



# ***Challenges in Climate Information Services (CIS) Provisioning in Philippine Agriculture: Results of a Baseline Survey***

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# Key Messages

- Rainfall patterns have changed; farmers' indigenous knowledge (IK) is not enough to guide them in their production decisions
- Climate information infrastructure for a localized CIS needs improvement.
- Capacity building is needed for municipal extension personnel to be able to integrate climate information in their local advisory services

# Introduction

- Due to changes in rainfall patterns which drives farmers' IK, climate information services (CIS) provisioning in agriculture is necessary in improving overall risk management in agriculture (Klopper, et al., 2006)
- But necessary hard and soft infrastructure are sometimes not adequate for climate forecast delivery to farmers.
- Mainstreaming the delivery of CIS underscores necessary innovations for agriculture's adaptation to climate change



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# Objective

- Using data from a project sponsored by the Adaptation and Mitigation Initiatives in Agriculture (AMIA) of the Dept. of Agriculture, this paper discusses issues in integrating CIS in agricultural extension by assessing:
  - 1) the hard infrastructure needs; and
  - 2) the capacity building needs.

## Methods:

1. Physical inspection of a sample of AWS
2. Survey of AWS operators
3. Survey of Municipal Agricultural Officers

# Study Sites

Region I: Ilocos Norte

Region II: Isabela

Region III: Tarlac

Region IVA: Quezon

Region V: Camarines Sur

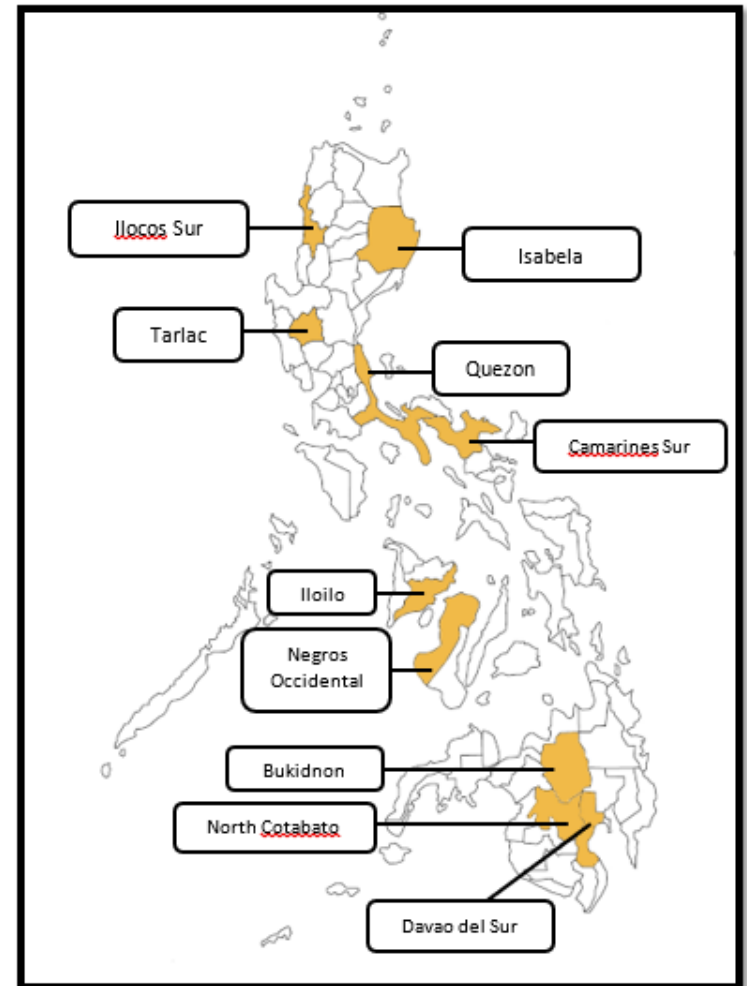
Region VI: Iloilo

Region X: Bukidnon

Region XI: Davao

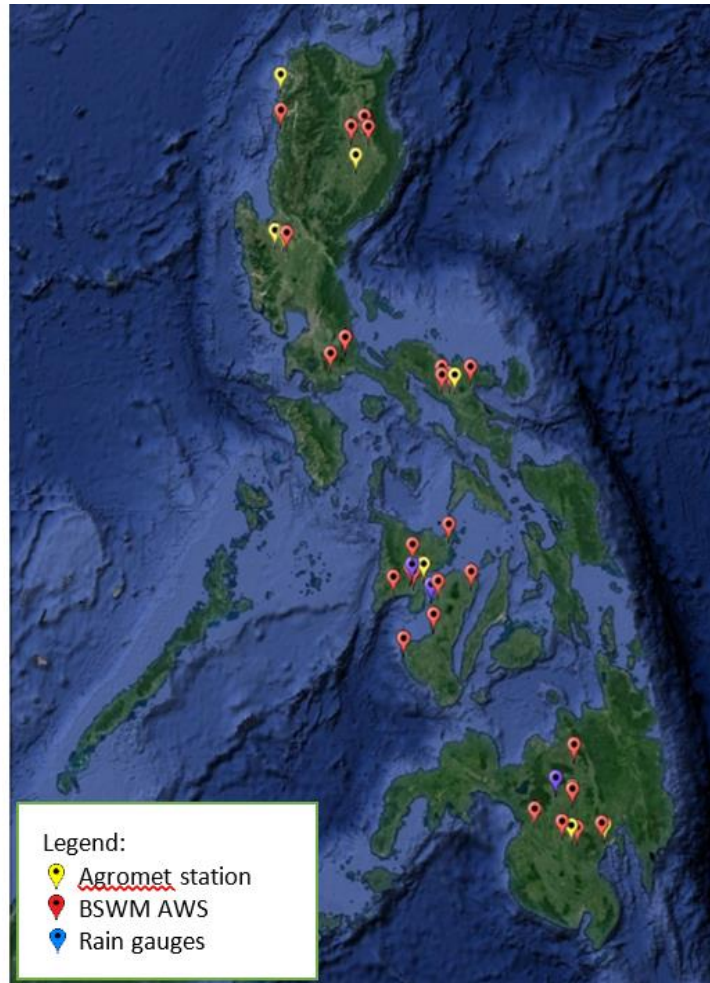
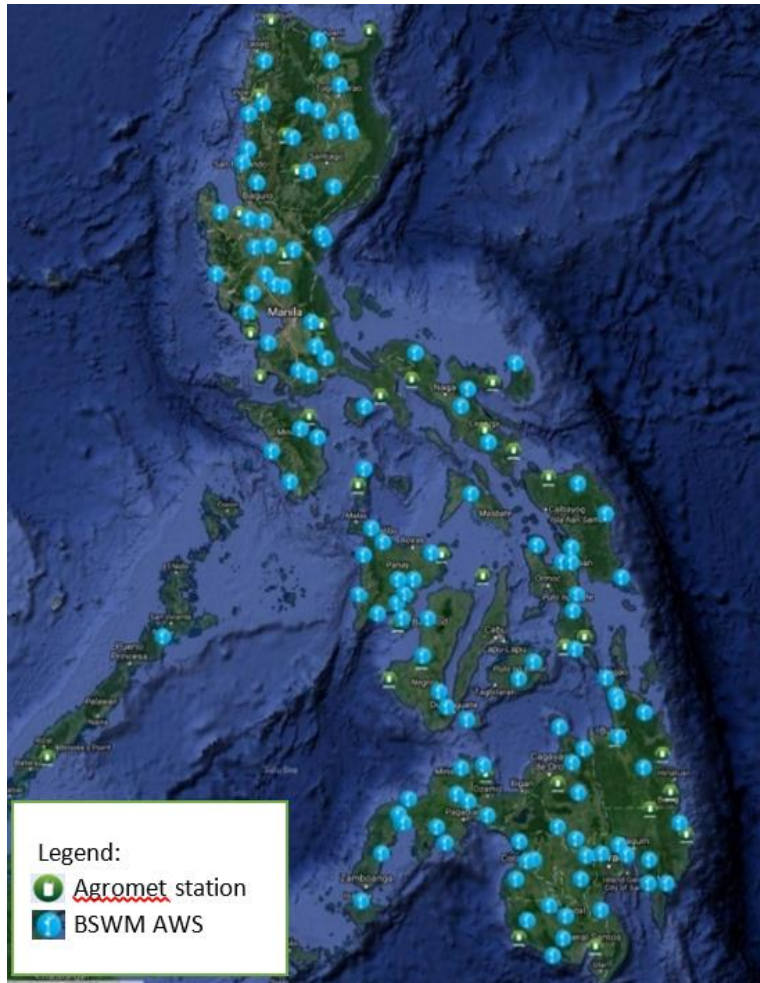
Region XII: North Cotabato

Region XVIII: Negros Occidenta



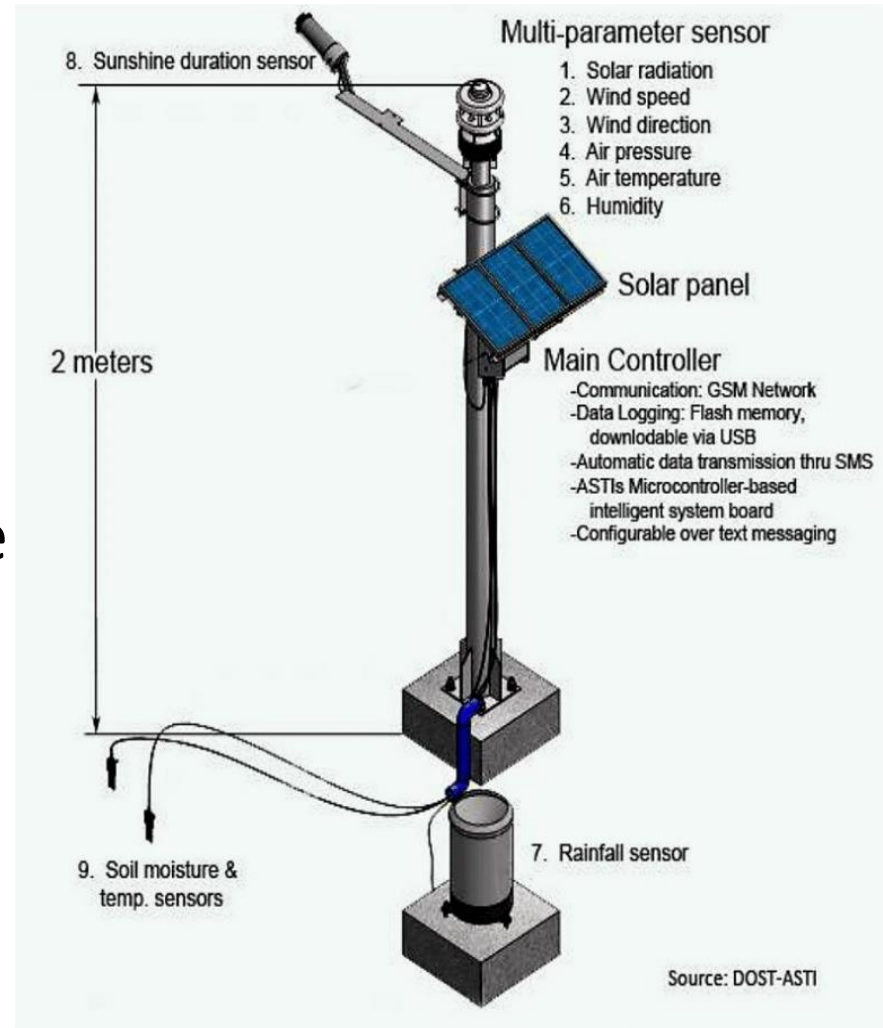


# Population and Sample of weather instruments

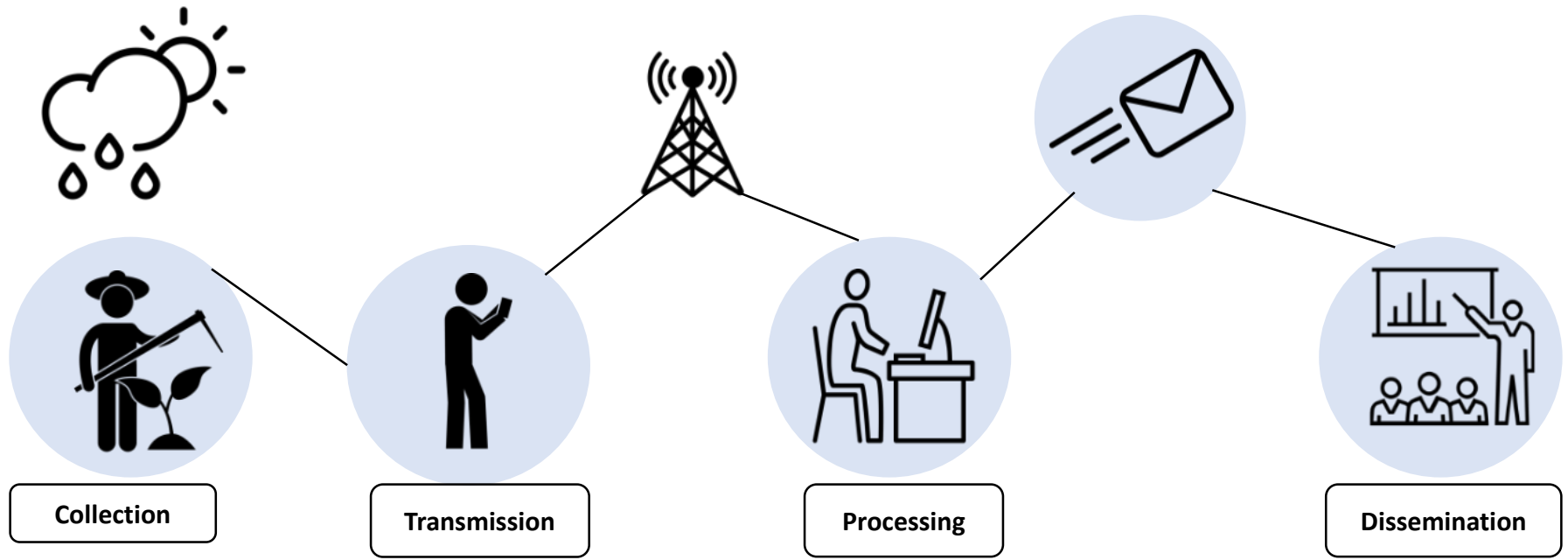


# Climate Data Generated

- Rainfall Amount, Duration, and Intensity
- Air Pressure, Temperature, and Humidity
- Solar Radiation
- Soil Moisture and Temperature
- Wind Speed and Direction
- Sunshine Duration
- Evaporation



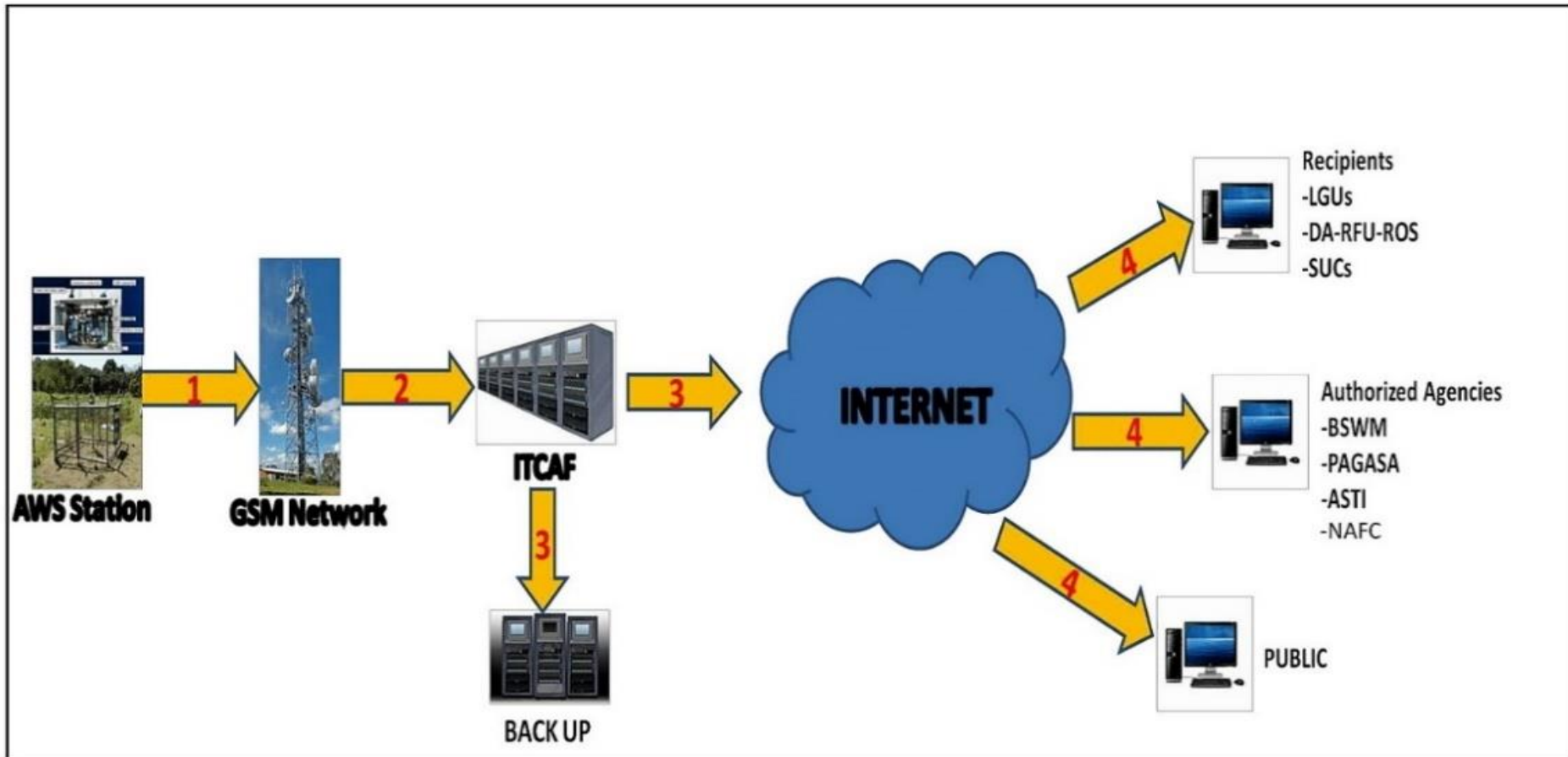
# CIS Provisioning in Agriculture



Analytical Framework



# CIS Provisioning in Agriculture



Institutional Flow of weather data from AWS to the end users

## Results of operators' survey on the functionality of the AWS

Particulars	N	Percent
<b>Is the equipment functioning smoothly?</b>		
Yes	20	55.6
<b>Is it well-maintained?</b>		
	11	55.0
<b>Does the AWS undergo regular maintenance work?</b>		
Yes	31	86.1
<b>Kind of maintenance done</b>		
Cleaning of equipment	24	77.4

## Results of the AWS operators' survey on problems encountered and solutions done

Particulars	N	Percent
<b>Problems*</b>		
Stability of power source	7	43.8
Hardware wear & tear due to pests	7	43.8
Internet connection	6	37.5
<b>How problems were resolved*</b>		
Contact technical staff	7	43.8
Clean equipment	7	43.8

\*Multiple response

# Results of Municipal Agricultural Officers Survey

Particulars	N	Percent
How do you formulate climate forecast advisories? *		
Based on climate information from PAGASA through <b>radio/TV</b>	7	23.3
Based on <b>info from DA</b>	7	23.3
Based on local knowledge	4	13.3
Use of information from locally installed AWS/rain gauge for forecast advisory?		
Yes	11	36.7
<b>No</b>	19	63.3
Total	30	100.0
Reasons for not using data from local AWS/rain gauge?		
<b>No access to data</b>	8	42.1
Incomplete data	2	10.5
Lack of knowledge of processing data	1	5.3
No response	8	42.1
Total	19	100.0

\*Multiple response

# Results of Municipal Agricultural Officers Survey

Particulars	N	Percent
Responsiveness of farmer to climate information-based extension advisories?		
Very responsive	17	56.7
Responsive due to experience and awareness	8	26.7
No response	5	16.7
Total	30	100.0
Farm household decisions influenced by such advisories? *		
Planting decisions	21	70.0
Crop insurance decisions	10	33.3
No response	7	23.3
Others	4	13.3

\*Multiple response

# Prospects and Challenges

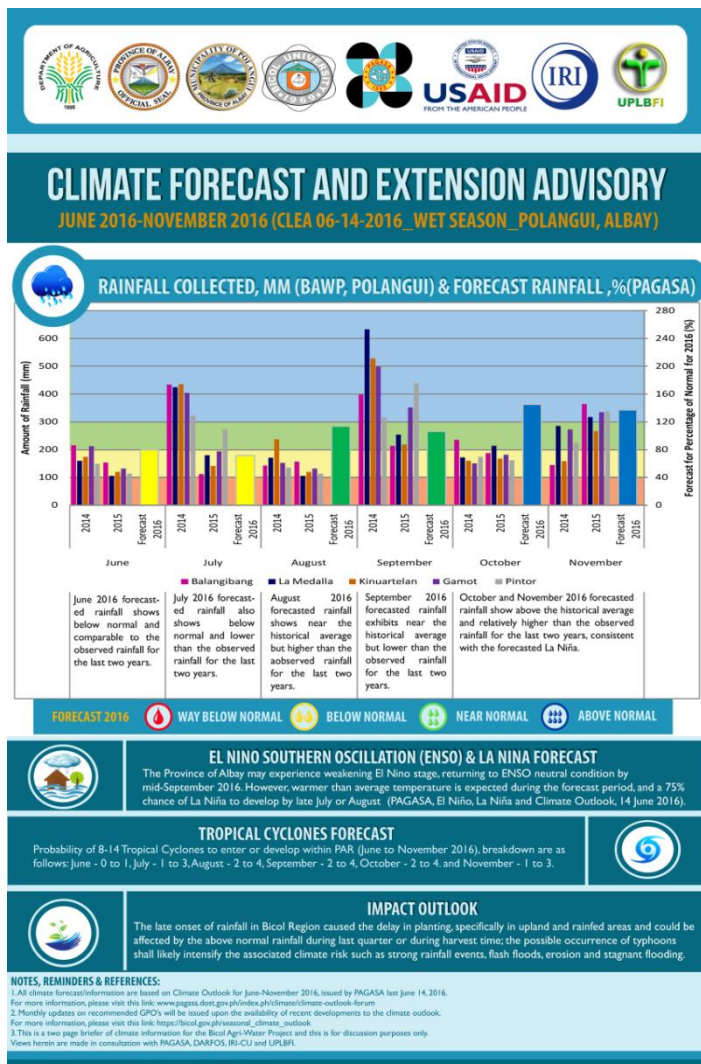
- ☐ More AWS is needed to capture the micro climate.
- ☐ More funds will be needed to maintain the equipment.
- ☐ More capacity building will be needed to maintain the equipment
- ☐ Capacity for municipal agricultural officers to package the CIS into timely extension advisories.



# PS: Further Activities Implemented

- Training of 32 scientists on climate crop modelling
- Training of 114 municipal agricultural officers for preparation of extension materials
- Training of 2,700 farmers to increase awareness of climate forecast and use of extension advisory

# SEASONAL CLIMATE FORECAST AND EXTENSION ADVISORY (CLEA)



**EXTENSION ADVISORY, DA & MAO**

The following *Good Practice Options* (GPO's) are suggested by the Department of Agriculture RFO 5 and MAO-Polangui for the project sites in Polangui, Albay:

**GOOD PRACTICE OPTIONS (GPO's) IN IRRIGATION WATER MANAGEMENT FOR RICE**

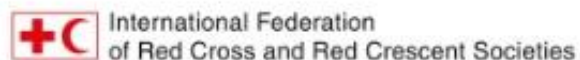
RAINFALL FORECAST	LAND PREPARATION	SEEDLING	VEGETATIVE	REPRODUCTIVE	MATURITY
<b>Way Below Normal</b>	Dry land preparation specially in upland	Dry-bed method Seedling tray	Irrigate every other day or as needed	Irrigate every other day (until flowering stage or grain was filled)	No irrigation but ripening should be 60-70%
<b>Below Normal</b>	Mechanical dry land preparation	Dry-bed method Wet-bed method Seedling tray	Irrigate every other day or as needed	Irrigate every other day (until flowering stage or grain was filled)	No irrigation but ripening should be 60-70%
<b>Near Normal</b>	Advisable for land preparation	Dry-bed method Wet-bed method	Maintain level of water (3-5 cm.)	Maintain level of water (3-5 cm.)	Always open the paddy outlet
<b>Above Normal</b>	Advisable for land preparation	Dry-bed method Wet-bed method	Maintain level of water (3-5 cm.)	Maintain level of water (3-5 cm.)	Always open the paddy outlet

**GOOD PRACTICE OPTIONS (GPO's) FOR RICE, OTHER CROPS, LIVESTOCK & FISHERIES**

RAINFALL FORECAST	RICE	OTHER CROPS	LIVESTOCK	FISHERIES
<b>Below Normal</b>	Repair water systems including leaks at the source and along the line Use early maturing/drought tolerant varieties.	Prepare a tank or pond near the crops for extra water Plant crops that are resilient to dry conditions: - Root crops such as cassava - Legumes like cowpea, winged bean - Leafy vegetables	Provide drinking water to livestock: - Large ruminant give daily water in the afternoon - Small ruminant give water twice a day (noon/PM) Practice Cut and Carry to augment / supplement pasture grasses.	Reduce stocking density and amount of feeds to avoid fish kill.
<b>Near Normal</b>	Apply just the required amount of fertilizer to prevent lodging and pest and disease occurrence. Open drainage outlets to prevent water stagnation, transplant (or expect to use) older seedlings that may require closer planting distance due to the reduced ability to tiller;	Plant crops that can tolerate near normal rainfall: Legumes like cowpea, winged bean, mungbean and other crops like okra and squash	Goats are susceptible to respiratory diseases during rainy/ wet season. Practice silage making for both large and small ruminants.	
<b>Above Normal</b>	Direct seeding in flood-prone areas is not recommended. The above normal rainfall from October shall favor land preparation in upland and rainfed areas for DS cropping. Use early maturing/submergent tolerant varieties. PH losses is expected to be high on cereal crops (rice and corn) since the harvest season (September to December) shall coincide with the start of La Niña.	Store food and next year seed in a secure and air tight container to avoid pest. Incidence of pest & diseases are expected to rise (e.g., snails, fungal disease, etc.). Construction of drainage canals; proper timing of fertilizer application.	Keep animals confined. Practice cut and carry.	Construct higher dikes and reinforce cages to prevent washouts.

For further information, please contact the ff: DARFOS - (054) 477-7263, PAGASA - Climatology and Agromet Division (CAD) - (02) 434-0955 or (02) 435-1675, UPLBFI - (049) 536-3455 or (049) 536-3637 and LGU MAS-Polangui.

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**THANK YOU**