総務省
Ministry of Internal Affairs and Communications

ICTs in Japan for Climate Change Issues

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Climate Change Issues in Global Frameworks

Sendai Framework

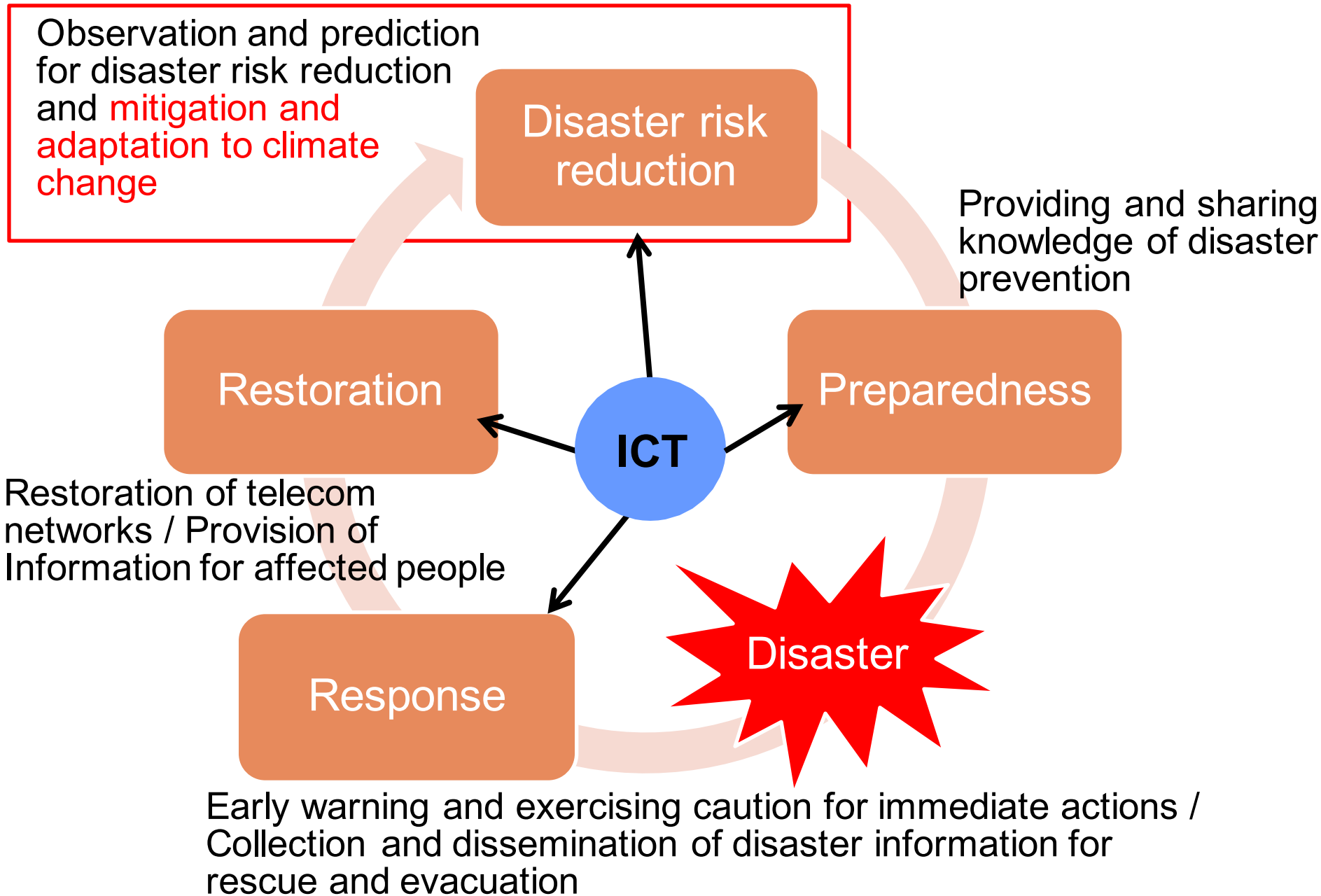
- Seven Global Targets
  - Reduce mortality, direct disaster economic loss
  - Increase countries with DRR strategies etc.
- Priorities for Action
  - Understanding disaster risk
  - Strengthening disaster risk governance
  - Investing in DRR for resilience
  - Enhancing disaster preparedness / Building back better in recovery

Including countermeasures for climate change

Global Frameworks

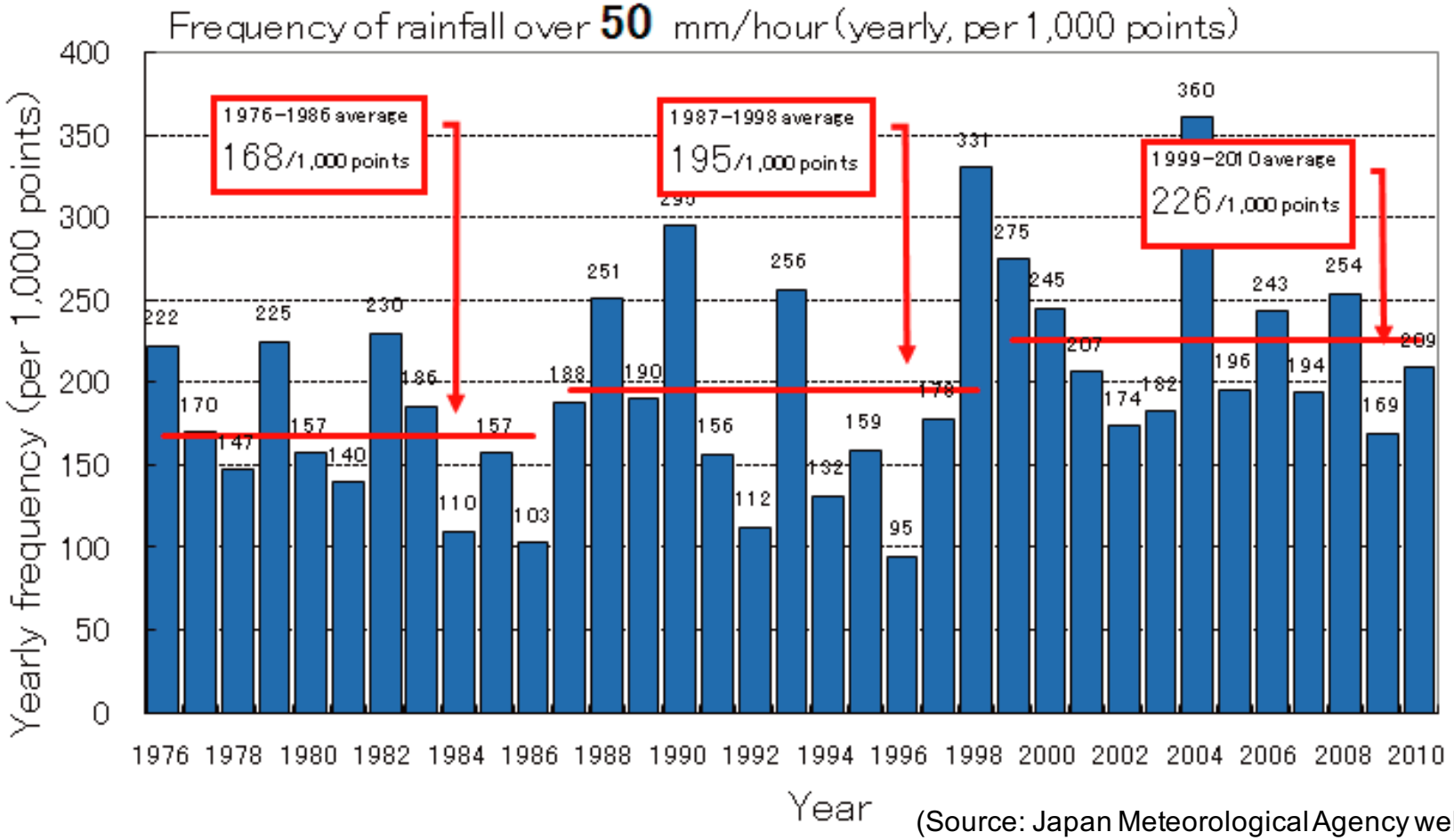
- 2030 Agenda for Sustainable Development
  - Adopted at the UN GA in September 2015
  - Focuses on DRR and mitigation and adaptation to climate change among targets
- Paris Agreement
  - Adopted at the COP21 in December 2015
  - Prioritizes DRR as an important element in mitigation and adaptation to climate change

Roles of ICT for Climate Change



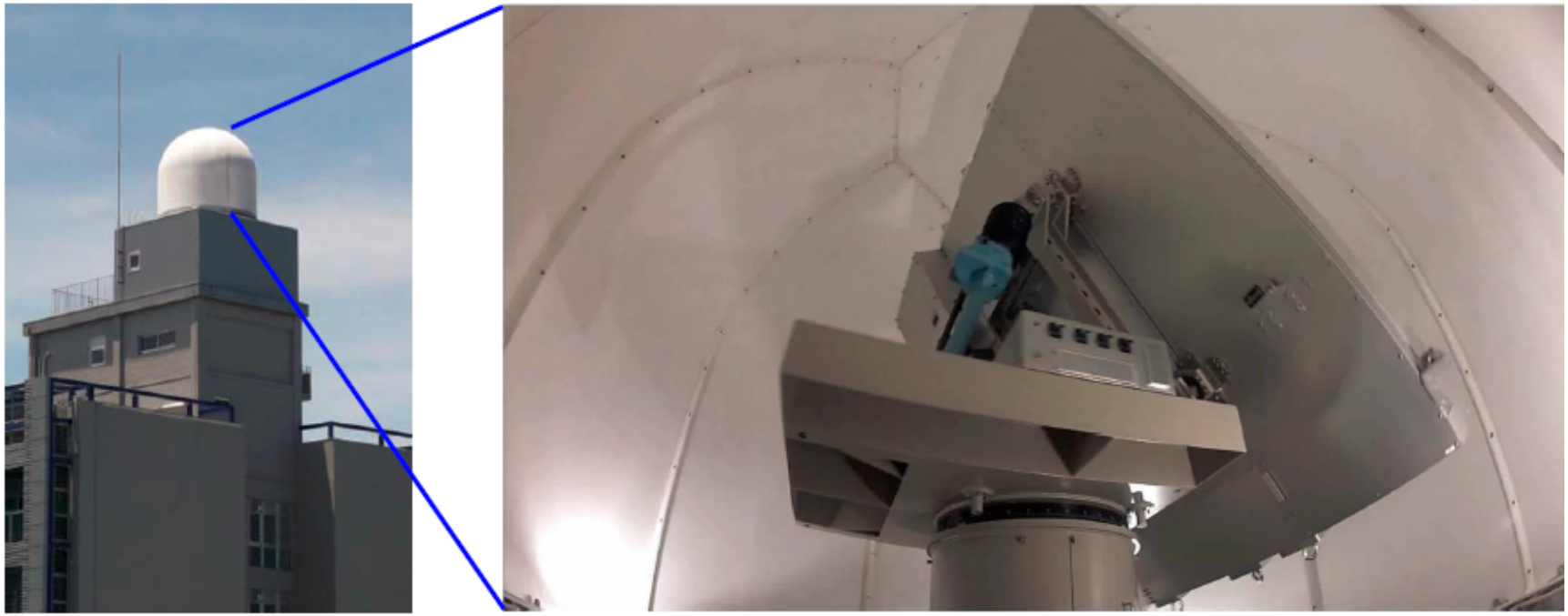
Long-Term Trend of Heavy Rainfall in Japan

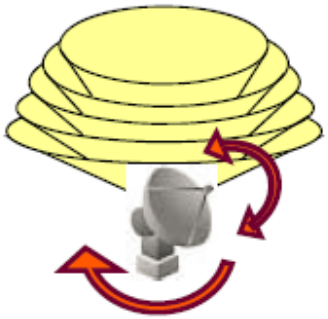
- An analysis using AMeDAS* data shows the long-term trend of the heavy rainfall in Japan (* Automated Meteorological Data Acquisition System)
- Frequency of an hour rainfall over 50 mm shows increment in 40 years, indicating significance at 95% confidence level



(Source: Japan Meteorological Agency website)

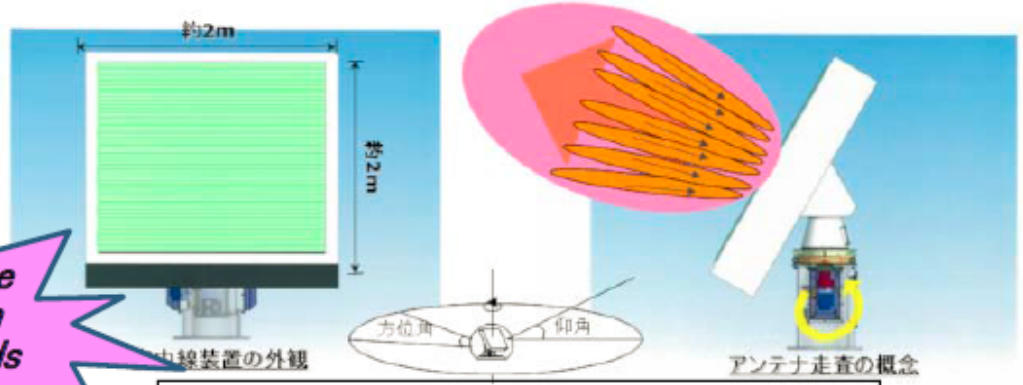
Phased Array Weather Radar





3-dim measurement using a parabolic antenna (150 m, 15 EL angles in 5 min)

3-dim. dense observation in 30 seconds



3-dim measurement using 128 slot-array antennas with fan-beam transmitting and DBF receiving. (100 m, 100 EL angles in 30 sec)

(Source: "Vertical Motion an Growth of Precipitation Measured by Dual Phased Array Weather Radar Every 30 Seconds", Shinsuke Satoh et al, AMS 37th Conference on Radar Meteorology @Normal OK, Sep 14, 2015)

Solid-State Weather Radar

A solid-state weather radar

- has characteristics of high-accurate observation, reduction of life cycle cost, stable operation and effective usage of radio spectrum

Electron tube

- Requires high voltage
- Requires many raw data for high accuracy
- Short designed life (~ 2 yrs)
- High running cost

Semiconductor

- Not require high voltage
- Requires less raw data for high accuracy
- Long designed life (> 10 yrs)
- Low running cost

Seismic/Tsunami Observation and Communication System

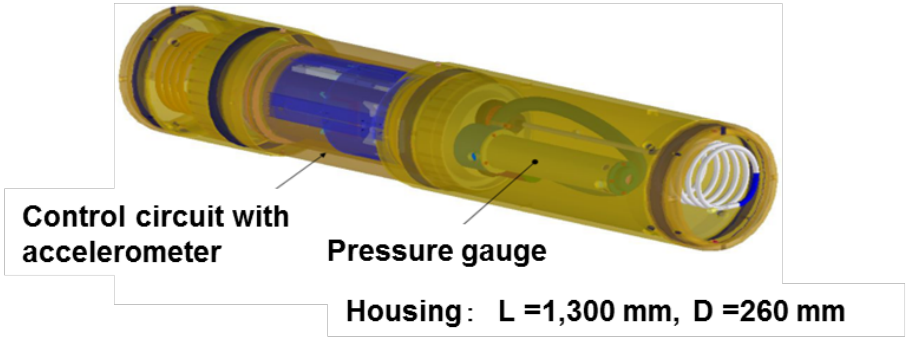
Seismic & Tsunami Sensor Node with Submarine Communication Capability

Dedicated design for seismic and tsunami observation & data collection compatible with ITU-T* Green Repeater

Sensor Node**

Real time observation with the following features:

- Network configuration with TCP/IP ➔ Fault tolerant observation
- Atomic clock and IEEE1588
- Remote control and software upgrade ➔ Flexible operation
- PoE (Power over Ethernet) port ➔ Sensors exchangeable
- Use of commercial components ➔ Cost effective observation



Note
*: International Telecommunication Union Telecommunication Standardization Sector
**: Joint development with Marine seismology group, Earthquake Research Institute (ERI), the University of Tokyo

(Source: Fujitsu Limited)

ITU-T Activity for Climate Monitoring and Disaster Reduction

Climate change – Reported by IPCC[1] (2007)

ITU, UNESCO-IOC[2] and WMO[3]:
Joint Task Force Established

Note
1: Intergovernmental Panel on Climate Change
2: Intergovernmental Oceanographic Commission
3: World Meteorological Organization

Enabling the availability of submarine repeaters equipped with scientific sensors for climate monitoring and disaster risk reduction

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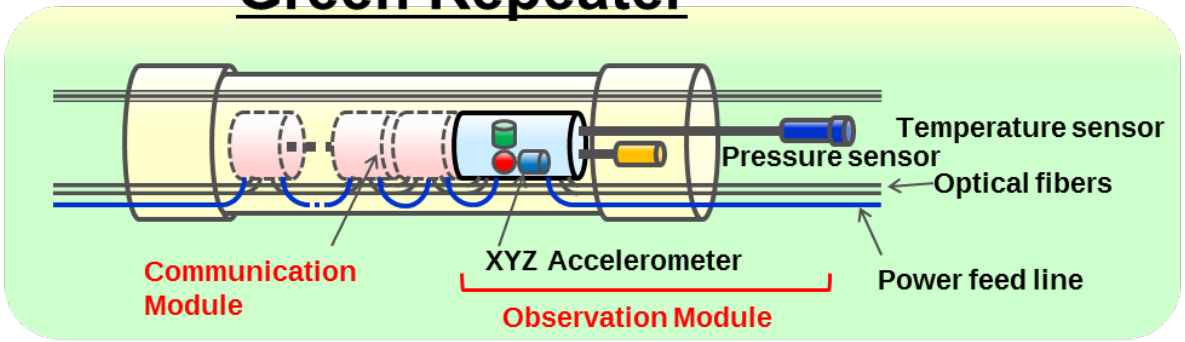
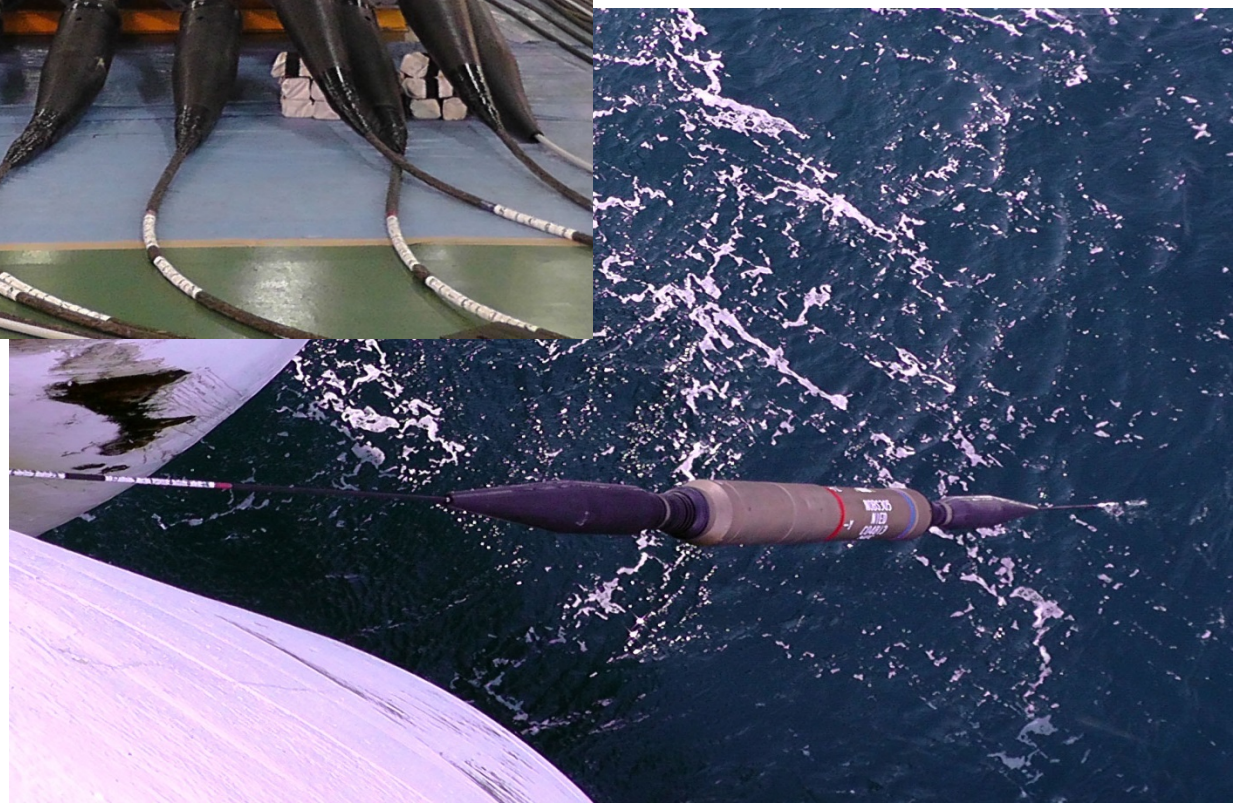
Green Repeater
(now under standardization by ITU-T)

Green Repeater



(Source: Fujitsu Limited)

Seismic/Tsunami Observation and Communication System

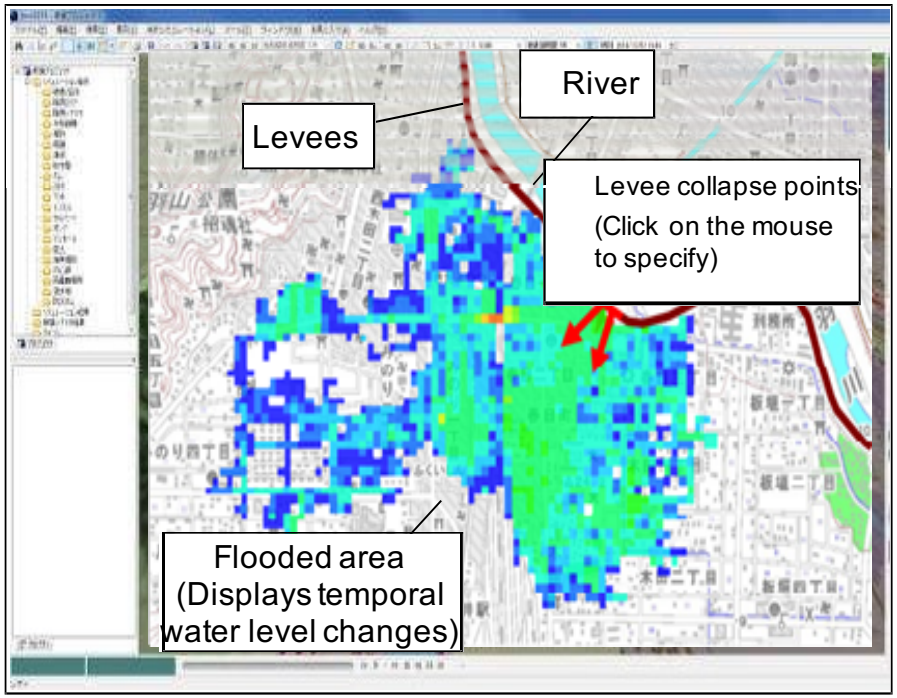


(Source: NEC Corporation)

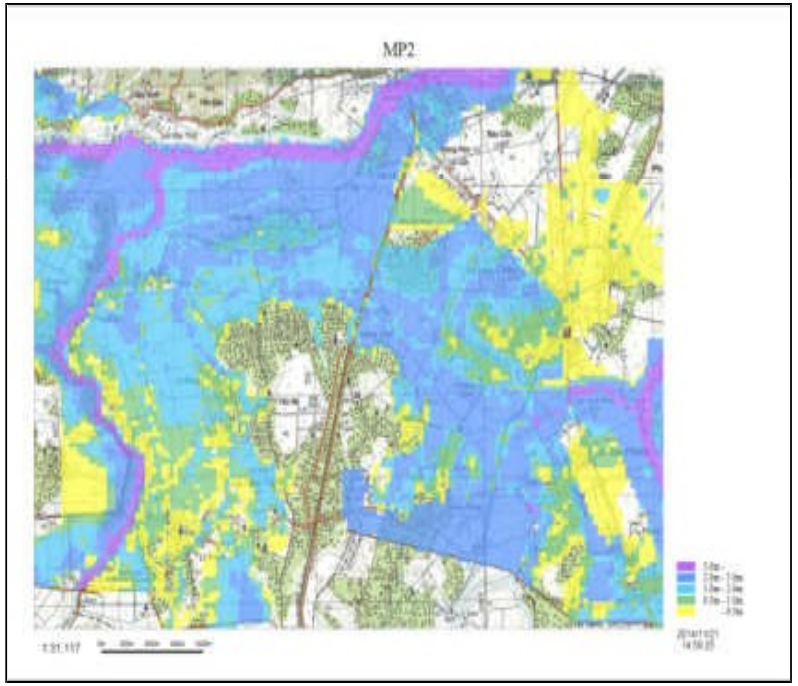
Flood Simulator

A flood simulator

- predicts river flooding and inundation;
- enables intuitive and easy user interface and flexible configuration;
- allows high-speed and high-accuracy simulation.



Sample image of flood simulation



Result of simulation

Thank You

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