Geohazards

- **Nepal Earthquake** – worst in Nepal for 80 years, 3,800 killed, 6.7mag aftershocks. 100 aftershocks. ([Telegraph 2015](http://www.telegraph.co.uk))
- A hazard can be defined as any natural process or phenomenon that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services and social in addition to economic disruption or environmental damage. ([UN/ISDR 2009](http://www.unisdr.org))
- **Scientific American 2011 – C Rowan**, discussed the importance of tectonic setting.
- Honokui Island Quake Magnitude 8.9 (released 8,000 time more energy than the 6.3 Christchurch Quake).
- Japan located on a complicated plate boundary region – 3 subduction zone meet and run parallel to Japan’s east coast. To the South, the Philippine plate is being subducted beneath the Eurasian plate and to the north, the pacific under the N American.
- According to ([Key 1995](http://www.key1995.com)), about 60% of all EQ related deaths are caused by the failure of unreinforced masonry structures (URMs).
- In Bam 2003, 26,000 killed due to unreinforced buildings.
- 9000 dead due to mass movements between 1990 and 1999.
- Between 2002 and 2007, there were 44,000 fatalities approx. ([Petley 2004](http://www.petley2004.com))

Atmospheric Hazards

- **Hurricanes** can be defined as intense tropical cyclonic storms that originate over warm tropical seas ([E. Bryant 2005](http://www.ebryant2005.com))
- On average, a cyclone precipitates 100mm of rain per day within 200km of the eye. ([Smith and Petley 2009](http://www.smithandpetley2009.com))
- On average, a cyclone precipitates 30-44mm of rain per day within 200 to 400km from the eye. ([Smith and Petley 2009](http://www.smithandpetley2009.com))
- 1952, hurricane at Reunion Island dropped 3240mm of rain in 3 days ([Smith and Petley 2009](http://www.smithandpetley2009.com))
- Hurricanes derive their energy from the evaporation of water over oceans ([Anthes et al 1982](http://www.anthesetal1982.com))
- Storm surges tend to be 6-7m high and can increase pressure on land by 7million tonnes per km2.
- Storm surges may even trigger EQ – Tokyo 1923 - 143,000 lives lost ([Smith and Petley 2009](http://www.smithandpetley2009.com))
- 123 million people worldwide are exposed to tropical cyclones in an average year.
- Hurricanes develop in latitudes 5 to 20 degrees above or below the equator.
- A storm is classed as a hurricane when wind speeds exceed 74mph.
- Beta Advection Model is now used to predict hurricanes ([Grey 2006](http://www.grey2006.com))
- Satellites can accurately predict hurricanes 3-5 days in advance.
- Can only use probability rather than stating specific dates.
- By 2020, 75% of people will live in coastal regions.
- New Orleans prepare – built dams and structures with $512 million, despite the 1 in 500 chance of a direct hit.