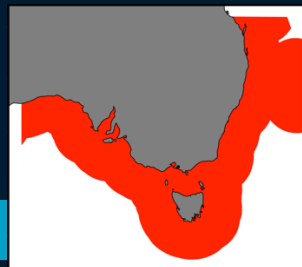




Climate & Ecosystem Status Report

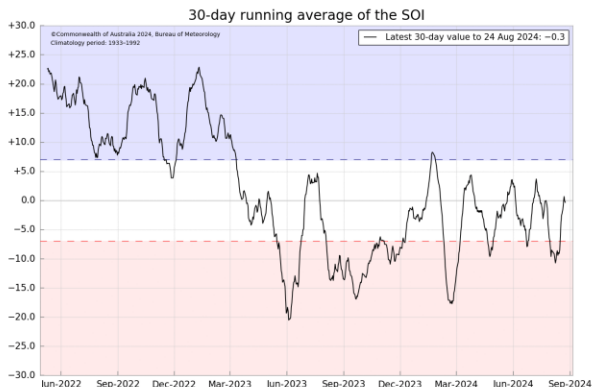
Southern Squid Jig Fishery

September 2024

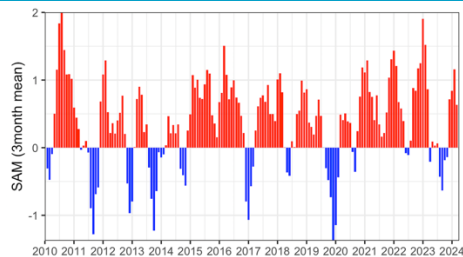


Historical Period

Climate Drivers



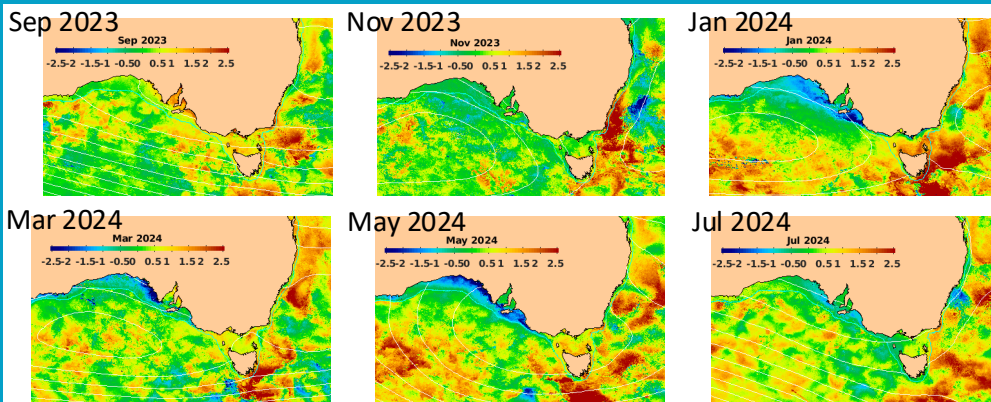
Major climate influences in 2023: switched from La Niña to El Niño; strong positive Indian Ocean Dipole & positive SAM [\(link\)](#)¹.



Southern Annular Mode (SAM) indicates the N-S movement of westerly winds that bring storms to southern Australia. Positive SAM (westerlies contract south) has become more common. Rainfall varies regionally and seasonally within each phase^{1,3} [\(link\)](#).

El Niño can: (1) weaken the Leeuwin Current, leading to a cooler GAB and an increase in nutrients from a shallow thermocline; (2) strengthen the EAC, resulting in warmer waters extending further south.

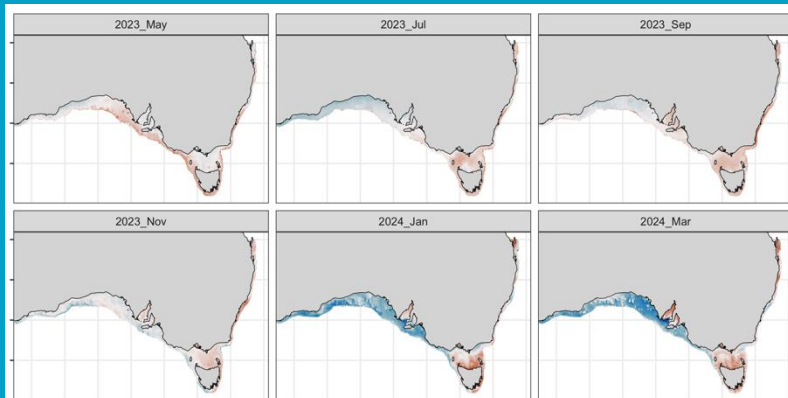
Regional Dynamics: Sea Surface Temperature Anomalies



Monthly SSTA (°C) [\(link\)](#)⁴. Moderate-severe marine heatwaves (MHW) occurred off east-TAS in summer [\(link\)](#)⁵.

Cool water in GAB and strong Bonney upwelling occurred throughout summer. High chl-a coincides with cool waters (not shown).

Regional Dynamics: Shelf bottom temperature anomaly



Monthly bottom temperature anomalies on the shelf (<500 m) (°C)², relative to 1993-2016.

East coast and Bass Strait had anomalously warm temperatures.

Bonney Coast and GAB had very cool temperatures during summer.

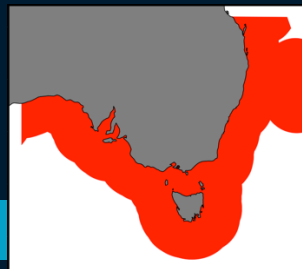
Note: month range differs to above SSTA. Bottom temp is from an ocean model and subject to error.



Climate & Ecosystem Status Report

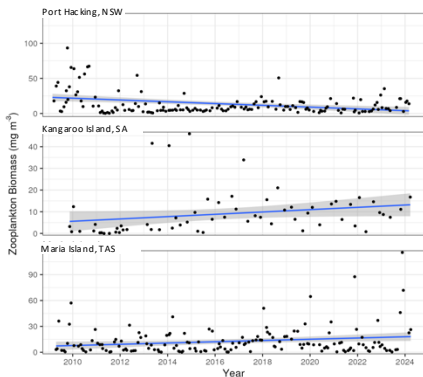
Southern Squid Jig Fishery

September 2024



Historical Period

Ecosystem and Fishery



Zooplankton biomass at National Reference Stations can indicate ecosystem productivity.

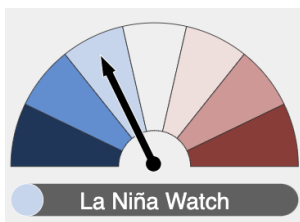
Over time, zooplankton biomass has declined off NSW, but increased off SA and TAS^{4,5} ([link](#)).

Observations

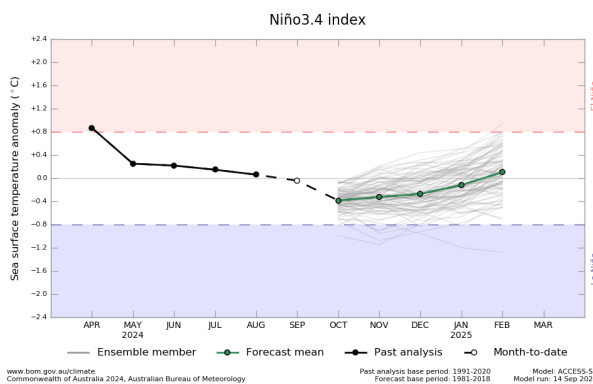
- Fishing effort continues in deeper waters (up to 160 m).
- Squid need to be aggregated to increase catchability.
- Squid were present in Bass Strait but not aggregated.
- Temperature loggers noted thermocline at ~40m off Maria Island.
- Hypothesized potential link between tuna inshore shifts, and squid offshore shifts.

Forecast Outlook

Climate Drivers: ENSO



BOM Outlook is La Niña watch (50% chance of La Niña) ([link](#))¹.

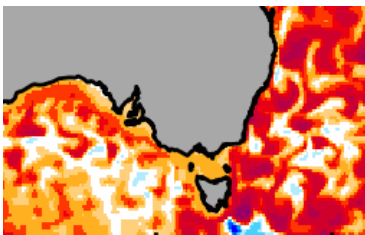


ENSO is currently neutral. Some models forecast neutral conditions until Feb, while others forecast La Niña forming from October ([link](#))¹.

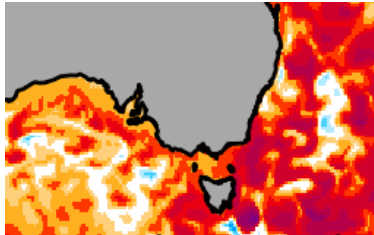
La Niña conditions can strengthen the Leeuwin current, leading to warmer waters in the GAB.

Regional Dynamics

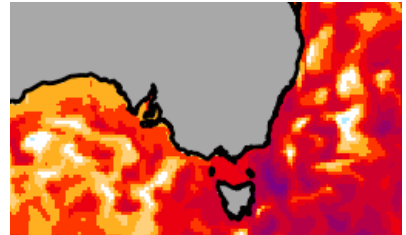
October 2024



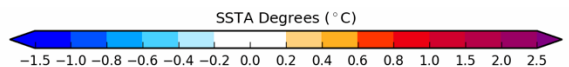
November 2024



December 2024



Forecasts of SST anomalies indicate warmer conditions for most of Australia for the next 3 months. Notably, the south-east is forecast to exceed 1.5°C anomalies, while the GAB is forecast to be 0.5°C warmer than average¹ ([link](#)).



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Model Run: 23/09/2024

Model: ACCESS-S2

Issued: 25/09/24 Base Period: 1981-2018