**PAESTA Podcast Series -- You Asked, We Answered!**

**Episode 6 -- What is Flash Flooding?**

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Hello and welcome to another Earth Science podcast on water. This is your host, Garrett Burris, and today I will be answering the common question, what is flash flooding? We all have either seen it on the news or witnessed it in person, streets turn to rivers, basements turn to swimming pools, and houses along with other personal belongings are underwater and destroyed. Floods are one of the most dangerous natural disasters known to man. About 150 people die in flood related causes each year. [1] Most of these floods are caused by flash floods which are defined as torrential down poor’s that accumulate over land that cannot absorb water quick enough leading to fast moving flood waters. Flash floods form within 6 hours of the start of an event and commonly have waters that can move at a steady rate of 9 feet per second. At this rate the water can easily sweep away a rock weighing over one hundred pounds. [2] City and suburban areas with more infrastructure and human activity are more vulnerable to flooding due to less natural land and soil available to soak up the water. Dry land is also more prone to flooding due to the fact that it takes longer to begin absorbing the water. Frozen ground will delay the absorption of water. Other contributions of flooding are large amounts of snow melting and ice dams forming in rivers. [3]

Humans have played a direct role in how flooding may occur more often. The building of roadways and large cities create little room for water to be absorbed back into the earth. Cities rely on sewage drainage systems to direct the water into the ground. These drainage systems can often clog or do not have the capacity to hold up to extreme precipitation levels. The concrete roads and parking lots do not allow water to absorb so these streets soon become rivers. [3] Most flood-related deaths are caused by people in cars thinking they can make it across a flooded road. [4] Humans have also mowed down thousands of miles of acres of plants and trees that help aid with the absorption of water. These forests are usually replaced with more roads, parking lots, and housing.

Floods can also be caused by rivers overtopping their banks, which is exactly what happened in New Orleans in 2005, creating a swimming pool out of the entire city. Once this water overtops it banks it flows rapidly onto ground that is not used to absorbing large amounts of water. Often times, levees are built so that rivers have higher banks in order to prevent this issue. The only problem with a levee is that if the river does top its banks and overflows, all that water can no longer flow back into that river. [4]

Of course flooding is not just a concern for humans. Floods cause all kinds of pollution and disruption to the environment. Floods ruin the habitats for animals and can wipe out miles of livestock. This can leave long-term effects of the ecosystem. River banks are eroded and large amounts of sediment are carried and dumped downstream. Floods can spread pollution by carrying it several miles. Drinking water can be contaminated with chemicals and other pesticides. [5]

Because flooding is one of the leading causes of deaths due to natural disasters, it is important that people be aware and prepared for when one occurs. A flood can occur almost anywhere. Many people think that if they don’t live near water they are not at risk of floods but this is false. It is important that people stay updated with local weather and news stations and know the difference between a flood WATCH and WARNING. A flood WATCH indicates that possible flood conditions may be forming in the area where as a flood WARNING indicates that a flooding event is occurring in the next 30 to 60 minutes. Families should have flood plans made and discussed with their children as well as survival kits prepared. Kids should be taught to never underestimate the strength of moving flood waters. After a flood event one should stay out of disaster zones and help those in need around them. People should report down utility lines and stay away from polluted water. Do not drink water due to pollution risks. Throw away any food that was contaminated by flood waters. [6]

So there you have it folks, flood waters caused by flash flooding are no joke. Any type of flood should be taken seriously and can cause a lot more damage than meets the eye. The exact causes of these floods are often due to human creations. Just like anything else, the more we know about these issues, the better chance we have at finding solutions. This has been another Earth science podcast on water, I’m Garrett Burris, thanks for listening.

*(This audio file was recorded by Garrett Burris on April 6, 2016)*

**Works Cited**

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2. Redd, N. T. (2012, October 11). Flood Facts, Types of Flooding, Floods in History. Retrieved March 5, 2016, from <http://www.livescience.com/23913-flood-facts.html>
3. Society, N. G. (n.d.). Flood Information, Flooding Facts, Flash Floods, Photos -- National Geographic. Retrieved March 5, 2016, from <http://environment.nationalgeographic.com/environment/natural-disasters/floods-profile/>
4. Wood, R. A. (Ed.). (2004). Floods & Flash Floods. In *Weather Almanac* (11th ed., Vol. 1, p. [209]–225). Detroit: Gale. Retrieved from <http://go.galegroup.com/ps/i.do?id=GALE%7CCX3409500016&v=2.1&u=psucic&it=r&p=GVRL&sw=w&asid=8c9ef601e5e21ce98f8a30808d1bf156>
5. Environmental. (n.d.). Retrieved March 5, 2016, from <http://albertawater.com/what-are-the-consequences-of-flooding/environmental>
6. Flood and Flash Flood Preparedness. (2015, March 12). Retrieved March 5, 2016, from <http://www.disastercenter.com/guide/flood.html>

**Earth Science Literacy Principles**

**Big Idea 1. Earth Scientists use repeatable observations and testable ideas to understand and explain our planet.**

1.5 Earth Scientists use their understanding of the past to forecast Earth’s future

**Big Idea 3. Earth is a complex system of interacting rock, water, air, and life**

3.1 The four major systems of Earth are the geosphere, hydrosphere, atmosphere, and biosphere.

3.2 All Earth processes are the result of energy flowing and mass cycling within and between Earths systems.

**Big Idea 4. Earth is continuously changing.**

4.8 Weathered and unstable rock materials erode from some parts of Earth’s surface and are deposited in others.

**Big idea 8. Natural Hazards pose risks to humans.**

8.1 Natural Hazards result from natural Earth processes

8.3 Human Activities can contribute to the frequency and intensity of some natural hazards.

8.8 An Earth-science-literate public is essential for reducing risks from natural hazards.

**Big Idea 9. Humans significantly alter the Earth.**

9.1 Human Activities significantly change the rates of many of earth’s surface processes.

9.7 Humans significantly alter the biosphere.

**Links**

Encyclopedia of Earth – Floods: The power of water http://www.eoearth.org/view/news/51cbf1f97896bb431f6a7650/

National Geographic – Floods

<http://environment.nationalgeographic.com/environment/natural-disasters/floods-profile/>

PBS. Org – Science of floods

<http://www.pbs.org/newshour/extra/1997/09/the-science-of-floods/>

Scientific America – Predicting floods in a flash

<http://www.scientificamerican.com/podcast/episode/predicting-floods-in-a-flash-08-11-21/>

Live Science - Flood Facts, Types of Flooding, Floods in History. <http://www.livescience.com/23913-flood-facts.html>