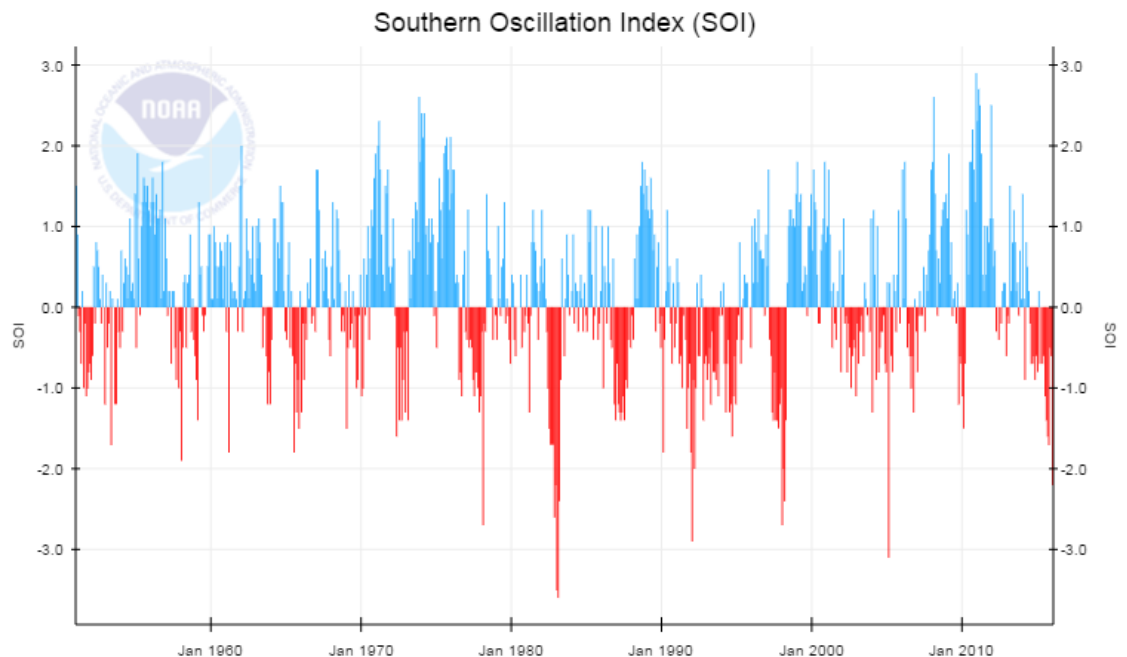


Southern Oscillation Index (SOI)

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The Southern Oscillation Index (SOI) is a standardized index based on the observed sea level pressure differences between Tahiti and Darwin, Australia. The SOI is one measure of the large-scale fluctuations in air pressure occurring between the western and eastern tropical Pacific (i.e., the state of the Southern Oscillation) during **El Niño** and **La Niña** episodes. In general, smoothed time series of the SOI correspond very well with changes in ocean temperatures across the eastern tropical Pacific. The negative phase of the SOI represents below-normal air pressure at Tahiti and above-normal air pressure at Darwin. Prolonged periods of **negative** (**positive**) SOI values coincide with abnormally **warm** (**cold**) ocean waters across the eastern tropical Pacific typical of **El Niño** (**La Niña**) episodes. The [methodology used to calculate SOI is available below](#). More information can be found at the [Climate Prediction Center SOI page](#).

*Place mouse on axis and left-click to **pan**; wheel up/down for **zoom** in/out (or shift key+left-click).*



Source: <http://www.cpc.ncep.noaa.gov/data/indices/soi>

Download: [XML](#)  

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DATE	SOI
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Calculation of SOI

Note the anomalies are departures from the 1951-1980 base period.

$$\text{SOI} = \frac{(\text{Standardized Tahiti} - \text{Standardized Darwin})}{\text{MSD}}$$

where

$$\text{STANDARDIZED TAHITI} = \frac{(\text{Actual Tahiti SLP} - \text{Mean Tahiti SLP})}{\text{Standard Deviation Tahiti}}$$

where

$$\text{Standard Deviation Tahiti} = \sqrt{\sum (\text{actual Tahiti SLP} - \text{mean Tahiti SLP})^2 / N}$$

where

N = number of months

and

$$\text{STANDARDIZED DARWIN} = \frac{(\text{Actual Darwin SLP} - \text{Mean Darwin SLP})}{\text{Standard Deviation Darwin}}$$

where

$$\text{Standard Deviation Darwin} = \sqrt{\sum (\text{actual Darwin SLP} - \text{mean Darwin SLP})^2 / N}$$

where

N = number of months

and

$$\text{MSD} = \text{Monthly Standard Deviation} = \sqrt{\sum (\text{Standardized Tahiti} - \text{Standardized Darwin})^2 / N}$$

where

N = number of summed months



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