



United Nations
Educational, Scientific and
Cultural Organization



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



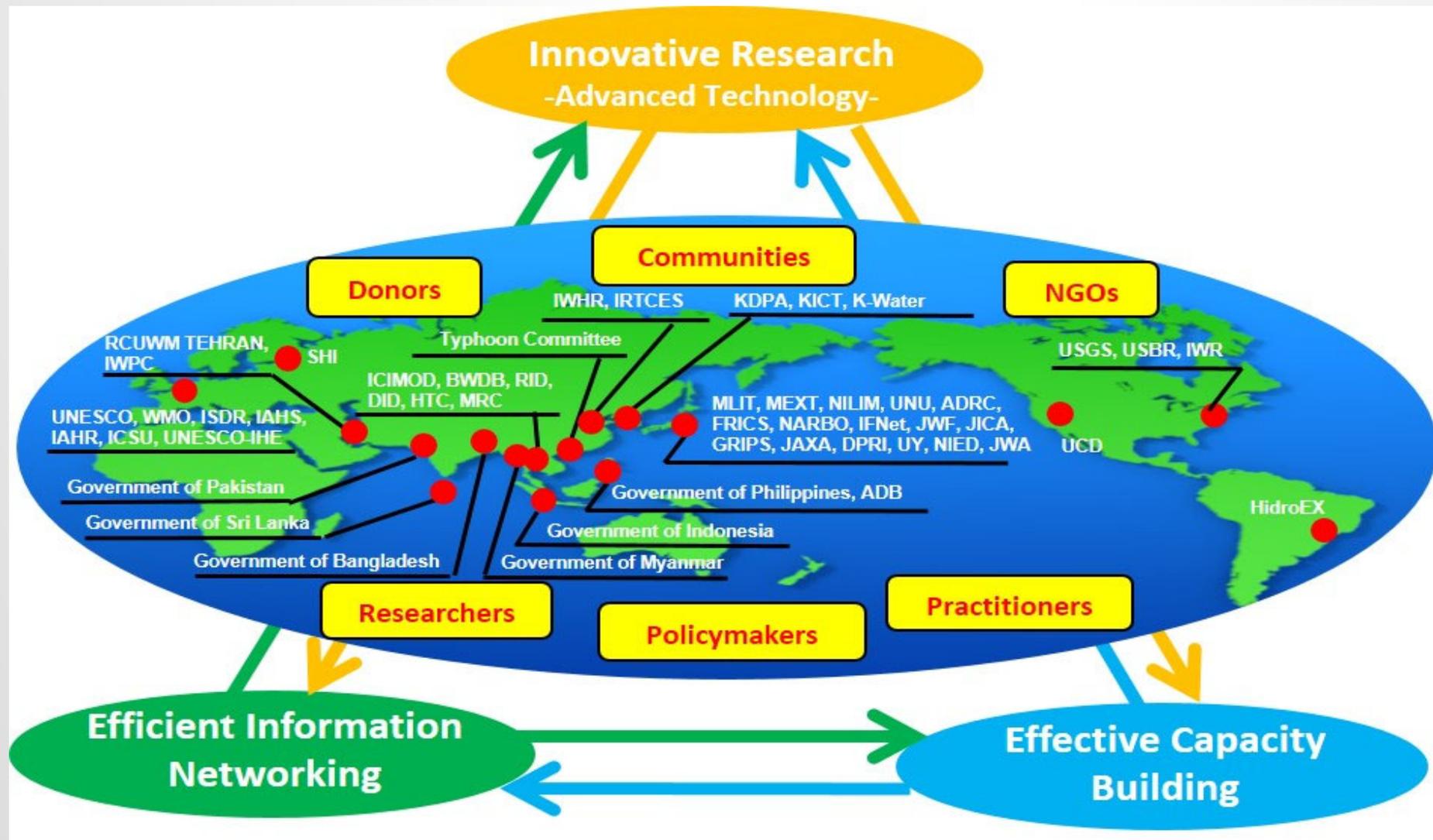
Public Works Research Institute,
National Research and Development
Agency, Japan

Platforms on Water Resilience and Disasters for Social Sustainability

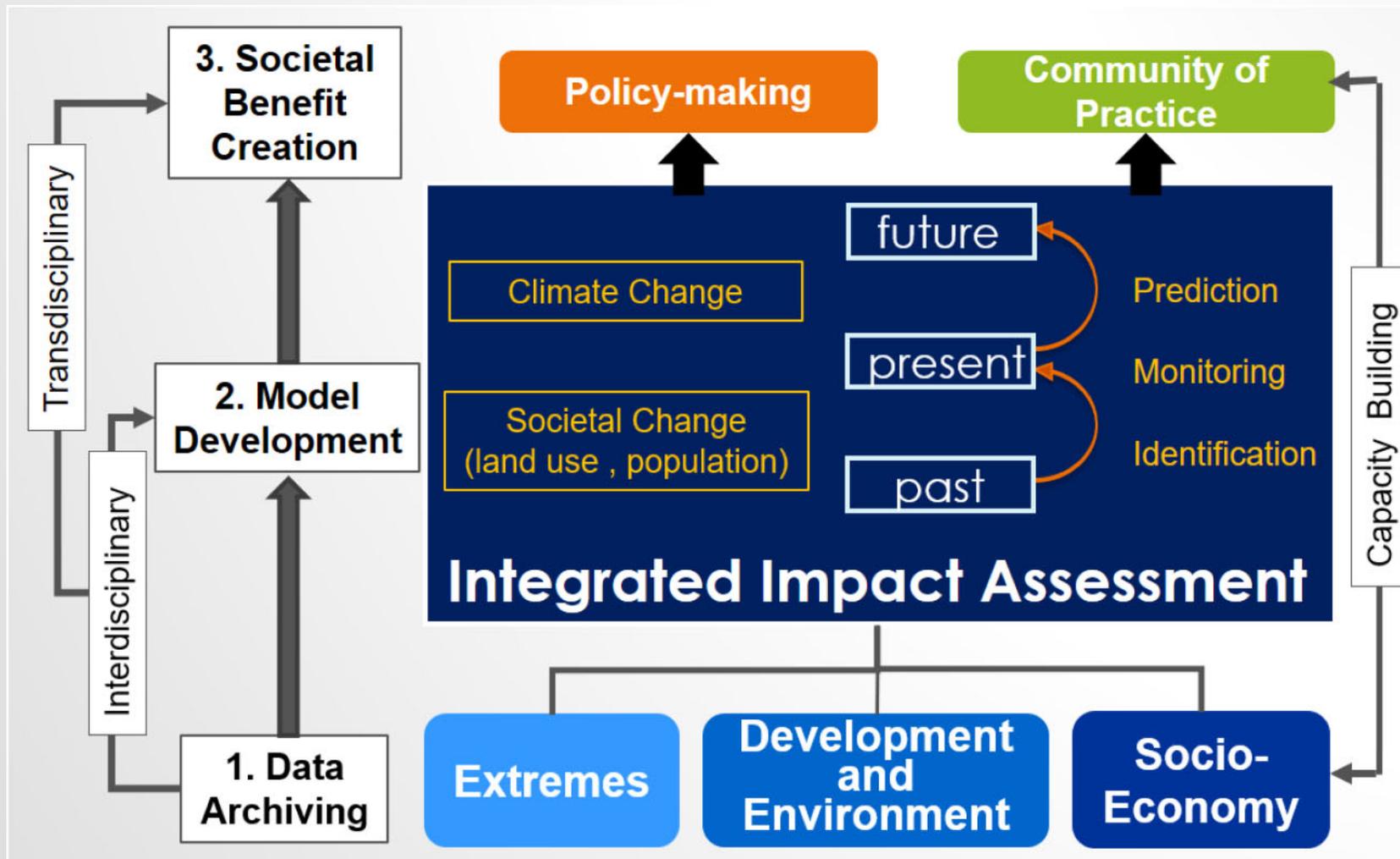
Noriyuki MORI

*Deputy Director of International Centre for Water Hazard
and Risk Management (ICHARM) Japan under the
auspices of UNESCO*

Three Pillars of ICHARM Activities



PLATFORM FUNCTIONS



Platform on Water Resilience and Disasters

Pakistan
- Indus River Basin



Myanmar
- Bago River Basin
- Sittaung River Basin



Philippine
- Pampanga River Basin
- Davao River Basin

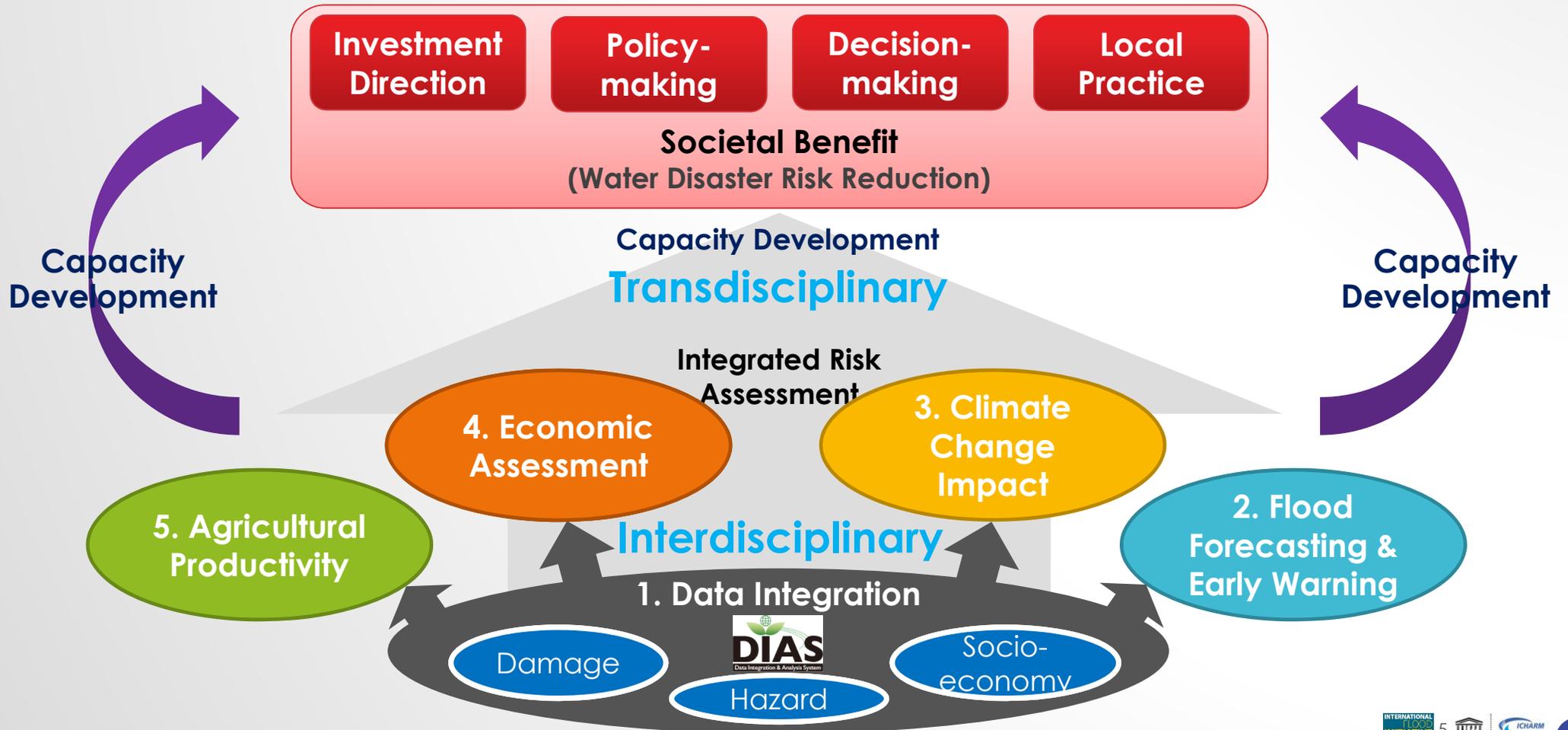
Sri Lanka
- Kalu River Basin
- Kelani River Basin
- Malvathu River Basin



Indonesia
- Bengawan Solo River Basin

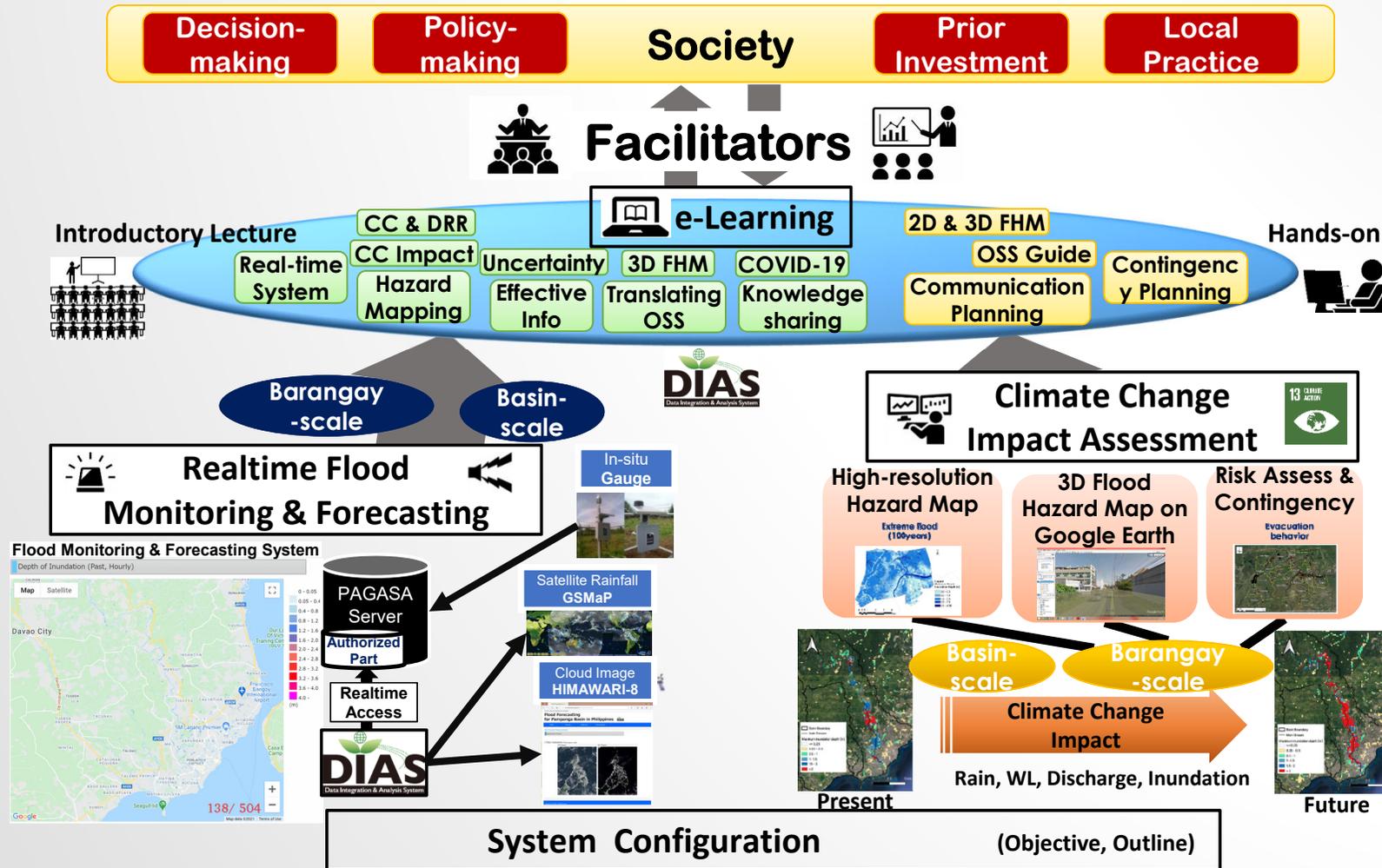


SCOPE OF PLATFORM



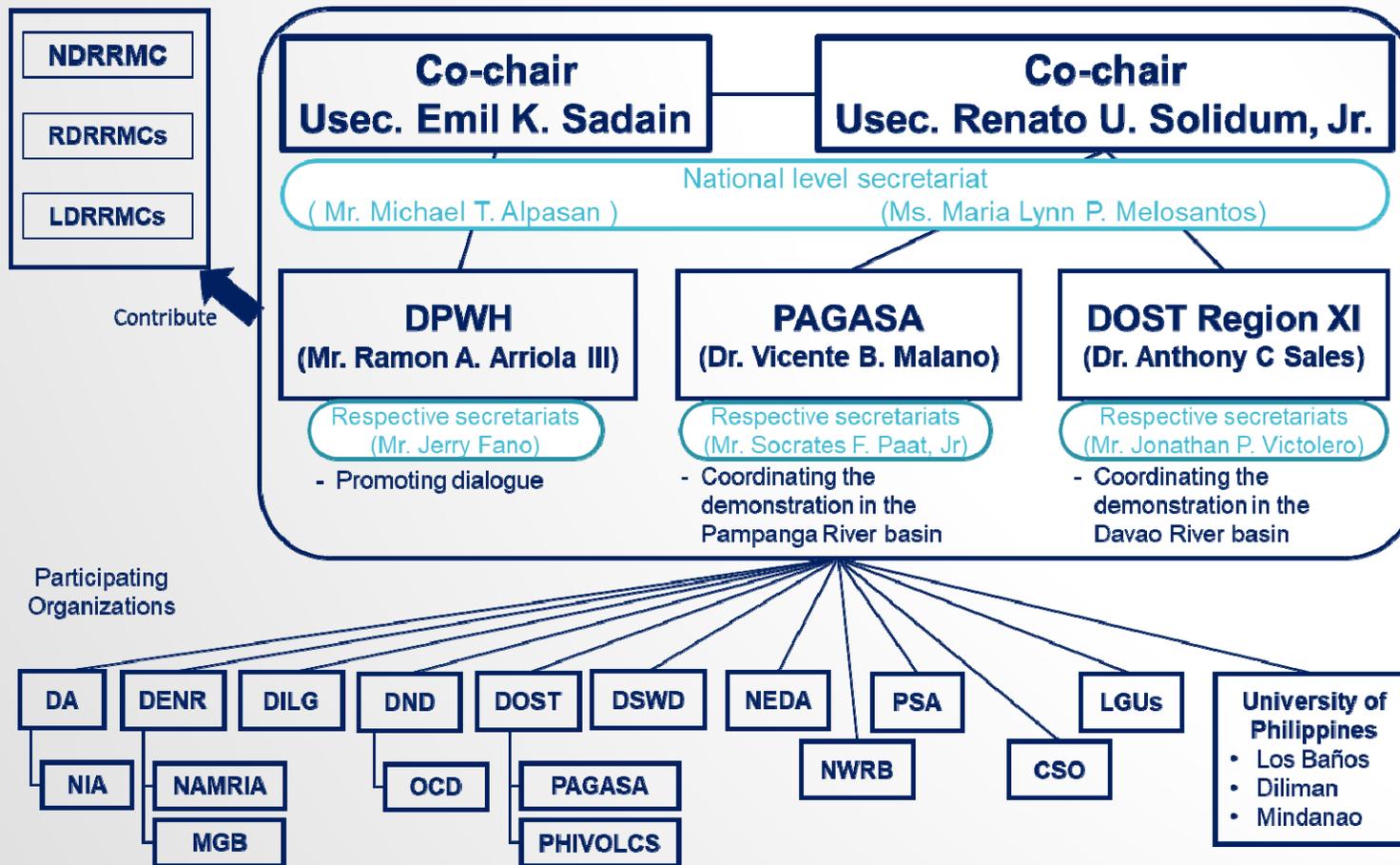
CONSILIENCE AND FACILITATORS

Online Synthesis System for Sustainability and Resilience (OSS-SR) in Davao City, Philippines

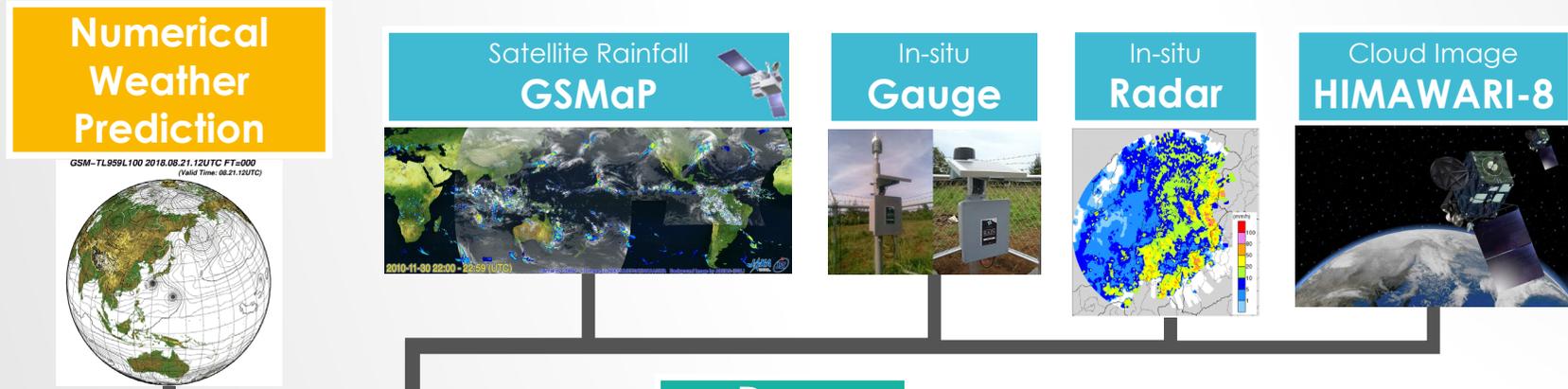


PLATFORM IN THE PHILIPPINES

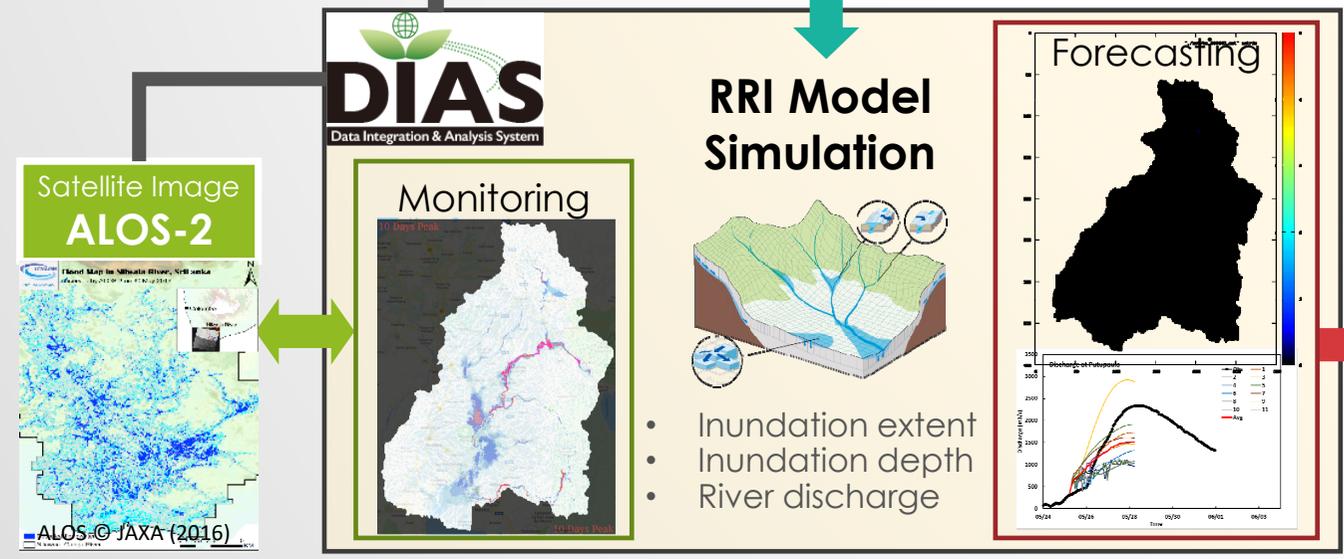
Institutional Structure



CONCEPT OF FLOOD FORECASTING & EARLY WARNING



Dam Operation



Flood prevention & evacuation



DAVAO OSS-SR: CLIMATE CHANGE IMPACT

Annual rainfall

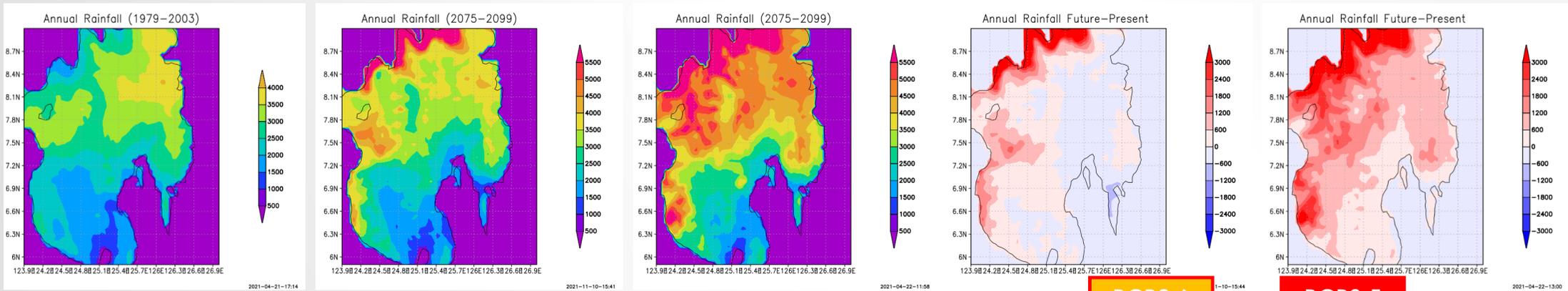
Past climate

Future (RCP2.6)

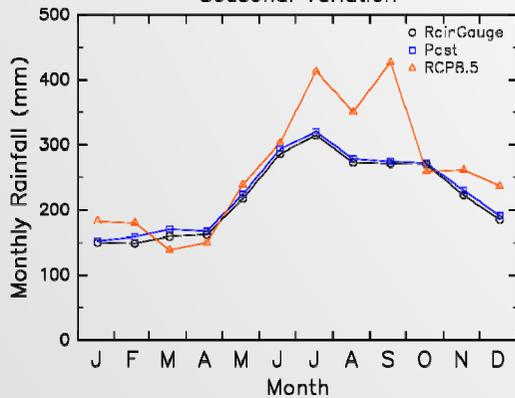
Future (RCP8.5)

(future)-(past) RCP2.6

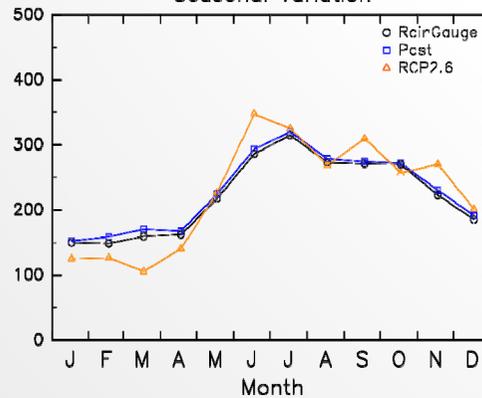
(future)-(past) RCP8.5



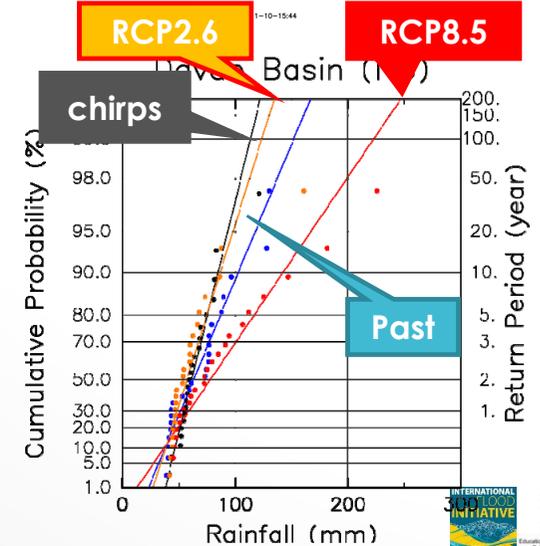
3.2H WRF RCP8.5
Seasonal Variation



3.2H WRF RCP2.6
Seasonal Variation



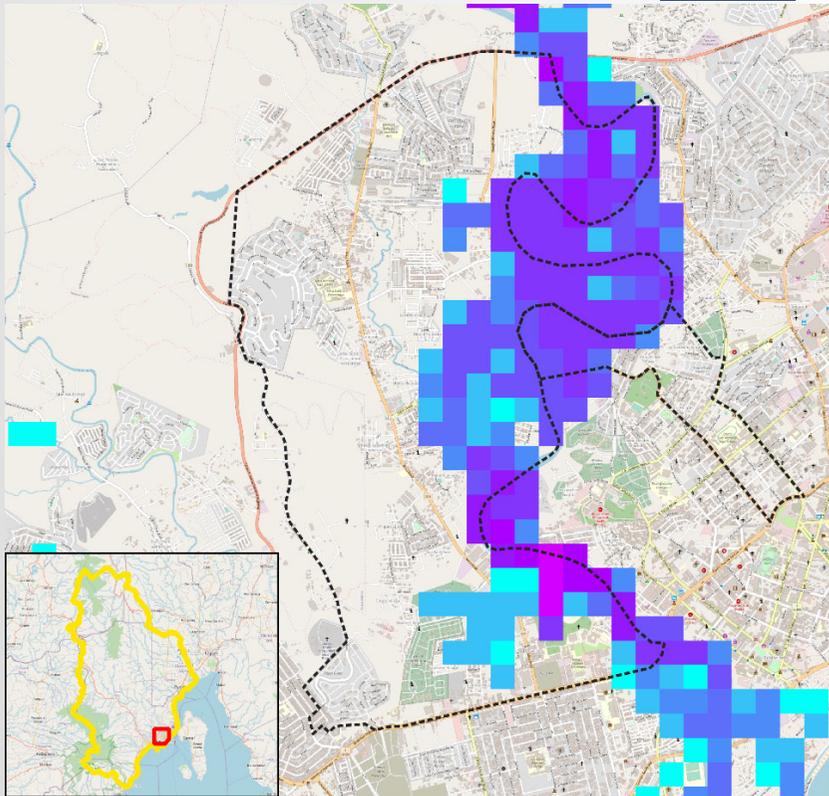
After Bias correction



DAVAO OSS-SR: MODELING APPROACH

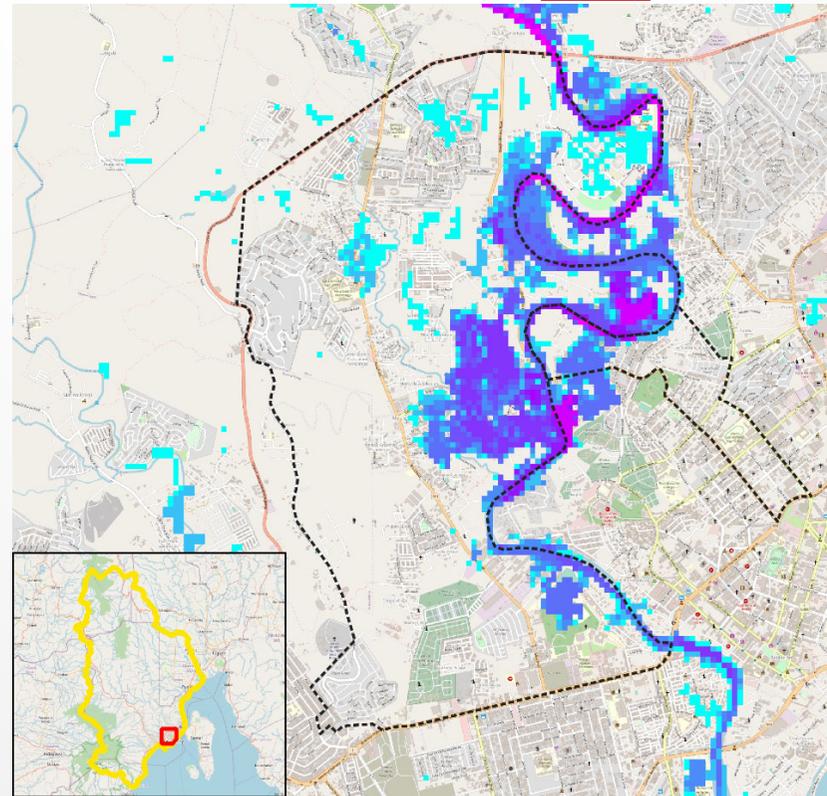
Basin-scale model

Resolution: 6 arc second \approx **180 m**



Barangay-scale model

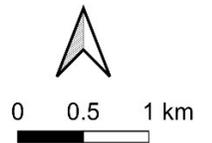
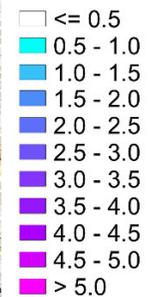
Resolution: **40 m**



Davao River Basin
Brgy. Ma-A &
Brgy. 10-A

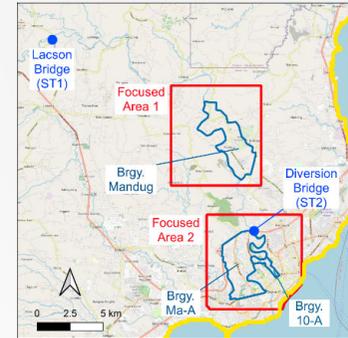
RCP 8.5 Scenario
100-Year Return Period

Inundation Depth (m)

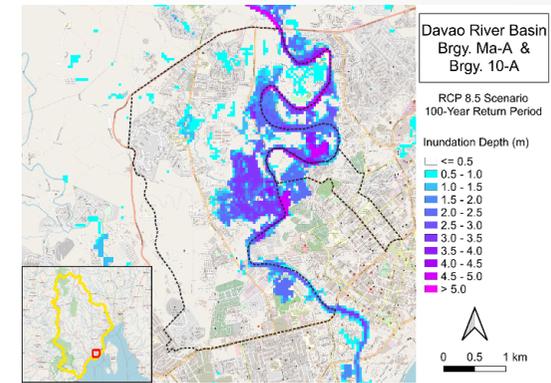
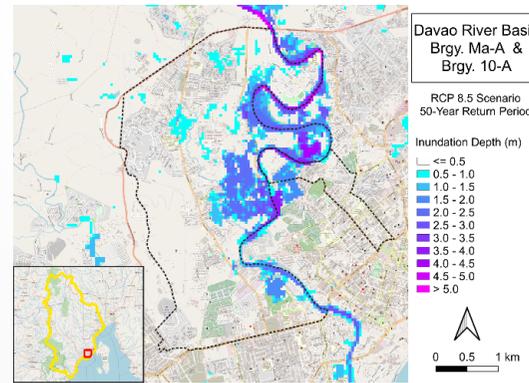
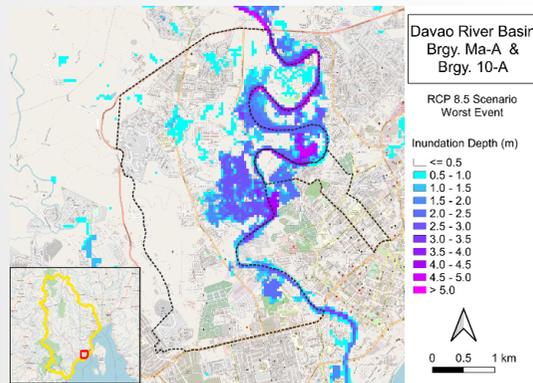


RESEARCH: CLIMATE CHANGE IMPACT

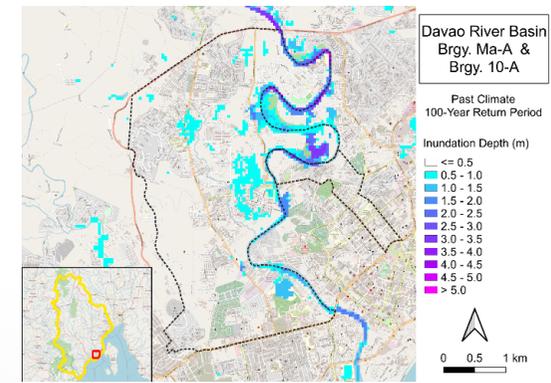
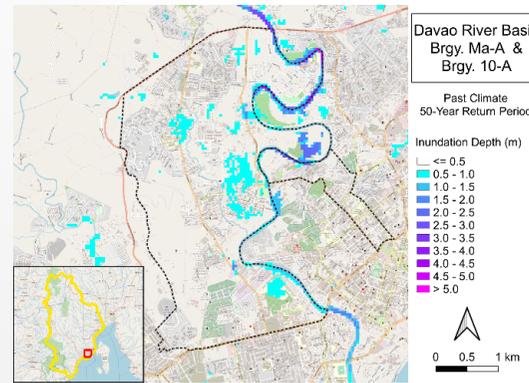
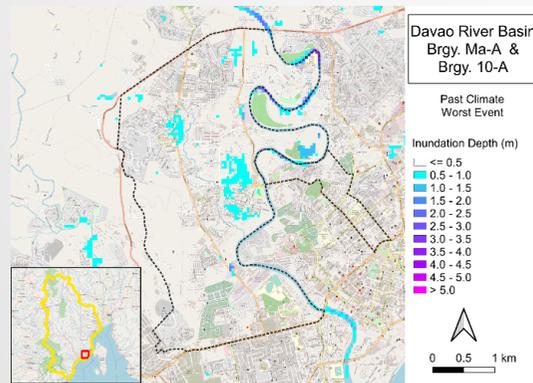
- Climate Change Impact Assessment



**Future
(2075-2099)
RCP8.5**



**Past
(1979-2003)**



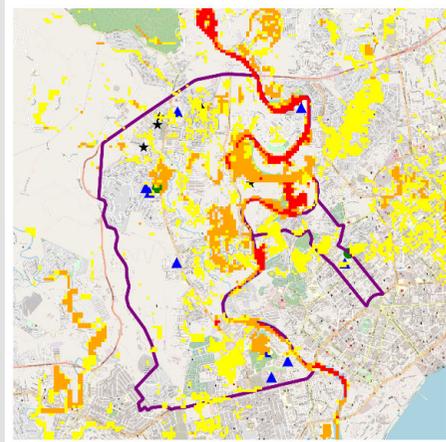
GCM Worst-case

50 year Return Period

100 year Return Period

DAVAO OSS-SR: DELIVERABLES OF TRAINING

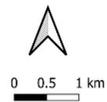
Present climate



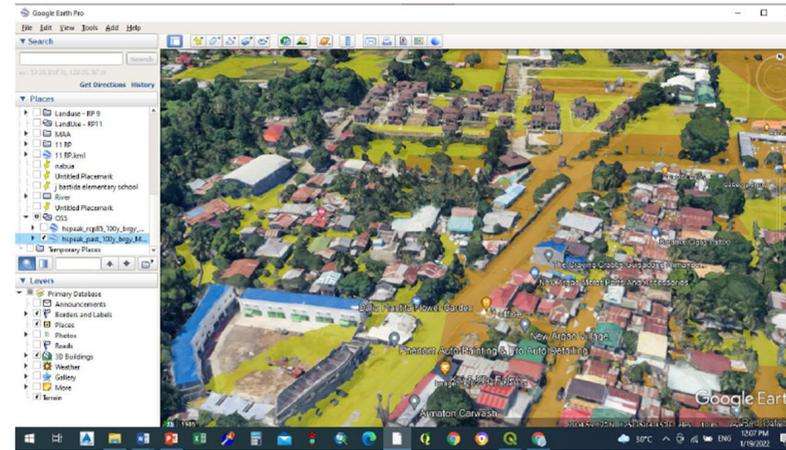
Inundation Hazard Map Brgys. Ma-A and 10-A

Inundation depth (m)

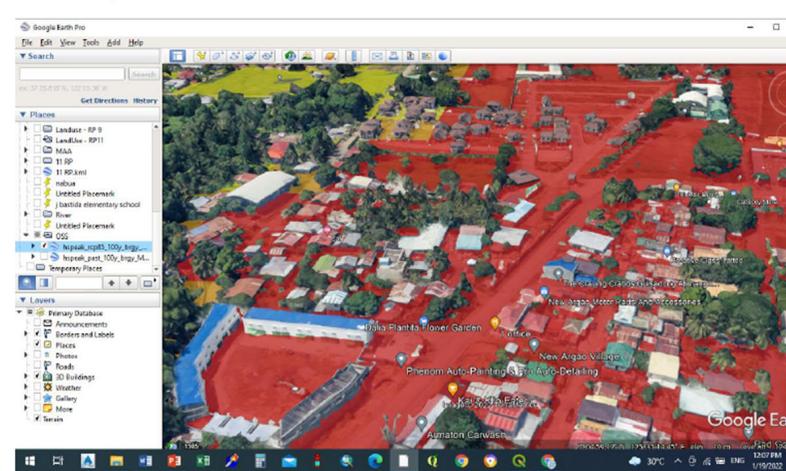
- <= 0.10
- 0.10 - 0.50
- 0.50 - 1.50
- >1.50
- Brgy. Boundary
- School
- Covered Court
- Brgy. Hall



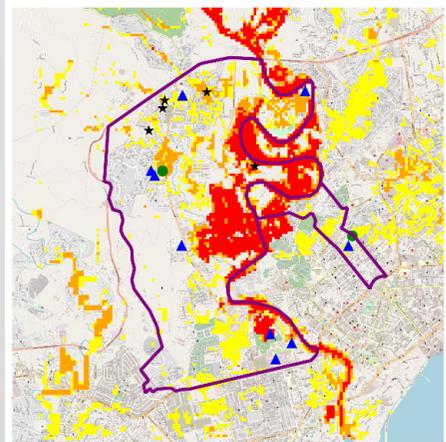
Past 100 years



RCP85 100 years



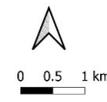
Future climate



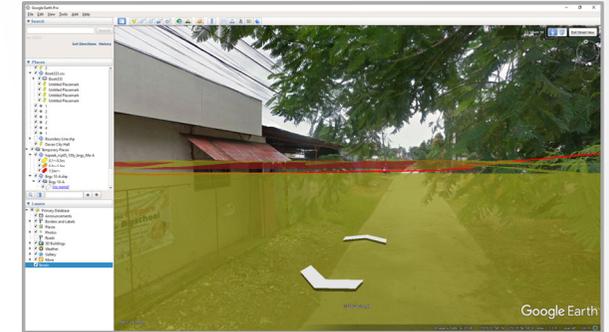
Inundation Hazard Map Brgys. Ma-a and 10-A

Inundation depth (m)

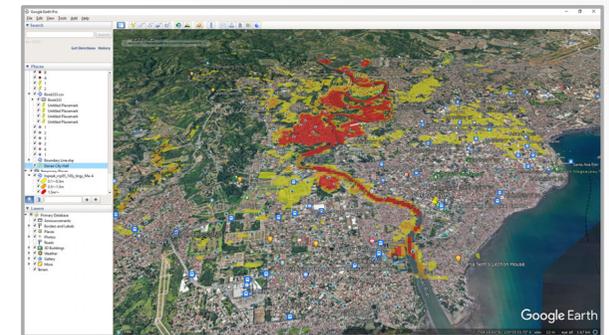
- <= 0.10
- 0.10 - 0.50
- 0.50 - 1.50
- >1.50
- Brgy. Boundary
- School
- Covered Court
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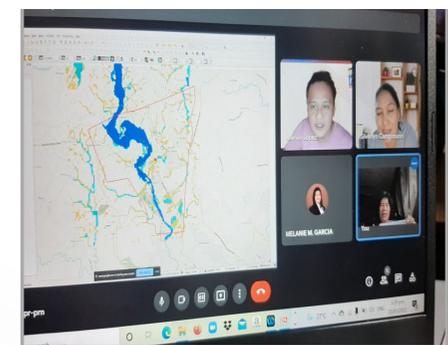
Inundation depth with their houses



Birds-eye view hazard map

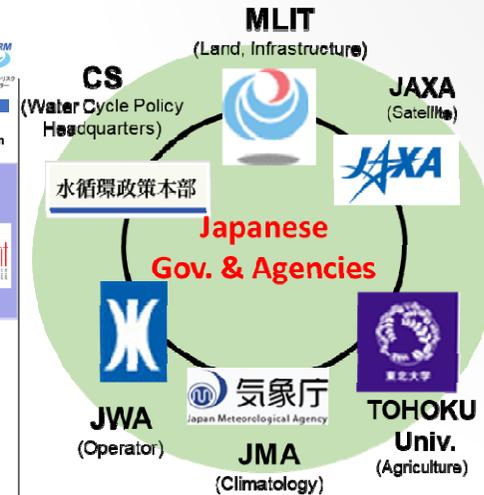
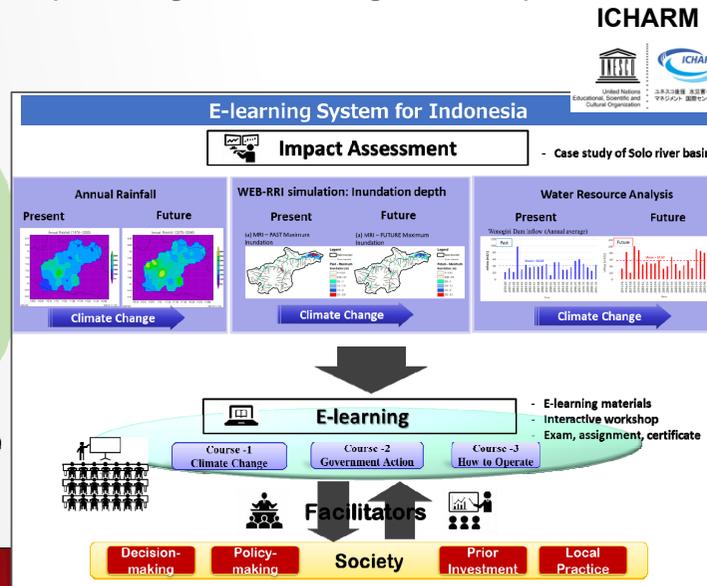
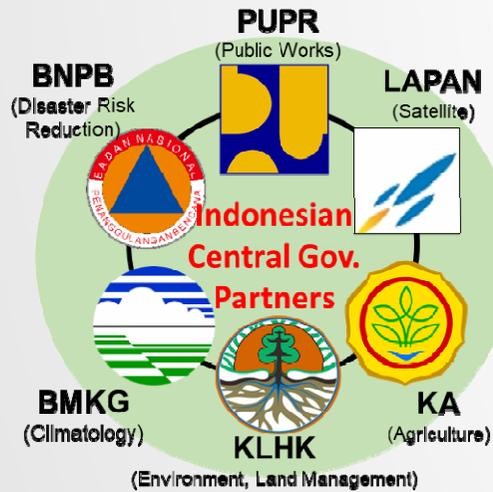


Discussion among participants



E-LEARNING & WORKSHOPS IN INDONESIA

- ✓ In order to strengthening disaster resilience and achieving sustainable development under climate change in Indonesia, ICHARM with Japanese government agencies implemented e-learning & workshops.



-Opening Session-
Video message from the
Minister Basuki, PUPR



Curriculum

- Four (4) lectures on Climate Change (CC)
- Five (5) lectures on Government Action (GOV)
- Four (4) lectures on Operation (OP)

Schedule

- October 5, Opening Session & CC introduction
- October 12, Workshop Session-1 & GOV introduction
- October 19, Workshop Session-2 & OP introduction
- October 26, Workshop Session-3 & Assignment
- November 5, Closing Session

The one-month e-learning course completed on Nov. 5.
32 experts from 6 organizations successfully got the certificate

An aerial photograph of Davao City, Philippines, showing a dense urban landscape with a prominent river winding through the center. The city is surrounded by greenery and a large body of water in the background. The text "THANK YOU SO MUCH FOR YOUR KIND ATTENTIONS!" is overlaid in large, white, bold letters across the middle of the image.

**THANK YOU SO MUCH
FOR YOUR KIND ATTENTIONS!**

Davao City, Philippines, 2019