

Climate change impacts on Torres Strait fisheries

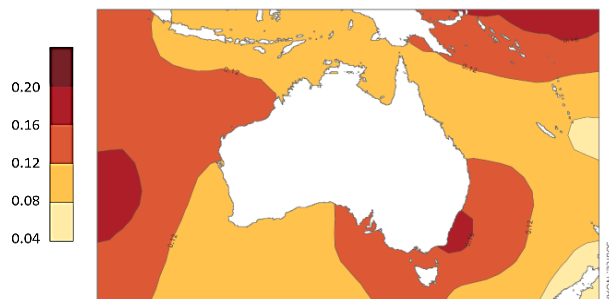


Climate change is already impacting the Torres Strait region with consequences for marine ecosystems and the fisheries they support. The Torres Strait is experiencing rising sea levels, warmer air and sea temperatures, and more acidic waters. Ocean currents are also changing, and extreme weather events are becoming more severe.

Ocean warming

By 2030, annual average sea surface temperatures in the Torres Strait region are expected to be between 0.5 and 1.1°C above the average climate of 1986-2005 (23.4°C).

Marine heatwaves have become more frequent and intense, causing widespread damage to ecosystems and fish communities. Heatwave conditions may occur for more than 300 days a year by 2040.



Trend in SST from 1950–2021 (degrees Celsius per decade). Source: CSIRO

Rising sea levels

The Torres Strait region is currently experiencing sea level increases at a rate of between 6-8mm per year. Models of sea level rise across Northern Australia predict as much as 20cm of further increase through 2030-2040.



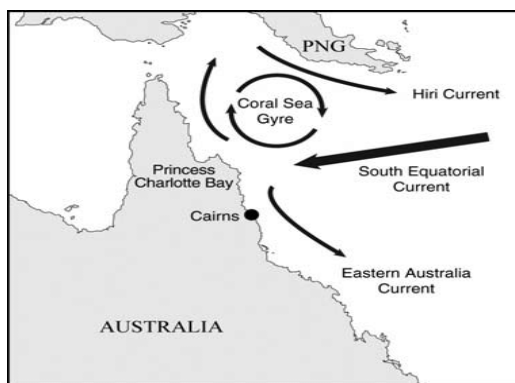
Predicted future sea level rise in Northern Australia through to 2030-2040. Source: FRDC

Ocean currents

Torres Strait fisheries are influenced by the Coral Sea Gyre. Seasonal variability occurs in the northern Coral Sea, strengthening the Northern Coral Sea gyre in winter and causing high eddy variability in summer.

Changing ocean chemistry

Decreasing ocean pH is increasing ocean acidification. Ocean acidification has already increased by 30%, but by 2030-2040, the predicted pH shift is expected to have increased by a further 20-120%. Different species will react differently according to this change.



Ocean current systems in Northern Australia



Australian Government

Australian Fisheries Management Authority

Impacts on Torres Strait fisheries

The changes occurring in Torres Strait waters are likely to be affecting the abundance, distribution, seasonality, and condition of marine species. Because some species are more sensitive to the impacts of climate change than others, these responses vary significantly between species. The Commonwealth Scientific and Industrial Research Organisation (CSIRO) have assessed the sensitivity of Torres Strait fish stocks to climate impacts and undertaken preliminary projections of stock responses through to 2040.

CSIRO projections for key Torres Strait species

Keiyar / Kaiar (Tropical Rock Lobster)

Highly sensitive to climate change. Abundance projected to decline by more than 20-40 per cent by 2040, but increase is also possible depending on changes in the food web and acidification.

Prawns

All species are moderately sensitive. Blue endeavour prawns are projected to experience declines of 20% or more, Brown tiger prawns are expected to experience greater variability due to rainfall influences, and Red spot king prawns are projected to remain steady.

Aber / Pislina (Holothurians)

Moderately sensitive to climate change. Projections of Coral Sea stocks indicate declines are possible, however impacts on Torres Strait stocks are uncertain.

Witi / Mamam Lar (Coral Trout)

Moderately sensitive to climate change. Projections of Coral Sea stocks indicate strong declines in shallow waters are possible, however impacts on Torres Strait stocks are uncertain.

Dabor / Duboi (Spanish Mackerel)

Low sensitivity to climate change. Projections of Coral Sea stocks indicate declines are possible, however impacts on Torres Strait stocks are uncertain.

Understanding local impacts in the Torres Strait

Local impacts on fish stocks in the Torres Strait are still uncertain and further research is required to better understand impacts on abundance, distribution, growth and reproduction of important Torres Strait fish populations. CSIRO, with TSRA support, is looking into this in a new research initiative to [investigate the future impacts of climate change on Torres Strait fisheries](#).

