

My experiences before and at ICHARM

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Dec 13, 2021 @ ICHARM Webinar 2021



United Nations
Educational, Scientific and
Cultural Organization



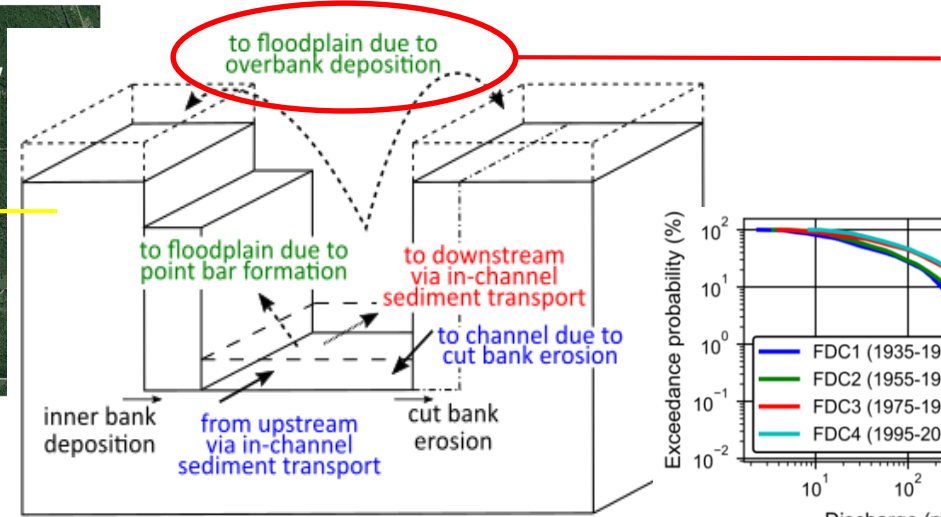
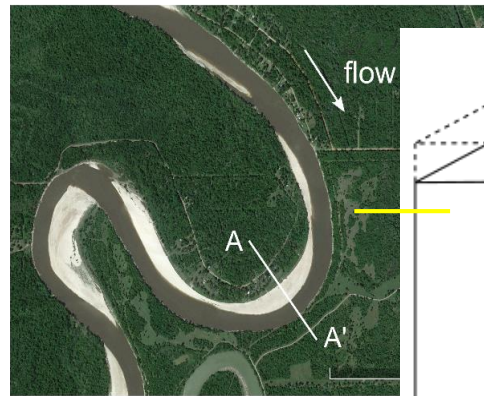
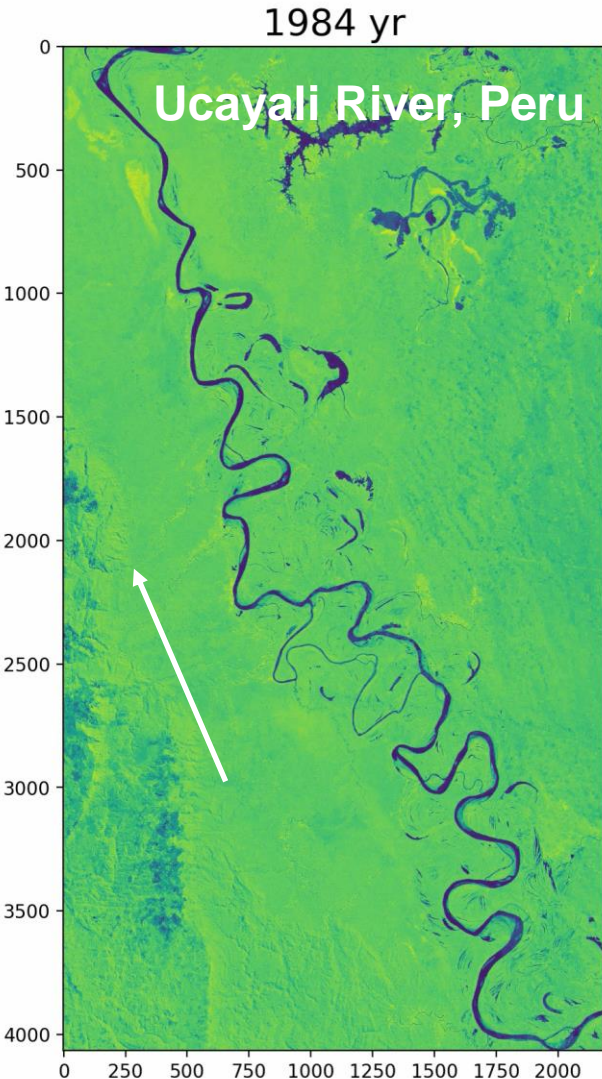
International Centre for
Water Hazard and Risk Management
under the auspices of UNESCO



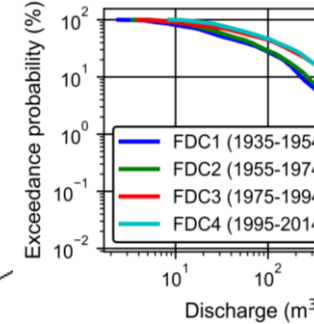
Public Works Research Institute,
National Research and Development
Agency, Japan

Ph.D. Study

Research theme: “How a natural meandering sets its width / depth?”



Floodplain sedimentation due to inundation



Flood / inundation: crucial process in nature

- river channel maintenance
- provide nutrient to adjacent floodplain
- fish migration between lake and river etc.

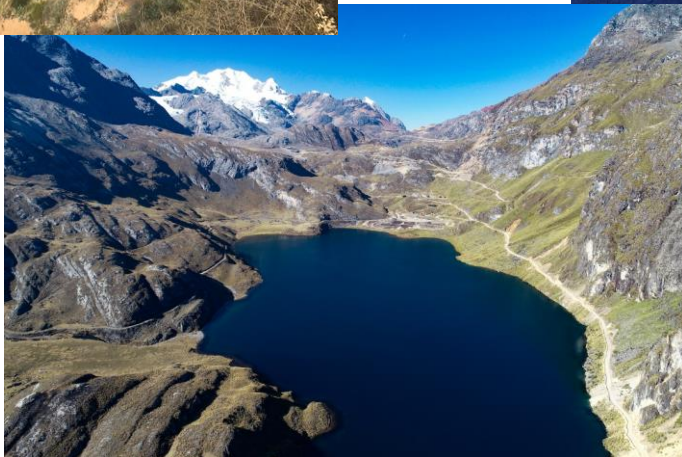
River is designed in a way that inundation occurs once in a while

→ This is how I used to see a river / flood



Postdoctoral Research

Research theme: develop a baseline information on Amazonian rivers



Postdoctoral Research

Research theme: develop a baseline information on Amazonian rivers

Rapid development in the Amazon and the Andes along rivers



↑ Large scale dredging plan in the Amazon

Dam construction plans in the Andes →

Problems: no adequate assessment of the impact on natural system

- measurement on sediment is not required by law
- technology does not exist



Our team developed a series of techniques for comprehensive measurement of the Andean and Amazonian rivers



- Field work
- Remote sensing
- Modeling

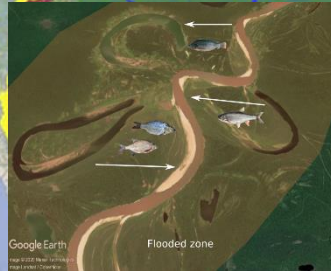
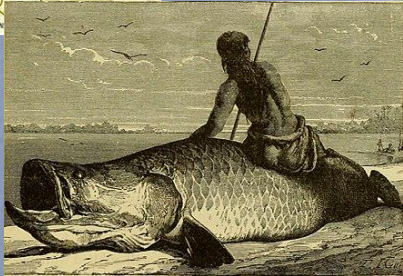


Postdoctoral Research: More perspectives

Connectivity



- **90%** of sediment comes from Andes
- Fish migration (e.g. Dorado Catfish)
- Flooding connects river and floodplain



Economic Activity

- Transportation of passenger and goods
- Fishery

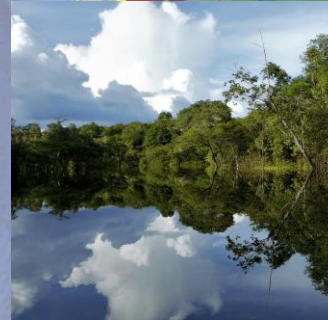


Flooding

- inundation is not a disaster

Diversity

- Different type of rivers
- Diverse ecological system
- Hotspots of biodiversity (e.g. Pacaya-Samiria)



Culture

- The basis of indigenous cosmology
- Local people identities

At ICHARM

New perspective:

Flood / inundation = *disaster*



Photo: Wikimedia Commons

River Basin Disaster Resilience and Sustainability by All 流域治水

“by All”

Integration effort to prevent
and mitigate the disaster

- Dam
- Channel
- Floodplain
- Water retention
etc.
- Academic
- Government
- Residents etc.

Flood

- disaster
- natural process
- culture
- economy etc.



Integrated view is needed

→ *This is how I see a river / flood today*

At ICHARM

Greta Thunberg

at Youth4Climate event in Milan in September 2021



Photo: Wikimedia Commons
By Anders Hellberg - Own
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<https://commons.wikimedia.org/w/index.php?curid=77270098>

“Build Back Better blah blah blah...”

“Green economy blah blah blah...”

“Net-zero 2050 by blah blah blah...”

*Indicating that these are empty words unless accompanied by **actions***

ICHARM works with

- central government
- local government
- local community
- national institution etc.

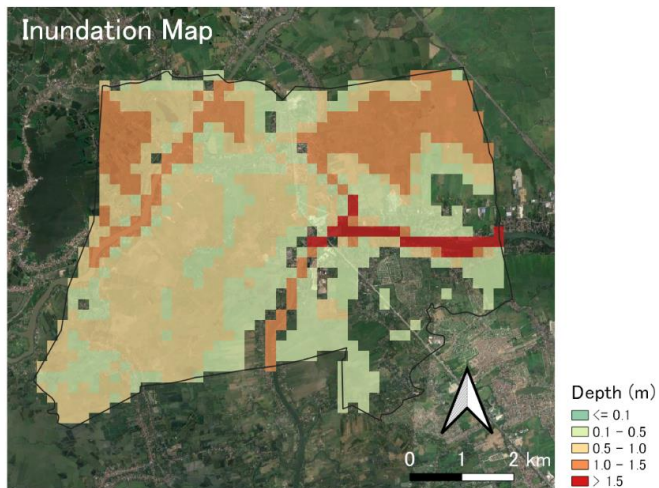


Works lead to action

At ICHARM

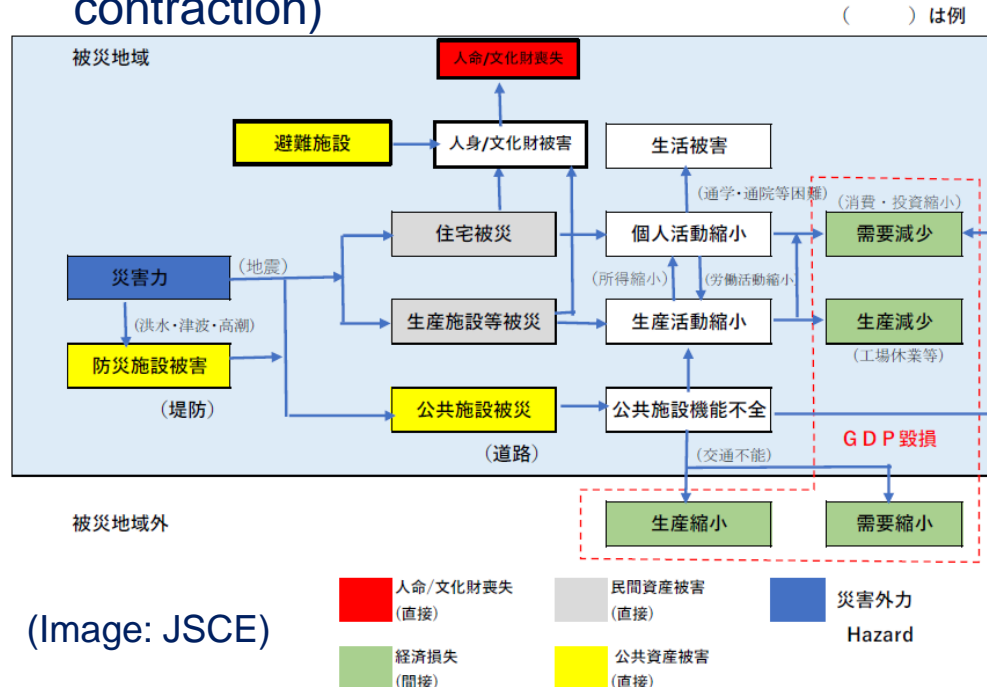
Research theme 1: *Climate risk assessment*

- Runoff-inundation simulation
- Different future climate scenario
- Mapping with socioeconomic data



Research theme 2: *Economic assessment*

- Quantification of economical impact by flooding
- Direct damage (affected population, house, infrastructure)
- Indirect damage (Sales decrease, economic contraction)



Research theme 3: *Sediment budget*

- Sediment production
- Sediment transport
- Sediment deposition

