

# FLOODS

## Congressional Hazards Caucus Alliance Factsheet

Flooding is the most common and costliest natural hazard facing the United States.<sup>1</sup> Adjusted annual losses from flooding have averaged \$8.2 billion per year since 1970, and estimated flood damages over the past 10 years alone exceed \$150 billion, including extreme events like Hurricane Katrina.<sup>2,3</sup> With a rising number of people living in both riverine and coastal flood plains, the question remains how to manage flood risk effectively.

### CAUSES AND RISKS

Flooding impacts all U.S. states and territories. It includes not only overland floods caused by river overbanking but also coastal flooding from tropical storms and hurricanes.

Flood risk can vary considerably within a community. Many local factors influence food risk including natural topography and ground permeability, the placement of dams/levees, and land use factors such as vegetation type and coverage by impermeable pavement.

### FEDERAL POLICY AND RESPONSE

#### FLOODPLAIN MANAGEMENT

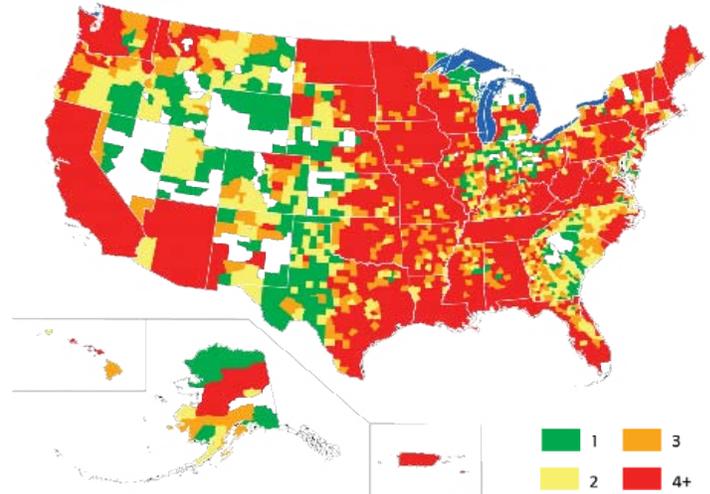
The Federal Emergency Management Agency (FEMA) has primary federal responsibility for providing flood disaster relief, sponsoring long-term flood mitigation initiatives related to land use and planning, and maintaining official community-level flood risk maps.

A number of flood mitigation initiatives are funded through FEMA's multi-hazard Pre-Disaster Mitigation Program and post-disaster Hazard Mitigation Grant Program. FEMA also manages flood-specific programs. Current programs include:

[1] Testimony of Craig Fugate, Administrator of Federal Emergency Management Agency before the Senate Committee on Banking, Housing, and Urban Affairs, National Flood Insurance Program Reform, June 9, 2011, p. 2.

[2] National Weather Service. (2013). "Hydrologic Information Center - Flood Loss Data. <http://www.nws.noaa.gov/hic>.

[3] National Oceanic and Atmospheric Administration. 2012. Spatial Trends in Coastal Socioeconomics Demographic Trends Database: 1970-2010. Available from: <http://coastalsocioeconomics.noaa.gov/>



**Above:** Number of presidential flood disaster declarations by county, 1965-2003.

Credit: USGS (<http://pubs.usgs.gov/fs/2006/3026/2006-3026.pdf>)

#### National Flood Insurance Program (NFIP)

The NFIP was established to reduce reliance on federal disaster assistance and incentivize communities to minimize their flood risks through land use planning and flood-resistant construction.

The NFIP includes the Community Rating System (CRS) program, which offers reduces flood insurance premiums for participating communities that demonstrate they have taken steps to reduce the flood risk in the community.

The NFIP has maintained a considerable debt to the U.S. Treasury since 2005, since the Flood Insurance Fund never carried reserves to cover the catastrophic losses of the 2005 hurricane season. The Biggert-Waters Flood Insurance Reform Act of 2012 instituted reforms to address the program's financial insolvency. The Homeowner Flood Insurance Affordability Act of 2013 stalls many of these reforms.

#### The Flood Mitigation Assistance program (FMA)

The FMA program was founded to reduce the number of claims under the NFIP. The FMA provides grants to states and communities to reduce their flood vulnerability through mitigation planning and through elevation, relocation, or purchase of NFIP-insurance structures.



### Risk Mapping, Assessment, and Planning program (Risk MAP)

The accuracy of flood hazard maps is a challenge to the effective implementation of the NFIP. Flood risk can change considerably from one year to the next with changes in land use, development, or storm and rainfall intensity.

Advances in mapping technology (e.g. LiDAR) provide greater accuracy in flood hazard mapping, but maps must be updated with regularity. Only one third of the nation's river and coastal miles have updated flood maps.

The Risk MAP initiative is a continuation of Map Modernization (Map Mod) to digitize and update flood hazard maps for all 22,000 communities in the NFIP. Progress can be monitored at <http://riskmapprogress.msc.fema.gov>.

### STRUCTURAL FLOOD PROTECTION

Several federal agencies maintain structural flood control projects, but the U.S. Army Corps of Engineers (USACE) has the primary mandate for preemptive flood protection. USACE collaborates with local and state governments to reduce flooding risk through installation of levees, floodwalls, and coastal dunes. USACE manages 10% of the nation's levees through its Levee Safety Program. Most levees are locally managed.

Other federal agencies that maintain flood control projects include the U.S. Department of Agriculture's Natural Resources Conservation Service, the Bureau of Reclamation, the Tennessee Valley Authority, and the International Boundary and Water Commission.

Levees do not eliminate flood risk, but they reduce the frequency of smaller floods. Levees must be accredited to particular performance standards (see 44 CFR 65.10) in order to influence the zoning of flood risk maps.

### FORECASTS AND MONITORING

The National Weather Service issues flood warnings and flood forecasts such as the National Spring Flood Outlook (<http://water.weather.gov/ahps/forecasts.php>). The U.S. Geological Survey operates a network of more than 30,000 stream gages to monitor river conditions. This data is available live via WaterWatch ([waterwatch.usgs.gov](http://waterwatch.usgs.gov)).



**Above:** An example of how updates to a Flood Insurance Risk Map (FIRM) can change whether a property is classified as being within a high-risk flood zone.

Example from Buzzards' Bay, Massachusetts. Credit: Buzzards Bay National Estuary Program (<http://climate.buzzardsbay.org/old-versus-new-firms.html>)

### ADDITIONAL RESOURCES

#### National Flood Insurance Program

[www.floodsmart.gov/floodsmart](http://www.floodsmart.gov/floodsmart)

#### Congressional Research Service Report: "The National Flood Insurance Program: Status and Remaining Issues for Congress"

[www.fas.org/sgp/crs/misc/R42850.pdf](http://www.fas.org/sgp/crs/misc/R42850.pdf)

#### US Army Corps of Engineers

[www.iwr.usace.army.mil/Missions/FloodRiskManagement/FloodRiskManagementProgram.aspx](http://www.iwr.usace.army.mil/Missions/FloodRiskManagement/FloodRiskManagementProgram.aspx)

#### National Weather Service Flood Safety

[www.floodsafety.noaa.gov](http://www.floodsafety.noaa.gov)

#### US Geological Survey Flood Information

[water.usgs.gov/floods](http://water.usgs.gov/floods)

#### Association of State Floodplain Managers

[www.floods.org](http://www.floods.org)

Prepared by Stephanie Tubman  
American Geosciences Institute  
[geofellow@agiweb.org](mailto:geofellow@agiweb.org)

