Atte Arffman

An Enemy from the Sea or Just another Depression

Agency in U.S. Hurricane Discourses

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Tiivistelmä – Abstract

Vaikka yleisiä käsityksiä hurrikaaneista hallitsee niiden aiheuttama materiaalinen tuho, on niiden vaikutus huomattavasti moninaisempi ja yltää myös yhteiskunnan abstrakteille tasoille. Analysoin tutkielmassani sitä, miten hurrikaanien materiaaliset ja diskursiiviset ominaisuudet ovat tiiviisti yhteen kietoutuneita ja kuinka kyseinen yhteen kietoutuneisuus suhteutuu luonto-kulttuuri -jaotteluun. Lähdeaineistonani ovat yhdysvaltalaiset sanomalehdet keskeisimpinä *The New York Times* ja *The Washington Post*.

Työ on jaettu kolmeen kategoriaan, tieteellisiin diskursseihin, regulaatiodiskursseihin ja poliittisiin instituutioihin liittyviin diskursseihin. Tutkimuksessa tarkastellut hurrikaanit muodostavat *hybridejä*, joissa luonnon ja yhteiskunnan erottaminen toisistaan vaikutusten osalta muodostuu vaikeaksi. Tieteellisten diskurssien kohdalla merkittävää on se, kuinka hurrikaanien luoma polkuriippuvuus muokkaa populaareja käsityksiä hurrikaaneista, mikä vaikuttaa välillisesti myös säätietelijöihin. Regulaation kohdalla huomionarvoista on se, kuinka pitkän aikavälin historialliset kehityskulut näkyvät esimerkiksi omistusoikeus -debateissa. Poliittisien instituutioiden suhteen hurrikaaneilla paljastuu olevan huomattavia vaikutuksia esimerkiksi presidentinvaaleissa, jolloin osavaltioiden valtatasapaino vaikuttaa hurrikaanikatastrofien määrittelyyn. Lisäksi hurrikaanit kytkeytyvät erilaisiin aikalaiskonteksteihin, kuten 1960-luvulla rotuerotteluun. Myös median merkitys muodostuu suureksi useiden käsiteltävien tapausten kohdalla.

Hyödynnän työssäni ranskalaisen Bruno Latourin kehittämää toimijaverkkoteoriaa, jonka keskeisiä teesejä ovat luonto-kulttuuri -dikotomian hämärtäminen, ei-inhimillisen toimijuuden myöntäminen ja siirtyminen kohti post-antroposentristä käsitystä historiasta. Työ sijoittuu voimakkaasti ympäristöhistorian alle, mutta huomioi ja hyödyntää olennaisesti myös aate- ja käsitehistorian metodologiaa.

Asiasanat – Keywords

The United States, Hurricanes, Environmental history, Political history, Intellectual history, Actor-Network -theory, Mediatization, Discourses

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1. Introduction

Hurricanes[1] are likely to be the strongest atmospheric phenomena on earth. Exceeding the force of the atomic bomb dropped in Hiroshima multiple times, a big storm can deliver an amount of energy that would be enough to supply The United States a years' worth of electricity in just couple of hours.[2] The strongest of the storms leave behind warlike imagery, as if a massive explosion had eradicated the area. However, alongside with the physical destruction, the storms have had notable impact also on other levels of society. That is, alongside the material disasters, they are capable of inflicting societal crises. This master's thesis is study on agency in these crises and explores both the discursive and the material dimensions of hurricane catastrophes in the United States in 1969–2004.

Crisis, according to Janet Roitman, is a blind spot.[3] Its meaning has changed over the time from an indicator of a decisive moment to a prevailing state of conditions and is ever so ambiguous.[4] Nevertheless, crisis denotes something of a discrepancy in the normal state of affairs and, as such, hurricanes are more than capable of cause crises. More detailed account on the meaning and use of the term crisis is provided in subchapter 1.4. However, for the start, it should be noted that, as Brian Milstein has described, crises are something that stipulates action.[5] Action naturally requires actors and agency. From this, we can conveniently grasp another important feature of this research, i.e. the *agency*.

To explore agency in different crises, this study utilise the Actor-Network –theory (henceforth ANT), which tries to get a grasp on both material and societal impacts of

[1] In this study, the word *storm* is used synonymously with the word *hurricane* with one exception; *tropical storm* is used, when the hurricane has weakened and ceased to be hurricane. Otherwise, if the term *tropical cyclone* is used, it refers to all geographical variants, which are *hurricanes, typhoons* and *cyclones*. The name hurricane is derived from several indigenous languages of the North- and Central America. The first documented use in the English language is from 1555 in a form *furacane*. Subsequently the form *hurricane* was established during the 19th century. A more detailed account on hurricanes is given in subchapter 1.1. Longshore 2008, 397–401.
[2] Smith 2011, 1.
[3] Roitman 2014, 39.
[4] Roitman 2014, 2.
[5] Milstein 2015, 4.

hurricanes and, moreover, how the two are inseparably intermingled. This study, thus, adopts a viewpoint in which nature and natural phenomena cannot be reduced to be only material or only socially constructed. Instead, we should acknowledge that these sides cannot be arbitrarily separated but should be considered simultaneously. ANT has a somewhat unconventional offset in which agency is extended to include also non-human actors on the side of human actors. For instance, ANT considers hurricanes, different media operators as well as different institutions, such as the Constitution or the election system of Presidential Elections, as actors with certain conditions. Actor-Network -theory and the approach of this thesis is presented in detail in subchapter 1.3.

In this master's thesis, the interest falls specifically on hurricanes; how they create contingency and crises in human life, how they become politicised and perhaps most importantly, how they participate into politics thereby becoming non-human actors. The purpose of this thesis is to explore how discourses regarding hurricanes are as much materially inflicted as they are socially constructed. This study, thus, seeks answers to questions such as 'how hurricanes have become politicised', 'what kind of mechanisms have led to the politicisation of hurricanes and why' as well as 'what all this tells about the relationship of man and nature'.

Different political disputes are categorised into three different 'classes', which are scientific discourses, regulation debates and political disputes regarding different institutions. Although different political discussions raised by or rising from hurricanes cannot always be separated, the categorisation model was utilised to make these debates more discernible. These three categories are also used as a framework for the study itself and the actual analysis. The categories are the most common categories of discourses arising from the source material and were determined through the semantic charting of the source material.

Chapter two of this thesis is an induction to the U.S. hurricane history. It is divided into two subchapters. Chapter 2.1 provides a brief and selected history of U.S. landfalling hurricanes from 1900 to 1968, that is, before the timeframe of the actual analysis, in a form of a narrative. Chapter 2.2 provides a general contextualisation of the timeframe of the actual analysis, that

is, from 1969 to 2004. However, deeper, case-specific contextualisation is built into the analysis itself. Chapter two does not pursue analytical delivery and is intended to be a conduct to the analysis of this study itself.

The analysis is divided, as already mentioned, into three chapters. Chapter three explores the scientific discourse of hurricanes. It illustrates how the awareness of hurricanes has spread from the late 1960s onwards and how the relationship between people and the nature along with the public and meteorologists as well as different officials have changed and how, for instance, the media transformed this relationship. Chapter four studies the regulation of land and buildings in hurricane prone areas and illustrates how hurricanes connects with long historical development and how material and non-material dimensions encounter in regulation legislation. Chapter five inspects how hurricanes affect political institutions and how they are used in the pursuing of political goals. Chapter 5.1 is studying how Hurricane Camille of 1969 connected with the racial discrimination debate, whereas chapter 5.2 studies the relationship of hurricanes and presidential elections through three examples: Hurricane Agnes and the Presidential Election of 1972, Hurricane Andrew and the election of 1992 and Hurricane Charley and the election of 2004.

1.1 What Is a Hurricane?

To understand the terminology of this study as well as to make the reader familiar with the phenomenon at stake, we should first familiarise ourselves with hurricanes. Simplifying, a hurricane[6] is a supreme form of a depression. The birth of hurricane is however somewhat complicated meteorological process. Hurricanes start their lives as an ordinary thunderstorm clusters in a zone that extends from the eastern coast of Africa to the Caribbean Sea, roughly between 5th and 30th parallel, though, they very rarely develop norther than 20th parallel

[6] Hurricane is a name for tropical cyclone in North-East Pacific Ocean and in Atlantic Ocean. Hurricane is essentially the same phenomenon as typhoon or cyclone and the only difference is the geographical area they are occurring. Longshore 2008, 397–401.

because the water temperature is usually not high enough.[7] Seawater's surface temperature has to be at least 26.5 degrees Celsius for the eye-chimney to form. Vapour rises, cools down and start to condense forming large area of depression, showers and thunderstorms.[8] At this point, the pressure starts to drop. *The Coriolis Effect*[9] causes the storm to start spinning around its central low pressure.[10] The spiralling movement makes the sea turbulent, which increases the rate of evaporation even more. Once the wind speed reaches 33 m/s (~119 km/h), the pressure drops enough and the spiral movement organizes; a hurricane is born.[11]

Although hurricanes have a certain amount of frequency, they are still extreme phenomenon and not very common in the big picture of storms. In the years 1851–2010, U.S. mainland was hit by 284 storms; a little under 1.8 storms in a year.[12] According to the Jay Barnes, an average of more than three hurricanes will hit the U.S. coast in every two years. Of those, almost 40 percent hit the state of Florida, but the impact is possible anywhere from Texas to Maine.[13] There have been altogether more than 284 hurricanes, but many of them never reach the land area. In this study, the focus is primarily on the storms that made a landfall during the timeframe of this study.

Even though a big part of hurricane's notoriety is based on their strong winds, ninety percent of the hurricane casualties are caused by storm surge.[14] Along with the winds, the storm surge is capable of destroying buildings and ships in harbour.[15] Hurricanes also dump enormous amounts of rain in many cases, which can cause localized flooding and flash floods.[16] The

[7] Barnes 1998, 6; Bradford et al. 2007, 171.
[8] Barnes 1998, 6.
[9] Earth's rotation deflects the winds and give them the spin required for hurricane to form. Bradford et al. 2007, 172.
[10] Barnes 1998, 6–7.
[11] Barnes 1998, 7.
[12] Blake et al. 2011, 15.
[13] Barnes 1998, 9.
[14] Storm surge is directly linked to the central barometric pressure of the storm. These storm in a sense pushes water in front of it. The height of the storm surge is calculated from the Stillwater sea level. The surge can range from less than one meter to more than six meters depending of the intensity and barometric pressure of the storm. Many eyewitnesses have described that the surge can raise very rapidly, which increases the dangerousness, because of the weak predictability. Longshore 2008, 380.
[15] Bradford et al. 2007, 170.
[16] Barnes 1998, 25.

overall dangerousness of a hurricane is a cumulative effect of strong winds, storm surge and torrential rains. These are the main material factors found as constituting crisis discourses. They are also the main elements that constitute hurricanes as actors.

The strength of the hurricane is most often measured by using the Saffir-Simpson hurricane scale. The scale was developed in 1973 and it is the official scale to measure the strength of hurricanes. It is used by the National Weather Service in U.S.[17] The category ranges from one to five, one being the weakest and five the strongest. As for the part of categories three to five, the National Weather Service uses the term *major hurricane*. Meteorologically the phenomenon is, however, the same regardless of the used term. The wind speed limits of the scale are as follows:

Category of the storm	**Wind speed limits, Winds Maximum 1-min sustained. (m/s, km/h)[18]**
1, Hurricane	33–42,5 m/s, 118–154 km/h
2, Hurricane	43–49 m/s, 155–176 km/h
3, Major hurricane	50–58 m/s, 177–208 km/h
4, Major hurricane	59–69 m/s, 209–248 km/h
5, Major hurricane	>69 m/s, >248 km/h

The category of the storms before 1973 can be measured since there is measurement data available. Because the determination of the scale has changed somewhat, there is an inconsistency between different storms from different years. The disparity, however, is not

[17] Longshore 2008. 364.

[18] The National Weather Service and The National Hurricane Center uses knot (kt) to measure wind speed. In popular instances, such as in newspapers, miles per hour (mph) is commonly used. This study, however, uses the International System of Units (SI) and the basic unit for wind speed is meters per second (m/s). Kilometers per hour (km/h) is added in parentheses to simplify the proportioning.

great and, thus, the categorisation is used consistently in this study. It should, though, be remembered that any apprised storm category from before 1973, is determined subsequently.

More recently, hurricanes as phenomena have been strongly connected to the climate change. Climate change has indeed tangible effects on earth, but these effects on hurricanes are anything but self-evident. For instance, Maarten van Aalst has noted in 2006 that the last thirty years have indicated an increase in the overall intensity and lifespan of tropical cyclones.[19] Anthony Penna and Jennifer Rivers note in their book *Natural Disasters in a Global Environment* that the occurrence of hurricanes that reached the strength of category 4 or 5 in Saffir-Simpson -scale has almost doubled since 1970.[20] However, as Penna and Rivers duly note, the complexity of the climate system and the scarcity of the long-term data makes it extremely hard to predict, how climate change will affect extreme weather events such as tropical cyclones.[21] Direct evidence between climate change and extreme weather phenomena is still lacking.[22]

The definition of hurricanes is strongly natural scientific. This dominance of natural sciences has also influenced the conceptual qualities of the hurricanes; the image of hurricane is usually attached to the physical destruction caused by strong winds and storm surge, even though the physical qualities are only one side of the hurricanes. The physical realities are not irrelevant, but considering only them leaves the analysis hollow, especially because the material impact of hurricanes are not separate from the societal impacts. If anything, the two above-mentioned realms are closely connected to each other, as this study will demonstrate.

[19] van Aalst 2006, 12–13.
[20] Penna & Rivers 2013, 226.
[21] Ibid.
[22] Teague & Galliccio 2017, 165.

1.2 Field of Study and Source Material

In the field of history, three major types of approaches to hurricanes can be distinguished. Firstly, some researches, like Jay Barnes' *Florida's Hurricane History* (1998) as well as Marlene Bradford's and Robert S. Carmichael's *Notable Natural Disasters* (2007), are studying hurricanes from their event-historical side. These studies give a comprehensive account of the meteorological qualities and the physical destruction hurricanes caused. However, these encyclopaedic accounts seldom have the space to tackle the more discreet political and societal qualities of hurricanes in length.

Secondly, some other works, like John Wills' *US environmental history: Inviting doomsday* and David K. Twigg's *The Politics of Disaster: Tracking the Impact of Hurricane Andrew* (2012) take somewhat different approach and try to grasp the effects of hurricanes in their aftermath. An interesting study is also historian Mark M. Smith's *Camille, 1969: Histories of a Hurricane* (2010) which not only grasps Hurricane Camille's impact on to politics but also illustrates the storms aftermath in the viewpoint of the victims themselves. Even if the context of the U.S. dominates the hurricane research, some research is also done outside of it. One such study is Louis A. Pérez Jr.'s *Wind of change: Hurricanes and the Transformation of Nineteenth-Century Cuba* (2001), which eloquently explores the significance of hurricanes in Cuban history. These studies, however, usually grasp only one specific hurricane and their aftermath to deal with. Some comparison to other storms is sometimes made, but it often falls short from comprehensive historical analysis. Connections between different storms from different times are seldom particularly clearly expressed.

Thirdly, hurricanes are also touched upon in many researches which main focus is not necessarily on hurricanes. For example, Rutherford H. Platt's *Disasters and Democracy: The Politics of Extreme Natural Events* (1999) is interested in the political response and the role of the federal government regarding disasters such as floods, tornadoes, hurricanes and earthquakes. Another such study is Thomas Birkland's *Lessons of Disaster: Policy Change after Catastrophic Events* (2006) which explores how disasters affect changes in policies

regarding them. Birkland, who has specialized in studying public policy in the field of disasters, count among disasters also such events as terrorist attacks and plane crashes, but have dedicated one chapter for hurricanes and earthquakes. A vast corpus of this kind of research literature and material already exists. This kind of studies are also usually very insightful. However, the information they provide about hurricanes as such, tends to be rather fragmented.

Studies concerning solely hurricanes are generally somewhat scarce with the exception of Hurricane Katrina which traumatised New Orleans in 2005. Today, Katrina has almost mythical position as the most expensive natural disaster in the U.S. What is more, Katrina claimed more than 1200 casualties. The last storm before Katrina to kill more than 1000 people was the Lake Okeechobee hurricane of 1928. In the crisis that followed Katrina, many most prevailing themes of the U.S. history, such as the legitimacy of the federal government, racial discrimination and regulation of land use, merged and thus Hurricane Katrina is used as some sort of baseline for proportioning natural disasters in the United States. Consequently, Katrina is by far the most scholarly studied hurricane. However, Katrina is not the only storm that has created a nexus for these different themes and, therefore, this master's thesis creates a longer, historical account on these amalgamations. That is also the reason Katrina is left for a less attention in this study.[23]

In its timeframe and focus, this research interposes somewhere between the above mentioned traditions of hurricane research. This research has features from long term historical accounts as well as from case studies. The aspiration behind this is to give a more thorough picture of hurricanes as phenomena including both material and societal dimensions.

In this thesis, the nexus of different themes and debates is explored from American newspapers. Newspapers are a convenient primary source material, since they are usually in the hub of the events. The impact of hurricanes is visible in the newspapers which actively took part in discussion and influenced the picture people had about the storms by

[23] Good accounts of Hurricane Katrina and its impacts for the interested readers are Douglas Brinkley's *The Great Deluge: Hurricane Katrina, New Orleans, And the Mississippi Gulf Coast* (2007) and Jeremy Levitt's and Mathew Whitaker's *Hurricane Katrina: America's Unnatural Disaster* 2009).

disseminating information and opinions regarding the disasters. As such, they are, in a sense, the first draft of history providing the basis for public and political discourses of the time. Two biggest of them are *The New York Times* (NYT) and *The Washington Post* (WP). Both newspapers have a considerably large distribution, which provide a vast picture from the level of national public discussion. For instance, Howard Friel and Richard A. Falk have noted how NYT "…occupies such and exalted place in the political and moral imagination of influential Americans and others as the most authoritative source of information…"[24] WP occupies very similar status.

Moreover, since hurricanes' most visible impact, that is, the physical destruction is always local, adding the local level into the source base is important. Even though most of the strongest storms rise interest in the national level, it is not always the case and some interesting debates and discourses could be lost if local newspapers were ignored. Local media can also grab individuals, such as congressmen or senators, who have influence in the geographical area they represent, but who are not individually specified in the national level news coverage.[25] As R. Douglas Arnold notes, the research of politics and press has usually focused on the biggest national newspapers and media outlets.[26] That is why adding the local newspapers is all the more important. Several local newspapers, such as Hattiesburg American, The Palm Beach Post, Panama City News Herald among others, are used in this study to strengthen the source base and to enable comparison of national and local discourses.[27]

When handling the media-based source material, it is important to be sensitive to the discussion forums' own interests. The news production is, after all, always someone's opinion on what is interesting and what is not. This means that even if NYT and WP are often perceived to be quality newspapers with high standards, it does not necessarily mean their

[24] Friel & Falk 2004, 2.
[25] Arnold 2004, 3.
[26] Ibid.
[27] The complete list of newspapers used in this study can be found in the primary source bibliography. Newspapers other than the New York Times, The Washington Post and The Christian Science Monitor are provided by Newspapers.com.

news are free from motives. NYT and WP are probably interested in hurricanes from the national viewpoint and their emphasis can be different compared to newspapers that are local, county- or state wide. This is of course true other way round and local newspapers may have considerably more specific perspectives to more local issues.

For this research, some 70 hurricanes from the years 1900–2005 were sieved through and their discursive fields charted. Even though the timeframe of the analysis of this study starts from 1969, earlier storms are not irrelevant. Moreover, the scale of this study does not allow to engross deeply to every single storm and only some of the charted storms are examined thoroughly. On the one hand, the wider survey was done to enable the long-term historical contextualising as well as to offer objects of comparison, but on the other hand, it pushed this thesis lengthwise to be quite long, although validly.

Source material was approached empirically and from bigger entities towards more specific topics. Hurricanes have been named since the year 1950, wherefore in most cases a rational starting keyword was "hurricane <name>", e.g. "Hurricane Camille" or "Hurricane Andrew". Based on the results from these searches, a general semantic field of hurricane discourses was constructed. These searches usually revealed if the hurricane raised or connected to debates concerning more than just the hurricane in its immediate aftermath. Adding specifying search terms as for example: "politic*", "segregation" and "crisis" or "president*", "election", "Bush" and "Clinton", these themes were followed and their specific semantic fields charted. In this manner, the most significant debates regarding different storms were revealed. The timeframe of the searches differs heavily between different storms. The ostensibly arbitrary timeframe follows from the fact that disasters, such as hurricane strike, are somewhat process-like phenomena and no obvious starting- or ending point can be justifiably defined.[28] In some cases the coverage was initiated long before the actual hurricane landfall and the hurricane acted as a starting motor. Similarly, many debates that were directly connected to the storms continued long after the storm as a physical phenomenon dissipated.

[28] Ekström & Kverndokk 2015, 356.

1.3 Approach and Research Questions

In this research, nature(s), environment(s) and natural phenomena, are considered real and empirical categories in the field of history research and historiography. It means that history should be written in a manner that considers the influence of nature(s) and environment(s) to human realm. This might be a truism, but as such, it pleads its cause: in the course of modern academic history, it has been anything but obvious to take nature(s) and environment(s) into account even as a singular wholeness. But as the plural form in the parentheses might suggest, the singular wholeness of nature is problematic. For example, Yrjö Haila and Ville Lähde argue in their essay *Luonnon poliittisuus: Mikä on uutta?* that nature and culture are too heterogeneous and too intermingled to have a 'relationship' in the proper meaning of the word. They call the belief about unified, homogenous world "metaphysical postulate".[29] Thus, as Raymond Williams points out, singular nature is only an abstraction and simplification. The composition of nature is dependent of what is included in it or what is observed.[30] In this sense, nature is an emergent phenomenon.

It is important to notice, however, that even if hurricanes are natural phenomena, they are not "…'naked facts'".[31] We should understand that nature's beings and processes (meaning hurricanes in this research) are not representing the whole nature as nature does not take part into politics in general.[32] To get a grasp of this composition, two sets of rather loose methodological approaches are combined. They are a version of actor-network -theory (ANT) and an analysis of political discourse. Before describing the combination used in this research, ANT and analysis of political discussion should be defined more precisely.

The actor-network –theory is developed by a French anthropologist and political scientist Bruno Latour. The basic premise of the ANT is that it challenges the traditional distribution of work between humanistic sciences and natural sciences.[33] ANT encourages the researcher

[29] Haila & Lähde 2003, 32.
[30] Williams 2004, 44–45.
[31] Haila & Lähde 2003, 9.
[32] Ibid.
[33] Åkerman 2009, 238.

to obscure the nature-culture division and engage to study how humans and non-human objects inseparably create our social reality.[34] In this sense, the ANT comes close to the basic premise of environmental history. That is, as environmental historian Jay Donald Hughes has put it: "Historians should see human events within the contexts where they happen, and that is the entire natural environment."[35]

Latour claims that there is no ready background structure against which social activity of humans could be explained. At the same time, either 'nature' does not have any explaining traits *per se*.[36] Actually, we should not assume that society or natural environment explains any activity, because we cannot know *a priori* what agents form the group and at what moment.[37] Nevertheless, society, as well as natural environment set some kind of boundaries to different actors, be they human or non-human, but we should still notice that nature does not set any clearly defined terms or conditions since: "…terms set by nature are, by no means, free from work done by earlier generations in different societies."[38] To get a grasp of this complicated composition, we should follow the actors themselves and see how they create the collective network of actors.[39]

At this point, we can take a note of another important feature of the ANT: agency. ANT challenges the more traditional humanistic sciences in the form of agency, because it claims that an agent does not necessarily have to be a human. What that means, is that agency is not so much an attribute than a consequence of collision of 'human' and 'non-human' in a specific context.[40] This follows from Latour's idea of agency as he proposes that if something has the ability to change the state of affairs it is an actor. Thus the question to ask is, according

[34] Regarding this research, it should be noted that ANT does not try to deny the existence of nature-culture division. Rather than that, it is interested how the distinction is created and deployed in different situations. This, however, does not happen by observing both sides as whole entities, but as locally emergent entanglements that can be grasped by following actors in an actor-network. Åkerman 2009, 238–243.
[35] Hughes 2016, 2.
[36] Asdal 2003, 63; Latour 2007, 29.
[37] Latour 2007, 28–29.
[38] Haila & Lähde 2003, 9.
[39] Åkerman 2009, 253.
[40] Åkerman 2009, 243–244.

to Latour: "Does it make a difference in the course of some other agent's action or no?"[41] Thus, the agency is determined through interactive qualities and does not necessarily require intentionality."[42]

We can illustrate this aspect of natural objects as having agency with an example from the theme of this research. Think of islands on the coast of the United States. These places are highly vulnerable to the effects of hurricanes and often densely populated (For instance Galveston TX, New Orleans LA, Miami FL, Charleston SC, and Long Island NY). The question is, when a hurricane wipes off the buildings on some of these islands, as was the case in 1989, when hurricane Hugo ruined the barrier island in front of Charleston, SC, is it a natural disaster or is it a result of human building activity on the specific island?

As they are inseparable, we have run into *hybrids*. Hybrids emphasize that at some point, we cannot self-evidently separate human agency from non-human. Thus hybrids are, as Maria Åkerman explains: "…connections of nature and culture."[43] In our example, humans are participating in the actor-network that already contained the following dimensions: vulnerable place by the sea, hurricanes, effects of the sea and so forth. Other way around, at a certain moment, a hurricane participates in the actor-network that already contained the island, its buildings, residents, the sea etc. Hence, the network-like interaction of non-human and human actors create a viewpoint where both socially defined and physical levels of reality are emerging. Once again, the idea is not to deny that the distinction between social and physical dimensions is in existence, but to state that, as David Manuel-Navarrete and Christine N. Buzinde have put it: "Reality is perhaps best understood not in terms of these distinctions, but in terms of their fundamental interconnectedness:"[44] Similarly, as Latour notes, non-human actors are not only passive recipients of acts, but also something that interacts with human actors.[45] Therefore, a perspective shift is made, where humans are not

[41] Latour 2007, 71.
[42] Latour 2007, 61.
[43] Åkerman 2009, 240.
[44] Manuel-Navarrete & Buzinde 2010, 138.
[45] Åkerman 2009, 241.

only subjects who act, as has been previously assumed[46], but can also be acted upon by natural phenomena. This shift does not lessen human ability to act but reveals the other side of the same coin: humans are still reacting, but at the same time, natural phenomena are influencing. This is important because it helps to understand phenomena such as hurricanes and societal crises associated with them comprehensively.

Although ANT is used here as an interpretative tool, it has been criticised by many other social scientist. They have accused, that ANT makes human agency flat and that non-human objects' agency is emphasized at human agency's expense.[47] There is a valid point if ANT is followed in the strict sense that stipulates symmetry between human and non-human agency. Maria Åkerman has noted that some ANT oriented researches have a craving need to highlight non-human agency.[48] Therefore, many scholars have interpreted the demand for symmetry more broadly and, for instance, the linguistic dimension is taken into the interest of the research.[49] That kind of approach is also done in this research.

As such, this research comes close to materialistic turn or *new materialism* in science-philosophical and science-theoretical terms. Basic premise for new materialism is that interpretation moves towards flat-ontology, in which human is (re)situated beside other material forces.[50] New materialism is not, however, reductionist, since it accepts meanings, thoughts, concepts, and language in general as a force that can have material implications.[51] Regarding for instance society, it is, as Diana Coole and Samantha Frost notes: …simultaneously materially real and socially constructed: our material lives are always culturally mediated, but they are not only cultural.[52]

In the viewpoint of this study, ANT and new materialism pursue the same thing: acknowledging non-human agency as equal by the side of human agency. The reason that

[46] For further discussion about the groundlessness of human-centred agency, see Vaillancourt 2010, 48–49.
[47] Åkerman 2009, 253; Manuel-Navarrete & Buzinde 2010, 136.
[48] Åkerman 2009, 257.
[49] Åkerman 2009, 253–254.
[50] Coole & Frost 2010, 10.
[51] Fox & Alldred 2017, 25–26.
[52] Coole & Frost 2010, 27.

this research comes only close to new materialism rather than being straightforwardly new materialistic is that considering material realm has never been excluded from environmental history.[53] Nevertheless, after the turn of last millennium, one of the big questions in environmental history has been how to acknowledge both idealistic and materialistic perspectives.[54] This research certainly has some features that are highlighted in new materialism, of which the most important point is that this research can be regarded as being *post-anthropocentric*. It means that it:

> *…offers a means to move beyond the anthropocentrism that takes the human as the measure of all things, and allows us to take a fresh look at the ways in which the non-human has important and pervasive effects – on a daily basis – upon the social world and on all our lives.*[55]

So far, the theoretical discourse of new materialism has been stronger in the social sciences and particularly in sociology and in this sense, this research can be seen as been influenced by it from the viewpoint of history, albeit it has been characteristic to environmental history to take stances, perhaps even more than more traditional history has done.[56] In a broader science-theoretical context this could be understood as a materialism without reductionism, that is, physical reality is taken into account regarding, for example, political discussion.[57] Kristin Asdal has noted, that this is also Bruno Latour's endeavour: "Latour wants to bring nature back to collective, political life"[58]

Furthermore, this could be understood in a historiographical framework as a return towards annalistic tradition.[59] Even though annalists did not regard themselves as environmental

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[53] Väyrynen & Ruuskanen 2016, 359.
[54] Väyrynen & Ruuskanen 2016, 351.
[55] Moving towards post-anthropocentrism does not mean that the goal would be to put humans aside. It is important to notice that the human part of actor-network is emphasized, when the interest falls on political linkages of the hurricanes. That is because non-human agency is non-verbal. Thus it is traceable through translations by other agents, for instance, as a text. No hurricane is political by nature, since to be political is not so much an attribute than it is a result of some action, but there is also nothing that says precisely what can or cannot be political. Hurricanes become political primarily through human political activity. Latour 2007, 107–108; Åkerman 2009 253; Fox & Alldred 2017, 7–8; Wiesner et al. 2017, 2–3.
[56] Väyrynen & Ruuskanen 2016, 361.
[57] Raatikainen 2004, 41.
[58] Asdal 2003, 71.
[59] Guldi & Armitage 2014, 16.

historians, they have had an influence on environmental history in Europe and in lesser extent in America, most notably to Donald Worster. In environmental historian sense, annalists, such as Fernand Braudel and Emmanuel Le Roy Ladurie, can be credited for non-linear understanding of causality, which is one of the essential features of modern environmental history.[60]

What then follows is that the nature-culture division is blurred and turned to be ambiguous and it is rather challenging to tell, where the boundary of environment and society is. Environmental processes are utterly social since they explicitly influence humans and their relationships.[61] The key is to understand that although ecosystems and societies are highly complex, they are not separate entities or alien to each other, but a part of wide network of actors that affect each other.[62] What this means regarding this research, is that hurricanes do not threat societies outside, but are actually a part of them. John S. Dryzek has put it succinctly:

> *Just because something is socially interpreted, does not mean it is unreal. Pollution does cause illness, species do become extinct, ecosystems cannot absorb stress indefinitely, tropical forests are disappearing. But people can make very different things of these phenomena and — especially — their interconnections, providing grist for political dispute.*[63]

Hurricanes, too, can certainly have a political dimension. This happens when hurricanes collide with human and end up, for example, on the pages of newspapers. From newspapers we can trace how hurricanes are used in different discussions and what kind of political traits they are given. As a result, attention should be paid to the question: what the author was doing when he or she was writing the text and so, in a sense, we should ask what was the purpose of the text and the intention of the writer.[64] These speech acts should be

[60] Väyrynen & Ruuskanen 2016, 353–354.
[61] Ibid.
[62] Dryzek 2005, 8–9.
[63] Dryzek 2005, 12.
[64] Skinner 2002, 101.

contextualized, i.e. tie them to the predominant temporal moment they were made considering for example political and social factors.[65]

According to Pasi Ihalainen, Mia Halonen and Taina Saarinen, accustomed way to understand context in language studies has been twofold. In its broad sense it has been seen to "…referring to the various features of the societal situation…" or in narrower sense "…as the properties of the immediate linguistic action itself."[66] The same writers note in the same passage that in the discipline of history context has very broad meaning including "…political, social, cultural, intellectual and generic (etc.) structures and factors." Moreover, discovering the pertinent factors in each case of interest is the very mission of a historian.[67] There should not be any reason why physical environment could not be a relevant context of political discourse, because, according to the intellectual historian, Markku Hyrkkänen, there is no any primary or ready-made context available in the first place.[68] The context has to be then somehow "invented" or "found" that is, *constructed*. This happens by reading the source material and interpreting the contexts found. What this means, is that, as Hyrkkänen concludes: "Context thus is a result of a research."[69]

However, in this study, hurricanes ascend to be more than just context because they most certainly are a factor that actively create (although without intention) contingency and through that enable the using of them for different aims. Thus, type of a layered model is adopted in which hurricanes happen in certain context but at the same time the aftermath of the storm can have the hurricane itself as a context. This can be grasped with ANT. For instance, Hurricane Hugo (1989) generated a dispute between state officials and barrier island's residents about the rebuilding. Officials wanted to look to the future and prevent similar catastrophes to recur. The stakeholders of real estate instead were interested more about the money than the human lives. Hugo was used by officials as an example and a warning what could happen again if nothing was done to change the situation in barrier

[65] Skinner 2002, 112–119.
[66] Ihalainen et al. 2015, 4.
[67] Ibid.
[68] Hyrkkänen 2002, 201.
[69] Hyrkkänen 2002, 200–201.

islands. In this sense, we can claim that hurricane Hugo was capable of changing the state of affairs between the island's residents and officials and also to arouse intentions. These intentions can be traced, for example, from newspapers that were the platform for the disputes.

Political activity is mostly linguistic, i.e. how concepts are created, used (if not utilised), and how they are given meanings. The temporal dimension is considered since concepts are not eternal in their meaning, but change as the time flows. The change in the meaning connects with different social, political, cultural, scientific and economic processes and contexts.[70] One example could be the development in meteorology and its impact on understanding hurricanes; this created a shift of the target of public critique from Weather service to federal and state officials, as is later shown in this study. Thus, the concepts used when discussing about hurricanes relate to the wider understanding of the phenomenon. As Willibald Steinmetz and Michael Freeden have put it: "Concepts can be seen…as windows through which we can appreciate how comprehensions of the world are organized…"[71] Regarding this study, the semantic field of hurricanes can be seen to carry material qualities, since material boundaries affect the conceptual meanings of the comprehensions of the world. Such questions as: how concepts have been created, how they are given different meanings, what kind of meaning reserve they possess and what kind of struggles have been "fought" over their right usage and control, should be asked.[72]

However, because we are interested in the intermingled nature of environment and culture, we cannot just choose to focus on the discursive side or to the material side. We must be able to grab both sides simultaneously without putting one side above the other. The observation should be done without vertical hierarchies. This can be done using ANT. To add ANT into the scheme of analysis of political discussion means, that political discussions regarding hurricanes are also seen happening as a part of different actor-networks. This is not to state that politics constitutes some kind of ready-made, closed space, as this could hamper the understanding of diverse characteristics of the politics itself.[73] With ANT, we can also

[70] Hyvärinen et al. 2003, 10.
[71] Steinmetz et al. 2017, 1–2.
[72] Hyvärinen et al. 2003, 10–13.
[73] Wiesner et al. 2017, 6.

analyse how political subjects are produced through interactions between humans or humans and nature. Ultimately, the question is about the relationship between physical reality and abstract levels of reality, for instance, environment and coastal development regulation in the case of Hurricane Hugo.

Thus my research questions are as follows:

1. What gives hurricanes political dimensions and why?

2. Is there to be found some shared factors between different politicised hurricanes?

3. What all this tells us about the culture-nature relationship regarding hurricanes?

Following these research questions, this study sets a hypothesis that the process of politicisation of hurricanes leads to a birth of *hybrid events*, in which human and non-human actors as well as environment and society enmesh inseparably.

1.4 Crisis and Mediatization – What is at Stake?

The purpose of this subchapter is to provide a description for the key concepts used in this research. These concepts are *crisis* and *mediatization*. The use and emergence of these two concepts should be seen and understood to happen as part of actor-networks. However, after the description of the concepts of crisis and mediatization, a brief synthesis of crisis and mediatization in relation to actor-networks is provided in the end of this subchapter.

1.4.1 Crisis

Crisis as a political concept is anything but lucid in its meaning. The various uses of the concept have raised some disputes about what constitutes as crisis. Some researchers, such as Reinhart Koselleck, Michael Freeden and Brian Milstein have noted that the concept has

suffered an inflation as the use of it has spread widely to a lexicon of everyday life.[74] There seems to be crises everywhere, and if not, something is at least on the brink of it. However, as Janet Roitman points out, crisis has also denoted a critical moment or some kind of discrepancy in the normal state of affairs.[75] Thus, crises can reveal the normative structures of the society. If the crisis is understood as a prevailing state of affairs, the problem of distinguishing a state of crisis or the factors constituting one comes up, since, as Roitman concludes, crisis needs a point of comparison; but comparison to what, if crisis itself carries normative qualities?[76] The task of describing the crisis as a concept is therefore rather demanding but by the same token, it is possible to find some boundaries for the empirical analysis within the framework and needs of this research.

Regarding the hurricane theme of this research, we can take a departure by trying to distinguish crisis from disaster or catastrophe. Brian Milstein defines crisis as some sort of rupture in the *status quo* of the society, but he notes that every event of that kind of nature, be it drought, economic downturn or terrorist attack, is not automatically a crisis since there are ways of dealing with these occurrences.[77] In Milstein's logic, crisis arise when the situation falls into a state of uncertainty; measures to deal with the situation are experimental and prevailing means of action cannot be relied.[78]

According to Thomas Birkland, crises and disasters or catastrophes also differ in the magnitude of the event, i.e. crises extends to a disaster and disaster to a catastrophe in the wake of increasing magnitude. However, Birkland seems to be purporting that crisis is a result of a human action and disaster results from factors beyond human control e.g. natural causes.[79] This distinction is problematic because, as the hybrid model of ANT suggests, it is not always clearly discernible whether the situation, be it called a crisis or a disaster, is caused more by human or non-human actors and natural factors. Moreover, in public discourse,

[74] Koselleck & Presner 2002, 236; Koselleck & Richter 2006, 397; Milstein 2015, 2; Freeden 2017, 13.
[75] Roitman 2014, 2.
[76] Roitman 2014, 4.
[77] Milstein 2015, 12.
[78] Ibid.
[79] Birkland 2006, 2–3.

visible, for instance, in newspapers, crisis, disaster and catastrophe are used simultaneously and more or less synonymously to describe the same situation.

Ergo, when a hurricane disaster or catastrophe occurs, i.e. hurricane makes a landfall and brings pandemonium and casualties, the researcher's task is to identify when catastrophe is interpreted as crisis. This is possible to demarcate from the source material since crisis is, as Milstein states, a *participatory* concept.[80] What this means is that the actual starting point of crises is often the moment when the crisis-talk starts by those who are bound to crises through acting in, and experiencing them.[81] Talking about crisis, however, does not necessarily need the usage of the word 'crisis' and crises can be identified from other factors too. Moreover, crises stipulates someone or some quarter to fix the situation and bring back the control.[82]

Thus, crises involve action. This "feature" also makes it usable in the actor-network –oriented studies like this one. Milstein's definition for crisis is indeed very practical even though he seems to take quite steeply constructivist viewpoint regarding the natural environment.[83] As noted in the previous subchapter, ANT comprises human and non-human actors. An important question regarding this is, as Michael Freeden notes:

> *…are crises the product of ascribable human agency, and therefore subject to prevention, deflection, or rectification; or are they impersonal, catastrophic, and socially or scientifically endemic, testifying to human helplessness in the face of natural, economic, or political forces?*[84]

In the thematics of this research, it would be crude over-simplification to state that crises are strictly either naturally occurring or human made. This holds even if crises are, as Milstein notes, ultimately political phenomena.[85] Crises that arise in the wake of natural disasters are hybrids; they are events where "Human agents dance with the moves of nature's actants to

[80] Milstein 2015, 4.
[81] Milstein 2015, 3–4.
[82] Milstein 2015, 10.
[83] Milstein purports that even though we are able to observe different entities, we cannot "see" natural environment, since it does not have a physical presence, thus resulting an interpretation where there is not natural environment outside of human consciousness. That is quite the opposite vis-à-vis this study. Milstein 2015, 14.
[84] Freeden 2017, 16–17.
[85] Milstein 2015, 2.

form hybrid constructions, with both influencing the other and both having some autonomy."[86] The quote is from the article "Disaster or Sustainability: The Dance of Human Agents with Nature's Actants" (2004) of the Raymond Murphy, who has extensively studied the sociology of environment and disasters. In the article, Murphy explores the nature of the ice storm that wrought severe infrastructural failure in Northern-America in 1998, especially the city of Quebec in Canada.[87] The storm, amongst other things, caused extensive power outages that lasted in some parts of the area almost two weeks.[88]

Murphy concludes that the crisis which developed was an entanglement of natural disruption and societal vulnerability of the infrastructural system.[89] The political nature of the crisis is bound to the operations of the politicians. Murphy writes how the officials concealed information about the gravity of the crisis from the public to avoid panic. This was revealed to the public only after the situation.[90] Furthermore, politicians visited the area to point out their compassion for the sufferers of the situation. This was, according to Murphy, prompted by the nature's actants.[91] But at the same time, it is as per the 'logic' of the crises, since, as noted, crises stipulate action.

Crisis, thus, is empirical concept, that is, we cannot overrule the experience of the crisis of contemporary people by setting strict boundaries for what constitutes crisis and what does not. Crisis is found happening as a part of the process of actor-network involving both human and non-human actors. Hurricanes cause contingency and are capable of derailing at least parts of societies into the state of uncertainty. However, we should be careful not to declare every hurricane landfall a crisis right away. The use of the concept of crisis, for instance, in the media, may in some cases be just a rhetorical device and thus we should follow different actors using the term, such as officials, media and so on. Particularly meaningful is media with its operational logic. This logic can be understood through the concept of *mediatization*.

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[86] Murphy 2004, 254.
[87] Murphy 2004, 255–257.
[88] Murphy 2004, 256.
[89] Murphy 2004, 260.
[90] Murphy 2004, 258–259.
[91] Murphy 2004, 258.

1.4.2 Mediatization

Mediatization as a concept comes from the mediatization theory (MT), utilised widely in communication studies. MT is interested in the spreading and intertwining of media into the society. MT oriented researchers have pursued to distinguish it from the older tradition of media studies, in which, according to Stig Hjarvard, the focus was on the communication process itself and media was somewhat separate from culture and society.[92] Hjarvard criticises that the concept of mediation is too narrow and does not acknowledge "…the long-term, large-scale structural transformation of relationships between media, culture and society."[93] Therefore the concept of mediatization is adopted to grasp the influence of the media to society and culture.[94]

MT, then, shifts the attention from mere *mediation* of the message to the structural change produced by media in long-term. Winfried Schulz has illustrated this with a four-point typology consisting of *extension, substitution, amalgamation* and *accommodation*.[95]

1. Extension refers to the extended communicational possibilities between humans in time and space, mainly through technology.

2. Substitution means that media is capable of replacing face-to-face communication through different technological devices.

3. Amalgamation means that media have penetrated everyday life. Non-media activities intermingle with mediated activities, i.e. reading newspaper while eating breakfast.

4. Accommodation denotes the adaptation of the operational logic of media into the operations of other societal actors and institutions.[96]

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[92] Hjarvard 2013, 1–2.
[93] Hjarvard 2013, 3.
[94] Hjarvard 2013, 2.
[95] Schulz 2004, 88–90.
[96] Schulz 2004, 88–90; Hepp 2012, 4; Hjarvard 2015, 10–11.

Stig Hjarvard notes that these processes and their relevance might vary in different sectors of society, but they might be useful for the understanding of the mediatization process itself.[97] For this research, *extension* and *accommodation* are especially meaningful. Extension is visible through the shared experience of hurricanes. For instance, television, as an extended means of communication, has squeezed hurricanes as phenomena into a single screen. Everyone can be their own weather expert and everyone can get their share of the experiencing of the storm regardless of their whereabouts.[98]

Moreover, governmental officials and institutions have been forced to (at least in some extent) accommodate with the transformed operational environment.[99] Every action, whether successful or not, is widely and easily visible for the public. This has led politicians, for instance president and governors, to rush to the disaster area. Thus mediatization has led to the increase in the (political) power of media as it can define what is important to concentrate and what is not.[100] Television has also become an important channel for hurricane warnings and awareness; this has been a benefit as well as a harm for the Weather service as is shown later in the analysis of this research.

1.4.3 Crisis and Mediatization in Actor-Networks

To pull all this together, we need to treat the actor-network. We could describe an actor-network as a collective formation of human and non-human actors in a specific context. However, some remarks have to be done. First, actor-network is not equivalent with society. That is because actor-networks form from different actors but they do not necessarily involve the whole society inside of it. Second, actor-networks do not form everywhere and finding them requires empirical research, i.e. going through the traces from source material.

[97] Hjarvard 2013, 11.
[98] Hjarvard 2013, 37.
[99] Schulz 2004, 89; Hjarvard 2015, 8.
[100] Hjarvard 2013, 77.

As was noted in the start of this subchapter, crisis and mediatization are emerging in different actor-networks. Thus, crisis and mediatization are connected through the collective network of actors which includes hurricanes, officials, media, other geographical features and the victims as well as bystanders, who can experience the crises through extended means of communication, that is, by watching television and using the internet. Crisis and mediatization are something that these different actors create and, hence, they are discernible through empirical analysis of the source material.[101] Before proceeding to the actual analysis, chapter two will provide an induction to the history and general context of hurricanes in the U.S.

[101] Hjarvard 2013, 36; Milstein 2015, 9.

2. Background

The purpose of this chapter is to provide a brief background history for the study and to give a general contextualisation for the timeframe of the analysis. This is executed through two subchapters. Subchapter 2.1 is a selected, and therefore brief, history of U.S. landfalling hurricanes during the period of 1900–1968. It does not strive pervasiveness nor analytical delivery but follows the general thematic segmentation of the study. Subchapter 2.2 serves as an introduction for the actual timeframe focused in this study. It also gives an insight to the general context of the themes dealt in the analysis, although, deeper, case-specific contextualisation is built into the analysis itself.

2.1 "Another List of Dead": Selected History of U.S. Landfalling Hurricanes in 1900–1968[102]

The 20th century had a harsh start in respect of hurricanes. At night on September 9, 1900, a category 4 hurricane devastated the vivid coastal town of Galveston in Texas. The blow was crushing. At least 6,000 people died and the highest estimate is dumbfounding 12,000.[103] The island city, of which highest point elevates only 2.7 meters above the sea level, was washed by 3.5-meter high storm surge that rose at one point 1.2 meters in four seconds.[104] The Great Galveston hurricane is the deadliest hurricane affected The United States. In the early 20th century, severe storms could isolate cities and other settlements for days from the rest of the world. For example, Galveston was cut off days before any rescue parties could reach the city and the first messenger from Galveston reached Houston two days after the storm. Phone and telegram lines were down and every possible route was blocked. Relief trains tried to reach the city from Houston, but huge amount of debris consisting of lumber and trunks (and

[102] "Another List of Dead" The Washington Post, Sep. 13, 1900: 1. Read 22.2.2019.
[103] Longshore 2008, 218.
[104] Longshore 2008, 218; Murphy 2010, 280.

apparently also pianos as The New York Times reported) prevented the train to reach its destination.[105]

High death count was rather characteristic after hurricanes in the late 19th century and early 20th century. Forty-five out of the fifty-two deadliest storms in years 1851–2010 struck before 1968.[106] The official records of hurricanes reach to 1851. A few of the most notorious storms after the turn of the century are The great Miami hurricane 1926 (372 deaths[107]), Lake Okeechobee hurricane 1928 (2,500 deaths), Labor Day hurricane 1935 (408 deaths), The Great New England hurricane 1938 (256 deaths, 600 including offshore losses) and Hurricane Audrey 1957 (over 400 deaths).[108] Some of these storms came by pure surprise. This was due to rather rudimentary meteorological equipment, which consisted mainly of instruments for measuring pressure, temperature and humidity.[109] No remote sensing technology was available before World War II.

The U.S. National Weather Service was established under the U.S. Army in 1870, but in the early decades, its ability to forecast hurricanes was not particularly good.[110] The invention of wireless telegraph in 1909 allowed quicker transmission of weather information and, for example, boats could inform weather stations about abnormal barometric pressure or winds.[111] This, however, did not necessarily mean better accuracy of forecasts. The weather stations and lighthouses were close to the coast and if no ship was in the area of the hurricane, forecasters had no way of getting information about the storm. The weather service, known as a U.S. Weather Bureau from 1890 to 1970, gained a considerable amount of critique during the early decades of 20th century.[112] For example in 1938, hurricane observers first lost the track of The Great New England hurricane, also known as a "Yankee Clipper", and later only

[105] "Great Disaster at Galveston: Deaths May be Over 2,600 – 4,000 Houses Ruined" The New York Times, Sep. 10, 1900: 1. Read 13.9.2018.
[106] Blake et al. 2011, 7.
[107] This number apparently does not include some 800 people who were missing and only presumed dead. Barnes 1998, 126.
[108] Ibid.
[109] Teague & Gallicchio 2017, 22.
[110] Knowles 2009, 5.
[111] Teague & Gallicchio 2017, 24–25.
[112] Knowles 2009, 16; Teague & Gallicchio 2017, 22.

gave lethargic warnings about the storm's presence; most of the over 600 victims did not know anything about the upcoming cataclysm.[113]

Some storms, such as The Great Miami Hurricane of 1926 and Labor Day hurricane of 1935, also triggered chains of events that reached political dimensions. The Great Miami hurricane was a strong category 4 storm which eye crossed directly over Miami at the night of September 17–18. Huge amount of debris combined to fallen power lines made the start of the relief efforts extremely dangerous.[114] The American Red Cross (ARC) took the main charge of the relief, after Florida's Governor John W. Martin made the request on September 19.[115] A little over a week later, ARC claimed that Governor Martin was hindering the relief effort by giving misleading information about the extent of the destruction.[116] ARC based its relief operation on contributions from citizens living all over The United States. Misleading information could staunch the flow of money and, therefore, prevented ARC to give aid the victims needed.[117] Later officials admitted they cannot handle the relief effort themselves and made appeal for outside help.[118]

A decade later, in 1935, Florida Keys witnessed the most intense hurricane ever lashed the coast of the United States. Storm's central pressure of 892 mb still holds the record as the lowest measured central pressure of landfalling hurricane in the U.S.[119] The storm brought 84 m/s (303 km/h) sustained winds with 100 m/s (359 km/h) higher gusts. All this combined to 7-meter storm surge proved itself fatal to over 400 people residing Florida Keys.[120] Most of the victims were unemployed veterans of the First World War, or so called "Bonus Marchers"[121], who President Roosevelt had sent to Florida Keys for the building of railway

[113] Longshore 2008, 224.
[114] Longshore 2008, 191.
[115] "Red Cross Assumes Charge of Relief: Nation-Wide Appeal for Funds is Likely to Succor Florida Victims" New York Times, Sep. 20, 1926: 3. Read 12.9.2018.
[116] "Floridians Attack Gov. Martin Anew: Inquiry Is Demanded on Failure to Drain Lake Okeechobee, Where Many Drowned" The New York Times, Oct 1. 1926: 15. Read 12.9.2018.
[117] Ibid.
[118] "Reports Floridians Admit Need Of Aid: Red Cross Vice Chairman Says Officials See Now Outside Help Is Necessary" The New York Times, Oct. 4, 1926: 48. Read 13.9.2018.
[119] Blake 2011, 13.
[120] Longshore 2008, 289; Landsea et al. 2014, 6114.
[121] More about Bonus Army and Bonus Marchers see Norton et al. 2015, 638.

from continent to the Keys. The start of the dispute was the failure of the rescue train that was sent from Miami to the Keys for the evacuation of the veterans.[122] The massive storm surge caught the train; all the eleven cars of the train fell on their side and only the locomotive and tender remained on the tracks.[123]

After the storm, a question arose who should be held responsible for the disastrous loss of lives. The finger was pointing mostly to the Weather Bureau, which was accused of giving inadequate warnings about the storms characteristics and route. Weather Bureau defended itself saying it had done the best it could and that the warnings were timely and more than adequate. All the controversy lead to an inquiry by the Congress. The committee stated later in its final report that no one was to be blamed and the storm surge had been unexpected.[124]

Poor predictability raised only few discussions about the fact that the population in coastal areas were in rise. The Great Miami hurricane (1926) stirred some debates about building regulations. Miami had been the fastest growing American city in the first half of the 1920s. Apparently, the fast growth had created shortages in building materials. The boom, however, faded almost as fast it had started in the wake of the hurricane.[125] Only a few days after the storm had ravaged the city, The New York Times announced that the great loss in property was mainly due to a poor quality of construction and that the need for more strict building codes were necessary.[126]

After the storm of 1926, debates about regulation were very rare and almost no existent in the 1950s and '60s. Instead, Weather Bureau stayed long in the focus of the debates after any bigger storms. Bureau was under constant attack by the public in the early 1950s. This raised questions about the role of Weather Bureau and its ability to function. For example, in 1954, after the hurricane Carol had lashed New England in late August, Theodore F. Green, the Democrat senator of Rhode Island, made a report that stated that the area of New England

[122] Knowles 2009, 134.
[123] Knowles 2009, 171–175.
[124] Knowles 2009, 300.
[125] Barnes 1998, 111.
[126] "Florida House Loss Laid to Poor Work: Concrete Block Buildings and Wooden Bungalows were Hit Hardest by Hurricane" The New York Times, Sep. 26, 1926: 20. Read 15.9.2018.

did not receive adequate warnings about the storm.[127] This commotion raised claims for better funding for the research of hurricanes and better meteorological equipment.

Luckily, for the Weather Bureau, better equipment was just the thing it got in the latter part of 1950s and early 1960s. Radar was first used for meteorological purposes in 1949 and in 1954 weather radars started to become more common. As a first remote sensing technology for forecasting weather, radar was a revolutionary.[128] During the late 1950s and early 1960s, Weather Bureau invested heavily in the network of radar stations and got more funding from the Federal Budget.[129] The National Hurricane Center (NHC) was established at the same time in 1965.[130]

Following the implementation of weather radars, weather satellites brought the next big advancement in the early years of 1960s. New technology changed the situation radically; storms did not come anymore as a surprise. Although the exact route of the storm was beyond the possibilities of forecasting,[131] storm warnings could be given much earlier. This development also changed the shape of the public discussion. The 1957 Hurricane Audrey can be regarded as a turning point.

Audrey was a strong category 4 hurricane that pulverised the coast of Louisiana with a 7-meter surge wave.[132] Weather bureau tracked the storm very carefully and the warnings were regarded all-time best.[133] Nevertheless, the death toll raised extremely high; official National Hurricane Centre's records state at least 416 dead and, for instance, Craig Colten gives a number of 556.[134] Despite timely and fairly accurate forecasting, some accusations were

[127] "Storm Warning Scored: Senator Green Says Officials Grant Inadequacy of Notice" The New York Times, Sep. 23, 1954: 34. Read 15.9.2018.
[128] Teague & Gallicchio 2017, 43–45.
[129] "Commerce Funds Bill Clears House" The Washington Post, May 25, 1955: 13. Read 15.9.2018; "Improved Warning System Ready for '56 Hurricanes: Radar, Ship Observers, Better Reporting Will Help Forecasting This Year" The New York Times, Jul. 22, 1956: E6. Read 15.9.2018.
[130] Fitzpatrick 2006, 126.
[131] Hurricanes are still today one of the hardest phenomena to forecast and forecasters need all possible equipment from satellites to radars and computers to give accurate predictions. Fitzpatrick 2006, 35.
[132] Longshore 2008, 27.
[133] "Storm Warning Held Among Best: Weather Bureau Lauds Its Role in Forecasting and Tracking Hurricane" The New York Times, Jun. 30, 1957: 43.Read 17.9.2018.
[134] Colten 2009, 32; Blake et al. 2011, 7.

thrown against the Weather Bureau about failure to inform people about the storm.[135] Weather Bureau answered by saying that good warnings were distributed through press, television and radio and that they cannot lead people away from the danger area by the hand.[136]

Audrey demonstrated that the responsibility was also on the shoulders of ordinary people and that Weather Bureau was not to be blamed if people did not heed the warnings. After Audrey, people apparently started to take warnings more seriously, since death toll dropped dramatically. During the 1960s, many big and strong storms, such as Donna 1960, Carla 1961 and Betsy 1965 claimed well under hundred victims each.[137] For example, Carla was a highly intensive and threatening storm, but death toll was only 46 thanks to effective invocation of radars and TIROS III satellite.[138]

Technological advancements created a strong belief for progress in the late 1950s and during 1960s. One feature of this was weather control as a form of cloud seeding.[139] Clouds were seeded first time in 1947, when *Project Cirrus* launched. One hurricane was seeded with dry ice. The storm changed its direction and hit Savannah GA, creating much controversy. Initial route-change of the storm was not a consequence of the seeding, but since hurricanes as phenomena were so poorly understood, scientist became cautious.[140] Project Cirrus, however, led to a bigger weather control program in 1962, when federally funded *Project STORMFURY* began. Several hurricanes were seeded but no remarkable results were gained.

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[135] ”Hurricane Toll Increases to 275; Air Hunt Pushed: 200 to 300 Persons Still Are Missing in Louisiana – damage in Millions” The New York Times, Jun. 30, 1957: 1. Read 17.9.2018.

[136] ”Storm Warning Held Among Best: Weather Bureau Lauds Its Role in Forecasting and Tracking Hurricane” The New York Times, Jun. 30, 1957: 43.Read 17.9.2018; ”Hurricane Toll Increases to 275; Air Hunt Pushed: 200 to 300 Persons Still Are Missing in Louisiana – damage in Millions” The New York Times, Jun. 30, 1957: 1. Read 17.9.2018.

[137] Blake et al. 2011, 7.

[138] TIROS was a weather satellite family consisting of ten satellites launched between 1960–1965. Longshore 2008, 392–393; Blake et al. 2011, 7.

[139] Cloud seeding is a performance, where the tropical cyclone is literally seeded with some chemical from the plane. Different chemicals have been used, such as dry ice and silver iodide. For a thorough account on clud seeding see: Fitzpatrick 2006, 31–64; Longshore 2008, 350–353.

[140] Fitzpatrick 2006, 122–123; Longshore 2008, 350–351.

The interest for cloud seeding and weather control in general abated in the years following the 1960s. Project STORMFURY was officially ended in 1983.[141]

The United States witnessed strong technological advancements throughout the years 1900–1968, although the development was slower before the Second World War. Later, this reflected to the public discussion about hurricanes. Weather Bureau managed to vindicate its reputation somewhat as the margin for error in forecasts diminished. This, however, did not mean that the criticism ended completely. More than that, it just focused on different issues in later part of the century. Yet, better forecasts and, from the 1970s onwards, increasing media coverage of hurricanes made the lot of Weather Bureau easier by shifting public interest to state- and federal officials' actions. The first of the bigger debates developed after hurricane Camille in 1969, which is also chronologically first storm in the focus of the actual analysis of this research. However, before moving to the analysis itself, the general context of the timeframe concerned in this study is presented in the next subchapter.

2.2 Shrinking Death Tolls and Skyrocketing Damages – General Context of U.S Landfalling Hurricanes from 1969 to 2010

The propitious development of diminishing death toll continued in the decades following the 1960s. During the period of 41 years from 1969 to 2010, 73 hurricanes made a landfall in the U.S.[142] The death toll, however, exceeded 100 only in 1969 (256 deaths), 1972 (122 deaths) and 2005 (1,200+ deaths).[143] Moreover, the only clear anomaly in the list is hurricane Katrina (2005) which death toll ranges from 1200 to little over 1800 depending on the source.[144] One other peculiar feature of the decades following the first half of the 20th century was diminishing landfalling hurricane activity. During the period of 1961–2000, the activity was

[141] Fitzpatrick 2006, 60–64; Longshore 2008, 351–353.
[142] Subject: E23 What is the complete list of continental U.S. landfalling hurricanes? Contributed by Chris Landsea (NHC). http://www.aoml.noaa.gov/hrd/tcfaq/E23.html. Retrieved on 13.5.2019.
[143] Blake et al. 2011, 27.
[144] Knabb et al. 2005/2011, 11; Blake et al. 2011, 7.

only 71 % of the statistical average of the years 1901–1960.[145] After the year 2000, the activity increased remarkably.[146]

Despite fewer landfalling hurricanes per year, the overall damages rose steadily. The first so-called "billion dollar hurricane" was Hurricane Betsy in 1965, which inflicted some $1.5 billion dollars' (unadjusted) worth of damage. It was followed by Hurricane Camille (1969/$1.4 billion. Unadjusted) and Hurricane Agnes (1972/$2.1 billion. Unadjusted). Year 1985 witnessed six landfalling hurricanes and some $4 billion dollars' worth of damage. In 1989 Hurricane Hugo became the costliest natural disaster in the history of the United States with the price tag of almost $8 billion dollars (unadjusted), but it was quickly bypassed by Hurricane Andrew that set the record to $26.5 billion (unadjusted) in 1992. Andrew hold the record for 13 years before Hurricane Katrina (2005) inflicted staggering $108 billion dollars' (unadjusted) worth of damage. Katrina still holds the record, although Hurricane Harvey might have tied it in 2017.[147] It should be noted that inflation and other increase in costs makes it difficult to compare different storms from different years. The purpose of this record is to illustrate the overall tendency of the increased damage infliction of the landfalling hurricanes.[148]

The increased damage is at least partly attributable to the rising coastal population. People living in coastal shoreline counties has rose steeply in the years 1970–2010. In many places, the aggregated number of residents in shoreline counties by state has nearly or more than doubled. Many of the states that have witnessed the greatest increase in coastal population from 1970 to 2010 (Florida 165 %, Georgia 82 %, North-Carolina 92 %, South-Carolina 127 %, Texas 107 %) are also the areas that have been hammered by many highly destructive hurricanes.[149] Higher population obviously meant more infrastructure, buildings, housing etc. that result in the increased damage. This development started to appear as an increase in

[145] Blake et al. 2011, 15.
[146] Ibid.
[147] The damage estimate for Harvey is incomplete. In the inflation adjusted list Katrina holds the first place Harvey being the second. Blake et al. 2011, 9; Blake & Zelinsky 2017, 9.
[148] For more comprehensive listing of unadjusted and inflation adjusted hurricane damages from years 1851–2010 see Blake et al. 2011, 27.
[149] Blake et al. 2011, 21–22; Crosset et al. 2013, 9.

property right and land development debates after the 1970s and especially in 1980s as the chapter four will demonstrate.

All this brought challenges for the officials such as National Weather Service (NWS).[150] For example, during the 1970s and 1980s newspapers started to discuss about the people who were not willing to evacuate despite the warnings. Furthermore, in many cases, people criticised the officials about unnecessary evacuations if the storm made last-minute change of directions and missed the area under warnings. State officials often commended the given warnings even if the storm did not make a direct hit, but NWS and National Hurricane Center (NHC) expressed their apprehension that "wrong warnings" might create 'crying the wolf – effect' lessening the authority of their warnings. Officials were also afraid that a coast trailing hurricane might give coastal residents false expression that they know what a big storm can do. In reality, many of the people who had moved to the hurricane prone areas had never experienced hurricane let alone major hurricane *in situ*.

In other ways, experiencing hurricanes changed from late 1960s onwards and especially during 1980s as the mediatization process accelerated. The number of televisions in households rose dramatically – the proportion of household with television rose from 9 % to 90 % between 1950 and 1960.[151] Television brought hurricanes to everyone's living room and as colour televisions became more common during 1970s, weather broadcasting achieved visual impressiveness.[152] All this improved reporting about weather and its extreme phenomena.[153]

The breakthrough of weather broadcasting came in 1980s. The Weather Channel launched in 1982 being the first television channel that focused on weather broadcasting.[154] NHC's director Neil Frank (served 1973–1987) skilfully took advantage of the television and newspapers started to write how hurricanes became media events. Officials, such as Frank

[150] In 1970, U.S. Weather Bureau changed its name to National Weather Service. History of the National Weather Service, https://www.weather.gov/timeline. Read 6.11.2018.
[151] Teague & Gallicchio 2017, 33.
[152] Teague & Gallicchio 2017, 35.
[153] Ibid.
[154] Teague & Gallicchio 2017, 53.

did not want to build drama around storms, but to take advantage of the television as a conduit of information. Through the mediatization process many hurricanes also became closely connected to political issues, such as presidential elections, which lead to the politicisation of hurricanes. Television, thus, changed the scope of experience and in that way, it took its position as a significant actor in the actor-networks around hurricanes.

3. Between the Devil and the Deep Blue Sea – Transformation in the Relationship of Scientific Discourse and Public Conceptions of Hurricanes

Forecasting weather has been, and still is today, a difficult task that calls for a lot of skill. Adding hurricanes into this theme, multiplies the difficulty. Hurricane is perhaps the greatest challenge a forecaster can face and accurate forecasts necessitate a comprehensive understanding of all facets of meteorology.[155] The first and foremost purpose of forecasts is to provide enough time for other officials and people in the hazard zone to prepare and evacuate.

In addition to material contingency of hurricanes and the technological nature of forecasting as such, the process as a whole also includes a significant linguistic and communicational dimension – the forecast and risk must be efficiently disseminated to the public. The trust of the public towards officials and the media is also essential in the process. During the years 1969–2004, weather officials in the United States have faced problems in conveying the message to the public. In several occasions, such as Hurricane Agnes in 1972, Hurricane David and Hurricane Frederic in 1979 and, for instance, Charley in 2004, the public expressed their dissatisfaction to warnings or evacuations. At the same time, weather- and other officials responsible of evacuations were worried of peoples' attitudes towards hurricane warnings. Even though the general belief in technological and scientific progress had been high, ordinary people were sometimes even hostile regarding the people working as officials and weather scientists.

This chapter explores the scientific discourse regarding the hurricanes and its position in the wider context, particularly on the side of the popular conception of hurricanes. These discourses and conceptions are closely bound to the material realities of the hurricanes. Especially in popular conception, irregularly repeating hurricane landfalls created path dependency between different storms, which had also effects on the scientific discourse;

[155] Fitzpatrick 2006, 35.

weather scientists and meteorologists sometimes struggled with how to convey the acute risk of every landfalling hurricane to the public. In this effort, the media had a significant role as an actor. This chapter also studies the effects of mediatization and media, particularly the television, to the relationship of weathermen and the public.

3.1 Windswept Life of Weathermen

During the first part of the 20th century, steady technological progress had facilitated the work of Weather Bureau (WB). This progress, however, started to decelerate after the big improvements of late 1950s and '60s. Moreover, the fact of steadily growing number of coastal dwellers stipulated forecasts that were even more accurate so enough time would be left for evacuations. During the 1960s, everything still looked good, hurricanes claimed relatively few lives and WB was payed tribute for good and timely warnings. The belief in technology was strong.

This high modernity, however, suffered a setback in the wake of Hurricane Camille in August 1969. Merely a month before, on July 20, 1969, humankind had crossed one of the biggest frontiers one could imagine by landing a man on the surface of the Moon.[156] Hurricane Camille ended the celebration and reminded everyone of their lot on the homely planet Earth, when it made a landfall not far from Bay St. Louis, Pass Christian, Gulfport and Biloxi in the State of Mississippi on August 18, 1969. Camille left behind 256 people who faced the death. Of those, some 150 perished in the coast of Mississippi. Overall, Camille shocked people around the nation as an unknown writer put it into words in The New York Times (NYT): "If scientists and engineers can bridge the quarter-million mile gulf between earth and its natural satellite, why can't they tame these deceptively named hurricanes?"[157] In another case, a person from Maryland wrote in a letter to the editor of The Washington Post (WP) that "In this age of technology and space and undersea research, it is inconceivable that so many

[156] Norton et al. 2015, 813.
[157] "Taming Les Femmes Fatales" The New York Times, Aug. 20, 1969: 46. Read 11.11.2018.

people should be so completely wiped out."[158] This kind of amazement before the natural phenomenon that was beyond the control of the humankind is in the core of the progressive mind-set of the late 1960s and the 1970s. The apparent vulnerability in front of the natural environment was hard to accept. Camille was, as historian Mark M. Smith has called it, an atavism.[159]

As a storm, Camille was a monster not by size but by intensity. With a minimum pressure of 900 mb and sustained wind speed of 77 m/s (277 km/h) Camille, still, is the second strongest hurricane to make a landfall in The United States.[160] To substantiate this raw power, storms of this strength do not only rip off clothes from people but can also tear the skin off.[161] Camille's horrendous storm surge of over 7 meters dug up and destroyed the sewer system in many places alongside levelled whole buildings.[162] Camille left a gargantuan havoc behind. Reports few days after the storm told also that storm surge lifted corpses from their graves and bodies were found hanging from the trees.[163]

Weather Bureau was well aware of the dangerousness of Hurricane Camille long before its eye crossed the coastline of Mississippi. Director of the National Hurricane Center Robert Simpson said to NYT on August 15, that it was still unknown where Camille would make its landfall, but advised all Gulf Coast residents to follow future advisories and bulletins closely.[164] On the next day, Camille reached the wind speed of almost 70 m/s (251 km/h) and WB called it extremely dangerous.[165] Civil defence officials estimated to NYT that almost 200,000 people had heeded the warnings and fled to inlands.[166] The evacuations seemed comprehensive and NYT reported that low-lying areas were cleared way before Camille

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[158] "Letters to the Editor: Hurricane Foresight" The Washington Post, Aug. 27, 1969: A26. Read 11.11.2018.
[159] Smith 2011, 4.
[160] Subject: E14) What have been the most intense hurricanes to strike the United States? Contributed by Chris Landsea (NHC). http://www.aoml.noaa.gov/hrd/tcfaq/E14.html. Read 11.11.2018; Kieper, Landsea & Beven II 2016, 380.
[161] Bechtel 2006, 38.
[162] Smith 2011, 15.
[163] "'Bodies Hanging From the Trees'" The Washington Post, Aug 21, 1969: A1. Read 12.11.2018.
[164] "Hurricane Hits Cuba in Drive Towards Florida" The New York Times, Aug 16, 1969: 55. Read 11.11.2018.
[165] "Hurricane Winds Grow to 150 M.P.H." The New York Times, Aug 17, 1969: 65. Read 11.11.2018.
[166] "Hurricane Stuns Mississippi Coast as 200,000 Flee" The New York Times, Aug 18, 1969: 1. Read 11.11.2018.

hit.[167] The death toll of some 150 people in the coastal area of Mississippi, however, tells a different story. A considerable amount of people indeed did not heed the warnings and decided to confront the storm at home. One lucky resident of Gulfport, MS, who survived the storm, mulled over his decision to ride the storm in his home to WP saying: "'I guess I didn't think it would be that bad and leaving would have been a lot of trouble.'"[168]

The core of the problem lies in the words of the quoted man. Those people who did not heed the warnings did not simply have accurate impression of the upcoming cataclysm. NYT reporter Roy Reed also considers in his article for NYT that the reason behind people's disinclination to evacuate is that nobody had seen a storm as strong as Camille.[169] Partly this was because last major hurricane striking directly to Mississippi had been an unnamed category 3 storm in 1916, and even though Hurricane Betsy had in 1965 caused some property damage in Mississippi, its eye crossed the land several dozen kilometres away in Louisiana.[170] This kind of path dependency seems to affect peoples' choices regarding hurricanes. Even though hurricanes in many cases have some national-level corollaries, their immediate impact is always local. In addition to that, the temporal distance to most recent hurricane can have significant influence on the events of the next one. Moreover, Camille was an exceptionally strong storm and made its landfall on very high intensity.[171]

According to the source material, a question of accuracy of WB's bulletins came up at least implicitly. President Nixon sent his Vice President, Spiro Agnew, to inspect the area few days after the storm. Agnew conveyed to reporters that President Nixon was "…greatly disturbed that the federal government 'was not better able to forecast the intensity and precise destination of the hurricane.'"[172] Precise forecasting of the weather was in the core of the

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[167] Ibid.
[168] (Writer's note: another quotation mark missing in the newspaper.) "Storm Victims Recall Long Night of Terror" The Washington Post, Aug. 23, 1969: A6. Read 18.2.2018.
[169] "Hurricanes: The Grim Lessons of Camille", Aug. 24, 1969: E5. Read 14.11.2018.
[170] Subject: E23 What is the complete list of continental U.S. landfalling hurricanes? Contributed by Chris Landsea (NHC). http://www.aoml.noaa.gov/hrd/tcfaq/E23.html. Read 12.11.2018.
[171] Kieper et al. 2016, 380.
[172] "Failure to Forecast Strength of Camille Disturbs President" The Washington Post, Aug. 26, 1969: A3. Read 14.11.2018; "Nixon Seeking Improved Weather-Disaster Warnings" The New York Times, Aug 26, 1969: 45. Read 14.11.2018.

technological change and scientific rationalisation of the society. The expectation was that, with the help of technology, everything from economic trends to weather should be easier to predict. WB had been criticised in 1950s because of the inaccurate forecasts and the federal government had subsequently invested heavily on technological weather equipment such as radars and satellites to improve forecasting. Thus, the expectations for WB were high, but they failed to meet these expectations, which could dilute the trust towards weather forecasting, and in a larger scale, towards the scientific progress.

Vice President Agnew also noted to WP that storm hunters' planes had had accurate enough equipment but would had not borne the storm's power and at the same time Air Force would had had strong enough planes but not good enough measuring equipment hinting that WB might not have had adequate equipment for accurate forecasts.[173] Nixon and Agnew also demanded better coordination between different officials although they were careful not to criticise local officials in disaster stricken areas in Mississippi and Louisiana.[174] Nixon was mostly displeased with federal officials and the most obvious culprit was Weather Bureau.

Direct criticism towards WB was, however, very little. Republican Member of the U.S. House of Representatives from Ohio William E. Minshall had requested investigation from the Appropriations Committee of WB's forecasts. In the final report, the investigators discovered that the error marginal of hurricane forecasts was some 100 miles. Investigators also threw some accusations to WB that Gulf Coast residents had been lulled into a false sense of security, but director of Environmental Science Services Administration, Robert M. White sharply denied these comments. White reminded that WB's bulletins had allowed timely evacuations of almost 200,000 people and those, who had not fled and therefore perished, had indeed been warned but chose to stay at home.[175]

[173] "Failure to Forecast Strength of Camille Disturbs President, The Washington Post, Aug. 26, 1969: A3. Read 14.11.2018.
[174] "Nixon Seeking Improved Weather-Disaster Warnings" The New York Times, Aug. 26, 1969: 45. Read 15.11.2018.
[175] "Hurricane Seers Often Miss Mark – Admit They Can be Off by 100 Miles Over a Day" The New York Times, May 3, 1970: 95. Read 15.11.2018.

Very different debates arose in 1972 after Hurricane Agnes. As a hurricane, Agnes had two faces. First of all, it was a weakling. It barely reached hurricane force and made a landfall in Florida Panhandle near Panama City as a category 1 hurricane with sustained winds 33.5 m/s (~121 km/h). Agnes was quickly resolved into tropical storm and did not cause any noteworthy damages in Florida. Nonetheless, Agnes is the deadliest storm of the 1970's. After its landfall, Agnes travelled to the Middle Atlantic -area[176] and dumped there astounding amounts of rain causing record high flooding. The Office of Emergency Preparedness gave the figure of 106 cubic kilometres of rain in its course in North-Eastern states reaching locally even 48 centimetres.[177] Complete towns were submerged and, for example, Susquehanna River in Pennsylvania breached its 13-meter high dykes.[178] In North, Agnes claimed over 120 casualties and caused some $2.1 billion dollars' (unadjusted) worth of damage.[179]

Agnes' two faces raised two different debates; one in Florida and one in the Middle Atlantic -area. In Florida, Panama City officials were displeased of the work of National Weather Service (NWS)[180] and, for the first time, of the media coverage of the storm. Debate in the North concerned federal failures in relief efforts having also a political dimension because of the forthcoming presidential election of 1972.

The debate in Florida started a day after Agnes had moved over Panama City on late June 19, leaving the city mostly undamaged. On June 21, 1972, Panama City officials announced their intention to sue National Weather Service and several news media for $100 million dollars for giving incorrect reports about the storm.[181] City commissioners told they had voted 3-1 in favour of suing and used the formulation "…"in behalf of the citizens of Panama City Beach"".[182] Officials claimed that the reports of damage for the city and surrounding Bay

[176] Middle Atlantic area covers the states: New Jersey, New York and Pennsylvania.
[177] Barnes 1998, 240; Longshore 2008, 2–3.
[178] Longshore 2008, 3.
[179] Blake et al. 2011, 7–9.
[180] In 1970, U.S. Weather Bureau changed its name to National Weather Service. History of the National Weather Service, https://www.weather.gov/timeline.
[181] "Beach Suing For $100 Million" Panama City News-Herald, Jun. 21, 1972: 1. Read 18.11.2018.
[182] "Beach Suing For $100 Million" Panama City News-Herald, Jun. 21, 1972: 1. Read 18.12.2018.

County were grossly magnified causing loss of millions of dollars in tourist trade.[183] Florida Representative Robert "Bob" Sikes (D) demanded a congressional investigation of the NWS' managing of the reporting and forecasting Agnes. Sikes for example, questioned if any reconnaissance flights were made in the first place.[184]

Panama City officials accused that newspapers and broadcast media reported about Agnes widely with: "…'big, black headlines about death and destruction'".[185] City officials also called reports wild and irresponsible.[186] A local newspaper, Panama City News-Herald (PCNH) wrote how people from city and surrounding areas were evacuated two times in vain before the storm.[187] The Mayor of the Panama City Dan Russell claimed that erroneous reports happen almost every year and one city commissioner accused NWS for: "…abusing this area for years."[188] Their claim was that the press and other media as well as NWS had made Hurricane Agnes a storm in a teacup.

These rather blunt accusations are revealing, as they insinuate some sort of intentionality from the weather officials side. It should be noted that the accusation points to the forecasters and not to the imperfect technology. This tells about the city officials' strong belief in technology; technology could not fail you, the problem was unreliable weather scientists. However, weather officials' authoritative position and, on a discursive level, scientific framework substantially determines what they can or cannot say, especially when wrong information could in worst case result in casualties. As the officials themselves noted later, they could not have made any more accurate forecasts.[189] On the other hand, the confidence in Government and its institutions started to decrease in 1970s and the development continued through the 1980s and '90s.[190] The lawsuit was one of the first sings of this

[183] Ibid.
[184] "Weather Bureau Probe Is Asked" Panama City News-Herald, Jun. 21, 1972: 1B. Read 18.11.2018.
[185] "Beach Suing For $100 Million" Panama City News-Herald, Jun. 21, 1972: 1. Read 19.11.2018.
[186] "Weather Bureau Probe Is Asked" Panama City News-Herald, Jun. 21, 1972: 1B. Read 18.11.2018.
[187] Ibid.
[188] "Beach Suing For $100 Million" Panama City News-Herald, Jun. 21, 1972: 1. Read 18.11.2018.
[189] "Hurricanes Topic Here" Panama City News-Herald, Jun. 27, 1972: 1B. Read 17.12.2018.
[190] Gans 2003, 16.

changing trend following the higher levels of trust that the Government and institutions had enjoyed in the 1950s and '60s.[191]

The lawsuit connects also with longer tradition and history between citizens and ruling authorities. According to Julie L. Demuth, Rebecca E. Morss, Betty H. Morrow and Jeffrey K. Lazo, weather officials' public position bound mission includes: "…forecasts and warnings for the protection of life and property and *enhancement of the economy*."[192] Traditionally authorities' involving into entrepreneurs' business has not been prevailing practise.[193] Perhaps the people in tourist trade saw that if there were defects in weather officials' operations, it could be interpreted as a violation of their mission and even as a interfering into peoples' private life. Suing, then, was a logical step to take and as Ari Helo has noted, relying to the constitutional rights and courts has been seen as the sanctuary for individual rights of people.[194]

The Press also drew its part of the criticism. On June 25, Archie Shamblin claimed in his column in PCNH how, for instance, Associated Press (AP) did not send a reporter to Florida nor consulted local reporters, but still promulgated exaggerated stories.[195] Panama City officials seemed to suggest that there was some ill logic behind the media's reporting. This implicates that some kind of transformation of the media's role was present and visible for contemporaries. In the absence of sensational events (Agnes admittedly was quite unimportant storm in the context of hurricanes) the media itself pursued to create something worth of writing by embellishing the actual events instead of resigning itself to only report.

Yet it seems that these accusations were somewhat exaggerated. For example, The New York Times and The Washington Post hardly gorged with headlines and reports full of death and terror, although reader may think the death count for Florida to be higher than it was, since deaths in Florida and Cuba are not itemised separately. The report on Agnes is in the first

[191] Ibid.
[192] Writer's emphasis. Demuth et al. 2012, 1136.
[193] Helo 2014, 39.
[194] Helo 2014, 124.
[195] "Sand in my Shoes" Panama City News-Herald, Jun. 25, 1972: 4. Read 20.11.2018.

section of the paper in WP whereas in NYT, Agnes is reported in the inner sections of the paper; Agnes simply did not offer intriguing headlines for national level. Moreover, NYT or WP did not specify Panama City in their reports, at least not in a bad light; Panama City Mayor Dan Russell himself was quoted in NYT and he said that no major damage happened to the city — NYT and WP used reports from AP.[196]

Other areas in Panhandle had different views and, for instance, city of Apalachicola, located some 100 km east from Panama City, and its surrounding Franklin County thanked the NWS and commended its operations. Apalachicola city manager Lance Anderson noted to PCNH that Weather Service gave them timely and accurate warnings and told that City Commissioners wanted to express their appreciations to the agency.[197] It seems that also local people from Panama City disagreed with the officials' view of the financial liability of NWS and news media. Several letters to the editor of PCNH condemned the planned lawsuit and accused greedy businessmen for playing with other peoples' lives. Some remarks about Hurricane Camille were also made, since Camille was, after all, heading towards Panhandle on one point.[198] One perceptive reader of PCNH also remarked that if NWS was made liable, it meant that it would also be liable for crop drought losses if rain was forecasted but never came and so forth.[199]

National Weather Service did not give comments on the lawsuit, but accepted Representative Sikes' invitation to come in Panama City to discuss about the situation.[200] On June 26, four high officials from NWS and National Hurricane Center (NHC) arrived in Panama City to give their account on things. Future director of NHC, Neil Frank called overwarning: "…the greatest enemy the National Weather Service and public has…", but also noted that "…'it is

[196] "Hurricane Perils Florida; Some Urged to Evacuate" The New York Times, Jun. 19, 1972: 66. Read 19.11.2017; "Storm Fading in Florida After Killing 12" The New York Times, Jun. 20, 1972: 26. Read 19.11.2018; "Hurricane Rips Florida Panhandle" The Washington Post, Jun. 20, 1972: A1. Read 19.11.2018.
[197] "Apalach Thanks Weather Bureau" Panama City News-Herald, Jun. 22, 1972: 1B. Read 19.11.2018; "Franklin Backs Bureau" Panama City News-Herald, Jun. 25, 1972: 6. Read 19.11.2018.
[198] "Hurricane Winds Grow to 150 M.P.H." The New York Times, Aug 17, 1969: 65. Read 22.11.2018.
[199] "The Letter Box" Panama City News-Herald, Jun. 26, 1972: 4. Read 20.11.2018; "The Letter Box" Panama City News-Herald, Jun. 27, 1972: 4. Read 20.11.2018; "The Letter Box" Panama City News-Herald, Jun. 30, 1972: 4. Read 20.11.2018.
[200] "NWS Chiefs to Meet Here" Panama City News-Herald, Jun. 24, 1972: 7. Read 19.11.2018.

dangerous to ignore them [hurricanes].'"[201] Deputy Director of the NWS, Bill Burnet also remarked that the intention of officials is not to overwarn anyone and they would only warn places that are hit if it was possible, but so far, forecasts had error margin preventing officials to give specified warnings.[202] Moreover, Neil Frank noted that Agnes' eye formation was quite poorly defined, which further made accurate forecasts harder to make.[203]

In the hearing of June 26, on the behalf of Panama City, spoke a lawyer Charles Hilton, who was, revealingly, also a local motel owner. Hilton told that information about the lawsuit against NWS was erroneous.[204] Later, on July 11, PCNH wrote that the intended lawsuit most likely would not happen. NWS was not mentioned anymore and report gave an impression that only the news media was accused.[205] On a bigger picture, the lawsuit did not get broad publicity in newspapers and, for instance, neither NYT nor WP reported the lawsuit in any way. More acute situation in the area of the Middle Atlantic probably influenced this. Agnes had claimed more than 120 casualties in the Middle Atlantic States, especially in Pennsylvania. Not only was the death toll more interesting piece of news, Pennsylvania is geographically much more close to Washington D.C. and New York than Panama City. This emphasises the local nature of hurricanes, but also shows, that big newspapers with nationwide readership may select their news according to physical proximity of the events to the city they are based.

The fact that the lawsuit fell through might not come as a surprise. Quarters behind it could not gain legally holding evidence to back them, even though some kind of juxtaposition between residents in Panama City and national news media and federal weather officials was tried to be built. Local public, however, did not buy this configuration and were not willing to question the competency of weather officials. It was too obvious that the reason of the lawsuit was not a consequence of local official's apprehension of their citizens but a display

[201] "Hurricanes Topic Here" Panama City News-Herald, Jun. 27, 1972: 1B. Read 19.11.2018.
[202] Ibid.
[203] Ibid.
[204] Ibid.
[205] "Beach's $100 Million Suit 'Probably' Won't happen" Panama City News-Herald, July 11, 1972: 7. Read 20.11.2018.

of crude greed of local business elite, especially since the sole reason for the lawsuit mentioned in the PCNH was the loss of tourist dollars.[206]

Moreover, as the professor of law, Randall Bezanson notes in his book *How Free Can the Press Be?* (2010), judicial decisions concerning the press are rare.[207] It is widely recognised in the U.S. that the Press have considerable freedom of action.[208] This is important since the media, which the press is of course a part, "…provide the means other social institutions and players communicate."[209] Thus, people of Panama City as well as people around the Nation were dependent of the information the media spread about the case of Hurricane Agnes. Officials and local tourist entrepreneurs were worried of the increasing power of the media and sought protection, if not for the citizens of the Panama City, then for their income, through suing. The whole instance of the lawsuit can be regarded as a herald of the mediatization process in which the semi-independent status and the significance of the media as an actor in the society have considerably increased in the last few decades.[210]

The lawsuit reveals also something about the relationship of man and nature if we expose it to the Actor-Network –theory oriented analysis. We can easily point out several different actors such as city and weather officials, media personnel, newspapers, the hurricane, hotels and motels along with other tourist attractions considering their locations. In the lawsuit, Hurricane Agnes is considered as a black-and-white fact; either it causes destruction or not. Thus, hurricanes are perceived as external threat or problem, a mere natural force that should be controllable through technology. This reflects a mono-causal conception of nature, in which human places himself outside of it and tries to observe it and in certain sense solve the problem called 'nature'. At the same time, this conception carries with it something very American, since, as Peter Coates has noted: "…nature is synonymous with wilderness…"[211] When a hurricane threats a city it is very much a situation where nature is obtruding to human

[206] "Beach Suing For $100 Million" Panama City News-Herald, Jun. 21, 1972: 1. Read 17.12.2018; "Weather Bureau Probe Is Asked" Panama City News-Herald, Jun. 21, 1972: 1B. Read 17.12.2018
[207] Bezanson 2010, 1–2.
[208] Ibid.
[209] Hjarvard 2013, 21.
[210] Hjarvard 2013, 24–25.
[211] Coates 1998, 177.

realm, since a city, as a build environment, does not embody a wilderness nor nature. Clear lines are drawn to separate nature from human realm.

This means that Agnes situates in the same continuum as Hurricane Camille in 1969. The reason for discontent of officials in 1969 as well as of quarters behind the lawsuit in 1972 has a shared root; the incapability to handle or control hurricanes through technology. Even a miserable storm like Agnes was capable of ridiculing the scientific might of the United States — the only nation that have landed humans on the surface of the Moon. This kind of attitude reflects the spirit of the Cold War era, a time when America was "…obsessed with eradicating evil forces, be they communist spies or disorderly weather patterns.", as Ted Steinberg has aptly remarked.[212] On the other hand, the government's approach to handle hurricanes and natural disasters in general have been very scientific and technologically oriented in all times, which makes it easy target for criticism.[213]

If we compare Panama City's case to the disaster of Camille, we can also see two separate discourses of the same thing in both cases. First of all, there is the scientific discourse of weather officials. The important thing here is that the discourse overlaps with material contingency of hurricanes and, as noted earlier, there are limits to what weather officials can or cannot say. What this means is that NWS's and NHC's bulletins take always an error margin into account. This is what came up in the case of Camille, when Appropriations Committee (in Congress) found that the fluctuation in hurricane track forecasts can be some 100 miles.[214] Similarly, officials from NWS and NHC noted to the hearing committee of Panama City in 1972 that they could not forecast with absolute precision where storms hit and where they do not.[215] The meaning of hurricane warning, thus, is at the moment of giving the warning that there is a considerable chance for the hurricane winds (≤ 33 m/s or ~119

[212] Steinberg 2006, 127.
[213] Steinberg 2006, xxii.
[214] "Hurricane Seers Often Miss Mark – Admit They Can be Off by 100 Miles Over a Day" The New York Times, May 3, 1970: 95. Read 2.12.2018.
[215] "Hurricanes Topic Here" Panama City News-Herald, Jun. 27, 1972: 1B. Read 2.12.2018.

km/h) to reach the area covered by the warning in the next 24 hours. [216] The error range for twenty-four hour warning has diminished from ~240 km in 1970 to ~70 km in 2015.[217]

Secondly, there is the non-scientific discourse of ordinary people. The public seems to understand the warning as a situation where there is danger or there is not. Generally, people heed the warnings quite well, but many stray to think that, if the storm does not hit a specific area, even though warnings were given, the danger and the prospect for the storm to hit directly was zero. In studies that are more recent, researchers have made similar observations. For example, Demuth et al. have found by interviewing forecasters that public have difficulties to understand the factual content of the hurricane warnings, that is, warning does not mean that the whole warned area is going to be affected by the hurricane.[218] This kind of comprehension of the hurricane warning is of course erroneous, but it nonetheless increasingly haunted NWS and NHC during the 1970s. Apart from that, the path dependency also had considerable effect on peoples' respond to the warnings.

The effect of path dependency can be seen by comparing two 1979 hurricanes, Hurricane David and Hurricane Frederic. Both storms were considered very dangerous by weather and civil defence officials but the reaction of the public differed substantially. Hurricane Camille's legacy "assisted" the evacuations when Hurricane Frederic was nearing Alabama and Mississippi on Gulf Coast. Evacuations were smooth and reports from different parts of the area threatened by Frederic told that people still recalled the horrors of Hurricane Camille and fled without any resistance.[219] Only a couple of weeks prior to Frederic, Hurricane David had caused significant problems to civil defence officials in Florida.

As a hurricane, David was more like a Goliath, as The New York Times called it on September 9.[220] Before veering towards Southern Florida the hurricane had claimed some

[216] Fitzpatrick 2006, 44–45.
[217] National Hurricane Center Forecast Verification – 5. Official error trends. https://www.nhc.noaa.gov/verification/verify5.shtml. Read 3.12.2018.
[218] Demuth et al. 2012, 1138–1139.
[219] "Hurricane Smashes Gulf Coast – Nearly 500,000 Flee Winds, High Tides In Four-State Area" The Washington Post, Sep. 13, 1979: A1. Read 4.12.2018.
[220] "David Turns Out To Be a Goliath" The New York Times, Sep. 9, 1979: E1. Read 4.12.2018.

2,000 casualties in Dominican Republic as a category 5 storm with winds of 77 m/s (277 km/h).[221] Furthermore, David was the first major hurricane to threat Miami area in 14 years and the first hurricane since Hurricane King in 1950 that threatened directly the City of Miami.[222] The temporal distance from last major hurricanes was almost thirty years in Florida, whereas in the Gulf Coast, only ten years had went by since Camille had ravaged there. Hurricane David and Hurricane Frederic form an interesting pair that reveals the effect of previous storms and furthermore emphasises the local nature of hurricanes.

Officials in Florida emphasised that David posed a serious threat to the Southern Florida. Director of the National Hurricane Center (NHC) Neil Frank expressed his concern over the people who had moved into Florida during the boom of 1970s but had never experienced a hurricane and, thus, might underestimate the danger.[223] The same thing caused many people to stay home in 1969 when Hurricane Camille ravaged the coast of Mississippi. Officials were worried, how people would react to the threat of a hurricane, since almost 80 percent of them had not experienced one before.[224] As the storm was nearing Miami, defence official from Broward County North of Miami reported that "…'not too many people are taking us seriously'"[225] Florida Governor Bob Graham ordered an evacuation and police informed people that they would be removed by force if they would not leave voluntarily.[226] NYT also reported how police authority complained that people had just laughed to the orders to evacuate, but when the storm was closing in, their courage trembled and they called police to come and get them away.[227]

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[221] Hebert 1980, 984.
[222] Subject: E23) What is the complete list of continental U.S. landfalling hurricanes? Contributed by Chris Landsea (NHC). http://www.aoml.noaa.gov/hrd/tcfaq/E23.html. Read 4.12.2018.
[223] "South Florida Bracing for First Hurricane in 14 Years" The Washington Post, Sep. 3, 1979: A2. Read 4.12.2018.
[224] "David Breezes by Florida, Heads North" The Washington Post, Sep. 4, 1979: A8. Read 4.12.2018.
[225] "South Florida Bracing for First Hurricane in 14 Years" The Washington Post, Sep. 3, 1979: A2. Read 4.12.2018.
[226] "Gov. Graham Calls Florida Guard; Thousands Leave Low-Lying Areas" The New York Times, Sep. 3, 1979: A1. Read 4.12.2018.
[227] "Hurricane David Skirts Miami and Hits Central Florida" The New York Times, Sep. 4, 1979: A22. Read 5.12.2018.

Even though David eventually weakened to be category 2 storm and did not hit directly Miami, it had high potentially to do so. This, however, seemed to be something that local residents in the Miami-Dade area did not understand. Many people expressed their dissatisfaction towards the evacuations. An elderly lady from Miami rebuked evacuations for being unnecessary. Another lady conveyed her disappointment that eventually nothing happened. She had been waiting to see a hurricane for the first time in her life and mourned that she might have missed the last possible chance.[228] Officials were also worried that people thought David as a full-force major hurricane even though it weakened significantly before hitting Miami.[229] Hence, the path-dependency should not be understood as a rectilinear causality that makes people behave similarly in all situations. For instance, it matters if one has experienced hurricane directly on its path or on the outskirts of the area of the strong winds. The area of the strongest winds is usually just a couple dozen miles, but people easily stray to think they have been through the worst although they might have been far from the eye of the storm. This can affect negatively to their willingness to evacuate when the next storm is nearing their domicile.

Just some ten days after David, Hurricane Frederic was approaching the coast of Mississippi, Alabama and North-Western part of Florida as a category 4 storm with winds over 55 m/s (200 km/h). Contrary to David, officials did not face any kind of problems with evacuations before Frederic. A sheriff's spokesman from Pensacola FL told the Washington Post that very little resistance has occurred and in Gulfport MS Civil Defence officials reported that evacuations were smooth.[230] As noted earlier, many people recalled Hurricane Camille from 1969. Especially in Mississippi, where Camille made a direct hit, people were very inclined to flee and Civil Defence reckoned it was because of memory of Camille.[231]

Informing of the dangerousness of David and Frederic was very similar: both storms worried officials and orders to evacuate were vigorous. This reveals how different storms are

[228] "David Breezes by Florida, Heads North" The Washington Post, Sep. 4, 1979: A8. Read 21.12.2018.
[229] Ibid.
[230] "Hurricane Smashes Gulf Coast; Nearly a Half-Million Evacuate" The Washington Post, Sep. 13, 1979: A16. Read 24.12.2018.
[231] Ibid.

connected to each other creating a path-dependency between them. People seem to underestimate the threat of the storm, especially if there is a big temporal distance between the two last big hurricanes, or perhaps without knowing better, and are not inclined to flee from the area, which happened in 1969 regarding Hurricane Camille and partly in 1979 with the case of Hurricane David. There is also evidence that people tend to feel safe in their homes along with not knowing where to seek shelter, particularly, if they have pets, since pets are not allowed in shelters.[232] Researchers of hazards have discovered that people tend to underestimate risks in their daily life.[233] The threat of hurricanes in a specific area is not constantly present and the return period for direct hit of major hurricane in a given place can be considerably long. This means that many people will never experience a storm like Camille for instance. For these people, the hurricane related risk is extremely hard to estimate without direct experience of hurricanes and warnings of weather officials might seem fulsome.

The work and efforts of weather and civil defence officials, thus, is rather thankless task. In historical perspective, there seems to be two scenarios that are repeated. If there are large scale evacuations, but the storm hits to a different area, public express their dissatisfaction to an apparently futile evacuations. Other way round, if the evacuations are not extensive enough and the storm claims casualties, a criticism towards the efforts of officials is often (and quite understandably) raised. It, thus, seems that whatever the officials do, the result is always discontent and criticism from the people affected by the storm and the operations of the officials even if they did their utmost best. At the same time, the configuration quite well illustrates the weak trust of ordinary people in the officials and their operations. As was already noted, the trend of this trust has been downward since the 1970s.[234] However, the persevering work of weather officials and civil defence officials proved itself effective, as the death toll kept diminishing. In the 1980s and onwards, people started to show better

[232] Lazrus et al. 2012, 105.
[233] Robbins et al. 2014, 86.
[234] Gans 2003, 16.

understanding towards large scale evacuations and television took its place in the actor-network around hurricanes.

3.2 The Age of Television

In the 1980s, hurricanes did not made forecasters' and civil defence officials' work any easier. Many storms took highly erratic routes and pushed National Weather Service (NWS) and National Hurricane Center (NHC) to their limits. However, persistent routine of evacuations started to bore fruit and a change in people's attitudes towards weather, civil defence officials as well as large-scale evacuations starts to become clearer. Moreover, especially NHC saw the prospects of television in hurricane warnings and started to harness it.

The start of the 1980s was quiet regarding the hurricanes. Between 1980 and 1984, only three storms made a landfall in the U.S. In 1985 situation changed drastically and the Nation witnessed six landfalling hurricanes between July and November of 1985. Especially demanding storm to forecast was Hurricane Elena since its course was extremely erratic. On September 1, it was heading on Northward course towards Louisiana and New Orleans. Then it made an unexpected turn and on September 2, started to head to east towards the west coast of Florida. However, Elena stopped and stalled almost two days some 130 km away from the coast of Florida before making once again a turn, this time to the west. Elena eventually landed into Mississippi, near Biloxi, as a category 3 hurricane on September 3.

Because of Elena's nebulous movements, some people had to be evacuated twice. At the point, when Elena was heading first time to Gulf Coast, officials praised the evacuations smooth and suspected that lessons of previous storms, notably Hurricane Camille (1969) and Hurricane Frederic (1979), had an effect on peoples' willingness to evacuate.[235] After its untoward turn towards the Florida, the director of NHC, Neil Frank, noted that forecasters

[235] "Storm Menaces a Wider Florida Area" The New York Times, Sep. 1, 1985: 6. Read 27.12.2018.

had little idea where Elena would head. He told the New York Times that landfall on the west coast of Florida was as possible as any other option.[236]

In Florida, as well as later in Gulf Coast, people showed much more understanding towards evacuations than, for instance, in 1979 in the case of Hurricane David. Florida's Governor Daniel "Bob" Graham (D) had ordered a mandatory evacuation and peppered his order by saying that staying home would mean "…almost certain injury or death…"[237] Apparently the statement had an effect since half a million people were told to heed the evacuation order and no reports of disobeying came up.[238] Many evacuees recalled earlier storms and noted that they had learned from the past. An elderly woman from Perry in Florida Panhandle, noted with remorse to the Washington Post (WP) that she had rode two hurricanes when she was younger.[239] Another Florida Panhandle resident from Steinhatchee recalled Hurricane Donna from 1960 and one man recalled even the Labor Day Hurricane from 1935.[240]

Different storms connected to each other, thus, creating path-dependency on peoples' behaviour. At the same time, the source material indicates a change in peoples' behaviour. In newspapers, a change in peoples' attitudes towards hurricanes was highlighted. Many local residents told that after undergoing hurricanes in past, they now know better. For instance, the aforementioned resident from Perry noted that "'…when they [officials] tell me to go, I go.'"[241] Even though some people expressed their frustration of the situation with Elena, they seemed not to be mad about forecaster's actions but to the zigzag -course of the storm that brought prolonged uncertainty and false alarms. A motel owner from Chiefland, Florida said he "'…just wish it would hit and get it over with…'"[242]

Later when Elena had eventually made its landfall causing massive damage but leaving only nine people dead, the efforts of NHC and Civil Defence officials' were praised. Elena was

[236] "Thousands Flee as Storm Whips Coast of Florida" The New York Times, Sep. 1, 1985: 1. Read 27.12.2018.
[237] "Hurricane Lashes Florida Gulf Coast" The New York Times, Sep. 1, 1985: 40. Read 27.12.2018.
[238] Ibid.
[239] "Unpredictable Storm Battering Gulf Coast" The Washington Post, Sep. 2, 1985: A4. Read 27.12.2018.
[240] Ibid.
[241] Ibid.
[242] "Hurricane Grows Stronger and Batters Florida's Panhandle" The New York Times, Sep. 2, 1985: 9. Read 27.12.2018.

tracked very carefully and even though its eventual course was unexpected, NHC reported almost at hourly pace of storm's movements. "'The consequence of everybody knowing what to do is that we didn't have any injuries or deaths here…'", announced the Mayor of Mobile AL, Lambert Mims.[243] On the other hand, NHC commended peoples' attitudes and, for instance, deputy Director of NHC, Robert Sheets noted to the WP that "What also happened in the last few years is that people living along the Gulf of Mexico have become aware of their vulnerability to these storms."[244]

Behind the changed attitudes of people are better means of spreading information. The officials from NHC noted that television had greatly improved the warning system and the public could get information much quicker.[245] Stanley L. Rosenthal, director of the Hurricane Research Division of the Commerce Department's Atlantic Oceanographic and Meteorological Laboratory, also considered that television and more effective warning system were the main reasons for lower death toll, since no major improvement in forecasting had occurred in the last decade.[246]

This can be understood as a mediatization of hurricane warnings. However, television as a technology is not the only explaining factor since mediatization as a process does not empty out in a single technology, but presents more "…*communicational practises associated with the* media."[247] These practises and the success of television regarding the information about dangers of hurricanes crystallises into one man: the Director of the National Hurricane Center Neil Frank. Frank was very skilled at using all the potential which television provided. He understood that scientific-technical jargon would not go down with the wider audience and adapted to that very proficiently, so that anybody could understand what he was speaking. In this way he was also a perfect man for the needs of broadcasting media; he was a "…natural showman." as one television producer called him.[248] Frank had indeed been interested in

[243] "1 Million Forced To Flee Hurricane" The Washington Post, Sep. 3, 1985: A6. Read 27.12.2018.
[244] "Hurricane Death Toll Held to 4 – Tracking Technology, Well-Heeded Warning Prove Life-Savers" The Washington Post, Sep. 4, 1985: A1. Read 27.12.2018.
[245] "Using High Technology to Save Lives" The New York Times, Sep. 28, 1985: 28. Read 28.12.2018.
[246] "Technology A Lifesaver" The New York Times, Sep. 28, 1985: 1. Read 28.12.2018.
[247] Emphasis in original text. Krotz 2009, 27.
[248] "All Eyes on Mr. Hurricane!" The Washington Post, Sep. 28, 1985: G1–G2. Read 28.12.2018.

public awareness throughout his career and his term as a Director of the National Hurricane Center (1973–1988) is well known for widening understanding of hurricanes and better public visibility of NHC. Patrick Fitzpatrick also credits him of giving encouragement to create hurricane preparedness plans, since the only existing emergency plans were Cold War infused plans for nuclear attack.[249] For instance, the highway network in the U.S. dated back to the 1950s and it was designed to evacuate people to countryside in the case of nuclear war, but it was already inadequate in 1970s, when hurricane evacuations jammed the roads in many cases due to the growth in coastal population.[250] Ever since the Neil Frank's reign as a director of the NHC, television has been the main tool for disseminating information about hurricanes to the public.

The rise of the television did not please everyone and the large coverage of hurricanes was criticised, for instance, by newspapers. In 1985, when one of the season's storms, Hurricane Gloria, was crawling to the north along the East Coast of the U.S., NYT and WP both criticised the television broadcasts of different channels for creating hurricane hype.[251] WP claimed that tropical cyclones had become the "…sexiest attractions in all of television news."[252] The press questioned the "new way" of producing news. Staff Writer for WP Bill Peterson reckoned, after tries of finding a good headline for the paper about Hurricane Gloria that he was "…not sure it exist except on television."[253] Peterson was hinting that the broadcasting media was exaggerating everything and could not be trusted in the reporting of important issues. Behind Peterson's, as well as other newspapers', criticism towards television was the realisation that the media was transforming for the benefit of television and for the loss of the traditional press. The morning paper was a half a day late in relation

[249] Fitzpatrick 2006, 137 & 204–205.
[250] "Hurricane Winds Buffet Louisiana: 180 M.P.H. Gusts Hit Coast – Highways Jammed as Thousands Flee Inland" The New York Times, Sep. 8, 1974: 1. Read 8.1.2019; "One Is Reported Dead as Hurricane Strikes Gulf Coast" The New York Times, Sep. 24, 1975: 22. Read 8.1.2019. Holmila & Roitto 2018, 190.
[251] "Gloria Coverage, in Eye of the Storm" The New York Times, Sep. 28, 1985: 4. Read 5.3.2019; "Weathering the Media Storm: Another Disappointing Hurricane Season Without Mass Devastation" The Washington Post, Oct. 13, 1985: B5. Read 5.4.2019.
[252] "Weathering the Media Storm: Another Disappointing Hurricane Season Without Mass Devastation" The Washington Post, Oct. 13, 1985: B5. Read 5.4.2019.

[253] "Outside Hurricane Gloria" The Washington Post, Sep. 28, 1985: A15. Read 6.4.2019.

to the evening news. For instance, the Weather Channel, established in 1982, provided real time information about the storms and the public did not need to wait for the morning paper.[254] The television had also a visual edge compared to the radio as it could provide satellite photos and moving image.[255]

The effect of television was thus significant. In the years following the busy hurricane season of 1985, the magnitude of evacuations increased firstly because the number of coastal dwellers had raised considerably, but also because better means of communications. Increased awareness of the dangerousness of hurricanes made people inclined to flee in time and mass evacuations became a common activity before hurricanes. For example in 1992, more than 700,000 people fled before Hurricane Andrew blasted Homestead in Florida, some 50 km south of Downtown Miami.[256] Newspaper reports, which dealt with people disobeying the evacuation orders, declined considerably compared to the 1970s.

The progress towards information society started to slightly heal the relationship between the public and the weather officials as well as civil defence officials. The overall trend of smoothness of the evacuations was improving but it did not always mean smoother evacuations and new weak linkages that could neutralise the positive effect of the mediatization, were revealed. In 1999, the evacuations from Charleston, South-Carolina, threatened by Hurricane Floyd, misfired seriously. Thousands of people tried to evacuate in time before Floyd's landfall, but the Governor of South-Carolina, Jim Hodges did not immediately allow to open all the lanes of Interstate-26, leading out from Charleston, and thousands of people jammed into the roads for more than ten hours.[257] Even though Floyd eventually made a landfall elsewhere, people were not angered by the slightly incorrect forecast but inconsistent actions of the Governor.[258] In the situation of hurricane emergency, predicting weather is not the only wild card. Evacuation plans were existing and up-to-date,

[254] Fitzpatrick 2006, 292–293.
[255] Ibid.
[256] Barnes 1998, 264.
[257] "Hurricane Expected to hit Border Between Carolinas" The New York Times, Sep. 16, 1999: A26. Read 6.4.2019.
[258] Ibid.

but the planners could not predict that the governor would made such an inexplicable decision.[259] Thus, actor-networks regarding hurricanes include complexities resulting from unpredictability of the non-human as well as human agents.

Sometimes problems are caused by both non-human and human agents. This happened in 2004, when Hurricane Charley was approaching the Tampa-area on the West Coast of Florida. Charley was relatively big category two storm some eight hours before the expected landfall. In Tampa-area, almost two million people were evacuated to shelters without major problems when Charley suddenly intensified substantially from category two to four in just five hours.[260] The storm simultaneously changed its course a little and at the evening of August 13, it landed on Punta Gorda, some 160 km from the expected Tampa-area. Even though the change in the course was quite minor in the size scale of a hurricane with the diameter more than 160 km, it had the potential to cause massive disaster. The unexpected turn in Charley's course happened so fast that neither civil defence officials nor media outlets could not react to it in time. Moreover, many people in the eventual area of the landfall had not prepared at all, even though Punta Gorda and the neighbouring area were well within the hurricane warning zone. Many of the residents as well as local officials were in the belief that the storm was heading elsewhere and neglected the preparations. The efficiently conveyed information about Charley's expected route created a strong narrative that made people to forget the unpredictable nature of hurricanes. Hence, we can see that even if the information could be effectively conveyed, it could also oversimplify things causing hazards. Fortunately Charley killed only nine people directly.

However, even though the margin of error in the forecasts has diminished considerably during the years and the information was much more easily available to the public, the population growth in the coastal areas has increased rapidly and even small errors or unexpected turns in events can cause significant danger. Technological advancements have made the work of forecasters easier and caused sizeable decrease in death tolls but the population growth included to the peoples' increasing willingness to live near the sea have

[259] Pilkey 2009, 44–45.
[260] Pasch, Brown & Blake 2004/2011, 2.

proved that accurate forecasts cannot be the only measure for the protection of the people living in the coast. Thus, different political measures have been adopted alongside, especially from the 1970s onwards. Regarding the hurricanes, the most significant such measure has been the regulation of the land and building codes. The next chapter will explore this theme and illustrate how hurricanes have also been a prominent factor in other discourses other than scientific.

4. Regulation of Land and Property Rights

One of the most debated topics of the U.S. hurricane history are disputes relating to the use of land and property. For example, after the Galveston Disaster in September 1900, a question was asked in The New York Times (NYT): "Why Should Men Build Cities Where Danger Is Always Imminent ?"[261] On the other hand, NYT also declared that the city of Galveston had to be there; even if the place was not the most ideal.[262] The city was indeed rebuild, as has since been the case with many other places in the U.S. after remarkable storms. The regulation, however, was not discussed in large extent in the early decades of the 20th century.

Regulatory debates became more common only after the 1950s and especially during the 1970s and '80s. This chapter focuses on regulation debates in the timeframe from 1970, when the mitigation had a secondary character behind the desire to control the nature, to 2000 when the problem was not necessarily the natural phenomenon itself, but the enforcing of regulation. Regulation debates, regarding hurricanes, can be divided into two categories: firstly, land regulation, which involves coastal development and property rights, and secondly, to building regulation, which mainly concerns building codes and quality, but also interlocks with the property right debates.

This chapter is divided by these two categories. Subchapter 4.1 explores how the land regulation of hurricane prone areas connects with the longer historical continuum of property right debates and to some arch-American themes such as the relationship of the federal government and private citizens. To understand hurricanes in the context of property rights, this chapter ponders the thematics of property rights more widely than just from the viewpoint of hurricanes. Through these debates we can also analyse how the conceptions of nature have changed from the 1970s to the early 2000s.

Subchapter 4.2 studies the regulation of building codes. Debates about building codes became more common in the wake of land regulation debates after the 1970s. Regulating the

[261] Constant peril Of Overflow" The New York Times, Sep. 17, 1900: 9. Read 25.11.2018.
[262] "Topics of the Times" The New York Times, Sep. 12, 1900: 6. Read 25.11.2018.

quality of the buildings was seen as an alternative to land regulation, especially because land regulation had difficulties regarding the property rights. Even though building codes were easier to implement than restrictions to coastal development, they were not without problems and the strictness as well as the monitoring the implementation of the code have been debated in abundance.

4.1 Long Tradition of Land Regulation in the U.S. and Hurricanes

The main cause of disagreement in land usage has been the land development. The main driving force has been money. Developers wanted to enhance the monetary value of the land by developing it. Mostly this was achieved by construction of infrastructure and buildings.[263] Land development descended into problems in many areas where natural forces were a threat to stability. Coastal zones are one location where development run up against erosion and, perhaps most notably, hurricanes.[264] In the 1980s, scientists and environmental activists expressed their worry over the degradation of environment, but in many cases, these concerns were overrode by the ongoing development.

The development of hazardous zones were in the interest of developers for many reasons, but one major reason can be highlighted: population growth. Samuel P. Hays notes that pressure of growing population forced people to build on hazardous areas after more suitable building sites became occupied.[265] In some cases, the Federal Government was caught up in a vicious cycle in which federal funds were used to rebuilding of structures destroyed by hurricanes only to wait the next storm to bring them down again. From the government's perspective the question was, as Hays mentions:

[263] Hays 2000, 67.
[264] Hays 2000, 72.
[265] Ibid.

> *…did it make sense for taxpayers to reimburse disaster victim only to encourage them to rebuild, risking still another round of federal disaster relief?*[266]

Even though the U.S government has regulated public hazards for a long time (at least from the late 18th century), it adopted disaster management relatively late in its remit.[267] According to Rutherford H. Platt, before 1950s assistance was not seen as a responsibility of the Government.[268] One hindrance has been the fact, that the Constitution does not take clear stand on land usage or development. Neither the rights and responsibilities of governments (federal or state) nor private individuals towards land are clearly defined. Environmental historian Donald Worster has noted that the word 'land' is mentioned in the Constitution only once and it concerns the capturing prisoners on land and on water.[269] The Fifth Amendment, added in 1791, states that:

> *No person … shall be deprived of life, liberty, or property, without due process of law; nor shall private property be taken for public use, without just compensation.*[270]

According to Worster, the Constitution, regarding the usage of private property, emphasises the individual's right to land over the State.[271] Nonetheless, this obscurity has made the regulation of land regarding hurricane prone areas quite difficult for the Government. Later, in 1869, the Fourteenth Amendment was adopted. It extends some parts of the Fifth Amendment to also concern states by noting that "No state shall … deprive any person of life, liberty, or property, without due process of law…"[272] This ambiguity might explain why the U.S. Supreme Court had said almost nothing about the regulation of land in any level of the administration from local to national before the 1970s.[273]

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[266] Ibid.
[267] Platt 1999, 132.
[268] Platt 1999, 2.
[269] Worster 1993, 96.
[270] U.S. Const. amend. V.
[271] Worster 1993, 98.
[272] U.S. Const. amend XIV; Platt 1999, 133.
[273] Platt 1999, 142.

Moreover, the discourse of the 1970s was more about the controlling of the risks with dykes and dams than mitigating them through regulation of building on the flood prone areas. The policy change came in 1950 when the Disaster Relief Act came into effect. Mitigation of disasters, however, was adopted as the primary goal of policy only in the 1980s, especially after the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988. Before that, in the 1970s and early 1980s, the focus was more on controlling the problem itself (i.e. hurricane, river, etc.) or in the disaster relief after something had happened than in mitigating the hazard in advance.[274]

One of the earliest discourses about land regulation was debated in 1972 in Wyoming Valley, Pennsylvania, where Hurricane Agnes had literally drowned everything by dumping spectacular amounts of rain. The worst situation was in Wilkes-Barre PA, where Susquehanna River breached its 13-meter high dykes.[275] A local newspaper, Wilkes-Barre Times Leader, was very confident in its editorial on July 10, 1972, some three weeks after Agnes had dissolved that "River Floods CAN Be Averted"[276] The article demanded that the rivers and streams should be tamed with dams and dykes even if it was costly.[277] Clearly the objective was not to mitigate, but to erase the whole problem of flooding by controlling the river.

On July 30, 1972, the Times Leader announced that rebuilding the Valley was the only option and reiterated their demands of damming the Susquehanna River.[278] The editor concluded that abandoning flood prone areas was not rational act and the best option was to build a system of dykes and dams that would give the control of water currents to human.[279] Perhaps the most curious thing in the article is the form of the endnote, in which the writer uses the term "…*protect* Wyoming Valley from the Susquehanna…"[280] Thus, the river was not

[274] Birkland 2006, 106–109.
[275] Longshore 2008, 3.
[276] "River Floods CAN Be Averted" Wilkes-Barre Times Leader, Jul. 10, 1972: 16. Read 14.2.2019.
[277] Ibid.
[278] "Rebuild We Must! Preventing Another Flood" The Wilkes-Barre Times Leader, Jul. 30. 1972: 38. Read 14.2.2019.
[279] Ibid.
[280] Writer's emphasis. Ibid.

conceived as something purely natural. Quite the contrary, the river was a threat and the Valley needed protection. This gives a quite clear impression of the attitudes of the time: the problem was not the risk (occasional flooding), that was well known, but how to learn to control the reasons behind the risk, namely the river.

Two years later, in early autumn 1974, visiting writer for the NYT, David Gelber, looked back on the aftermath of Hurricane Agnes and recalled how President Nixon had encouraged people to rebuild.[281] A native from Wilkes-Barre had described the rebuilding to the flood plain as "'…sign of our manhood, our courage, our Americanism.'"[282] Gelber, however, points out how these people did not necessarily have any other choice than to rebuild. Gelber writes that the flood victims solicited the government to buy their homes at the pre-flood market value so they could move and build homes elsewhere, less hazardous area. The *commercial elite*, using Gelber phrase, however, had different plans; they propelled the Federal Government to patch up a recovery plan that kept the flood victims in the area for tax paying, giving them no real choice to move away.[283]

Among the flood victims, there seems to have been some kind of a desire to mitigate in a form of moving away from flood plain. This proved to be hard since it meant almost always loss of money. The Government was reluctant to buy plots and damaged structures at pre-disaster value. At the same time, regulative legislation that determined some areas hazardous substantially diminished the resale value of the existing infrastructure even before any disaster happened. This made staying and rebuilding in the hazardous area more attractive option than moving away with economic losses. Moreover, if Gelber's claim was true, business sector pushed the Government to keep flood plain inhabited.

The issue raised tensions and the adherents of regulation had hot-tempered debates with people who were against the regulation. On December 24, 1972, the editor of NYT suggested that the Government has been "…encouraging improper building on these vulnerable lands, encouraging 'unwise economic developments in areas prone to periodic flooding and

[281] "So Where Are Bob Hope and the Government?" The New York Times, Sep. 5. 1974: 37. Read 15.2.2019.
[282] Ibid.
[283] Ibid.

hurricane hazards'"[284] Couple of weeks later, on January 14, 1972, a feisty answer was published. In a letter, dated on January 4, 1973, Carl H. Bronn, Executive Director of National Water Resources Association, reminded the editor that on the flood plain, there are considerable amount of public infrastructures, roads, railroads, commercial plants etc. as well. Bronn then asked if the editor suggests that these facilities, which are also beneficial for people outside of flood plains, should be abandoned as well: "Do you now propose to abandon all that investment, including that which serves users not on flood plains?"[285]

The debate illustrates well the problematic nature of the land. Samuel P. Hays notes that land is often "'privately owned', which carries certain 'rights' along with ownership, but private land use often conflicts with the interests of the surrounding public."[286] According to Hays land carries simultaneously a private and a public characteristics, which have made the regulation challenging.[287] These problems became more prevalent in the 1980s and after, when rapid economic growth, limited amount of land and officials' as well as legislators' will to regulate descended into a collision course.

Many states woke up to see the problem and started to enact laws that regulated the building in zones of danger. One such state was South Carolina where the Beachfront Management Act of 1988 (BMA) created restrictions on the development of the beachfront to secure that beaches remain for the future generations. The law was creation of the South Carolina Coastal Council (SCCC). In certain cases, private property owners might lose the ownership of their lot. This clause was, however, quite problematic, since it infringed the Constitution. The law was indeed heavily objected by the real estate sector and property owners as well as local politicians. For instance, South Carolina Senator James Waddell Jr. called the law unconstitutional because it allowed takings of property without just compensation.[288]

[284] "A national Water Plan" The New York Times, Dec. 24, 1972: E8. Read 15.2.2019.
[285] "Down on the Flood Plain" The New York Times, Jan. 14, 1973. E16. Read 15.2.2019.
[286] Hays 2000, 79.
[287] Ibid.
[288] "Waddell predicts changes coming for state beach management law" The Times and Democrat, Dec. 16. 1988: 2B. Read 16.2.2019.

BMA was also an answer for many environmentalists' and researchers' worries about the threat of hurricanes in coastal areas, especially in barrier islands. On September 20, 1989, Orrin Pilkey, a professor of geology from Duke University, stated to the NYT that "I don't wish a storm on us… … but it's almost essential that we have one to bring people to their senses…"[289] Pilkey was most certainly very aware that a strong category four Hurricane Hugo was approaching the coast of the two Carolinas. Two days later, Hugo slammed to the coast of South Carolina hitting directly to the city of Charleston.

Hugo crashed the city with winds of 69 m/s (~250 km/h) and central pressure of 934 mb. Its 7 meter high surge demolished beachfront property, bridges and even cut one of the barrier islands in front of the Charleston in two. Near Charleston, one fishing boat was found five miles inland. Moreover, almost 80 % of the houses of Charleston lost their roofs. Hugo was costliest natural disaster ever in the United States up to that time, before Hurricane Andrew exceeded it in 1992.[290]

The discussion about the rebuilding started immediately in the storm's wake. The discussion changed into a bitter debate after many property owners in barrier islands in front of Charleston realised that the BMA would potentially restrict of rebuilding their houses to forestall unwise development and to prevent the damages from reoccurring. One frustrated and angry property owner from Pawleys Island went as far as to threat to start another civil war if he and other islanders were denied of doing what they want with their properties.[291] He furiously announced that the islanders will "'…blow up the causeway and secede from the Union.'"[292]

The threat of the islander carries strong symbolism and meanings with it. The American Civil War is still today a sort of a gauge with which almost anything in the U.S. can be measured. It symbolises a moment when "…political machinery breaks down", as Bruce

[289] "Wary Southeast Watches the Skies" The New York Times, Sep. 20, 1989: B9. Read 16.2.2019.
[290] Longshore 2008, 239–242.
[291] "Lawsuits In the Wind After Hugo" The Washington Post, Sep. 28, 1989: A3. Read 16.2.2019.
[292] Ibid.

Catton has expressed.[293] Interesting point is how the Civil War is connected to the conflict over property rights. The question over slavery is widely considered as the most profound single reason behind the War. In a certain sense, abolition of slavery can be seen as a conflict over property rights — after all, slaves were considered as property. In this light, the seemingly wrath induced comment of the islander presents itself quite deliberate. Furthermore, it is not a coincidence that this kind of rhetoric is used in context of South Carolina. It describes the North-South dichotomy so devoutly carried through the history of the United States. Moreover, South Carolina was among the first states that seceded from the Union in the turn of the 1860–1861.[294]

The real estate sector similarly was very much against the regulation of BMA. Real estate interests claimed that it was already too late to start the regulation of coastal development now.[295] The argument was that monetary losses following the regulation were greater than those caused by occasional hurricanes or beach erosion and, thus, the development should be allowed to continue. They also noted that the BMA caused "…a significant conflict between private property rights and the public interest…"[296] Lockean theory of private property is strongly present. After one had melded his work with land, the land did not belong to the Government nor did it not belong to the nature. The Government was as much an intruder as was the hurricane.

The greatest problem is indeed the regulation per se. Rutherford H. Platt has noted that many property rights organisations oppose regulation and in many ways they see that the Government's mission is not to tell people what they can or cannot do, but make sure they are aware of the risks.[297] These organisations also see that people are in charge of themselves. For instance, Political Economy Research Center (PERC)[298] sees that federal funding for

[293] Catton 1986, 11–12.
[294] Sutherland 2001, 152.
[295] "After Hugo, a Storm Over Beach Development" The New York Times, Sep. 24, 1989: 1. Read 16.2.2019.
[296] Ibid.
[297] Platt 1999, 120–122.
[298] PERC does not accept government funding but according to Platt, have major contributors in big American companies and organisations such as Pfizer, American Forest and Paper Foundation etc. Platt 1999, 121; PERC, about us, financials. https://www.perc.org/about-us/financials/. Retrieved 15.3.2019.

barrier islands should be eliminated. According to the PERC, this would not contravene with private property rights, and would probably reduce the incentive to build at barrier islands.[299] The benefit of real estate and other market forces surpasses the regulatory force of Government. However, as Platt remarks, these organisations often miss the fact that "…the reason the government exists in the first place is to define what is for the common good and what is not."[300]

For that reason, Hurricane Hugo is a very interesting storm. The core of the problem is, as noted earlier that the Constitution is "blind" to the natural environment. The Constitution itself is created for the society and to work in the society, but this leads problems when the society encounters with natural environment. On the one hand, the Constitution ties the Government to take care that the property rights are fulfilled. But on the other hand, the Constitution also assigns the Government to protect citizens from different threats. In this sense, natural disasters, such as Hugo can make the Constitution to contravene itself.

The problem for the Government is to where to draw the line. The fundamental question then is, as Rutherford H. Platt has formulated it:

> *If communities and private investors fail to act sensibly to protect themselves from natural hazards, to what extent should they be held harmless from the effects of their 'own free choice?'*[301]

It should be also remembered that the form of the Constitution emphasises the separation of "American attitude" towards the federal power over the land from the old "British attitude". Generally speaking in Europe, the attitude towards Governmental power over land has been positive.[302] Thus, most Americans are hostile towards a regulation that dispossesses their control over the land and its development.[303] J. B. Cullingworth and Roger Caves have indeed

[299] Ibid.
[300] Platt 1999, 125–126.
[301] Platt 1999, 280.
[302] Cullingworth & Caves 2003, 24–25.
[303] Cullingworth & Caves 2003, 411.

pointed that in America "There continues to be a long tradition of belief in the sanctity of the rights of property.[304]"

The property rights in the U.S. emphasize the point that the owner must have a freedom to utilise his property in anyway. Thus, property rights have fundamental connections to the interpretation and use of the concept *Liberty*. Liberty is conceived in the U.S. mostly in negative terms: liberty is the lack of something meaning usually someone's interference to individual's actions.[305] This negative interpretation is showing as a desire for a minimalist government and it has its roots in John Locke's as well as Thomas Jefferson's writings.[306] One of the most fundamental principles this conception of liberty interlocks, is the property rights. Locke, and later many Founding Fathers saw that protection of property rights is the purpose of the government, which is clearly visible in the Constitution.[307]

From the viewpoint of regulation, however, there are problems. The fundamental question is: what is the situation that government can legitimately interfere to people's actions against their will? Deborah Stone notes that if there is harm to others, it justifies the interference.[308] On the other hand, we can interpret, that even if the primary harm of disaster is done to the victim himself, the relief is public money and, thus, away from the enhancement of public good and that is why the interference of the Government to ordinary people's life in a form of land regulation is justified. But on the other hand, as Stone points out, there is also a question when government should interfere into a *voluntary* action of someone that simultaneously causes harm to the actor himself? People on the barrier islands nonetheless lived there voluntarily, by their own free choice and, therefore, the interference of the Government was not justified. The latter interpretation, it seems, is also the position of the property owners as well as real estate.

[304] Ibid.
[305] Stone 2002, 109.
[306] Stephens 2002, 98.
[307] Stephens 2002, 17.
[308] Stone 2002, 109.

Regulation then inflicts very complex policy problems to governments. This pressure also caused the South Carolina Coastal Council (SCCC) to interpret the BMA rather liberally. On September 29, 1989, SCCC announced that only those buildings destroyed could not be rebuild. Damaged buildings instead would be allowed to be rebuild.[309] The line between damaged and destroyed was drawn rather nebulously: a house considered to be two-thirds destroyed could not be rebuild.[310] The Chairman of SCCC placated angry property owners and promised that "As long as you've got a foundation, a load-bearing wall and maybe one other wall, you're okay."[311] Many supporters of the BMA were disappointed that the Act was not able to implement its main purpose; i.e. curtail the beachfront development. Some six months after Hugo, the WP wrote how the storm had not taught anything to anyone. The development of the beachfront continued as if nothing had happened. Aforementioned Professor Pilkey lashed that "By most standards, that type of behavior would be classified as insanity…"[312] The one storm Pilkey had thought essential had not been enough. Apparently it would take "…a slew of Hugos to make people [realize] that building on the coast is not a good idea", as Elise Jones from Wildlife Federation noted to WP.[313]

As was noted at the start of this chapter, decisions of previous generations can be in essential role when it comes to the effects of natural disasters.[314] This means that a political culture regarding regulation, or perhaps more suitably the lack of it, can make substantial increase in the damage made by hurricane. Fortunately Hurricane Hugo did not redeem its full potential. In 1999, however, Hurricane Floyd showed how "[a] natural disaster is complicated by the presence of humans", using the phrase of NYT.[315]

[309] "Most Beachfront Property May Be Rebuilt" The Washington Post, Sep. 30, 1989: A8. Read 17.2.2019.
[310] "Lawsuits In the Wind After Hugo" The Washington Post, Sep. 28, 1989: A3. Read 1.3.2019.
[311] "Most Beachfront Property May Be Rebuilt" The Washington Post, Sep. 30, 1989: A8. Read 17.2.2019.
[312] "A Hurricane's Fury Fast Forgotten: Beach Development in Carolinas Is Brisk 6 Months After Hugo" The Washington Post, Apr. 9, 1990: A1. Read 17.2.2019.
[313] "Most Damaged Homes Being Rebuilt on Same Lots in Carolinas" The Washington Post, Apr. 9, 1990: A9. Read 17.2.2019.
[314] Haila & Lähde 2003, 9.
[315] "After the Storm, an Ecological Time Bomb Off the Carolinas" The New York Times, Nov. 30, 1999: 2. Read 17.2.2019.

Floyd made its landfall in Southern North Carolina in mid-September 1999. It had already weakened from its peak intensity and crossed the land as category 2 storm with winds of 46 m/s (165 km/h). Floyd caused very severe flooding that demolished more than 6,000 houses and mangled almost another 9,000 uninhabitable.[316] Floyd is another demonstration of the importance of regulation. The problem with Floyd was, however, different compared to Hugo. Hugo raised disputes about coastal development, whereas Floyd exposed the lack of regulation in other sector: farming industry.

A week after Floyd's landfall, the extent of the damages started to became clear. The flood waters became dangerously contaminated. NYT and WP reported how several sewage treatment plants were under water in consequence of the flood and raw sewage water was pumping into the flood waters.[317] At the same time 100,000 hogs and up to 3 million poultry had drowned and were putrefying in the water.[318] This added to the faeces of the animals and chemical leaks from several industrial plants made the flood water "Witch's brew…", as an official from North Carolinas Department of Environmental and Natural Recourses described the situation.[319]

In October it turned out that the so called "witch's brew" could have been equally called "human's brew". NYT noted on October 17, how farmers had had the freedom to build their hog and poultry operations with almost no regulation.[320] It was revealed that digging of pits for the waste of the animals had not been controlled and no health concerns had been taken into account.[321] Even if North Carolina had benefitted from the massive business of raising hogs and poultry, Hurricane Floyd grimly proved that ignoring the environment can pay back hard.

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[316] Longshore 2008, 195.
[317] "Lingering hazards Cover Carolina's Sea of Trouble" The New York Times, Sep. 22, 1999: A22. Read 17.2.2019.
[318] " North Carolina's Contaminated Water Supply Raises Health Fears" The Washington Post, Sep. 22, 1999: A16. Read 17.2.2019.
[319] "In North Carolina, Floyd Leaves a Toxic Legacy" The Washington Post, Sep. 22, 1999: A1. Read 17.2.2019.
[320] "Hurricane Reveals Flaws in Farm Law as Animal Waste Threatens N. Carolina Water" The New York Times, Oct. 17, 1999: 33. Read 17.2.2019.
[321] Ibid.

The Floyd disaster also opened the eyes of the local leaders. The Governor of North Carolina, James B. Hunt (D) admitted that they have a problem and that his, as well as many others' views, had been changed after Floyd: "We need a strong economy for our people, but we cannot sacrifice the environment for jobs."[322] Farmers' side were seeking subsidies worth $1 billion to rebuild their facilities as they were. Governor Hunt called these plans wrong.[323] The local farmers remarked that their operations had not been illegal and, thus, they should not be punished.[324]

In the eyes of the Actor-network -theory (ANT), Floyd represents a *hybrid event*, because it is not self-evident whether the disaster was more a consequence of a natural disaster or (irresponsible) human operations. It is clear that without Floyd there would not have been a contamination problem, but at the same time, Floyd's effects were certainly heavier because of the unregulated farming in the area. All the cases presented in this subchapter are demonstrations of amalgamation of natural environment and society. The ANT oriented analysis revealed that even though the Constitution is not designed to take a stand on nature, it cannot escape it. Especially the case of Hurricane Hugo showed how hurricanes can cause problems in the interpretation of statutes of the Constitution. Of course, the effect is two-way: the Constitution most clearly has implications on how the society acts or can act under the threat of hurricanes. Thus, as much as there is at stake the continuance of the hurricane threat, there is the continuance of the "guidance of the Constitution".

We can also see how the attitudes changed from the effort to rule the nature towards some kind of endogenous compromise with the phenomena of nature. In the case of Hurricane Agnes, the discourse was much more tilted to the pursuit of controlling the nature than to mitigate and seek a long term permanent solution. The mitigation discourse gained attention afterwards, but in the late 1980s, when Hurricane Hugo devastated the South Carolina, drawing the line between property rights, the Constitution and regulation was still very much uncompleted. Ten years later, in 1999, when Hurricane Floyd had rumbled over North

[322] ibid.
[323] Ibid.
[324] Ibid.

Carolina, many people, including politicians, saw what the lack of regulation can cause. Politicians, Governor James B. Hunt at the front, remarked that regulation was indispensable, but even then, local entrepreneurs, mostly farmers, were against it.

Since 1999, yearly hurricane activity has stayed high and ever accelerating erosion and rising sea level is pushing different quarters to make decisions about regulation of land. However, even if many people today admit that the only option is to co-operate with nature, the growth of coastal dwellers is still rising. In 2013, National Oceanic and Atmospheric Administration estimated that some 124 million Americans lived in coastal shoreline counties and the expected growth by 2020 is 8 % or 10 million people from the 2010 level.[325] This can mean two things: either there is some latent belief that human will someday learn to control the forces of nature or belief that the society in all levels can adapt of co-operating with the nature. Either way, the Government has understood quite early that the regulation of land with all its problems cannot be the only solution and have created other ways to mitigate the threat of hurricanes. The next subchapter will deal with one such solution, i.e. Building codes.

4.2 Hurricanes and Building Codes

Many coastal states have enacted building codes that impose a standard for how strong winds the buildings should withstand. Passing this kind of legislation was considerably easier than imposing land regulation because it did not directly affect the property rights. This concerns particularly the discourse about hurricanes. Another hazard concerning directly building code is earthquakes. The threat of earthquakes is mostly associated with California, even though there are at least 39 states in the U.S. where earthquake is potential threat. This threat, however, is much less appreciated in the areas outside of California.[326] The frequency of hurricanes is considerably greater than notable earthquakes which has meant that building codes are usually discussed more regarding hurricanes than earthquakes.

[325] Crosset et al. 2013, 4.
[326] Birkland 2006, 105–107.

Most of the debates about the building code have been about the toughness of the code. Defining the appropriate level, however, is not easy. A wind of 44 m/s (160 km/h) thrusts the wall of 10x30 meters in size with a force of ~18,000 kilograms. Similarly a wind of 71 m/s (257 km/h) will thrust the same size wall with the force of ~45,000 kilograms.[327] A hurricane with winds of 71 m/s or more are not particularly rare, but such hurricanes have made only few landfalls in the USA. The average return period for strong category 5 hurricanes in Florida, for instance, is around 50 years.[328] Storms with weaker winds and lower category are much more frequent. The big question regarding the level of the building code has indeed been how strong winds should the structures withstand. Since more stringent building code consistently raised the expenses of the construction, it was not obvious to build structures to withstand as strong winds as possible.

The debates about the building codes started earlier than those about the land development. There are two major reasons for this. First, as was mentioned above, people were more willing to accept legislation that did not infringe their conception of property rights. Second, on some densely populated areas, for instance Southern Florida and parts of Texas, moving people and/or infrastructure away from the immediate coast was impossible because the magnitude of coastal dwellers and infrastructure was simply too large. At this point the most convenient option was to provide for hurricanes with building codes.

Before the 1970s, building codes were occasionally discussed after big storms. Perhaps the most significant such debate before the 1970s was after the Great Miami Hurricane in 1926. The Great Miami Hurricane was a strong category 4 storm that brushed directly over Miami. The power of the storm was remarkable; 64 m/s (230 km/h) sustained winds caused the newly erected eighteen-story Keyser-Meyer -building to twist around itself and bend its steel frame. A local man described that the steel superstructure was like "…a piece of india rubber."[329] Miami had been the fastest growing city in the USA in the early 1920s.[330] This, of course,

[327] Bradford et al. 2007, 176.
[328] Landsea et al. 2004, 1710.
[329] "Modern Buildings playthings of Wind, Eyewitness Says" The Washington Post, Sep. 21, 1926: 2. Read 23.2.2019.
[330] Barnes 1998, 111.

meant a great deal of new buildings. The building boom had its negative effects too and speed was emphasised over quality in building.[331] After the storm more rigid building code was regarded necessary.[332]

After 1926, significant discourses about building code or the regulation in general were somewhat scarce. The overall tendency of controlling the nature subdued regulation debates in general from the 1930s to late 1970s. As was already noted, mitigation was simply not the primary target of hurricane related policy. The building code discourses became more common after the 1970s. The rise of demand for regulation of land development also placed building codes into the core of the discourse as an alternative to the land regulation. Moreover, many coastal areas regarded that it was too late to start the regulation of land development, as was noted in last subchapter regarding the case of Hurricane Hugo in 1989. Debates regarding building codes were indeed more common in highly developed and densely populated coastal areas.

One such debate was in 1983, when Hurricane Alicia hit Galveston and Houston in Texas. Alicia was not particularly strong storm, but managed still to cause quite extensive damages both in Galveston and Houston with winds of 51 m/s (185 km/h).[333] The most obtrusive damage happened to Houston's numerous skyscrapers. Several buildings with all-glass facades suffered extensive damages which quickly raised questions of the building quality and the decision to use glass. Many expressed their concern over glass falling as high as from the 40th store.[334]

Building codes in Houston at that time required buildings to stand winds of 40 m/s or some 145 km/h. The winds of Alicia exceeded this perceptibly. Steven J. Marcus from NYT noted that "The City cannot control weather…but…it could certainly strengthen its building codes."[335] The issue was alarming especially because experts did not consider Alicia's winds

[331] "Florida House Loss Laid To Poor Work" The New York Times, Sep. 26, 1926: 20. Read 23.2.2019.
[332] Ibid.
[333] Longshore 2008, 7.
[334] "An Ill Wind" The Washington Post, Aug. 20, 1983: A14. Read 24.2.2019.
[335] "Some Experts Fault Houston Code For Glass Buildings" The New York Times, Aug. 20, 1983: 7. Read 23.2.2019.

to be unusually high for the area of Houston.[336] Some specialist though noted that Houston was a "…wide-open city for architects…"[337] Marcus' notion of man's inability to control the weather tells well about the changed attitudes towards nature; fantasies of tamed hurricanes started to become desolate.

Instead, Architects were sure that there was no fault in the design of their buildings. Spokespersons for many architect offices blamed wind-blown debris for the damages.[338] Different designing firms were at loggerheads with also each other. Some investigators claimed they found rooftop gravel in the rooms which windows had been broken and said the damages were caused by debris from other buildings. This was flatly denied by the other quarter.[339]

Later investigations supported the debris -theory to some extent. Scott Norville, Professor of Civil Engineering from Texas Tech University, noted that he found no evidence of failure of the glass to withstand the winds. He considered that the most probable explanation was wind-blown debris, but he could not fully except that negligent design was a part of the problem.[340] The Director of National Hurricane Center, Neil Frank, remarked that because hurricane winds throw debris practically every time the hurricane strikes, it did not make sense to build huge skyscrapers faced entirely with glass.[341] President of a major firm located in Houston, Charles Thomsen from 3D/International, granted that "Maybe there is something to be said for reducing exposure by reducing the amount of window on the wall…"[342] Otherwise the decision to build glass buildings was not seen as a crucial question. For instance, Houston's deputy building inspector, Horace Cude, dismissively noted that there was no reason for panic since "You can get killed just as fast walking across the street."[343]

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[336] ibid.
[337] Ibid.
[338] "Houston Is Struggling to Regain Normal Life" The New York Times, Aug. 20, 1983: 7. Read 23.2.2019.
[339] Ibid.
[340] "Alicia left several engineering questions unanswered" The Galveston Daily News, Sep. 1, 1983: 12A. Read 23.2.2019.
[341] "Glass Skyscrapers Vulnerable" The Washington Post, Aug. 29, 1983: A3. Read 23.2.2019.
[342] Ibid.
[343] Ibid.

The opposing sides in the debate after Alicia are practicality (public safety) and extravagance of the skyscrapers. The safety and functionality of buildings is, of course, an important aspect for architect offices but Alicia revealed that sometimes they were overrode by aesthetics of the buildings. Thus, it is understandable that architect offices defended their designs hard. It would indeed been very embarrassing for them that their flagships, big skyscrapers, in the biggest cities of the USA had problems. It was all the more painful since this vulnerability of the skyscrapers, the symbols of post-industrialist world, was exhibited by hurricane – a natural phenomenon. The agency of the Hurricane is here clearly visible. Alicia demonstrated how even the post-industrialist human could not escape nature and, in a sense, made the material outputs of humans, that is skyscrapers, hybrids – they are built by humans but at the same time they interact with nature, which questions that skyscrapers are purely unnatural.

The situation in Houston also raised apprehensions from other parts of the Nation. The issue was discussed, for instance, in New Orleans, LA, where building inspectors believed that, because of lower buildings and better framings for windows alongside with more stringent building code, the risk for similar events than in Houston was smaller.[344] In Miami, where the building code demanded buildings to withstand winds of 53 m/s (193 km/h); some 13.5 m/s or 48 km/h more than in Houston, a worry over the booming construction was expressed.[345] On October 14, 1983, the editor of South Florida Sun Sentinel, a newspaper situated in Fort Lauderdale, FL, some 45 km north of Miami, asked almost in portentous tone: "Wouldn't it be awful, and awfully ironic, if it took a hurricane's destruction to force Florida citizens and their leaders to get serious about regulating growth…"[346]

A little over nine years later, in 1992, Sun Sentinel's editor's hapless question materialised in the form of Hurricane Andrew. Andrew was only the third category 5 hurricane to make a landfall in the United States,[347] when it slammed Homestead in Southern Dade County FL,

[344] "New Orleans' skyscrapers might be less vulnerable than Houston's to hurricanes" The Galveston Daily News, Sep. 1, 1983: 8A. Read 24.2.2019.
[345] "Miami officials worry at hurricane effect on glass-covered buildings" The Galveston Daily News, Sep. 13, 1983: 10A. Read 24.2.2019.
[346] "Hurricane: Instant urban renewal" South Florida Sun Sentinel, Oct. 14, 1983: 14A. Read 24.2.2019.
[347] In 1992, Andrew was estimated to be category 4 storm, but it was later raised to category 5 after National Hurricane Center finished its reanalysis in 2004. Landsea et al. 2004, 1709.

some 50 km from Miami on August 24, 1992.[348] Andrew was tightly packed storm producing sustained winds of 77 m/s (278 km/h). It left a dumbfounding devastation in its wake. The storm damaged heavily 80,000 homes of which 25,000 were completely eradicated.[349] Surprisingly, the death toll was only 26 direct casualties.[350] This relatively low number is probably due to heavy evacuations: nearly 700,000 people left the area before the storm.[351]

The area of Miami had witnessed a booming growth during the 1980s and the population of the Dade County had rose from 1.6 million to 1.9 between 1980 and 1990.[352] A lots and lots of new buildings were erected and the situation resembled the one before the Great Miami Hurricane in 1926. Few days after Andrew's landfall, many experts expressed their amazement over that so many houses were totally wrecked even though Florida's building codes were toughest in the U.S.[353] This lead to qualms about the observance of the building code.

In subsequent days, several reports described shoddy construction of the buildings. One resident from southwest Miami described the houses to be "'…Mickey Mouse,'"[354] Another man who lost his house stood in the rubble and cried to NYT that "The walls were supported by a lousy screw. Can you believe this?"[355] Evidence of egregious building errors were indeed found; for instance, hurricane straps for anchoring the roof were attached erroneously.[356] A big commotion was also raised over the attachment of roof shingles and

[348] Andrew made a second landfall into Louisiana as a category 3 storm couple days later, but the analysis here focuses on the situation in Florida. Barnes 1998, 262.
[349] Barnes 1998, 276; Bradford et al. 2007, 822.
[350] Blake et al. 2011, 7.
[351] Barnes 1998, 284.
[352] 1980 Census of Population. Vol. 1. Chapter A, Number of Inhabitants. Part 11, Florida. 1980. U.S. Department of Commerce, Bureau of the Census. Read 24.2.2019; U.S Census Bureau, Census 2000 PHC-T-4. Ranking Tables for Counties: 1990 and 2000, 2001. https://www.census.gov/population/www/cen2000/briefs/phc-t4/tables/tab02.pdf. Read 24.2.2019.
[353] "Amid the Fallen Buildings, a Host of Question About How They Were Built" The New York Times, Sep. 6, 1992: 36. Read 25.2.2019
[354] "Home-Construction Industry in Florida Examined in Wake of Hurricane Andrew" The Science Christian Monitor, Sep. 8, 1992: 1. Read 25.2.2019.
[355] "Amid the Fallen Buildings, a Host of Question About How They Were Built" The New York Times, Sep. 6, 1992: 36. Read 25.2.2019
[356] Ibid.

tiles. Inspectors found in many places that staples were used instead of nails when attaching shingles on the roof.[357]

Later it came up that during the heydays of the 1980s, the workload of building inspectors has been almost unbearable. Some inspectors said they had 25–30 inspections a day, which meant that there was absolutely no time for diligent inspection.[358] This was twice as much as the building code considered optimal.[359] Real estate and building sector blamed the storm's unusual magnitude of the destruction. A chief financial officer for Lennar, Miami-based building constructor company, reckoned that "… people are going to find it's not a construction-quality issue at all…"[360] The evidence of shoddy construction though was too overwhelming and Andrew's great strength would not have explained the extent of the destruction completely. In the terms of the actor-network -theory, Andrew was a hybrid event, since the cause of the destruction cannot be laid solely on humans or the storm.

Hurricane Andrew revealed the weakness of the building code as method of regulation compared to the regulation of land development: "Building code [is] just words on paper unless standards strictly enforced", as the editor of South Florida Sun Sentinel framed the issue.[361] Herbert Saffir, the co-developer of the Saffir-Simpson hurricane scale, similarly remarked to the NYT how the code is like "…adopting a speed limit on the highway… …If everyone ignores it, it's no good."[362] Paul Fronstin and Alphonse Holtman suggested in their 1994 article that one reason for large extent of the damage was partly attributable to eroding building code. Apparently Florida Officials had allowed the weakening of the code which

[357] "Why did some houses stand, other crumble?" The Palm Beach Post", Sep. 13, 1992: 4H. Read 26.2.2019.
[358] "Amid the Fallen Buildings, a Host of Question About How They Were Built" The New York Times, Sep. 6, 1992: 36. Read 26.2.2019
[359] "Weak building code seen as only part of reason for damage" South Florida Sun Sentinel, Sep. 6, 1992: 4A. Read 26.2.2019.
[360] "Home Construction" The Christian Science Monitor, Sep. 8, 1992: 4. Read 26.2.2019.
[361] "Building code just words on paper unless standards strictly enforced" South Florida Sun Sentinel, Sep. 9, 1992: 10A. Read 26.2.2019.
[362] "Big Storms, Plentiful Targets" The New York Times, Aug. 30, 1992: 3. Read 26.2.2019.

allowed contractors to use cheaper materials etc.[363] Moreover, Fronstin and Holtman conclude that the impairing of the code was a response to the demand of consumers.[364]

It, thus, seems that the strict building code has its flip side: during the rapid growth, enforcing and monitoring the implementation of the code might become hard. In the case of Andrew, monitoring was already complicated because in many cases, one contractor build the frame, other the walls and still other the roof and so on. Afterwards it was difficult to find who the actual perpetrator behind the poor construction was. It should be understood that the economic growth itself is not to blame, since the failure to enforce building codes is externality rather than direct implication of growth. Hurricane Andrew nonetheless showed how growth (at least unregulated) cannot be regarded solely positive in all its outcomes. Andrew forms a pair with the case of Hurricane Floyd. Andrew and Floyd are actual cases where we can observe how lack of regulation or the failure to enforce it have considerable effects of hurricanes' eventual damage.

The cases presented in this and the previous subchapter illustrates the quality and extent of the relationship of hurricanes, regulation and problems in policies as well as the discourse regarding them. These issues, however, are debated with different intensity after almost any hurricane and the discourse is not restricted to the presented cases only. For instance, after the tremendous havoc left by Hurricane Katrina in 2005, the inadequate levee system of New Orleans was widely discussed and not the least since the Federal Emergency Management Agency had listed hurricane hitting New Orleans and causing large scale catastrophe as a highly anticipated – four years before the actual event.[365]

Regarding hurricanes, regulation is demarcation between society and nature. This have caused many hurricanes to politicise as we saw by exploring, for instance, Hurricane Hugo or Hurricane Andrew. These debates are not the only mechanisms through which hurricanes

[363] Fronstin & Holtman 1994, 389.
[364] Fronstin & Holtman 1994, 396.
[365] Willis 2012, 156.

can politicise. The next chapter studies the mechanism of the politicisation of hurricanes and their interaction with different institutional political structures.

5. Politics of Hurricanes

One key factor in the politicisation of hurricanes lies in their deep connection with longer historical progressions. Sometimes, in right time, place and context, hurricanes can end up in the politics as tools of policymaking. The interpretations and conceptions of the crises created by the hurricane can be in the center of different political debates. This chapter explores how hurricanes are conceptualised in the policymaking and how material phenomena can have significant consequences in institutional level of societies. Chapter 5.1 studies how Hurricane Camille of 1969 connected to the institution of racial discrimination in the U.S. Chapter 5.2 explores the relationship of hurricanes and presidents as well as presidential candidates through three cases in the timeframe of 1972–2004.

5.1 A Civilisation Gone with the Wind – Hurricane Camille and Segregation

The severity and the depth of the disaster or crisis is context-bound. The studying of hurricanes requires us to also take social contexts into account. Environmental history have, according to Connie Y. Chiang: "…potential to illuminate complex dynamics of human societies."[366] Chiang also notes that environment has had a significant role in the formation of constructions of race and ethnicity.[367] In the viewpoint of African American history, Pero Gaglo Dagbovie has remarked that African American environmental history has remained in an embryonic state.[368] Even though this research as a whole does not represent African American history, this particular chapter can be seen as a contribution into the field; i.e. how material factors are intermingled with seemingly purely social constructions such as racial discrimination.

[366] Chiang 2017, 573.
[367] Chiang 2017, 574.
[368] Dagbovie 2015, 127.

In addition to that, this chapter explores through the example of Hurricane Camille, how hurricanes can end up as a political tool and how conceptual struggles can be closely connected to material boundary conditions. In the context of the Deep South and the disaster wrought by Camille, the storm was utilised by different actors to either restore *status quo* (including segregation) or to equalise the society. Perhaps the most important context of Camille was the racial discrimination. As Mark M. Smith has noted: "… race, and the history that underwrote the idea, was nestled deep in the debris of Camille."[369] Thus, Camille situates into the context of Southern U.S. history of the late 1960s.[370] Hurricane Camille was also a very politically charged and in the months following the landfall on August 18. 1969, an interesting debate about the relief, discrimination and equity developed.

At first, though, everything looked good and it seemed that everything was happening according to the Civil Rights Act of 1964, which had outlawed racial discrimination altogether.[371] The New York Times (NYT) proclaimed how the colour line was erased in Mississippi and called the Camp Shelby, an army camp turned into a refugee camp the "… biggest exercise of integrated living in the state's history".[372] Camp personnel gave similar notions. For instance, one director of the relief operations did not believe that "'…people pay any attention to those things in a crisis.'", referring to the colour of someone's skin.[373] The crisis had derailed the society and its normal internal functions, including the normally prevailing colour line. Since everyone was in the same state of chaos, it was necessary to temporarily 'bend the rules' to bounce back. We see the crisis here as a moment when the normativity cannot be upheld or in other words, the segregation of races had to be pushed aside.

However, there is something in the news article that tells that the loosened racial etiquette was only an exception. The second in line officer of the camp stated to NYT that they "'…are

[369] Smith 2011, 23.
[370] Smith 2011, 26.
[371] Smith 2011, 25; Norton et al. 2015, 740 & 770.
[372] "Mississippi Color Line Erased In Refugee Camp After Storm" The New York Times, Aug. 23, 1969: 1. Read 27.1.2019.
[373] "Mississippi Color Line Erased In Refugee Camp" The New York Times, Aug. 23, 1969: 16. Read 27.1.2019.

in orders to integrate.'"[374] On the one hand it appears to be quite revealing that the equal treatment of refugees had to be ordered when the Civil Rights Act had been standing for five years, but on the other, it gives a clear impression how deeply rooted the racial etiquette was.

It was not long before civil rights leaders expressed their concern that there was discrimination in Shelby refugee camp. On August 26, and 27, 1969, The Washington Post (WP) wrote how African American refugees had to use guarded mass toilets and showers but this did not concern white refugees. Civil rights leaders reproached that there was only token integration in the camp. As a public facility, the army base changed into a refugee camp should have been an integrated as per the Civil Rights Act.[375] Governor of Mississippi, John Bell Williams (D), who was known as a hard-line segregationist, and Department of Health, Education and Welfare (HEW) both assured that the facilities were adequate.[376]

Couple of days later, the focus turned to the question of school integration. On August 30, an official from HEW, Guy H. Clark, announced that they are in no position to provide aid to any educational agency that is not in line with the Civil Rights Act.[377] Clark was pointing to the fact that there were several schools in Mississippi that upheld the segregation of white and black students despite the fact that the Supreme Court had condemned segregation in public schools in 1954. Hurricane Camille and the crisis it inflicted made this inconsistency visible and lifted it to the hub of the discourse.

Vice-President Spiro Agnew, who had inspected the storm area on August 20, was infuriated by the statement of the HEW official and conveyed in the news conference that withholding the aid from anyone affected by the storm would have been the last thing to come in his mind. A Democratic Congressman from Mississippi, William M. Colmer told NYT he had been in contact with the White House and received a message that HEW's statement did not represent

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[374] "Mississippi Color Line Erased In Refugee Camp After Storm" The New York Times, Aug. 23, 1969: 1. Read 27.1.2019.
[375] Howard & Zebrowski 2007, 220.
[376]"Miss. Hurricane Refugees Moved to Guard Camp; Blacks Distressed" The Washington Post, Aug. 26, 1969: A3. Read 28.1.2019; "Storm Refugees Balk at Transfer to Shelby" The Washington Post, Aug. 27, 1969: A2. Read 28.1.2019; Howard & Zebrowski 2007, 221.
[377] "Aid to Segregated Schools in Storm's Path Studied" The New York Times, Aug. 3, 1969: 22. Read 26.1.2019.

the position of Nixon Administration.[378] On August 29, spokesman of secretary of HEW, Robert H. Finch said "the matter is under study."[379]

Colmer, who strongly opposed the school integration, said he was confident that the statement of the HEW official would be overruled and aid would be granted to all schools in need.[380] Colmer's statement was smart: he was able to chastise the HEW that was in charge of the implementation of the school integration. At the same time, Colmer could represent Nixon administration in other respect concurring with the Mississippi politicians. If the relief was admitted unconditionally to all schools in need, it could have meant that segregated schools cannot be unconstitutional since the Title IV of the Civil Rights Act prohibits the use of federal money in any program that upholds discriminatory operational principles.[381] It is possible that this was exactly what Colmer had in his mind; at least it was in line with his pro-segregation views.

The school desegregation question, alongside the whole integration discourse, had long been part of the public discourse dating at least to the 1954 *Brown vs. Board of Education* case that simply condemned the segregation in any public schools.[382] Hurricane Camille did not create racism in its wake. Instead, it hit into the core of the problem: Mississippi was still thoroughly segregated in 1969 and it was most evidently visible in the school system.[383] White parents from Mississippi approached a devout segregationist, Mississippi Senator John Stennis (D) by mail and expressed their concerns, sometimes with very variegated expressions — one anxious couple suspected that the whole school integration plan was a communist scheme to weaken morals in U.S.[384] A newspaper (with a telling name), The Dixie Guide, from Biloxi, MS, announced that the whole decision to integrate was rotten and it would lead into the situation where the Nation's children were "…reared under totalitarian

[378] "Aid to Segregated Schools in Storm's Path Studied" The New York Times, Aug. 30, 1969: 22. Read 27.1.2019.
[379] Ibid.
[380] Ibid.
[381] 78 Stat. 1964, 252–253. https://www.govinfo.gov/content/pkg/STATUTE-78/pdf/STATUTE-78-Pg241.pdf. Retrieved 22.3.2019.
[382] Smith 2011, 28.
[383] Smith 2011, 25.
[384] Bolton 2007, 110.

tyranny."[385] In Clarion-Ledger, a newspaper from Jackson MS, one apprehensive reader from Chicago wrote in his letter to the editor how "…forced integration of any kind, is… un-natural…immoral…illegal…and un-constitutional", by God's commands.[386]

In January 1969, HEW had given a deadline for the integration: by or on August 11, 1969.[387] When Camille made its landfall on August 18, no integration of school system had been achieved. It, thus, seems that Camille was used by HEW to force the integration process forward by threats of cutting funding. Suddenly, however, the connection between the school integration question and the federal relief for segregated schools faded from the newspapers in the early days of September. This was not coincidence as Mark M. Smith has found out. Smith writes in his book *Hurricane Camille: Histories of a Hurricane* how Senator Stennis was involved with the case. Stennis extorted President Nixon to separate the two questions by threatening to endanger success of the Safeguard -plan. Safeguard was an antiballistic missile system to secure U.S. missile silos. Stennis wrote to Nixon and said he would torpedo the negotiations for funding of the system if the two questions would not be separated.[388]

Nixon had his hands tied and he ordered the Director of HEW, Robert Finch to delay the deadline for integration to December.[389] The official reason for the postponement was the chaos caused by Hurricane Camille. Newspapers kept quiet about the role of Senator Stennis.[390] There is though some implicit evidence that the press had a clue about the situation. For instance, Mississippi newspapers, such as Clarion-Ledger and Hattiesburg American, systematically reported the school integration question and relief issues in separate articles. During the September, the relief discourse faded away also from the national-level newspapers such as NYT and WP, and only the integration issue had some coverage. Stennis and other Mississippian segregationists had won the game even though the postponement for the integration was only some four months. HEW's plans to use Camille

[385] "Fatal Decision" The Dixie Guide, Nov. 1, 1969: 2. Read 28.1.2019.
[386] "Word Of The Lord Forbids Integration" [The] Clarion-Ledger, Sep. 3, 1969: 8. Read 30.1.2019.
[387] Smith 2011, 27.
[388] Smith 2011, 31–34.
[389] Smith 2011, 32.
[390] Smith 2011, 32–33.

for pushing the integration forward in Mississippi instead had failed and even Nixon, who, according to Charles Bolton: "…had no intention of allowing… …segregated schools at this late date", had to yield.[391]

The Actor-Network around Hurricane Camille made the racial discourse a nexus where many other themes of the time confronted each other. The adversaries of the school integration paralleled the segregation with God's commands and made it almost ritualistic. Segregation was indeed considered as some sort of a religious doctrine by many Mississippians.[392] Moreover, by Senator Stennis, the racial discourse was connected through Hurricane Camille to the Cold War mentality and national security discourses. Stennis literally extorted President Nixon to stand back with the integration of schools. He compelled Nixon to choose between the enforcing of desegregation or national security. The choice was bitter but easy. All this would not have been possible without Camille. Material changes in prevailing circumstances, thus, opened up new possibilities to human agents to utilise. As a whole, all this tells about the significance of Hurricane Camille.

The intense debate over the school integration probably pushed the problems in disaster relief aside during September and October. In November, however, allegations of discrimination came up. This led two democratic senators, Edmund S. Muskie and Birch Bayh to propose a hearing and investigation on the issue.[393] On November 22 1969, Chairman of the Senate Public Works Committee, Jennings Randolph (D) promised to organize a hearing in the Senate.[394] On November 25, the American Friends Service Committee (AFSC) and the Southern Regional Council (SRC), both known as pushing social justice and racial equity, stepped forward with a study that excoriated Nixon Government and some private agencies,

[391] Bolton 2007, 108.
[392] "Church-state separation" Hattiesburg American, Aug. 23, 1969: 2. Read 23.3.2019.
[393] Muskie and Bayh were both Democrats but not from the Dixie South. Muskie and Bayh most likely tried to challenge the Senate's democratic coalition called Southern Caucus that was vitiating Civil Rights advocates' efforts to enhance non-discriminatory legislation in the Senate. Day 2014, 26.
[394] "Bias Hearing Set On Storm Relief" The Washington Post, Nov. 22, 1969: B10. Read 3.2.2019.

such as the American Red Cross (ARC) and the Small Business Administration (SBA), of racial discrimination.[395]

The report blamed the Federal Government of giving the responsibility of individual care to private agencies, such as ARC that were outside of the federal reach or public oversight.[396] Similarly the report assailed SBA on discrimination in loan approvals; allegedly 99 % of the money went to whites.[397] The message was quite clear, the standard of giving aid was prejudiced. The report also highlighted that President Nixon had recognised the all-white council of Governor John Bell Williams as the agency through which all federal funds were directed.[398] The council consisted of white businessmen and when Biloxi Chairman of The National Association for the Advancement of Colored People (NAACP)[399] criticised the arrangement, Governor Williams blatantly informed how all the members of the council were aware of the needs of blacks and he did not understand the commotion.[400] The response was unapologetically morose.

Southern Newspapers also displayed their posture, at least implicitly, against the allegations. For example, Hattiesburg American, newspaper from Hattiesburg MS, reported about the future Senate hearing, but omitted of telling that the reason for hearing was alleged discrimination.[401] Curious about the piece of news is that the information is from Associated Press, which was also used by The Washington Post – in WP's report, though, the reason for hearing is explicitly notified.[402] Mississippi Senator James O. Eastland (D) and Mississippi

[395] "Study Assails U.S. On Hurricane Aid: Neglect of Poor and Racial Discrimination Are Found" The New York Times, Nov. 25, 1969: 47. Read 3.2.2019.
[396] Ibid.
[397] Ibid.
[398] Ibid.
[399] NAACP is one of the most influential Civil Rights organizations in the U.S. history. It was established in 1909 and its principal goal was to end racial discrimination in all its forms. Dagbovie 2015, 48; Norton et al. 2015, 531.
[400] Howard & Zebrowski 2007, 221.
[401] "Camille aid hearings to be held" Hattiesburg American, Nov. 25, 1969: 7. Read 3.2.2019.
[402] "Bias Hearing Set On Storm Relief" The Washington Post, Nov. 22, 1969: B10. Read 3.2.2019.

Representative William M. Colmer (D) also denied all charges and assured they had not heard of any kind of discrimination before the report.[403]

In December 1969, more criticism came up, especially against the Emergency Council of the Governor Williams. The Council was largely criticised being all-white which was already arraigned by the report of AFSC and SRC in November. Moreover, the Council was excoriated for its use of the relief funds. The Washington Post noted on December 25, how there were plans for supersonic airport and monorail along the coast, when there were still thousands of homeless families.[404] On the first day of January 1970, it was announced that three African-American members were added to the council in response to a recommendation of the White House, but that seemed in many ways more forced than a benevolent gesture; especially, when the Senate hearing was meant to start in few days.[405]

The New York Times also wrote on January 1, 1970 that SBA denied the allegations of discrimination in its operations. The head of the SBA, Hilary Sandoval, insisted that only a few African American areas had been hit and most of the damages were along the immediate coast, of which properties were for the most part owned by whites.[406] Sandoval tried to demarcate the crisis into the immediate coast. However, as Brian Milstein has pointed: "…a crisis is always in the last instance a *political* phenomenon."[407] If we consider, for instance, the claim of the SBA about the magnitude of the destruction after Hurricane Camille, it is obvious that they tried to invoke the material conditions on the coast. Had Camille been a weak category 1 hurricane, the whole situation would have been very different, but the truth is that Camille was a category 5 knockout with a record high surge. According to Howard and Zebrowski, Camille's surge indeed pushed deep into the inland and covered many African American areas, for instance, in hard hit Biloxi, with layers of water as deep as 1.5

[403] "Charges of discrimination are denied" Hattiesburg American, Nov. 25, 1969: 7. Read 3.2.2019
[404] "Gulf Coast Rehabilitation After Camille Sharply Criticized" The Washington Post, Dec. 25, 1969: A3. Read 7.2.2019; Smith 2011, 46.
[405] "Mississippi Adds 3 Negroes to Storm Relief Unit" The New York Times, Jan. 1, 1970: 43. Read 7.2.2019; Howard & Zebrowski 2007, 221.
[406] "S.B.A. Insists Few Negro Areas Were Hit by Hurricane Camille" The New York Times, Jan. 1, 1970: 43. Read 7.2.2019.
[407] Emphasis in the original text. Milstein 2015, 2.

meters.[408] Sandoval's claim about the extent of Camille's destruction was underestimate which further politicised the situation.

The Senate Hearing on the issue started on January 7, 1970. The panel consisted of four Senators: Edmund S. Muskie, William B. Spong and Mike Gravel who were all democrats and Robert Dole from Republicans. Civil rights leaders reiterated the same claims again: African American victims had been excluded from the relief effort and discriminated by the Council of the Governor, the American Red Cross as well as the Small Business Administration. Similarly, Governor Williams, the ARC and the SBA denied all the allegations. Governor Williams reiterated the view of SBA that the hardest hit areas did not consist of areas where African American population lived.[409]

On the next day, the dispute started to center around the principle of giving the relief. For instance, ARC announced that their policy only allowed relief that was given on the base of the victims' pre-disaster income. Mark M. Smith has noted that a family with annual income of 39,000 dollars got a full bedroom outfit whereas a 3,000 dollar income family only received a mattress.[410] This was, according to Judith A. Howard and Ernest Zebrowski, consequence of the attempt to restore the *status quo ante*; it was just carried to ridiculous extreme in the case of Hurricane Camille.[411] Senator Muskie called this kind of principle "… a horrible policy."[412] He also pointed out that disasters are opportunities for change and to help people.[413]

This conveniently leads us to the core of the dispute; the conceptual struggle over equity. Deborah Stone has noted that "…equity is the goal for all sides in a distributive conflict…"[414] In the case of Hurricane Camille, there were two opposing conception of equity and no consensus in how the distribution of relief should have been arranged. Mississippi officials,

[408] Howard & Zebrowski 2007, 217–218.
[409] "Camille Relief Hearing Opens" The Washington Post, Jan. 8, 1970: A11. Read 7.2.2019.
[410] Smith 2011, 40.
[411] Howard & Zebrowski 2007, 217.
[412] "Muskie to Seek panel To Direct Disaster Aid" The Washington Post, Jan. 10, 1970: A4. Read 7.2.2019.
[413] Ibid.
[414] Stone 2002, 39.

such as Governor Williams and local chapter of the American Red Cross, saw that the main goal was to return *status quo ante*. This happened according to pre-existing economical standards but also according to the "racial etiquette". For instance, Red Cross had rebuild only the kind of home that was previously occupied by the victim.[415] The *status quo ante* of Mississippi officials, thus, included segregated social system. This is a version of rank-based distribution where the rank was based on the colour of the victim's skin.[416] The legitimacy of the policy was of course dubious since it violated the Civil Rights Act; the Title VI unequivocally prohibits discrimination in federally funded programs.[417]

The federal side of the conflict viewed the catastrophe as a chance to improve peoples' previous lot. They regarded that the relief should be given progressively, i.e. more for those who previously had less. The goal with this kind of distribution was to achieve an equal end result. That was outspokenly expressed by the panel and especially by Senator Muskie from Maine, who stated in the hearing: "Disaster is one side of the coin… …The other side is opportunity (to help) and there is opportunity here."[418] It is quite easy to see that this kind of policy would also desegregate the society in the State of Mississippi. This can be understood as a kind of an *affirmative action*, since African American victims would have got proportionally more relief.[419]

The configuration has also some features of legitimacy crisis, if we consider that the sides were representing the State of Mississippi and on the other side the Federal State in the form of Senate's panel. Michael Freeden has noted that "…if political systems habitually do not deliver what they are expected to deliver, their basic support begins to erode."[420] As we have already acknowledged regarding the school question, strict "racial etiquette" was still in effect in Mississippi at the time Hurricane Camille hit.[421] Although some discrimination had

[415] "Muskie to Seek Panel to Direct Disaster Aid" The Washington Post, Jan 10, 1970: A4. Read 9.2.2019.
[416] Stone 2002, 45–46.
[417] 78 Stat. 1964, 252–253. https://www.govinfo.gov/content/pkg/STATUTE-78/pdf/STATUTE-78-Pg241.pdf. Retrieved 9.2.2019.
[418] Ibid.
[419] Stone 2002, 46–47.
[420] Freeden 2017, 20.
[421] Smith 2011, 25.

been revoked in the years following the 1964 Civil Rights Act, President Nixon's Southern Strategy had slowed things down by emphasising state's rights.[422] White Mississippi leaders had also made the most of the use of words in the 1954 *Brown Decision,* which stated that school integration was to be delivered with all *deliberate* speed.[423] Charles Bolton had pointed out how many whites were "…zeroing in on the word "deliberate".[424] The Senate hearing as such questioned the ability of the State of Mississippi to operate non-discriminatory way after natural disaster.

But the panel noted also that the Federal State was unprepared to confront a major disaster in its aftermath.[425] The crisis, thus, reached the Federal Government, which was surprised off-guard. It had not been able to cope with sufficient measures after Camille, especially since the problems with equity in relief had come up. In this sense, both sides had been unable to deliver what they were expected to deliver. The panel, however, fell the bigger blame on the "Mississippi side". For instance, the panel did not chastise President Nixon for assigning the Governor's Emergency Council as the main channel for federal relief funds, even though the composition of the Council was known before the nomination.[426] All the fault was signalled to be Governor Williams', although the panel noted the need for a separate federal agency that would bear the main responsibility after any disaster.[427]

Considering that the main figure in the panel, Senator Muskie (from Maine), and Governor Williams were both democrats may also offer a glimpse of party-politics of the time. The 1968 Presidential election was signified by the collapse of the democratic vote in the southern states, including Mississippi.[428] Moreover, Nixon's Southern strategy had clearly attracted conservative southern whites who were disappointed to President Lyndon Johnson's support

[422] Smith 2011, 24–25.
[423] Bolton 2007, 68.
[424] Ibid.
[425] "U.S. Is Unprepared For Big Disasters" The Washington Post, Jan. 11, 1970: A13. Read 9.2.2019.
[426] "Mississippi Adds 3 Negroes to Storm Relief Unit" The New York Times, Jan. 1, 1970: 43. Read 10.2.2019
[427] The Camille disaster launched a development that later, in 1979, lead to the establishment of the Federal Emergency Management Agency. Howard & Zebrowski 2007, 215; "Muskie to Seek Panel to Direct Disaster Aid" The Washington Post, Jan 10, 1970: A4. Read 10.2.2019; "U.S. Is Unprepared For Big Disasters" The Washington Post, Jan. 11, 1970: A13. Read 10.2.2019.
[428] Rae 1994, 47.

for civil rights.[429] What we can see in the composition of a national democrat against a southern democrat is an echo of an evolution of the Democratic Party that renounced the segregationist image.[430]

Behind the Senate hearing was then more than just Hurricane Camille. We have clearly seen how the problem regarding the racial discrimination was not only a black-and-white -issue: on a background there was a political and conceptual struggle of equity which was also connected to the goal of bouncing back after the crisis Camille had instigated. The role of the Hurricane, however, should not be undervalued. Camille highlighted the segregation in the southern U.S. in particular way. The storm in a sense disrobed the society and revealed the depth of the political conflict pestering the United States of the late 1960s; that is, racial discrimination. The crisis in the wake of Hurricane Camille laid the normal functions of the society bare and highlighted the political problems of this normativity regarding the new political climate following the Civil Rights Act of 1964. Camille consequently connected to a network of crises and made societal problems further visible. This is, according to Brian Milstein, one trait of crises as he notes that "…crises can be indicative of deeper pathologies in the structure of society…"[431] Camille offered a surface to grasp for different actors to plead their cause and, thus, connected to the already existing problem of discrimination.

The debate that followed Hurricane Camille is once more a *hybrid event*. It is obvious that human operations did not create Camille and Camille did not create discrimination, but it is not self-evident whether the debate was more consequence of the storm or the underlying problem of discrimination. It highlights how the chains of events initiated by natural disasters are not mono-causal and furthermore points out that Actor-network -theory oriented analysis, which has adopted a viewpoint with no vertical hierarchies in human and non-human agency, can provide interesting and fresh insights to the research of environmental history as well as political history.

[429] Smith 2011, 24.
[430] Aistrup 1996, 9.
[431] Milstein 2015, 3.

5.2 Nature's Own October Surprise – Hurricanes and Presidential Elections

The relationship of the Presidents of the United States and land falling hurricanes started to intensify during the 1960s, when Presidents' inspection tours to the areas devastated by hurricanes became common practice. In the first half of the 20th century, presidents usually just expressed their condolences, but did not tour the area or meet the victims even after big and destructive hurricanes. This was partly due the fact that traveling to the area was simply too difficult: if relief effort struggled to get into the area, as was in the cases of Galveston Hurricane in 1900 or after the Great Miami Hurricane in 1926, it was pointless to think that President would make it any easier. On the other hand, as mentioned in subchapter 4.1, government started to take profound role in the disaster relief and mitigation only after the 1950s.[432]

In the 1960s, moving was quicker and aeroplanes as well as helicopters allowed presidents to inspect the areas without landing. Many presidents, however, did not downrightly hurry to the catastrophe area. For instance, President Nixon sent his Vice President Spiro Agnew to Mississippi in 1969 after Hurricane Camille, before he briefly visited the area himself several days after the storm. This, however, did not raise any critique towards the President, and it seems that in the 1960s people did not even expect the president to visit catastrophe areas immediately.

On the other hand, there is significant variation in different presidents' actions depending on the year of the storm. For example, Nixon reacted to the devastation of Hurricane Agnes in 1972 in very different manner than he had reacted to Camille three years earlier. In the same way there is a stark difference in the actions of President George H. W. Bush (Bush Sr. hereafter) if we compare Hurricane Hugo in 1989 and Hurricane Andrew in 1992. Hurricane Charley that hit in East coast of Florida in 2004 is another interesting case, since then incumbent President George W. Bush (Bush Jr, hereafter) was heavily compared to his father

[432] Platt 1999, 2.

Bush Sr., who was strongly criticised in 1992 during the aftercare of Hurricane Andrew. In the United States, 1972, 1992 as well as 2004 were presidential election years. Contending candidates running for Presidency similarly reacted to the storms in different ways which sometimes gave hurricanes political qualities. On the other hand, hurricanes offered opportunities and grist for political debates and sometimes even forced, at least the incumbent candidate, to give comments on the situation.

The political impact of hurricanes, let alone their impact on presidential elections have been studied very little, if at all. David Twigg has noted this regarding hurricane Andrew in his book *Politics of Disaster: Tracking the Impact of Hurricane Andrew*, but the observation holds for almost all other hurricanes as well, excluding, without surprise, Hurricane Katrina (2005).[433] The reason for this is most likely that hurricanes never ascended into a major theme in any elections. Moreover, many studies concentrate on the bigger, national issues that ultimately settled the election results. However, the significance of hurricanes in certain presidential elections have been greater than it first seems. For example, in 1992, hurricane Andrew substantially changed the dynamics of the presidential elections in the State of Florida, a well-known swing state which 25 electors were seen crucial, especially for the then incumbent President Bush Sr.[434] This subchapter explores the relationship of hurricanes and the Presidential Elections of the United States focusing on three different cases, Hurricane Agnes and elections of 1972, Hurricane Andrew and elections of 1992 together with Hurricane Charley and elections of 2004.

5.1.1 Richard Nixon and Hurricane Agnes

As noted regarding the scientific discourses and the weathermen, Hurricane Agnes had two faces: on the one hand it was a weak on, hardly reaching even the category 1 hurricane status,

[433] Twigg 2017, xiii.
[434] ”Florida Emerges As Crucial State In the Campaign” The New York Times, Sep. 17, 1992: A1. Read 31.12.2018.

while on the other, it nevertheless claimed some 120 lives by causing extreme flooding in the North-East states of the USA. The most severe destruction was confronted along the Susquehanna River in Pennsylvania and especially in the town of Wilkes-Barre. As such, Agnes is a prime example how one does not need a category 5 hurricane to cause massive devastation and great amount of deaths or to stir up long lasting political disputes.

President Nixon made his first visit to Pennsylvania on June 24, viewing damages in the state capital Harrisburg. This happened only two days after Agnes, now resolved to a tropical storm, had dumped torrential rains reaching locally almost 50 cm.[435] Comparing Nixon's actions in 1972 to his actions in 1969, when Hurricane Camille had devastated the coast of Mississippi, a clear difference can be seen. In 1969, Nixon first sent his Vice-President, Spiro Agnew to view damages and briefly visited the area himself two weeks later, when he was returning from California to Washington. It seems quite clear that Camille was not a big enough reason for relatively freshly elected president to stop his month long working vacation.[436]

This is the first hint that tells us something was different in 1972. The election campaigning, however, started only later, when signs of problems in federal disaster aid started to came up in late July 1972. The New York Times wrote on July 30, how thousands of peoples were still without even temporary shelter – a month after the worst of the flooding had ended.[437] As the disturbed messages of slow relief continued, President Nixon sent his Secretary of Housing and Urban Development (HUD secretary) George Romney to inspect the situation.[438]

Secretary Romney, however, did not manage very well during his visit to Wilkes-Barre on August 9. 1972. He drifted into an open argument and shouting competition in a press conference with the Governor of Pennsylvania, Milton Shapp (D) and a group of protestors,

[435] Barnes 1998, 240; Longshore 2008, 2–3.
[436] "President Returns To Capital Today" The New York Times, Sep. 8, 1969: 6. Read 31.12.2018.
[437] "Wilkes-Barre Dazed a Month after Flood" The New York Times, July 30, 1972: 1. Read 31.12.2018.
[438] "Romney Visits Flood-Ravaged Areas" The Washington Post, Aug. 9, 1972: A8. Read 31.12.2018.

who came to give complaints about the actions of the Government.[439] Romney failed to show any compassion and according to the Washington Post, had fiercely shouted with a red face.[440] A day later he claimed that Governor Shapp had organised the whole episode in the press conference and accused Shapp of "'…making a political statement…'"[441] Shapp denied everything.[442]

Without taking a stand on Romney's accusations, the fact that a Democratic Governor and Republican HUD secretary ended up having an open argument about a very politically sensitive subject on a year of Presidential Elections should raise interest. It can be speculated that Romney was sensitive to criticism of the Government because of the upcoming elections. Even though it was few days later revealed that Romney had some disputes with the President himself about the relief and number of staff in his department, which might explain Romney's unconventional conduct, his actions gave an excellent opportunity for Nixon's challenger in the election, Senator George McGovern (D) to openly attack the Nixon administration in an aim to gain benefit in the elections.[443]

This is exactly what Senator McGovern did. A fortnight after the "Romney incident", McGovern went to visit Wilkes-Barre. McGovern tried to parade the slow relief and Romney's outburst as sings of the inability of the Nixon Government. McGovern also made sure people noticed that Nixon himself had not visited Wilkes-Barre, but only took a few-hour helicopter tour in the area.[444] On August 29, McGovern sniped Nixon by saying that "It's all well and good for President Nixon to go to Moscow and Peking… …but it wouldn't hurt for him to visit Wilkes-Barre…"[445]

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[439] "Romney, Angry Flood Victims Tangle" The Washington Post, Aug. 10, 1972: A11. Read 31.12.2018.
[440] Ibid.
[441] "Shapp Staged Protest in Pa., Romney Claims" The Washington Post, Aug. 11, 1972: A2. Read 31.12.2018.
[442] ibid.
[443] "Romney's Complaint Revealed" The Washington Post, Aug. 13, 1972: A1. Read 2.1.2019.
[444] "U.S. Aide Speed Flood Relief As Aged Await Autumn's Chill" the New York Times, Aug. 23, 1972: 82. Read 2.1.2019
[445] "McGovern Would 'Welcome' GAO Audit of His Finances" The Washington Post, Aug. 29, 1972:A6. Read 2.1.2019.

As a strong adversary of the Vietnam War, McGovern also drew analogies between the situation in Pennsylvania and the war in Vietnam by saying: "I imagine you feel almost like you've been invaded by a foreign army with this destruction…"[446] Vietnam War was the first "television war" and imagery from Vietnam could be seen by anyone who owned a television.[447] This highlights the ongoing process of mediatization and the extent it already advanced; the progress had been fast, not more than 20 years ago in 1950, only 9 % of the households had television. The number in 1972 was more than 90 %.[448] Television did not just enable beaming of war images, but images from flood stricken areas as well. McGovern took advantage of the extended means of communications and interwove the war and Hurricane Agnes as parts of his election campaign and the message was clear: Nixon was unable to handle crises whether they were domestic or abroad. Similar remarks were made also in 1992, when then incumbent President George H. W. Bush's ability to handle domestic crisis after Hurricane Andrew was likened to the Gulf War. Here the mediatization presents itself as a kind of a meta-process helping us "…to think of specific events and developments as belonging together, as each one takes place in specific field of culture and society and then affects many other fields.", meaning here that Hurricane Agnes, the Vietnam War and Presidential election of 1972 became intertwined.[449]

Nixon himself did not comment McGovern's claims in any way. This might have been a smart move since it seems that the anger of the flood victims fall upon HUD Secretary Romney and not Nixon.[450] One irritated resident from Wilkes-Barre lashed Romney stating: "'For Romney to come in here with his tie and his shined shoes and walk around for 45 minutes and say, 'I know what it's all about,' I think he made an ass of himself."[451] After the "Romney incident", Nixon had also appointed Frank Carlucci to the head of the federal relief effort. On September 9, WP reported that Carlucci had managed relatively well in a hard

[446] "Mc Govern Talks to Discontented Flood Victims in Pennsylvania" The New York Times, Aug 22, 1972: 37. Read 2.1.2019; Norton et al. 2014, 806–807
[447] Norton et al. 2014, 800; Holmila & Roitto 2018, 247.
[448] Teague & Gallicchio 2017, 33.
[449] Krotz 2009, 25.
[450] "Mc Govern Talks to Discontented Flood Victims in Pennsylvania" The New York Times, Aug 22, 1972: 37. Read 2.1.2019.
[451] Ibid.

situation and contrived to speed up the flow of help.[452] Nixon though reacted to the situation by making a surprise visit in Wilkes-Barre on September 9, but even then he did not mention McGovern or the elections in anyway. Nixon made a stark contrast to McGovern with his silence about the election. McGovern stood out as an arrogant opportunist who did not shirk dubious actions. Paradoxically, the latter description could have been a portrait of Nixon himself, as the Watergate-scandal later showed. However, at that moment, Nixon read the situation well and did not say anything.

Overall, the situation did not cause extensive problems for Nixon, since the polls indicated a massive lead for him. For example, polls in August foretold some 30-40 % of democrat's votes for Nixon.[453] Nixon eventually did score a landslide victory winning even the traditionally strongly democratic southern states, thanks to his Southern Strategy that attracted white southerners.[454] McGovern's decision to use the difficult situation in Pennsylvania as a political weapon in the Presidential elections might first seem an expedient way to get votes. However, a closer analysis reveals the risks in it.

At the end, it is hard to say if McGovern's actions eventually made harm to him, but it seems at least, that Nixon did not suffer any harm from the Agnes; Nixon cleared Pennsylvania with great majority, and even the Luzerne County where the city of Wilkes-Barre is situated voted for Nixon's favour.[455] While it is difficult to conclude why Nixon did well in Luzerne County, one possibility is that Romney worked as a lightning rod for Nixon's campaign sparring Nixon from the anger of flood victims. At the same time, McGovern's actions might have cost him in popularity.

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[452] "The Lingering Legacy of Agnes" The Washington Post, Sep. 9, 1972: A18. Read 2.1.2019.
[453] "Two Surveys Show Nixon Getting 30-40% of Democrats' Votes" The New York Times, Aug. 20, 1972: 52. Read 2.1.2019.
[454] Nixon's strategy consisted of pragmatic moves to appeal for conservative southern voters. For instance, Nixon's nominees to the Supreme Court were two southerners, of which one was a segregationist. Charles Bolton has noted in his book *Hardest deal of All: The Battle Over School Integration in Mississippi 1870–1980* that Nixon probably was not a downright segregationist, but he was impudent enough to drive dubious political strategies in his thirst for power, which was clearly revealed later during the Watergate scandal. Bolton 2007, 108; Smith 2011, 24; Norton et al. 2015, 806–807.
[455] Leip, David. Dave Leip's Atlas of U.S. Presidential Elections. https://uselectionatlas.org/RESULTS/state.php?year=1972&fips=42&f=1&off=0&elect=0. Retrieved 5.1.2019.

5.1.2 George H. W. Bush and Hurricane Andrew

After Hurricane Agnes, quite few remarkable storms made a landfall on the years of Presidential Election. In 1980, Hurricane Allen hit into Texas, but it caused much less damage than feared. Despite being one of the strongest storm in the history, Allen used most of its energy before the landfall. Allen did not have any impact on the Presidential Elections of 1980 and the next storm to hit in the election year was Hurricane Andrew in August, 1992. Unlike Allen, Andrew wreaked unprecedented havoc and connected quickly to the upcoming elections.

This time the battle for presidency was fought between incumbent President George H. W. Bush (Bush Sr.) and Senator from Arkansas, William "Bill" Clinton. Unlike Nixon in 1972, Bush Sr. did not have a solid lead and his approval rate had plummeted. Right after the Operation Desert Storm in early March 1991, Bush's approval rate was 89 % but by the time Andrew hit Florida, it had dived to 39 %.[456] Similarly, election polls showed 15 % lead in favour of Clinton at the start of September 1992.[457] What makes Andrew significant relative to the elections is Florida's importance in the balance of power; as was noted earlier, Florida's 25 electoral votes were seen crucial especially for the then incumbent President Bush Sr.[458]

Bush Sr. indeed reacted swiftly to the catastrophe Andrew left in its wake. Andrew had barely crossed the Florida peninsula and entered the waters of the Gulf of Mexico, when President Bush Sr. arrived to Miami at the evening of August 25.[459] The press quickly took a note on the hastiness of the actions of the President and, for instance, WP noted that Bush toured the storm area immediately after Andrew had hit when in 1989 he waited eight days before

[456] Roper Center, George H. W. Bush Presidential Approval. https://presidential.roper.center/?fbclid=IwAR37E_XtN-JhqR1kzQhlvA5RUfZFtbhfYVY7yfdDyIBHmXNnbKLD6hRssQo. Retrieved 5.1.2019.
[457] Gallup Presidential Election Trial-Heat Trends, 1936–2008. https://news.gallup.com/poll/110548/gallup-presidential-election-trialheat-trends-19362004.aspx#4. Retrieved 5.1.2019.
[458] "Florida Emerges As Crucial State In the Campaign" The New York Times, Sep. 17, 1992: A1. Read 31.12.2018.
[459] Barnes 1998, 279–280.

visiting the storm area of Hurricane Hugo in South Carolina.[460] In Christian Science Monitor, visiting writer Steve Mullins announced that he was "'…flat-out amazed...'" since the President's response of the storm was much quicker in the case of Hurricane Andrew than Hurricane Hugo.[461] Bush Sr. was indeed heavily criticised in 1989 after Hurricane Hugo had caused significant destruction in South Carolina. The President commented the criticism by saying: "'I do know that there's been a critic or two. That's less than I would have expected.'"[462] The statement is easy to interpret to be somewhat contemptuous.

Behind Bush Sr.'s more rapid actions in 1992 is, in addition to the needs of election year, his experiences in 1989 since there is considerable reasons to believe that presidents know they are under the constant observation of the press and other media.[463] Jay Barnes has noted that albeit being brief, President Bush's visit to Miami managed to convey his sincerity and compassion to the victims of the storm.[464] Things, however, turned to the worse quite quickly and left Bush Sr. treading on a tightrope. Only a week later, national newspapers were full of news that dealt with the slow start of the relief effort. Allegedly, after his first trip to Miami, Bush Sr. did not do anything for 48 hours, before federal gears started to roll.[465]

The press quickly connected the relief effort and Bush's campaign together, thus, making Andrew just what the President did not want it to be: a political question.[466] The Washington Post, for example, announced how the candidate Bush and the President Bush "…kept stumbling over each other."[467] The press got more reasons for speculation when Bush Sr. made his second trip to the destruction area on September 1. Bush's visit got mixed acceptance also from the local people of Homestead. One resident stated to the NYT: "The

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[460] "Bush Arranges Return Today to Storm Scenes; President Holds Meetings on Relief Efforts" The Washington Post, Sep. 1, 1992: A10. Read 4.1.2019.
[461] "Bush struggles with disaster relief." The Christian Science Monitor, Sep. 8. 1992: 1. Read 4.1.2019.
[462] "President Inspects Hugo's Devastation" The Washington Post, Sep. 30, 1989: A8. Read 19.1.2019.
[463] Arnold 2004, 2.
[464] Barnes 1998, 280.
[465] "Perils of the Candidate-President; Past Week Demonstrated Both the Benefits and Pitfalls of Incumbency" The Washington Post, Aug. 30, 1992: A6. Read 5.1.2019.
[466] "Troops Arrive With Aid In Ravaged South Florida; 'Blame Game' Over Hurricane Effort Fades" The Washington Post, Aug. 29, 1992: A1. Read 5.1.2019.
[467] "Perils of the Candidate-President; Past Week Demonstrated Both the Benefits and Pitfalls of Incumbency" The Washington Post, Aug. 30, 1992: A6. Read 5.1.2019.

man was here, the man will be on TV, and the world will keep thinking about us."[468] Others were not so approving and as one victim noted: "…we don't need our morale boosted. We need our ceiling plugged."[469]

The notion of the victim that President Bush will be seen on TV is intriguing and is a sign of the *mediatization of politics*. In public view, the television is the major medium for politics. Television is beaming not only the picture of the President, but also pictures of the havoc, weary victims and the need for help to millions and millions of people. This created pressure for the President and other federal officials, as well as state officials to act. For the presidential campaign, television as a single technology can be seen as crucial and media, as a whole, similarly as an extremely meaningful actor. This all illustrates the quantitative side of the mediatization of politics; i.e. how the degree of the mediatized communication has increased and subjected the actors in the network to act in accordance of the media's logic.[470] This is particularly true in the U.S., where the media, especially the political press, has been dominated by commercial operators that can freely adopt standpoints and views regarding e.g. elections.[471]

President's campaign officials tried to reassure that Bush Sr. had acted in adequate way in the wake of the disaster and the President himself angrily denied any political connections between his actions in disaster relief and election campaign.[472] White House press secretary Marlin Fitzwater blamed in WP the media for second-guessing.[473] Hurricane Andrew forced Bush to be extra careful with his actions and sayings, but the same was true for his rival Bill Clinton too. Even though Clinton asked an inquiry over the slow start of the relief, he was

[468] "After Andrew, Another Unannounced Visitor: George Bush" The New York Times, Sep. 2, 1992: 16. Read 5.1.2019.
[469] Ibid.
[470] Hjarvard 2013, 44–45.
[471] Hjavard 2013, 45.
[472] "The Hurricane and Bush: an Opportunity Missed?" The New York Times, Aug. 29, 1992: 7. Read 7.1.2019; "President to View U.S. Relief Efforts in Storm-hit Areas: Trips are Planned Today" The New York Times, Sep. 1, 1992: A1. Read 7.1.2019.
[473] "Bush Arranges Return Today to Storm Scenes; President Holds Meetings on Relief Efforts" The Washington Post, Sep. 1, 1992: A10. Read 7.1.2019.

careful not to criticise Bush directly.[474] It was clear that openly using the devastation in Florida as a political cudgel would be seen as a highly insensitive action and thus would be counter-productive. In one of his campaign events Clinton contended himself only to state that "The people of Florida are the best judges of what has and hasn't been done."[475] Clinton acted in very different way than George McGovern had in 1972. Parenthetic factor may be the fact that Clinton had much more to lose, especially in Florida, than McGovern had in Pennsylvania in 1972. The mediatization of politics is again visible. Clinton had to be wary in his sayings because he knew his favour could be lost in a matter of the evening news. This hints that the politicians as well as the media had moved from the logic of the politics towards the (commercial) logic of the media.

The commercial logic of the media can be illustrated by comparing the elections in 1972 and in 1992. In 1972, the candidates themselves, mainly Senator McGovern, and Secretary Romney, who was not though running for presidency, in a sense, produced the content for the media themselves, whereas in 1992, when the candidates were much more careful, journalists produced the content by constantly displaying the connections of the relief and the elections, even when the candidates did not explicitly connect them. This is where the transformational power of the mediatization process comes visible: in 1972 media was reporting whereas in 1992 it was producing the content.[476] Journalists achieve some degree of political agency and can make contributions to the political agenda.[477] For instance, in 1992, the news value of the stories could be increased by connecting Hurricane Andrew and the election campaigns to each other which lead to the politicisation of the storm.

Thus it was almost impossible to avoid the connection between the election and the situation in Florida entirely. The best description of the situation is in the Washington Post's innocuous statement about Clinton's visit in Homestead FL: "Clinton… …*tried* to avoid any

[474] "Clinton Calls for an Inquiry Into Delays in Storm Relief" The New York Times, Aug. 30, 1992: 30. Read 7.1.2019.
[475] "U.S. to Pay Relief Cost In Florida; Bush Makes 2nd Trip to Areas Destroyed by Hurricane Andrew" The Washington Post, Sep. 2, 1992: A1. Read 7.1.2019.
[476] Hjarvard 2013, 48.
[477] Hjarvard 2013, 53.

suggestions that he was exploiting the disaster for political purposes."[478] Similarly it seems that also Bush Sr. officially denied any political connections, but used Andrew, at least subtly, for his campaign as was remarked by The New York Times: "He [Bush] mentions his concern for the hurricane victims virtually every campaign stop, managing even to work it into a speech on health care at a beer festival in Ohio on Saturday."[479] It is a matter of course that not reacting to the catastrophe would have been equally problematic than using it openly for political goals, but even then it seems that reassurances about non-political nature of aftercare of Hurricane Andrew were not entirely true.

The press continued to draw analogies, especially when both of the candidates refrained themselves from obvious mud-slinging regarding the relief effort of Hurricane Andrew. Much of the heat fell upon Bush Sr. For example, The New York Times appraised that voters would make comparison between Bush's domestic actions and his actions in international arena and as Michael Wines wrote in the same article: "…voters will compare Desert Storm to Florida Storm, and find his domestic skills lacking.", referring to U.S's military campaign in Iraq.[480] In 1972 similar reference was made by McGovern, when he connected The Vietnam War and the situation in Wilkes-Barre, PA. The difference in 1992 is that because Clinton restrained himself of making straight references to the Operation Desert Storm, media took the initiative and created a news.

One reason for the politicisation of Hurricane Andrew was because the press questioned the candidate's disclaiming of the political connections in Andrew's relief effort. Indeed Andrew became political precisely because of the claims that election campaigns and the hurricane had nothing to do with each other, even regardless of the fact that neither Bush Sr. nor Clinton could choose where Andrew would hit or what kind of electoral system the United States have. It is noteworthy to see, however, that the connections between Presidential elections and hurricanes have arose in swing states, i.e. Pennsylvania in 1972 and Florida in 1992 and

[478] Writer's emphasis. "Clinton Surveys Storm Area: Rival Matches Bush's Promises" The Washington Post, Sep. 4, 1992: A18. Read 10.1.2019.
[479] "Bush Asks for $7.6 Billion To help Hurricane Victims" The New York Times, Sep. 9, 1992: A16. Read 10.1.2019.
[480] "The Hurricane and Bush: an Opportunity Missed?" The New York Times, Aug. 29, 1992: 7. Read 7.1.2019

in 2004. This means, as was noted earlier, that hurricanes are not just naked facts and their impact depends heavily on the decisions and actions made by earlier generations, perhaps a very long time ago, as we can see regarding the Presidential electoral system in U.S. and Andrew's impact on Bush's election campaign.

In addition to that, it is probable that the press was very interested in the question because Florida is a swing state. This notion is defended by the fact that the press concentrated heavily on the situation in Florida and did not tie Andrew and the elections together for the part of Louisiana, where Andrew made its second landfall on August 26. As it happens, Louisiana is not considered to be a swing state. In the standpoint of actor-network -theory, Andrew did not change the dynamics of the elections in Florida and in Louisiana in equal amount and consequently its significance as an actor in Louisiana is lesser than in Florida. A point for comparison is also the Presidential Election of 1980 and Hurricane Allen, which made a landfall into Texas that is not a swing state. Allen indeed was not in any significance regarding the elections, which further validates the notion that there is a considerable effect whether the storm hits into a swing state or not in the year of the Presidential Election. Furthermore, Andrew is a prime example of how a hurricane can be simultaneously material and dependent on cultural factors.

Finally, the major question remaining is how Andrew then influenced the election itself. It is well-known that the stagnating economy was the main election theme.[481] It seems, however, that Andrew had, especially for President Bush, an impact in Florida regarding the election. It is, as The Christian Science Monitor (CSM) wrote on September: "In an election year, for a president burdened with a reputation for not caring enough about the problems of ordinary Americans, meeting those public expectations is imperative."[482] Bush had acted somewhat actively right after Andrew had made its landfall, especially if compared to his response in 1989 after Hurricane Hugo. Hurricane Hugo was also the example Andrew was set against. The situation in Florida was still very chaotic in September and as CSM noted: "The political

[481] Norton et al. 2015, 852.
[482] "Bush Struggles With Disaster Relief: Administration cannot meet Florida's expectations after hurricane. The Christian Science Monitor, Sep. 8, 1992: 1. Read 10.1.2019.

fallout for President Bush is still an open question. His active response can probably neutralize the early complaints about [federal government's] slowness to react."[483]

CSM's estimate seemed to hit the mark. In the poll of The New York Times on September 17, 1992, 61 % of Floridians approved Bush's handling of the response to Hurricane Andrew, but 40 % of Floridians and 49 % of Dade County residents disapproved federal government's response.[484] This hints that the sharpest critique did not focus on Bush, but on other federal officials, such as the Federal Emergency Management Agency. In the election on November 3, 1992 President Bush won Florida's 25 electoral votes, but votes in Dade County went to democratic candidate first time since 1976, when Jimmy Carter won there.[485] It is hard to say if Andrew had influence on people's voting behaviour in the Dade County, and it should be remembered that South Florida has been a strong area for democrats in an otherwise republican state.[486]

Nevertheless, ANT oriented analysis helps us to see, how nature and culture overlapped in the Presidential Election of 1992. Andrew's agency is based on the notion that it was capable of influencing other actor's affairs.[487] Andrew clearly changed the dynamics of the elections on the part of Florida and both candidates were forced to act promptly in appropriate way. It is, however, not obvious, which was the primary driving force, the storm as physical phenomenon or needs of the electoral system, since Hurricane Andrew, just as the upcoming election required action. This configuration also admit of a speculation if the politicisation of hurricanes (and natural phenomena more generally) is partly a structural feature ensuing from the electoral system where some states have more power than others. Eventually, there is no single unambiguous parenthetic factor. Hurricane Andrew represents itself strongly as a hybrid event and a splendid example of situation how ANT blurs the boundaries of nature

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[483] "Hurricane" The Christian Science Monitor, Sep. 8, 1992: 4. Read 10.1.2019.
[484] "Florida Emerges as Crucial Arena for Bush as Economy, Not Hurricane, Is Issue" The New York Times, Sep. 17, 1992: A20. Read 10.1.2019.
[485] Leip, David. *Dave Leip's Atlas of U.S. Presidential Elections*. https://uselectionatlas.org/RESULTS/datagraph.php?year=1992&fips=12&f=0&off=0&elect=0; https://uselectionatlas.org/RESULTS/state.php?year=1992&fips=12&off=0&elect=0&f=0. Read 10.1.2019.
[486] Twigg 2012, 79.
[487] Latour 2007, 71.

and culture, as well as how there are inseparable connections between material and abstract worlds.

5.1.3 George W. Bush and the Wrath of the 2004 Hurricane Season

The 2004 hurricane season was hyperactive. The United States witnessed five hurricane landfalls of which four battered Florida.[488] The season was started by Hurricane Charley, which is perhaps best remembered of its unexpected route and rapid intensification. Charley intensified from category 2 hurricane to category 4 in just few hours and the shift from category 3 to category 4 took only 3 hours.[489] On the top of that, Charley made last-minute odd turn and made its landfall in Punta Gorda in the West Coast of Florida on August 13. This was 100 km south from Tampa, where the landfall was expected to happen. Even though Punta Gorda was well within the hurricane warning zone, many residents were taken by surprise, which raised some criticism towards the weather officials.[490]

According to the Tropical Cyclone Report of the National Hurricane Center, Charley left catastrophic wind damage at its wake and people started to call Florida The Plywood State instead of the traditional Sunshine State.[491] Charley, however, was just overture of the torment. It was followed by three other land falling storms: Hurricane Frances (25 Aug–8 Sep), Hurricane Ivan (2–24 Sep) and Hurricane Jeanne (13–28 Sep).[492]

It was once again a year of Presidential Election in the United States 2004. By the time Hurricane Charley hit in the mid-August, rivalling candidates, incumbent President George

[488] Hurricane Alex (31.7.2004–6.8.2004) came as close as under ten miles from the coast, but never crossed to the land making eyewall passage still causing hurricane-force winds on the land area. Franklin et al. 2005, 981; Subject: E23) What is the complete list of continental U.S. landfalling hurricanes? Contributed by Chris Landsea (NHC). http://www.aoml.noaa.gov/hrd/tcfaq/E23.html. Read 18.1.2019.
[489] Pasch, Brown & Blake 2004/2011, 2.
[490] Fitzpatrick 2006, 45.
[491] Franklin et al. 2006, 981.
[492] Pasch, Brown & Blake 2004/2011, 1; Franklin et al. 2006, 981–982.

W. Bush (R) (Bush Jr.) and Senator John Kerry (D) were practically tied in the polls.[493] This of course meant that the significance of swing states was again high. As already noted, Hurricane Andrew had played more or less significant a role in the elections of the 1992 for the part of Florida. The legacy of Andrew influenced the elections on the part of Florida also in 2004 raising Charley, Frances, Ivan and Jeanne into the topics relating to the candidates' actions.

The speculation in the press started immediately after Charley's landfall. On August 15, two days after Charley's landfall, The New York Times (NYT) highlighted how Bush Jr.'s father, Bush Sr. had been criticised for slow start of the relief.[494] Bush Jr. declared he would visit the storm ravaged area right away.[495] Bush Jr.'s rival, Senator Kerry instead announced that he would not visit the area immediately to avoid diverting attention from the relief effort itself.[496] This reveals the "double burden" of Bush Jr.: Not only was he put against Kerry but also against his father's actions in 1992. It was of course a pure coincidence that the circumstances were as they were, but comparison was probably impossible to avoid, since the situation was, as NYT noted: "…another storm, another Bush, another campaign."[497]

NYT was quite certain that Bush Jr. was "Seemingly determined to avoid the sort of political mistakes that haunted his father…"[498] The Washington Post even purported that the slow relief had cost votes for Bush Sr. in 1992.[499] This claim is hard to prove and on the strength of the polls 1992, the criticism fell more upon the Federal Emergency Management Agency and State Officials than Bush Sr.[500] Moreover, it should be remembered that Bush Sr. won

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[493] Gallup Presidential Election Trial-Heat Trends, 1936–2008. https://news.gallup.com/poll/110548/gallup-presidential-election-trialheat-trends-19362004.aspx#4. Retrieved 8.5.2019.
[494] "Florida Digs Out as Mighty Storm Rips Northward" The New York Times, Aug. 15, 2004: N1. Read 17.1.2019.
[495] Ibid.
[496] "Charley Leaves at Least 13 Dead; Thousands Homeless In Florida" The Washington Post, Aug. 15, 2004: A01. Read 17.1.2019.
[497] "President's Response to Hurricane Carries Reminders of Political Fallout for Past Candidates", The New York Times, Aug, 15. 2004: N24. Read 17.1.2019.
[498] Ibid.
[499] "Charley Leaves at Least 13 Dead; Thousands Homeless In Florida" The Washington Post, Aug. 15, 2004: A01. Read 17.1.2019.
[500] "Florida Emerges as Crucial Arena for Bush as Economy, Not Hurricane, Is Issue" The New York Times, Sep. 17, 1992: A20. Read 18.1.2019.

the electoral vote of Florida in 1992 although the margin in popular vote was very tight.[501] The fact that NYT lifted the 1992 election to a point of comparison to the election of 2004, tells about the mediatization of the politics. NYT actively created the news, especially because their claim about the 1992 election was not entirely accurate.

Bush Jr. reacted to these speculations quite differently than his dad had twelve years earlier for he made a forthright statement where he promised that help was on its way, but the scope of destruction was so massive that it would take a while to rebuild.[502] He also passed off the comparisons between him and his dad as well as the speculations of the election's influence to the relief effort by noting: "'that was then, this is now'", and "'if I didn't come, they would have said, 'He should have been here more rapidly…'"[503]

Both candidates pursued giving a message that the devastation in Florida and the misery of the hurricane victims would not be used to gain benefit in upcoming elections, but it is obvious that the message included more and as such, the situation bears a resemblance to the one in 1992 when non-political statements had hidden political messages. Kerry's decision not to visit the storm area immediately to avoid distractions in relief effort and Bush Jr.'s swift actions both delivered a picture of upright persons who are capable for the office of President. In Kerry's case, for instance, it cannot be ruled out that this was exactly what he and his campaign staff tried to convey, especially when a crucial part of political reasoning is to "…get other to see a situation as one thing rather than another."[504] Thus hurricanes not only restricted candidates of doing or saying something but also gave opportunities to act in a way that benefited them without being outright scavenging favour from the debris. Both

[501] Leip, David. Dave Leip's Atlas of U.S. Presidential Elections. https://uselectionatlas.org/RESULTS/state.php?year=1992&fips=12&f=1&off=0&elect=0. Retrieved 18.1.2019.
[502] "Florida Assesses Damage in Wake of Deadly Storm" The New York Times, Aug. 16, 2004: A1. Read 18.1.2019.
[503] "President Vows Rapid Relief in Fla.; Bush Brothers Survey Damage" The Washington Post, Aug. 16, 2004: A10. Read 18.1.2019.
[504] Stone 2002, 9.

candidates thus operated skilfully in mediatized environment where media had a lots of influence on public opinion.[505]

The effects of these actions, however, are not obviously predictable since there are many other actors influencing the outcomes. In late September, after Charley, Frances and Ivan had already made their landfalls and Jeanne was only knocking the door, some strategists estimated that Kerry's decision to stay away from Florida apart from brief visit in the storm area had cost him in visibility. On the other hand, few strategists suspected that consecutive hurricanes might have shifted peoples' focus away when "…Mr. Bush was basking in the glow of the Republican National Convention."[506] It seems also that in 2004 the press did not put as much pressure on the candidates as it put in 1992 during the Andrew catastrophe. The reason is probably smoother relief effort in 2004: three days after Charley's landfall the Florida National Guard estimated they were up to two weeks ahead of the 1992 effort.[507]

Nonetheless, the press speculated with the possibility that the upcoming elections spurred Bush Jr.'s actions. Here, the infamous 2005 Hurricane Katrina is suitable point of comparison. As is known, Katrina left a staggering cesspool of doom and dismay in its wake. John Wills has estimated that in New Orleans, perhaps as much as 200,000 car wrecks waited to be removed and different toxins such as DDT, lead and petroleum contaminated waters and soil.[508] This combined to the salty and putrid floodwater; the whole city became a massive health-risk.[509] Even though Katrina's scope of destruction fairly exceeds the overall damage caused by Charley, Frances, Ivan and Jeanne (Katrina ~$105 billion vs. Charley, Frances, Ivan and Jeanne combined ~$53.6 billion in 2010 dollars)[510], we can assume that the base level of expectations for the President's responding was same in 2004 and in 2005. Thus, we can compare Bush Jr.'s actions in both years and evaluate if there is difference.

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[505] Hjarvard 2013, 59.
[506] "For Florida, the Campaigning Just Has to Wait" The New York Times, Sep. 25, 2004: A1. Read 19.1.2004.
[507] "Florida and President Assess Damage From the Deadly Storm" The New York Times, Aug. 16, 2004: A12. Read 19.1.2019.
[508] Wills 2013, 171.
[509] Ibid.
[510] Blake et al. 2011, 11.

In political sense, the major difference between 2004 and 2005 is that in 2005, Bush Jr. was already elected for his second term and could not run for presidency in the next elections.[511] It is well documented that the Federal government got caught in the eye of the storm regarding the relief effort of Hurricane Katrina.[512] Bush Jr. also got his share of the criticism. For instance, in 2004, Bush Jr. visited the storm area after Hurricane Charley a day and a half after the landfall, but, as Charles Pouncy has noted, on a third day after Katrina's landfall in 2005, the President was playing golf.[513] This was noted by The Washington Post (WP) that pointed out how Bush Jr.'s response to the 2004 four hurricanes in Florida had been quick.[514] In the same piece of news, Bush Jr. was also, once again, compared to his dad and aftercare of Hurricane Andrew in 1992.[515]

The criticism towards Bush Jr. was partly very harsh. The New York Times' editorial called Bush's speech on August 31, "…one of the worst speeches of his life…"[516] Sebastian Mallaby lashed Bush Jr. in his column in WP that "…he's lost his political nerve and all sense of the big picture."[517] The apoplexy of the public comes clear when we observe the date of Mallaby's column; it was published six days after Bush Jr. had personally taken all responsibility for the failed relief effort.[518] Bush had actually expressed his dissatisfaction with the results of federal aid already on September 2, but was careful not to criticise the effort itself.[519] Jon Meacham has written in his Pulitzer winning biography of Bush Sr., *Destiny and Power: The American Odyssey of George Herbert Walker Bush* that "The criticism enraged the former president."[520] According to Meacham, Bush Sr. wrote in a letter

[511] The ire caused by Bush probably broke out in the Midterm election of 2006, where Republicans suffered significant election defeat. It has been speculated that the relief effort of Hurricane Katrina and actions of President Bush Jr. had negative effect on the republicans.
[512] See for example. Brinkley 2007, Levitt & Whitaker 2009, Wills 2013.
[513] Pouncy 2009, 69.
[514] "Bush Cuts Texas Vacation Short to Oversee Hurricane Response" The Washington Post, Aug. 31, 2005: A16. Read 20.1.2019.
[515] Ibid.
[516] "Waiting for a Leader" The New York Times, Sep. 1, 2005: A22. Read 20.1.2019.
[517] "'Whatever It Costs'" The Washington Post, Sep. 19, 2005: A17. Read 20.1.2019.
[518] "Bush Takes Responsibility For Failures Of Response" The Washington Post, Sep. 14, 2005: A1. Read 20.1.2019.
[519] "In First Response to Crisis, Bush Strikes Off-Key Notes" The New York Times, Sep. 3, 2005: A14. Read 20.1.2019; "Promises by Bush Amid the Tears" The New York Times, Sep. 3, 2005: A1. Read 21.1.2019.
[520] Meacham 2015, 583.

to his friend Hugh Sidey: "'Now my own son is under this kind of blistering, mean-spirited attack…'", in reference to the criticism he had been himself under in 1992.[521]

We can ask if Bush Jr.'s confession of recognising the responsibility of failed relief effort has something to do with the fact that elections were behind and his approval rate had fallen under 50 %.[522] The scenario where Bush Jr. would have not taken any stand regarding the relief effort can be quite confidently ruled out as his position as a president would not have allowed it. It is also rather improbable that Bush would have gone as far as taking the full responsibility in 2004, considering the elections in that year, but in the same breath we can be quite sure that no president would be playing golf if a strong hurricane had hit a swing state in an election year. Nonetheless, the comparison between 2004 and 2005 does not enable peremptory conclusion about the influence of the elections to Bush Jr.'s actions in 2004, but with hindsight, we can assume that Bush Jr. was quite lucky Katrina hit in 2005 and not in 2004.

However, if we take the comparison to cover more storms in longer time period, the effect of the elections comes clearer. Considering how Nixon had to eventually react to Agnes, how starkly Bush Sr.'s actions differed in 1989 and 1992 and how Bush Jr. acted in 2004 and in 2005, we can see that presidents have generally acted more swiftly in election years than otherwise. As much as hurricanes changed the dynamics between the rivalling candidates, equally important is how media changed the relationship between the elections and hurricanes. Basically this means that alongside of the physical destruction, place (e.g. swing state or not) and time (e.g. election year or not) have significance in the course of the development of the situation.

As these three cases (Hurricane Agnes, Hurricane Andrew and Hurricane Charley) illustrate, the media's role transformed through the mediatization of politics. According to Stig Hjarvard, mediatization of the politics can be understood as a shift in the balance of power

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[521] Ibid.

[522] Roper Center, George W. Bush Presidential Approval. https://presidential.roper.center/viewer?P289NDMtVFdPJm89bnVsbC1BTEwmbz1udWxsLUFMTA. Retrieved 21.1.2019.

from the institution of politics to the media.[523] This was clearly visible in the actions of the candidates as they had to seek the balance between the connection of the hurricane and the election (media's *modus operandi)*, even when the politically most convenient settlement would have been the separation of the two issues. Thus, media's role as an actor is important alongside the hurricane and the candidates.

[523] Hjarvard 2013, 77.

6. Conclusion: From Context into the Limelight – Hurricanes as Actors

This master's thesis explored the agency in the relationship of hurricanes and society. One of the main themes of this study was to acknowledge the significance of both material and societal sides of hurricanes. A hypothesis was set, which claimed that hurricane incidents form *hybrid event,s* in which nature and culture enmesh in a way that makes the separation of the two impossible. The politicisation of hurricanes was studied bearing this hypothesis in mind. To answer these questions and to confirm the hypothesis, the *Actor-Network -theory* (ANT) was adopted as an approach. ANT can reveal the interconnectedness of nature and culture, because it accepts non-human agency. This forces the researcher to look beyond the actions of humans and see how, for instance, hurricanes affect societies more widely than just by causing extensive physical damage.

This study is divided into three different discursive themes, which are *scientific discourses* (Chapter three), *regulation discourses* (Chapter four) and *political discourses regarding institutions* (Chapter five). The hybrid event -hypothesis was visible in all three themes and can be thus regarded as verified. In all three themes, hurricanes and their material qualities formed complex relationships with the abstract levels of society. The significance of the media was also taken into account. However, it was found out to be more significant than originally expected. Media turned out to be one of the main factors in the politicisation of hurricanes. Media, and especially newspapers in this research, provided the platform for different debates and themes to confront. Moreover, in many cases the journalist were the key actors behind the events creating connections between hurricanes and, for instance, political operators and institutions. Thus journalist were substantially influencing the politicisation of different hurricanes.

Chapter three emphasised, how different storms create path dependency, which can be seen in the actions and behaviour of humans in the time of hurricane events. Thus, it is more than adequate to call the relationship of humans and hurricanes as *interaction*. Studying of

hurricanes by focusing on only one storm is problematic since people mould their conception of hurricanes in relation to their experiences of former storms. This was revealed through long term historical analysis. Thus, material factors, such as the average return period of storms in a specific area and the strength and intensity of previous storms, create path dependency which substantially affects how people will act and behave in the hurricane situation.

Alongside the material effects, the influence of the media transformed the conceptions of hurricanes. Media became an important actor because it could change the relationship of the public and weather scientists such as meteorologists. Media, most importantly the television as a single technology, helped the scientists to settle themselves on the same level with ordinary people. Scientific information was no longer unfathomable numerical data from the ivory tower. The better means of communication popularised the scientific information and helped the ordinary people to see that they could benefit from that information.

In chapter four we saw how hurricanes connected to a long intellectual historical progress regarding the regulation. This highlighted how hurricanes cannot be reduced into naked facts. As Yrjö Haila and Ville Lähde have put it: "…the gravity of the consequences of every natural disaster is essentially dependent on how environment has been shaped by human activity."[524] For example, the Constitution of the United States, written more than 200 years ago, have today a substantial significance to legislation regarding hurricanes through contemporary interpretations. ANT oriented analysis highlights the intermingled historical nature and relationship of land, property and hurricanes. As we saw regarding the property rights debates, the capacity of governments to act in the time of disasters is shaped by long intellectual historical development. Thus, one shared feature of politicised storms, such as Hurricane Agnes, the two Carolina Hurricanes Hugo and Floyd that brought destruction to the Southern East coast, Hurricane Andrew as well as Katrina, is how they were testing the basic structure of the society. Hereby, we can see how disasters are as much socially constructed, as they are immutable material realities.[525]. Little did the Founding Fathers know

[524] Haila & Lähde 2003, 9.
[525] Birkland 2006, 104.

when they formulated the Constitution and the Bill of Rights, that their legacy would last over centuries and have material consequences today.

Moreover, hurricanes had many consequences to institutional level of society as we saw in chapter five regarding, for instance, presidential election. Chapter five showed that hurricanes have been used as a political instruments. This was very apparent in 1969, when hurricane Camille ended up in the hub of political arm-wrestling regarding racial discrimination. The actor-network around Camille formed a nexus of different political concepts and agendas which could not have been possible without Camille's material impulse.

Chapter five also revealed that the influence of hurricanes to presidential elections can be partly a consequence of the structural factors of the institution of elections, i.e. the system where the power balance of the states is uneven. The analysis pointed that the effect of hurricanes is considerably more notable in swing states than in other states in the years of presidential elections. This was particularly apparent in 1992 regarding the Presidential election and Hurricane Andrew. 1972 Presidential Election and Hurricane Agnes represents one of the first instances of mediatization of politics. As for the press, elections are always an interesting event. In 1972 the candidates and other persons in administration created the drama themselves and the press did not have to put pressure on the candidates. It should be still understood that the media played an important role: McGovern would not have been able to capitalise on the imagery from Agnes and the Vietnam War without extended means of communication. Medias role grow considerably in later years as the analysis of Hurricane Andrew and Hurricane Charley showed.

En bloc, we found several different mechanisms that lead to the politicisation of hurricanes and ANT oriented analysis proved to be rather prolific. A parenthetic factor to all these mechanisms is that they are all corollaries of the entangling of environment and society. The conceptualising of hurricanes of course is not possible without the material phenomena, but we also learned that these conceptualisations are highly context bound. The agency of hurricanes should not be, however, undervalued in relation to the agency of humans. From the viewpoint of the ANT, hurricanes definitely are more than just context. Many hurricanes

changed the relationship of other actors, for instance, between legislators and estate owners or presidential candidates, and proved that material phenomena can have non-material effects.

This study could be extended by lengthening the timeframe and deepening the themes already in this thesis. As was mentioned, the role of the media was found to be greater than expected and, thus, putting more emphasis on the media would be sensible. For instance, considering the effects of wireless telegraph and radio in the first half of the 20th century from the viewpoint of mediatization and actor-network -theory could be fruitful. Moreover, there are some themes that the space and time did not allow to touch in this thesis. For instance, studying of resilience of society after a natural disaster and the role of the Governmental offices, such as the Federal Emergency Management Agency, fell outside of the scope of this study. These themes, however, would be interesting and in further research they should be considered. Perhaps adding other natural disasters, such as earthquakes, tornados and non-hurricane related floods to the comparison would be interesting and the relationship between different natural disasters as well as comparing the crises they inflict could provide new information about the intermingled nature of environment and society.

At the moment of writing this conclusion, the hurricane season of 2019 is lurking behind the door, only a half month. The second decade of the 21st century has been very active regarding hurricanes and several strong and costly storms have devastated the coast of the U.S. There are considerable reasons to believe that the high hurricane activity is continuing in the 2020s and the effects of climate change to extreme weather phenomena starts to become clearer, as we have enough data to prove some corollaries and correlations between, for instance, the global warming and hurricanes. Thus, the relationship of these phenomena and societies also gain relevance. The expertise of historians is key role in the research of this relationship in long historical scope.

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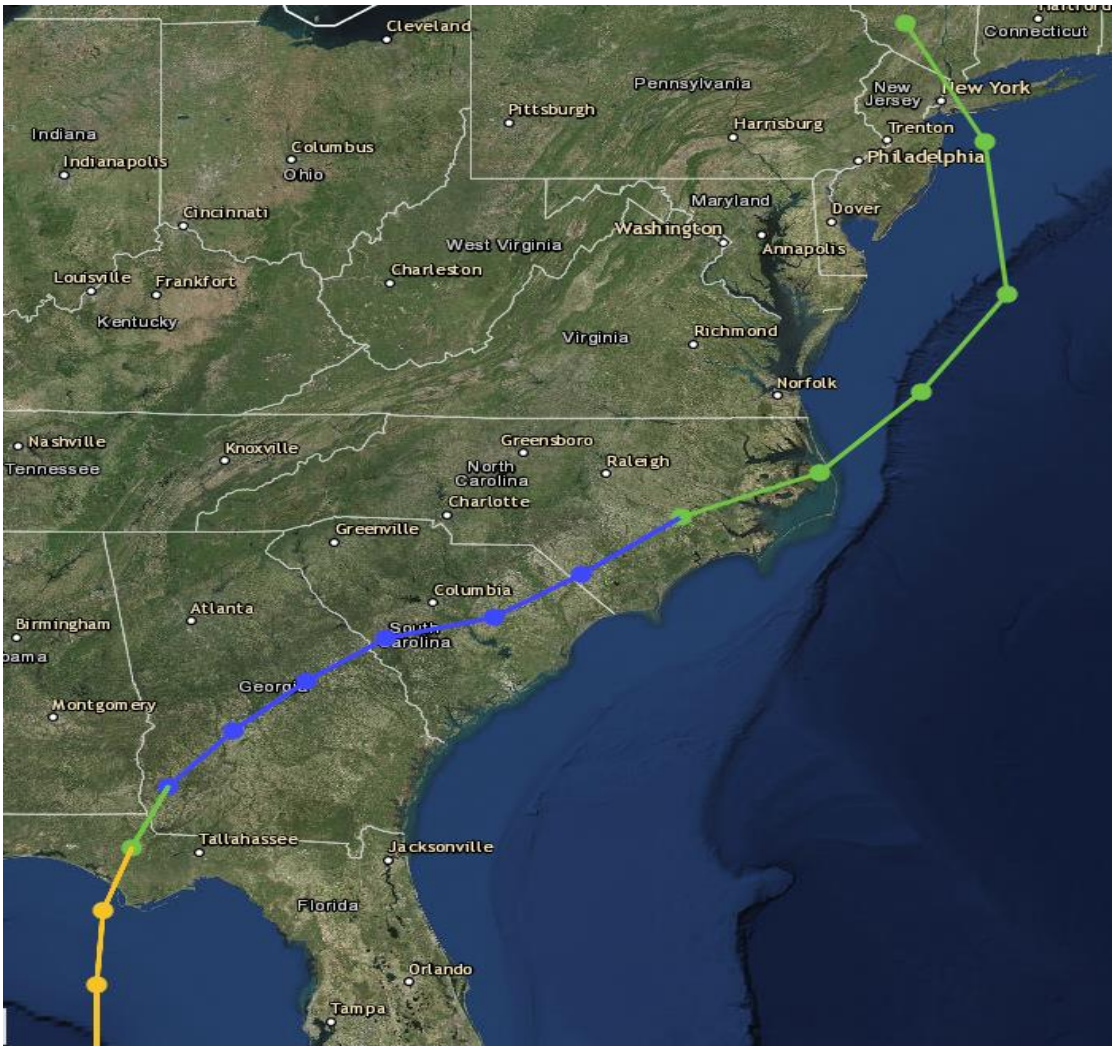
Appendix

This appendix provides the track maps of different hurricanes analysed in this study. The maps of different storms are organized alphabetically and not chronologically to facilitate the use of the appendix. Maps are only provided to the storms that are focused in the analysis and the overall amount of storms mentioned in this study is higher. The maps of this appendix are created with a web-tool provided by the National Oceanic and Atmospheric Administration (NOAA). The tool is found behind the following URL: https://coast.noaa.gov/hurricanes/. It can be accessed freely and interested readers can use it to track storms not covered here.

The track maps of this appendix are provided for the following storms:

Hurricane Agnes (1972)
Hurricane Alicia (1983)
Hurricane Andrew (1992)
Hurricane Camille (1969)
Hurricane Charley (2004)
Hurricane David (1979)
Hurricane Elena (1985)
Hurricane Floyd (1999)
Hurricane Frederic (1979)
Hurricane Hugo (1989)

Figure 1, Track Map of Hurricane Agnes (1972)



Legends

Colour of the track-line expresses the category of the storm in Saffir-Simpson -scale.

H5

H4

H3

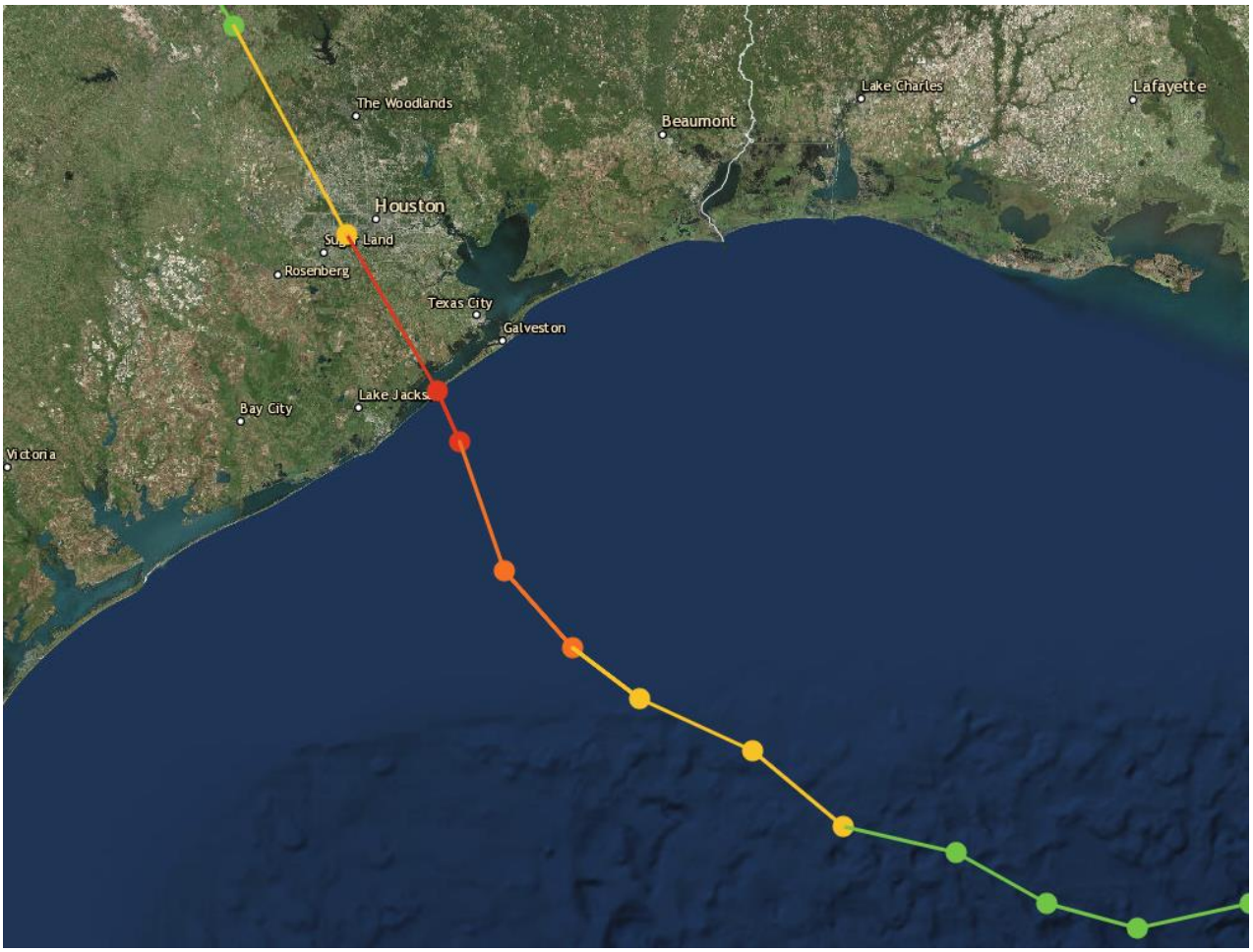
H2

H1

TS (Tropical storm)

TD (Tropical depression)

Figure 2, Track Map of Hurricane Alicia (1983)



Legends

Colour of the track-line expresses the category of the storm in Saffir-Simpson -scale.

H5

H4

H3

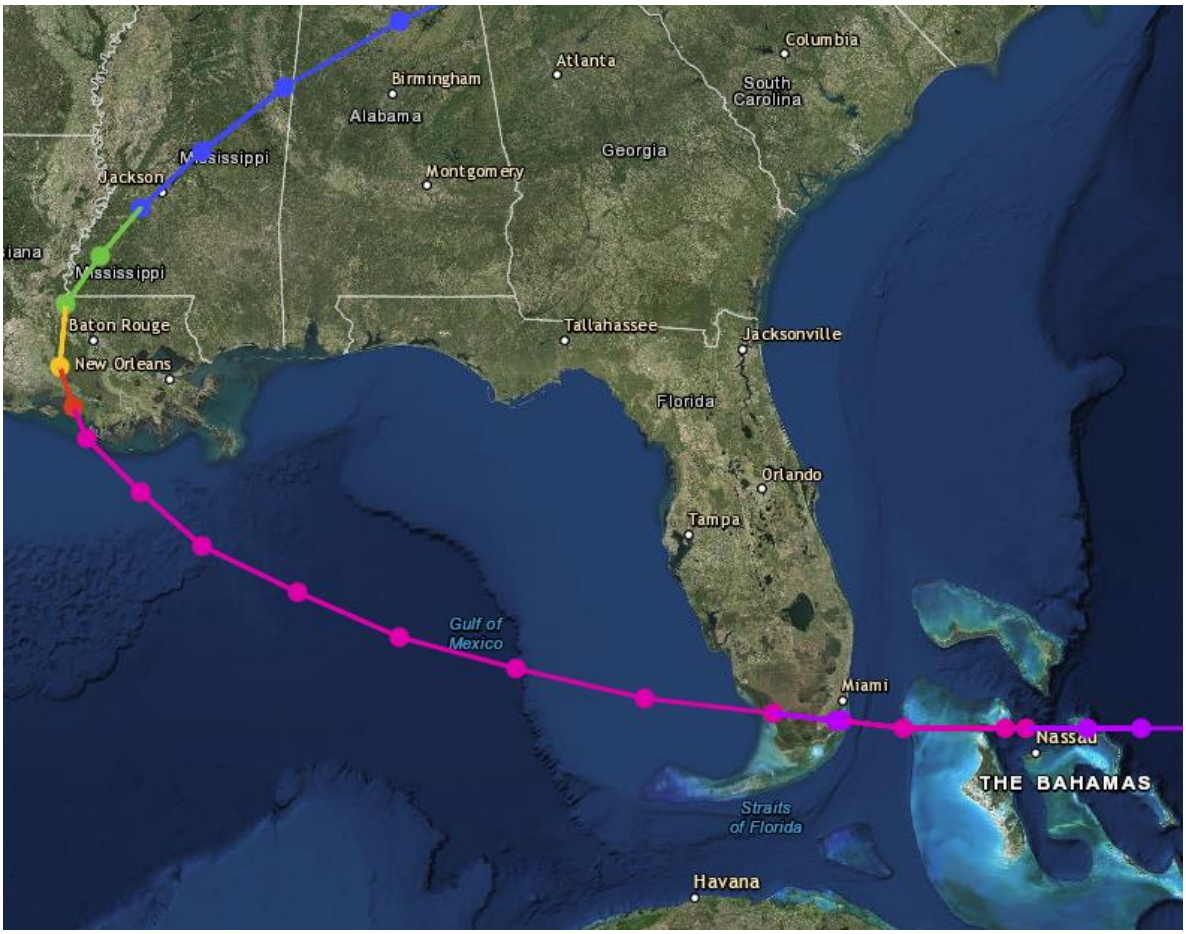
H2

H1

TS (Tropical storm)

TD (Tropical depression)

Figure 3, Track Map of Hurricane Andrew (1992)



Legends

Colour of the track-line expresses the category of the storm in Saffir-Simpson -scale.

H5

H4

H3

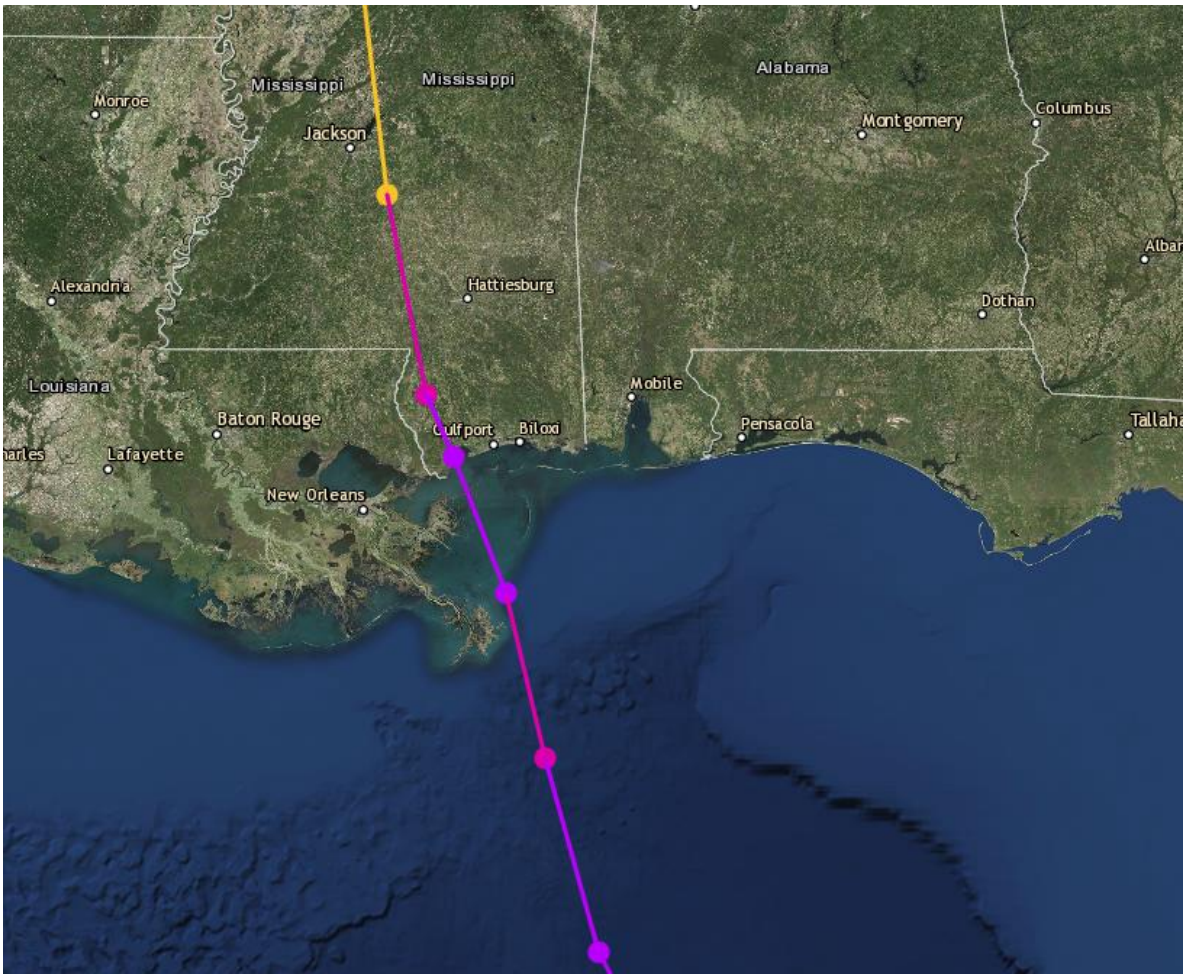
H2

H1

TS (Tropical storm)

TD (Tropical depression)

Figure 4, Track Map of Hurricane Camille (1969)



Legends

Colour of the track-line expresses the category of the storm in Saffir-Simpson -scale.

H5

H4

H3

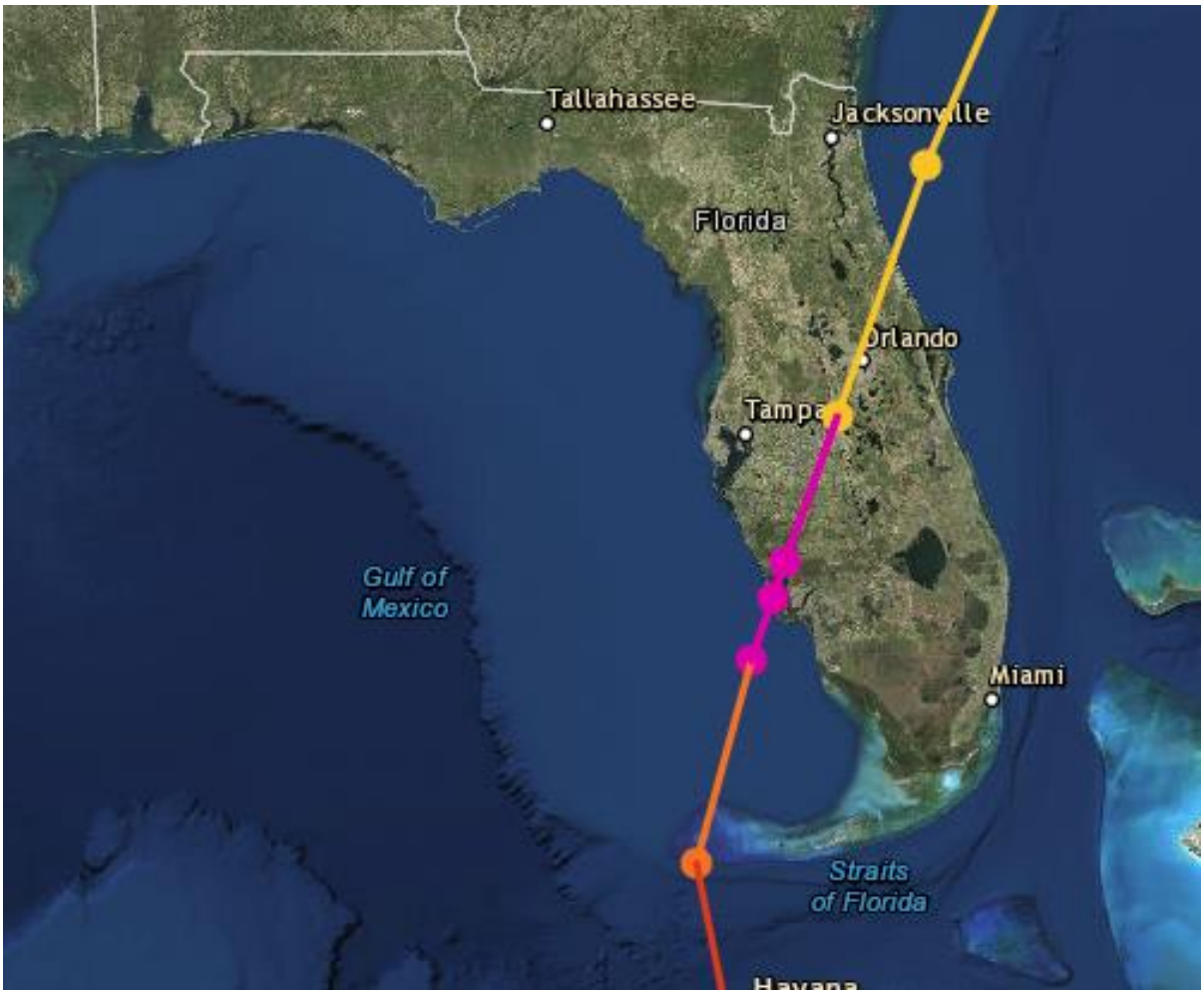
H2

H1

TS (Tropical storm)

TD (Tropical depression)

Figure 5, Track Map of Hurricane Charley (2004)



Legends

Colour of the track-line expresses the category of the storm in Saffir-Simpson -scale.

H5

H4

H3

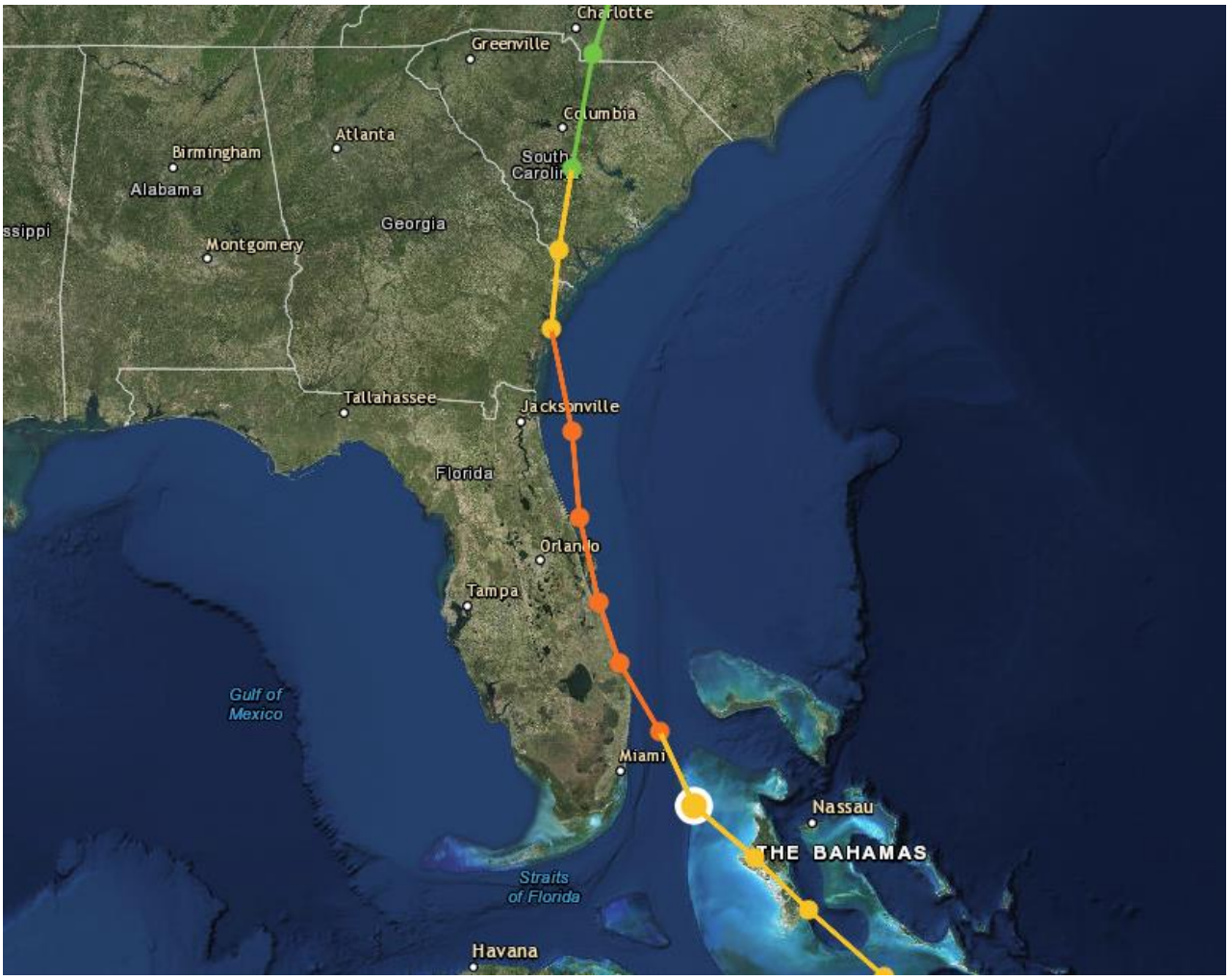
H2

H1

TS (Tropical storm)

TD (Tropical depression)

Figure 6, Track Map of Hurricane David (1979)



Legends

Colour of the track-line expresses the category of the storm in Saffir-Simpson -scale.

H5

H4

H3

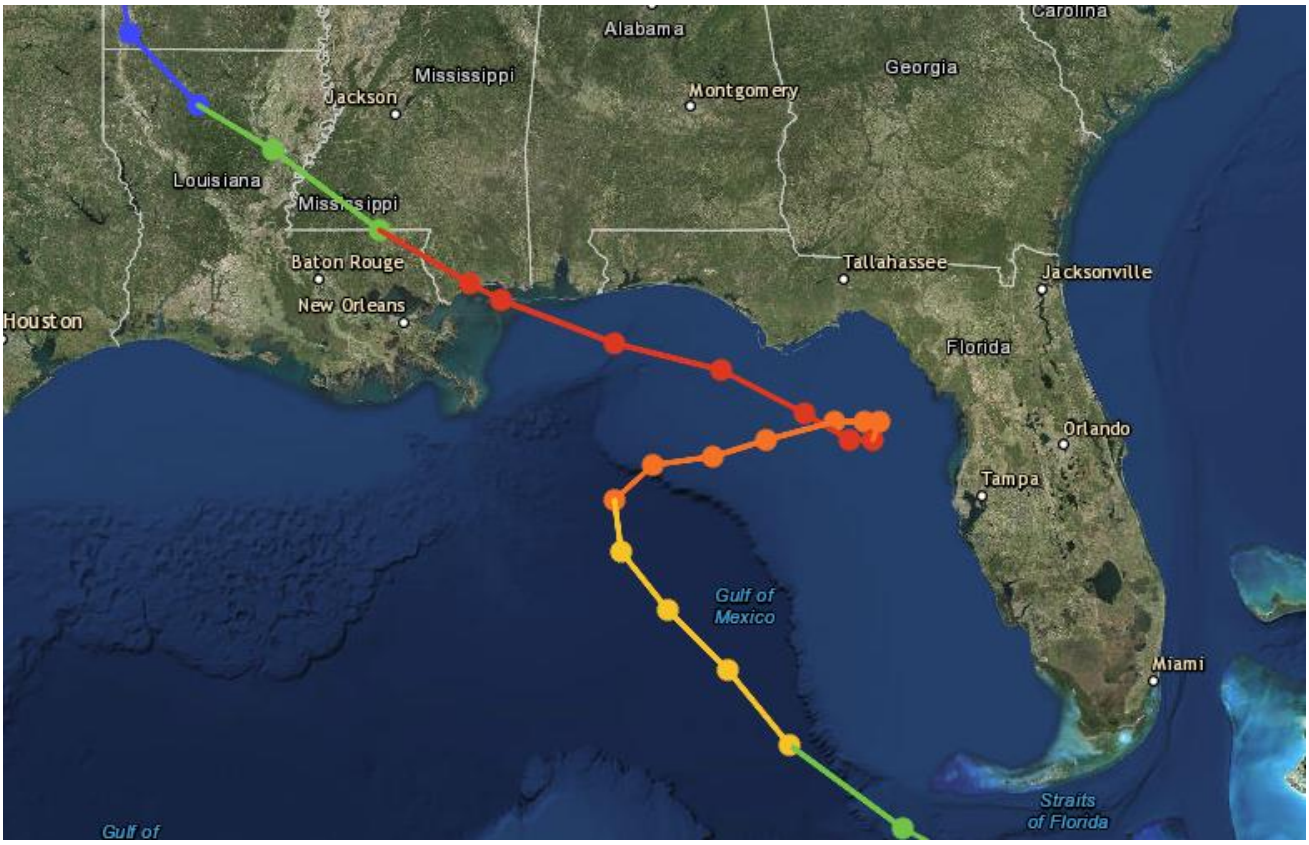
H2

H1

TS (Tropical storm)

TD (Tropical depression)

Figure 7, Track Map of Hurricane Elena (1985)



Legends

Colour of the track-line expresses the category of the storm in Saffir-Simpson -scale.

H5

H4

H3

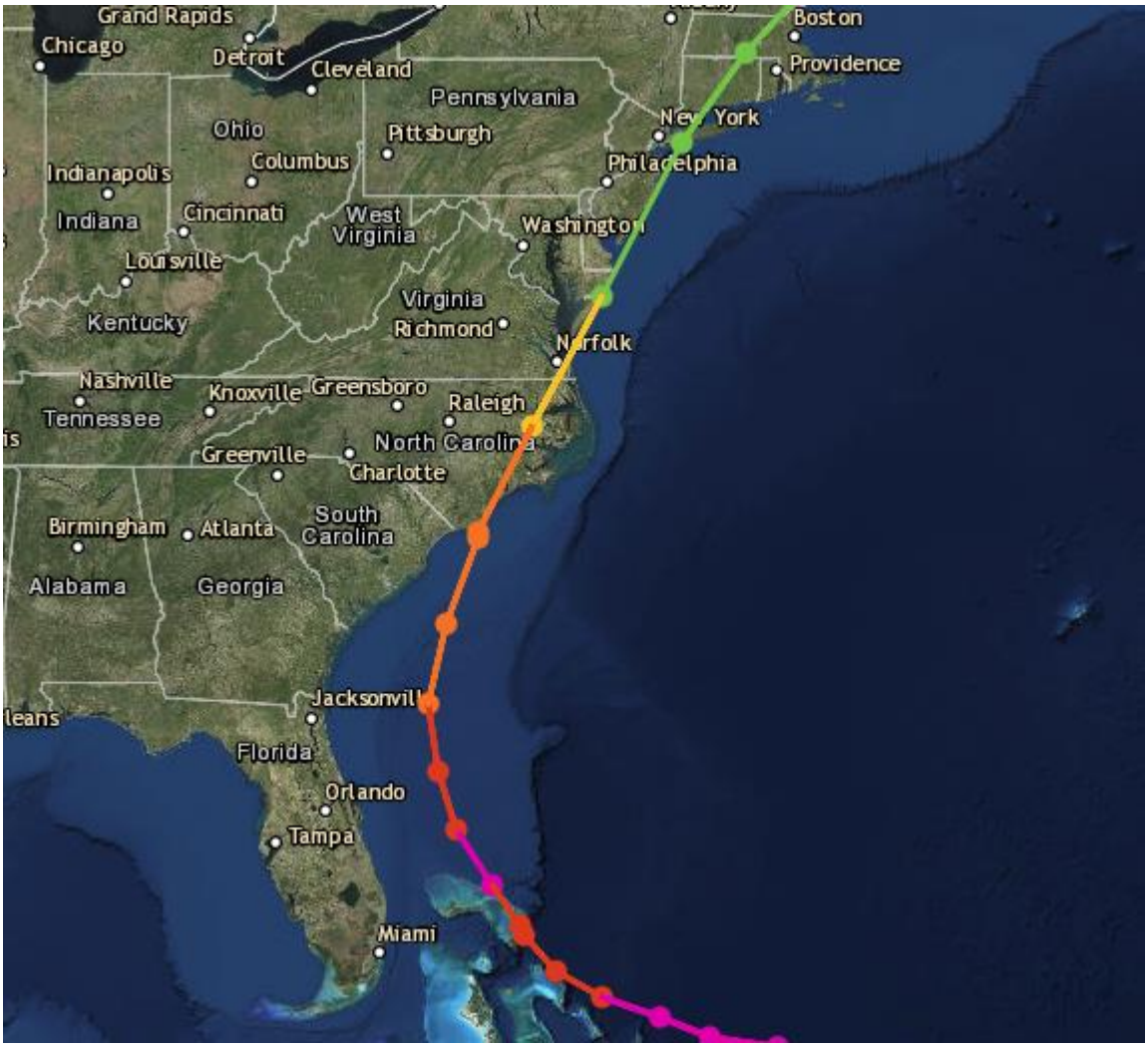
H2

H1

TS (Tropical storm)

TD (Tropical depression)

Figure 8, Track Map of Hurricane Floyd (1999)



Legends

Colour of the track-line expresses the category of the storm in Saffir-Simpson -scale.

H5

H4

H3

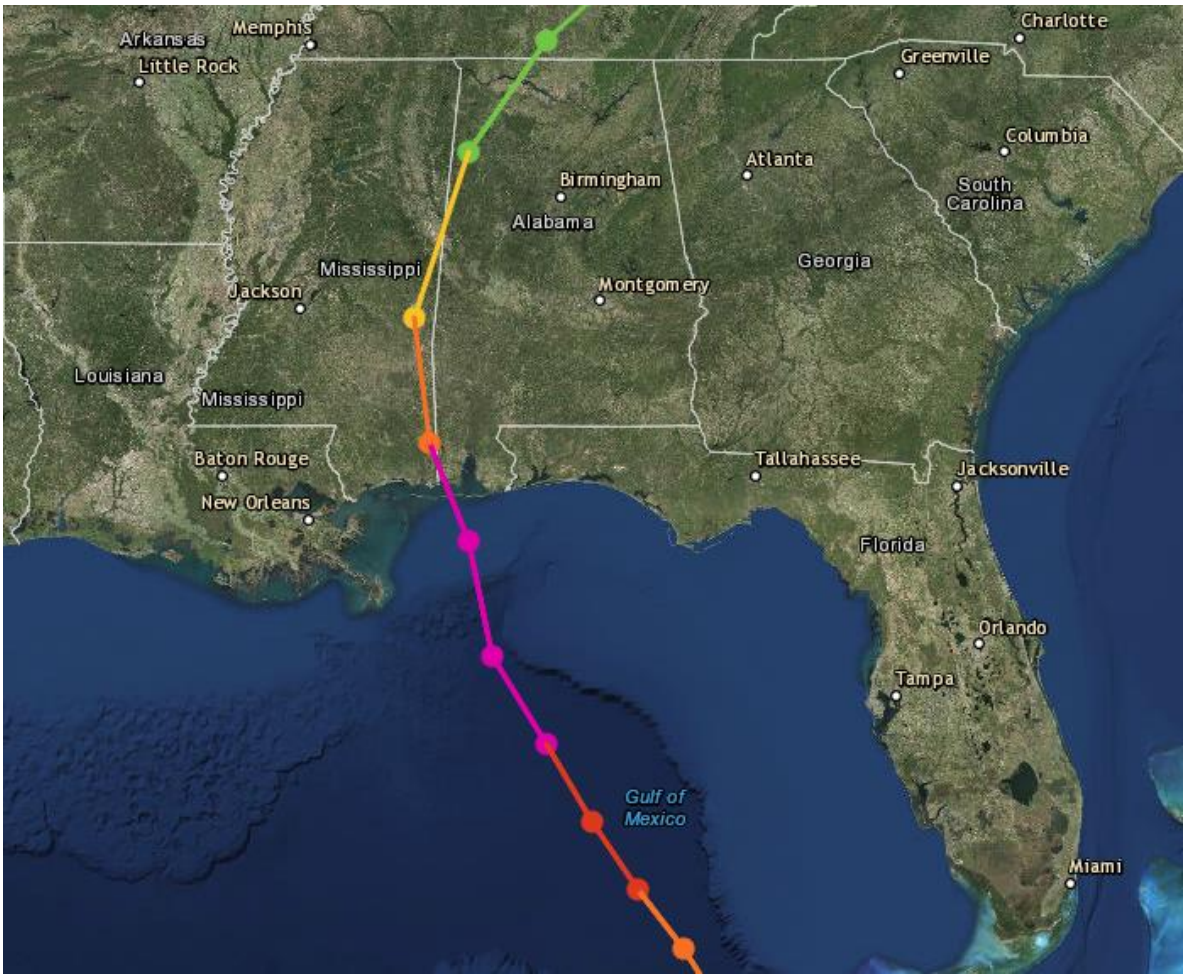
H2

H1

TS (Tropical storm)

TD (Tropical depression)

Figure 9, Track Map of Hurricane Frederic (1979)



Legends

Colour of the track-line expresses the category of the storm in Saffir-Simpson -scale.

H5

H4

H3

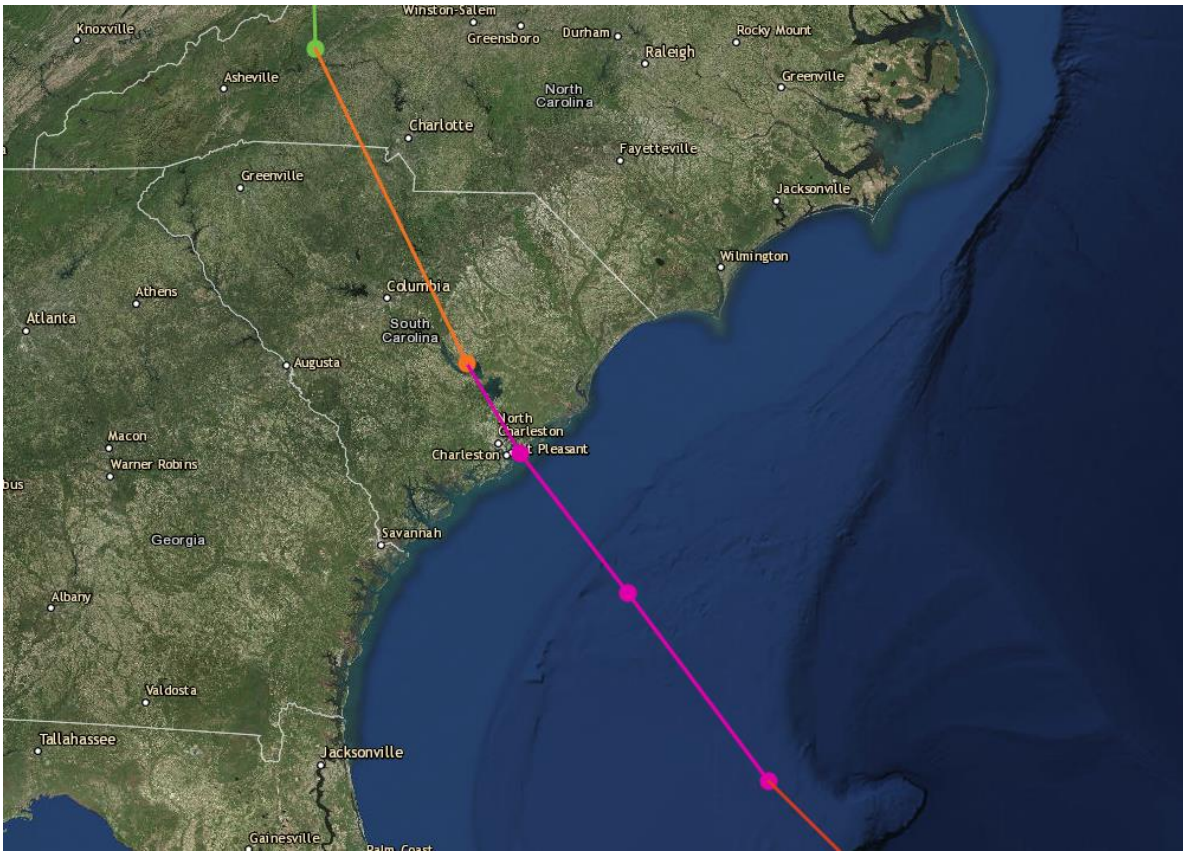
H2

H1

TS (Tropical storm)

TD (Tropical depression)

Figure 10, Track Map of Hurricane Hugo (1989)



Legends

Colour of the track-line expresses the category of the storm in Saffir-Simpson -scale.

H5

H4

H3

H2

H1

TS (Tropical storm)

TD (Tropical depression)