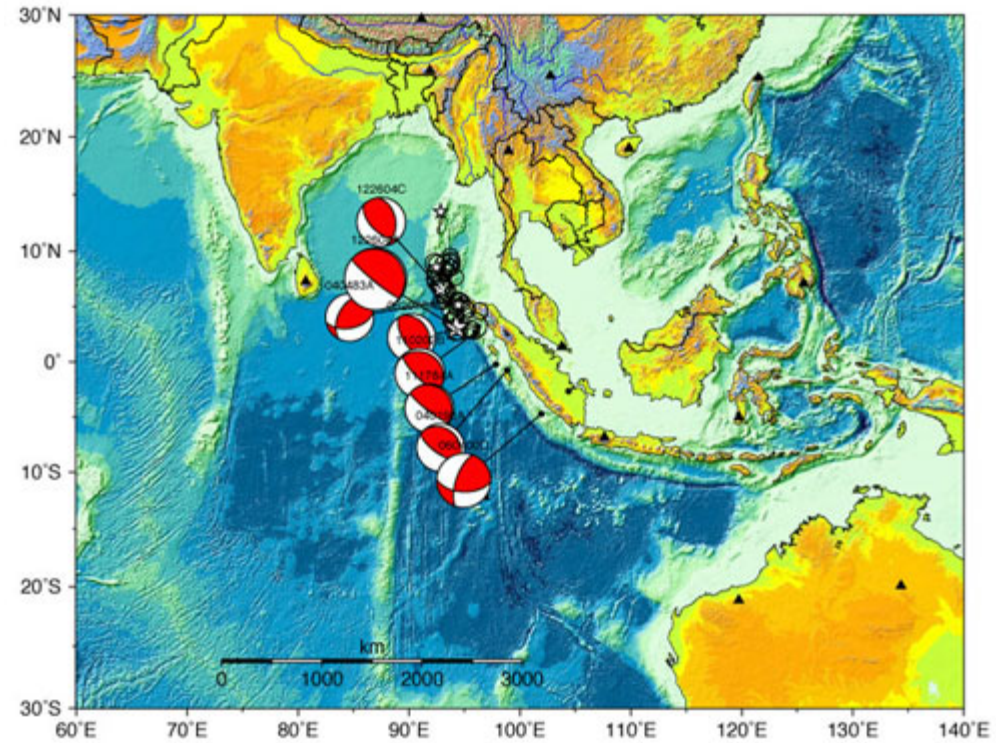


The 2004 Indian Ocean Earthquake: A Case Study

- **Dec 26, 2004: Magnitude 9.3 (moment mag)**
- **Undersea (depth 30 km)**
- **Epicentre of the W coast of Sumatra**
- **Tsunami followed, killing 225,000 in 11 countries**
- **Caused by subduction: A 1600 km faultline slipped ~15 m along the subduction zone with the India plate slides under the Burma plate (over several mins)**
- **Reverse faulting**
- **The 2nd largest earthquake ever recorded on a seismograph.**

Mw 9.0 Earthquake on 12/26/2004 Off West Coast of Northern Sumatra



<http://www.iris.iris.edu/sumatra/>

The 2004 Indian Ocean Earthquake/Tsunami Case Study



Tsunami in Banda Aceh, Indonesia, January 2005

<http://news.nationalgeographic.com>



This fishing boat landed on the main street of Banda Aceh several miles from the sea.

- **24-30 m waves reaching the coasts**
- **Total E of Tsunami = 5 megatons of TNT**
- **More than twice the total explosive energy used during all of WWII**
- **Greatest strength waves was in the E-W direction**
- **Distance is NEVER a guarantee of safety, Somalia was hit harder than Bangladesh**
- **No warning systems were in place**
- **The tsunami in deep water is only recognizable by expensive little sensors**
- **FYI- The Pacific “Ring of Fire” has a warning system
The UN is implementing an Indian Ocean Tsunami Warning System**
- **Minutes before it reached land, the sea receded temporarily from the coast, and people went out to collect the stranded fish**
- **The tribes all evacuated, with NO casualties**

- **229, 866 people lost, (186,983 of that total are dead, and 42, 883 are missing)**
- **1/3 of the dead are children b/c they are too little to resist the surging waters**
- **9,000 tourists (mostly European's) died**
- **Coral reefs** would have helped, they would have acted as a barrier
- **Economic losses: tourism and fishing**