

2009 Global Assessment Report on Disaster Risk Reduction

Risk and poverty in a changing climate

Invest today for a safer tomorrow

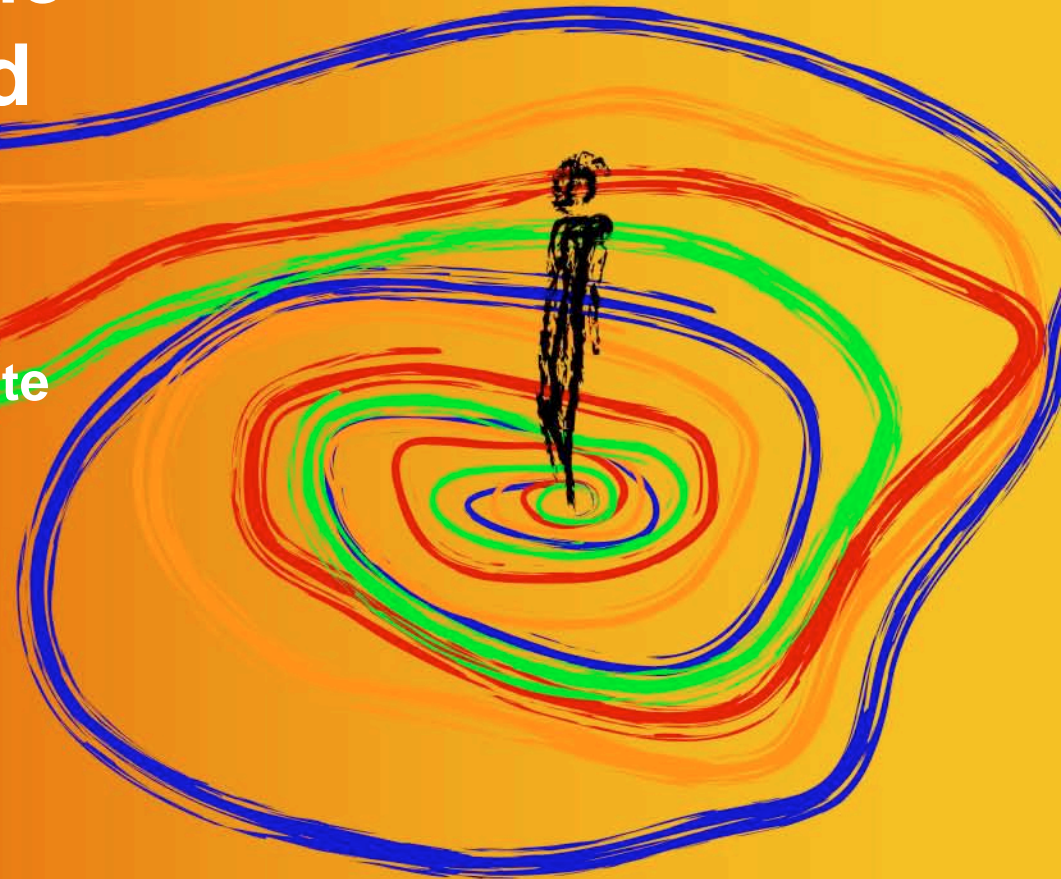
The Global Landslide and Tsunami Hazard

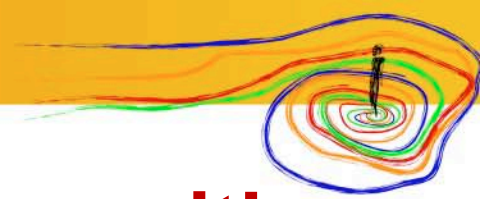
Farrokh Nadim

Norwegian Geotechnical Institute



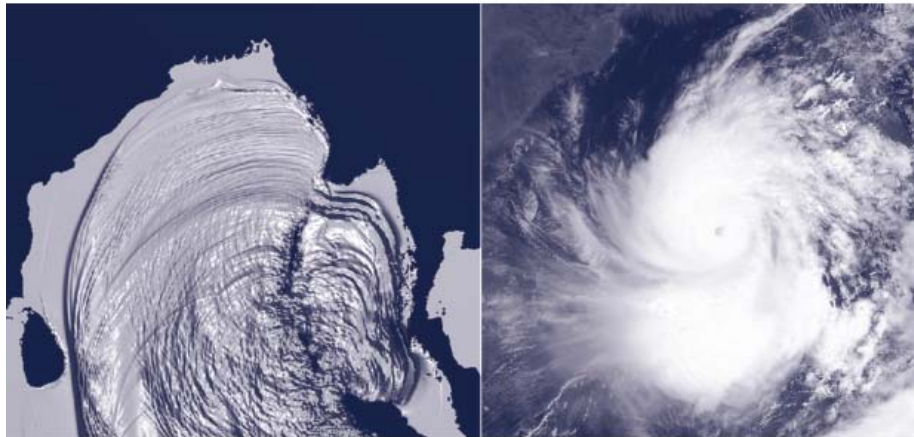
United Nations





Background for NGI's collaboration with UN/ISDR

Natural and Conflict Related Hazards in Asia-Pacific



Risk assessment and mitigation measures for natural and conflict related hazards in Asia-Pacific

Study commissioned by:

United Nations Office for Coordination of Humanitarian Affairs, OCHA Regional Office for Asia and the Pacific, Bangkok



Study financed by:

Norwegian Ministry of Foreign Affairs



In cooperation with:

International Peace Research Institute, Oslo (PRIO)



The Earth Institute at Columbia University



UNEP / GRID-Europe



Stene & Lahidji SARL

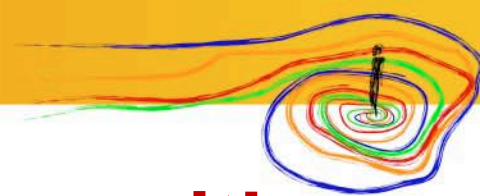
STENE & LAHIDJI



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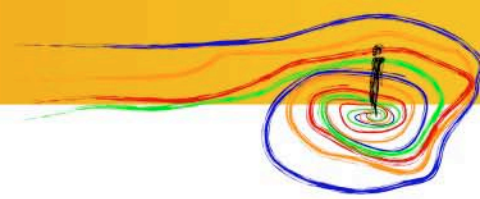




Background for NGI's collaboration with UN/ISDR

- The two projects shared data and models
- UNEP / GRID-Europe did the cyclone and flood hazard assessment for NGI's project for OCHA
- NGI did the landslide and tsunami hazard assessment for the Global Assessment Report.

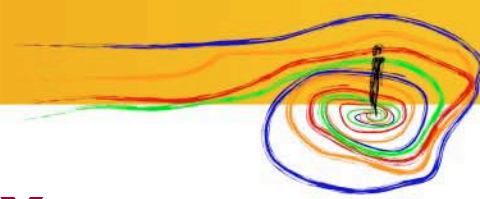




Factors considered in global landslide hazard model

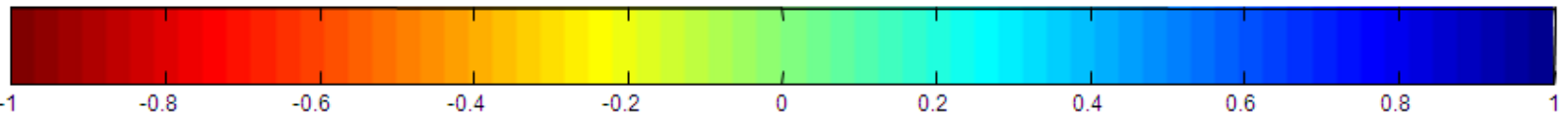
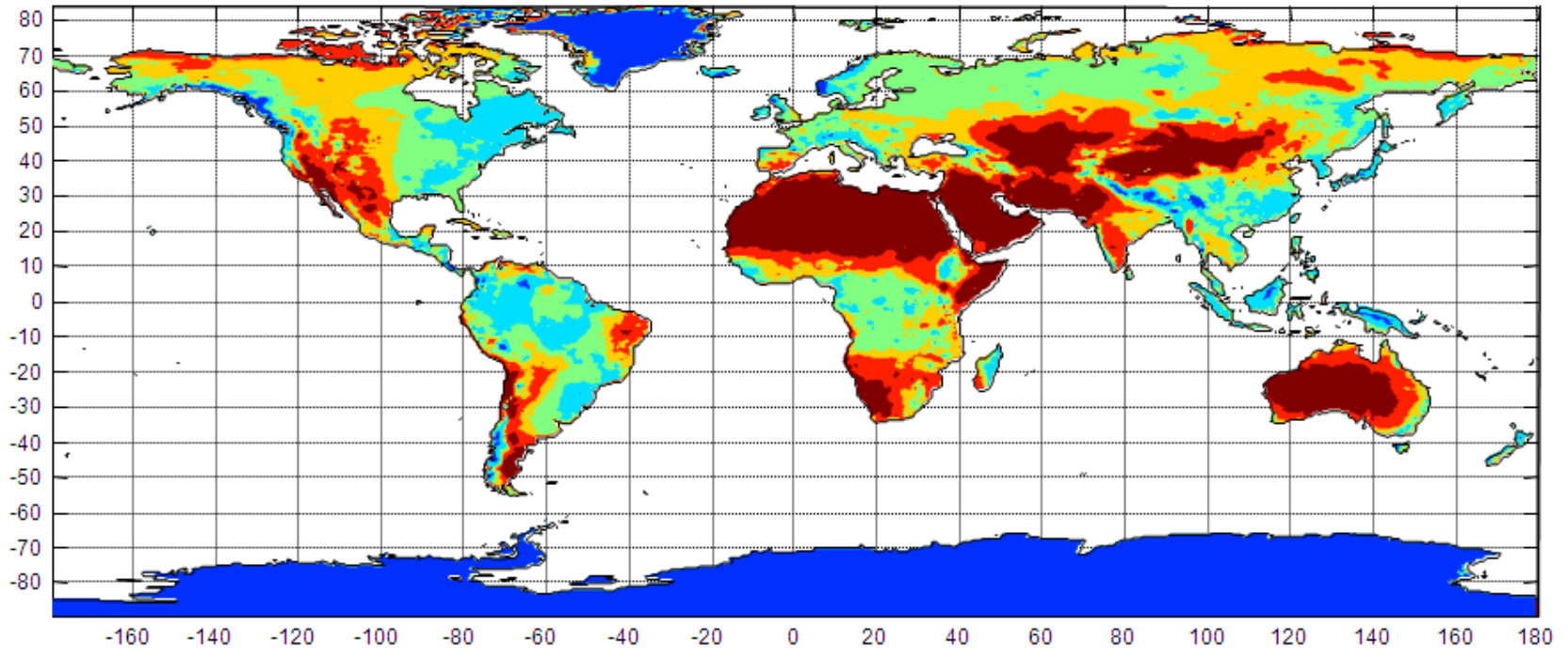
- Topography (terrain slope)
- Geology
- Soil moisture
- Vegetation cover
- Extreme precipitation events
- Earthquake events





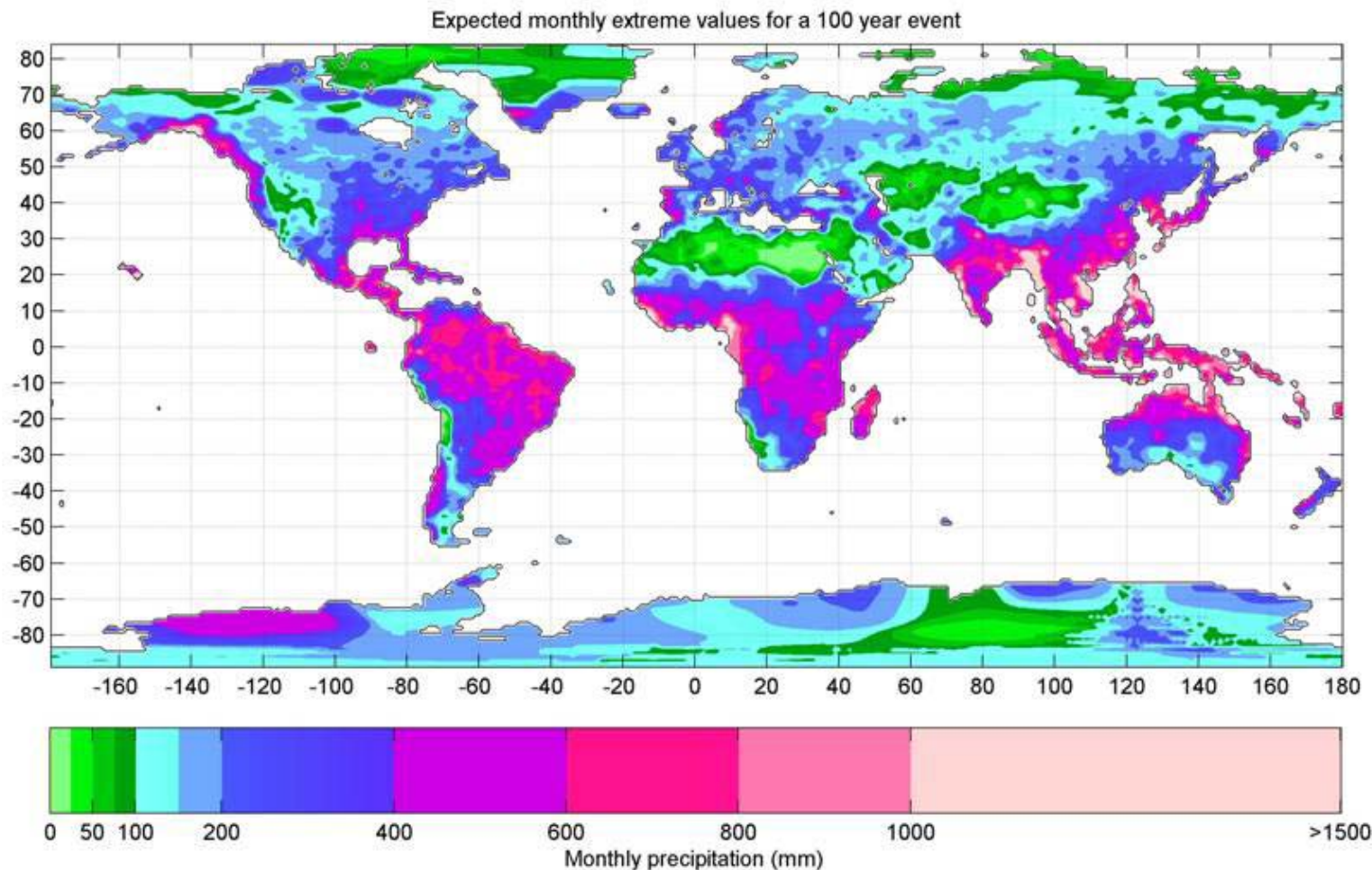
Global soil moisture index

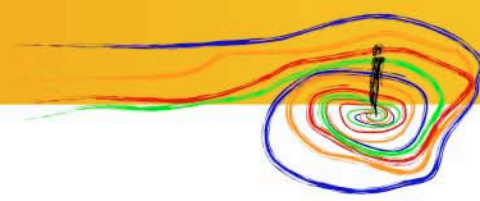
global annual soil moisture index 1961 - 1990



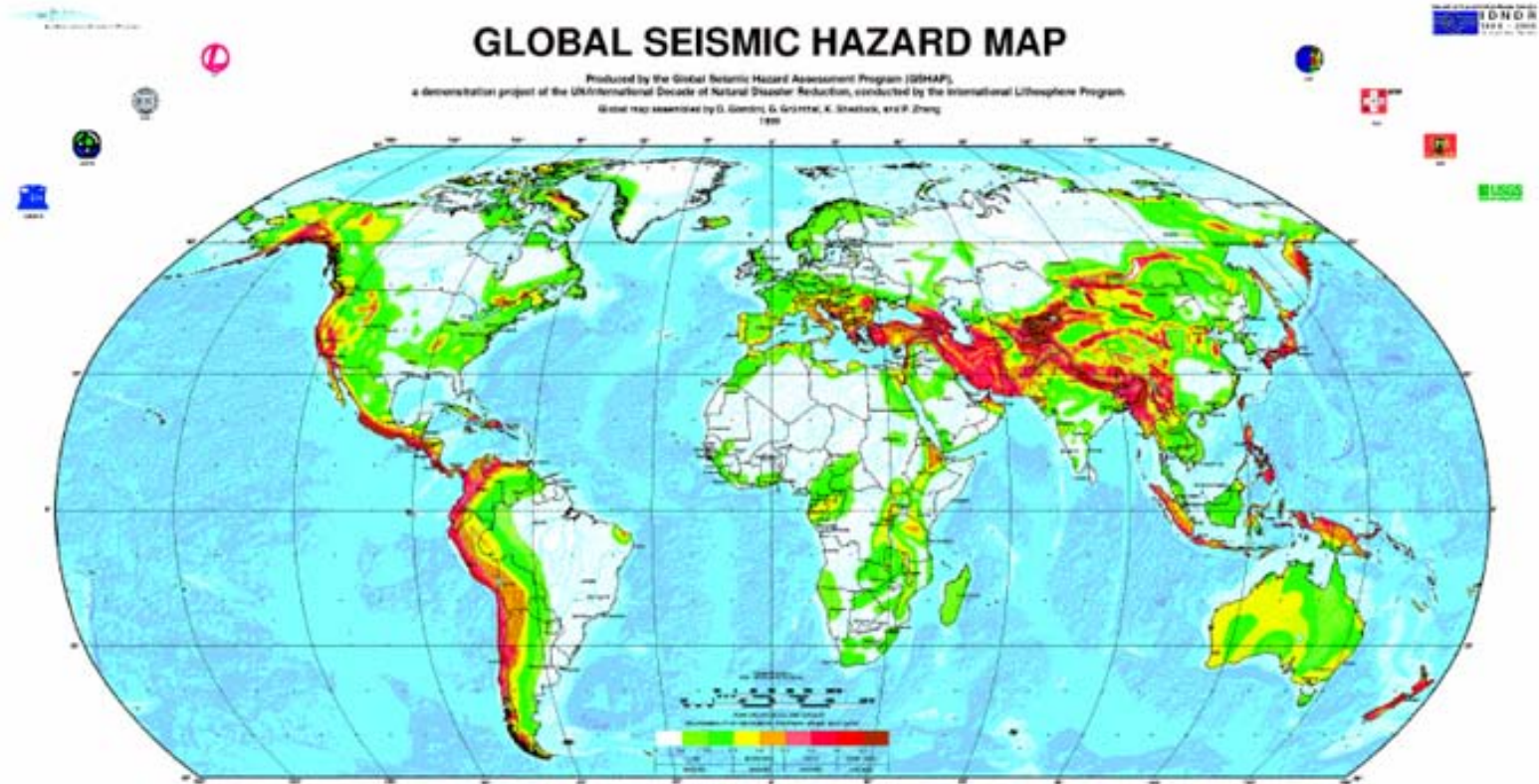


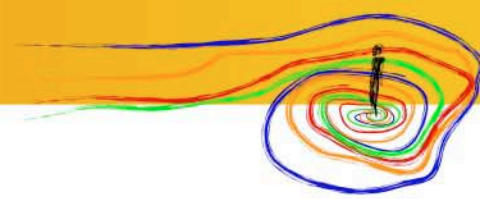
Expected monthly extreme precipitation





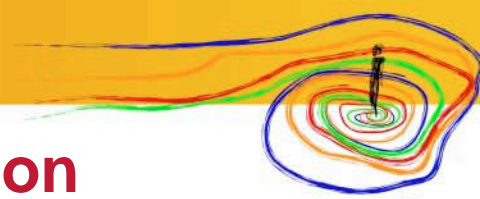
Seismic triggering factor





Global Landslide Risk



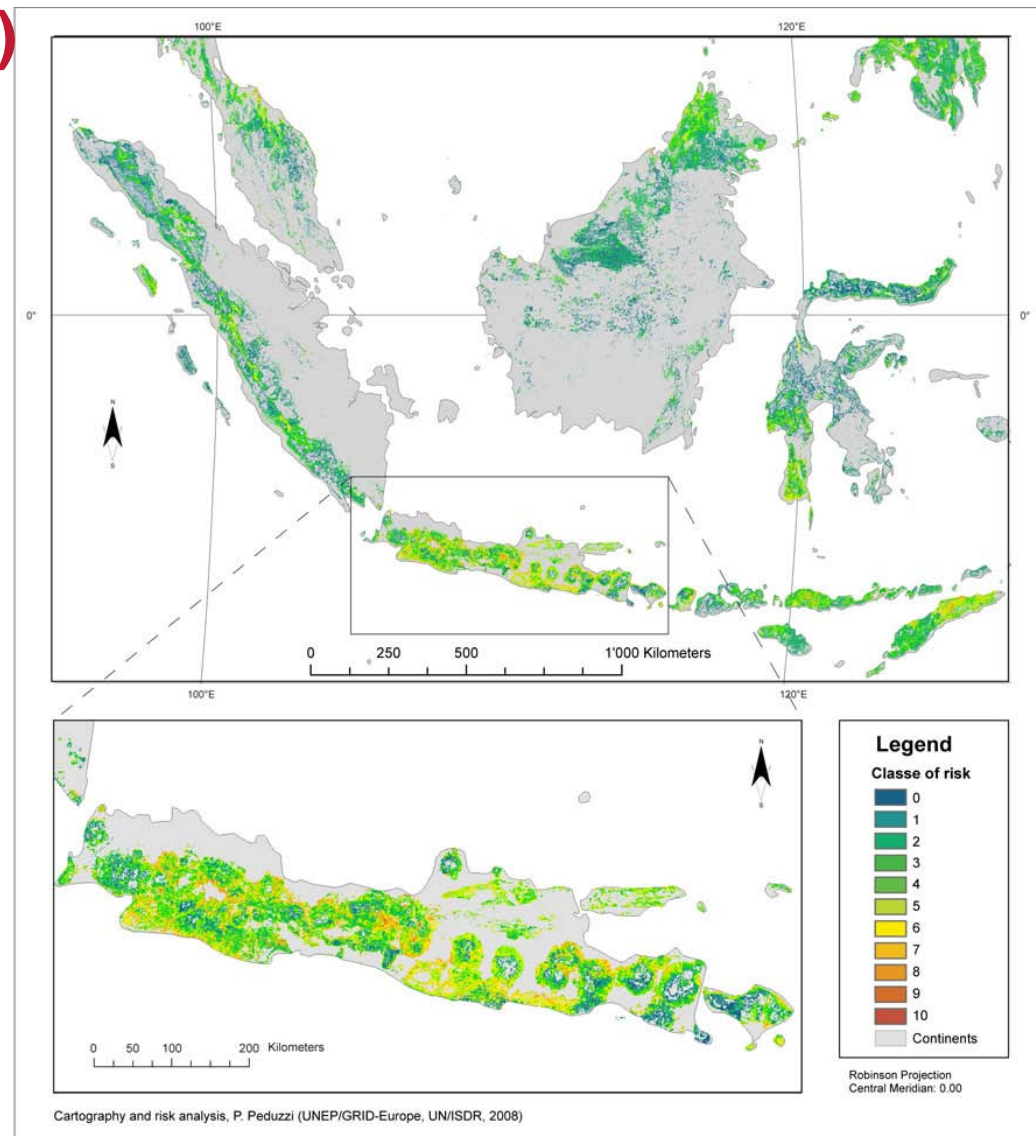


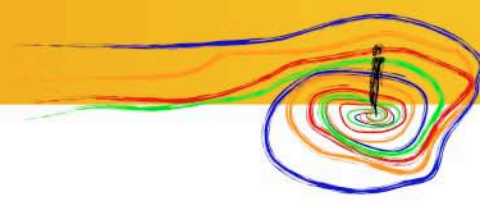
Landslide risk (modelled for both precipitation and earthquake triggers)

55% of landslide mortality risk is concentrated in 10 countries, which also account for 80% of the exposure.

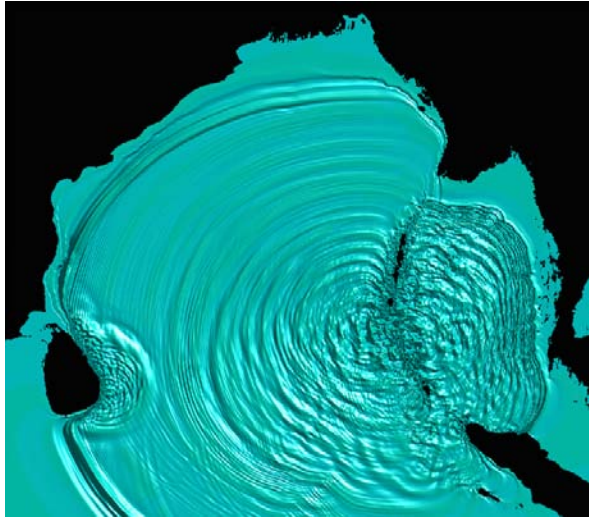
Countries with high exposure:

Comoros, Dominica, Nepal, Guatemala, Papua New Guinea, Solomon Islands, Sao Tome and Principe, Indonesia, Ethiopia, and the Philippines

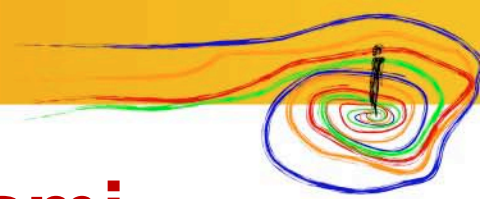




Tsunamis



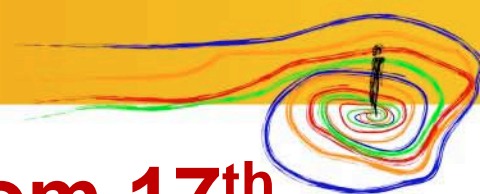
Thailand – Aftermath of 26 December 2004 tsunami



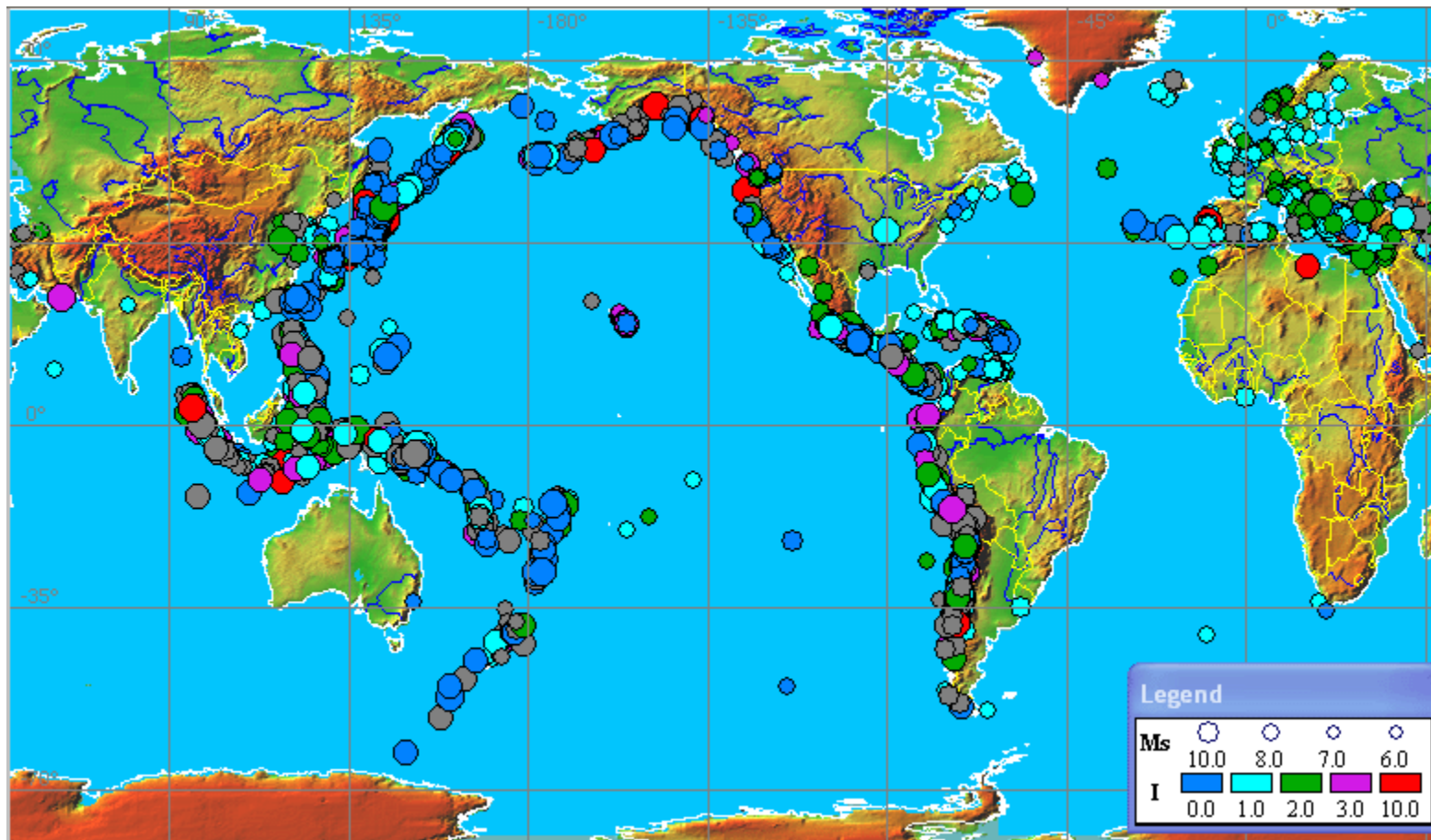
Overview of approach for tsunami hazard assessment

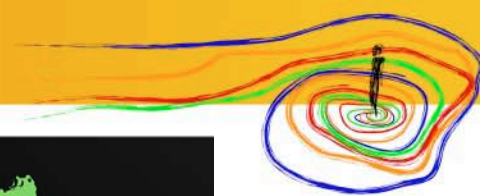
- Establish the tsunami hazard based on today's knowledge
- Share information with other leading international organisations
- Perform computations in hotspot areas where information is lacking





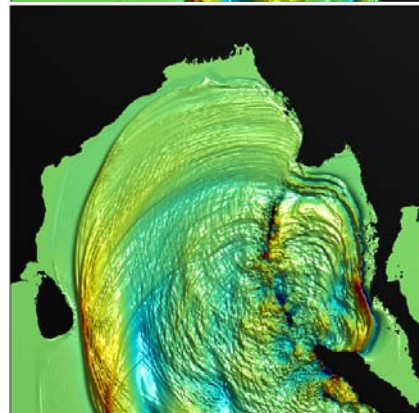
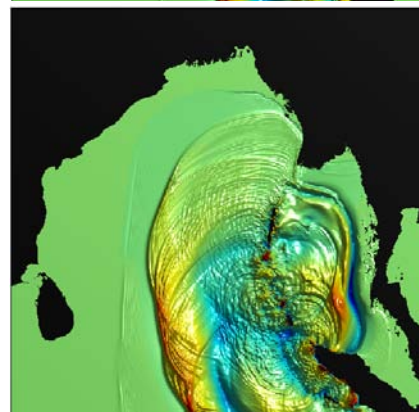
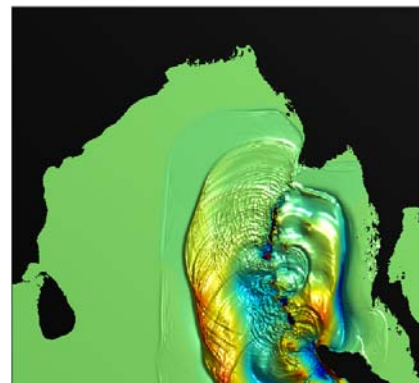
Historic tsunamis in the world from 17th century until today

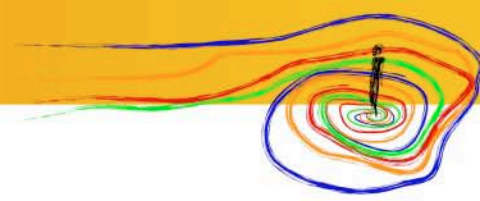




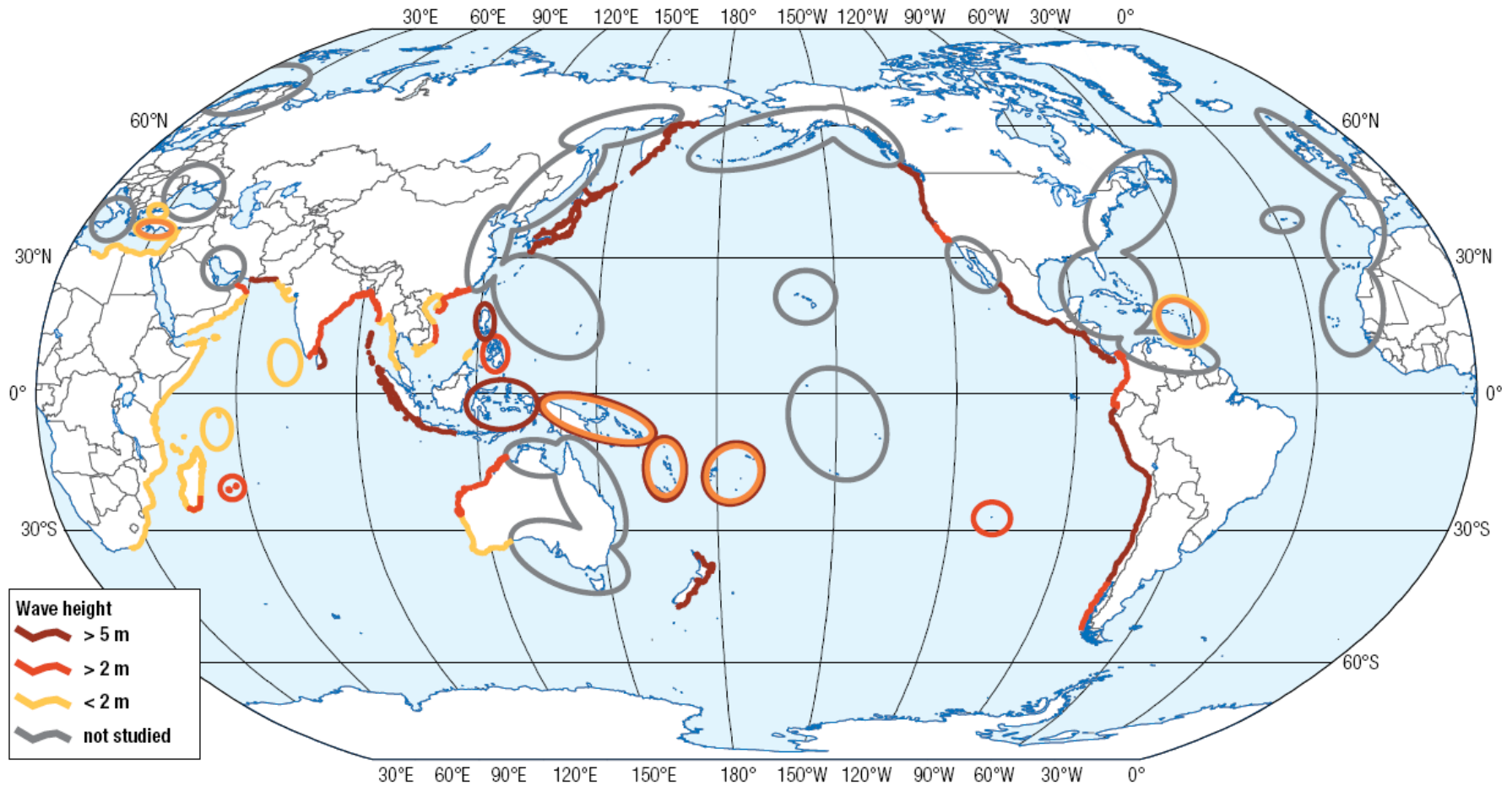
Tsunami sources

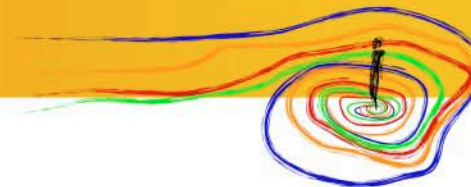
- Major tsunami-triggering sources
 - Earthquakes (primary source)
 - Volcano collapse
 - Submarine slides
- Emphasis on large earthquakes



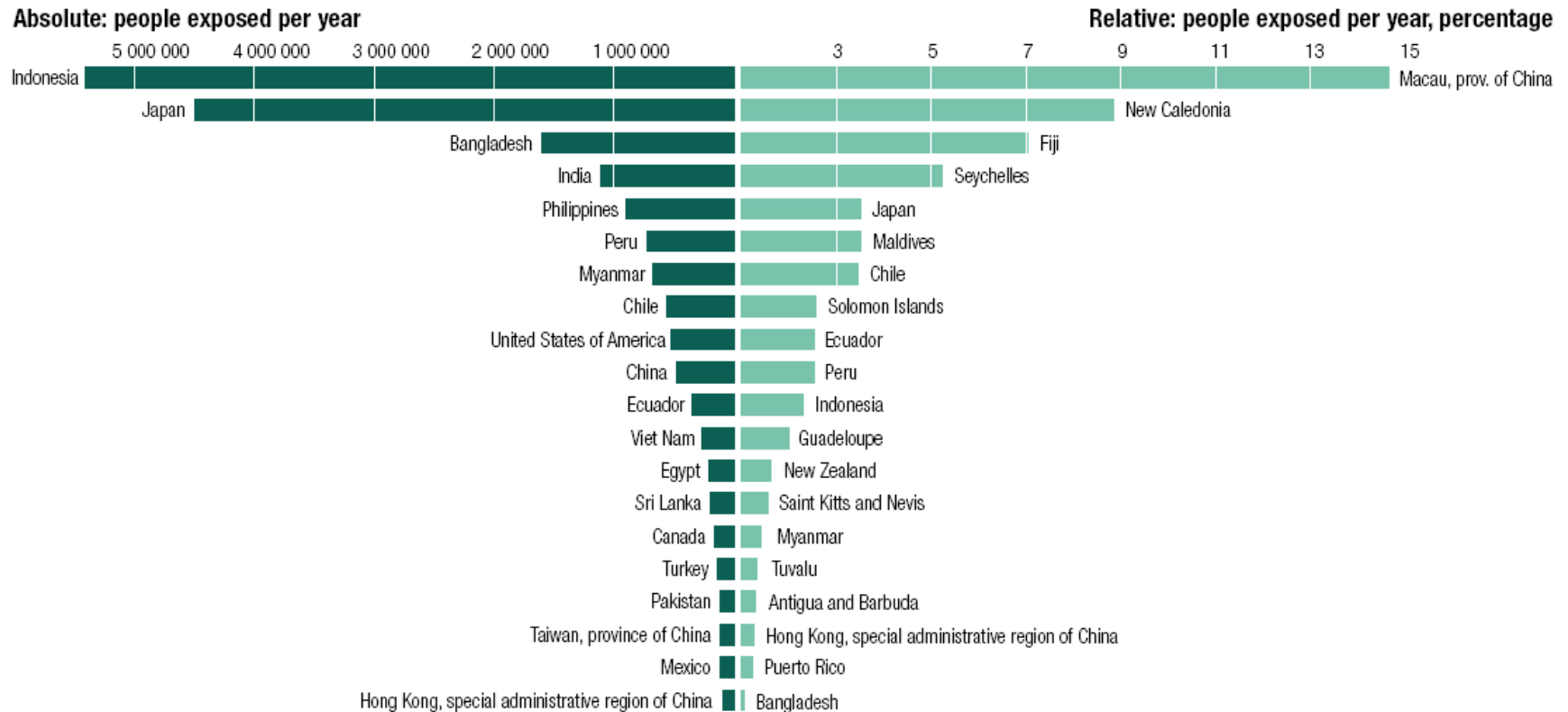


Global Tsunami Hazard





Population exposed to Tsunami Risk



World-wide, about 14 mill. people are exposed to tsunami risk



**THANK YOU
FOR YOUR ATTENTION**

