International Symposium on Water and Disasters
-Learning from Historical Lessons and Good Practices -

Recurrent Water-related Disasters in Japan -their Mechanism and Future Trends-

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United Nations Educational, Scientific and Cultural Organization
International Centre for Water Hazard and Risk Management under the auspices of UNESCO
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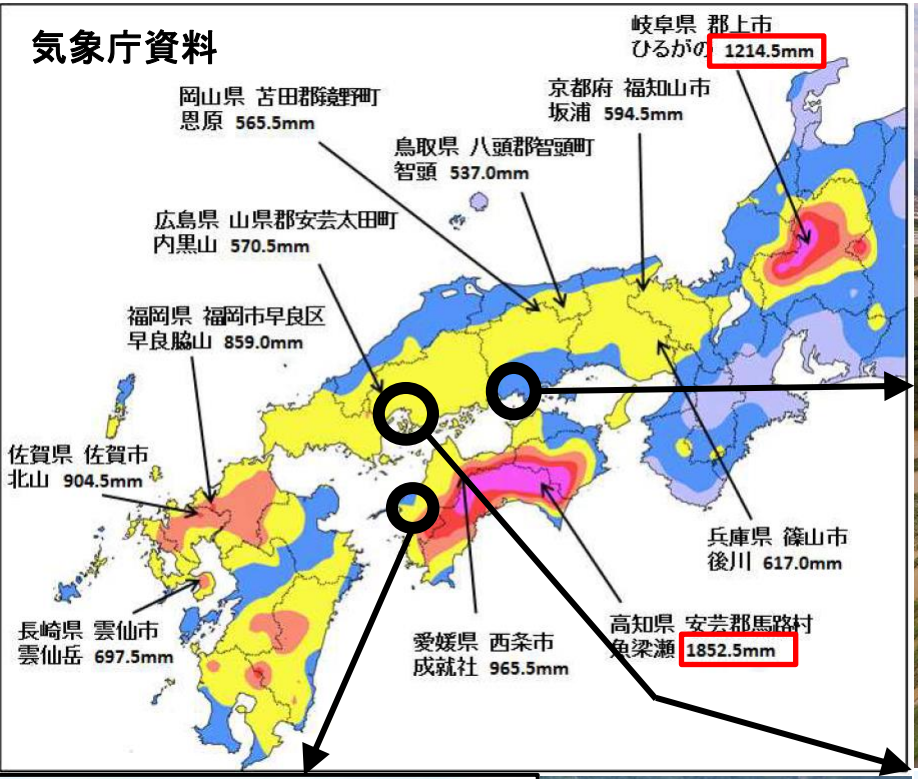
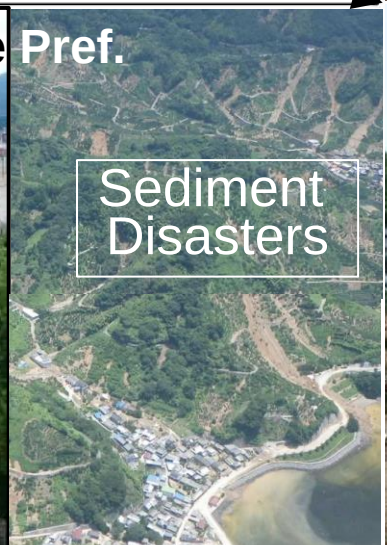
Western Japan Floods 2018

Maximum 48hrs Rainfall from June 28th to July 8th (JMA)





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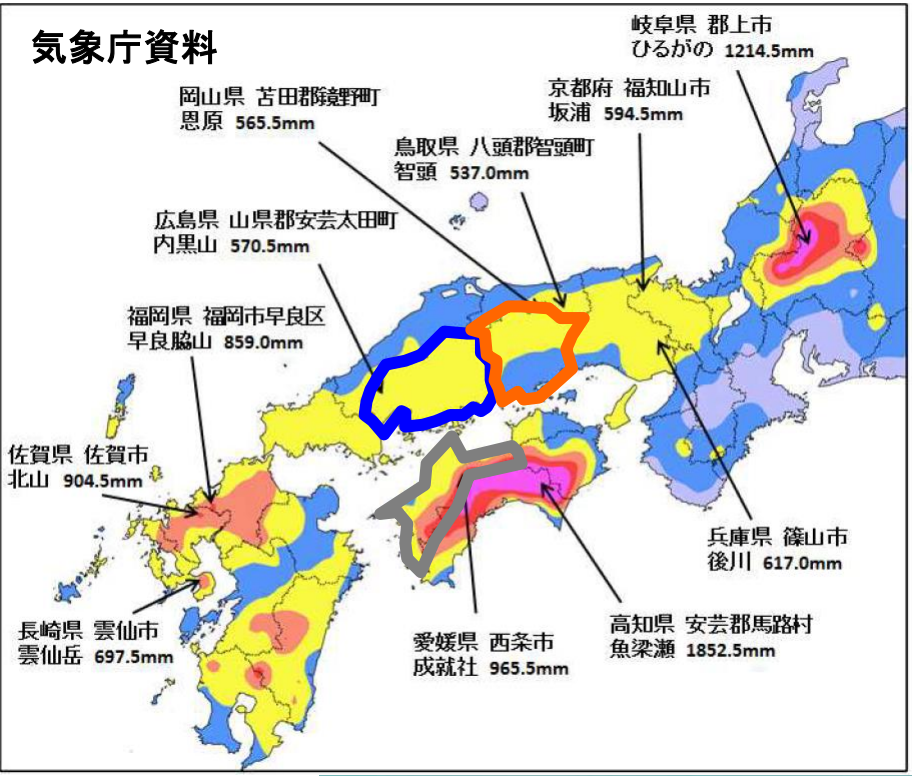
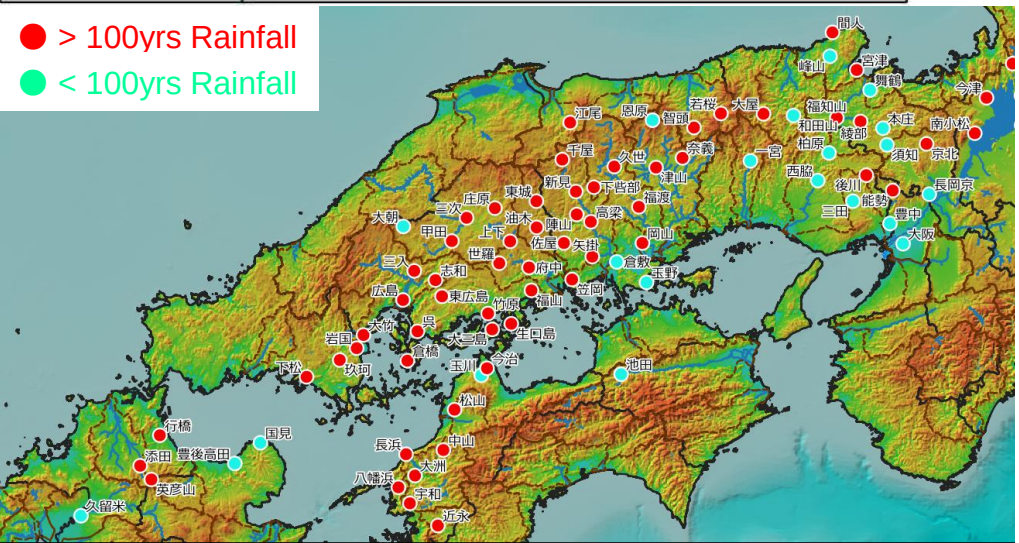
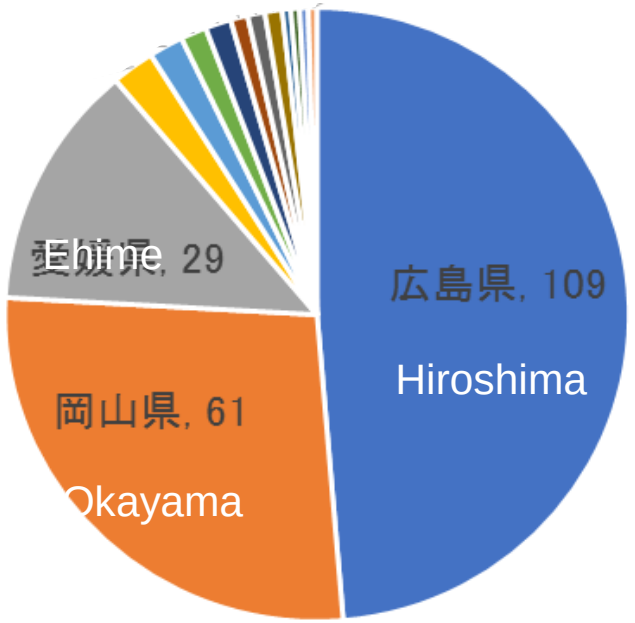


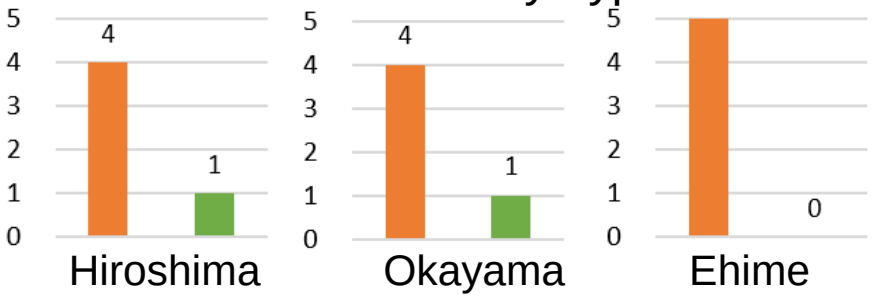


Mortality: 224
(the worst case after 1982)

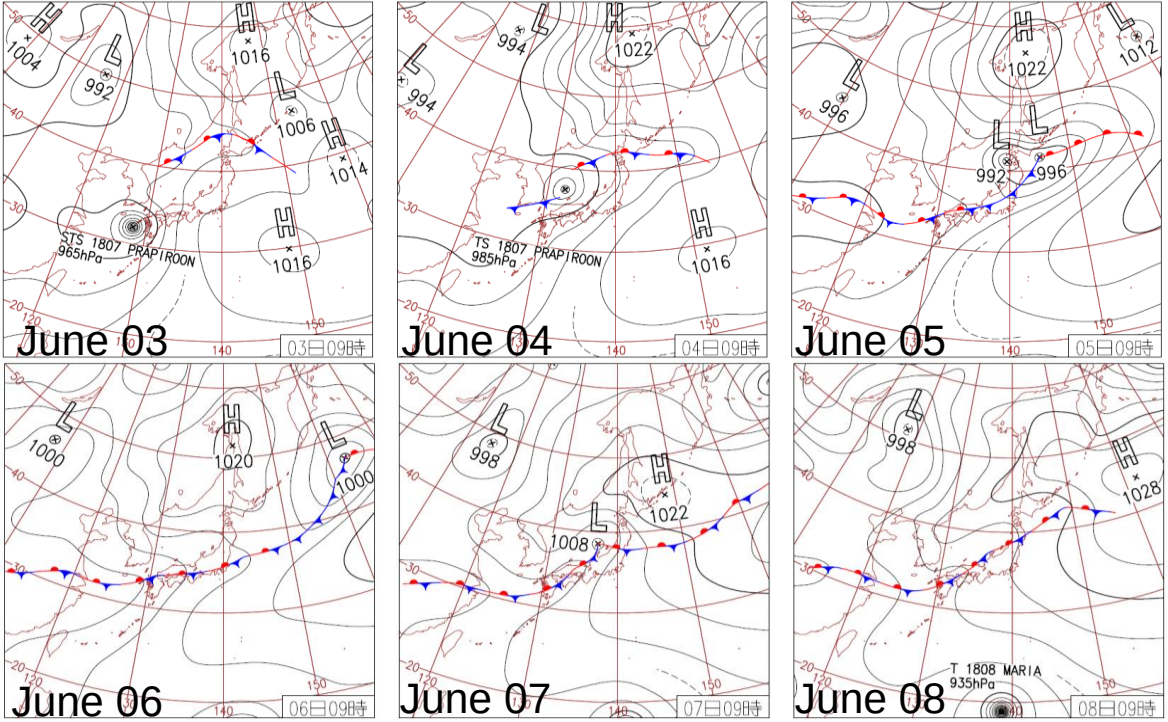


by courtesy Dr. M. Ohara, ICHARM

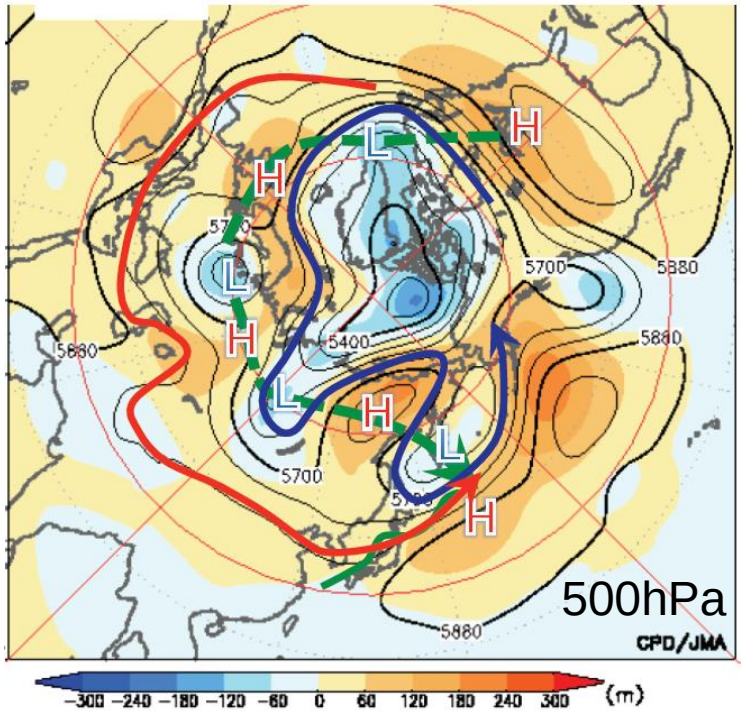
Major River of each Prefecture
Maximum Flood by Typhoon



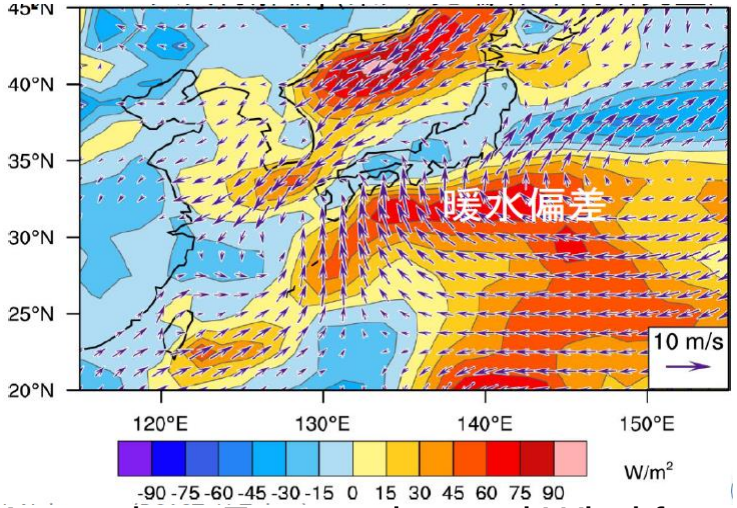
Top 5 Floods by Typhoons and Frontal Activities.



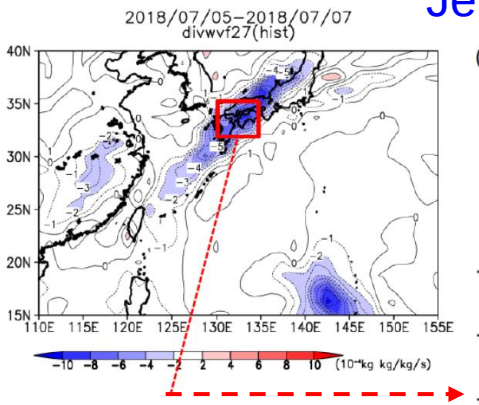
Anomalously Long Stay of Active Frontal Line.



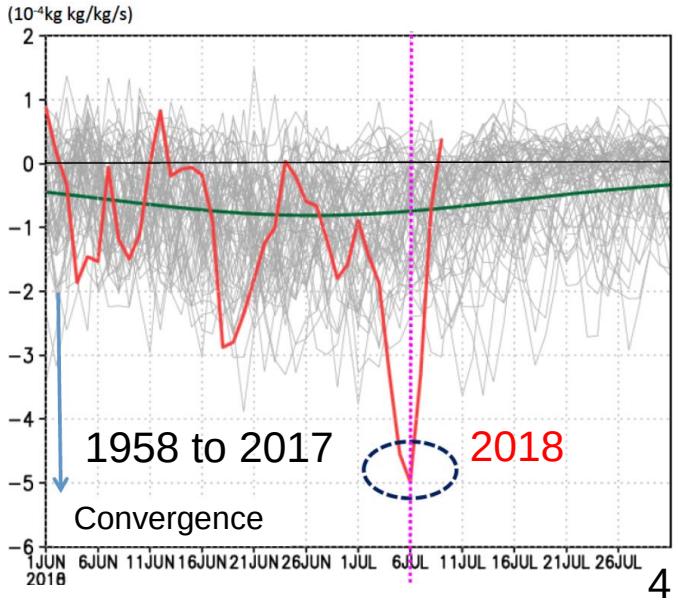
Anomalous Patterns of the Polar Jet and the Sub-tropical Jet.



Anomalous Evaporation and Wind from the Northern and Southern Anti-cyclones .



The Strongest Water Vapor Convergence since 1958.



by courtesy Prof. H. Nakamura, U-Tokyo.

Recurrent Water-related Disasters in Japan

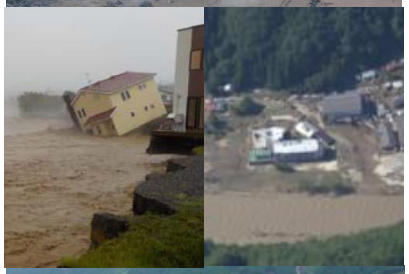
Events and Countermeasures

Oct., 2013
Izu Oshima Island（Sediment）
- 824mm/24hrs (Typhoon)
- Human Loss: 39
- *evacuation warning*

Aug., 2014
Hiroshima City (Sediment)
- 121mm/hr (Typhoon, Frontal Line)
- Human Loss: 74
- *evacuation warning, land use*

Sep., 2015
Kanto & Tohoku (Bank Breach)
- 551mm/24hrs (Typhoons)
- Human Loss：8
- *evacuated by helicopter: 1339 and by boat: 2919*

Aug., 2016
Hokkaido & Tohoku (Bank Breach and Sediment)
- 251mm/72hrs (Typhoons)
- Human Loss: 27
- *evacuation of physical handicaps*
- *local socio-economic impact*



June, 2017
Northern Kyushu (Sediment)
- 299mm/6hrs (Frontal Line)
- Human Loss: 42
- *sediment and flood complex*

Nov., 2014
Amendment: Sediment Disasters Prevention Act

Jan., 2015：
Policy Vision: Disaster Prevention and Mitigation against a New Stage

May, 2015
Amendment: Flood Risk Management Act
- Probable Maximum Rainfall for Life-Saving

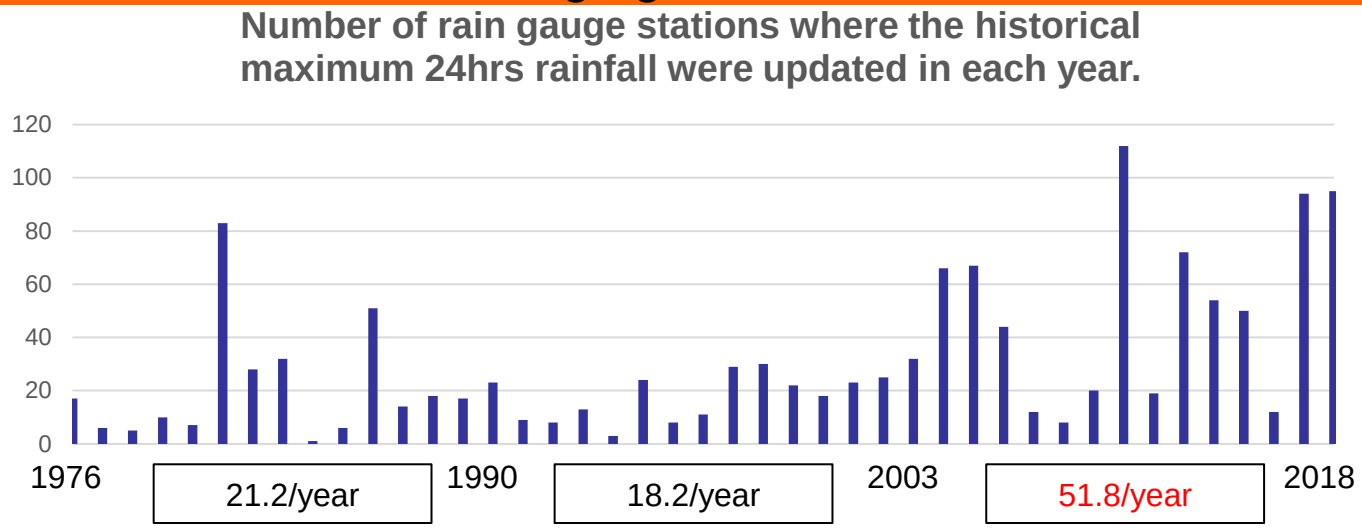
Dec., 2015
Policy Vision: Rebuilding Flood-Conscious Societies: Class A Rivers
- Raising public awareness
- Structural measures for crisis management

Jan., 2017
Policy Vision: Rebuilding Flood-Conscious Societies: Class B Rivers
- Life-saving of physical handicaps
- Local socio-economical continuity

May, 2017
Amendment: Flood Risk Management Act
- Joint Stakeholder Committee for FRR
- Evacuation planning and drilling for handicap-accessible facilities
- Recovery by the national government

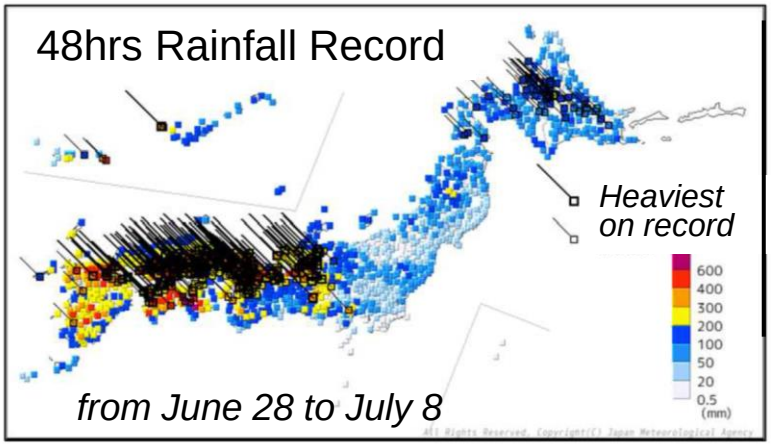
Recurrent Water-related Disasters in Japan

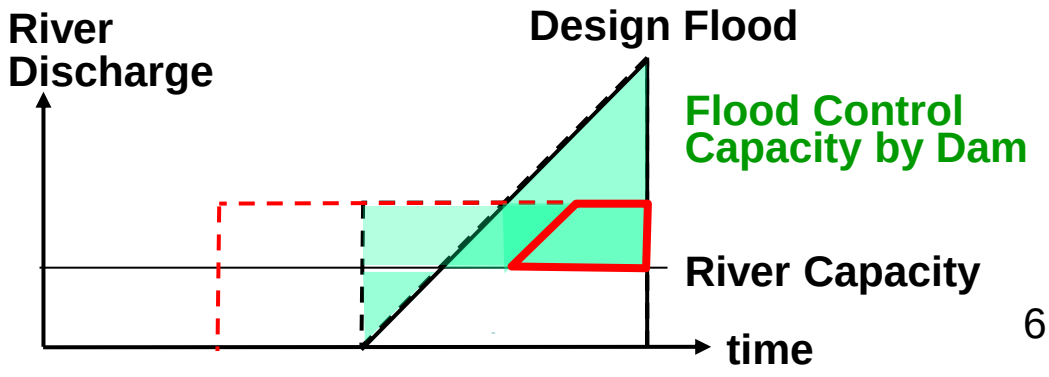
Changing Hazards



Torrential heavy rainfall happens everywhere more frequently. No exceptions. The areas where have not experienced heavy rainfall are likely to be seriously damaged. The June 2018 floods raised two new issues:

1) Simultaneous events in the wider area.
2) Longer duration.

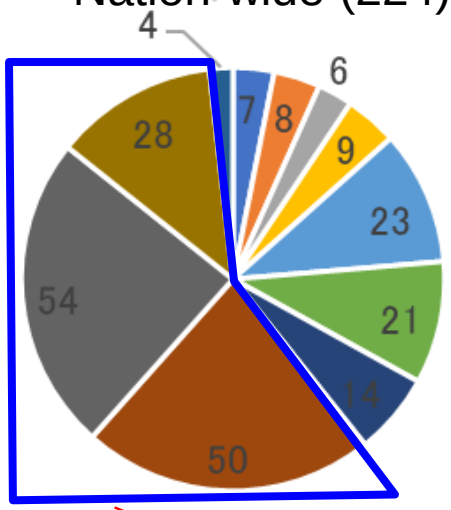




Recurrent Water-related Disasters in Japan

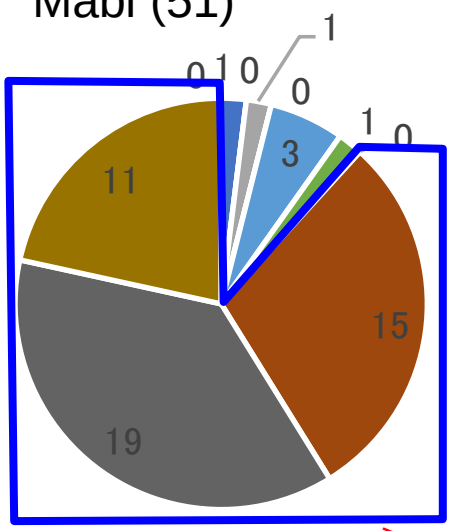
Changing Society

Nation-wide (224)



58.9% ≧65

Mabi (51)



88.2% ≧65

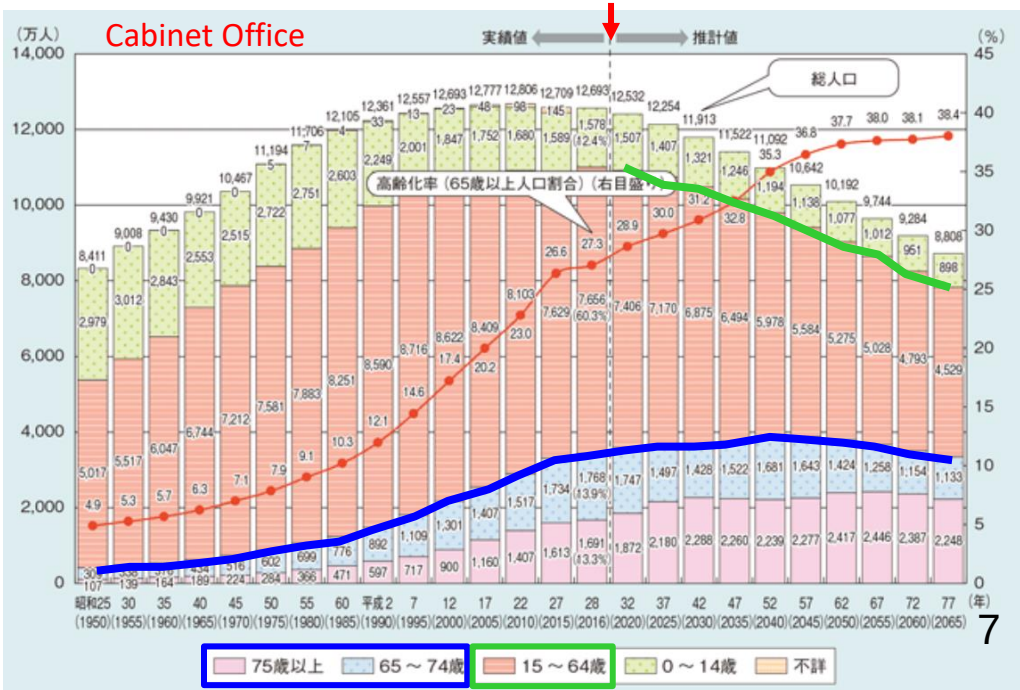
■ 0–9 ■ 10–19 ■ 20–29
■ 30–39 ■ 40–49 ■ 50–59
■ 60–64 ■ 65–74 ■ 74–85
■ >85 ■ unknown

by courtesy Dr. M. Ohara, ICHARM

Rapid Aging:

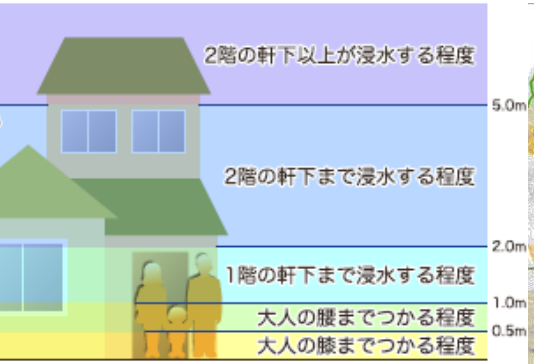
- increase of the number of those who should be supported.
- decrease of the number of those who can support.

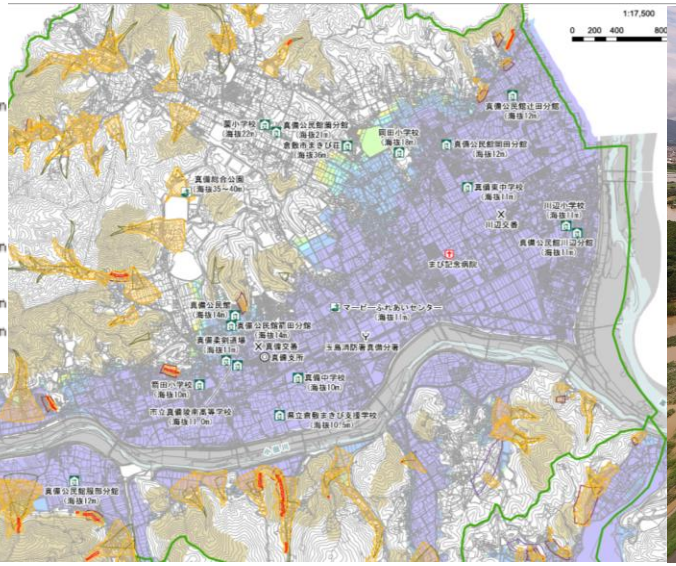
now



Recurrent Water-related Disasters in Japan

Changing Society



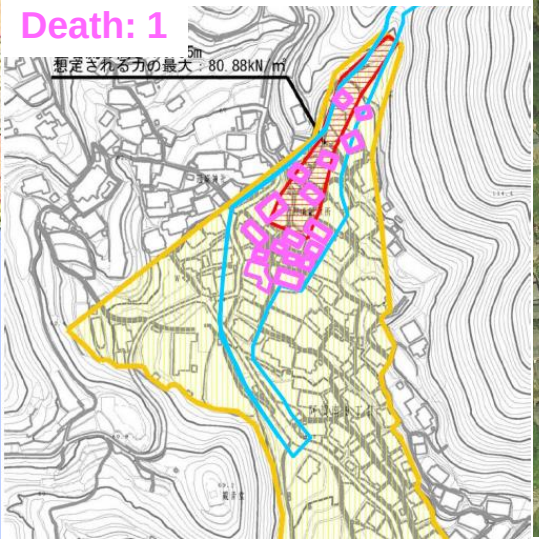


Flood Hazard Map

Sediment Disaster Prevention Act
special alert area: red zone
alert area: yellow zone

Risk has been informed but not recognized.

Fully Collapsed: 17 houses
Death: 1

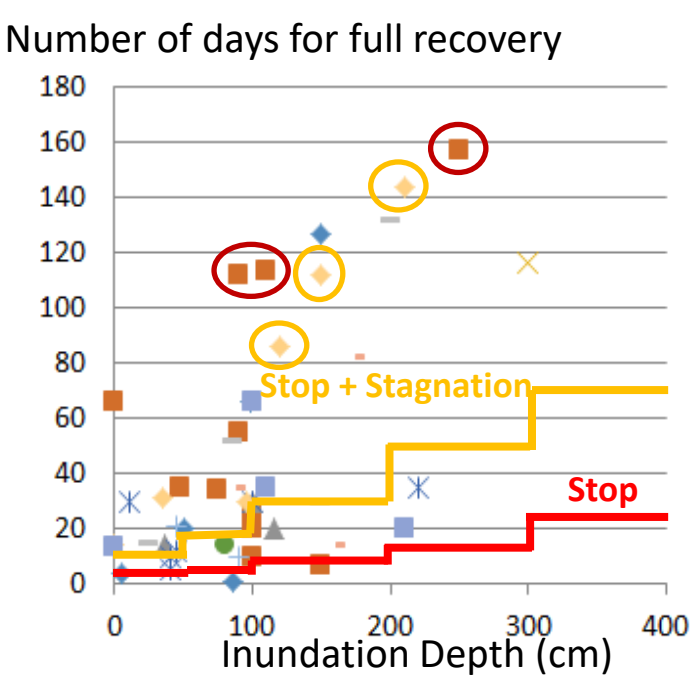


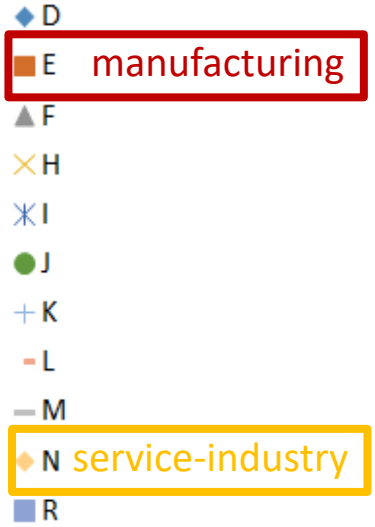
Recurrent Water-related Disasters in Japan

Changing Society

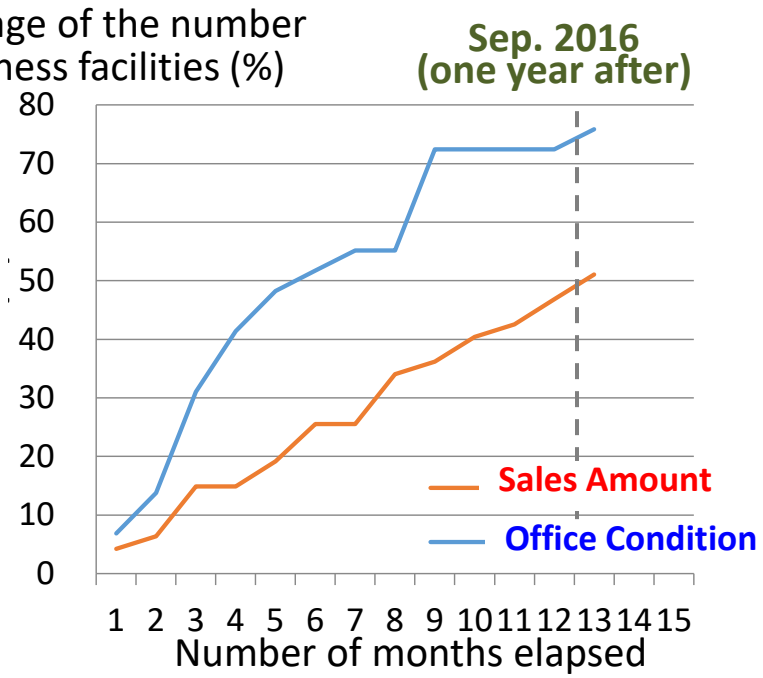
Direct Damage of the Western Japan Floods: ～10 Billion USD (QE)
(the largest damage on record since 1961)

A follow-up survey of the Kanto-Tohoku Floods by courtesy Dr. M. Ohara, ICHARM





Number of days for full recovery and inundation depth

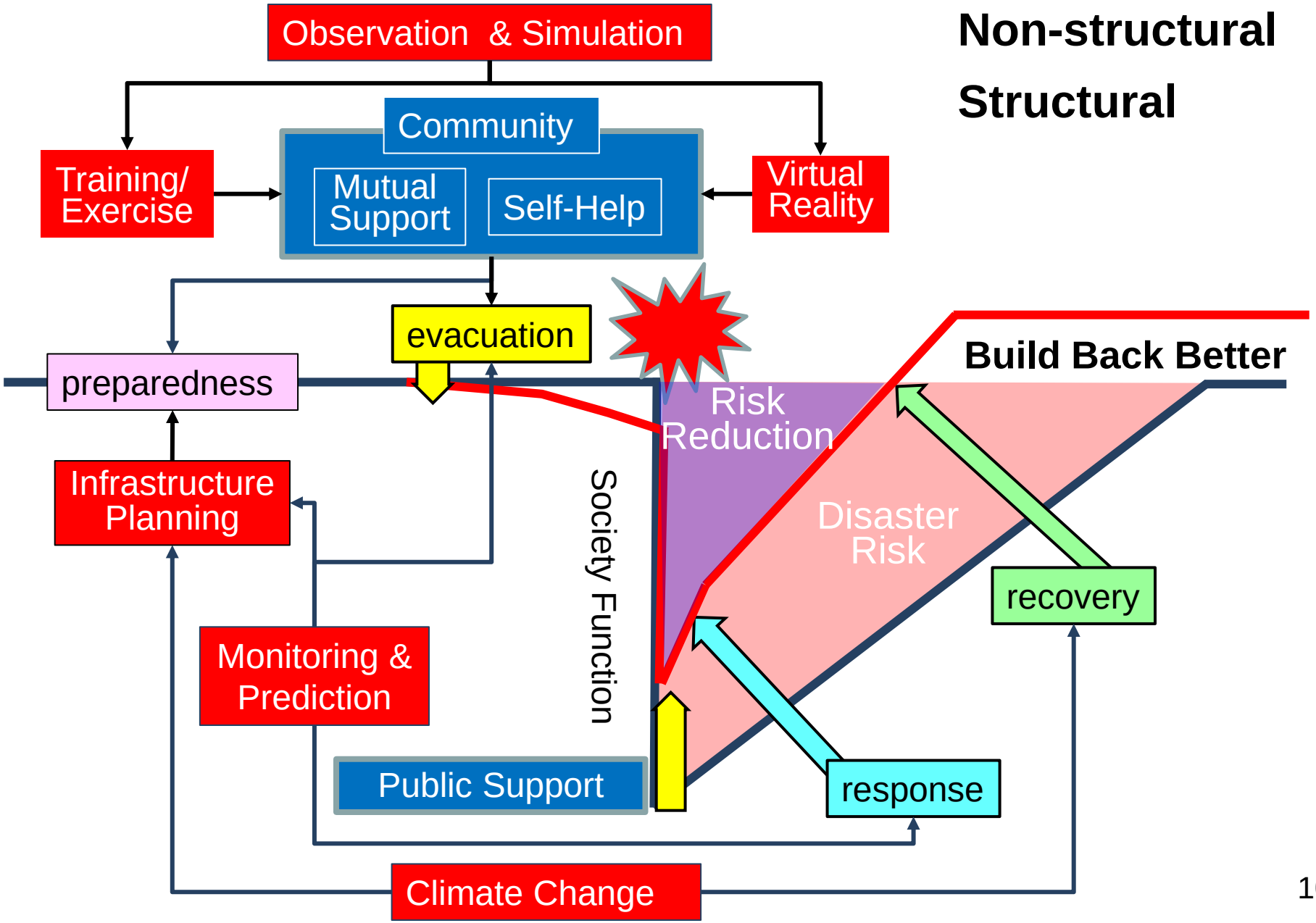


How long does it take to recover fully?

Can we recover fully from the devastating water-related disasters?

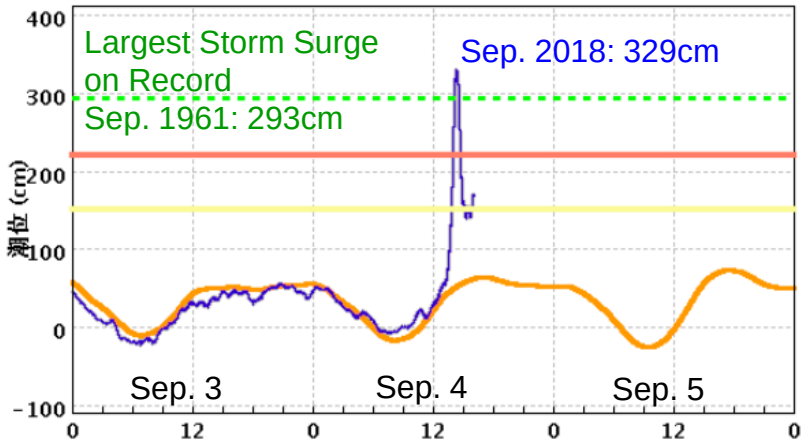
Recurrent Water-related Disasters in Japan

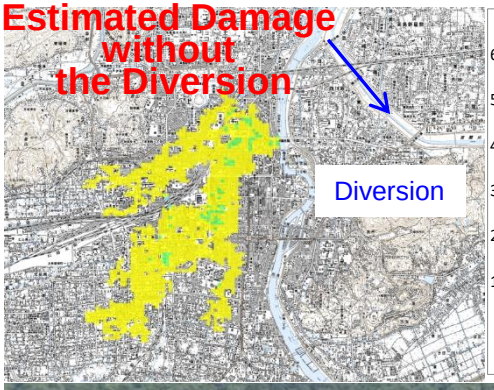
Our Challenges

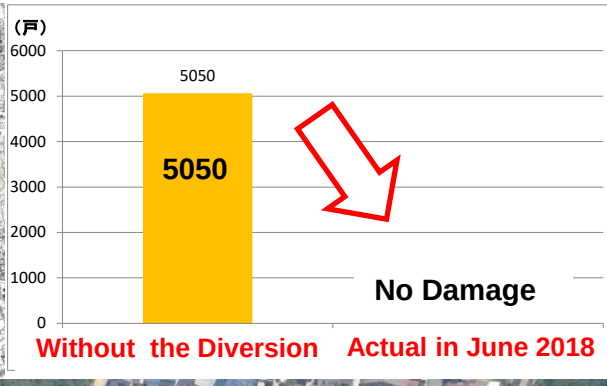


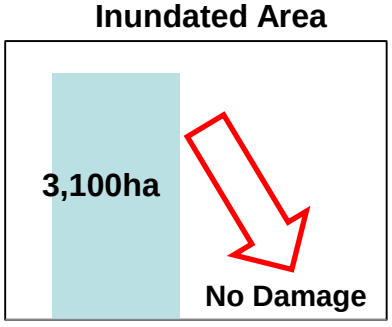
Recurrent Water-related Disasters in Japan

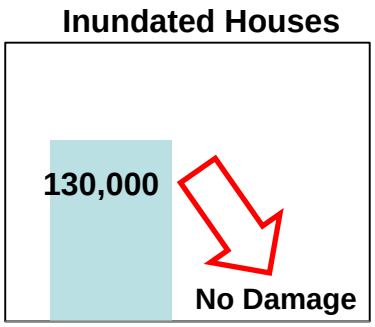
Our Challenges



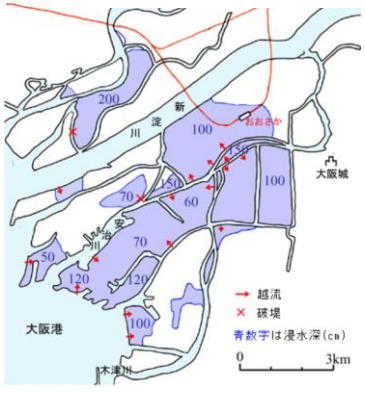


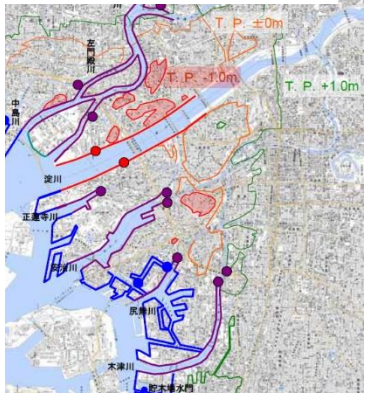






Infrastructure Investment Effect: 170Billion USD





Recurrent Water-related Disasters in Japan

Our Challenges

HEADLINE RECOMMENDATION

Shift focus of disaster management from response to preparedness and resilience.

- Political leadership
- Dialogue and community-based practices
- Long-term Planning
- Financing for and investment in water-related DRR to be doubled within the next five years.
- Integration of science and policy including higher education
- Biannual Special Thematic Sessions on Water and Disaster

by High-Level Panel on Water
on March 14, 2018

United Nations

The World Bank