1990

Intergovernmental Panel on Climate Change Impacts Assessment

"Although the variability of weather and associated shifts in the frequency and magnitude of climate events were not available from the outputs of the Global Circulation Models [GCM's], there is reason to believe that the increased precipitation regime predicted by some of the GCMs will result in greater and more frequent flooding in the tributary watersheds. Along with this trend, it is possible that the frequency, duration and magnitude of droughts might also increase as a consequence of the warming trend. In other words, the cycles of floods and droughts experienced in the current hydrologic record could become worse, exacerbating future conditions of higher water demands." – Ch4, pg 16 *Climate Change: The IPCC Impacts Assessment*, Intergovernmental Panel on Climate Change, (1990)

"Other possible associated effects of global warming could also increase coastal flooding. In particular, increases in the frequency and magnitude of riverine floods and coastal storms could result from changing weather patterns, increased precipitation, and shifting of the seasonality of monsoons, snowmelt and other precipitation - runoff phenomena. The resultant wetter soils and increased flows could exacerbate flooding and result in the loss of agricultural productivity, as the soils stayed saturated for longer periods." – Ch 6, pg *5 Climate Change: The IPCC Impacts Assessment*, Intergovernmental Panel on Climate Change, (1990)

Source Information:

"The Intergovernmental Panel on Climate Change (IPCC) was jointly established by the World Meteorological Organisation and the United Nations Environment Programme in 1988, in order to: (i) assess available scientific information on climate change, (ii) assess the environmental and socio-economic impacts of climate change, and (iii) formulate response strategies. The IPCC First Assessment Report was completed in August 1990 and served as the basis for negotiating the U N Framework Convention on Climate Change."

1995

Second Assessment Report of the Intergovernmental Panel on Climate Change

"Many of the impacts of climate change may result from changes in climate variability or extreme weather events. Some reports have already suggested an increase in variability or extremes has taken place in recent decades. Do meteorological records support this? There are inadequate data to determine whether consistent global changes in climate variability or extremes have occurred over the 20th century. On regional scales there is clear evidence of changes in some extremes and climate variability indicators (e.g., fewer frosts in several widespread areas; an increase in the proportion of rainfall from extreme events over the contiguous states of the USA). Some of these changes have been toward greater variability; some have been toward lower variability." pg 30

"Overall, there is no evidence that extreme weather events, or climate variability, has increased, in a global sense, through the 20th century, although data and analyses are poor and not comprehensive. On regional scales there is clear evidence of changes in some extremes and climate variability indicators. Some of these changes have been toward greater variability; some have been toward lower variability." pg 173 *Climate Change 1995: The Science of Climate Change, Second Assessment Report of the Intergovernmental Panel on Climate Change*, Intergovernmental Panel on Climate Change, (1995)

Source Information:

"This report is a unique example of international cooperation over a wide range of disciplines in a relatively short time frame. While literally hundreds of scientists in a large number of countries have contributed information and peer-reviewed the material, the major task has fallen on the principal authors of the various chapters."

2000

US Global Change Research Program Report

"The [climate] projections are less certain regarding changes in the incidence of tropical storms and hurricanes. Some recent studies suggest that hurricanes will become more intense, while others project little change. It is possible that a 5-10% increase in hurricane wind speed will occur by 2100; confirming this remains an important research issue. Perhaps a more important concern is rainfall during hurricanes. One set of model simulations projects that peak precipitation rates during hurricanes will increase 25-30% by the end of the 21st century. Today, El Niño conditions are associated with increased Pacific and decreased Atlantic hurricane frequencies. La Niña is associated with increased Atlantic hurricane frequencies. However, hurricane formation is dependent on a large number of atmospheric and surface conditions. Given these complex dynamics, projections for changes in the frequency and paths of tropical storms must be viewed with caution." – pg 18 of *Climate Change Impacts On The United States: The Potential Consequences of Climate Variability and Change*, US Global Change Research Program (2000).

Source Information:

"This report is based on the work of hundreds of individuals and organizations participating in regional and sector activities across the country and by the National Assessment Synthesis Team (NAST), a committee of experts drawn from governments, universities, industry, and nongovernmental organizations."

2009

US Global Change Research Program Report

"Scientists are sometimes asked whether extreme weather events can be linked to human activities. Scientific research has concluded that human influences on climate are indeed changing the likelihood of certain types of extreme events. For example, an analysis of the European summer heat wave of 2003 found that the risk of such a heat wave is now roughly four times greater than it would have been in the absence of human-induced climate change. Like fingerprint work, such analyses of human caused changes in the risks of extreme events rely on information from climate models, and on our understanding of the physics of the climate system. All of the models used in this work have imperfections in their representation of the complexities of the "real world" climate system. These are due to both limits in our understanding of the climate system, and in our ability to represent its complex behavior with available computer resources. Despite this, models are extremely useful, for a number of reasons."- pg 22 *Global Climate Change Impacts in the United States, The Second National Climate Assessment*, US Global Change Research Program. (2009)

"Many extremes and their associated impacts are now changing. For example, in recent decades most of North America has been experiencing more unusually hot days and nights, fewer unusually cold days and nights, and fewer frost days. Droughts are becoming more severe in some regions. The power and frequency of Atlantic hurricanes have increased substantially in recent decades. The number of North American mainland land-falling hurricanes does not appear to have increased over the past century. Outside the tropics, cold-season storm tracks are shifting northward and the strongest storms are becoming even stronger. These trends in storms outside the tropics are projected to continue throughout this century." - pg 32, *Global Climate Change Impacts in the United States, The Second National Climate Assessment*, US Global Change Research Program. (2009)

Source Information:

"An expert team of scientists operating under the authority of the Federal Advisory Committee Act, assisted by communication specialists, wrote the document. The report was reviewed and revised based on comments from experts and the public in accordance with the Information Quality Act guidelines issued by the Department of Commerce and the National Oceanic and Atmospheric Administration."

2013

Intergovernmental Panel on Climate Change Synthesis Report

"It is very likely that the number of cold days and nights has decreased and the number of warm days and nights has increased on the global scale. It is likely that the frequency of heat waves has increased in large parts of Europe, Asia and Australia. It is very likely that human influence has contributed to the observed global scale changes in the frequency and intensity of daily temperature extremes since the mid-20th century. It is likely that human influence has more than doubled the probability of occurrence of heat waves in some locations. There is medium confidence that the observed warming has increased heat-related human mortality and decreased cold-related human mortality in some regions. There are likely more land regions where the number of heavy precipitation events has increased than where it has decreased. Recent detection of increasing trends in extreme precipitation and discharge in some catchments imply greater risks of flooding at regional scale (medium confidence). It is likely that extreme sea levels (for example, as experienced in storm surges) have increased since 1970, being mainly a result of rising mean sea level. Impacts from recent climate-related extremes, such as heat waves, droughts, floods, cyclones, and wildfires, reveal significant vulnerability and exposure of some ecosystems and many human systems to current climate variability (very high confidence)." - pg 7-8, *CLIMATE CHANGE 2014 Synthesis Report Summary for Policymakers*, Intergovernmental Panel on Climate Change. (2013).

Source Information:

"This Synthesis Report is based on the reports of the three Working Groups of the Intergovernmental Panel on Climate Change (IPCC), including relevant Special Reports. It provides an integrated view of climate change as the final part of the IPCC's Fifth Assessment Report (AR5)."

"In the Synthesis Report, the certainty in key assessment findings is communicated as in the Working Group Reports and Special Reports. It is based on the author teams' evaluations of underlying scientific understanding and is expressed as a qualitative level of confidence (from very low to very high) and, when possible, probabilistically with a quantified likelihood (from exceptionally unlikely to virtually certain). Where appropriate, findings are also formulated as statements of fact without using uncertainty qualifiers. This report includes information relevant to Article 2 of the United Nations Framework Convention on Climate Change (UNFCCC)."