

Adaptation to flood under climate change

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Background



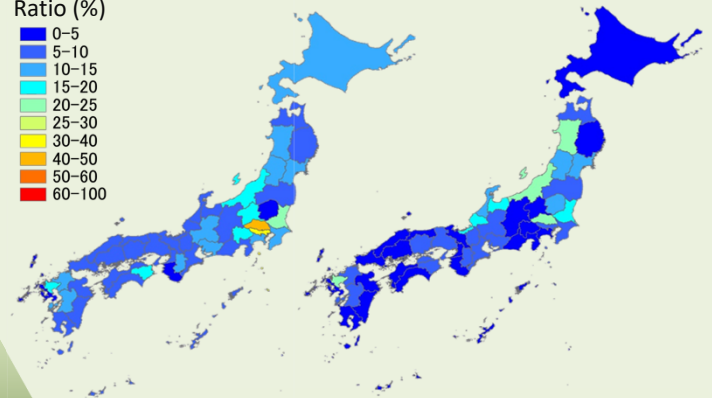
The west downpours in 2018
The east downpours in 2019
The August downpours in 2020
Levee breaks in Miyagi and Yamagata in 2022

Increase of downpours by
climate change →
What is the best adaptation?

Effects of adaptation measures

Reduction
Ratio (%)

- 0-5
- 5-10
- 10-15
- 15-20
- 20-25
- 25-30
- 30-40
- 40-50
- 50-60
- 60-100



Reduction ratio of flood damage

Left: Levees

Right: Paddy dams

Flood reduction to 100 years flood
Different effects in each region

Combination simulation and Future goals

900 combinations ← High speed model

- 250m grid cells 6,000,000 in Japan
- 5 climate models Japan2, Australia1, France1, Germany1
- 3 future scenarios RCP2.6+SSP1, RCP4.5+SSP2, RCP8.5+SSP5
- 3 target periods Present, 2050, 2100
- 4 risk simulations Return period 30, 50, 100, 200 years
- 5 Countermeasures Levees, Landuse control, High-floor houses, Drainage system, Paddy dams

Future goals

- What is the best adaptation regionally?
- What is the best combination?
- Applying other countermeasures (Reservoirs, Logging in channels, et al.)
- Preparation for the future heavy downpour



Supercomputer
SX-Aurora TSUBASA