ENSO Transition to El Niño: Pacific Shift Elevates Global Weather and Food Security Risk

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, destabilise agricultural systems, and elevate extreme weather risk. The consequences span food price volatility, direct mortality from intensified storms, and climate-driven displacement from vulnerable agricultural and coastal regions.

SECTION 2

Main Findings

What the evidence shows

Key Findings

- La Niña weakening toward ENSO-neutral: Sea surface temperatures and atmospheric indicators confirm weak La Niña conditions are fading. ENSO-neutral is now the most probable outcome (60–70% likelihood) through June 2026, with El Niño probability rising to 40% by May–July. This matters because ENSO state is the primary driver of global weather pattern shifts; the transition will alter precipitation distribution and temperature regimes across multiple continents, affecting agricultural productivity and disaster risk simultaneously.
- Subsurface Pacific warming accelerating transition: Warmer subsurface temperatures are reaching the eastern Pacific, signalling the ocean heat content shift that precedes El Niño development. This implies rapid climate pattern reorganisation is underway; the timing and magnitude of the transition remain uncertain across forecast models, creating planning risk for agricultural and disaster management systems.
- Forecast uncertainty embedded in transition: Widespread divergence among tropical Pacific sea surface temperature forecasts across models reflects genuine uncertainty in the transition pathway. This matters operationally because regional impacts depend on both ENSO state and local climate drivers; forecast ambiguity compounds planning difficulty for food security and disaster preparedness systems relying on seasonal outlooks.

SECTION 3

Evidence

Key passages from the source

Key Passages

- WMO forecast consensus (mid-February 2026): 'Sea surface temperatures, alongside key atmospheric and oceanic indicators in the tropical Pacific, reveal that the recent weak La Niña conditions are fading and shifting toward ENSO-neutral.' The latest Global Producing Centres forecasts assign 60% probability to ENSO-neutral during March–May 2026, with ENSO-neutral rising to 70% for April–June and 60% for May–July. This establishes the baseline transition trajectory and confirms La Niña is ending.
- El Niño emergence signal: Probability of El Niño developing stands at 10% for March–May 2026 but rises to 40% by May–July 2026. This 4-fold increase over a two-month window signals accelerating ocean heat accumulation and atmospheric coupling, indicating the transition is not linear but subject to rapid regime shifts.
- Subsurface temperature dynamics: Warmer subsurface temperatures are reaching the eastern Pacific, a precursor condition for El Niño establishment. This physical signal indicates the ocean heat content necessary for sustained El Niño conditions is already in motion, constraining the range of possible outcomes toward warmer ENSO states.
- Forecast model divergence: 'Widespread uncertainty is reflected in the widespread divergence among tropical Pacific sea surface temperature forecasts across models and their ensemble members.' This uncertainty is material for operational planning; it means regional seasonal outlooks must account for multiple ENSO scenarios rather than a single deterministic forecast.

ENSO Probability Evolution: March 2026 to July 2026

Forecast Period	ENSO-Neutral	La Niña	El Niño
March–May 2026	60%	30%	10%
April–June 2026	70%	~20%	~10%
May–July 2026	60%	~10%	40%

WMO Global Producing Centres forecast probabilities. El Niño probability quadruples from March–May to May–July, signalling rapid transition risk.

SECTION 4

Consequences

Human and systemic impacts

Human Consequences

The ENSO transition from La Niña to El Niño will drive mortality through intensified extreme weather events. El Niño typically amplifies tropical cyclone activity in certain ocean basins, increases flood and drought frequency, and destabilises atmospheric circulation patterns that coastal and low-lying communities depend on for predictability. Direct deaths will result from storm surge, flooding, and infrastructure collapse in vulnerable regions. Affordability crisis will follow as crop failures and agricultural disruption cascade through food systems. El Niño-driven precipitation shifts will reduce yields in major grain-producing regions, driving staple food prices beyond reach for food-insecure populations in sub-Saharan Africa, South Asia, and Central America. Displacement will accelerate as farmers abandon fields rendered unproductive by altered rainfall patterns and as coastal communities face intensified storm risk. Systemic effects will compound: agricultural supply chain disruption will trigger price volatility in global commodity markets, straining government food security budgets and forcing rationing in countries dependent on imports. Water scarcity in El Niño-affected regions will create competition between irrigation and drinking water, forcing rural-to-urban migration. The combination of crop failure, food price inflation, and disaster risk will create cascading humanitarian need across multiple continents simultaneously, overwhelming disaster response capacity and forcing triage in humanitarian assistance.

SECTION 5

Why This Matters

Broader significance

Significance

ENSO transitions are the largest source of predictable climate variability on seasonal timescales; they reshape global weather patterns and trigger cascading impacts across food, water, and disaster systems simultaneously. The shift from La Niña to potential El Niño over the next two months represents a critical inflection point for global food security and disaster risk. Forecast uncertainty embedded in this transition means operational systems—agricultural planning, water management, disaster preparedness, humanitarian logistics—must prepare for multiple scenarios rather than a single outcome. The 40% El Niño probability by May–July 2026 is material enough to demand immediate contingency activation in vulnerable regions; delay in preparedness will directly translate to preventable mortality and displacement.

Sources & Provenance

- WMO Global Producing Centres ENSO forecasts (mid-February 2026 update)
- WMO Climate into the 21st Century (2003) — El Niño/La Niña circulation pattern reference
- ASIP Analysis / Synthesis framework — signal classification and consequence mapping