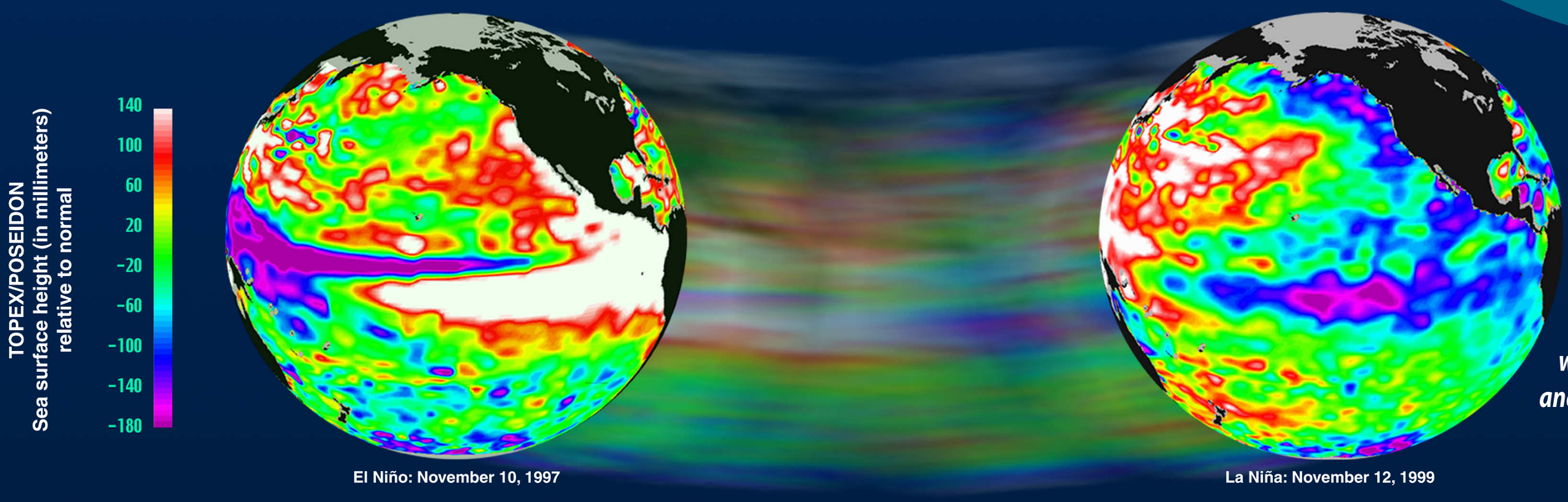
Pacific Pendulum Swings With Global Reach!

The El Niño of 1997–98 and the long La Niña of 1998–2001 forced Earth's environmental systems to totter.

EOSDIS data can be used to study El Niño and La Niña variations and their impacts on Earth's systems.



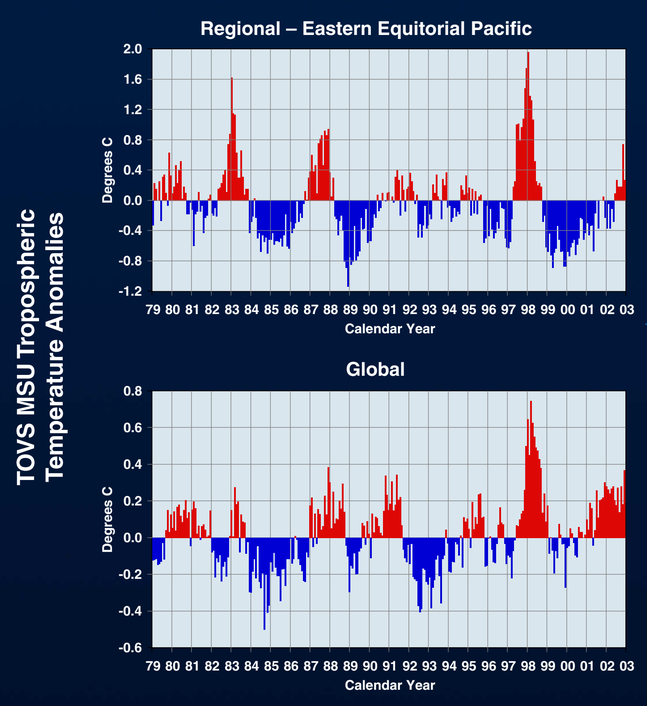
El Niño: November 10, 1997

La Niña: November 12, 1999

The hot-and-cold extremes of El Niño/Southern Oscillation (ENSO) are expressed as sea surface height anomalies. Higher (warmer) than normal water appears as white and red, and lower (cooler) than normal as blue and purple.

Images courtesy of NASA JPL TOPEX/POSEIDON Project

Air Temperature

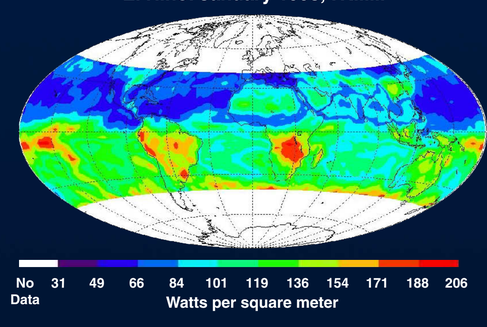


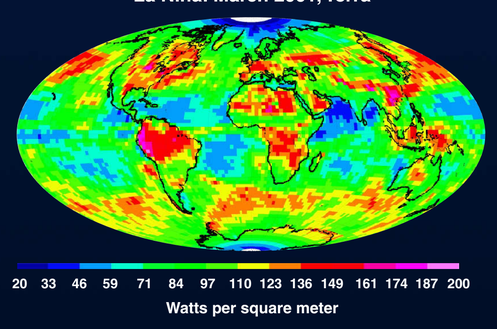
Data show temperatures higher than normal during El Niño and lower than normal during La Niña, even in the global chart.

Images courtesy of Global Hydrology and Climate Center

Replacement of warm water by cold water causes air temperature swings and humidity changes, affecting cloud patterns and winds.

Cloud Patterns



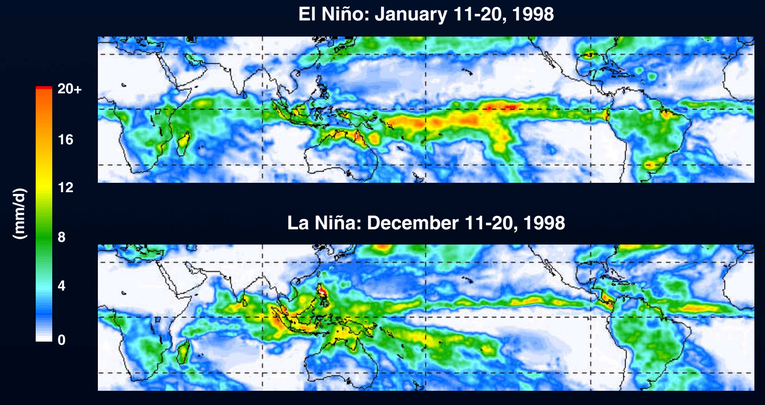


CERES monthly total-sky shortwave flux data display different patterns of high reflectivity (in pink and red) indicating clouds.

Images courtesy of NASA LaRC DAAC

All of these changes steer storms and rainfall to new locations.

Rainfall

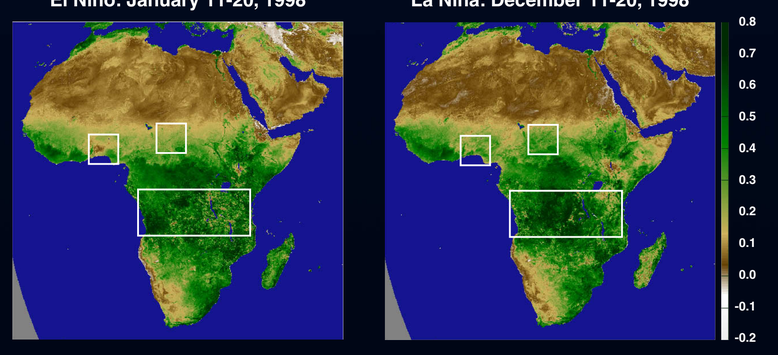


TRMM monthly rainfall data show areas of intense rainfall that moved from east to west.

Images courtesy of NASA GSFC TRMM Project

Shifts in rainfall affect plant growth and areas of drought.

Land Vegetation

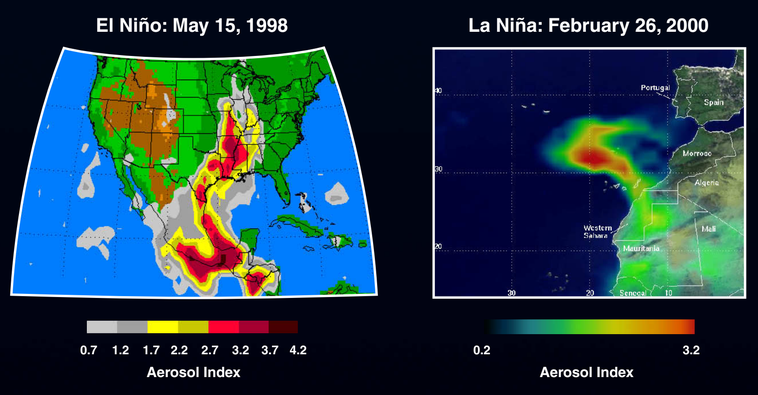


Pathfinder AVHRR NDVI data reveal regional shifts in vegetation cover. Areas are highlighted for comparison.

Images courtesy of NASA GES DAAC

Drought contributes to dust and smoke aerosols in the atmosphere.

Aerosols



TOMS aerosol data indicate smoke from drought-facilitated fires and dust from drought-impacted areas of Africa (right).

Images courtesy of NASA GSFC Scientific Visualization Studio

DAAC Alliance

National Aeronautics and Space Administration