

**MEMORANDUM**

TO : TO ALL CONCERNED

FROM : **VICENTE B. MALANO, PhD.**  
Administrator

SUBJECT: **Adoption of the PAGASA ENSO ALERT AND WARNING SYSTEM**

**OCT 24 2019**  
Date : 21 October 2019

**Rationale**

As prescribed in the Memorandum Order No. 38, s. of 2019 on Reactivating and Reconstituting the El Nino Task Force (issued August 13, 2019), the PAGASA ENSO Alert and Warning System is hereby adopted to provide guidance in the preparation of sectoral contingency plans which will serve as basis for actions before, during and after El Niño. The ENSO Alert and Warning System will serve as input of PAGASA to Chapter 4: Preparedness Actions on the formulation of the Guide for El Nino Contingency Planning.

The ENSO Alert and Warning System also aims to increase understanding among concerned national and local government agencies, the private sector, academia, research and general public; and to heighten awareness in the user community when El Niño/La Niña event exists or might develop so preparedness measures should be initiated.

**Objective**

To serve as guidance in the formulation and implementation of El Niño/La Niña Contingency Plan.

**Definition of Terms**

**Sea Surface Temperature Anomaly (SSTA)** – defined as the departure from the average sea surface temperature (SST)

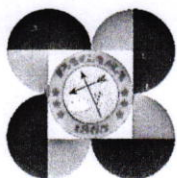
**Niño 3.4 region** – refers to the central and eastern equatorial Pacific (CEEP); 5°N-5°S, 120°-170°W

**Oceanic Niño Index (ONI)\*** – defined as the 3-month running-mean average SST departures in the Niño 3.4 region based on a set of improved homogeneous historical SST analyses [i.e., Extended Reconstructed SST – ERSST.v4 (Huang et al. 2015, J. Climate)]; based on a threshold of +/- 0.5°C for the 3-month running mean SSTAs in the Niño 3.4 region centered on 30-year base periods updated every 5 years

**El Niño** - characterized by a positive ONI greater than or equal to +0.5 °C

**La Niña** - characterized by a negative ONI less than or equal to -0.5 °C

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**El Nino Condition\*** - A one-month positive SSTA of  $0.5^{\circ}\text{C}$  or greater is observed in the Niño-3.4 region and an expectation that the 3-month ONI threshold of  $0.5^{\circ}\text{C}$  or greater will be met (i.e., 3 overlapping 3-months; example: JFM, FMA, MAM).

**El Niño Episode/Event** - a minimum of 5 consecutive 3 overlapping months with ONI values of  $0.5^{\circ}\text{C}$  or greater is observed (i.e., 5 overlapping 3-months; example: JFM, FMA, MAM, AMJ, MJJ)

**La Niña condition** - A one-month SSTA of  $-0.5^{\circ}\text{C}$  or less is observed in the Niño-3.4 region and an expectation that the 3-month ONI threshold of  $-0.5^{\circ}\text{C}$  or less will be met (i.e., 3 overlapping 3-months; example: JFM, FMA, MAM)

**La Niña Episode/Event** - a minimum of 5 consecutive 3 overlapping months with ONI values of  $-0.5^{\circ}\text{C}$  or lower is observed (i.e., 5 overlapping 3-months; example: JFM, FMA, MAM, AMJ, MJJ)

*\* adopted from Climate Prediction Center (CPC)/ NOAA USA's working definition*

### Types of Alert

#### **During an El Niño**

**El Niño Watch** - Issued when conditions are favorable for the development of El Niño within the next six months and probability is 55% or more.

**El Niño Alert** - an upgrade from El Niño Watch; issued when ONI of  $+0.5^{\circ}\text{C}$  or greater is forecasted to persist in the next 2 months or more and El Niño is likely/probable by 70% or more\*\* (to satisfy 5 ONI).

**El Niño Advisory** - an upgrade from El Niño Alert. Issued whenever El Niño is currently on-going and the 3-month Oceanic Niño Index (ONI) threshold is expected to persist during the forecast period.

**Final El Niño Advisory** - issued whenever an ONI value is between  $<0.5^{\circ}\text{C}$  to  $>-0.5^{\circ}\text{C}$  or Neutral.

#### **During a La Niña**

**La Niña Watch** - issued when climate favours development of La Niña conditions within the next six months and probability is 55% or more.

**La Niña Alert** - an upgrade from La Niña Watch; issued when ONI of  $-0.5^{\circ}\text{C}$  or less is forecasted to persist in the next 2 months or more and La Niña is likely/probable by 70% or more\*\* (to satisfy 5 ONI).

**La Niña Advisory** - an upgrade from La Niña Alert. Issued whenever a La Niña is currently on-going and the 3-month Oceanic Niño Index (ONI) threshold is expected to persist during the forecast period.

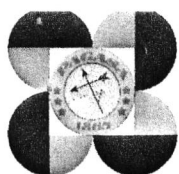
**Final La Niña Advisory** - issued whenever an ONI value is between  $<0.5^{\circ}\text{C}$  to  $>-0.5^{\circ}\text{C}$  or Neutral

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## EL NIÑO WARNING SYSTEM AND RECOMMENDED ACTION/RESPONSE:

Observed Sea Surface Temperature anomaly (SSTA)	Observed Oceanic Niño Index (ONI)	Forecast from CPC NOAA and other Int'l Prediction centers	Warning Type	Recommended Action/Response	Form of Issuance
	between $<0.5^{\circ}\text{C}$ and $> -0.5^{\circ}\text{C}$ or neutral	Neutral; no favourable development of <i>El Niño conditions within the next six months.</i>	N/A	Be Aware	Monthly Climate Assessment and Outlook ***
1 month $0.5^{\circ}\text{C}^*$ or greater is observed	between $<0.5^{\circ}\text{C}$ and $> -0.5^{\circ}\text{C}$ or neutral	Issued when conditions are favorable for the development of El Niño within the next six months and probability is 55% or more.	Watch	Be Aware/ Be Prepared	Press Statement
5 consecutive months of $0.5^{\circ}\text{C}^*$ or greater is observed	3 consecutive ONI of $+0.5^{\circ}\text{C}$ or greater is already observed	Issued when ONI of $+0.5^{\circ}\text{C}$ or greater is forecasted to persist in the next 2 months or more and El Niño is likely/probable by 70% or more** (to satisfy 5 ONI).	Alert	Early Action	Press Statement Issuance of Dry Spell/Drought Assessment to monitor early impacts.
7 consecutive months of $0.5^{\circ}\text{C}^*$ or greater is observed	5 consecutive ONI of $+0.5^{\circ}\text{C}$ or greater is already observed	Issued when El Niño is observed and expected to continue.	Advisory	Take Action	El Nino Advisories Press Statement Issuance of Dry Spell/Drought Assessment and Outlook for areas affected and likely to be affected.
	ONI is between $<0.5^{\circ}\text{C}$ and $> -0.5^{\circ}\text{C}$ or neutral	Issued after El Niño has ended.	Final Advisory	Assess and Take Action whenever necessary	Press Statement

\*at the Niño-3.4 region, ( $5^{\circ}\text{N}$ - $5^{\circ}\text{S}$ ,  $120^{\circ}\text{W}$ - $170^{\circ}\text{W}$ )

\*\* based from consensus ENSO Probabilistic forecast of CPC/IRI

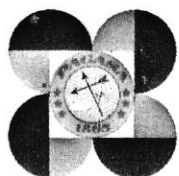
\*\*\* issued during ENSO-neutral condition

N/A – No active ENSO Alert System during neutral condition and no foreseeable development of either El Nino or La Nina.

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**LA NIÑA WARNING SYSTEM AND RECOMMENDED ACTION/RESPONSE:**

Observed Sea Surface Temperature anomaly (SSTA)	Observed Oceanic Niño Index (ONI)	Forecast from CPC NOAA and other Int'l Prediction centers	Warning Type	Recommended Action/Response	Form of Issuance
	between $<0.5^{\circ}\text{C}$ and $>-0.5^{\circ}\text{C}$ or neutral	Neutral; no favourable development of <i>La Niña</i> conditions <u>within the next six months</u> .	N/A	N/A	Monthly Climate Assessment and Outlook ***
1 month $-0.5^{\circ}\text{C}^*$ or less is observed	between $<0.5^{\circ}\text{C}$ and $>-0.5^{\circ}\text{C}$ or neutral	Issued when conditions are favorable for the development of La Niña within the next six months and probability is 55% or more.	Watch	Be Aware/ Be Prepared	Press Statement
5 consecutive months of $-0.5^{\circ}\text{C}^*$ or less is observed	3 consecutive ONI of $-0.5^{\circ}\text{C}$ or less is already observed	Issued when ONI of $-0.5^{\circ}\text{C}$ or less is forecasted to persist in the next 2 months or more and La Niña is likely/probable by 70% or more** (to satisfy 5 ONI).	Alert	Early Action	Press Statement
7 consecutive months of $-0.5^{\circ}\text{C}^*$ or less is observed	5 consecutive ONI of $-0.5^{\circ}\text{C}$ or less is already observed	Issued when La Niña is observed and expected to continue.	Advisory	Take Action	La Niña Advisory and Press Statement (if necessary)
	ONI is between $<0.5^{\circ}\text{C}$ and $>-0.5^{\circ}\text{C}$ or neutral	Issued after La Niña has ended.	Final Advisory	Assess and Take Action whenever necessary	La Niña Advisory (Final) and Press Statement (if necessary)

\*at the Niño-3.4 region, ( $5^{\circ}\text{N}$ - $5^{\circ}\text{S}$ ,  $120^{\circ}\text{W}$ - $170^{\circ}\text{W}$ )

\*\* based from consensus ENSO Probabilistic forecast of CPC/IRI

\*\*\* issued during ENSO-neutral condition

N/A – No active ENSO Alert System during neutral condition and no foreseeable development of either El Niño or La Niña.

NOTE: These oceanic conditions must be met along with consistent El Niño or La Niña atmospheric features.

The adoption of the **PAGASA ENSO ALERT AND WARNING SYSTEM** is effective immediately.

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