Committee: World Meteorological Organization (WMO)

Issue: Extreme phenomena: regulating the environmental, social and economic ramifications.

Student Officer: Joanna-Maria Kritikou

Position: Deputy President

PERSONAL INTRODUCTION

Dear Delegates,

My name is Joanna Maria Kritikou. I am almost 16 years old and I am a student in Arsakeio Tositseio Ekalis. Next year I will be attending year 11 and after graduating from university I would like to pursue the profession of a lawyer.

I have participated in 3 MUNs in the past few years but this is the first time I will take part as a Deputy President in the World Meteorological Organization (WMO). I believe that this is a once in a lifetime experience in which I will gain knowledge that is unreplaceable. Through collaboration with others, speaking our minds and suggesting ideas, we can form a part of our personality and be prepared for similar situations/events in our future life.

I strongly urge you to read the Study Guide I have prepared for you on the above matter and conduct any relevant research based on your experience and knowledge in order to better support your opinion on the topic.

If you have any questions, feel free to contact me directly on this email: **ioannakritikou06@gmail.com**

INTRODUCTION

"No, it's not a climate crisis, but a societal crisis. And it has devastating consequences for the climate and nature - for the entire world as we know it today." [1]

Our goal is to control extreme phenomena in a way so that they do not affect our environmental, social and economic stability. Unfortunately, such events take place more often than in the past due to the alarming transformation of our ecosystem and have a negative impact in various aspects of our lives.
Extreme phenomena are the following: floods, uncontrollable fires, surface movement and other. All those phenomena can reform the state of a country. They carry effects that have a direct impact on all of our lives. They can be observed and since they affect us all, we have to bring a solution to the problem. As a

[1] *Translated from Lars Hochmann. Economists4future - Verantwortung übernehmen für eine bessere Welt. 2020*

result, we have to examine a way to control them or if they are unavoidable to come up, with how to restore the effects they have caused.

DEFINITION OF KEY TERMS

Extreme Weather Phenomena

"Extreme events are occurrences of unusually severe weather or climate conditions that can cause devastating impacts on communities and agricultural and natural ecosystems. Weather-related extreme events are often short-lived and include heat waves, freezes, heavy downpours, tornadoes, tropical cyclones and floods. Climate-related extreme events either persist longer than weather events or emerge from the accumulation of weather or climate events that persist over a longer period of time". [2]

Climate Change

"Climate change refers to long-term shifts in temperatures and weather patterns. These shifts may be natural, such as through variations in the solar cycle. But since the 1800s human activities have been the main driver of climate change, primarily due to burning fossil fuels like coal, oil and gas".[3]

Carbon Dioxide (CO2) Emissions

"Carbon dioxide emissions are those stemming from the burning of fossil fuels and the manufacture of cement. They include carbon dioxide produced during consumption of solid, liquid, and gas fuels and gas flaring".[4]

EM-DAT (The international disasters database)

"In 1988, the Centre for Research on the Epidemiology of Disasters (CRED) launched the Emergency Events Database (EM-DAT). EM-DAT was created with the initial support of the World Health Organization (WHO) and the Belgian Government. The main objective of the database is to serve the purposes of humanitarian action at national and international levels. The initiative aims to rationalize decision

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[2] "Extreme Weather." *Extreme Weather | USDA Climate Hubs*, https://www.climatehubs.usda.gov/content/extreme-weather.

[3] "What Is Climate Change?" *United Nations*, United Nations, https://www.un.org/en/climatechange/what-is-climate-change.

[4] *Databank*, databank.worldbank.org/metadataglossary/world-development-indicators/series/EN.ATM.CO2E.PC.

making for disaster preparedness, as well as provide an objective base for vulnerability assessment and priority setting".[5]

Intergovernmental Panel on Climate Change (IPCC)

The United Nations body for assessing the science related to climate change.[6]

BACKGROUND INFORMATION

The earth and its ecosystems are our home. In order to achieve a just balance among the economic, social and environmental needs of present and future generations, it is necessary to promote harmony with nature and the Earth. Even though it is common knowledge that human actions are responsible for the destruction of our planet and many efforts have been made to control the negative effects, however the need to support the economy worldwide usually is of a higher priority. As a result, human actions continue to have a direct damaging impact on nature.

Humans impact the physical environment in many ways: overpopulation, pollution, burning fossil fuels and deforestation. Changes like these have triggered climate change, soil erosion, poor air quality, and undrinkable water. Human activity is a major threat to the biodiversity of the planet. This is because population growth has traditionally been exponential. In other words, the rate of population growth remains the same regardless of population size. As a result, the larger the population, the faster the population. Population can grow exponentially for some time, but when limited by resource availability, it will eventually become unfeasible. However, people have continued to strive to avoid carrying capacity while developing new technologies to support an ever-growing population. This threatens biodiversity. This is because the more people there are, the more crowded the other species will be and the less abundant the species will be. Excessive use of non-renewable resources such as fossil fuels can be very harmful to the environment. Recycling products made from non-renewable resources (such as plastics made from petroleum) is one way to mitigate the negative effects of this resource depletion. In addition, the development and use of renewable resources such as solar and wind energy will help mitigate the negative effects of resource use. The burning of fossil fuels and the growth of animal husbandry produce large amounts of greenhouse gases (such as carbon dioxide and methane) in the atmosphere. Higher concentrations of greenhouse gases trap more heat in the biosphere, leading to global warming. This causes climate change. If climate change severely impacts the environment and makes it unsustainable,

[5] "DAT: The International Disasters Database." *EM*, www.emdat.be/.
[6] "The Intergovernmental Panel on Climate Change." *IPCC*, www.ipcc.ch/.

organisms will have to adapt, migrate or face extinction. For this reason, climate change can have significant impacts on biodiversity.

The largest known contribution comes from the burning of fossil fuels, which releases carbon dioxide gas to the atmosphere. Burning fossil fuels, releasing chemicals into the atmosphere, reducing the amount of forest cover, and the rapid expansion of farming, development, and industrial activities are releasing carbon dioxide into the atmosphere and changing the balance of the climate system. Average temperatures have risen internationally and wide variations are being monitored, sea levels are rising as a result of ice melting, forests that are our planet's basic source of oxygen are destroyed. The loss of ecosystem is caused mainly by changes in land and sea use, exploitation, climate change, pollution and the introduction of invasive species. Some things have a direct impact on nature, like the dumping of waste into the ocean. The year of 2019 was the second warmest year on record and the end of the warmest decade (2010- 2019) ever recorded. Carbon dioxide (CO_2) levels and other greenhouse gases in the atmosphere rose to new records in 2019. All these consequences result in extreme weather phenomena which also lead in additional disastrous effects. The destruction of our eco system is directly linked with the extreme phenomena which also lead in more severe results to our economy and society. For instance, the effects of extreme phenomena can lead to severe damage into a society. In order to restore the situation economical funding is needed. Not all countries in the world have the means to mend the damages such as the destruction of roads, public buildings and housing. In more severe cases, the death of citizens due to extreme phenomena is another problem in the society of a country that need to be taken care of.

Historical Background

Historical data can be used to see if global warming is already changing the frequency of heat waves, droughts, floods, hurricanes and many other extreme weather events. Uniform quality weather observations around the world have only been available since around 1970, when satellite data was first collected. Decade-year data on tropical cyclones in some parts of the world are patchy, and even after 1970, data on cyclone intensity are not always of high quality in most regions. Sufficient data are available over the past half-century or more. Since 2000, global data collection has improved significantly through daily continental record collection, closely spaced instrument placement, and data recovery from the National Archives.

These data show that the number of heat waves increased with the occurrence of warmer nights from the 1950s to the early 2000s. In most places, the number of heavy (abnormally heavy) rains, and therefore the frequency of flooding, has also increased. Tropical cyclones (called hurricanes in the Atlantic) have probably increased in intensity since 1995, but the frequency of such storms has probably not increased.

This is followed by observations of several important categories of extreme weather. The final section discusses projections for changes in these types of extreme weather in the 21st century.

Flash floods, heatwave, cold wave, famines, strong winds and storms, etc. are many exemplifications of extreme weather conditions. 2003 heatwaves in Western and Central Europe redounded in the death of further than 30,000 people, and 2005 Katrina hurricane was considered the dear disaster that devastated southern USA. It caused$ 160 billion worth of damages to the Gulf Coast. Hurricanes Harvey, Irma and Maria combined with ruinous California backfires and other natural catastrophes to make 2017 the most precious time (about $ 306 billion), on record for disasters in the USA. 2018 brought Hurricane Michael, which struck the Florida seacoast in October, and the Camp Fire is California's deadliest and most destructive fire on record. The 1999 Orissa (now Odisha) cyclone in India was the strongest recorded tropical cyclone in the North Indian Ocean and among the most destructive in the region. Demolitions as a result of unusual flooding in Uttarakhand in 2013, Kashmir in 2014, Kerala in 2018 and typhoon Mangkhut in Philippines in 2018 are exemplifications of extreme weather events. Scientists assert that Europe's death risk from weather disasters could rise 50-fold by the end of twenty-first century, with extreme heat alone causing deaths of further than a time if nothing is done to check the goods of climate change. In July 2019, Europe has been confounded by another massive heat surge that could break records again.

CO2 Emissions

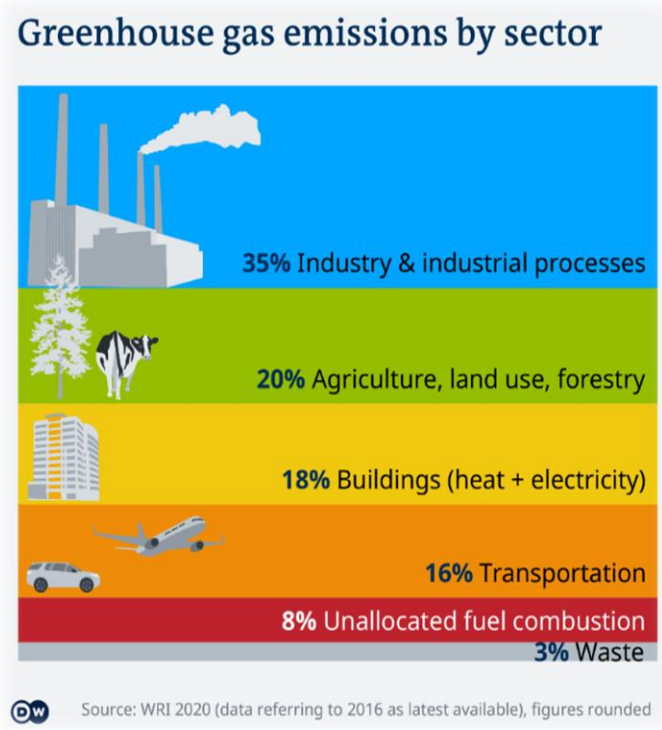

Figure 1: Given the correlation between economic strength and CO2 emissions, it's no surprise that the industrial sector is responsible for the lion's share (35%) of overall greenhouse gases (GHG) — including methane and nitrous oxide — released into the atmosphere, (www.dw.com), Deutsche Welle. "Climate Change in 11 Charts: DW: 02.11.2021."*DW.COM*,https://www.dw.com/en/climate-change-emissions-data-charts-cop26/a-59652069.

[7]At 20%, agriculture, forestry and change in land use collectively account for the second greatest source of GHG emissions. Over the last two decades, the

[7] (www.dw.com), Deutsche Welle. "Climate Change in 11 Charts: DW: 02.11.2021." *DW.COM*,https://www.dw.com/en/climate-change-emissions-data-charts-cop26/a-59652069.

annual amount of tree cover lost has gradually increased. Russia, Brazil and the United States were the world's biggest drivers of deforestation in 2020.

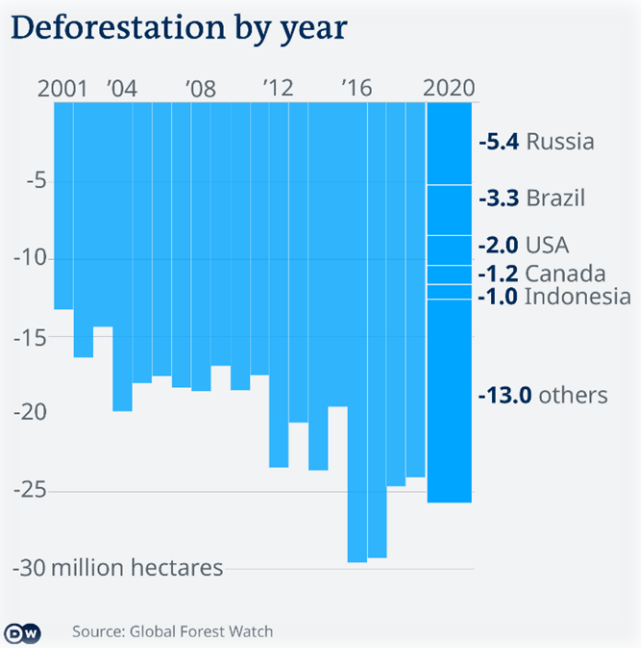

Figure 2: Compared to the decade from 1990-2000, however, the rate of deforestation has slowed, (www.dw.com), Deutsche Welle. "Climate Change in 11 Charts: DW: 02.11.2021." *DW.COM*, https://www.dw.com/en/climate-change-emissions-data-charts-cop26/a-59652069.

Deforestation is not only problematic because the CO2 previously stored in the ground and the trees themselves is released into the atmosphere, but also because forests and soils are "carbon sinks" that absorb atmospheric CO2 — making them a valuable tool in the fight against climate change.

It is evident from all the above data that the extreme phenomena cannot be controlled or eliminated if immediate actions are not taken in order to prevent further damaging the ecosystem.

MAJOR COUNTRIES AND ORGANISATIONS INVOLVED

Norway

The Nordic countries are consistently ranked top in their ability to combat climate change, and by 2020 Norway has set an expansion target for the Paris Agreement to reduce emissions by at least 50% from 1990 levels by 2020. Norway also continues to lead the record share of electric vehicles-the share of electric vehicles sold domestically in 2019 rose to a whopping 42%. As you walk across the country, smart streetlights illuminate sidewalks, and many homes and buildings make Norwegian priorities easy as they automatically reduce light levels when no one is there, to save electricity.

Sweden

Sweden has led the charge for serious climate change policy on a transnational scale over the last many times. The country is a major source of backing for the Green Climate Fund, the world's largest climate fund and an integral element of the Paris Climate Accords. Sweden is a pioneer in climate change policies. It is the first country to pass the environmental protection act in 1967. It has focused on increasing the economy with low carbon emissions. The government plans to reduce its greenhouse gas emissions by 85% of its 1990 levels by 2045, along with 100% of renewable energy production. Sweden's clean energy sector has increased over the years. The country has 4th place in 2021 CCPI. As of 2020, renewable energy accounts for over 50% of its energy consumption. It ranks 5th in the list of best countries to live considering climate change.

Moreover, Sweden's forests cover more than 50% of the land, comprise 23 million hectares contributing to environmental sustainability. The year 2020 was recorded as the hottest year in Sweden in 160 years. Though the temperatures are moving towards the extremes, the country enjoys a temperate climate due to the Gulf stream.

Finland

Finland's climate policy is often touted as a two-pronged approach aimed at both reducing greenhouse gas emissions and developing the bioeconomy. European national climate change laws are implementing policies aimed at reducing emissions by as much as 80% by 2050, with a more immediate 2030 target to reduce emissions from transport, housing and agriculture. The goal is to reduce the volume. The country's vast forestlands and renewable biomass deposits will also become an important focus of energy production in the coming decades. Wood energy use already accounts for almost 25% of total energy consumption. Finland also implements cleantech initiatives that promote sustainable consumption, production and innovation.

Iceland

Iceland is the first country to come up with a good solution to mitigate the effects of climate change through a process known as carbon dioxide capture and storage (CCS). According to the Icelandic Environment Agency, Iceland's heavy industry is backed by hydropower and geothermal energy, but metal

production accounts for 48% of her CO_2 emissions. [8]Fortunately, the country has found a way to deal with this emission. Icelandic start-ups have begun to turn this carried-over CO2 into stone by capturing the emitted carbon with a chimney and injecting it into basalt. In this way, the rays are stored rather than escaping into the atmosphere and trapping heat. As part of its climate change plan, the country plans to become carbon neutral by 2040 and reduce greenhouse gas emissions by 40% by 2030. Icelandic air also contributes to a healthy life as it is ranked 98/106 on the AQI. It ranks 9th on the list of best countries to live given climate change.

China

Despite a lower overall performance standing, China has put forth detailed plans to combat climate change and other environmental issues, similar as air quality, that have agonized its metropolises. President Xi Jinping has pledged to significantly increase the use of solar and wind energy by 2030. China, which has moved into 26th place from 45th position in 2021, has made significant gains in greening its society, the authors say. This includes buying more than half the world's electric vehicles in 2021.[9]

France

In the last year alone, France passed a temperature change bill meant to require a broad approach to environmentally unfriendly practices within the country. The proposed legislation included eliminating short domestic flights and limiting use of plastic packaging. France is threatened by the negative impacts of climate change, with increasing heat waves and less snow. The country's annual temperature has increased by 0.95 degrees Celsius in the 20th century. France's climate action plan aims to reduce greenhouse gas emissions and achieve carbon neutrality by 2050. The country also announced €30 billion to support the ecological transition, including renewable energy, public transport and improved insulation in public buildings and homes[10]. France relies heavily on renewable energy sources, with wind and solar power on

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[8] "20 Best Countries to Live Considering Climate Change." *Yahoo! Finance*, Yahoo!, https://finance.yahoo.com/news/20-best-countries-live-considering-095432849.html?fr=sycsrp_catchall.

[9] "These Are the Countries Best Prepared for a Green Future." *World Economic Forum*, https://www.weforum.org/agenda/2022/04/green-future-index-2022/.

[10] "Net Zero New Buildings and Homes." *City and County of Denver*, https://www.denvergov.org/Government/Agencies-Departments-Offices/Agencies-Departments-Offices-Directory/Climate-Action-Sustainability-Resiliency/High-Performance-Buildings-and-Homes/Net-Zero-New-Buildings-and-Homes.

the rise. In 2020, wind power became the third largest source of electricity in the country, after nuclear power and hydropower. Wind power accounted for 17% of the generation, while gas accounted for the rest. Despite regional variations, France experiences a temperate climate with mild summers and cool winters, making it one of the best places to live in the face of climate change. It was ranked 23rd in CCPI 2021.

Netherlands

The Netherlands was one of the first EU member states to announce the elimination of natural gas from its energy mix. Like many other countries, the Netherlands is focused on reducing its greenhouse gas emissions by 49% by 2030 to prevent the dramatic effects of climate change. [11]With 55% of the country under sea level and 60% of the population living there, the country is subject to severe flooding. To protect citizens from extreme rains, the government has announced the Delta Program. This allows people to prepare for weather fluctuations and floods. In addition, our climate change plan includes making all new cars emission-free by 2030 and maximizing public transport use. Based on this current performance and future direction, the Netherlands is ranked 29th in the CCPI. She ranks 13th on the list of the best countries to live in considering climate change. In addition to reducing carbon dioxide emissions by EU standards, the Netherlands has strived to be a predominantly bicycle and pedestrian country. As sea levels rise, the country has also launched climate adaptation programs, such as targeted flooding, to save its cities.

Morocco

Morocco, a coastline nation, is especially at risk from sea level rise and other climatic changes. In recent years, they have started to switch from conventional to renewable energy sources, with a goal of using 52 percent[12] of renewable energy nationwide by 2030. [13]" According to CAT, Morocco is one of only two countries with a plan to reduce its CO_2 emissions to a level consistent with limiting warming to 1.5 degrees. Morocco's National Energy Strategy calls for generating 42 percent of its electricity production from renewables by 2020, and 52 percent by 2030. Already it is at 35 percent, not least because of investment in such projects as the Noor Ouarzazate complex, the largest concentrated solar farm in the world, which

[11] "20 Best Countries to Live Considering Climate Change." *Yahoo! Finance*, Yahoo!, https://finance.yahoo.com/news/20-best-countries-live-considering-095432849.html?fr=sycsrp_catchall .

[12] *These Countries Are Leading the Way in Climate Policy*. https://www.usnews.com/news/best-countries/slideshows/these-countries-are-leading-the-way-in-climate-policy .

[13] Mulvaney, Kieran. "World Climate Change Report Card: These Countries Are Meeting Goals." *Environment*, National Geographic, 3 May 2021, https://www.nationalgeographic.com/environment/article/climate-change-report-card-co2-emissions.

covers an area the size of 3,500 football fields, it generates enough electricity to power two cities the size of Marrakesh".

Denmark

Denmark unveiled a 10-year plan in 2019 - one of the more ambitious plans in Europe - to cut its carbon emissions to levels that were 70 percent[14] lower in 1990. The nation hopes to achieve carbon neutrality by 2050, which would mean that there would be no carbon dioxide emissions or absorption. An aggressive new climate law was passed by the Danish parliament last December with the aim of reducing Denmark's carbon emissions to 70% of 1990 levels by 2030. Long-term goals for the country include achieving carbon neutrality by 2050. According to the law, the government is held accountable for these targets by setting legally-binding emissions targets for all sectors of the economy every five years. Parliament can choose ministers, promoting offices for climate and energy when insufficient progress is made.

Luxemburg

The most recent significant piece of climate change legislation in Luxembourg, the COVID-19 recovery and resilience plan, allots 30.5 million euros[15] to expanding the number of charging stations in the nation to facilitate and encourage the switch to electric vehicles. Luxembourg holds an advantage over climate due to its rural surroundings and dense forests. Luxembourg has a favorable climate due to its countryside and jungle. The government aims to reduce greenhouse gas emissions [16]by 50-55% by 2030. Renewable energy with a capacity of 451 MW accounts for more than 6.7% of his electricity generation. Wind power capacity has also shown a noticeable increase over the last decade, reaching 166 MW in 2020. Luxembourg is ranked 21st in the 2021 CCPI.

Word Meteorological Organization (WMO)

The occurrence of extreme events is unprecedented in the observed record and will increase with increasing global warming, according to the Sixth Assessment report from the Intergovernmental Panel on

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[14] *These Countries Are Leading the Way in Climate Policy*. https://www.usnews.com/news/best-countries/slideshows/these-countries-are-leading-the-way-in-climate-policy.

[15] *These Countries Are Leading the Way in Climate Policy*. https://www.usnews.com/news/best-countries/slideshows/these-countries-are-leading-the-way-in-climate-policy.

[16] "20 Best Countries to Live Considering Climate Change." *Yahoo! Finance*, Yahoo!, https://finance.yahoo.com/news/20-best-countries-live-considering-095432849.html?fr=sycsrp_catchall.

Climate Change (IPCC). Every bit of warming matters. [17]WMO aids in the development of climate policies by offering reliable guidance and data on mitigating and adapting to climate change. The National Hydrological and Meteorological Services of its Members, as well as worldwide data centers and agencies, provide WMO with the greatest possible scientific expertise.

EM-DAT (The international disasters database)

EM-DAT contains essential core data on the occurrence and effects of over 22,000 mass disasters in the world from 1900 to the present day. The database is compiled from various sources, including UN agencies, non-governmental organizations, insurance companies, research institutes and press agencies.[18]

Intergovernmental Panel on Climate Change (IPCC)

The United Nations body for assessing the science related to climate change.[19] The IPCC prepares comprehensive Assessment Reports about the state of scientific, technical and socio-economic knowledge on climate change, its impacts and future risks, and options for reducing the rate at which climate change is taking place. It also produces Special Reports on topics agreed to by its member governments, as well as Methodology Reports that provide guidelines for the preparation of greenhouse gas inventories. The IPCC is working on the Sixth Assessment Report which consists of three Working Group contributions and a Synthesis Report. The Working Group I contribution was finalized in August 2021 and the Working Group II contribution in February 2022.

TIMELINE OF EVENTS

August 30, 1950	Hurricane Baker Baker began forming as a tropical depression just east of the Leeward Islands on August 18th in the year of 1950. Early in

[17] "Climate Change and Extreme Weather." *World Meteorological Organization*, 17 Mar. 2022, public.wmo.int/en/resources/world-meteorological-day/world-meteorological-day-2022-early-warning-early-action/climate-change-and-extreme-weather.

[18] "DAT: The International Disasters Database." *EM*, www.emdat.be/.

[19] "The Intergovernmental Panel on Climate Change." *IPCC*, www.ipcc.ch/.

	the morning on the 19th, Baker had strengthened into a tropical storm.[20]
September 26 1953	Hurricane Florence Florence began as a tropical wave that crossed the Caribbean Sea on September 21st back in 1953. The tropical wave became more organized just southeast of Jamaica and quickly gained tropical storm status early on the 23rd.[21]
August 17, 1969	Hurricane Camile Late in the evening on August 17 in 1969, Hurricane Camille made landfall along the Mississippi Gulf Coast near Waveland, MS. Camille is one of only FOUR Category 5 hurricanes ever to make landfall in the continental United States (Atlantic Basin) - the others being the 1935 Labor Day Hurricane, which impacted the Florida Keys; Hurricane Andrew in 1992, which impacted south Florida; and Hurricane Michael in 2018, which impacted the Florida panhandle[22]
September 23 1975	Hurricane Eloise On September 13th of 1975, Eloise slowly formed into a tropical depression east of the Lesser Antilles. The tropical depression slowly intensified over the next few days

[20] US Department of Commerce, NOAA. "Hurricane Baker - August 1950." *National Weather Service*, NOAA's National Weather Service, 19 Aug. 2018, www.weather.gov/mob/baker.

[21] US Department of Commerce, NOAA. "Hurricane Florence - September 1953." *National Weather Service*, NOAA's National Weather Service, 17 Sept. 2019, www.weather.gov/mob/florence.

[22] US Department of Commerce, NOAA. "Hurricane Camille - August 17, 1969." *National Weather Service*, NOAA's National Weather Service, 18 Aug. 2019, www.weather.gov/mob/camille.

	and became the 5th tropical storm of the 1975 season early on the 16th of September. Atmospheric conditions quickly became more ideal for intensification. Eloise rapidly developed into a hurricane late on the 16th before moving across the northern part of the Dominican Republic and Haiti.[23]
September 12 ,1979	Hurricane Frederic Frederic formed on August 29 as a tropical depression over the far eastern Atlantic and became a hurricane on September 10 over the Gulf of Mexico. Hurricane Frederic strengthened to a Category 4 hurricane over the central Gulf of Mexico with maximum sustained winds near 132 mph.[24]
September 2, 1985 October 31, 1985	Hurricane Juan Hurricane Elena
August 3, 1995 October 4, 1995	Hurricane Erin Hurricane Opal
December 18, 1996	Central Gulf Coast Heavy Snow Although there was not a White Christmas that year, a blanket of wet heavy snow fell just days prior over portions of coastal Mississippi and southwest Alabama. This snow was part of a larger swath which extended from southeast Mississippi into

[23] US Department of Commerce, NOAA. "Hurricane Eloise - September 23, 1975 ." *National Weather Service*, NOAA's National Weather Service, 2 Dec. 2016, www.weather.gov/mob/Eloise.

[24] US Department of Commerce, NOAA. "Hurricane Frederic - September 12, 1979." *National Weather Service*, NOAA's National Weather Service, 12 Sept. 2019, www.weather.gov/mob/frederic.

	east Alabama. The graphic below shows a composite of total snowfall across the region. The graphic shows a general 1-2 inches of wet snow fell over most locations within the snow swath with isolated snowfall totals as high as 3-4 inches. Note the isolated heavy snowfall over both Jackson County in Mississippi and Mobile County in Alabama. By definition, in most locations around the US (excluding mountainous regions and the Great Lakes) receiving 4 inches of snowfall in 12 hours, qualifies as heavy snow. With a return period of 1 event in 13 years (Branick, 1996), this heavy snow event was indeed a rarity for Deep South residents.[25]
September 20-21, 1998	Tropical Storm Hermine
September 22, 2000	Tropical Storm Helene On the 19th of September (2000), Hurricane Hunter reconnaissance aircraft observed a closed surface circulation in the tropical wave moving through the Caribbean. Helene slowly intensified on the 19th and 20th and became a tropical storm on September 21[26]
March 12, 2001	Southwest Alabama Severe Thunderstorm Outbreak

[25] US Department of Commerce, NOAA. "December 1996 Snow Storm." *National Weather Service*, NOAA's National Weather Service, 10 May 2017, www.weather.gov/mob/1996_Snow.

[26] US Department of Commerce, NOAA. "Tropical Storm Helene - September 2000." *National Weather Service*, NOAA's National Weather Service, 6 Dec. 2016, www.weather.gov/mob/helene.

November 15, 2006 December 5, 2006	Tornado Outbreak Gulf Coast Hard Freeze
January 19, 2008	Rare Snow Storm
February 6, 2008	Super Tuesday Tornado Outbreak
February 12, 2008 February 17, 2008	Damaging Winds Northwest Florida, South Alabama Tornado Event
April 4-5, 2008	Heavy Rainfall Event
March 9, 2011	Tornado Outbreak and Flash Flood Event
June 8-11, 2012	Gulf Coast Flood Event
August 2, 2012	Pensacola Microburst
December 8-9, 2017	North Central Gulf Coast Snow
June 28, 2018	Deep South Derecho
July 22, 2018	Significant Hail Event
January 18 2021	On January 18, the United Kingdom saw some of its heaviest precipitations in decades. For three consecutive days, Storm Christoph brought significant rain and widespread flooding across the country.

March 2021	In March, China witnessed its worst sandstorm in a decade, bringing flights to a halt and shuttering schools. The storm further worsened air quality and pollution levels across the country amid the coronavirus pandemic.
April 2021	Swaths of western Germany and Belgium in July drowned as floods devastated low-lying towns in the region for the first time in 60 years. In Germany, at least 170 people died in the worst natural disaster to hit the European country in decades. The floods caused severe damage to infrastructure, phone networks, and left more than 100,000 people without power.
August 2021	As wildfires ravaged parts of Southern Europe in August, Greece was one of the countries heavily affected. The country's second-largest island of Evia was evacuated as more than 580 fires swept through the region.

Figure 3: Amaro, Silvia. "CNBC Photos Show Devastating Wildfires in Greece." *Cnbc.com*, 0 Aug. 2021, image.cnbcfm.com/api/v1/image/106923757-1628489908062-gettyimages-1234532515-economou-hundreds210806_npCwT.jpeg?v=1628489955&w=929&h=523. Accessed 18 July 2022.

Figure 4: Telfer, Matt. "Beijing's 'Sandstorm' Was Actually a Dust Storm — and That's Much Worse." *Https://Www.downtoearth.org.in/*, 0 Mar. 2021, cdn.downtoearth.org.in/library/large/2021-03-19/0.96155700_1616130584_beijing-dust-storm.png.

UN INVOLVEMENT: RELEVANT RESOLUTIONS, TREATIES AND EVENTS

Resolution 26/27 (July 2014) Resolution 47/24 (July 2021) [27]

The Human Rights Council (HCR) honored that the rights of people in vulnerable situations were disproportionately affected by the negative impact of climate change. It requested the Secretary- General to prepare a report on the issue and decided that a panel discussion on the content be held at the 50th Council session. The Council also decided to incorporate into its periodic programme of work, beginning in 2023, a panel discussion on different themes related to climate change and mortal rights. It encouraged continued conversations among States and applicable stakeholders on the possible creation of a new special procedure accreditation on climate change and mortal rights.

Resolution 26/27 (July 2014) [28]

The Human Rights Council (HCR) emphasized the need for all countries to enhance transnational dialogue and cooperation to address the adverse impacts of climate change on the enjoyment of mortal rights including the right to development. It called for dialogue, capacity- structure, rallying of fiscal coffers, technology transfer, and other forms of cooperation to grease climate change adaption and mitigation, in order to meet the special requirements and circumstances of developing countries.

United Nations Framework convention on climate change

The United Nations Framework Convention on Climate entered into force on 21 March 1994. Today, it has near-universal membership. The 197 countries that have ratified the Convention are called Parties to the Convention. The UNFCCC is a “Rio Convention”, one of three adopted at the “Rio Earth Summit” in 1992. Preventing “dangerous” human interference with the climate system is the ultimate aim of the UNFCCC.

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[27] “Human Rights Council Resolutions on Human Rights and Climate Change.” *OHCHR*, www.ohchr.org/en/climate-change/human-rights-council-resolutions-human-rights-and-climate-change.

[28] “Human Rights Council Resolutions on Human Rights and Climate Change.” *OHCHR*, www.ohchr.org/en/climate-change/human-rights-council-resolutions-human-rights-and-climate-change.

Together with the Convention, the Kyoto Protocol and the Paris Agreement establish the institutional agreements for the climate change intergovernmental process.[29]

United Nations Intergovernmental Panel on Climate Change (IPCC)

The Intergovernmental Panel on Climate Change (IPCC) was set up by the World Meteorological Organization (WHO) and United Nations Environmental Programme to provide governments with an objective source of scientific information. The establishment of the IPCC was endorsed by UN General Assembly in 1988. Its initial task, as outlined in UN General Assembly Resolution 43/53 of 6 December 1988, was to prepare a comprehensive review and recommendations with respect to the state of knowledge of the science of climate change; the social and economic impact of climate change, and potential response strategies and elements for inclusion in a possible future international convention on climate.[30]

[29] "Climate Change: Climate Change and the United Nations." *Research Guides*, libraryresources.unog.ch/climatechange/UN.

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PREVIOUS ATTEMPTS TO SOLVE THE ISSUE

Since extreme phenomena is a problem that will only continue to increase and become more frequent there have been some attempts to solve the issue.

The Paris Agreement[31]

Adopted in 2015, aims to strengthen the global response to the threat of climate change by keeping a global temperature rise this century well below 2 degrees Celsius above pre-industrial levels. The agreement also aims to strengthen the ability of countries to deal with the impacts of climate change, through appropriate financial flows, a new technology framework and an enhanced capacity building framework.

NASA'S eyes on Extreme Weather (OCTOBER 18, 2019)

NASA uses airborne and space-based platforms, in conjunction with those from the National Oceanic and Atmospheric Administration, or NOAA, to monitor these events and the ways in which our changing climate is contributing to them. Together, the agencies are collecting more detailed data on weather and climate than ever before, improving society's ability to predict, monitor and respond to extreme events. NASA's airborne instruments, such as those aboard the Global Hawk aircraft, provide data from within the storm that cannot be otherwise obtained. Global Hawk can fly above a storm in a back-and-forth pattern and drop instruments called dropsondes through the storm. These instruments measure winds, temperature, pressure and humidity on their way to the surface. This detailed data can be used to characterize a storm, informing scientists of shifting patterns and potential future developments. NASA missions will continue to study both weather and climate phenomena. Penetrating P-3 aircraft will fly missions starting in 2020 to study Atlantic coast-threatening snowstorms. Data from these flights will be combined with ground-based radar measurements and satellite measurements to better understand storms and their potential impact. Meanwhile, climate science instruments and satellites will continue to collect data that can inform everyone about the many aspects of our changing planet.[32]

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[31] *Unfccc.int*, https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement .

[32] "NASA's Eyes on Extreme Weather - Teachable Moments." *NASA*, NASA, 10 Feb. 2022, https://www.jpl.nasa.gov/edu/news/2019/10/18/nasas-eyes-on-extreme-weather/.

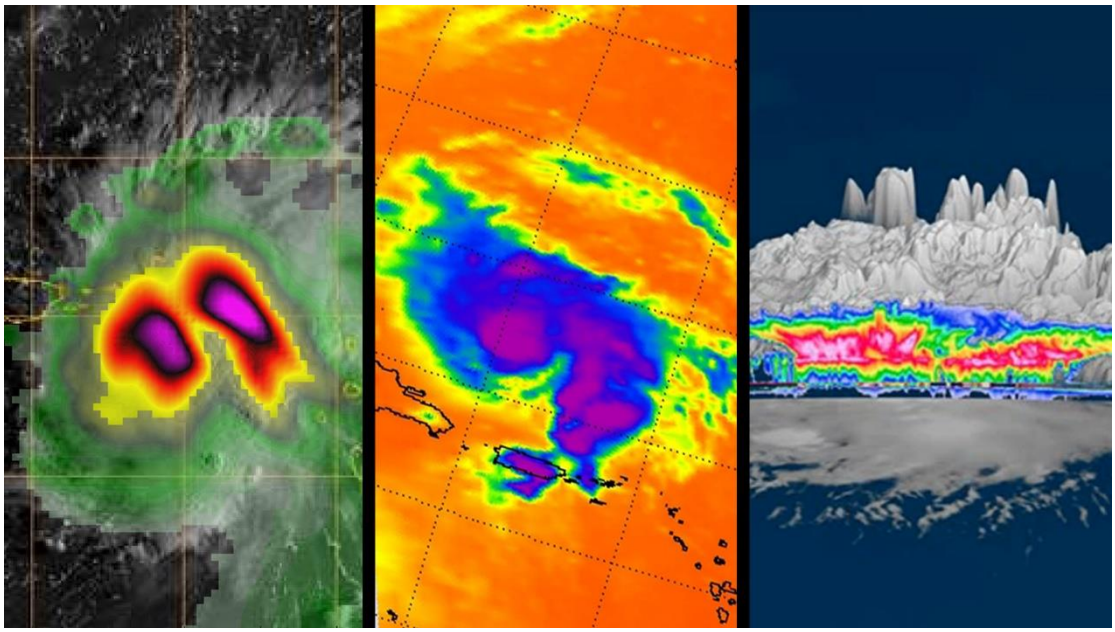

Figure 5: Three images of Hurricane Dorian, as seen by a trio of NASA's Earth-observing satellites in August 2019. The data sent by the spacecraft revealed in-depth views of the storm, including detailed heavy rain, cloud height and wind, "NASA's Eyes on Extreme Weather - Teachable Moments." *NASA*, NASA, 10 Feb. 2022, https://www.jpl.nasa.gov/edu/news/2019/10/18/nasas-eyes-on-extreme-weather/

POSSIBLE SOLUTIONS

The goal of this committee is to eliminate and control extreme phenomena and find ways to achieve it.

Stricter law legislation

In regards to environmental issues stricter penalties should be set both for industries and individuals. Industries, car emissions, fossil fuels are some of the main reasons for the pollution of the climate which should be controlled more efficiently. Such regulations aim in controlling all industries and the public's effect on the environment in order to prevent extreme meteorological changes due to human pollution, overheating and damaging behaviors. International organizations and governments should come together and agree on stricter levels of acceptable emissions and all countries that are part of the UN should follow

those measures carefully. If they fail to follow those rules there should be sanctions and fines should follow.

More efficient organization of state mechanism

In order to control such phenomena, each country requires a more efficient organization of state mechanism. All countries must set out plans for each and every case of extreme phenomena in order to better control the consequences. For example, countries must come up with plans such as emergency evacuation of citizens, immediate actions taken by all departments and much more that must be done in cases of extreme phenomena. This requires the collaboration of all state mechanisms as every area requires a different approach. In addition to that, constant monitoring of charts in each country's ecosystem is essentials in order to predict hazardous situations. This will help to prevent or envision a potential threat and evaluate an actual plan before the problem strikes. With the above, disasters and loss of lives during extreme phenomena could be avoided and as a result cause less damage to the economy, environment and society of a country.

Strengthen the economy

Countries that are affected, in order for them to be easier to deal with the effects of extreme phenomena, they should strengthen their economy. Unfortunately, there is no way to eliminate disasters which occur from extreme phenomena and as a result each society must come up with a financial plan in order to support citizens and the public sector after such an event occurs.

Raise awareness

Societies need to be informed and educated about extreme weather conditions and phenomena, as they could help to prevent injuries while the phenomena occur. It could help people to stay safe, take the correct and necessary measures and keep calm while those phenomena last.

Ways that the information about everyone's safety should be taught:

- at schools
- government brochures
- verified media/TV advertising

- campaigns
- Funding and participation in NGOs is of vital importance. That way anyone could provide with their service when it comes to critical conditions. Secondly, these NGOs could support affected areas after an extreme phenomenon.

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