Climate Report Card

VICTORIA & TASMANIA

JUNE 2025

SEA CHANGE AUSTRALIA

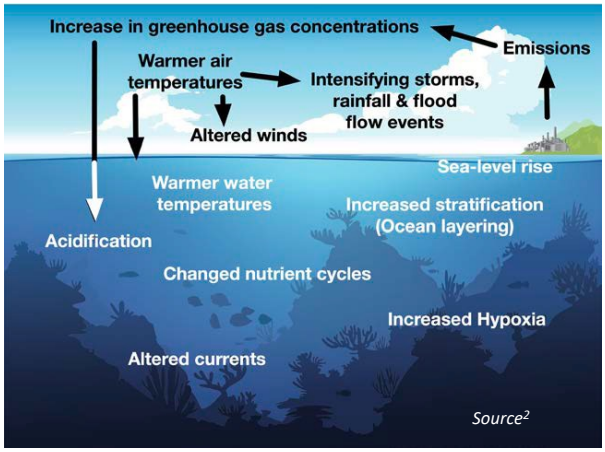
Australia's Changing Climate

What is climate change?

Increases in greenhouse gases lead to changes in the atmosphere and the physical and biogeochemical ocean environment.

Australia's sea surface temperature (SST) has warmed by over 1 °C since 1900[1]. Ongoing ocean warming contributes to longer and more frequent marine heatwaves. As waters warm, they also become more stratified – altering circulation and currents and reducing nutrient availability in surface waters.

Increased atmospheric CO_2 means more CO_2 is absorbed by the ocean, leading to shifts in ocean chemistry and ocean acidification.



What impacts are expected for the seafood sector?

The seafood we eat relies on healthy marine ecosystems. Ecosystem productivity can be impacted through changing nutrient cycles, increasing temperatures, and habitat loss. Shallow coastal and estuarine ecosystems are particularly vulnerable to climate change.

The impact of climate change to the seafood sector will vary by the degree of exposure to physical change and species vulnerability.

Image credit: Nicolas Job

How to use this report

Use **page 2** to find information on SST changes over the past year and forecasts for the next two months in your area.

Use **pages 3-4** to learn about potential future ocean conditions due to climate change. These projections are based on a 'business as usual' scenario and show two global warming levels: 1.5°C (expected around 2015-2034) and 2°C (expected around 2030-2049). The Paris Agreement aims to limit global warming to well below 2°C above pre-industrial levels.

Report your climate observations and go 'Fishing for Climate Answers'!
Check out the Sea Change Australia website to log potential climate related observations in your area and submit your climate questions. Our team connects your questions with climate and fisheries experts who provide clear, practical answers.

LOOK FOR THIS SYMBOL FOR THE KEY MESSAGES

Climate Report Card

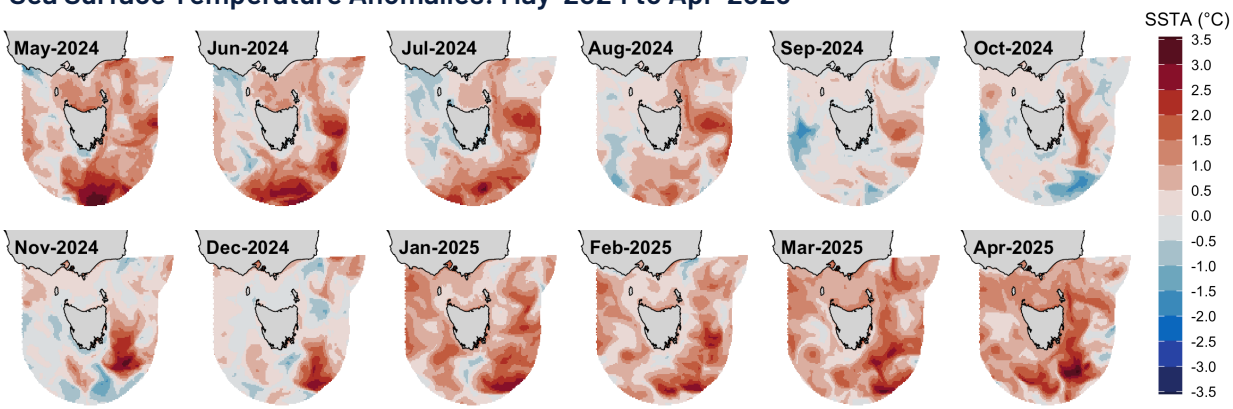
VICTORIA & TASMANIA

JUNE 2025

SEA CHANGE AUSTRALIA

Observed SST anomalies in 2024-25

Sea Surface Temperature Anomalies: May-2024 to Apr-2025



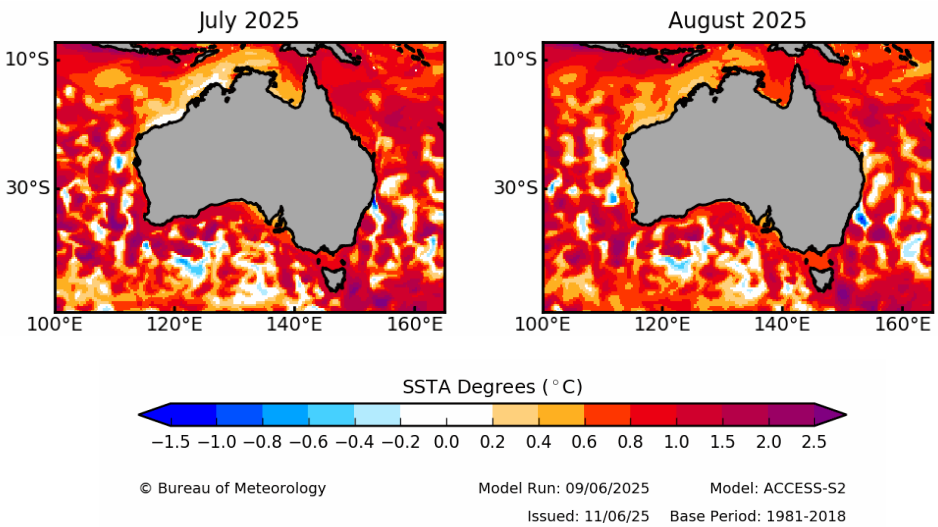
Monthly SST anomalies from May 2024 to April 2025 (base period 1993-2016)[3]. Average and anomalously warm waters have persisted in the Bass Strait and the east coast since May 2024. Marine heatwave conditions were experienced over most of the region from January-April 2025[4].

Similar SST anomaly maps from BOM can be accessed here.

Waters have been anomalously warm in 2024-2025.

Forecast Conditions: Jul-Aug 2025

Australia Sea Surface Temperature Anomaly Outlook



See BOM for seasonal forecast outlooks for SST

Monthly SST anomalies are forecast to remain anomalously warm from July-August 2025[5]. Forecasts are updated regularly and can be accessed here.

Climate Report Card

VICTORIA & TASMANIA

JUNE 2025

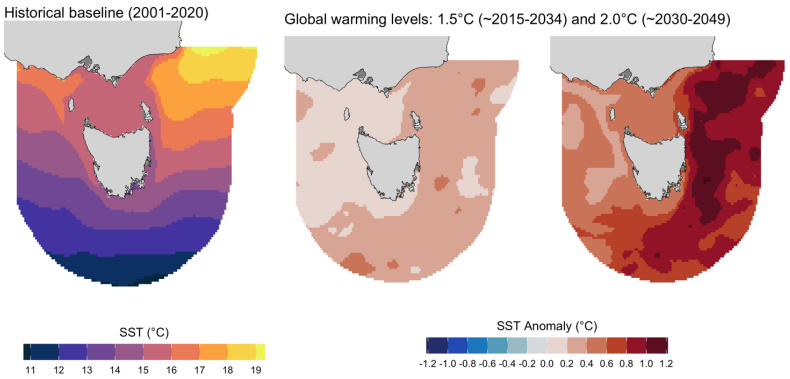
SEA CHANGE AUSTRALIA

Projected Change: Ocean Warming

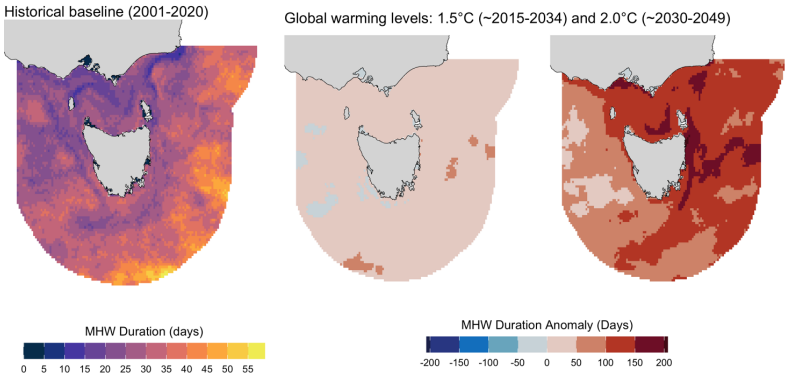
Baseline

Projected

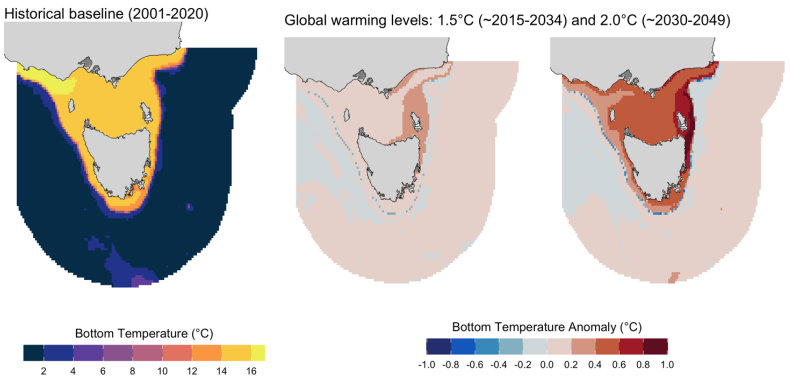
Sea Surface Temperature



Marine Heatwave Duration



Bottom Temperature



Climate projections are from the Ocean Forecasting Australian Model (OFAM), which is a spatially-downscaled ocean model[6]. Projections are based on a 'business as usual' scenario (CMIP5) and show two global warming levels: 1.5°C (expected around 2015-2034) and 2°C (expected around 2030-2049) relative to a historical baseline (2001-2020).

Waters are projected to warm, with longer-lasting marine heatwaves.

SSTs are projected to increase under climate change. The degree of warming is highest in the east.

Marine heatwaves are projected to increase in duration, and this pattern is highest in the east. Under a 2°C global warming level (~2030-2049), this region is projected to experience marine heatwave conditions for much of the year (relative to the baseline).

Bottom temperatures are projected to increase under climate change. The degree of warming is highest in shallow waters on the continental shelf, and particularly the eastern continental shelf.

Climate Report Card

VICTORIA & TASMANIA

JUNE 2025

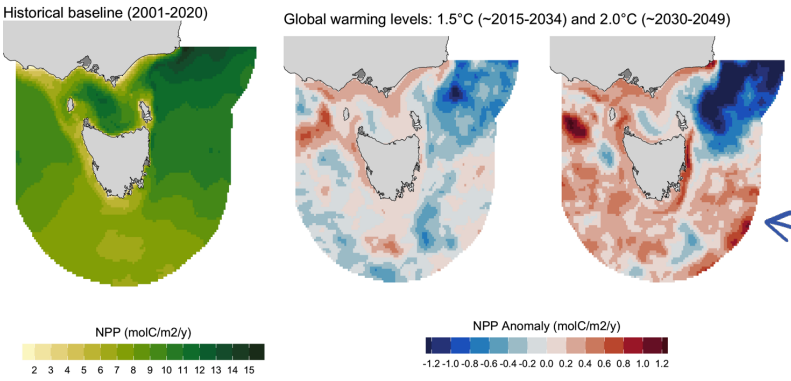
SEA CHANGE AUSTRALIA

Projected Change: Ecosystem Productivity

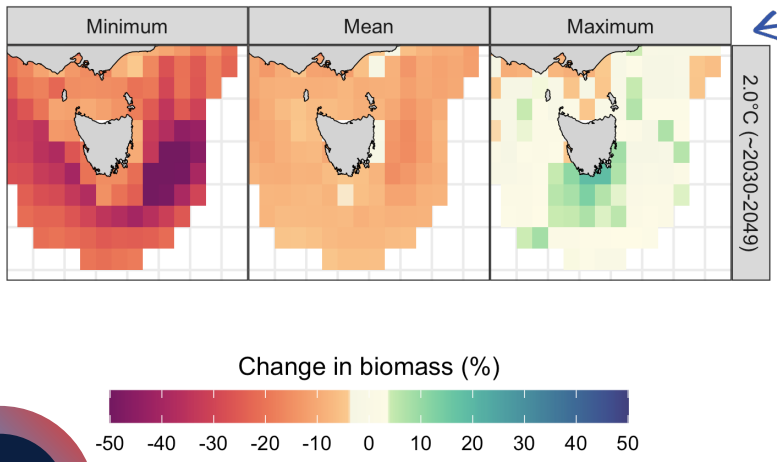
Baseline

Projected

Net Primary Productivity



Exploitable Fish Biomass



Productivity is projected to decline but is uncertain.

Projections of **net primary productivity**, the base of the marine food web, show decreases in the north-east and increases in other areas. Projections are highly uncertain[6].

Ecosystem models project changes in the biomass available to fisheries (animals 10g - 100kg) under a 2.0°C global warming level.

On average, there is a decline in biomass, but this is uncertain. Minimum and maximum biomass estimates show divergent patterns.

Biomass is estimated from 6 ecosystem models projected under CMIP6[7]. Ecosystem models integrate temperature, oxygen, salinity, acidity, nutrients, & primary productivity, among other variables.

Community Reflections and Feedback

We would love to hear from you!

We invite reflections from the community about how the fisheries and aquaculture sectors are experiencing climate change in your region. Your story could be featured in this space.

The Sea Change Australia team listens and adapts to the needs of the sector. We want to make sure these report cards are as useful and relevant as possible—so let us know what you think. Your feedback will help shape future updates throughout the project.

Contact enquiries@seachangeaustralia.org

Produced by CSIRO in partnership with Sea Change Australia.

Sources: [1]BOM State Of the Climate 2024, [2]Fulton et al., 2021, [3]CMEMS, [4]MHW Tracker, [5]BOM, [6]CSIRO, [7]Blanchard and Novaglio 2024

How to cite: https://data.csiro.au/collection/csiro:65817

Sea Change Australia is funded by FRDC.

Regional Partners: IMAS, University of Tasmania; NRE, Tasmania Government; Southern Rock Lobster Ltd.