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9th Joint Project Team Meeting

Drought Detection from Space: A Data-Driven Early Warning Approach

Engr. Christine Marie V. Oca
Science Research Specialist I

Michael Angelo Valete
Science Research Specialist II

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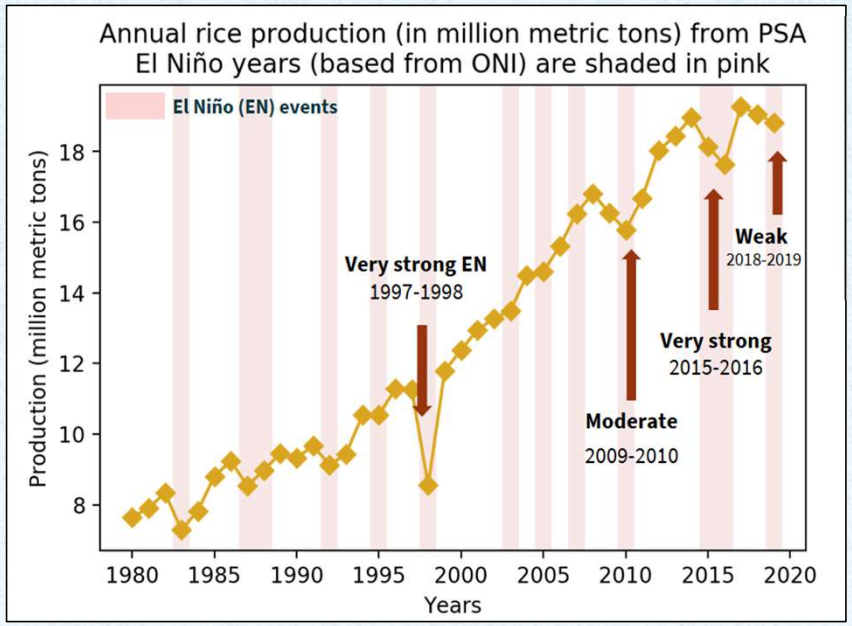
Agricultural drought is closely tied to El Niño.



35% agricultural lands

1 out of 5 Filipinos working in agricultural sector

Impacts of the 2023 – 2024 event

RICE

109, 481 Ha Area affected	**71.70%** Partially Damaged
330, 717 MT Volume Loss	**28.30%** Totally Damaged

Total Value: **₱5.93 B**

CORN

327, 310 Ha Area affected	**63.80%** Partially Damaged
327, 310 MT Volume Loss	**36.20%** Totally Damaged

Total Value: **₱5.94 B**

Official DA data of recent effects of El Niño 2023–2024

$51 million
(International Federation of Red Cross and Red Crescent Societies)
1997 - 1998

$180 million
(National Disaster Coordinating Council)
2009 - 2010

$274 million
(Food and Agriculture Organization)
2015 - 2016

$137 million
(Department of Agriculture)
2018 - 2019

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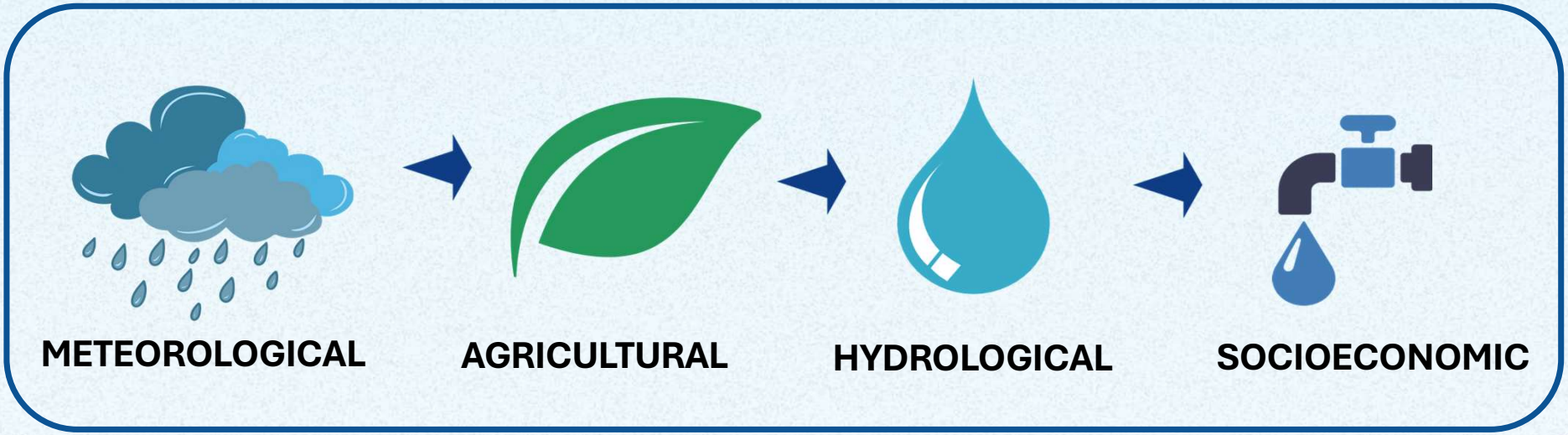
Drought is a creeping phenomenon resulting from deficiency of precipitation and increased temperature.



Types of Drought

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Drought indicators are hydro-meteorological parameters used to monitor drought conditions.

Precipitation

Evapotranspiration

Soil Moisture

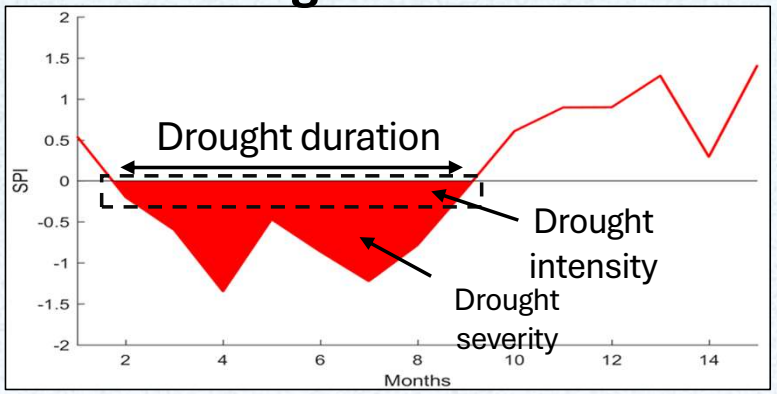
Land Surface Temperature (LST)

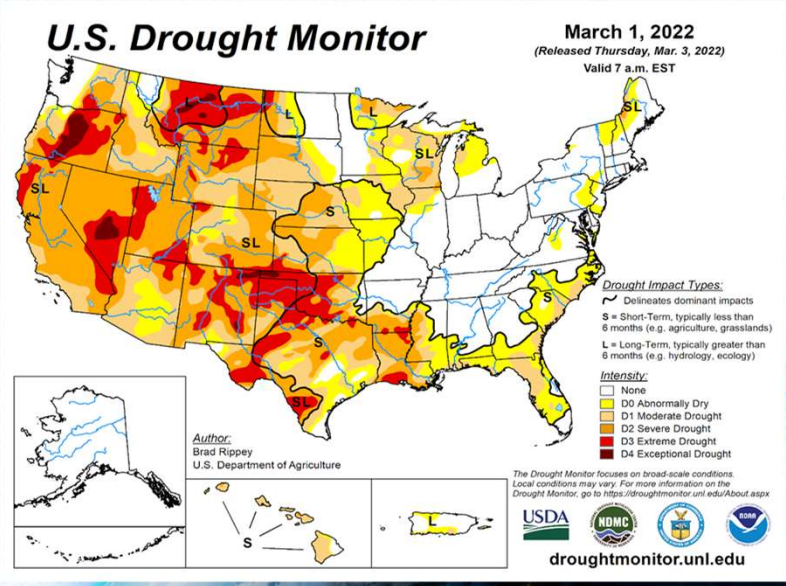
Normalized Difference Vegetation Index (NDVI)

Ground-based
Point observations

Satellite-based
To complement the ground data since satellite can cover large areas

Drought Indices





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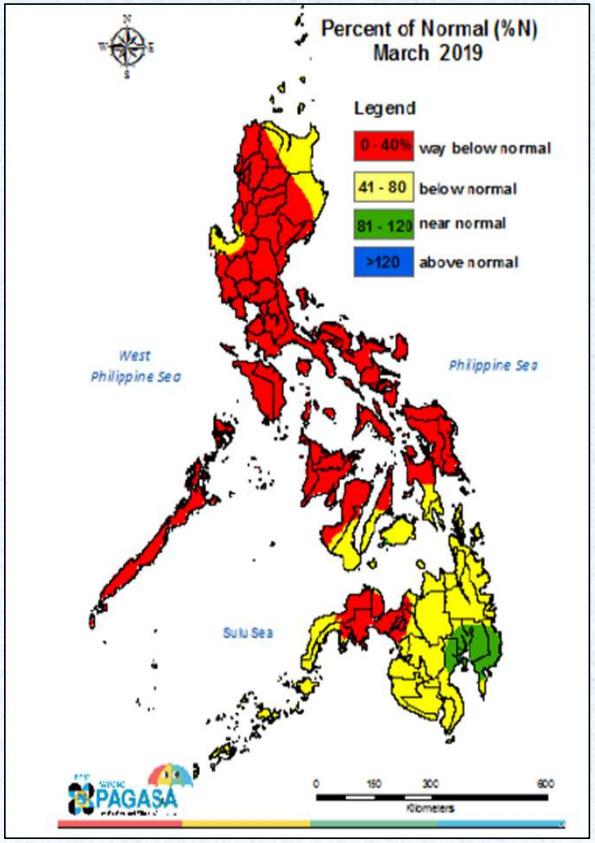
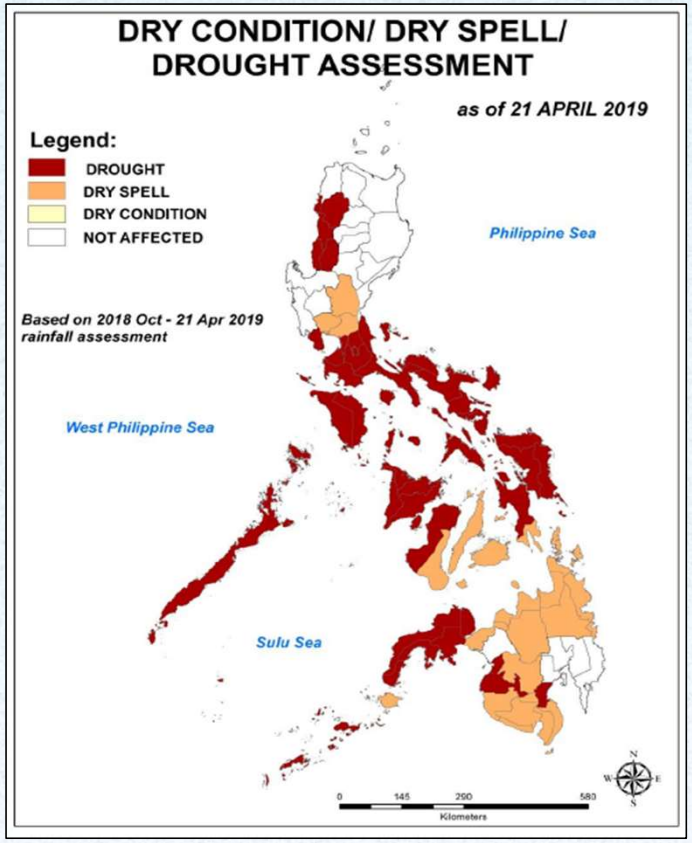
State weather bureau focuses on meteorological drought





Agricultural droughts do not necessarily coincide with meteorological drought.

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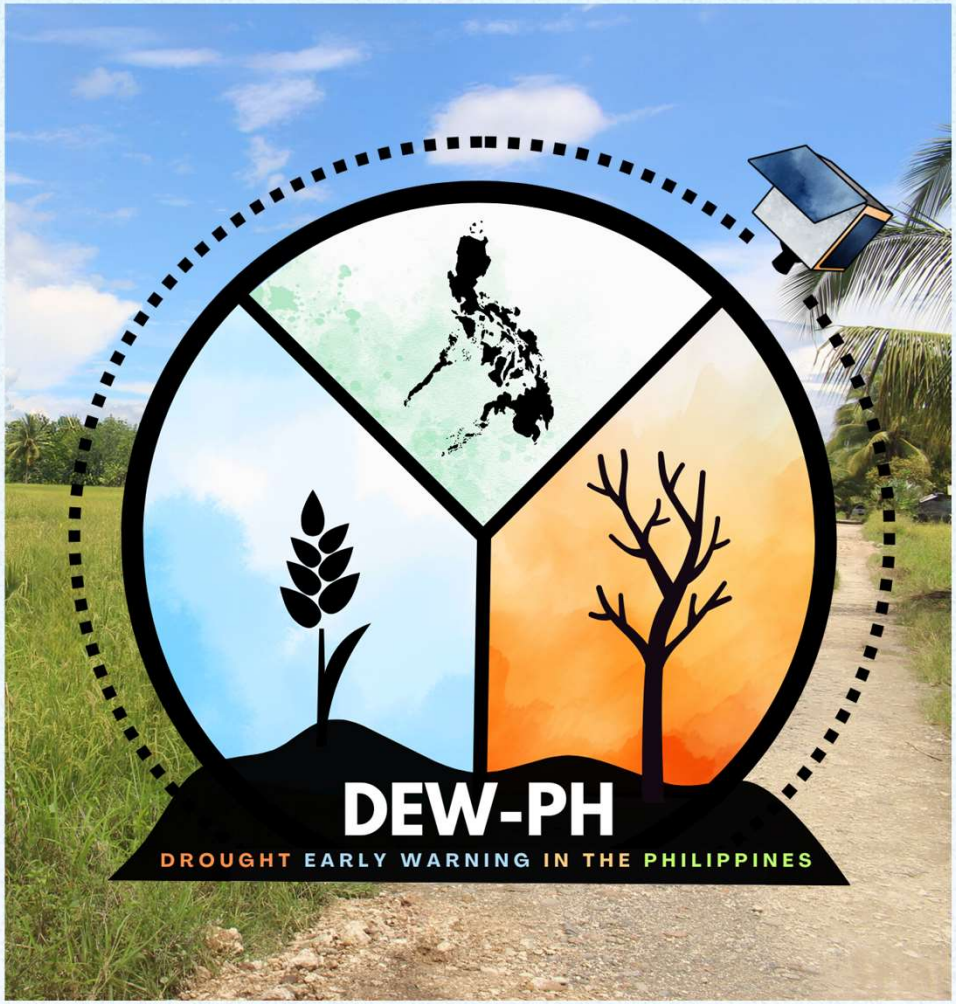

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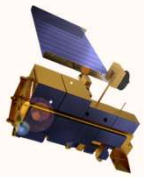
Rationale

- **Drought Early Warning in the Philippines (DEW-PH) Project** aims to produce a national early warning system for drought monitoring and forecasting with the use of **satellite** and **ground-observation data**.

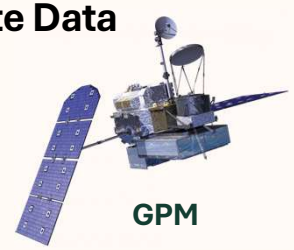
- This **project will generate agricultural drought maps** that will feature both the **observed and forecasted affected areas**. In collaboration with other government agencies, these maps will be thoroughly assessed and analyzed to better understand the drought patterns in the country.

Data

Satellite Data



TERRA- MODIS



GPM

NDVI

LST

Rainfall

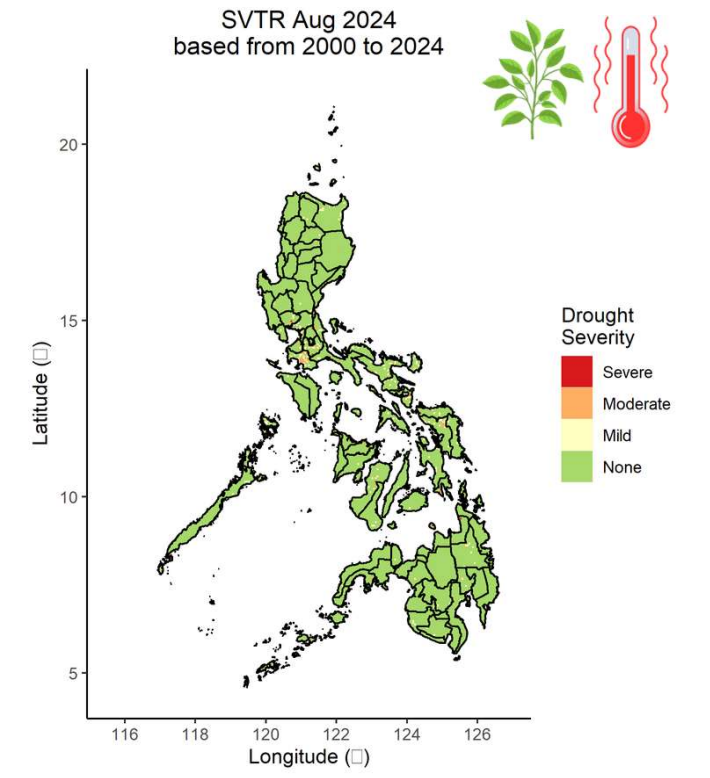
Ground Observation Data

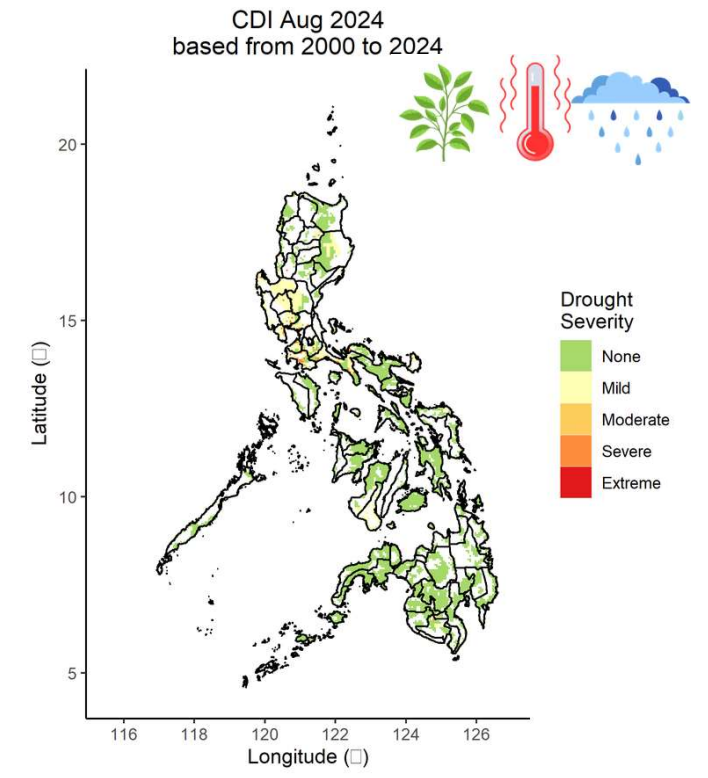
- Synoptic stations from DOST-PAGASA and the AWS of DA-BSWM
- Fieldwork data.

Other

- Oceanic Niño Index (ONI) records and forecasts
- Drought damage reports from DA.

Drought Indices





DEW-PH WORKFLOW

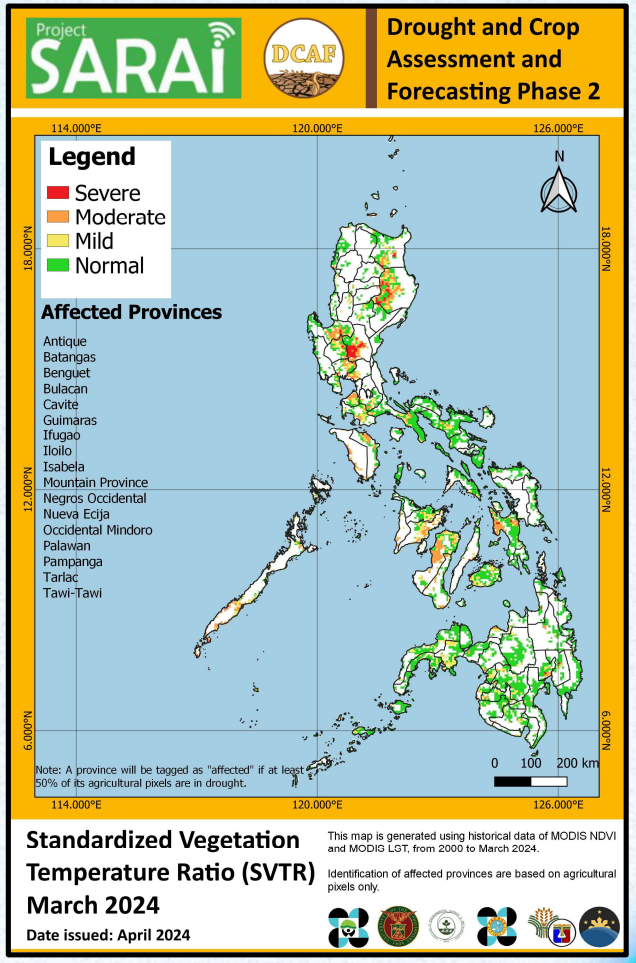
Our Products - Observed

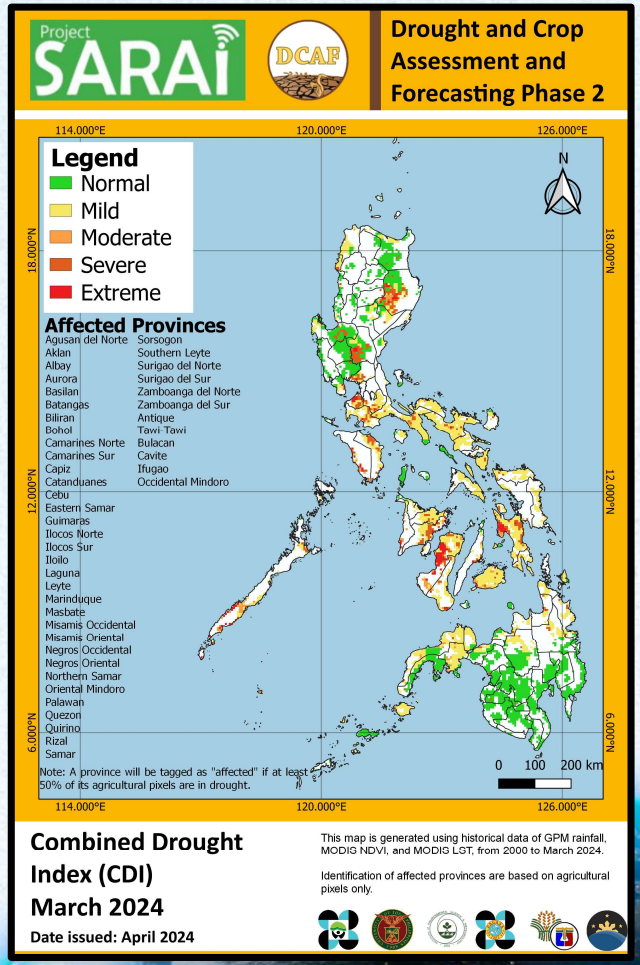
SVTR CATEGORIES

Drought Severity	Value Range
Normal	> -0.50
Mild	-0.51 to -1.00
Moderate	-1.01 to -2.00
Severe	< -2.01

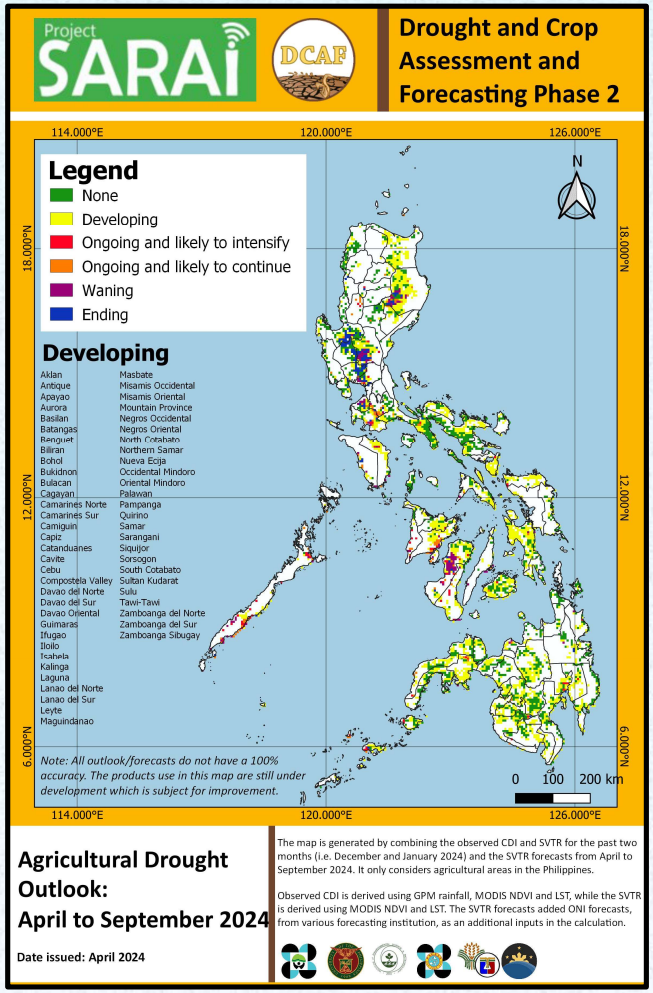
CDI CATEGORIES

CDI INPUTS			
Normal			
Mild	✓		
Moderate	✓	✓	
Severe	✓		✓
		✓	✓
Extreme	✓	✓	✓





Our Products - Forecast



Forecasting drought conditions to mitigate impacts

Developing
Monitor continuously
Prepare and deploy early actions

Ongoing and likely to intensify
Prepare and deploy assistance

Ongoing and likely to continue
Prepare and deploy assistance

Waning

Ending

The Agricultural Drought Outlook from April to September 2024 was initialized using data available from 2000 to March 2024. Outlook is a derivative product of observed and forecasted drought.

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DEW-PH Operations

DEW-PH OPERATIONAL DATABASE

- Rainfall
- NDVI and anomalies
- LST and anomalies
- SPI-3
- SVTR and forecasts
- CDI

Hosted in the Bureau of Soils and Water Management (BWSM)

Monthly DEW-PH Products

Drought damage reports

Department of Agriculture (DA)

DA regional offices

Farmers

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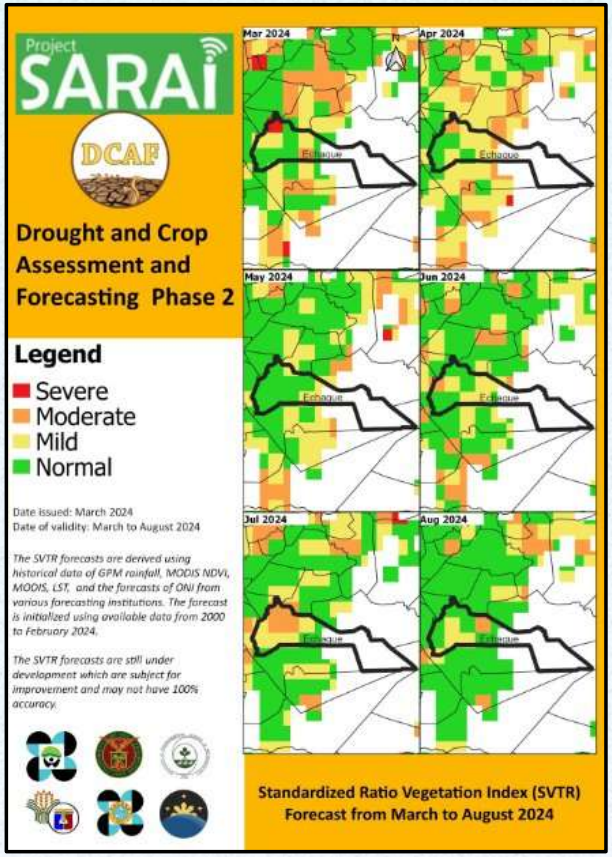
Government Agencies

End-users

DEW-PH Utilized

Satellite-based maps provided a critical role for the UN Food and Agriculture Organization (UNFAO) and the Department of Social Welfare and Development's Anticipatory Action (AA) initiatives in Echague, Isabela through distribution of multipurpose cash to around 1,000 rice and corn farming households.



AGRICULTURAL DROUGHT IN ISABELA

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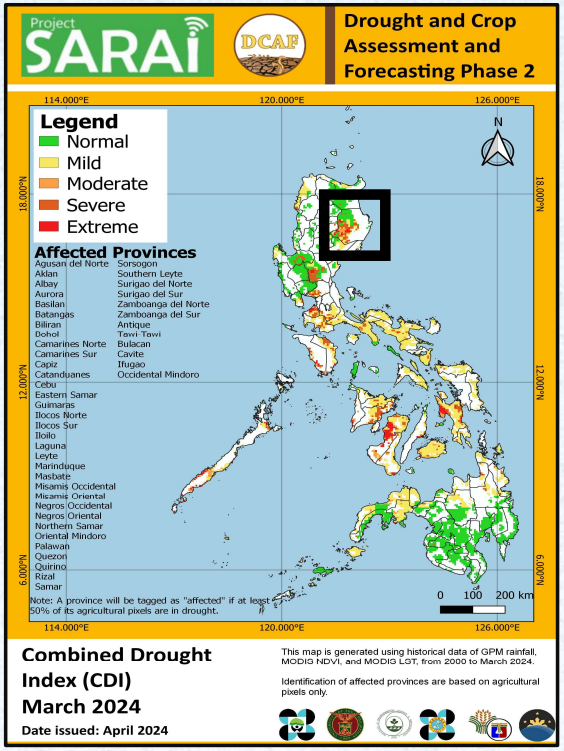

B-SPARED Launching in Echague, Isabela

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Thank You!

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