



**Impacts of Climate Change and  
Water-Related Disaster Reduction Management  
in the Asia-Pacific Region**

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# Background

In Japan, Discussions about impact of climate change and adaptation were just started.

River Sector Committee in Infrastructure Development Panel, MLIT, constituted an Ad Hoc Committee on “Climate Change Adaptation for Flood Disaster Reduction” in this summer, and the interim report is going to be published.

Also, yesterday, a panel session entitled “Adaptation to Increasing Risks due to Climate Change” was held as an open event.

My presentation is based on the discussions in both the ad hoc committee and the panel session, including my personal view.

# Contents of Presentation

## In the Asia-Pacific region including Japan,

- What conditions make the water-related disaster reduction management (WDRM) difficult?
- What adverse effects will we anticipate on water-related disasters by climate change?
- What adaptation measures could we apply for the effects?
- How should we promote the International cooperation in the field of water-related disaster reduction management ?

# Two major natural conditions which make WDRM issues difficult: Climatic and Geomorphologic Conditions

## Climatic Contition: Asian Monsoon Climate

The AMC covers a variety of climatic regions as you can see in this figure

*Arid/Semi-arid Temperate*

*Highland Climate*

*Humid/Semi-humid Temperate*

*Humid/ semi-humid Tropics*

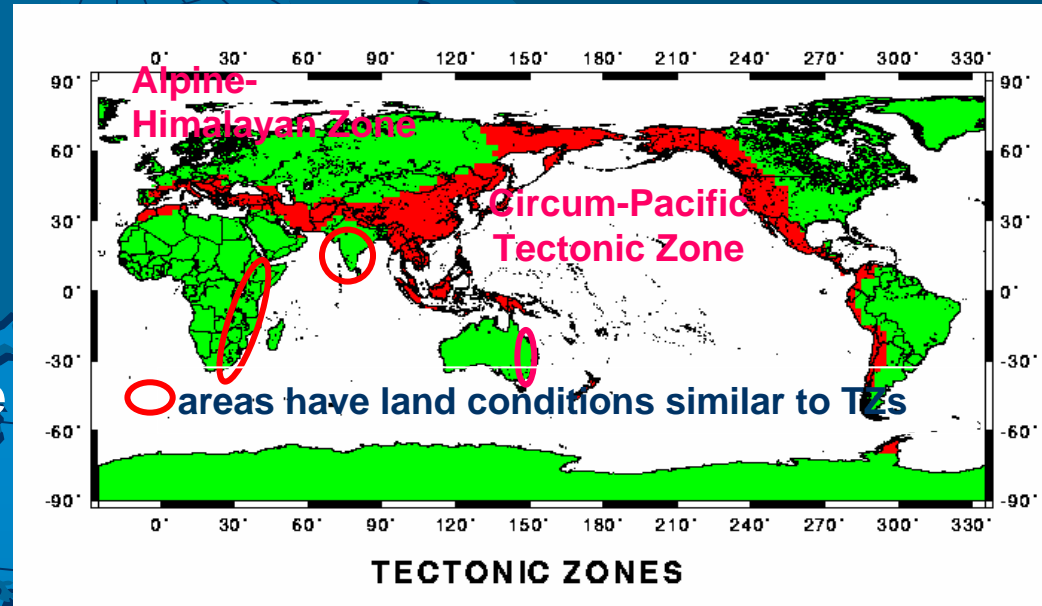
Among various climatic regions in MA, we will focus mainly “too much water” issues in humid/semi-humid Asia, where **too much rainfall** sometimes brings about **serious water-related disasters**, while much rainfall is usually “blessed rain”.

Two major natural conditions which make WDRM issues difficult:  
Climatic and **Geomorphologic Conditions**

**Geomorphologic Condition: Effects of Plate Tectonic Movement**

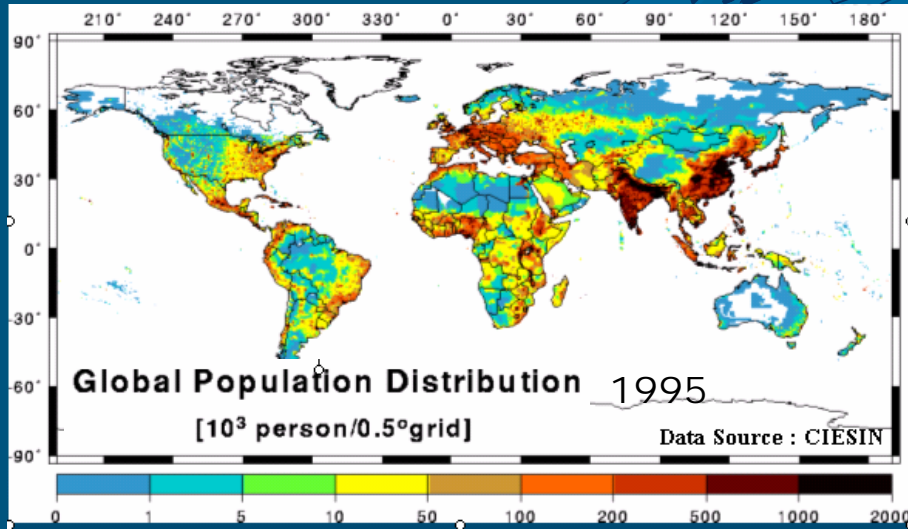
The Asia Pacific region is widely covered by Alpine-Himalayan and Circum-Pacific tectonic zones (TZs).

- Major part of mountain areas in the TZs are composed of fragile geology vulnerable to slope failure, landslide, debris/mud flow, etc., affected by plate tectonic movement with seismic and/or volcanic activities.



- Plains in TZs are mainly alluvial plains, formed of sediments transported by floods from the upper reaches of fragile mountain basins. So, alluvial plains have originally a nature vulnerable to be flooded.

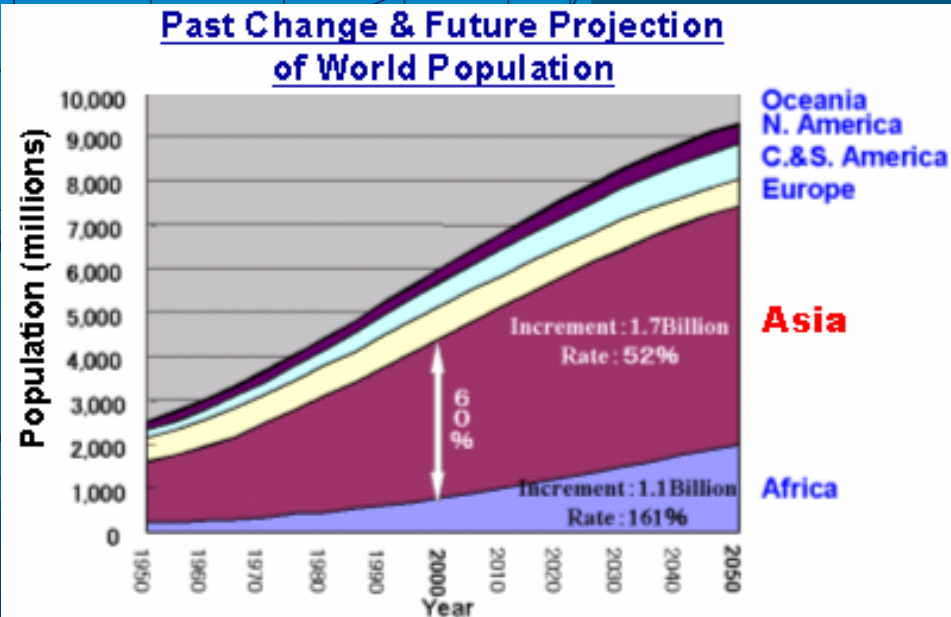
In addition to the natural conditions, we have anthropological issues; **High Population Density and Growing Population**



The A-P tectonic zones, both mountain and plain areas, are the most densely populated region in the world.

The alluvial plain has been developed mainly for the paddy cultivation since olden times, and villages, towns and mega-cities have located there.

Moreover, the population is still rapidly growing in our region. The Population growth is making the water management issues more difficult.



# Adverse Effects Anticipated by Climate Change

- In addition to effects of population growth and expanding human activities, the climate change (CC) will certainly cause even more serious consequences in disaster risks such as heavier rainfalls and typhoons, more frequent droughts, enlarged tsunamis/storm surges.
- In the A-P region, the level of structural measure development is generally far from sufficient due to the difficult natural and societal conditions as mentioned now. For instance, as for large-scale river systems in Japan, the rate of construction of flood control facilities is about 60% to the target of the immediate flood control plans that are directed to averagely 30-years return period.
- **Each countries** needs to **closely share adequate information** about **changing disaster risks** due to **CC** and **communicate it to the people.**

# Adaptation Measures

- \* Each national government, depending on the situation of the country, should take responsibility for making his best effort to minimize anticipated adverse effects due to CC, by wisely integrating both structural and non-structural measures.
  - \* Structural measures will continue to play an important role to raise the safety level from expected risks. Financial resources need to be ensured to steadily implement the structural measures.
  - \* However, it is not possible to attain perfect protection only by applying structural measures. The land use in flood-risk areas should be induced and regulated in such a way that the inundation never leads to serious damages like loss of human life.
- Also, measures taken in the way of thinking “Living with Flood” is very important in our region.

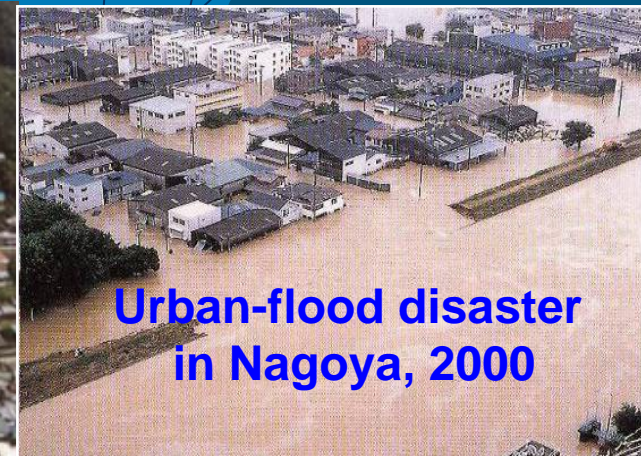
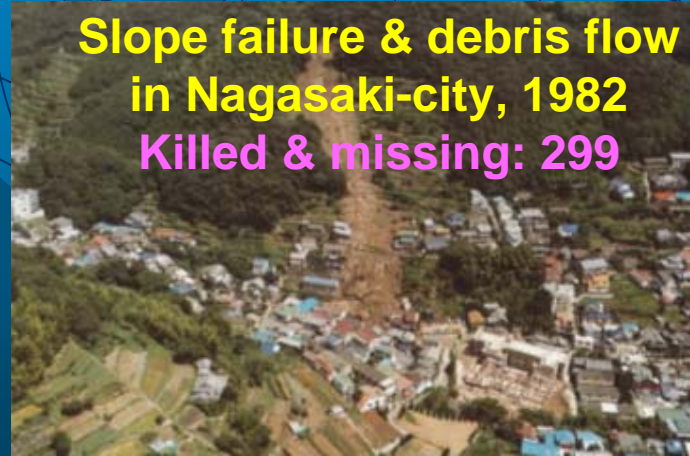
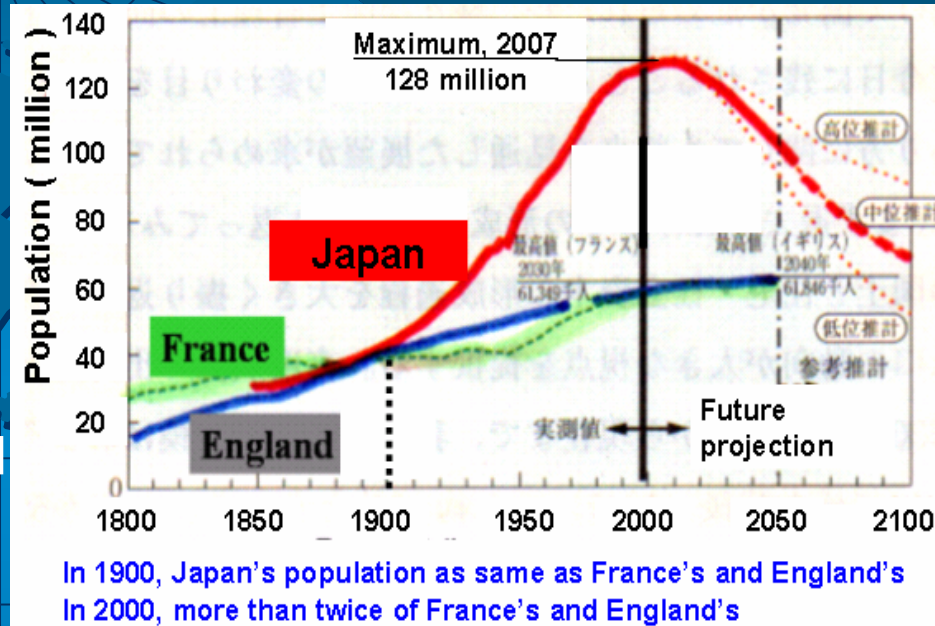


# International Cooperation to Share Experiences, Policies, Measures and Technologies for Water-related Disaster Mitigation Management

- Taking into account the new and common challenges posed by CC such as making decisions in uncertain situations, Asia-Pacific countries should share experience, measures, and technologies with high motivation in order to properly promote water-related disaster reduction management.
- For this purpose, it is important to create a **platform of knowledge sharing like knowledge hub** and to endeavor to foster **experts and enhance capacities of related institutions, based on local needs.**

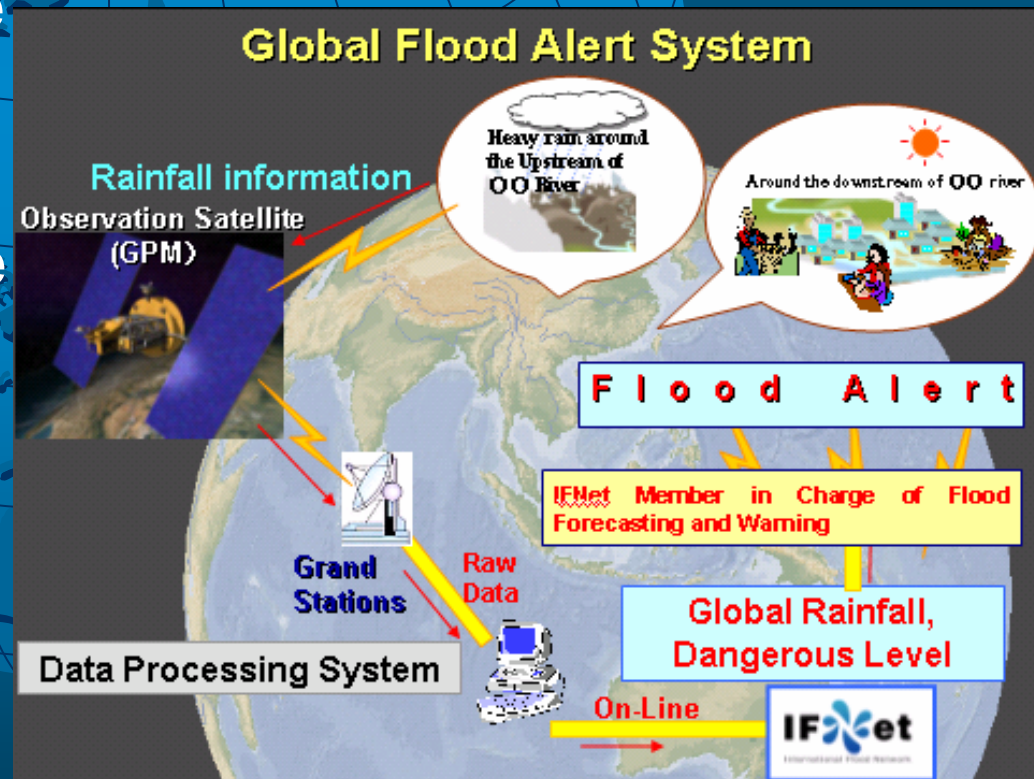
## Japan's Experiences

- Japan has quite a bit of experiences about water-related disasters for more than 100 years through its modernizing processes along with **rapid population growth**.
- Especially due to rapid urbanization /industrialization after the 2nd World War, we have confronted **serious disaster problems**.



## Japan' Experiences and Contribution to World Community

- We have applied a variety of policies, measures and technologies to cope with serious water issues. **Some of them are successful and effective**, but **some of them are not**. Those experiences could provide some useful information to other countries, **especially to the A-P countries** which have climatic and geomorphologic conditions similar to Japan.
- Also, Japan would contribute to world community in the field of **leading-edge technologies** related to monitoring, modeling, prediction, hazard mapping and risk assessment etc.



A blue globe with a grid of latitude and longitude lines, centered on the Pacific Ocean. The continents of North America, South America, and Australia are visible in a darker shade of blue. The text "Thank you very much for your attention !!" is overlaid in yellow.

Thank you very much for your attention !!