

Disaster Preparedness and Environmental Management



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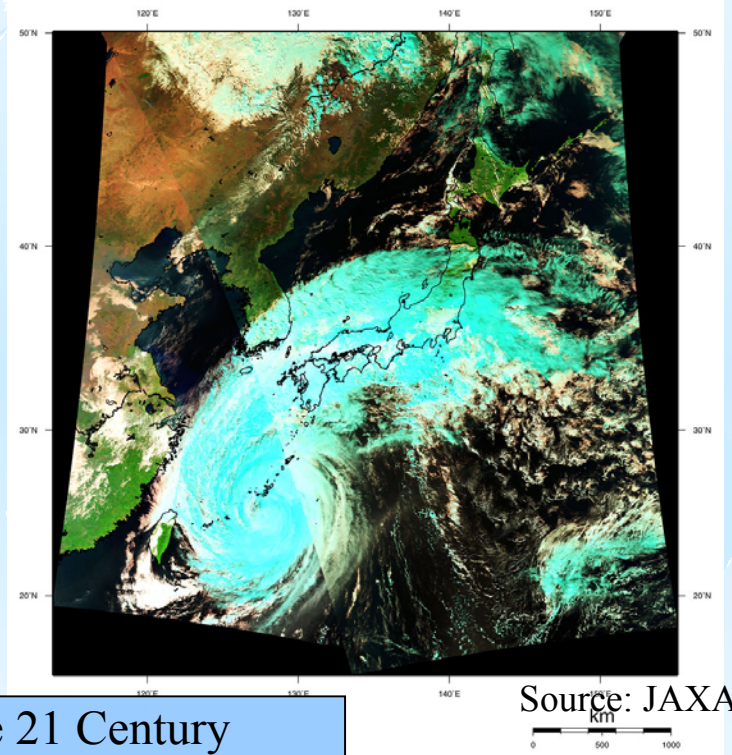
Recent Extreme Climate Events and Disasters

Forest fires resulting from extreme heat and droughts

Large-scale typhoon Landing in Japan



Portugal, 2003 Reuter/Jose Manuel Ribeiro



Source: JAXA

Projection towards the end of the 21 Century

- Average global temperature may rise by 1.4 to 5.8 degrees Celsius
- Average sea level may rise by 9 to 88 cm
- Extreme climate events such as torrential rain and drought may increase

Preparedness is a Key Element for Sustainable Development

1. The Johannesburg Plan of implementation (JPOI) underlines the importance of :
 - 1) Vulnerability and risk assessment and prevention
 - 2) Disaster management including mitigation, preparation, response and recovery.
2. The **APFED Final Report** recommendations include:
 - 1) Establishing early warning systems
 - 2) Managing disaster situations
 - 3) Mitigating their effects

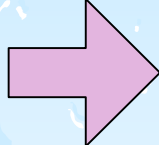


Disaster Preparedness and Environmental Management

- 1. The role of monitoring and projections of the global environment in disaster preparedness**
- 2. Environmental management for disaster prevention and impact mitigation**
- 3. Emergency responses upon the occurrence of disasters**

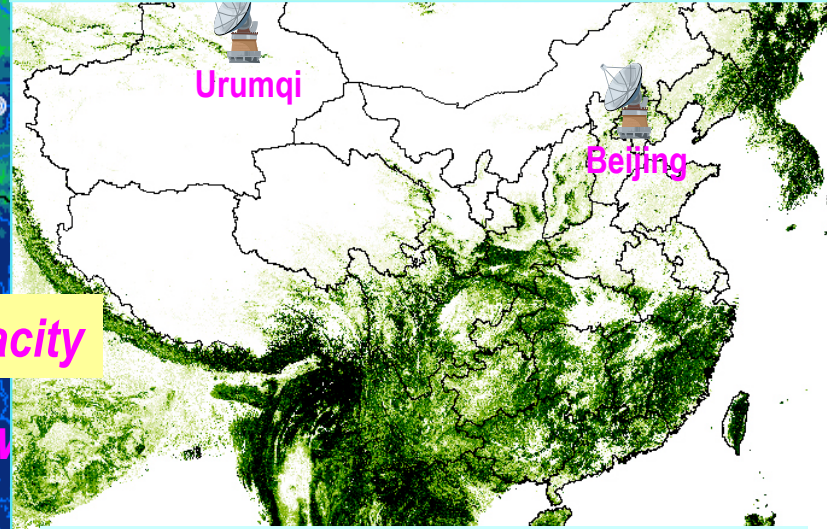
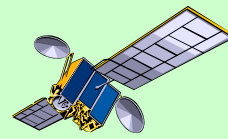
1. The Role of Observation and of Projections on Global Environment

Change in the global environment may directly and indirectly trigger disasters

- **Understanding of current state of global environment**
 - **Projection of global environment**
- 
- **Early warnings against disaster**
 - **Measures for impact mitigation**

Importance of global observation and future projections

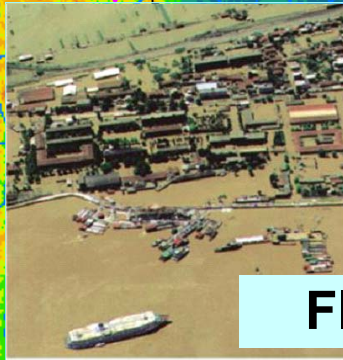
APEIS-IEM Monitoring System



Soil Erosion

Deforestation

Loss of water & soil holding capacity



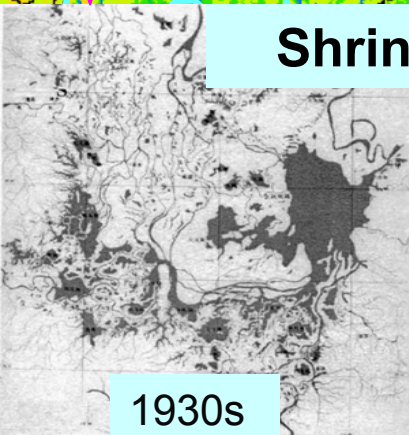
Flood

Monitoring of Forest Change

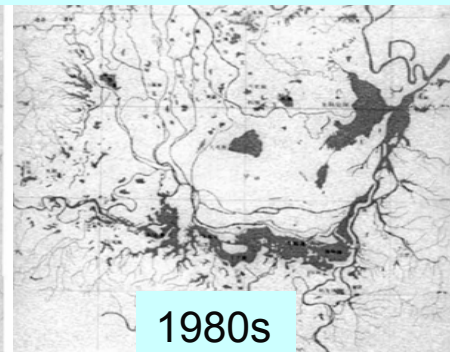
Dongting Lake

Loss of buffering capacity

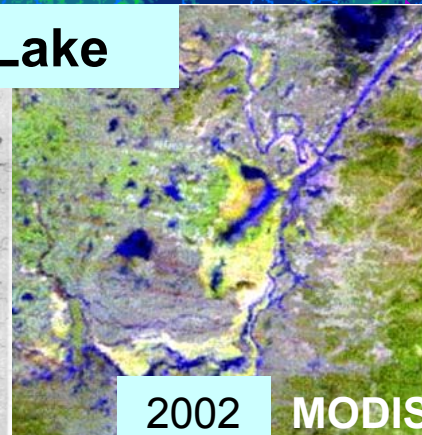
Shrinking of Tongting Lake



1930s

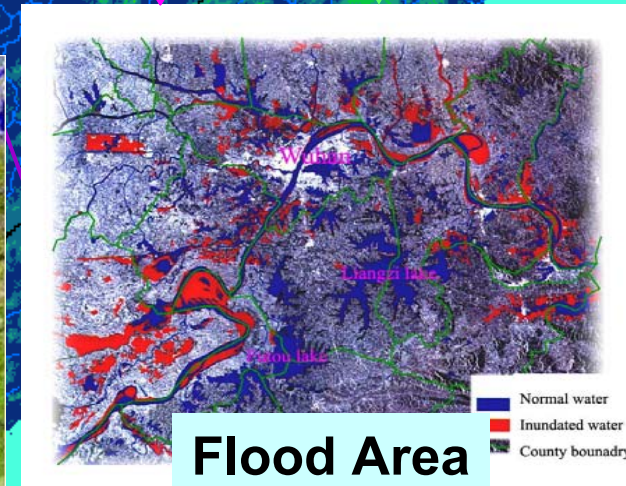


1980s



2002

MODIS



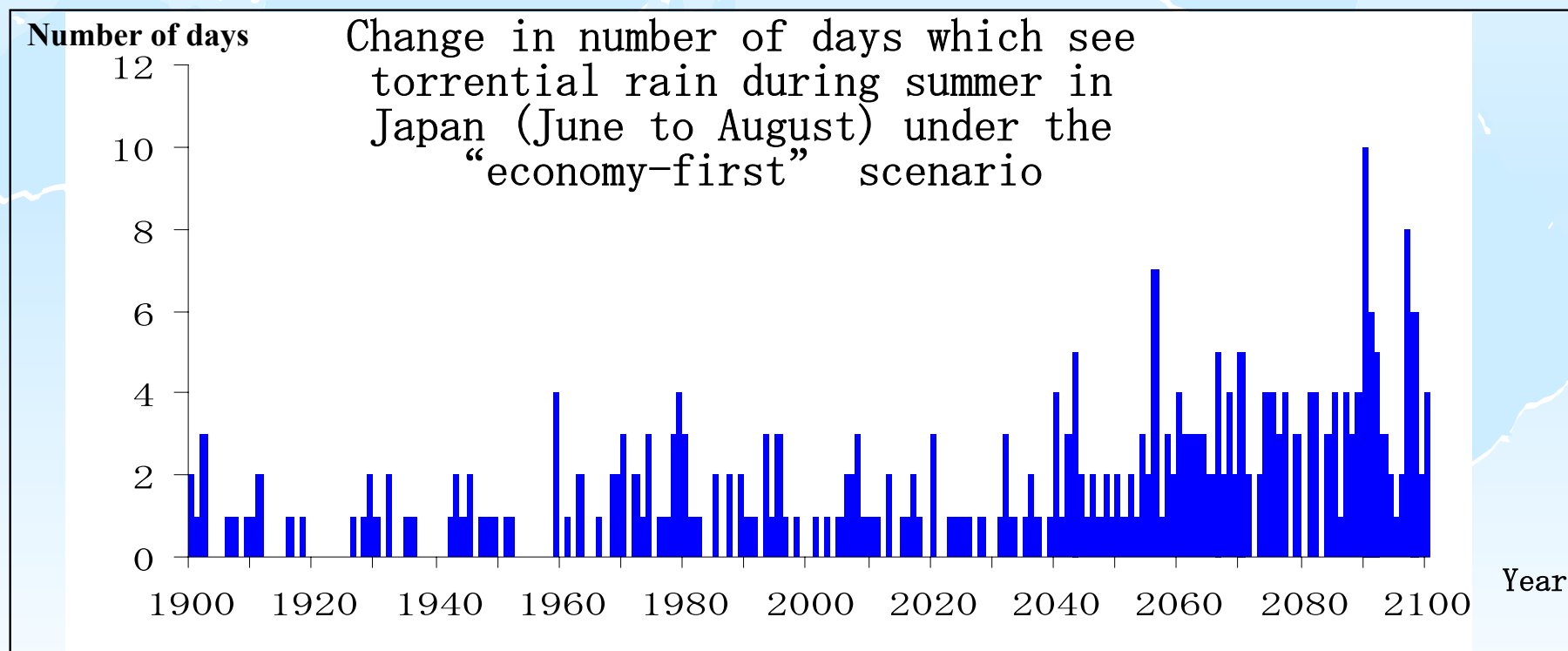
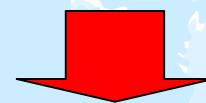
Flood Area

Future Climate Change Projection using the Earth Simulator

Summer precipitation projection for Japan (June to August)

from 2071 through 2100	"Economy-first" scenario	"Environment-first" scenario
Precipitation	Approx. increase by 19%	Approx. increase by 17%

Frequency of
torrential rain
may increase



2. Environmental Management for Disaster Prevention and Impact Mitigation

- **Reduction of anthropogenic causes of environmental change and mitigation of risks**
Forest destruction, greenhouse gas emissions, etc.
- **Importance of international environmental agreements**
United Nations Framework Convention on Climate Change, Kyoto Protocol, etc.
- **Importance of maintenance, management and development of the sound mitigation capability that inherent to nature**

1. Forests' Disaster Prevention Capabilities

- **Forests have a wide variety of functions benefiting the public: fostering water resources, preventing soil defluxion and destruction, serving as windbreaks, etc.**



Photo by Prof. Nunn, University of the South Pacific

Negative impacts from logging



**Protection forest at coastline
(Toyama Prefecture)**

2. Corral Reefs Assisting in Disaster Preparedness

Reduce the power of ocean wave energy and protect sea bottoms and coasts



Mitigate high tides and tsunamis

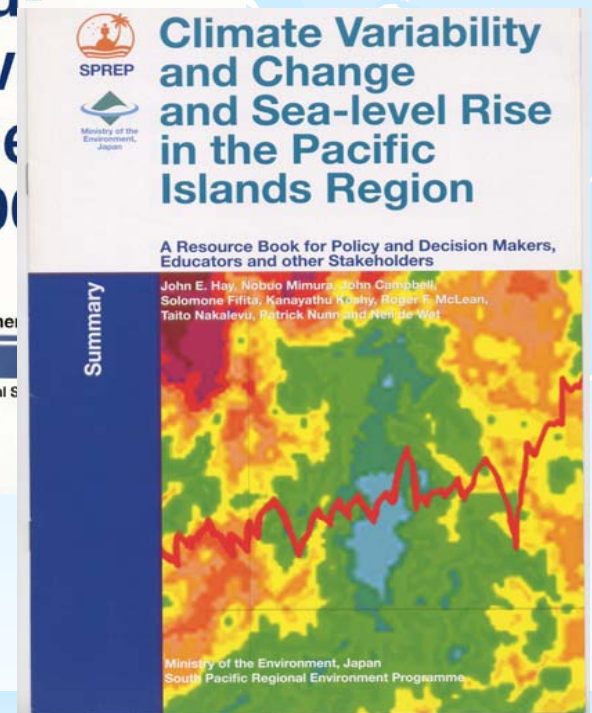
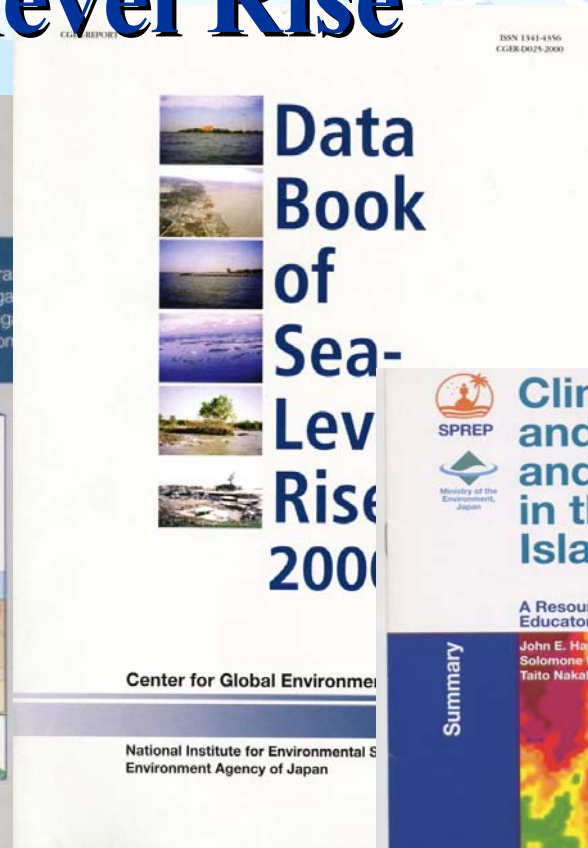
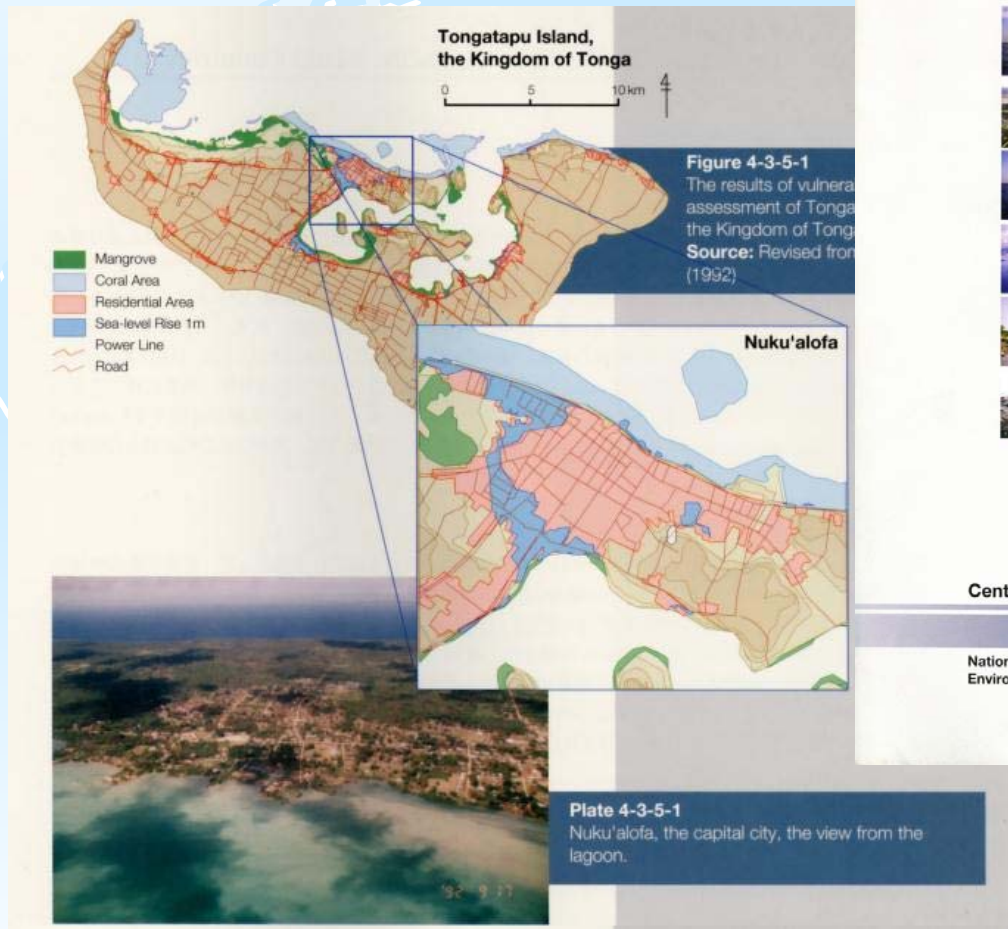


Tonakijima



Photo by Dr. Hironobu Kan, Okayama University

3. Vulnerability Assessment of Sea-level Rise



4. Construction of Seawalls around Male, Mordive



- **Construction of seawalls around the island**
- **5.4 billion yen (50 million USD), 1994 through 2001 (grant Aid)**
- **Took into account long-term sea-level rise**

- **Maintenance, management and development of the sound mitigation capabilities inherent to nature as longer-term and wider-area disaster prevention measures**
- **Shift from concrete river walls to “nature-restoring” type river walls in Japan**
- **Importance of using measures suitable for each locale**



Photo by Prof. Nunn, University of the South Pacific

Planting mangroves

3. Emergency Response upon the Occurrence of Disasters

- **Appropriate environment management and quick restoration is crucial in the wake of disasters**
- **Linkage among national and local governments, citizens and business entities through partnerships**



Oil contaminated seabirds

Treatment of Wastes Generated during Great Hanshin Earthquake



Removal of demolition wastes



Demolition work

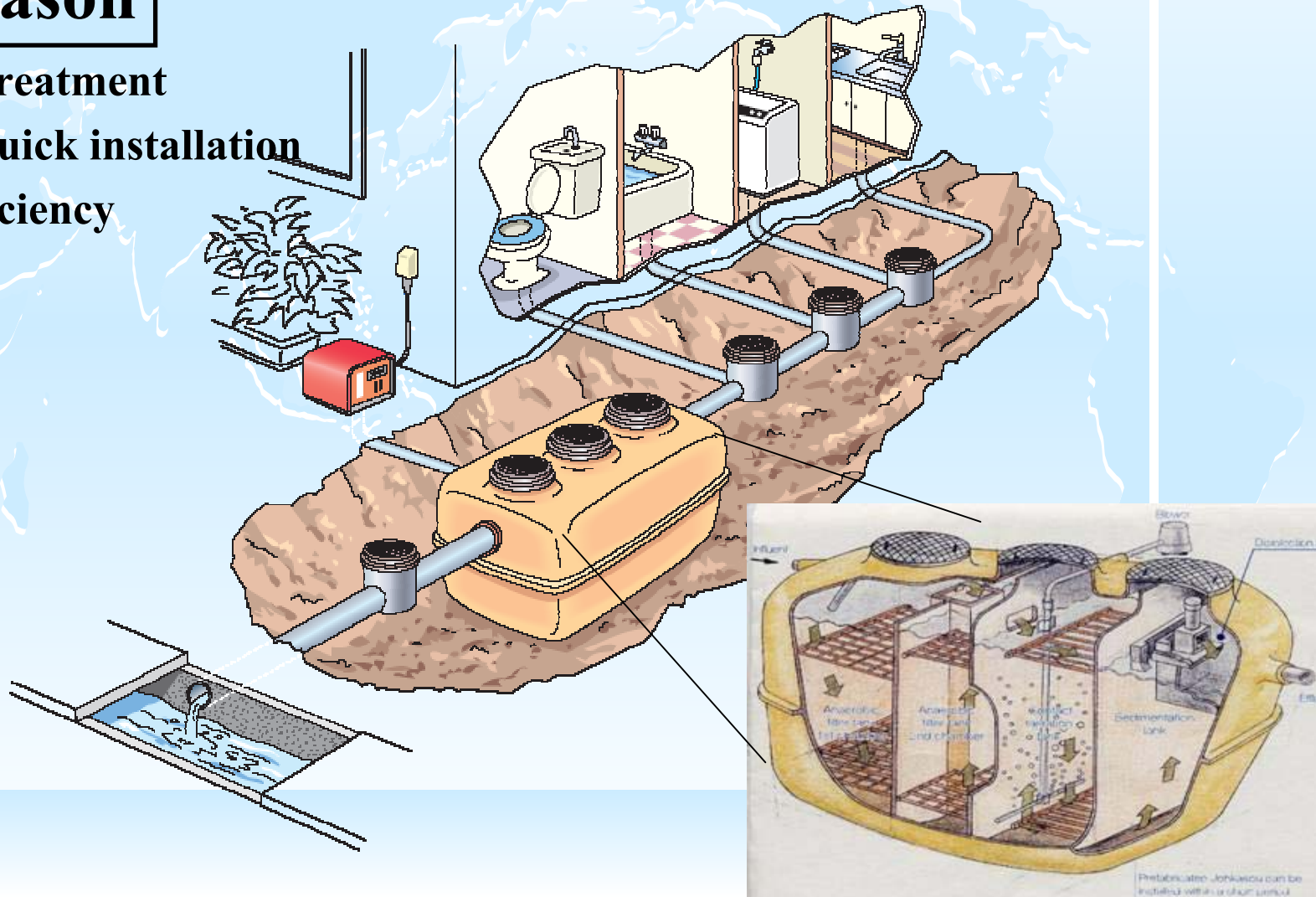
**After demolition
and land leveling**



< Treatment of Human waste is Necessary in the Wake of a Disaster >

Johkasoh

- On-site treatment
- Simple quick installation
- High efficiency



Partnership for Disaster Preparedness



Conclusion

- Appropriate environmental management contributes to disaster preparedness, mitigation and recovery from damage
- Cooperation by the international community is important and much is expected of the role of UNEP in this regard
- Japan is committed to collaborating with the international community by utilizing its knowledge and experience



Thank you