

Floods occur nationwide and are the deadliest weather related killer in the United States. According to the 30-year average, there are 99 fatalities each year resulting from flash and river floods.

Flooding can be caused by a variety of weather and related phenomena, including tropical cyclones, low pressure systems, thunderstorms, snowmelt, and debris flows. Types of flooding caused by these events can range from river flooding, to urban flooding, to flash flooding. All flooding can be life threatening, so it is important to be aware of developing flood situations and to be prepared to take quick action to avoid danger. Learn more about types of flooding below:

- **Flash flooding:** A flash flood is defined as a rapid and extreme flow of high water into a normally dry area or a rapid water level rise in a stream or creek above a predetermined flood level. Ongoing flooding can intensify to flash flooding in cases where intense rainfall results in a rapid surge of rising flood waters. Commonly it occurs within six hours of a heavy rain event. However, flash floods can also occur within hours or even minutes if a dam or levee fails or rapid ponding of water caused by torrential rainfall. Flash floods can even occur in areas away from the causative event. Flash floods can catch people off guard and unprepared. You may only have a few minutes warning that these deadly, sudden floods are coming. If you live in areas prone to flash floods, plan now to protect your family and property.
- **River Flooding:** With river flooding, the NWS uses different categories to convey the expected flood severity. These categories are minor, moderate, and major flooding. Each category has a definition based on property damage and public threat and are closely coordinated by the local NWS office, the servicing River Forecast Center, and other emergency and public officials.
- **Coastal Flooding:** Coastal flooding is another type of flood. When it comes to tropical cyclones, wind speeds do not tell the whole story. Along the coast, storm surge is often the greatest threat to life and property from a tropical cyclone. In the past, large death tolls have resulted from the rise of the ocean associated with many of the major hurricanes that have made landfall. Hurricane Katrina in 2005 is a prime example of the damage and devastation that can be caused by storm surge. At least 1500 people lost their lives during Hurricane Katrina and many of those deaths occurred directly, or indirectly, as a result of storm surge. By knowing your vulnerability and what actions you should take, you can reduce the effects of a coastal flooding disaster.
- **Inland Flooding:** Since the 1970s, inland flooding has been responsible for more than half of the deaths associated with tropical cyclones in the United States. Typically greater rainfall amounts and flooding are associated with tropical cyclones that have a slow forward speed or stall over an area. These areas can be right along the coast but they may be even hundreds of miles away from where the storm made landfall. Tropical Storm Lee is a recent example of inland flooding severe hundred miles away from where the eye of the storm ultimately made landfall. In 2011, Tropical Storm Lee made landfall along the Louisiana coast, but the remnants from the storm caused heavy rainfall and historic flooding in Washington, DC, Pennsylvania, and as far away as New York. Ten fatalities, all in Pennsylvania, were confirmed as flood related during the flooding associated with Tropical Storm Lee.



Keep yourself informed by knowing flooding terminology:

- A **flood watch** or **flash flood watch** indicates that conditions are favorable for flooding to happen.
- A **flood warning** or **flash flood warning** means flooding is occurring or imminent.
- **Minor flooding** occurs when minimal or no property damage is expected, but the flooding could possibly cause some public threat or inconvenience.
- **Moderate flooding** occurs when some inundation of structures and roads near streams is expected. Some evacuations of people and or a transfer of property to higher elevations are necessary.
- **Major flooding** occurs when there is extensive inundation of structures and roads in addition to the possible significant evacuations of people and/or transfer of property to higher elevations.