

# Signals of future floods

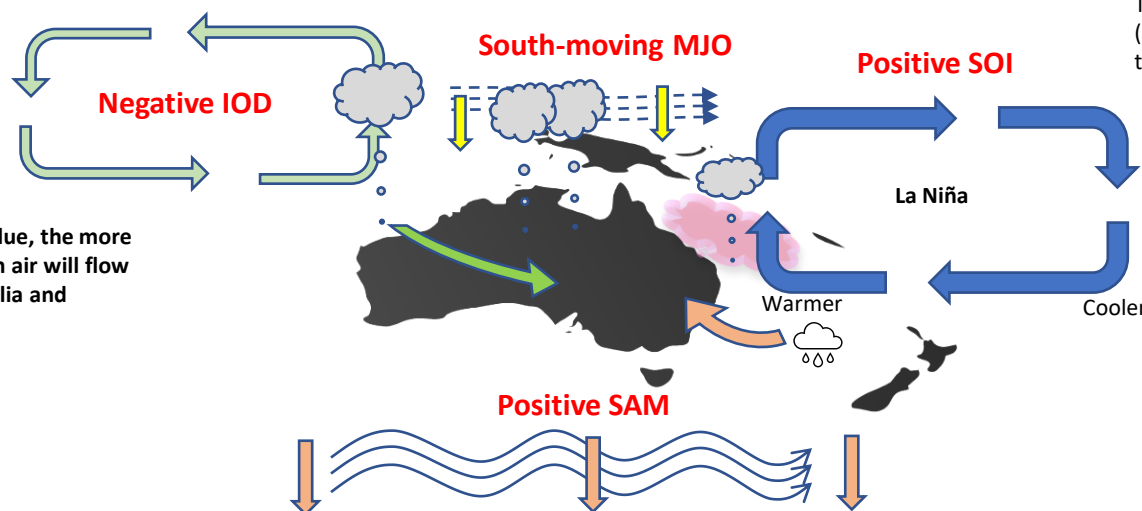
Madden Julian Oscillation is an eastward-moving 'pulse' of cloud and rainfall near the equator that typically recurs every 30 to 60 days.

It strengthens the monsoon trough when it moves south over North Australia. **Cyclones are more likely to develop when the MJO is nearby.**

When the pulse of cloud moves away from Australia further east, It can weaken or disrupt a La Nina event.

The Indian Ocean Dipole (IOD) measures the difference in sea surface temperatures on either side of the tropical Indian Ocean.

The more negative the IOD value, the more likelihood that moisture-laden air will flow towards south-eastern Australia and promote rainfall.



The Southern Annular Mode (SAM) refers to the (non-seasonal) north-south movement of the strong westerly winds that blow almost continuously in the mid- to high-latitudes of the southern hemisphere. **When they move south, in a positive mode in the summer, they disrupt weather patterns and allow easterly winds to take moisture from the oceans to the coast.**

Each positive or negative SAM event tends to last for around one to two weeks, The time frame between positive and negative events is quite random, but typically in the range of a week to a few months.

El Nino Southern Oscillation (ENSO) is measured by the Southern Oscillation Index – SOI.

ENSO involves coordinated, season-long changes to ocean surface temperature and atmospheric circulation.

The Southern Oscillation Index (SOI) tracks the *atmospheric* part of the pattern.

The SOI compares the difference from average air pressure in the western Pacific, measured in Darwin, to the difference from average pressure in the central Pacific, measured at Tahiti.

During a **positive SOI, La Niña**, the pressure is higher than average over the central Pacific near Tahiti, and lower than average over Australia.

It is associated with cooler surface waters in the Pacific, causing **increased clouds and rain in the western Pacific.**

This means above-average winter/spring rainfall for the east and north of Australia.