

**Natural hazards, the character of  
manifestations and effects on  
people and objects of economy.**

# Can you name some natural disasters?

- Earthquakes
- Hurricanes
- Lightning
- Fire
- Tsunami
- Tornados
- Volcanoes
- Blizzards
- Floods
- Heat
- Drought

# What You'll Learn

During this PowerPoint you are going to about 11 natural disasters. You will see some statistical information about how each disaster impacts man. Afterwards, you'll be a researcher to learn how natural disasters affect the environment.

# Earthquake



A sudden movement of the earth's crust caused by the release of stress collected along faults or by volcanic activity

Earthquake Statistics <http://neic.usgs.gov/neis/eqlists/eqstats.html>

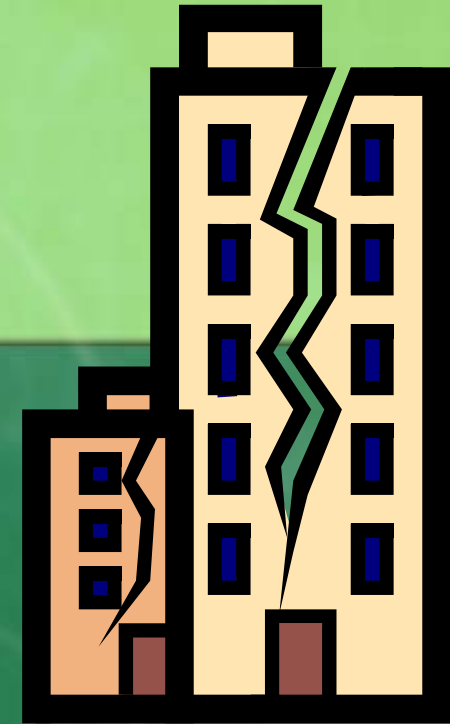
Earthquake Video <http://video.nationalgeographic.com/video/player/environment/environment-natural-disasters/earthquakes/earthquake-101.html>

# Richter Earthquake Magnitudes Effects



Less than 3.5	Generally not felt, but recorded.
3.5-5.4	Often felt, but rarely causes damage.
Under 6.0	At most slight damage to well-designed buildings. Can cause major damage to poorly constructed buildings over small regions.
6.1-6.9	Can be destructive in areas up to about 100 kilometers across where people live.
7.0-7.9	Major earthquake. Can cause serious damage over larger areas.
8 or greater	Great earthquake. Can cause serious damage in areas several hundred kilometers across.

# Worldwide Earthquake Related Deaths for 2000 - 2009



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Estimated Deaths	231	21357	1685	33819	228802	82364	6605	712	88011	369

# Hurricane



If winds reach 74 mph, then they are called:

- **"hurricane"** (the North Atlantic Ocean, the Northeast Pacific Ocean east of the dateline, or the South Pacific Ocean east of 160E)
- **"typhoon"** (the Northwest Pacific Ocean west of the dateline)
- **"severe tropical cyclone"** (the Southwest Pacific Ocean west of 160E or Southeast Indian Ocean east of 90E)
- **"severe cyclonic storm"** (the North Indian Ocean)
- **"tropical cyclone"** (the Southwest Indian Ocean)

# Most Expensive Hurricanes (Atlantic)

Rank	Hurricane Name	Year	Category	Damage (U.S.)
1	Hurricane Katrina	2005	3	\$81,000,000,000
2	Hurricane Andrew	1992	5	\$26,500,000,000
3	Hurricane Wilma	2005	3	\$20,600,000,000
4	Hurricane Ike	2008	2	\$18,000,000,000
5	Hurricane Charley	2004	4	\$15,000,000,000
6	Hurricane Ivan	2004	3	\$14,200,000,000
7	Hurricane Rita	2005	3	\$11,300,000,000
8	Hurricane Frances	2004	2	\$8,900,000,000
9	Hurricane Hugo	1989	4	\$7,000,000,000
10	Hurricane Jeanne	2004	3	\$6,900,000,000
11	Tropical Storm Allison	2001	T.S.	\$5,000,000,000
12	Hurricane Floyd	1999	2	\$4,500,000,000

**Note: Damages are listed in US dollars and are not adjusted for inflation.**



# Lightning



a brilliant electric spark discharge in the atmosphere, occurring within a thundercloud, between clouds, or between a cloud and the ground

# Fire



a burning mass of material

# The Overall Fire Picture - 2007



- There were 3,430 civilians that lost their lives as the result of fire.
- There were 17,675 civilian injuries that occurred as the result of fire.
- There were 118 firefighters killed while on duty.
- Fire killed more Americans than all natural disasters combined.
- 84 percent of all civilian fire deaths occurred in residences.
- There were an estimated 1.6 million fires in 2007.
- Direct property loss due to fires was estimated at \$14.6 billion.
- An estimated 32,500 intentionally set structure fires resulted in 295 civilian deaths.
- Intentionally set structure fires resulted in an estimated \$733 million in property damage.

# Tsunami



an unusually large sea wave produced by a seaquake or undersea volcanic eruption

# Volcano



a vent in the earth's crust through which lava, steam, ashes, etc., are expelled, either continuously or at irregular intervals

Volcano Statistics

[http://www.epicdisasters.com/index.php/site/comments/the\\_worlds\\_worst\\_volcanic\\_eruptions/](http://www.epicdisasters.com/index.php/site/comments/the_worlds_worst_volcanic_eruptions/)

# Deadliest Volcanic Eruptions



Location	Date	Death Toll
Mt. Tambora, Indonesia	April 10 - 15, 1816	92,000
Mt. Pelee, West Indies	April 25 - May 8, 1902	40,000
Mt. Krakatoa, Indonesia	August 26 - 28, 1883	36,000
Nevado del Ruiz, Columbia	November 13, 1985	23,000
Mt. Unzen, Japan	1792	12,000 - 15,000
Mt. Vesuvius, Italy	April 24, AD 79	10,000+
The Laki Volcanic System, Iceland	June 8, 1783 - February 1784	9350

# Blizzard



A violent snowstorm with winds blowing at a minimum speed of 35 miles per hour and visibility of less than one-quarter mile for three hours

Top Blizzards in US

- <http://www.infoplease.com/ipa/A0886098.html>
- <http://nsidc.org/snow/blizzard/storms.html>

# Top 10 Deadliest Blizzards

Death Toll	Event	Location	Date
4,000	Iran Blizzard	Iran	1972
1,337	2008 Afghanistan blizzard	Afghanistan	2008
400	Great Blizzard of 1888	United States	1888
318	1993 North American Storm Complex	United States	1993
235	Schoolhouse Blizzard	United States	1888
199	Hakkōda Mountains incident	Japan	1902
144	Armistice Day Blizzard	United States	1940
133	2008 Chinese winter storms	China	2008
112	1995 Kazakh Blizzard	Kazakhstan	1995
54	Blizzard of 1978	United States	1978



# Flood



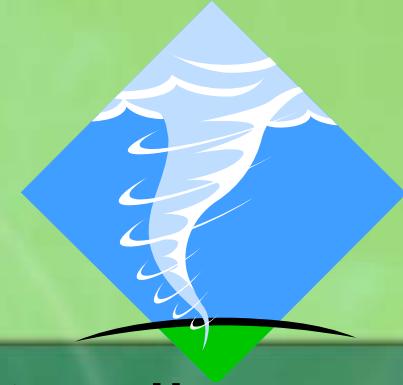
A temporary rise of the water level, as in a river or lake or along a seacoast, resulting in its spilling over and out of its natural or artificial confines onto land that is normally dry. Floods are usually caused by excessive runoff from precipitation or snowmelt, or by coastal storm surges or other tidal phenomena.

# Top 10 deadliest floods and landslides



Death Toll	Event	Location	Date
2,500,000–3,700,000	1931 China floods	China	1931
900,000–2,000,000	1887 Yellow River (Huang He) flood	China	1887
500,000–700,000	1938 Yellow River (Huang He) flood	China	1938
231,000	Banjiao Dam failure, result of Typhoon Nina. Approximately 86,000 people died from flooding and another 145,000 died during subsequent disease.	China	1975
145,000	1935 Yangtze river flood	China	1935
more than 100,000	St. Felix's Flood, storm surge	Netherlands	1530
100,000	Hanoi and Red River Delta flood	North Vietnam	1971
100,000	1911 Yangtze river flood	China	1911
50,000–80,000	St. Lucia's flood, storm surge	Netherlands	1287
60,000	North Sea flood, storm surge	Netherlands	1212

# Tornado



A violently rotating column of air extending from a cumulonimbus cloud to the Earth, ranging in width from a few meters to more than a kilometer and whirling at speeds between 40 and 316 mi per hour.

# Latest U.S. Tornado Statistics



	2006	2007	2008	2009	Three Year Average
Number of Tornadoes	1103	1098	1691	1053	1297
Number of Tornado Related Deaths	67	81	126	21	91
Number of Killer Tornadoes	25	26	37	9	29

# Drought



A long period of abnormally low rainfall, especially one that adversely affects growing or living conditions.

Statistical Information [http://www.ncdc.noaa.gov/paleo/drought/drght\\_alleve.html](http://www.ncdc.noaa.gov/paleo/drought/drght_alleve.html)

# Drought Facts



- The cost of losses due to drought in the United States averages \$6-8 billion every year, but range as high as \$39 billion for the three year drought of 1987-1989, which was the most costly natural disaster documented in U.S. history.
- The two major droughts of the 20th century, the 1930s Dust Bowl drought and the 1950s drought, lasted five to seven years and covered large areas of the continental U.S.

# Top 10 Droughts Reported - Economic Damages



Disaster	Date	Cost
China P Rep	1994	13,755,200,000
Australia	1981	6,000,000,000
Spain	1990	4,500,000,000
United States	2002	3,300,000,000
Iran Islam Rep	1999	3,300,000,000
Spain	1999	3,200,000,000
China P Rep	2006	2,910,000,000
Zimbabwe	1981	2,500,000,000
Australia	2002	2,000,000,000
Brazil	2004	1,650,000,000

# Heat Wave



- an air mass of high temperature covering an extended area and moving relatively slowly
- a period of abnormally hot and usually humid



# Top 10 Heat Waves reported based on Number of People Killed

Disaster	Date	Killed
Italy	2003	20,089
France	2003	19,490
Spain	2003	15,090
Germany	2003	9,355
Portugal	2003	2,696
India	1998	2,541
France	2006	1,388
United States	1980	1,260
India	2003	1,210
Belgium	2003	1,175



# Top 10 Heat Waves reported based on Economic Damages



Disaster	Date	Cost
France	2003	4,400,000,000
Italy	2003	4,400,000,000
United States	1998	4,275,000,000
United States	1980	2,000,000,000
United States	1986	1,750,000,000
Germany	2003	1,650,000,000
United States	1999	1,000,000,000
Spain	2003	880,000,000
India	2003	400,000,000
Switzerland	2003	280,000,000
Austria	2003	280,000,000

# Which disasters are the worst?

In the next two slides you will see the 10 'Worst' Natural Disasters as decided by expert David Crossley, Professor of Geophysics.

# 10 'Worst' Natural Disasters

- The October 8, 2005 magnitude 7.6 earthquake in Pakistan
- Hurricane Katrina
- Volcanic Eruption - Nevado del Ruiz (Columbia) in 1985
- 1976 earthquake magnitude 8 Tangshan event in China
- Indonesia Volcanic Eruptions – Tambora volcano of 1815 & Krakatoa explosion in 1883

# 10 'Worst' Natural Disasters

- New Madrid earthquakes of 1811-12 in southern Missouri
- 1737 Calcutta, India typhoon
- Santorini volcanic explosion around 1500 B.C.
- major global paleoclimate event that happened around 3000B.C.
- mass extinction during the Cretaceous-Tertiary Stratigraphic Boundary, 65 million years ago

# Top 10 Deadliest Natural Disasters

Source [http://en.wikipedia.org/wiki/List\\_of\\_natural\\_disasters\\_by\\_death\\_toll](http://en.wikipedia.org/wiki/List_of_natural_disasters_by_death_toll)

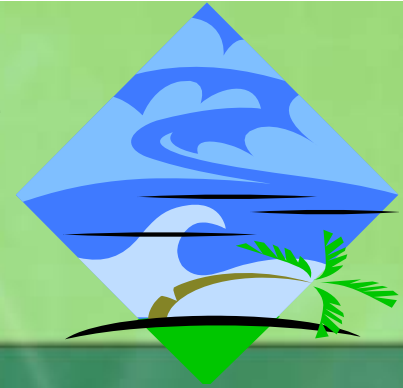
Rank	Event	Location	Date	Death Toll (Estimate)
1.	1931 China floods	China	July-Nov, 1931	1,000,000– 4,000,000
2.	1887 Yellow River flood	China	Sept-Oct 1887	900,000– 2,000,000
3.	1556 Shaanxi earthquake	Shaanxi Province, China	Jan 23, 1556	830,000
4.	1970 Bhola cyclone	Bangladesh	Nov 13, 1970	500,000
5.	1839 India Cyclone	India	Nov 25, 1839	300,000
6.	526 Antioch earthquake	Antioch, Byzantine Empire	May 20, 526	250,000
7.	1976 Tangshan earthquake	Tangshan, Hebei, China	July 28, 1976	242,000
8.	1920 Haiyuan earthquake	Haiyuan, Ningxia-Gansu, China	Dec 26, 1920	240,000
9.	1975 Banqiao Dam flood	Zhumadian, Henan Province, China	Aug 7, 1975	90,000– 230,000
10.	2004 Indian Ocean earthquake/tsunami	Indian Ocean	Dec 26, 2004	229,866

# How **Earthquakes** Impact the Environment



- collapsing buildings
- property damage
- mud slides
- fires
- floods
- tsunamis
- loss of power

# How **Hurricanes** Impact the Environment

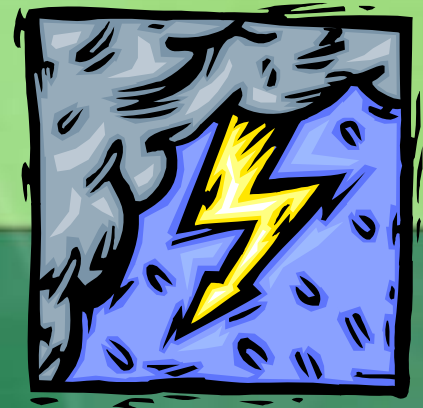


- erosion
- houses, buildings, and other structures destroyed
- heavy flooding of inland areas
- tornadoes
- loss of power
- contaminated water supply



# How **Lightning** Impacts the Environment

- fire
- loss of power



# How **Fire** Impacts the Environment



- houses, buildings, and other structures destroyed
- loss of habitat

# How **Tsunamis** Impact the Environment



- houses, buildings, and other structures destroyed
- loss of power
- erosion
- fresh water contaminated

# How **Volcanic Eruptions** Impact the Environment



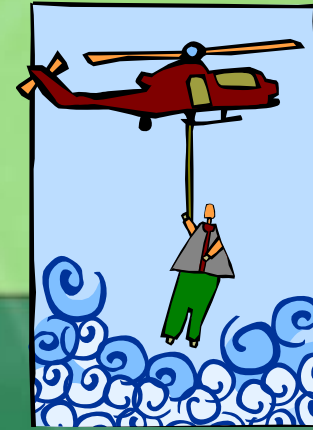
- houses, buildings, and other structures destroyed
- fires
- toxic gases released into the atmosphere
- Carbon dioxide emitted from volcanoes adds to the natural greenhouse effect.
- loss of habitat

# How **Blizzards** Impact the Environment



- flooding when snows melt
- trees fall
- power outages
- hypothermia

# How **Flooding** Impacts the Environment



- disease
- loss of habitat
- houses, buildings, and other structures destroyed
- household wastes get into the water system
- power outages

# How **Tornadoes** Impacts the Environment



- Tornadoes could hit hazardous or toxic materials which could be carried by a thunderstorm and then transported along ways down stream.
- could transport certain types of small animals and plants across the land
- destroys topsoil and crops

# How **Drought** Impacts the Environment



- young trees die
- dried up lakes and other water sources
- loss of livestock and crops
- People use more fuel during droughts.
- losses or destruction of fish and wildlife habitat
- lack of food and drinking water for wild animals
- increase in disease in wild animals, because of reduced food and water supplies
- migration of wild animals, leading to a loss of wildlife in some (drought-stricken) areas and too many wildlife in areas not affected by drought
- increased stress on endangered species
- lower water levels in reservoirs, lakes, and ponds
- loss of wetlands
- more fires
- wind and water erosion of soils, reduced soil quality