



WA Government Challenge

Challenge 2: Australian ocean climate information, including seasonal forecasts, is produced and made available by a number of organisations however; a gap exists in the synthesis of this information for key regions and marine ecosystems along the Western Australian coastline.



Aligns with Decade Challenge

Challenge 5: Enhance understanding of the ocean-climate nexus and generate knowledge and solutions to mitigate, adapt and build resilience to the effects of climate change across all geographies and at all scales, and to improve services including predictions for the ocean, climate and weather.

Context

Western Australia has been one of the most severely affected regions in Australia by marine heatwaves (MHW), with an average of 20-25 MHW days per year since 1950, and a projected increase of greater than 300 MHW days per year by 2030. Yet there is no central repository of information about heatwave events over time and at the level of detail needed for people to collectively take action and support systems to recover. The 2011 extreme MHW event had a major effect on the marine ecosystem and fisheries, with some fisheries being closed for 5 years and some stocks still having not recovered after 10 years. This presents a challenging future for fishery and aquaculture sustainability.

If industry, recreational fishers and fisheries managers had access to longer lead-time seasonal forecasts of ocean conditions at a regional / ecosystem scale they would be better equipped to adjust their activities to reduce impacts on areas affected by marine heatwave events. However, this requires a comprehensive picture of MHW data which incorporates predictions, outcomes and impacts at a regional / ecosystem scale. Collectively, this information will enable fisheries managers and industry operators to make informed decisions about adaptation and management strategies, both in advance of, and following MHW events.

The Fisheries team in the Department of Primary Industries and Regional Development (DPIRD) is keen to be involved in a project, with the fisheries and aquaculture industries, key stakeholders and researchers to find a way to produce this valuable information and make it available to end users. This could include activities such as:

- Identifying key areas along the Western Australian coast that represent important fishing grounds, spawning/recruitment areas and ecosystems;
- Synthesising available data to downscale seasonal ocean forecasting information/modelling to the areas identified in point 1;
- Scoping the level of seasonal forecasting information useful for informing fishing operations and fishing seasons;
- Documenting historic MHW event data, including the thermal stress predictions and a retrospective narrative on the outcome (location, timing, duration, intensity etc.) and impacts (marine ecosystem and fishing & aquaculture industries) of the MHW events;
- Recommending the most appropriate and effective means of disseminating the project information to end users;
- Developing case studies to highlight the impact of climate change on fishery and aquaculture operations, and demonstrate how seasonal forecasting information can assist operators to plan and adapt for the future.

Nominating Agency: DPIRD is responsible for the development and protection of Western Australia's agriculture and food sector and aquatic resources, and the building of vibrant regions with strong economies.

End Users: DPIRD, fishery and aquaculture industries, research community.