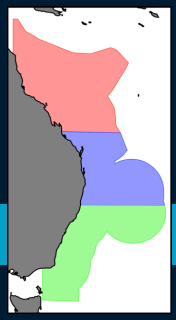
Climate & Ecosystem Status Report

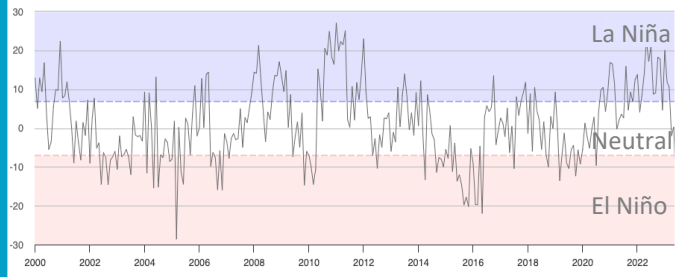
Eastern Tuna and Billfish Fishery

June 2023



Historical Period

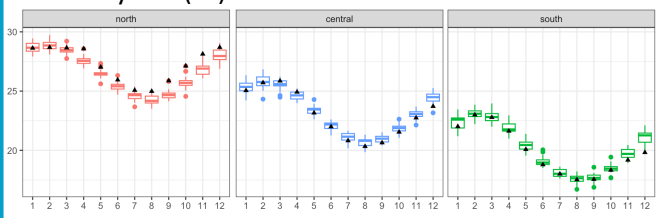
Climate Drivers



Monthly Southern Oscillation Index[1] (link).

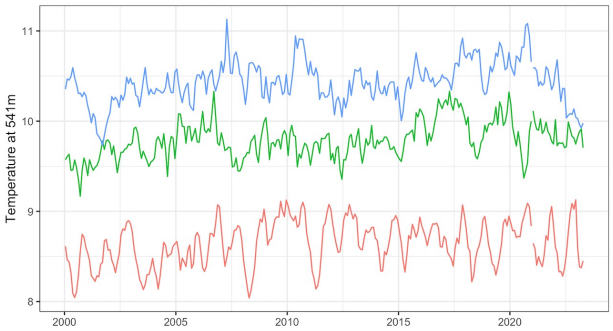
Sea Surface Temperature

Monthly SST (°C) from 2000-2022:



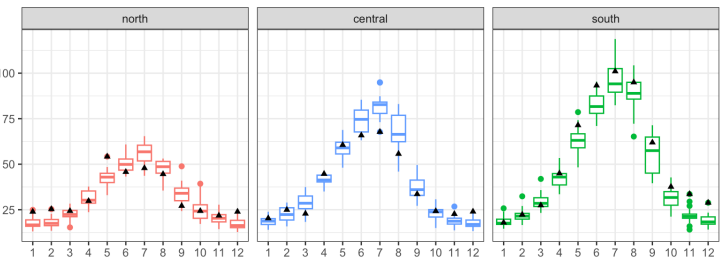
Seasonal SST dynamics for each region, with black triangles show the most recent monthly SST (July 2022-June 2023). SST last year was warmer than average in the North, but cooler than average in Central and South regions. This may support higher recruitment.

Subsurface Temperature



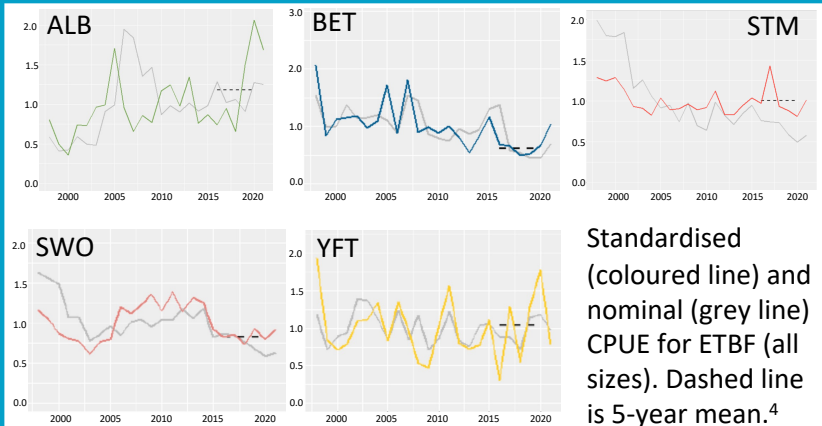
Temperature at 500 m indicates sub-surface ocean structure. All regions have warmed over time, but more so in the Central and South regions[3].

Monthly Mixed Layer Depth (MLD; m) from 2000-2022:



MLD indicates the depth of surface mixing and can impact the distribution of top predators. MLD can be deeper in the South & Central regions but varies seasonally. Black triangles show the most recent monthly MLD (Jun 2022-May2023).

Ecosystem and Fishery



Standardised (coloured line) and nominal (grey line) CPUE for ETBF (all sizes). Dashed line is 5-year mean.[4]

Observations

- Catches higher during El Niño.
- Recreational fishing sector noted a recruitment event is occurring due to juvenile species being caught.
- Bigeye is usually fished at different depths especially before El Niño.
- High sea temperatures during La Niña thought to be good conditions for spawning.

Sources: BOM[1] NOAA[2] CMEMS[3] CSIRO[4] AFMA[5]

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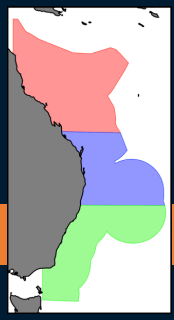
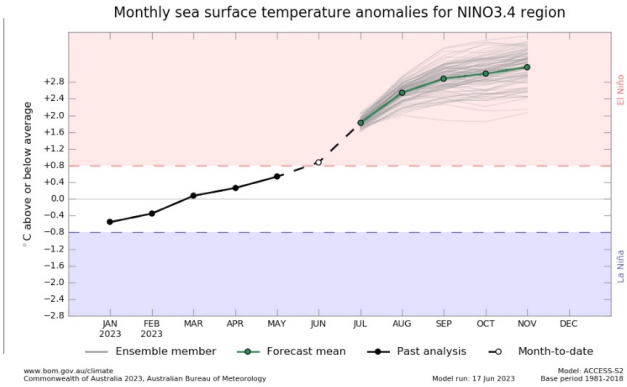


Future Outlook for 2023

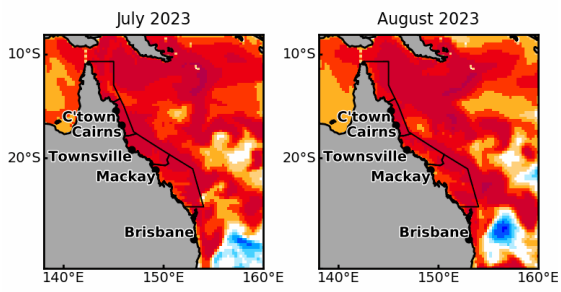
Climate Drivers

Currently transitioning to El Niño[1] (link)

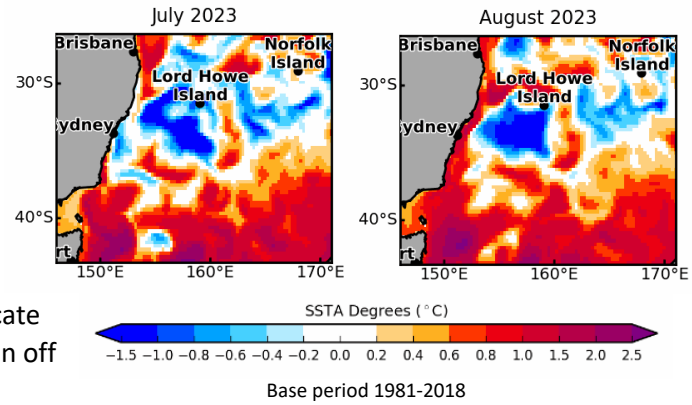


El Niño is predicted[1] (link). These conditions can favour higher catches for YFT, BET, ALB, & STM in the Western Central Pacific[4]

Temperature for the region

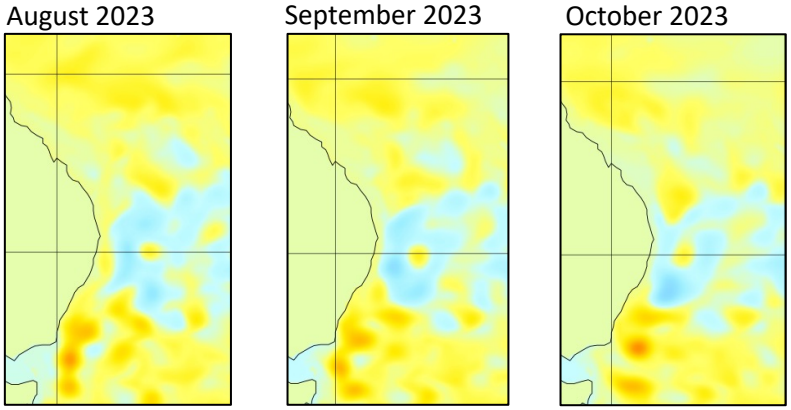


Forecasts of SST anomalies for July and August indicate warmer conditions off QLD and cooler conditions seen off NSW[1] (link).



Base period 1981-2018

Sea Surface Height Forecasts



Forecasts of sea surface height show how regional ocean dynamics may change over the next 3 months[1] (link). Sea surface Height anomalies can indicate eddy activity.

Sources: BOM[1] NOAA[2] CMEMS[3] CSIRO[4] AFMA[5]