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Recent Evolution and Current Conditions
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ENSO Alert System Status: La Niña Advisory

La Niña is present.*

Equatorial sea surface temperatures (SSTs) are below average across most of the Pacific Ocean.

The tropical Pacific atmosphere is consistent with La Niña.

La Niña is expected to continue, with chances for La Niña gradually decreasing from 86% in the coming season to 60% during December-February 2022-23.*

* 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.
In the last week, negative equatorial SST anomalies weakened slightly across the equatorial Pacific.
The latest weekly SST departures are:

- Niño 4: -0.8°C
- Niño 3.4: -0.9°C
- Niño 3: -0.4°C
- Niño 1+2: -0.5°C
SST Departures (°C) in the Tropical Pacific During the Last Four Weeks

In the last four weeks, equatorial SSTs were below average across most of the Pacific Ocean, with the exception of above average SSTs in the eastern Pacific.
During the last four weeks, equatorial SSTs were below average across most of the Pacific Ocean. Equatorial SSTs were above average around Indonesia, in the eastern Pacific Ocean, and in the western Atlantic Ocean.
During the last 4 weeks, negative SST anomalies have persisted across the central and east-central equatorial Pacific.
During the last four weeks, small positive and negative changes in equatorial SST anomalies were observed across the Pacific Ocean.
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.

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).
Until mid-January 2022, negative subsurface temperature anomalies were observed. During February 2022 through mid-March, subsurface temperature anomalies decreased and were negative. From mid-March to mid-June, subsurface temperature anomalies increased from negative to positive. Since mid-June, anomalies have decreased and are negative.
During the last two months, negative subsurface temperature anomalies reemerged at depth in the east-central Pacific Ocean, and extended to the surface.

Positive subsurface temperature anomalies have persisted, at depth, in the western Pacific Ocean.
Tropical OLR and Wind Anomalies During the Last 30 Days

Positive OLR anomalies (suppressed convection and precipitation) were located over the central and western tropical Pacific Ocean. Weak, negative OLR anomalies (enhanced convection and precipitation) were observed over parts of Indonesia.

Low-level (850-hPa) easterly wind anomalies were evident across most of the equatorial Pacific Ocean.

Upper-level (200-hPa) westerly wind anomalies were observed over most of the equatorial Pacific, with anomalous cyclones on both sides of the equator.
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.
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.
Low-level (850-hPa) Zonal (east-west) Wind Anomalies (m s⁻¹)

At times, the Madden Julian Oscillation (MJO) has contributed to the eastward propagation of low-level wind anomalies.

Since the beginning of the period, easterly wind anomalies have generally dominated over the central and east-central Pacific, except for breaks during late March 2022, mid-May 2022, and early-to-mid June 2022.
Upper-level (200-hPa) Velocity Potential Anomalies

During most of the period, anomalous divergence (green shading) generally remained near Indonesia, while anomalous convergence (brown shading) persisted over the eastern Pacific Ocean.

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

Since late July 2021, positive OLR anomalies were evident over the western and/or central Pacific Ocean. Negative OLR anomalies were periodically observed over Indonesia.

Drier-than-average Conditions (orange/red shading)
Wetter-than-average Conditions (blue shading)
Oceanic Niño Index (ONI)

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 Reconstructed 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.

Note: a different SST dataset is used for weekly SST monitoring (slides #4-9) and is using OISSTv2.1 (Huang et al., 2021).
NOAA Operational Definitions for El Niño and La Niña

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.
ONI (°C): Evolution since 1950

The most recent ONI value (May - July 2022) is -0.9°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 Niño 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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</table>
Chances of La Niña gradually decrease from 86% in the coming season to 60% during December-February 2022-23. ENSO-neutral is favored beginning in February-April 2023.
La Niña is expected to persist through the Northern Hemisphere winter 2022-23.
The CFS.v2 ensemble mean (black dashed line) indicates La Niña persisting into the Northern Hemisphere winter 2022-23, and then transitioning to ENSO-neutral by January-March 2023.
Atmospheric anomalies over the North Pacific and North America During the Last 60 Days

From late June to mid-August, above-average heights and temperatures persisted over the central U.S.

Since mid-July, above-average heights and temperatures also influenced the northwestern contiguous U.S.
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U.S. Temperature and Precipitation Departures During the Last 30 Days

End Date: 27 August 2022
U.S. Temperature and Precipitation Departures During the Last 90 Days

End Date: 27 August 2022
The seasonal outlooks combine the effects of long-term trends, soil moisture, and, when appropriate, ENSO.
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