Outline

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Recent Evolution and Current Conditions
Oceanic Niño Index (ONI)
Pacific SST Outlook
U.S. Seasonal Precipitation and Temperature Outlooks
Summary
ENSO Alert System Status:  La Niña Advisory

La Niña conditions are present.*

Equatorial sea surface temperatures (SSTs) are below average across the central and eastern Pacific Ocean.

La Niña is expected to transition to ENSO-neutral during the April-May, with ENSO-neutral then likely (greater than 50% chance) to continue through the Northern Hemisphere summer 2018.

* Note: These statements are updated once a month (2nd Thursday of each month) in association with the ENSO Diagnostics Discussion, which can be found by clicking here.
Recent Evolution of Equatorial Pacific SST Departures (°C)

During August 2017, above-average SSTs dissipated east of the Date Line. Below-average SSTs emerged and have generally persisted across the central and eastern Pacific Ocean.

Since early April 2018, negative SST anomalies have dissipated or weakened in the central and east-central equatorial Pacific.
Niño Region SST Departures (°C) Recent Evolution

The latest weekly SST departures are:

- Niño 4: 0.1°C
- Niño 3.4: -0.2°C
- Niño 3: -0.3°C
- Niño 1+2: -1.2°C
During the last four weeks, equatorial SSTs were below average across the east-central and eastern Pacific Ocean, and above average in the western Pacific.
Global SST Departures (°C) During the Last Four Weeks

During the last four weeks, equatorial SSTs were above average in the western Pacific. SSTs were below average in the eastern Indian Ocean and the east-central and eastern Pacific.
During the last four weeks, below-average SSTs have weakened or dissipated across the central and east-central equatorial Pacific Ocean. Negative SST anomalies persisted near the coast of South America.
During the last four weeks, negative changes were observed near the South American coast, with mostly positive changes observed west of there, across the eastern Pacific.
Upper-Ocean Conditions in the Equatorial Pacific

The basin-wide equatorial upper ocean (0-300 m) heat content is greatest prior to and during the early stages of a Pacific warm (El Niño) episode (compare top 2 panels), and least prior to and during the early stages of a cold (La Niña) episode.

The slope of the oceanic thermocline is least (greatest) during warm (cold) episodes.

Recent values of the upper-ocean heat anomalies (below average) and thermocline slope index (above average) reflect La Niña conditions.

The monthly thermocline slope index represents the difference in anomalous depth of the 20°C isotherm between the western Pacific (160°E-150°W) and the eastern Pacific (90°-140°W).
Negative subsurface temperature anomalies lasted from August 2017 to February 2018. Since the end of February, temperature anomalies have been positive and increasing.
In the last two months, positive subsurface temperature anomalies have shifted eastward into the eastern Pacific Ocean. Recently, positive temperature anomalies at depth have shifted eastward to ~100°W. Weak, negative anomalies persist near the surface between ~160°W and ~140°W, with stronger, negative anomalies occurring near the surface east of ~100°W.
Positive OLR anomalies (reduced convection and precipitation) were near the Date Line, east-central Pacific, and parts of Indonesia. Negative OLR anomalies (enhanced convection and precipitation) were southeast of Papua New Guinea.

Low-level (850-hPa) winds were anomalous westerly over the far western tropical Pacific Ocean and anomalous easterly over the central tropical Pacific.

The anomalous upper-level (200-hPa) winds were cross-equatorial over most of the equatorial Pacific.
Intraseasonal variability in the atmosphere (wind and pressure), which is often related to the Madden-Julian Oscillation (MJO), can significantly impact surface and subsurface conditions across the Pacific Ocean.

Related to this activity:

Significant weakening of the low-level easterly winds usually initiates an eastward-propagating oceanic Kelvin wave.
Weekly Heat Content Evolution in the Equatorial Pacific

From August 2017- early January 2018, negative subsurface anomalies persisted in the central and eastern Pacific Ocean.

From December 2017- February 2018, a downwelling Kelvin wave contributed to the eastward shift of above-average subsurface temperatures.

From mid January - March 2018, an upwelling Kelvin wave resulted in below-average subsurface temperatures.

Since early February 2018, another downwelling Kelvin wave has led to positive subsurface anomalies as far east as ~100ºW.

Equatorial oceanic Kelvin waves have alternating warm and cold phases. The warm phase is indicated by dashed lines. Downwelling and warming occur in the leading portion of a Kelvin wave, and upwelling and cooling occur in the trailing portion.
Through mid-January 2018, easterly wind anomalies prevailed across the central equatorial Pacific.

Up to late February 2018, the Madden Julian Oscillation (MJO) contributed to the eastward propagation of low-level wind anomalies.

Since early March 2018, easterly wind anomalies have persisted over the east-central Pacific Ocean.
Upper-level (200-hPa) Velocity Potential Anomalies

Until April 2018, anomalous upper-level divergence (green shading) generally persisted near Indonesia.

During this period, eastward propagation of regions of upper-level divergence (green shading) and convergence (brown shading) have been evident.

Unfavorable for precipitation (brown shading)
Favorable for precipitation (green shading)

Note: Eastward propagation is not necessarily indicative of the Madden-Julian Oscillation (MJO).
Outgoing Longwave Radiation (OLR) Anomalies

At least since October 2017, positive OLR anomalies generally persisted over the central Pacific Ocean. At the same time, negative OLR anomalies were intermittent near the Maritime Continent.

Drier-than-average Conditions (orange/red shading)
Wetter-than-average Conditions (blue shading)
The ONI is based on SST departures from average in the Niño 3.4 region, and is a principal measure for monitoring, assessing, and predicting ENSO.

Defined as the three-month running-mean SST departures in the Niño 3.4 region. Departures are based on a set of improved homogeneous historical SST analyses (Extended Reconstructions SST - ERSST.v5). The SST reconstruction methodology is described in Huang et al., 2017, J. Climate, vol. 30, 8179-8205.)

It is one index that helps to place current events into a historical perspective.
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.

By historical standards, to be classified as a full-fledged El Niño or La Niña episode, these thresholds must be exceeded for a period of at least 5 consecutive overlapping 3-month seasons.

CPC considers El Niño or La Niña conditions to occur when the monthly Niño3.4 OISST departures meet or exceed +/- 0.5°C along with consistent atmospheric features. These anomalies must also be forecasted to persist for 3 consecutive months.
The most recent ONI value (January - March 2018) is $-0.8^\circ\text{C}$. 
Historical El Niño and La Niña Episodes Based on the ONI computed using ERSST.v5

Recent Pacific warm (red) and cold (blue) periods based on a threshold of +/- 0.5 °C for the Oceanic Niño Index (ONI) [3 month running mean of ERSST.v5 SST anomalies in the Nino 3.4 region (5N-5S, 120-170W)]. For historical purposes, periods of below and above normal SSTs are colored in blue and red when the threshold is met for a minimum of 5 consecutive overlapping seasons.

The ONI is one measure of the El Niño-Southern Oscillation, and other indices can confirm whether features consistent with a coupled ocean-atmosphere phenomenon accompanied these periods. The complete table going back to DJF 1950 can be found [here](#).

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A transition from La Niña to ENSO-neutral is expected during April-May, with ENSO-neutral favored (greater than 50%) through Northern Hemisphere summer 2018.
The majority of models predict ENSO-neutral through summer 2018, with an elevated chance of El Niño by fall/winter 2018.

Figure provided by the International Research Institute (IRI) for Climate and Society (updated 19 April 2018).
The CFS.v2 ensemble mean (black dashed line) favors ENSO-neutral through Northern Hemisphere fall 2018.
Atmospheric anomalies over the North Pacific and North America During the Last 60 Days

From late February to late March 2018, anomalous ridging over the North Pacific Ocean has been accompanied by an anomalous trough (and below-average temperatures) over the western contiguous United States with anomalous ridging over the central US.

During late March through late April 2018, an anomalous trough and below-average temperatures persisted over much of North America.
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U.S. Temperature and Precipitation Departures During the Last 30 Days

End Date: 14 April 2018
U.S. Temperature and Precipitation Departures During the Last 90 Days

End Date: 14 April 2018
The seasonal outlooks combine the effects of long-term trends, soil moisture, and, when appropriate, ENSO.
ENSO Alert System Status: La Niña Advisory

La Niña conditions are present.*

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