



Double-Dip La Niña

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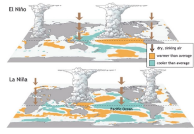
Why in News

Recently, the **National Oceanic and Atmospheric Administration** (NOAA, an American scientific agency) has declared that **La Niña has re-developed. Consecutive La Niña is called Double-Dip.**

Key Points

- **About:**
 - La Nina is one part of the **El Nino Southern Oscillation (ENSO)** cycle, which is characterized by **opposing warm and cool phases of oceanic and atmospheric conditions** in the tropical **Pacific Ocean**.
 - **Consecutive La Ninas following a transition through ENSO neutral conditions are not uncommon** and can be referred to as a “**Double-Dip.**”
 - In **2020, La Nina developed** during the month of August and then **dissipated in April 2021** as ENSO-neutral conditions returned.
 - For the **upcoming winter season**, which extends from December 2021 through February 2022, there is **an 87% chance of La Nina**.
 - Previous La Ninas occurred during the winter of 2020-2021 and 2017-2018, and **an El Nino developed in 2018-2019**. When neither climate pattern is present, ENSO is neutral and does not influence global climate patterns.
- **ENSO:**
 - It is a **periodic fluctuation in sea surface temperature** (El Niño) **and the air pressure of the overlying atmosphere** (Southern Oscillation) across the **equatorial Pacific Ocean**.
 - **El Nino and La Nina** are complex weather patterns resulting from variations in ocean temperatures in the Equatorial Pacific Region. They are **opposite phases of what is known as the ENSO cycle**.
 - El Nino and La Nina episodes **typically last nine to 12 months, but some prolonged events may last for years**.

El Nino and La Nina



Basis of Comparison

El Nino

La Nina

About

El Niño means **Little Boy**, or Christ Child in Spanish. During an El Niño event, **ocean water from off the coast of South America (near Ecuador and Peru) to the central tropical Pacific warm above average.**

La Niña means **Little Girl** in Spanish. During a La Niña event, **ocean water from off the coast of South America to the central tropical Pacific cools to below average temperatures.**

Occurrence

The warming takes place **as trade winds (the permanent east-to-west prevailing winds that flow around the equator) weaken or even reverse**, blowing warm water from the western Pacific toward the east. As a result, sea temperatures in the far western Pacific can cool below average.

This cooling occurs **because of stronger than normal easterly trade winds**, which churns cooler, deeper sea water up to the ocean's surface. Sea temperatures can warm above average in the far western Pacific when this happens.

Impact

- **On Walker Circulation:** The unusually warm water in the eastern Pacific then **influences the Walker Circulation** (an atmospheric system of air flow in the equatorial Pacific Ocean), acting as a focal point for cloud, rainfall, and thunderstorms. It is this **change in the Walker Circulation that impacts weather patterns** around the world.
- **On the Pacific Jet Stream:** The warmer waters **cause the Pacific jet stream to move south of its neutral position**. With this shift, **areas in the northern US and Canada are dryer and warmer than usual**. But in the **US Gulf Coast and Southeast**, these periods are **wetter than usual** and have increased flooding.
- **On Marine Life:** El Niño also has **a strong effect on marine life off the Pacific coast. During El Niño, upwelling weakens or stops altogether**. Upwelling is movement of colder, nutrient-rich water from the depths to the surface.

Without the nutrients from the deep, there are **fewer phytoplankton off the coast**. This affects fish that eat phytoplankton and, in turn, affects everything that eats fish.
- **On the Indian Ocean:** El Niño is associated with **lower than normal monsoon rainfall in India**.
- **On Walker Circulation:** The unusually cool water in the eastern Pacific **influences the Walker Circulation** and suppresses cloud, rain, and thunderstorms. This change **impacts weather patterns around the world, but in a different way than El Niño does**.
- **On the Pacific Jet Stream:** These cold waters in the Pacific **push the jet stream northward**. This tends to lead to **drought in the southern US** and heavy rains and **flooding in the Pacific Northwest and Canada**. It can also lead to a **more severe hurricane season**.
- **On Marine Life:** Off the west coast of the Americas, **upwelling increases**, bringing cold, nutrient-rich water to the surface.
- **On the Indian Ocean:** There are **increased temperatures in Western Pacific, Indian Ocean and off the Somalian coast**. It also leads to **heavy floods in Australia** and a **comparatively better monsoon rains in India**.

Source: DTE