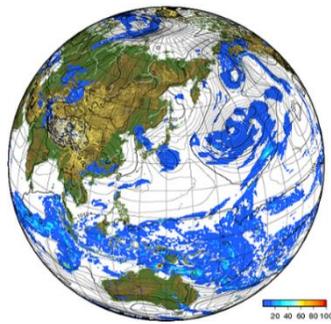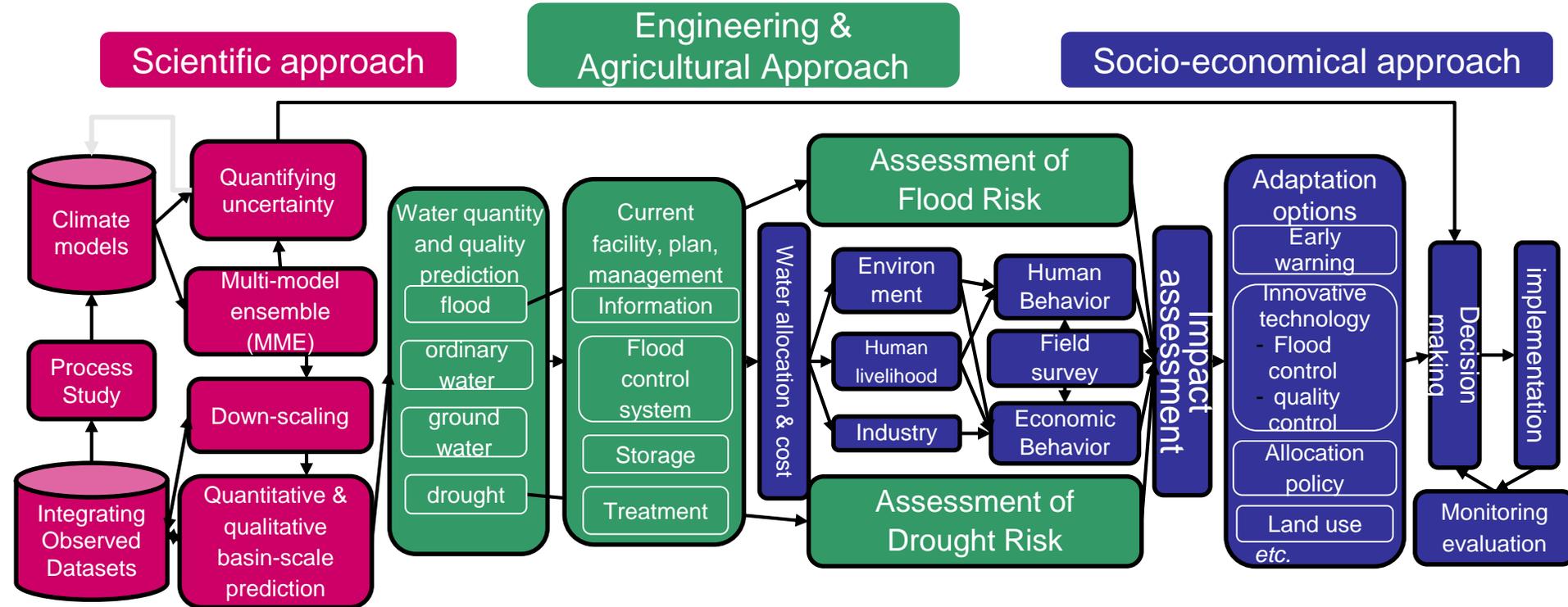# SATREPS EFFORTS ON TYPHOON ULYSSES

## PATRICIA ANN J. SANCHEZ, Ph.D.

**Project Leader, SATREPS-Philippines**
**Professor, School of Environmental Science and Management, UPLB**
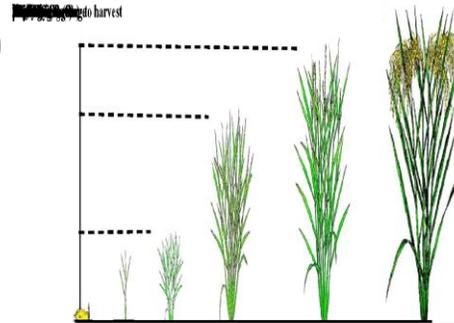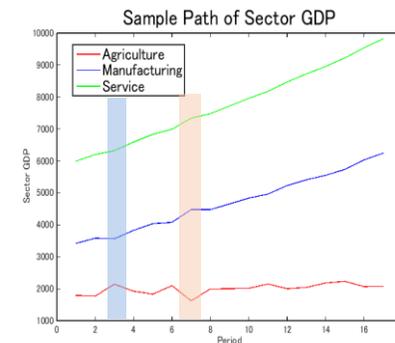
# About SATREPS

Climate Model
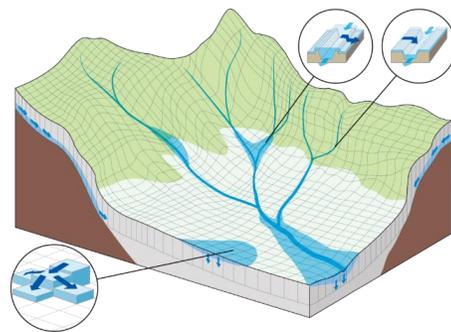
Hydrological model :
Rainfall-Runoff-Inundation (RRI)
Model developed by ICHARM

Agricultural model

Socio-economic model

## Project Objectives

- To achieve the highly accurate assessment of flood and drought risks by developing and using a hybrid assessment model covering climate change, hydrological processes, agriculture (crop growth) and socio-economic activity with a DIAS-based big-data platform.
- To evaluate the benefits of pre-disaster investments by applying the hybrid assessment model to the target local municipalities and make policy proposals for the sustainable economic development of local municipalities in general.

## Research Activities

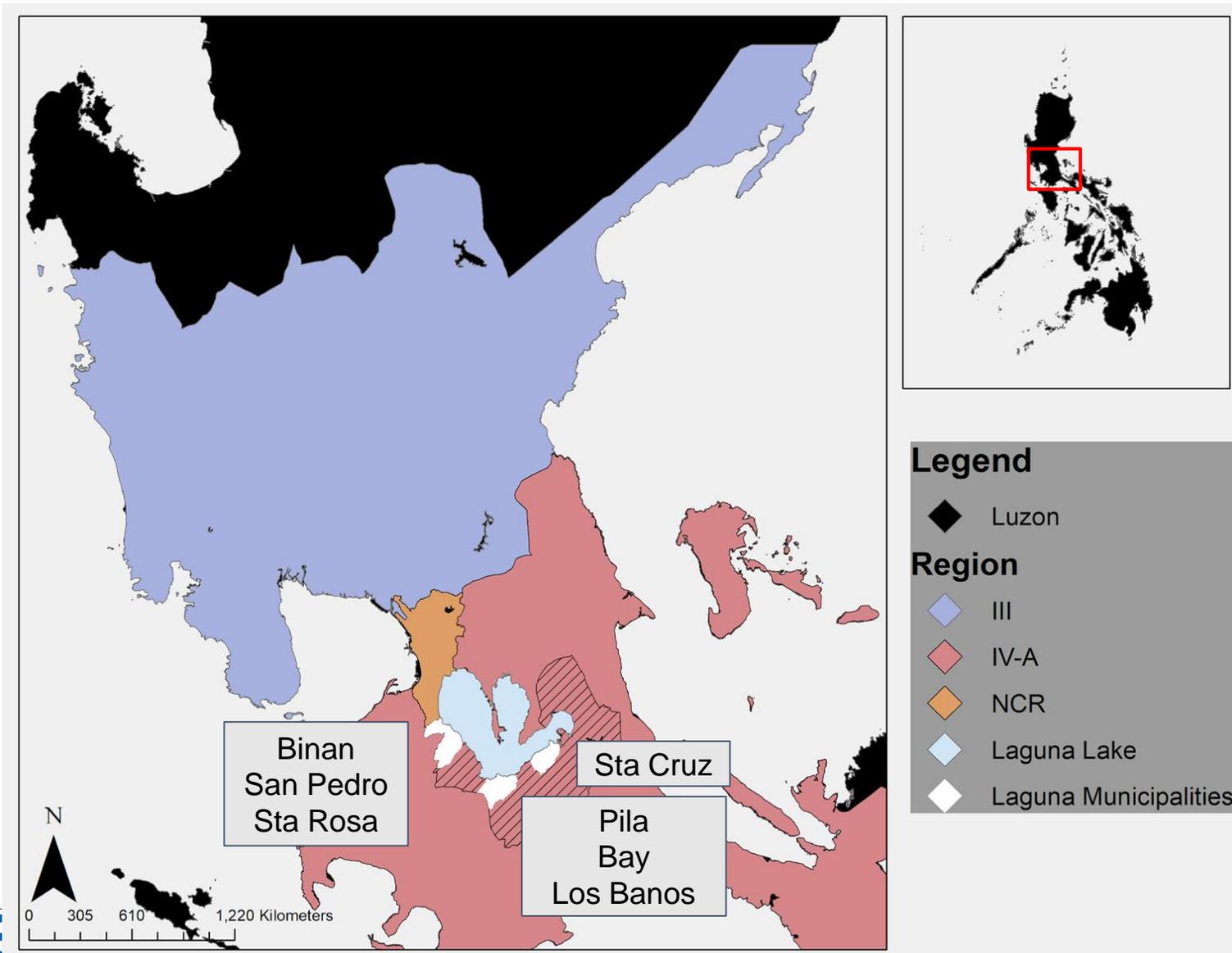①Data Collection Using Data Integration & Analysis System (DIAS) → ②Development of a Hybrid Risk Assessment Model → ③Evaluation of Local Resilience with/without DRR Investments → ④Policy Proposal for sustainable economic development

## Overall Goal

- To enhance the resilience and promote the sustainable economic development of local municipalities by incorporating policy proposals in local and national climate change action plans, thereby contributing to reducing the over-centralization in the metropolitan area and facilitate balanced national land development.

# Typhoon Ulysses (Vamco)



**Legend**
- ◆ Luzon

**Region**
- ◆ III
- ◆ IV-A
- ◆ NCR
- ◆ Laguna Lake
- ◆ Laguna Municipalities

Binan
San Pedro
Sta Rosa

Sta Cruz

Pila
Bay
Los Banos

N

0    305    610    1,220 Kilometers

## IMPACTS AND DAMAGES

- Fatalities: 73  (CNN Report, Nov 20, 2020)

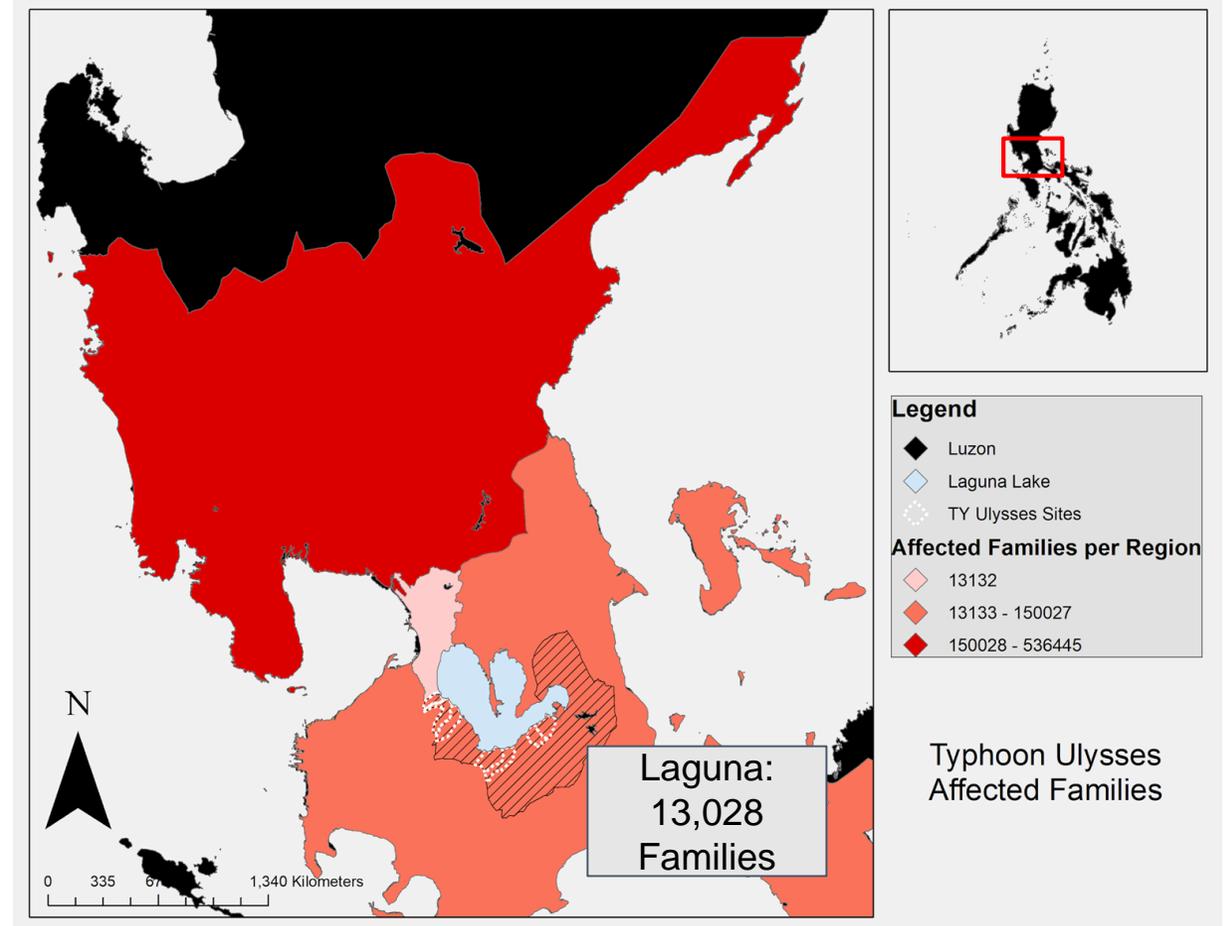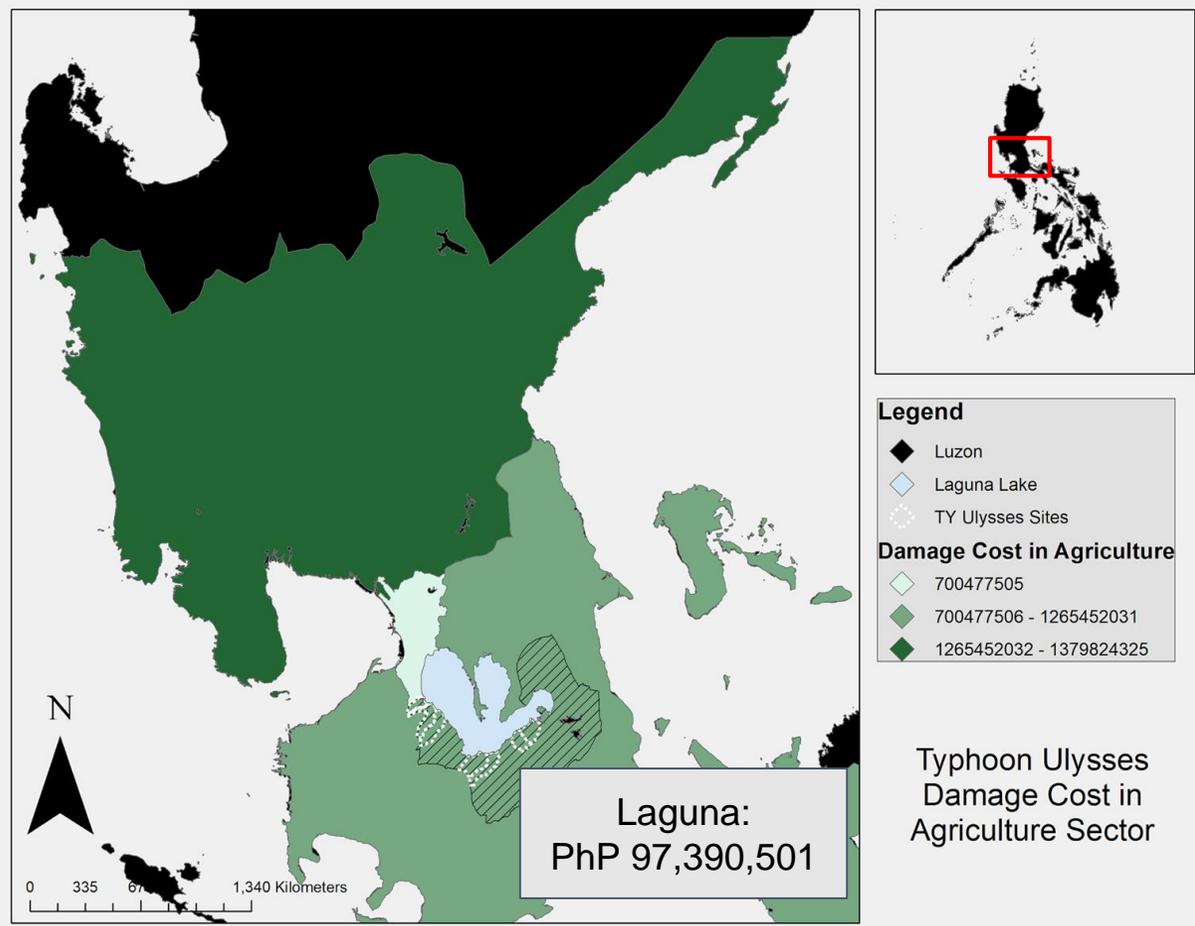- Food and Agriculture Sector: ~12.8 Billion (DA, Philippine News Agency, November 26, 2020)

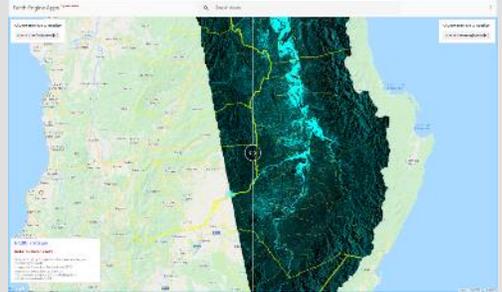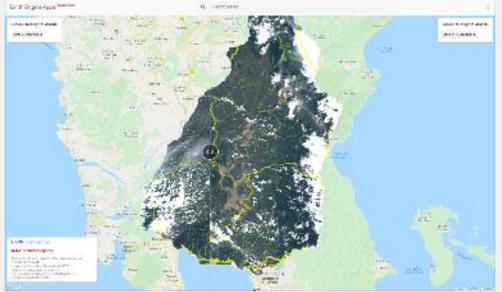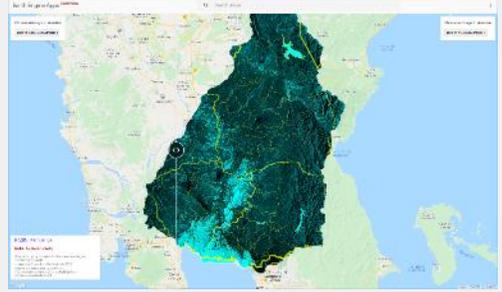- House damages: 26,510 - totally damaged (NDRRMC, January 13, 2021)

- Infrastructure: ~12.9 Billion *including agriculture facilities (NDRRMC, January 13, 2021)

AO
GE
Earth Observations
for Asia-Oceania

Asian Water Cycle Initiative

# Impacts of Typhoon Ulysses in SATREPS Study Sites



Typhoon Ulysses Damage Cost in Agriculture Sector

Laguna: PhP 97,390,501

Legend
- Luzon
- Laguna Lake
- TY Ulysses Sites

Damage Cost in Agriculture
- 700477505
- 700477506 – 1265452031
- 1265452032 – 1379824325



Typhoon Ulysses Affected Families

Laguna: 13,028 Families

Legend
- Luzon
- Laguna Lake
- TY Ulysses Sites

Affected Families per Region
- 13132
- 13133 – 150027
- 150028 – 536445

# Flood disaster monitoring Apps in Google Earth Engine for Typhoon Ulysses in November, 2020

| BASIN | APP-1: Flood monitoring using Sentinel-2 optical image | APP-2: Flood monitoring using Sentinel-1 SAR | APP-3: Flood Mapping and Damage Assessment |
|---|---|---|---|
| Cagayan | | | |
| Pampanga | | | |
| Pasig-Marikina-Laguna | | | |
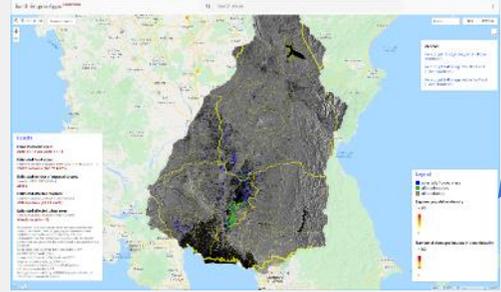
As of 2020-12-03
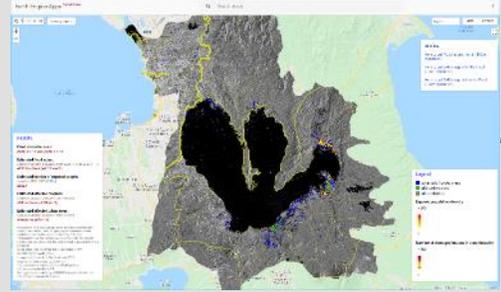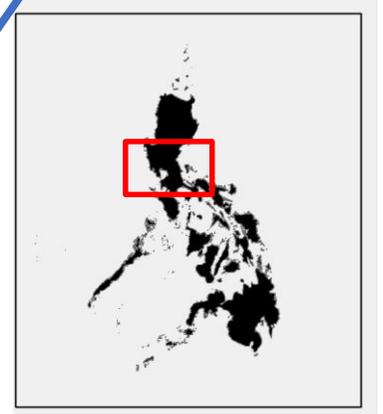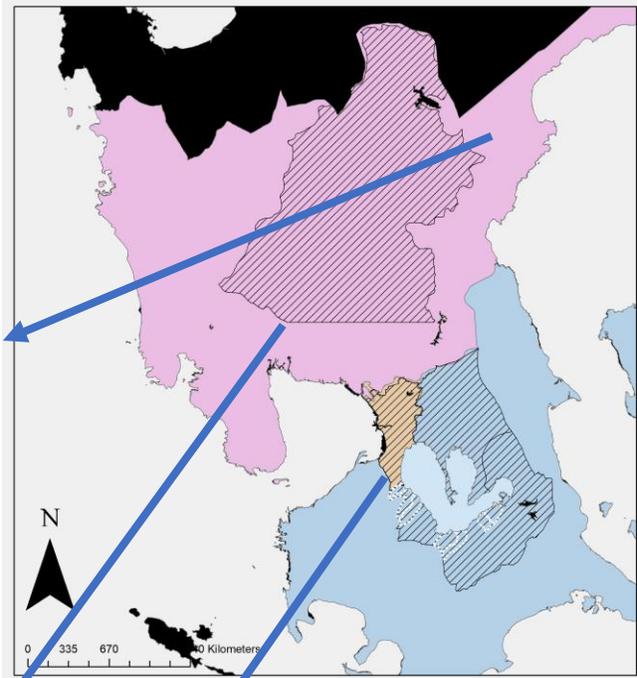
|  | **Accomplished activities** | **On-going and future activities** |
|---|---|---|
| **Data Collection and Sharing** | • Assessment of existing data<br>• Assessment of sharing gaps | • Capacity-building on data gathering, analysis and sharing<br>• Collaborative works on forecasting system improvement |
| **Resilience Assessment** | • Inundation monitoring by satellite<br>• Agricultural and weather monitoring<br>• Rainfall monitoring | • Crop damage assessment<br>• Sediment -related research |
| **Flood and Drought Risk Assessment** | • Identification of affected areas<br>• Collection of secondary data | • Agricultural damage assessment on selected areas<br>• Impact assessment in lake environment |
| **Economic Scenario** | • Collection of secondary data<br>• Drafting of interview questionnaires | • Survey and interview on local damages and caused by typhoon and adaptive measures |

AO GEO
Earth Observations for Asia-Oceania

GEO GLOWS

AWCI
Asian Water Cycle Initiative