Commentary: Climate and Catastrophic Weather Events.

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Abstract

The impacts of global climate change are conventionally discussed in terms of changes in the temperature averaged over the year and over the globe. Much less emphasis has been placed on anticipated changes in weather variability. Of particular interest are extreme events such as windstorms, hurricanes, floods, droughts, hailstorms, tornadoes, etc. In the last decade, the number of catastrophic weather events is three times as great, and the cost to world economies, eight times higher than the decade of the 1960s. In part, the higher cost in the last decade is due to greater vulnerability of society as a result of increasing urbanization. In 1997, a year with exceptionally few natural disasters, 13,000 deaths could be attributed to weather-related events, and economic losses were $30 billion, as compared to $60 billion in 1996. The most frequent natural catastrophes in 1997 were windstorms and floods, which accounted for 82% of the economic losses and no less than 97% of the insured losses. Floods devastated large areas of China, Latin America and the United States. A major event in Europe was, as in 1996, a flood in Central Europe where the heaviest precipitation ever recorded inundated areas in Poland, Germany, the Czech Republic and Austria.

Whether the frequency and intensity of extremes will increase or decrease in a warmer world is not known; the spatial scales of most extreme events are much too small to be captured in current climate models. However, a small increase in the surface temperature of the oceans will undoubtedly lead to increased water content of the oceans, since the vapor pressure of water rises exponentially with temperature. Thus, it is highly likely that at least some regions of the globe will experience higher precipitation and more frequent flooding in a warmer world.

Reference: See the IIASA interim report IR-99-034, at
http://www.iiasa.ac.at/docs/Admin/PUB/Catalog/PUB_ONLINE.html