Messages;
Experiences and lessons of the 2011 Tohoku earthquake tsunami for future disaster risk reduction

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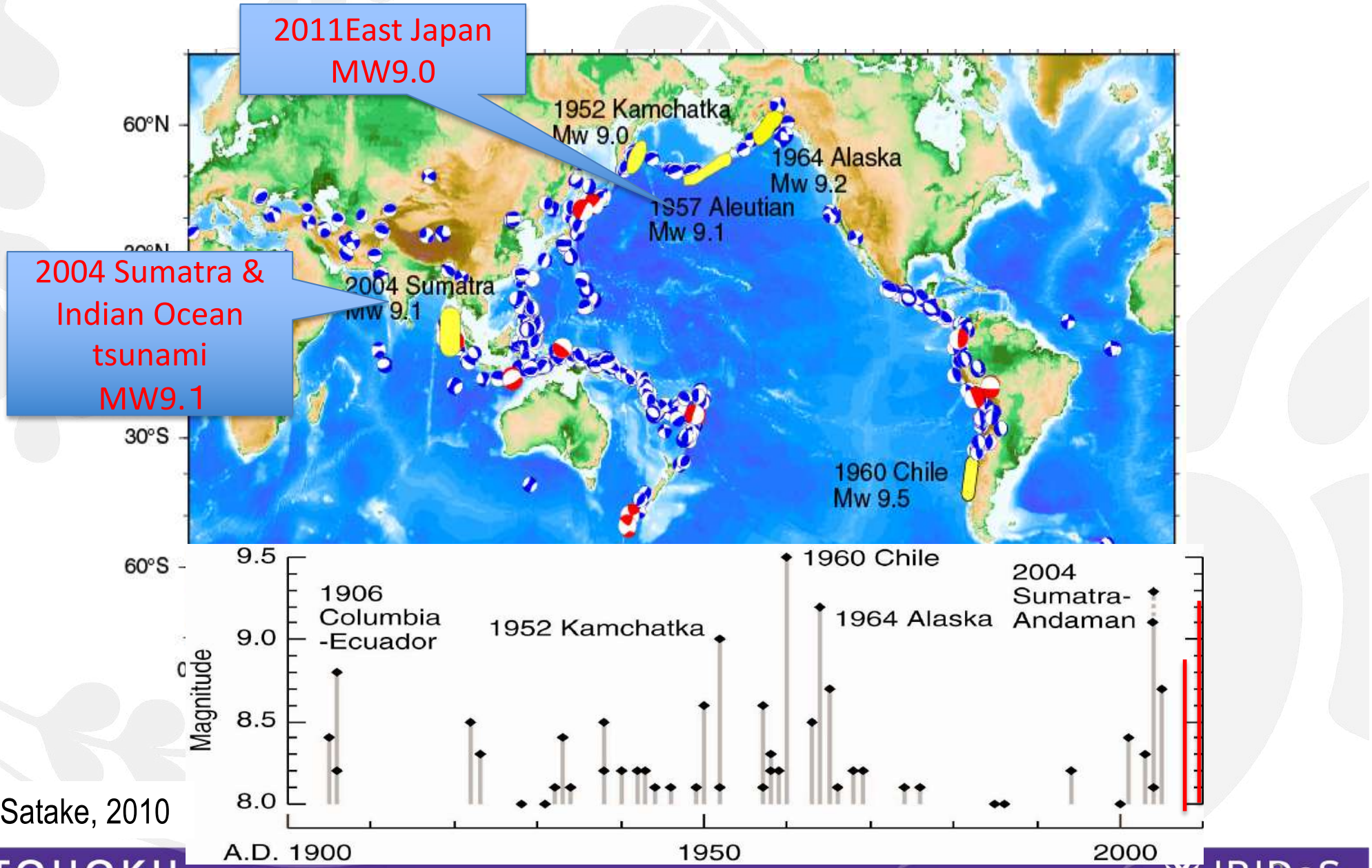
New year 2015
at the IRIDeS research building

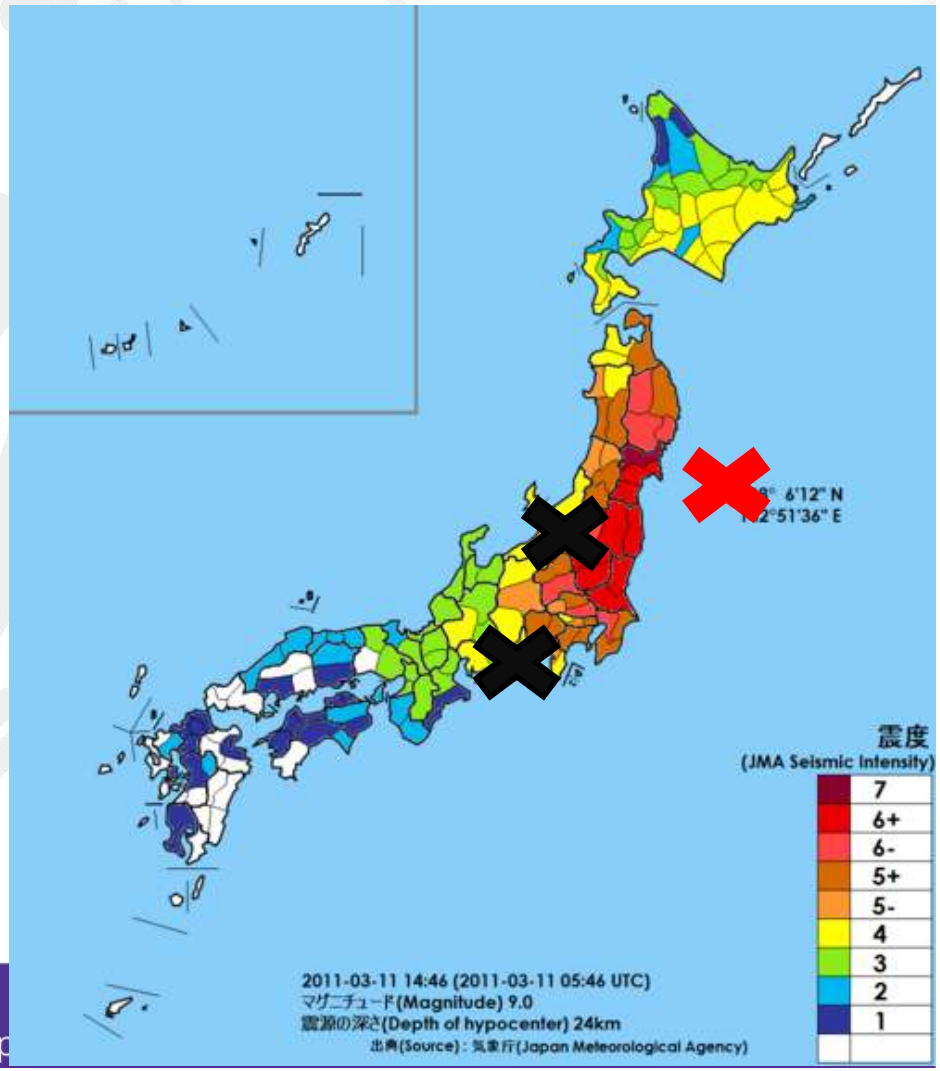
Giant earthquakes followed by tsunamis over 100 years



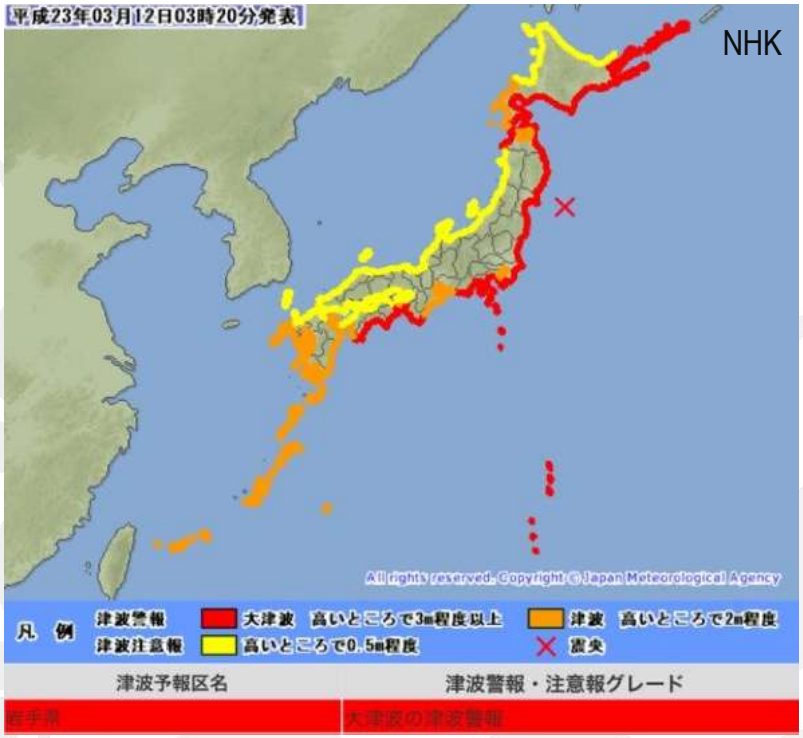
Satake, 2010

Unfolding the 3.11 event:
Triple Tragedy and Damages

- **Triple Disasters: ONE – The Earthquake**
  - Time: March 11, 2011, 2:46pm
  - Scale: Mw 9.0
    (4th largest in the world since 1900 (USGS))
  - In 5 days: 2 additional Mw 5+ earthquakes (black X)
  - In a month: 400 + aftershocks continues



- Triple Disasters: **TWO – Tsunamis**
  - Tsunami evacuation order and warning, immediately after – all around coastal Japan
  - Time reaching the coast: less than 20-30 min
  - 7 tsunamis in the first 6 hrs after the shock, continue for 2 days




Reuters/Mainichi Shimbun

- According to the information:
  - Highest wave recorded: 9.3m
  - Highest run up-height : 35 m
  - Farthest inland reached: 8km

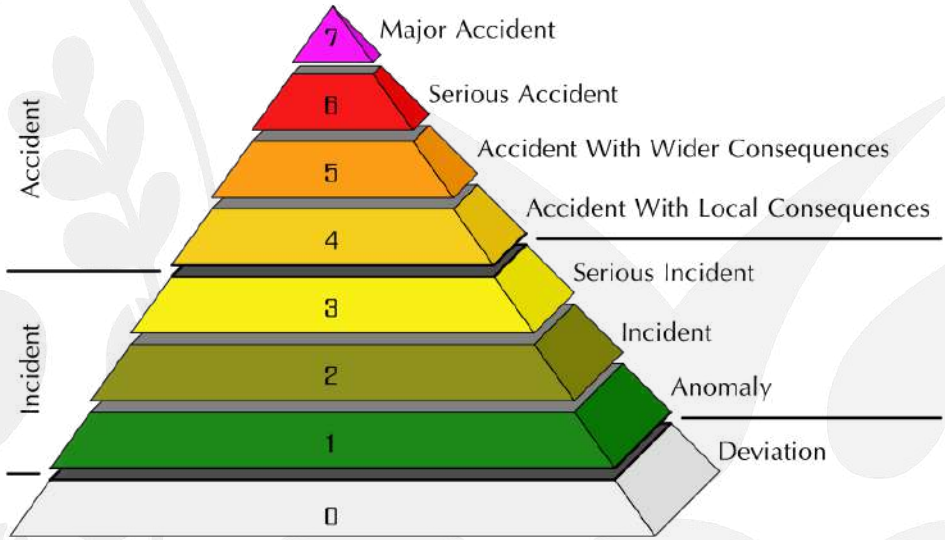
Other damages

- Inundated area: 560km2
- Liquefaction
- Fire

- Triple Disasters:

THREE – Nuclear Power Plant Failure

  - One of the worst nuclear incident, triggered by the earthquake and tsunami
  - Temporarily assessed as level 7 on INES
  - Emergency state is still on-going




Digital Globe via Wiki


NHK

IRIDeS 7divisions and 37 fields

Mitigation & Supportology

Spread/ex tending

Emergency Opetation

Hazard/disaster study

Disaster Medical

Generation

Rescue/saving

Interdisciplinary
7 divisions
37 fields

Disaster Science

Recovery/Reconstruction

Recovery

Tradition/ archives

人間・社会対応研究部門

災害リスク研究部門

災害医学研究部門

災害理学研究部門

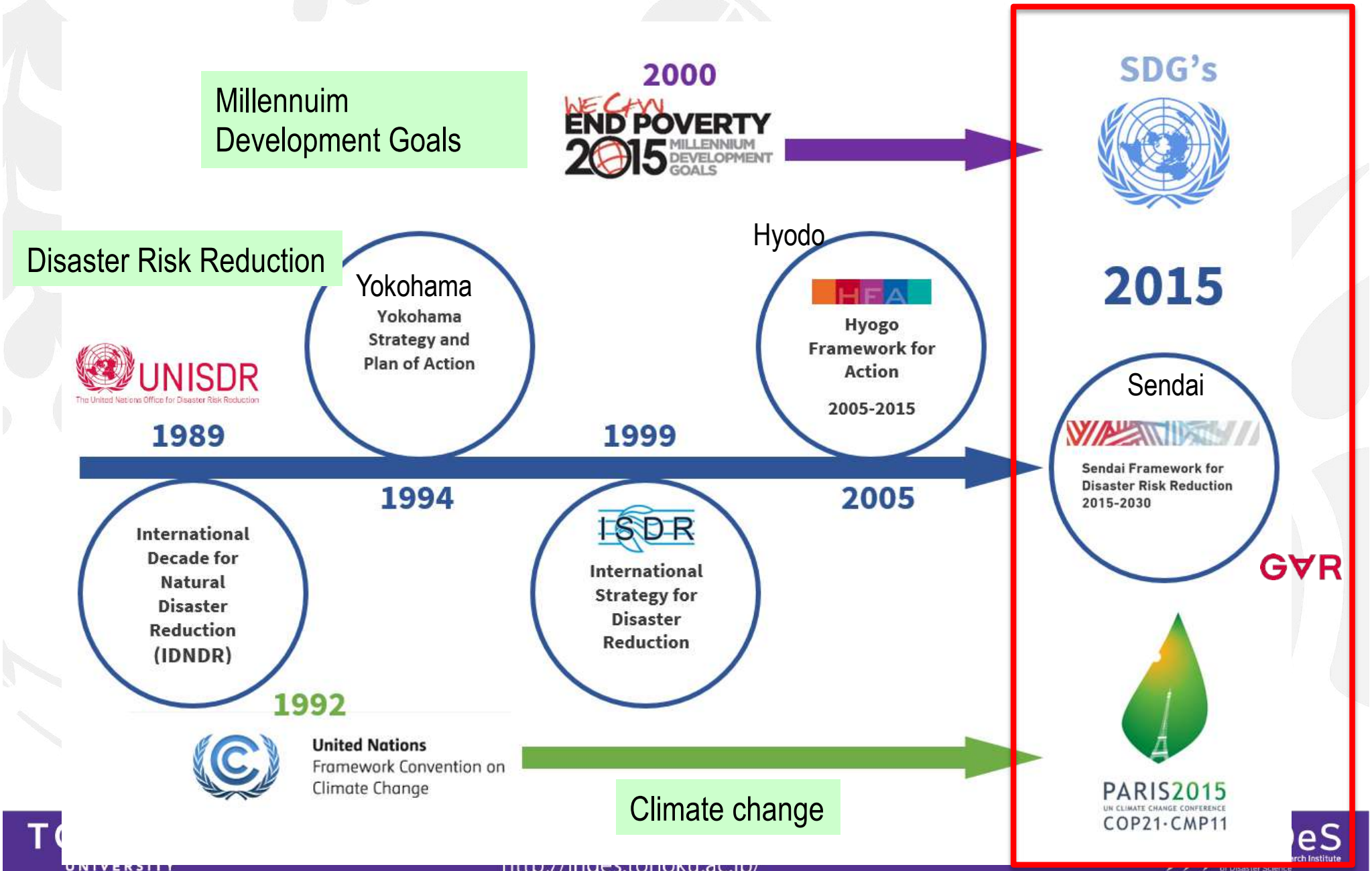
地域・都市再生研究部門

寄附研究部門

情報管理・社会連携部門

Series of UN conferences in 2015

25 years of international commitment to disaster risk reduction




SENDAI FRAMEWORK
Scope and Purpose
1 Global Outcome
1 Goal
7 Global Targets
13 Guiding Principles
4 Priorities for Action
at 4 Levels
Local, National, Regional and Global
Role of Stakeholders
International Cooperation and Global Partnerships

‘Build Back Better’ Approach in Reconstruction Projects In Sendai

Restoration of damaged residential areas

Disaster reconstruction municipal housing

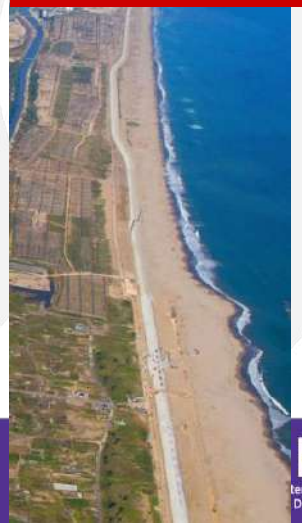
Evacuation stairs

Farmland reclamation

Tsunami evacuation facility

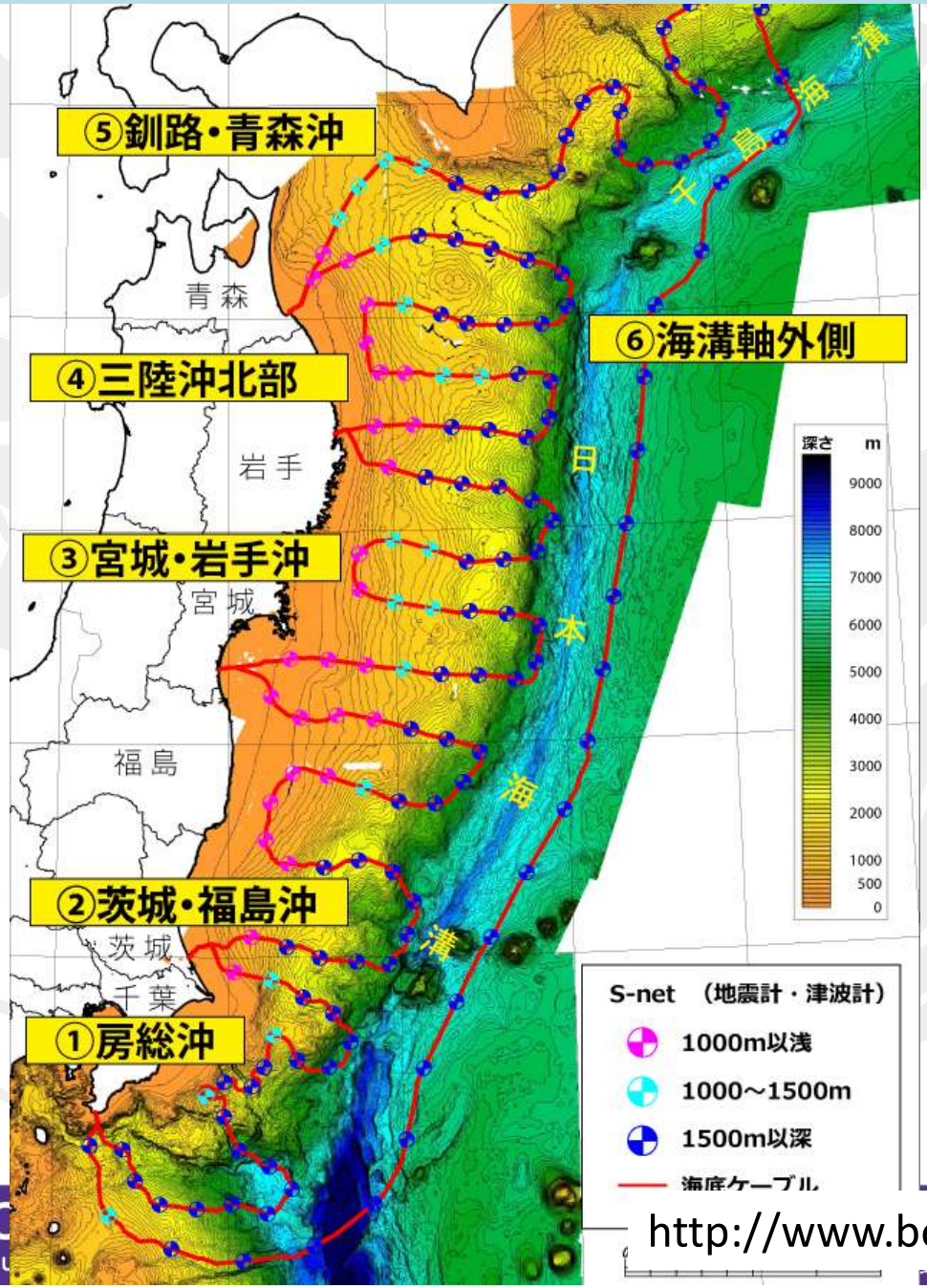
Restoration of a wastewater treatment plant

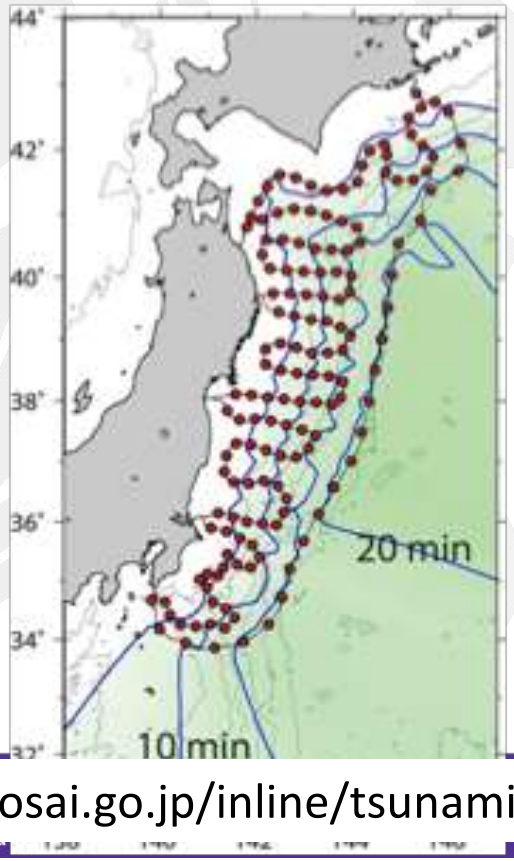
Coastal embankment



Elevated roads

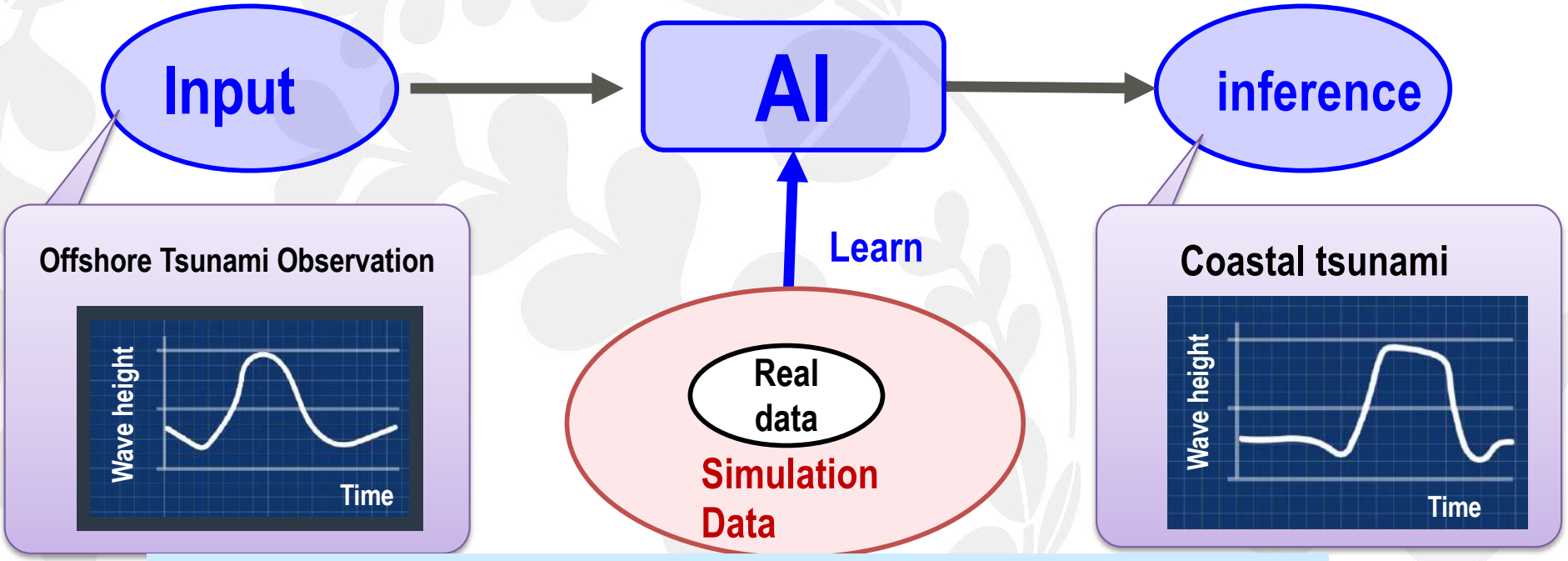
Improvement of earthquake/tsunami observation in real time
- More stations to detect tsunamis shortly

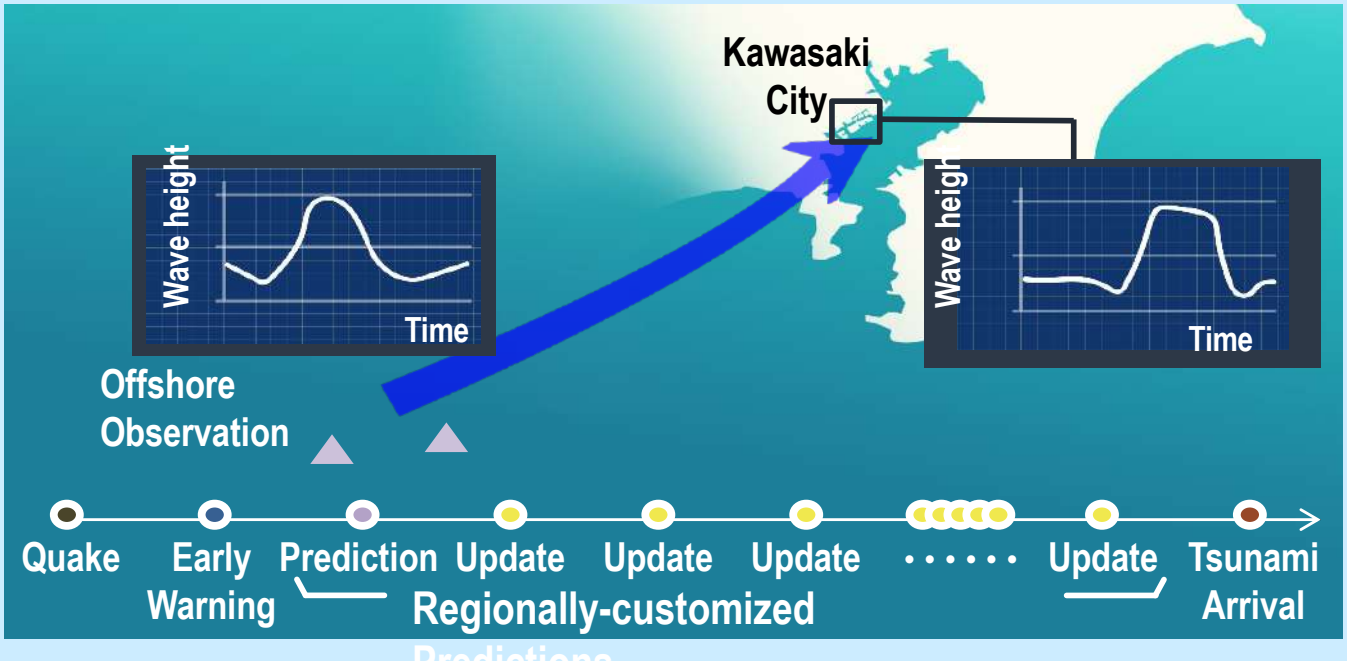




http://www.bosai.go.jp/inline/tsunami/tsunami01.html

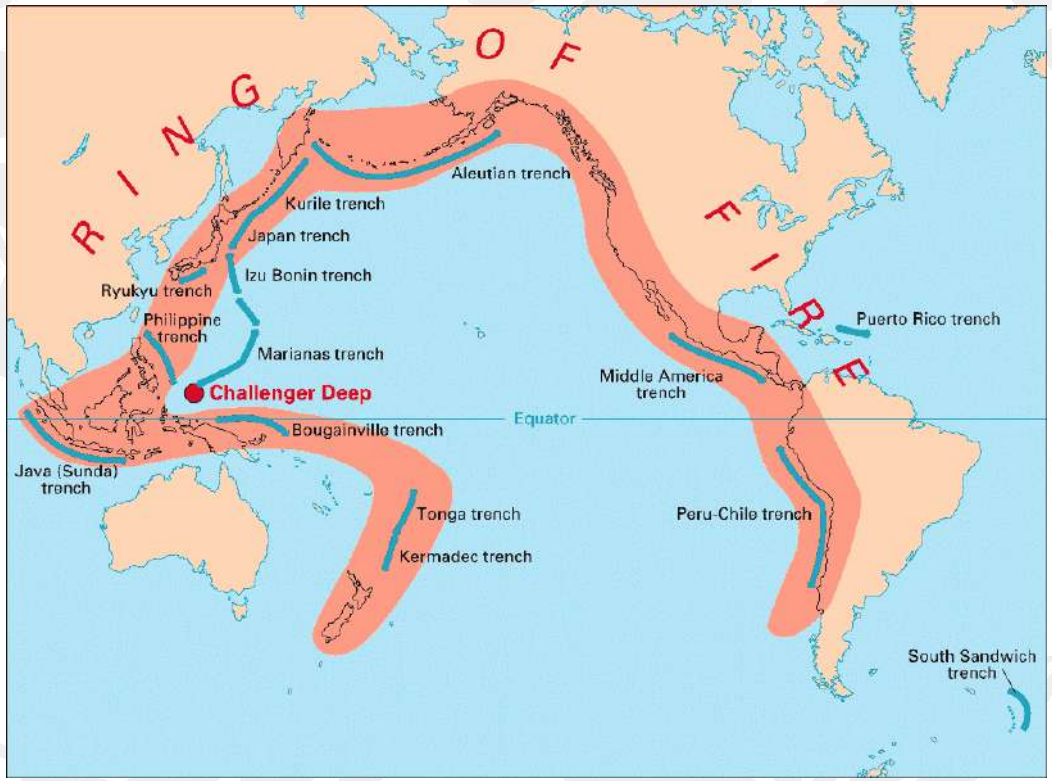
Applying a new way; Instant tsunami prediction based on AI





We are living in Ring of fire

We cannot control and avoid such disaster, but the BBB including risk management should reduce them and live together with harmony



We are living in the area of Asian and Pacific Ocean where a large number of earthquakes, tsunami and volcanic eruptions occur. This is called ring of fire.

In a 40,000 km (25,000 mi) horseshoe shape, it is associated with a nearly continuous series of oceanic trenches, volcanic arcs, and volcanic belts and plate movements.

https://www.thinglink.com/scene/626446973402087425