



**Philippine
Space
Agency**

THE PHILIPPINE SPACE AGENCY:

USING SPACE TECHNOLOGY IN RESPONSE TO THE CHANGING CLIMATE

Gay Jane Perez, Ph.D.

Deputy Director General for Space Science and Technology

64th Session of the United Nations Committee on the Peaceful Uses of Outer Space

01 September 2021 | Vienna, Austria



The Philippine Space Agency

Building an integrated and sustainable national space program



08 August 2019

Signed by the President

03 September 2019

Effectivity of Philippine Space Act
R.A. 11363

The Philippines' vulnerability to climate change

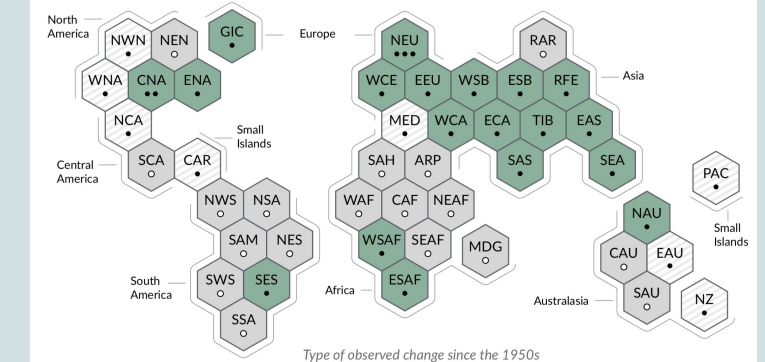
FLOODING

More **intense** typhoons and **wetter** monsoon season affecting economy and society

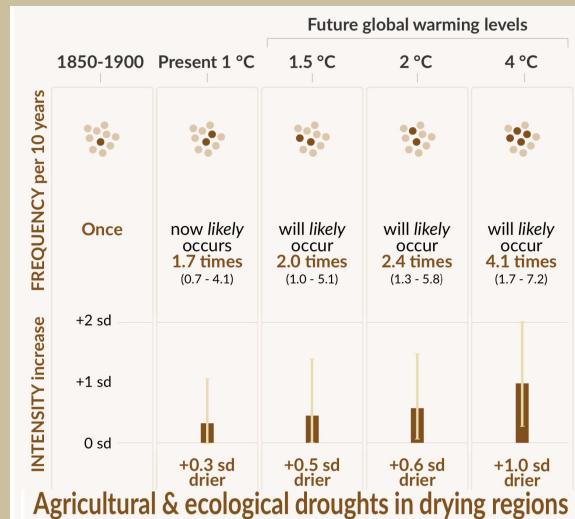


<https://www.ibtimes.com/after-typhoon-haiyan-philippines-economy-grows-slow-est-pace-over-year-1489028>

b) Synthesis of assessment of observed change in **heavy precipitation** and confidence in human contribution to the observed changes in the world's regions



IPCC Climate Change 2021 The Physical Science Basis Summary for Policymakers



IPCC Climate Change 2021 The Physical Science Basis Summary for Policymakers



<https://www.philstar.com/headlines/2019/03/06/1899107/drought-due-el-nio-hit-more-provinces>
*World Bank 2019

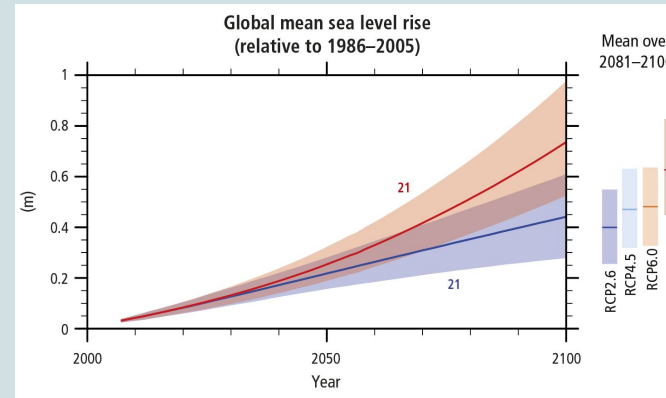
DROUGHT

More occurrences of **drier** agricultural and ecological droughts

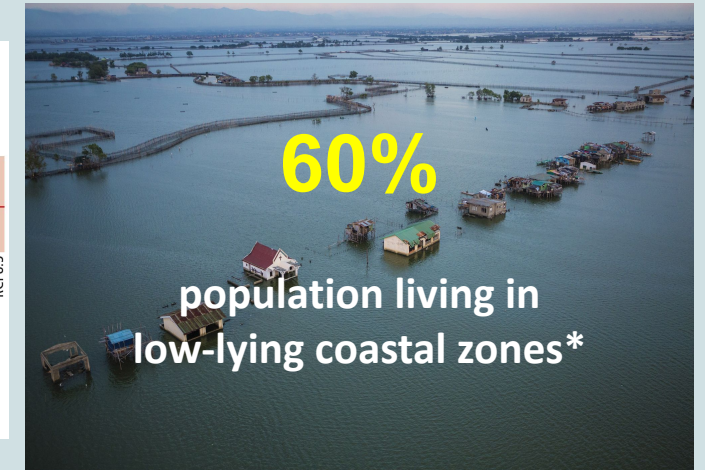
The Philippines' vulnerability to climate change

RISING SEA LEVEL

Compounded with land subsidence result to **frequent flooding** of low-lying coastal areas and **shoreline retreat**

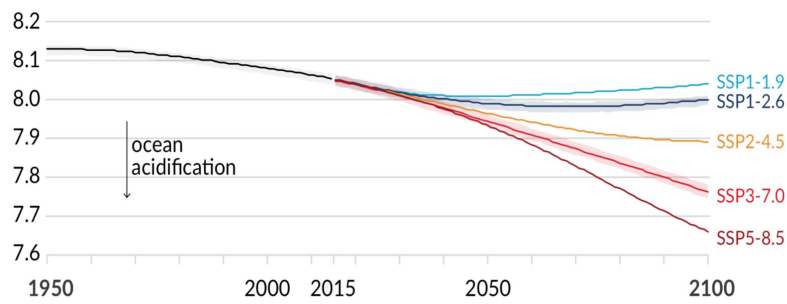


IPCC Special Report on the Ocean and Cryosphere in a Changing Climate

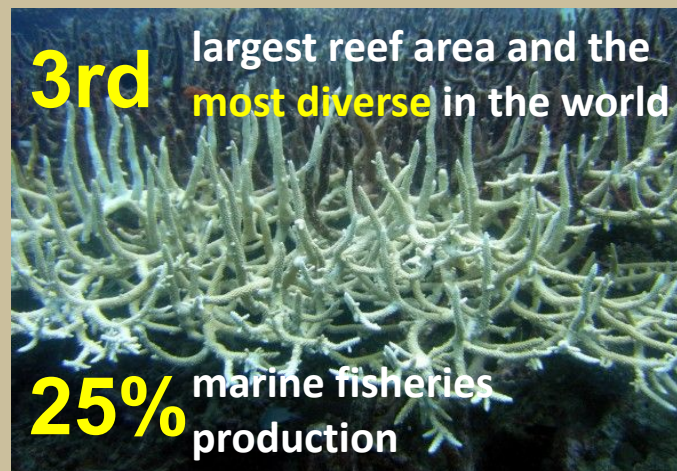


<https://www.nationalgeographic.org/activity/sea-level-evidence/> *Taguam and Quiambao, PSA

Global ocean surface pH (a measure of acidity)



IPCC Climate Change 2021 The Physical Science Basis Summary for Policymakers

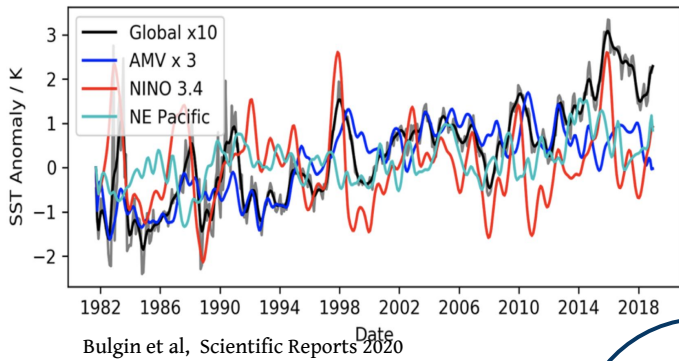


<https://news.climate.columbia.edu/2011/06/13/losing-our-coral-reefs/>

OCEAN WARMING AND ACIDIFICATION

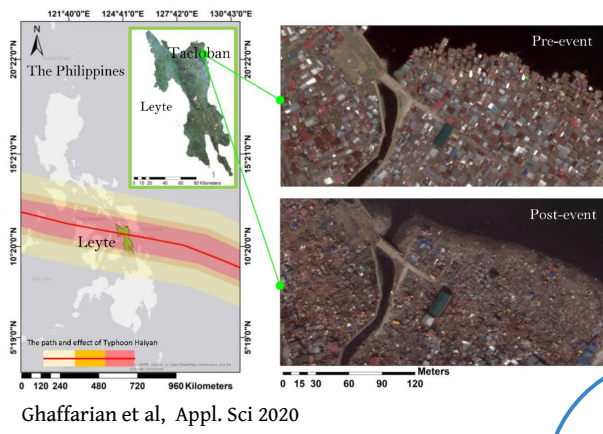
Destroys coral reefs and other marine resources

Role of Satellite Observation



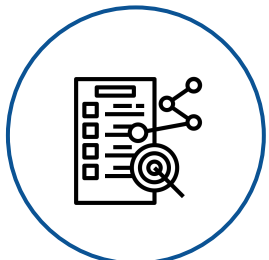
Monitoring

Long-term and continuous observation contribute to climatological research

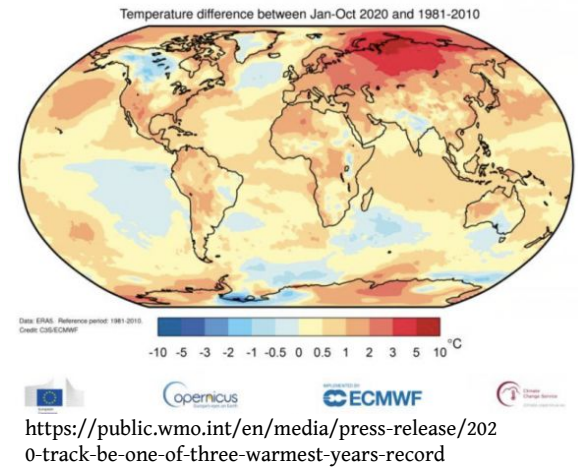


Response and Recovery

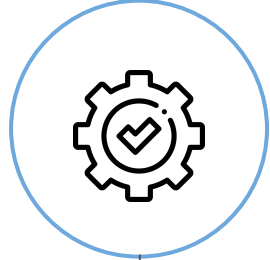
Provision of pre- and post-disaster impact and needs assessment



Assimilation of satellite data improve performance of weather and climate prediction models



Forecasting



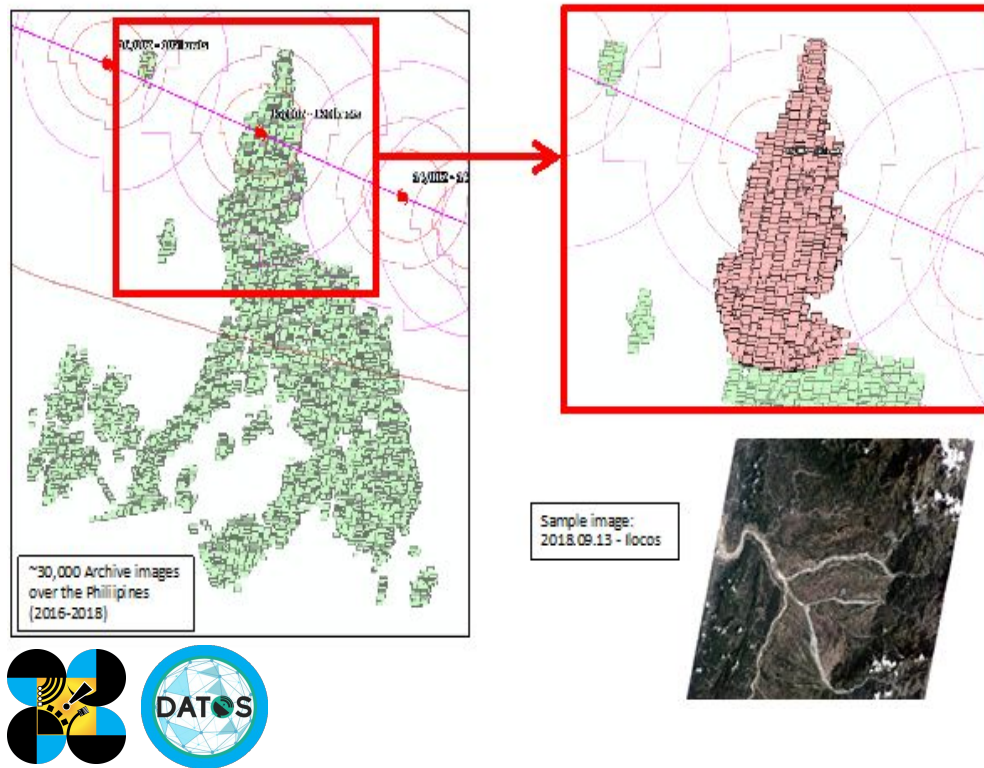
Provision of information on environmental changes creates proactive measures in combating climate change

Mitigation

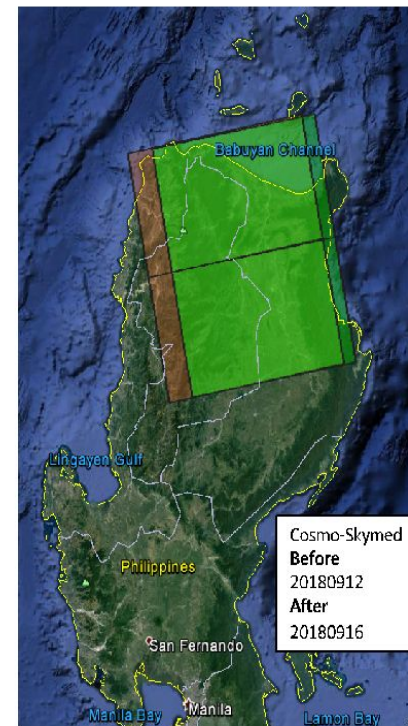


Flood monitoring and detection

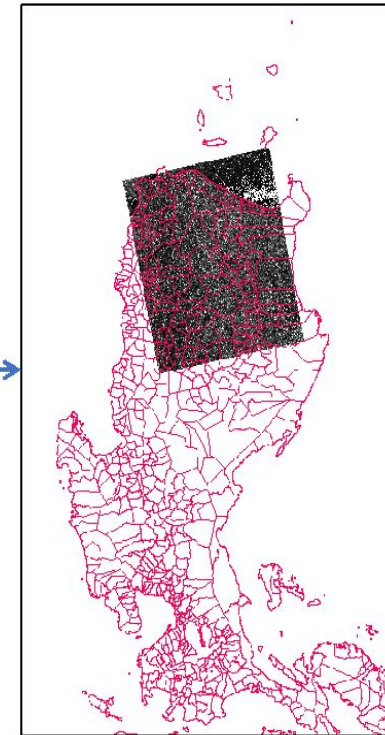
Preparation of archive pre-typhoon



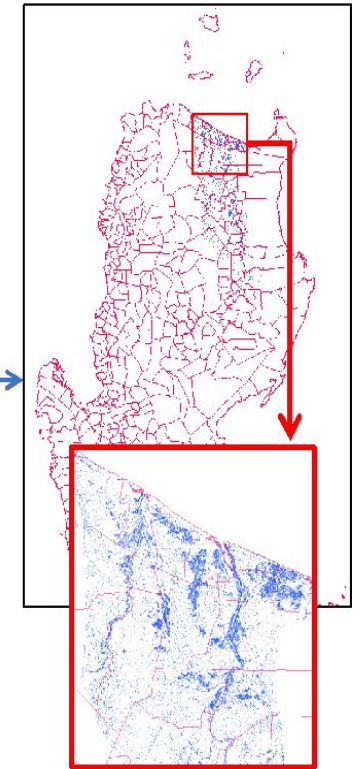
Satellite tasking



Raw data acquisition

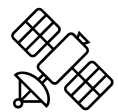
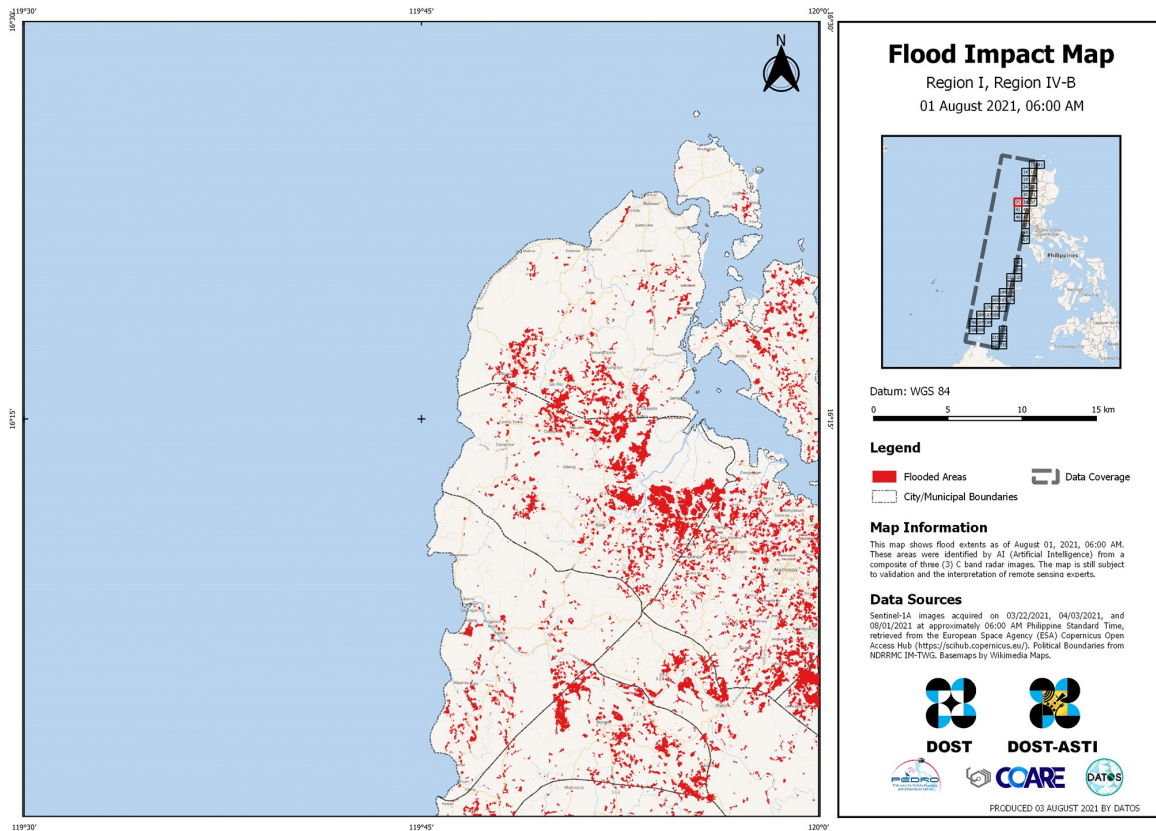


Data processing



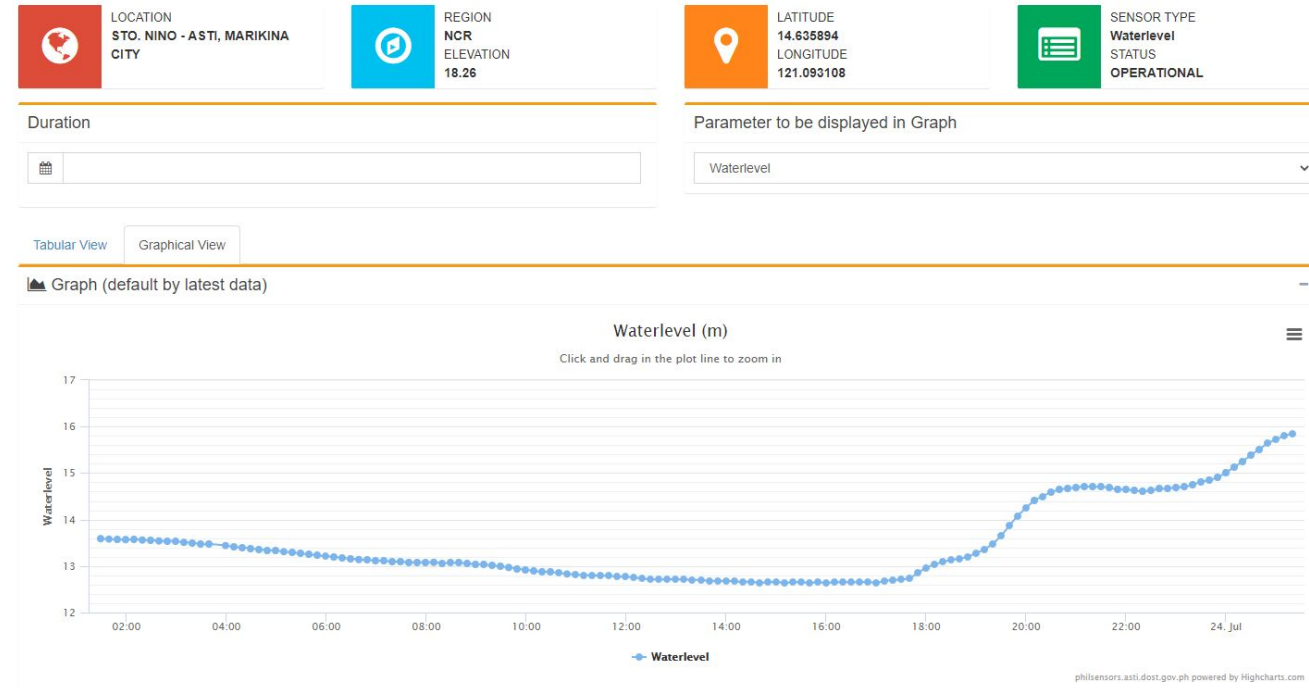
Pre- and post-disaster images when Typhoon Mangkhut (Ompong) hit the country in 2018

Flood impact assessment



satellite images to monitor areas at large scale

Data Visualization

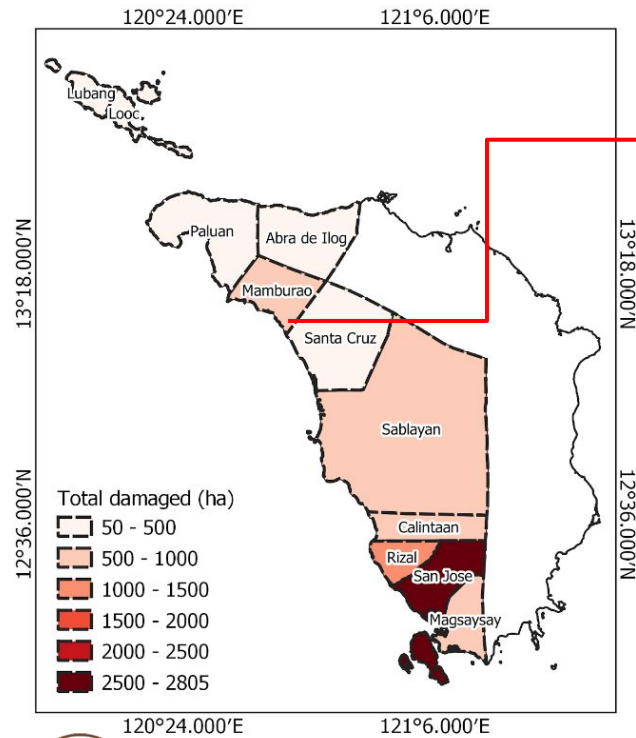


ground sensors to validate and monitor water level in critical areas real time

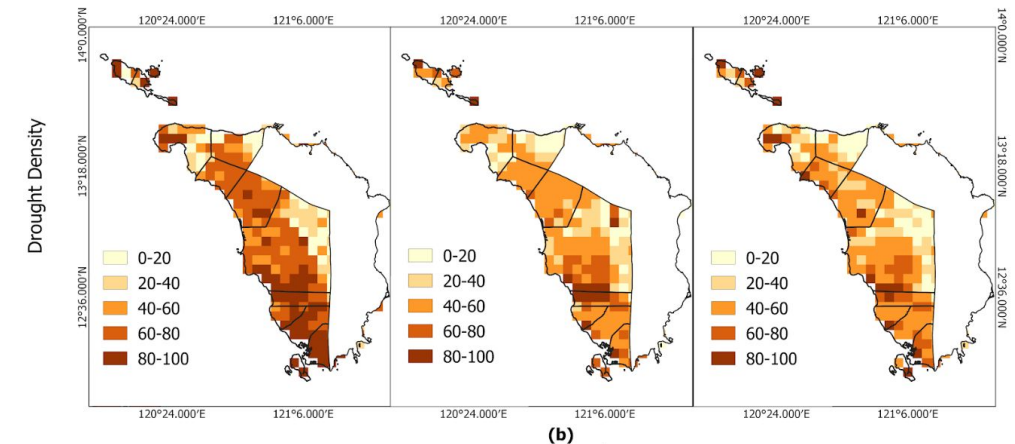
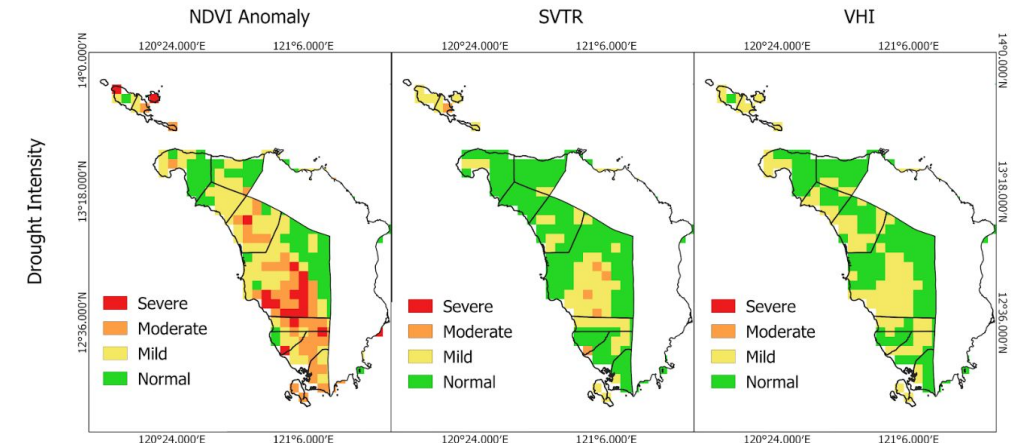
<https://philsensors.asti.dost.gov.ph/>

Drought monitoring

Monitoring and assessing impacts of drought in one of the rice regions in the country



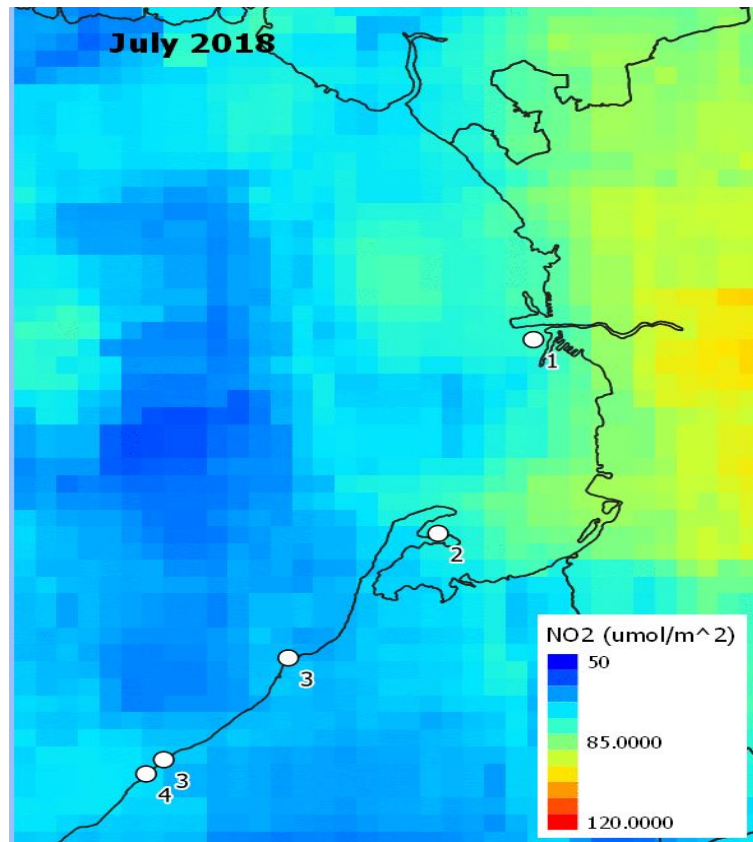
crop damage reports from local government units



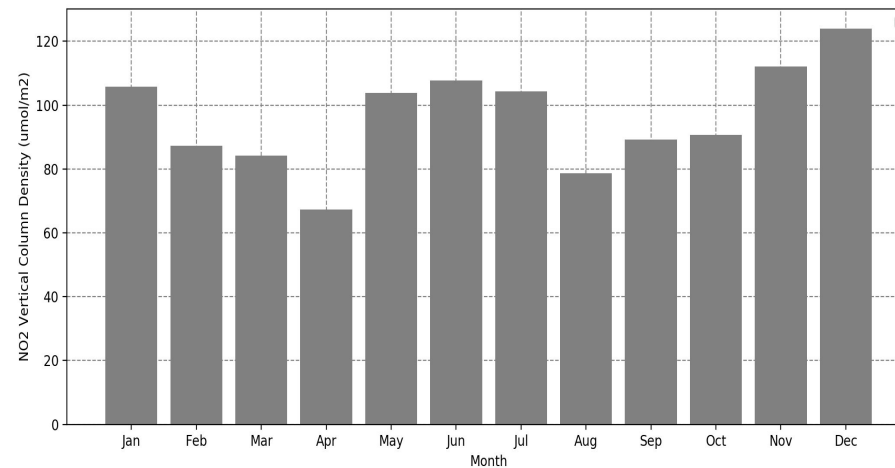
satellite data products to **monitor drought development and impacts** at regional scale

National Copernicus Capacity Support Action Programme for the Philippines (CopPhil)

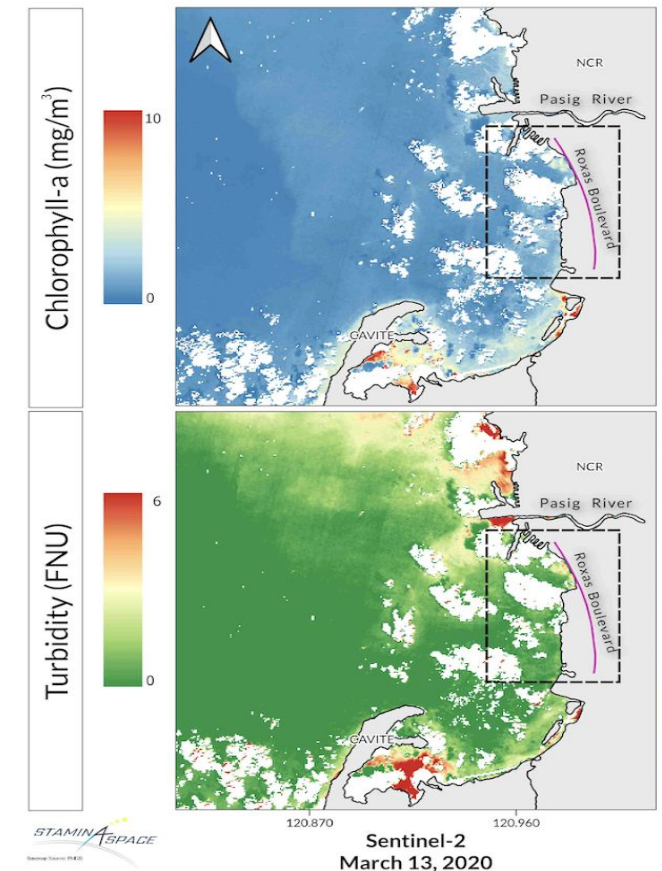
*Make readily available satellite products for different environmental applications accessible through
Copernicus open access mirror site*



Air quality - Sentinel 5P, NO₂ mapping



Port of Manila, 2020
Estimate of NO₂ vertical
column density



Water quality - Sentinel 2 & 3, chl and turbidity mapping

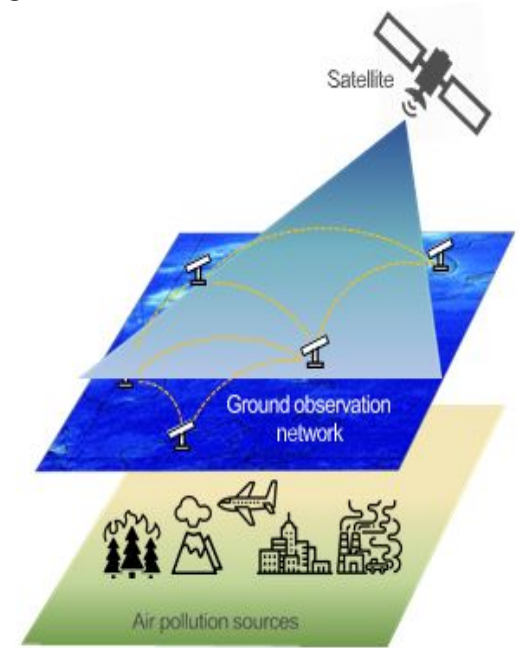
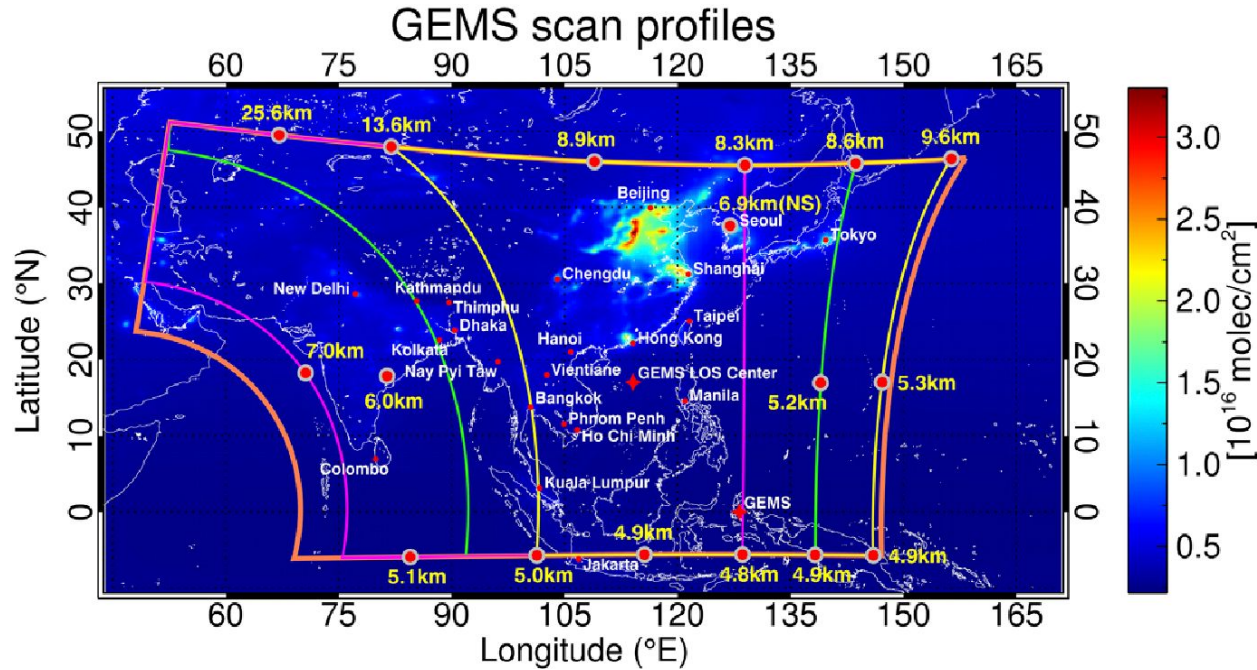
PAPGAPi-PAN Philippines

Pan-Asia Partnership for Geospatial Air Pollution Information

 ground-based air quality monitoring
 +
  satellite observations



Pandora ground instrument to validate GEMS products



Sourced from: **ESCAP Presentation Philippines 13 Nov**

MULA satellite in support of Climate Change Adaptation and Mitigation



Disaster Management



Agriculture



Coastal Monitoring & Ocean Studies

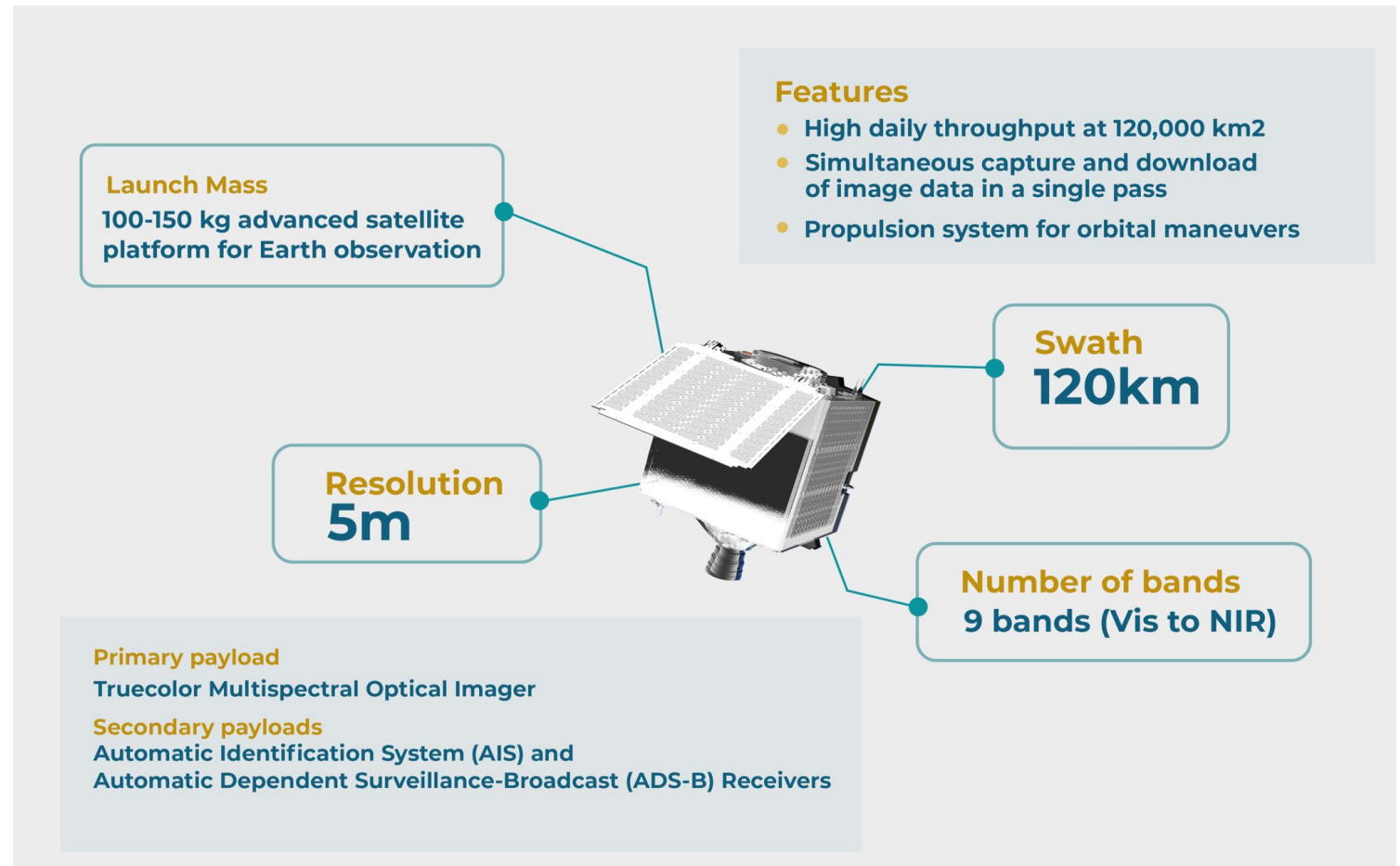


National Security

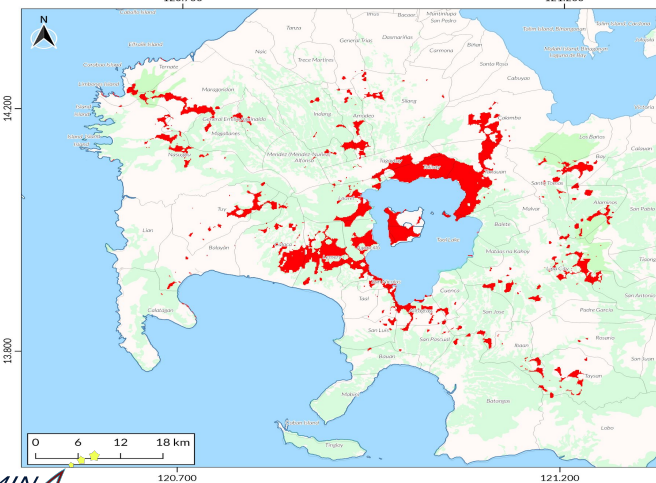
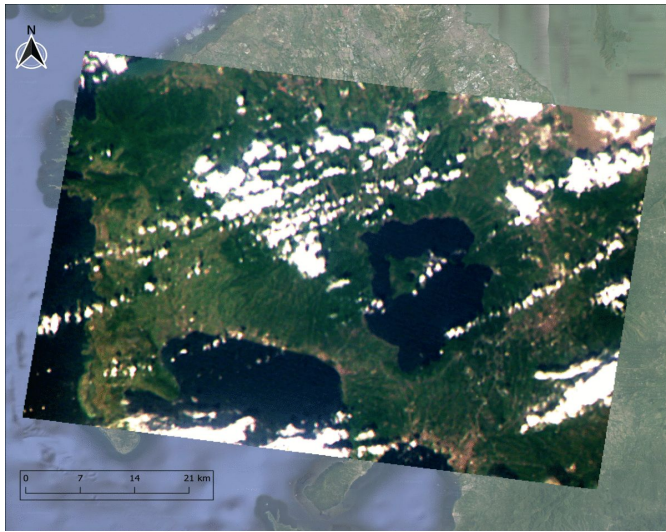


Sample hi-res images of agricultural lands
from RapidEye

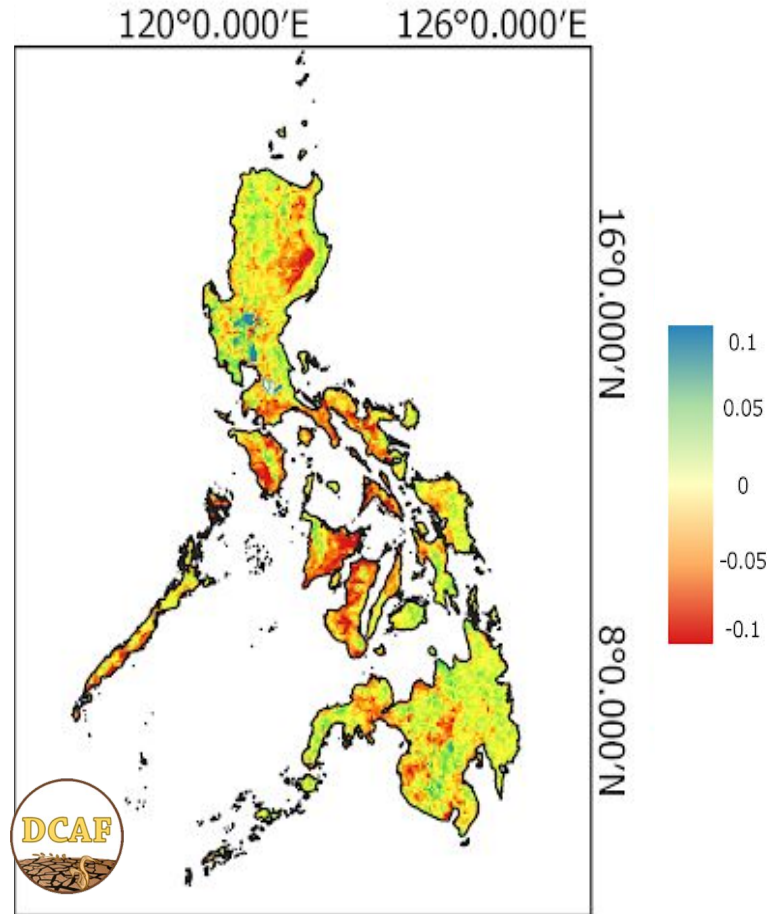
Multispectral Unit for Land Assessment



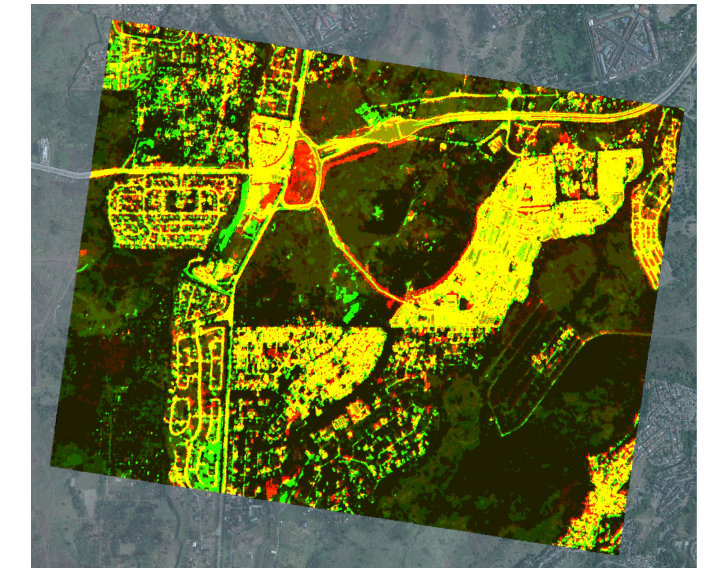
MULA satellite in support of Climate Change Adaptation and Mitigation



Ashfall extent

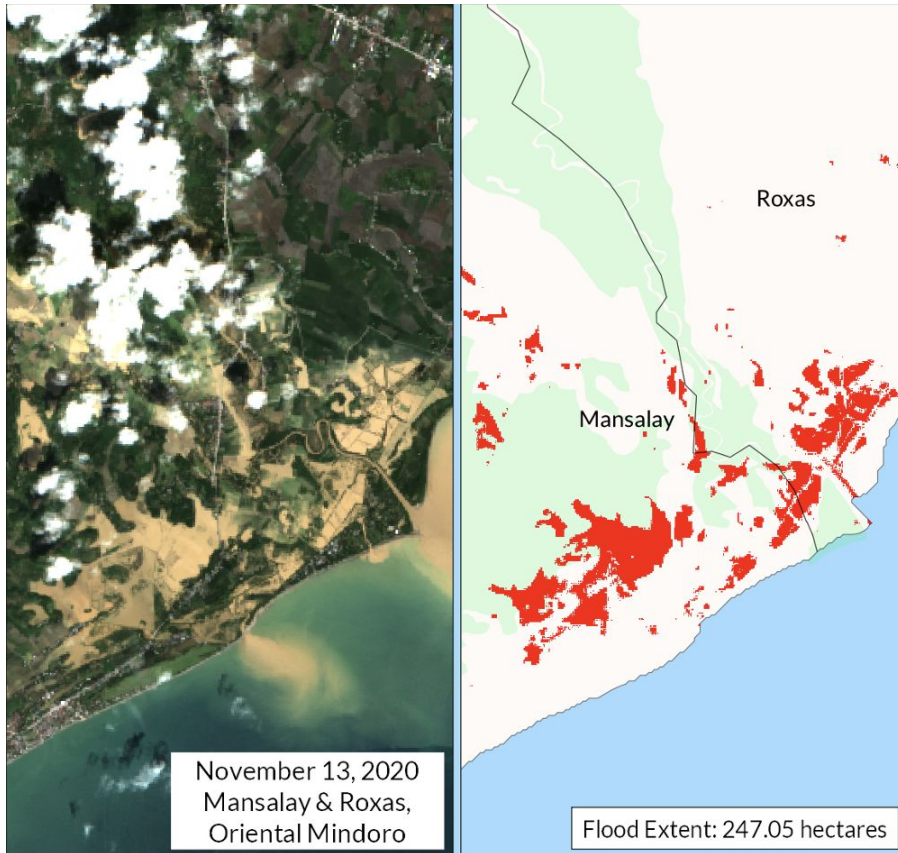


Drought Monitoring



Land Cover/Land Use Change

MULA satellite in support of Climate Change Adaptation and Mitigation



Monitoring flood at local to national scale
Sample images from Sentinel (left) and Planetscope (right)

Engaging with the international community

United Nations Platform for Space-based Information for Disaster Management and Emergency Response (UN SPIDER)

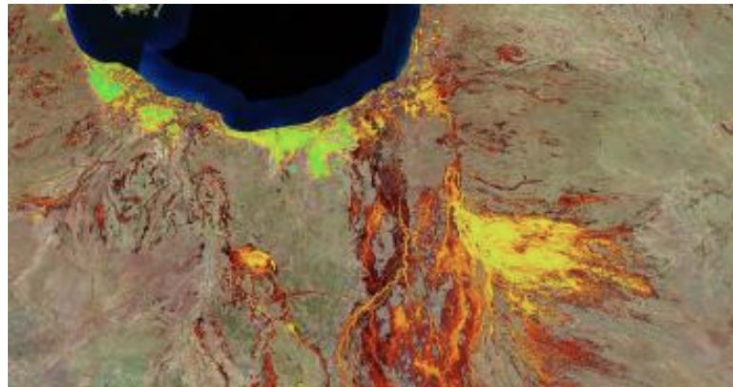


United Nations

Office for Outer Space Affairs
UN-SPIDER Knowledge Portal



Data Application of the Month: Earth Observation Data Cubes



UN-SPIDER Knowledge Portal
<https://un-spider.org/links-and-resources/daotm>

The PhilSA signs Memorandum of Understanding with UNOOSA

- ✓ **Enhance** the use of space-based information for disaster risk reduction and emergency response

Engaging with the international community

Asia-Pacific Plan of Action on Space Applications for Sustainable Development (2018-2030)



<https://www.unescap.org/sites/default/d8files/knowledge-products/3rdMC-SASD-Plan-of-Action.pdf>

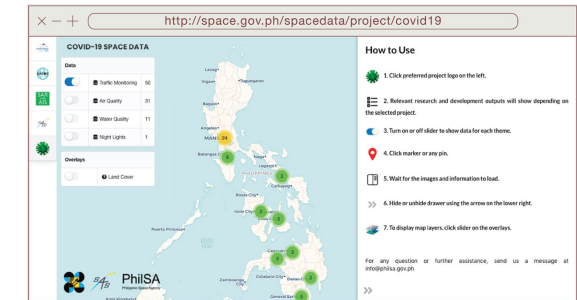
Plan of Action

- ✓ Disaster Risk Reduction and Resilience
- ✓ Climate Change
- ✓ Management of Natural Resources
- ✓ Social Development



MULA Satellite

Space Data Dashboard



Decadal Survey

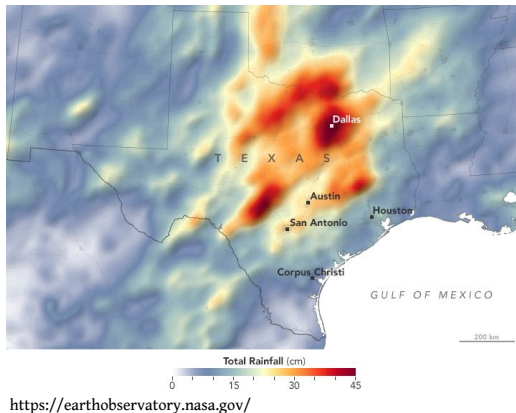


Engaging with the international community

Space Climate Observatory

- ✓ The PhilSA to formally join as a **signatory** of the Space Climate Observatory
- ✓ **Enhance** meteorological applications of satellite data in the country
- ✓ Promote **exchange of technical know-how** and **open data-sharing** on climate information

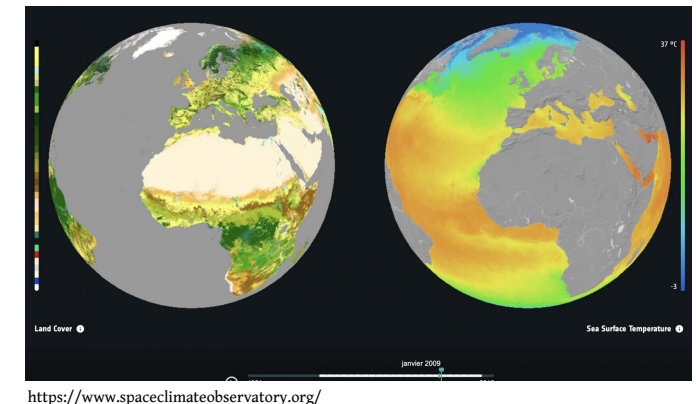
Hazard
Management
& Climate
Studies



Rainfall



Vegetation health



Land Cover and Temperature



**Philippine
Space
Agency**

Our Vision

The PhilSA envisions a Filipino nation **bridged, uplifted, and empowered** through the peaceful uses of outer space.

Our Mission

We will promote and sustain a robust Philippine space ecosystem that **adds and creates value** in space **for and from Filipinos and for the world.**

Thank you.
Maraming salamat po.

Contact Us

W: space.gov.ph

E: info@philsa.gov.ph

FB: [PhilSpaceAgency](#)

IG: [philspaceagency](#)

TW: [PhilSpaceAgency](#)

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