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# #YamangKalawakan:

## Philippine Spatial Data Infrastructure and the Space Value Chain

Joel Joseph S. Marciano, Jr. PhD

Director General



**PhilSA**

**Digital x ADB**

19 September 2023

# Republic Act No. 11363 "The Philippine Space Act"



**Republic Act No. 11363** or the **Philippine Space Act**, signed into law on **August 8, 2019**, establishing the **Philippine Space Policy** and **PhilSA**.



**Office of the President**



**Philippine Space Council**



**Philippine Space Agency (PhilSA)**

**PhilSA is an attached agency of the Office of the President for purposes of policy and program coordination, to ensure alignment in national policies and priorities**

**PhilSA is the central government agency in the Philippines addressing all national issues & activities in space S&T applications (SSTA).**



**Key Development Areas**

# The Philippine Space Council

The principal advisory body for the coordination and integration of policies, programs and resources affecting **SSTA**.

<b>Chair:</b>	President of the Philippines
<b>Vice-Chairs:</b>	Secretary of Science and Technology Secretary of National Defense
<b>Members:</b>	
Secretary of Foreign Affairs	Secretary of NEDA
Secretary of Agriculture	Secretary of Finance
Secretary of Environment and Natural Resources	Chair, Senate Committee on Science and Technology
Secretary of Trade and Industry	Chair, House Committee on Science and Technology
The PhilSA Director General serves as <b>Head Secretariat</b> of the PSC and <b>Presidential Adviser on Space Matters</b>	



## Marcos to tap PH Space Agency to improve security, economy

Katrina Domingo, ABS-CBN News  
Posted at Oct 19 2022 06:04 PM



## Marcos declares Aug. 8-14 of every year as PH Space Week

By CNN Philippines Staff



“At present, we are already utilizing [space technology’s] wide array of advantages to enhance the delivery of public services through the use of transmitted data and images from the satellites managed by PhilSA.

Looking forward, we are even more optimistic about the many benefits it can bring to our country.”

**President Ferdinand R. Marcos, Jr.**  
Philippine Space Week 2023 Message

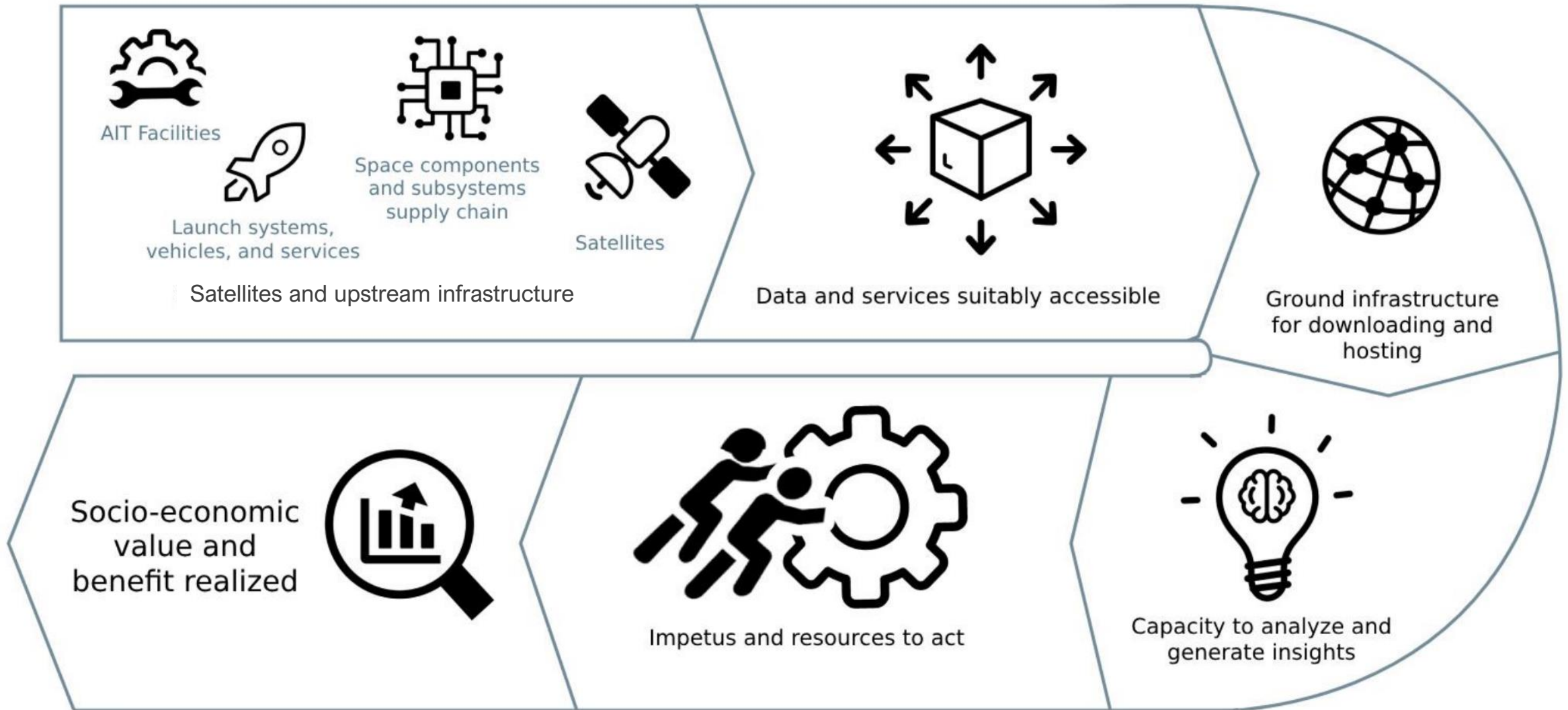
# **Value creation** is at the **core** of the **PhilSA mission**

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.



**PhilSA**

# Space Data Value Chain



1



### Upstream Space Infrastructure

# “Space-faring, space-capable nation” means *sovereign* satellites and industrial space capabilities



Diwata-1  
2016-2020

Diwata-2  
2018-present

2 components localized (amateur radio + attitude sensor)

Maya-1  
2018-2020

**Angkop sa Kalawakan, Yari at Tatak (AKYAT) Pilipino**  
*Opportunities in local space manufacturing*

**Target Space-Adjacent Industry Sector**

- Materials Engineering
- Fabricated Metal Products Manufacturing
- Optical Instruments and Photographic Equipment Manufacturing
- Electronic Products Manufacturing
- Embedded Systems and Software Development
- Solar and Battery Engineering

**Satellite Modules**

1 Solar PV Cells	9 Software Defined Radio
2 Power Control Module	10 Star Tracker
3 Battery	11 Reaction Wheel
4 Propulsion Tank	12 On-Board Computer
5 Pressurant Tank	13 Satellite Structure
6 MLI Sheet	14 Rocket Interface
7 Camera Payload	15 Deployable Solar Panel
8 Helical Antenna	

**Power**

**Propulsion**

**Thermal**

**Payload**

**RF Subsystem**

**Structure and Deployables**

**On-Board Data Handling**

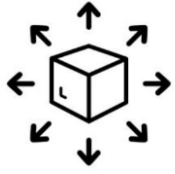
**Flight Software**

**Attitude and Orbit Control System**

Philippine Space Agency

#YamangKalawakan

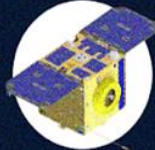
2



# Data and services suitably accessible

## Sovereign

Satellites owned, operated, and tasked by the Philippines.



Diwata-2



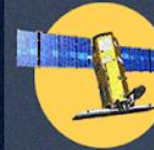
NovaSAR\*

## Disaster Charter-Activated

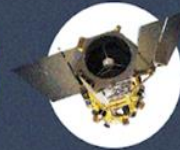
Satellite images shared through the International Charter: Space and Major Disasters for rapid response to major disasters

## Commercial

Satellites with paid subscription.



\*Komsat-5



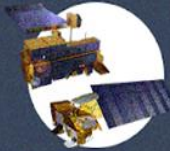
\*GeoEye-1



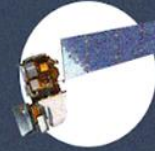
SPOT-6, 7

## Open

Satellite images that are free to use and download.



Terra and Aqua



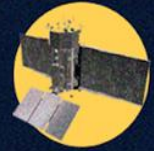
Landsat-8, 9



Suomi-NPP



RCM-2\*\*



SAOCOM-1A



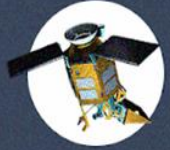
\*Komsat-3, 3A



TerraSAR-X



\*Dove & \*Skysat\*\*



Sentinel-5P



Sentinel-3



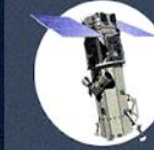
Sentinel-1A, 1B



Goafen-2



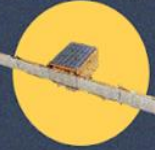
Kanopus-V



\*Worldview-2,3,4



\*Pleiades Neo\*\*



\*ICEYE\*\*

Legend: Optical SAR --- Disaster Charter-Activated \*\* Satellite Constellation \* Philippines is a Mission Partner # Subscribed



PEDRO Center Quezon City



Iloilo Ground Receiving Station



Quezon City (ASTI)  
New Clark City (PhilSA - soon)



Davao Ground Receiving Station

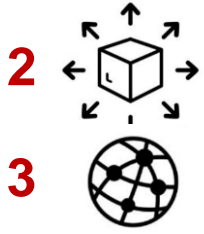
3



# Ground infrastructure for downloading and hosting



PhilSA

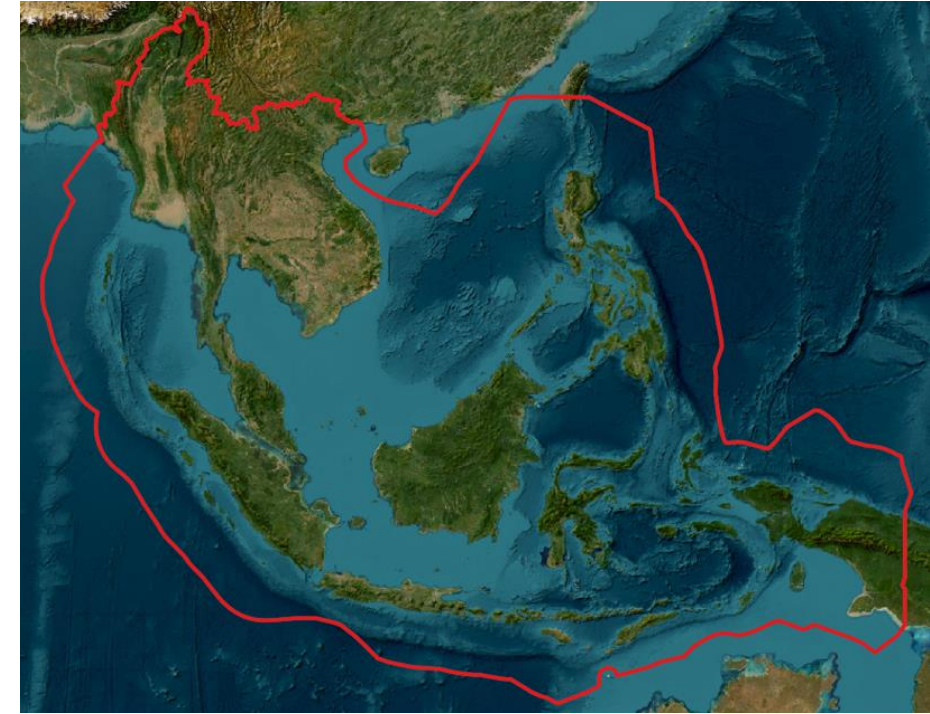


# National Copernicus Capacity Support Action Programme for the Philippines (CopPhil)

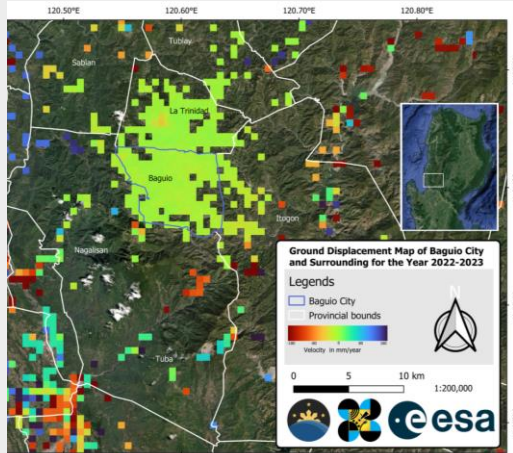


**Ursula von der Leyen**  
European Commission President

"We're currently setting up a so-called Copernicus data mirror site within the Philippine Space Agency. And we have just signed an agreement to boost the flow on Earth observation data between us. This is very important for early warning, for example, for extreme weather phenomenon and to improve the climate resilience. This is a first in space cooperation in Asia."

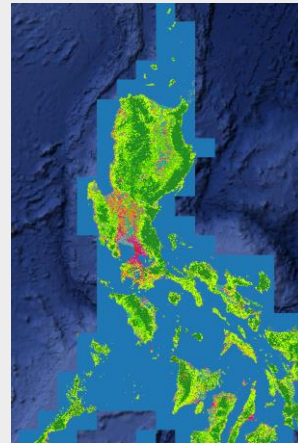


## Ground Motion Monitoring



- ✓ Site specific ground motion monitoring **at request**
- ✓ End-users: **LGUs, other agencies**

## Land cover (LC) and Forest Mapping Service



- ✓ Increase frequency of LC map production **5 → 1 year**
- ✓ End-users: **NAMRIA, FMB, DHSUD, LGUs**

## Benthic Habitat Monitoring Service



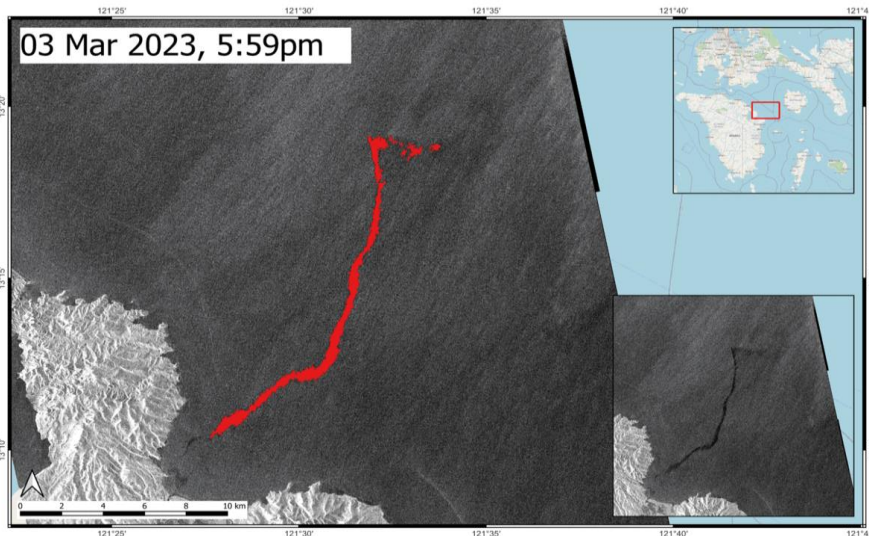
- ✓ **Automated** benthic seabed coverage mapping service produced at **regular intervals**
- ✓ End-users: **BMB, NAMRIA, LGUs**



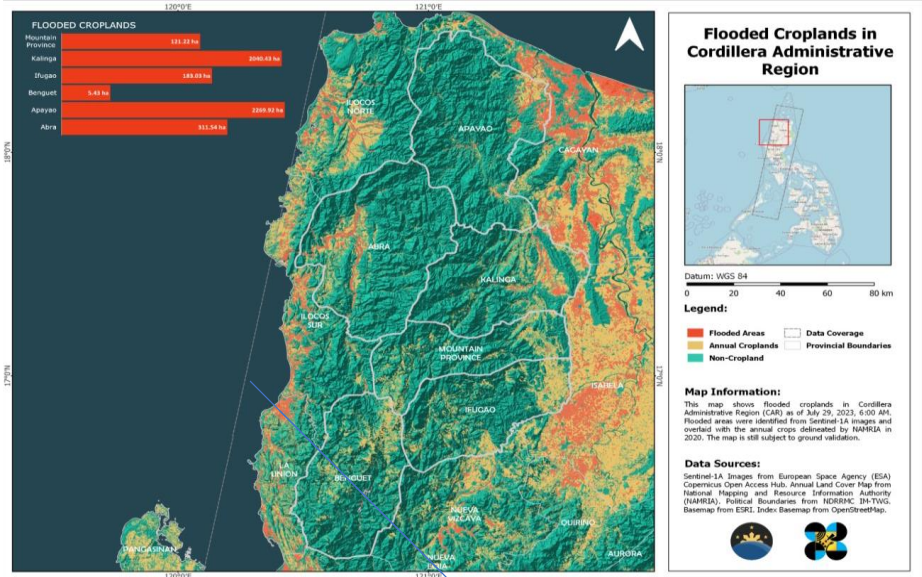




# Capacity to Analyze and Generate Insights



Marine Pollution Due to Oil Spillage in Oriental Mindoro, Philippines  
Data Source: RADARSAT Constellation Mission Imagery © Government of Canada (2023) - RADARSAT is an official mark of the Canadian Space Agency.



In 2023

# 7,769

Maps produced for various applications



11 capacity-building engagements benefitting 776 individuals

# 117,952

total person-hours of training

## Mobilizing Space Data for National Security, Maritime Domain Awareness, and Economic Development

5



# Impetus and Resources to Act



**National Greening Program**



**Mindanao Socio-Economic Development**



**Digital Information for Monitoring and Evaluation**



**Protection and Management of Marine Biodiversity**



**National Copernicus Capacity Support Action Programme for the Philippines**



**Analytics for Agri-Financing**



**Department of Transportation**



**Department of Agriculture**



**Philippine Coast Guard**

6

**New space data mobilization agreements signed in 2023**





6

# Socio-Economic Value and Benefit Realized

## Satellite images lead to mining bust in Misamis Oriental

At least 16, including 5 Chinese, nabbed in gov't raid along Iponan River in Opol town

By the Inquirer Staff / 05:04 AM May 19, 2023



**ENVIRONMENT SURVEILLANCE** At least 16 people, five of them Chinese, were arrested on May 13 as authorities stopped an unauthorized mining operation that had damaged about 7 hectares of forest land in Opol, Misamis Oriental. A satellite image (lower right) led to the discovery of the site, alerting the Department of Environment and Natural Resources (DENR). --PHOTO FROM DENR

**CAGAYAN DE ORO CITY**—Satellite imagery played a crucial role in busting an illegal mining operation that destroyed more than 7 hectares of forests in Misamis Oriental province.

EDITORS' PICK

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# Maraming salamat po.



## Philippine Space Agency

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Bagumbayan, Quezon City 1109 Philippines

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