

10-19-2011

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Recommended Citation

Navarro, Carlos. "Flooding in Southeast Mexico Reinforces Warnings about Climate Change." (2011).
<https://digitalrepository.unm.edu/sourcemex/5834>

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Flooding in Southeast Mexico Reinforces Warnings about Climate Change

by *Carlos Navarro*

Category/Department: Environment and Sustainability

Published: 2011-10-19

Mexico is no stranger to hurricanes, floods, and other natural disasters, but a recent government report suggests that problems have worsened in recent years because of the impact of climate change. The report, published by the government's statistics agency (Instituto Nacional de Estadística y Geografía, INEGI) on Oct. 11, was released to coincide with the UN-sponsored International Day for Disaster Reduction on Oct. 13. Almost as if to confirm the report, heavy rains caused severe flooding throughout southeastern Mexico and into Central America a week after INEGI released its findings. In Mexico, the floods were especially severe in Tabasco state, although serious problems were also reported in nearby states.

Mexico has seen the effects of climate change in various forms, from increased flooding and intense hurricanes to drought and even atypical cold temperatures in some parts of the country. Dry conditions resulted in record forest fires the last two years ([SourceMex, April 28, 2010](#) and [April 27, 2011](#)). The dry conditions have also threatened agricultural production, leading some experts to predict a decline in output in coming years ([SourceMex, Aug. 11, 2010](#)).

Government report links recent severe storms with warmer ocean temperatures

The recent INEGI report emphasized the effects of climate change on the intensity of storms in Mexico. The agency said warming ocean temperatures probably contributed to the higher intensity of several storms that hit Mexico in the past two decades. The report said the first of these highly damaging storms occurred in 1998, when Hurricane Gilbert caused the Santa Catarina River in Nuevo León state to overflow its banks, killing 202 people and causing US\$10 billion in damage. Similarly devastating effects occurred from Hurricane Ismael in Sinaloa state in 1995 and Hurricanes Wilma and Stan in southern Mexico in 2005 ([SourceMex, Nov. 9, 2005](#)).

INEGI said the most devastating flooding in recent years occurred in 2007 in Tabasco state and adjacent areas of Chiapas, when heavy rain caused the Peñitas reservoir to overflow, overwhelming the Grijalva, Usumacinta, Carrizal, and Mazcalapa rivers. While the problem was blamed in part on outdated infrastructure, the rain that caused the floods was unprecedented ([SourceMex, Nov. 7, 2007](#)).

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Federal and state authorities have taken steps to improve flood protection in Tabasco, but the state remains susceptible to severe flooding. This was the case again this year, when 16 of 17

municipalities were flooded by water overflowing various rivers around the state in mid-October. The only municipality not affected was Centro, site of the capital city of Villahermosa.

"For a fifth consecutive year, nature is collecting its debt," said Gov. Andrés Granier Melo, who requested help from the federal government. Granier said Tabasco needs authorities in Mexico City to send funds for the state to secure pumps and rescue vessels and also to issue emergency and disaster declarations so that citizens and businesses can receive direct assistance. Nearly 115,000 Tabasco residents suffered some loss because of the floods.

Flooding was also a problem in nearby Quintana Roo, Chiapas, and Campeche states, and local authorities are also expected to seek assistance from the Fondo de Desastres Naturales (FONDEN).

The heavy rain extended into Central America, causing severe problems in El Salvador, Guatemala, and Nicaragua. The storms resulted in the death of dozens of people and the displacement of tens of thousands in the region.

During October, Mexico was also affected by a second storm system that hit the Pacific states of Jalisco, Colima, and Nayarit. Hurricane Jova generated heavy rain, which caused flooding and landslides in parts of the region. As a precaution, authorities evacuated a vulnerable community in the city of Manzanillo in Colima state. The storm, which was a Category 2 hurricane upon landfall, resulted in five deaths in western Mexico.

Some meteorologists said climate factors contributed to strengthening Jova, which was described as a dangerous hurricane as it approached land. "Jova is now approaching a region where these warm waters extend to great depth, which should allow the storm to maintain major hurricane strength until landfall," said an advisory by Dr. Jeff Masters in weatherunderground.com.

Mexico cites need for joint international efforts

Mexican authorities, from Mexico City Mayor Marcelo Ebrard to President Felipe Calderón, have sounded the alarm on climate change and have taken steps to reduce greenhouse emissions and promote alternative energy (SourceMex, Nov. 17, 2010 and Aug. 10, 2011). The federal government has launched a long-term water-conservation effort that also seeks to address the impact of climate change (SourceMex, March 30, 2011).

Still, Mexico believes that it cannot take the necessary steps to reduce the effects of climate change in Mexico without financial and technological assistance from the international community.

"World politicians must not forget that funds are needed to promote sustainable management of forests," Environment Secretary Juan Rafael Elvira Quesada said during a tour of Oaxaca state in October. "By restoring the forests, we can address climate change in a cheap and efficient manner and at the same time provide great benefits to society."

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The environment secretary said weather changes were manifested in a variety of forms in Mexico, from flooding in the south to unprecedented freezes in the center of the country to prolonged

droughts in the north. But he also pointed out that problems associated with climate change transcend borders. "At one time, climate change was a phenomenon that primarily affected tropical countries," said Elvira. "We are now seeing very dangerous hurricanes affecting Mexico, the US, and Canada."

Agriculture Secretary Francisco Mayorga, in a separate forum in October, also raised concerns about climate-change impact on Mexico's food production. The secretary acknowledged that climate factors are affecting Mexico's productivity and its ability to compete on world markets.

While Mexico can do little to prevent damage from a change in the climate, Mayorga said the administration and the Congress have developed a mechanism to assist the agriculture, livestock, and fisheries industries in dealing with the impact of weather-related problems. For example, he noted that the Congress approved 1 billion pesos (US\$74 million) for the insurance program Componente de Atención a Desastres Naturales (CADENA). This year, more than 8.1 million hectares of cropland were insured in 30 states under the program. Additionally, 4,227 heads of livestock were brought into the insurance program in 18 states. [Peso-dollar conversions in this article are based on the Interbank rate in effect on Oct. 19, 2011, reported at 13.46 pesos per US\$1.00.]

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