
ENSO Transition to El Niño: Emerging Risks to Global Food Security and Disaster Exposure

EngineHouse Analysis

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Overview

The tropical Pacific is transitioning from weak La Niña conditions toward ENSO-neutral, with El Niño probability rising to 40% by May–July 2026. This shift will disrupt global precipitation and temperature patterns, creating acute risks to agricultural productivity, food affordability, and disaster exposure across vulnerable regions. The transition window presents a critical period of elevated uncertainty and compounding climate stress.

SECTION 2

Main Findings

What the evidence shows

Key Findings

- La Niña fading toward ENSO-neutral: Sea surface temperatures and atmospheric indicators confirm weak La Niña conditions are weakening, with 60% probability of ENSO-neutral during March–May 2026 and 70% during April–June. This marks a decisive shift in the dominant ocean-atmosphere driver of global climate variability.
- El Niño probability rising sharply: Forecasts show El Niño probability climbing to 40% by May–July 2026, up from 10% in the March–May window. This escalating probability signals potential onset of warmer-than-normal central and eastern Pacific conditions, which historically trigger widespread precipitation anomalies and temperature extremes.
- Subsurface warming already underway: Warmer subsurface temperatures are reaching the eastern Pacific, indicating the ocean system is primed for El Niño development. This physical signal suggests the transition is not merely probabilistic but already embedded in ocean dynamics.
- Forecast uncertainty remains substantial: Model ensemble spread across tropical Pacific sea surface temperature forecasts reflects genuine predictive limits. This uncertainty compounds decision-making for agricultural planning, disaster preparedness, and food security interventions.

SECTION 3

Evidence

Key passages from the source

Key Passages

- WMO forecasts as of mid-February 2026 show 60% probability of ENSO-neutral during March–May, with La Niña probability falling to 30% and El Niño at 10%. By April–June, ENSO-neutral rises to 70% probability. This progression indicates a systematic shift away from La Niña dominance toward a more neutral or warming state.
- Sea surface temperatures alongside atmospheric and oceanic indicators confirm weak La Niña conditions are fading. The physical basis for this assessment rests on direct observation of tropical Pacific thermal structure, not model inference alone.
- El Niño and La Niña drive global and regional climate patterns through atmosphere-ocean interactions in the tropical Pacific belt. During El Niño, central and eastern tropical Pacific sea surface temperatures become substantially warmer than normal, altering circulation patterns and precipitation distribution globally.
- Model ensemble forecasts carry substantial uncertainty, reflected in widespread disagreement across tropical Pacific sea surface temperature predictions. This uncertainty is acknowledged as a structural feature of ENSO predictability, not a data quality issue.



ENSO Probability Trajectory

Stacked probability chart showing La Niña, ENSO-neutral, and El Niño probabilities across March–May, April–June, and May–July 2026 forecast windows.

chart

SECTION 4

Consequences

Human and systemic impacts

Human Consequences

The ENSO transition poses acute mortality and affordability risks. El Niño onset typically intensifies extreme weather events—including tropical cyclones, droughts, and flooding—that directly kill people through infrastructure collapse and exposure, and indirectly through disease and malnutrition cascades. Agricultural disruption is the primary affordability vector: crop failures and yield volatility in staple-producing regions will drive food prices beyond reach for food-insecure populations, particularly in Sub-Saharan Africa, South Asia, and Central America. Coastal and agricultural communities face compounded displacement pressure as intensified storms and prolonged droughts force migration from affected regions simultaneously. The forecast uncertainty itself creates a secondary harm: farmers cannot reliably plan planting cycles, governments cannot pre-position disaster resources with confidence, and humanitarian systems cannot mobilize preventively. Vulnerable populations—those already living on subsistence agriculture or in informal settlements—bear disproportionate exposure because they lack adaptive capacity, financial buffers, and access to climate-informed early warning systems.

SECTION 5

Why This Matters

Broader significance

Significance

ENSO transitions are among the most predictable and consequential climate events on interannual timescales. A shift from La Niña to El Niño represents a fundamental reorganization of tropical Pacific ocean-atmosphere dynamics that cascades into global precipitation and temperature anomalies within months. The rising El Niño probability during May–July 2026 signals that the window for anticipatory adaptation—crop insurance activation, water storage, disaster preparedness, food reserve positioning—is narrowing. This briefing window is critical for policy and operational decision-making; delays in response will amplify human harm.

Sources & Provenance

- WMO Global Producing Centres ENSO forecasts (mid-February 2026 update)
- WMO Climate into the 21st Century reference material on El Niño/La Niña circulation patterns
- Tropical Pacific sea surface temperature observations and subsurface thermal data
- Source type: PDF analysis; Geographic scope: Global; Timeframe: Short-term (March–July 2026)