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AMOS

Aotearoa Moana Observing System

Newsletter #1

August 2026

Welcome to the very first AMOS newsletter.

When the Moana Project ended in 2024, it left a fully functioning, world leading network of temperature sensors operating on fishing gear all around Aotearoa, delivering vital scientific information about the state of our seas and provide the potential ability to correlate fishing (effort, bycatch, fish health) with observed ocean conditions.

AMOS has since been established as a registered charitable trust, so it can function as a neutral caretaker of the sensor network. The guiding principle of AMOS is to ensure the sensor network is maintained and operated so that it continues to generates high quality ocean data into the future.

The sensor programme is now fully funded for 5 years, to maintain a network of 100 vessels distributed around Aotearoa. Additional vessels can be added through our sponsorship arrangement.

The AMOS board has representatives from science and industry, and is dedicated to ensuring the sensor network continues to deliver freely available quality ocean data for public good.

The network is maintained by Amba, our network coordinator, with technical and logistical support from ZebraTech, and data handling and processing generously provided in-kind by Metservice.

Sensor network status

When the Moana project ended, the sensor network was kept operational but many of the sensors became overdue for servicing.

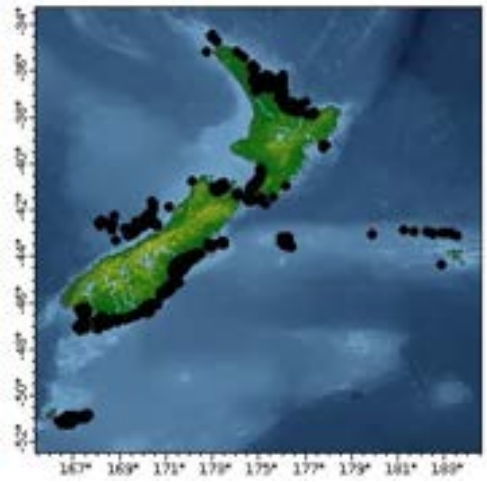
Over the past 6 months we have been busy revitalizing the network. We have been establishing contact with the fishers, recalling, servicing and reallocating the gear.

We now have 88 vessels with freshly serviced equipment. This includes 2 Dredge, 9 Long liners, 4 Netters, 27 Potters, 5 Seiners 36 Trawlers and 5 Tourism/Research operators

Our target is 100 well distributed vessels operating around Aotearoa, so we still have some work to do!

There were a total of 803 sub surface temperature profiles recorded during July as indicated on the map.

These sea temperature temperature profiles are made publicly available by AMOS.



Explore the data

Funding

AMOS is funded for 5 years by the Te Moana Mahana MBIE Endeavour Programme (2025-2030). The programme is using the data to generate tools needed for climate-related decision making. It is looking at the interactions between deep ocean and coastal water temperatures, high resolution weather forecasting, physical and societal changes that are underway.

Te Moana Mahana

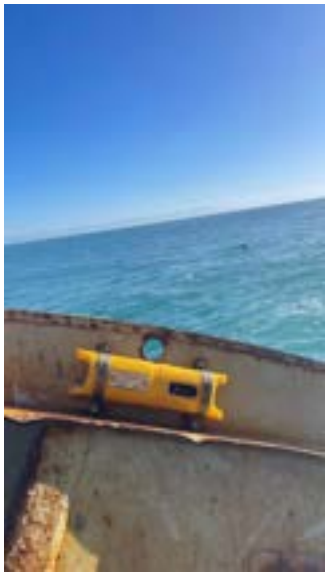
Find out more

AMOS is grateful to have many additional generous sponsors and supporters that are helping us develop and expand the sensor network.

Introducing our network coordinator

For those I haven't met yet, I'm **Amba Blommaart-Klay**, the AMOS Network Coordinator.

You'll often find me on the wharf, visiting vessels, helping fit gear, collecting sensors, solving technical issues, and talking all things fishing and ocean science. My role is to support the skippers and crew who make AMOS possible and ensure the network continues delivering world-class ocean data from New Zealand fishing vessels.



Got New Gear? Let's Get It Fitted!

If you've recently received a new sensor or replacement equipment, please make fitting it a priority.

Everyday your sensor is operating, it is collecting valuable temperature information that helps scientists, vessel managers, and fisheries understand our changing ocean environment, leading to a more resilient and efficient fishery. Whether you're towing, potting, netting, dredging or long lining, your vessel is contributing data that simply can't be collected any other way.

Need help fitting equipment, please do not hesitate to contact me: contact@amos.org.nz

Returning Old Gear

Received a sensor? Please send your old gear back when you can.

We service sensors and Deck Units and then redeploy them to another vessel, helping AMOS stretch its funding further and grow the network.

Need a courier label? Just get in touch with me

Wharf Talk

What's the buzz around your patch?

- Strange water temperatures?
- New species showing up?
- Fish behaving differently?
- Interesting stories from sea?

Fishers are often the first to notice changes in the marine environment. We'd love to feature your observations, photos and stories in future newsletters.

Send them through, I would love to hear your stories

Contact Amba

Why measure the sea temperature?

One could easily get a myriad of different answers to this question: From identifying marine processes to monitoring their change in time; from improving the efficiency of economic activities such as fishing to helping protect marine ecosystems; from supporting operational activities to identifying the role of the ocean in our changing climate. In essence, we want to understand how different ocean systems work and what drives them so we are able to predict their behavior.

In a similar fashion, when questioning what should we observe, different answers come to mind. From the basic physical parameters to chemical and biological quantities. However, when boiling it down, temperature is arguably the most essential variable that impacts different systems, and temperature measurements benefit multiple users.

This realization is evidenced in the history of ocean observations. Inverse ocean thermometers were first introduced in the mid-1800s and provided an early view of the subsurface ocean mass structure. After more than 100 years of mostly sparse observations, the need for stable operational observing systems drove a revolution. Sea Surface Temperature from satellites became the first widespread ocean remote observations in the 1980s. This was shortly followed by the implementation of the Tropical Mooring Arrays that looked below the surface. Moving to the 2000s, the Argo Program expanded our capacity to observe the ocean subsurface to a global scale using drifting profiling floats.

Although there has been a massive improvement in recent decades, the coastal zones down to 1000 m deep where most of the economic activities take place, are still largely under-observed. Regardless of modern instrument and methodology developments, the challenge of having sustained and cost-effective coastal ocean observing systems has persisted. This becomes even more important as funding for Earth observations and science becomes scarcer as environmental changes appear to be increasing.

An idea then came to life: to crowd-source the collection of observations by partnering with the very people already working at sea – in particular, the fishermen. On top of closing this gap in ocean observing, collecting data where and when fishing occurs opens the door to improving forecasts and developing new information products where and when they are needed the most.

As this approach grows worldwide, so does the evidence of its impact on improving forecasts. Early studies in the Adriatic Sea showed the potential, based on just a couple of observations. The first regional operational ocean forecast system using fishing vessel observations came to life in Japan, followed by the East Coast of the US. Anecdotal evidence from fishermen indicated a direct impact of the improved forecasts on their activity. New Zealand then became the first country to have a national observing system based on fishing vessels, feeding its operational forecasts. More recently, studies coming from Europe and the US show potential improvements to weather forecasts driven

by the new ocean observations. Other direct uses of such observations have just started to be explored.

To help the development of future regional and national systems, ensuring the new observations are findable, accessible, interoperable, and reusable – the FAIR data principles – the institutions and scientists working on the pioneering fishing vessel observing systems came together to found the "Fishing Vessel Observing Network" (FVON). This network was recognized in 2025 as an emerging observing system by the Global Ocean Observing System (GOOS).

Nowadays, there is a growing use of artificial intelligence (AI) and machine learning for the processing and interpretation of data in near real time. From avoiding by-catch to improving efficiency and reducing fuel consumption, the new era of information products is data hungry. Moreover, AI models are growing in importance as the main guidance for operational forecasts. While current AI models are trained on traditional reanalyzes that depend on the availability of observations, the first examples of AI-based forecasts directly using observations have just appeared. These highlight the importance of innovative, cost-effective, and collaborative approaches to observing the ocean – for which fishing vessel observing systems are a perfect example.

Joao Marcos Azevedo Correia de Souza

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Physical Sciences Laboratory, National Oceanic and Atmospheric Administration (NOAA).

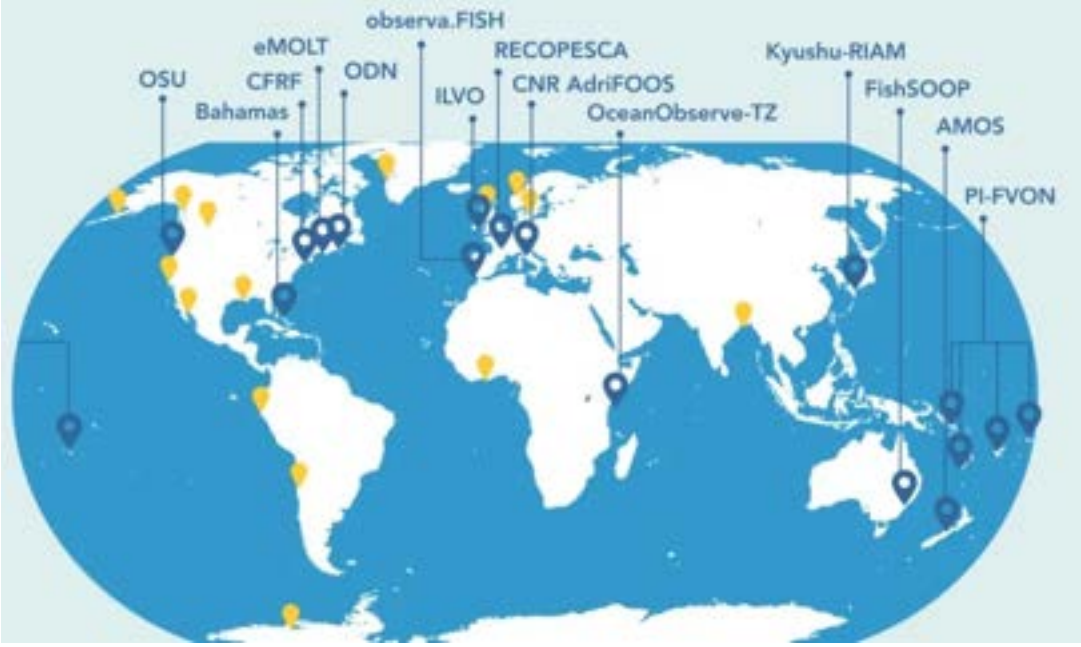
Former Science group leader Moana Project, Metocean, NZ

Fishing Vessel Ocean Observing Network (FVON)

AMOS isn't just a New Zealand programme.

Fishing vessels around the world are now carrying ocean-monitoring sensors similar to those operating on AMOS vessels. Through **Fishing**

Vessel Ocean Observing Network (FVON), fishers from New Zealand are connected with fishing communities across Australia, South Pacific, North America, Europe, Asia and beyond, all helping collect critical ocean data.



Visit FVON

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