



**UNSW**  
SYDNEY



## Monitoring and Predicting the marine environment from land, sea, and space

**Accurate, detailed, and timely information on the marine environment is essential for the "Blue Economy". Expertise delivering research quality ocean information to end-users in industry, defence, and government. "End-to-end" approach integrates ocean observations from a range of platforms, numerical models, operational data assimilation and forecasting, machine learning, and data delivery for time-sensitive decision making.**

### Competitive advantage

- Research quality ocean information (from observations and models) for marine industries, defence, and government
- State of the art ocean data collection using autonomous ocean gliders, HF radar, moorings and vessels
- Data science and Big data experts
- Integration of ocean observations and numerical simulations, operational data assimilation and forecasting, machine learning, and data delivery

### Impact

- Detailed information about the marine environment is essential for complex and time-sensitive maritime operations, including for safety at sea, operational efficiencies and social licence

### Successful applications

- The Moana Project ([www.moanaproject.org](http://www.moanaproject.org)) is developing an ocean prediction system to support growth of the seafood sector, and includes working with Indigenous people (Maori- NZ) to support aquaculture growth aspirations
- Partnered with NSW Fisheries to investigate and predict lobster larval transport and settlement in support of fisheries management.
- Partnered with the New Zealand Meteorological Service to develop an ocean weather information system (data assimilating ocean prediction system) for their customers in the offshore and maritime industry sectors, defence, and government
- Lead members of the Australian Surface Water Ocean Topography (AUSWOT) working group, a partnership with the Bureau of Meteorology, the Royal Australian Navy, CSIRO and others with the goal of leveraging the next generation of Earth observing satellites
- Working with Australian Bureau of Meteorology and Surf Life Saving Australia to develop ocean forecast tools for increased beach safety

### Capabilities and facilities

### More Information

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- State-of-the-art ocean modelling (ROMS) and data assimilation (4DVAR) capacity
- Observation impact assessment for strategic use of observing infrastructure
- Expertise in ocean observing systems including deployment, management, and recovery of advanced ocean observing platforms (gliders, HF coastal radar, moorings)
- Data analytics, machine learning, web delivery of ocean data streams from land, sea, and space

## **Our partners**

- Australian Bureau of Meteorology
- Royal Australian Navy
- Oceanographic Field Services PTY LTD
- MetOcean Solutions (NZ)
- NZ Meteorological Service
- NSW Department of Primary Industries (Fisheries)
- Surf Life Saving Australia