

20

CELEBRATING 20 YEARS
OF SUSTAINED MARINE OBSERVING

IMOS
Integrated **Marine**
Observing System

2025–2026 HIGHLIGHTS

Enabling research that delivers benefits across Australian society, its environment, and its economy.

NCRIS
National Research Infrastructure for Australia
An Australian Government Initiative

Image: David Hughes, CSIRO

Director's Overview

IMOS was established in 2006 with 10 partner organisations, 10 Facilities and an NCRIS budget of $7 million. On our 20th anniversary IMOS comprises 7 principle and 4 associate participants, over 50 Facilities and an annual NCRIS budget of $34 million. Over the course of 20 years IMOS has collected over 1.5 billion ocean measurements which have been used to produce over 5,000 publications and support hundreds of postgraduate students. With over 15,700 identified users from 108 countries, IMOS is a truly impactful international program.



As IMOS continues to grow and evolve we continue to support and expand our role in the global community through our role as a Regional Alliance of the Global Ocean Observing System, supporting UN Decade of Ocean Science for Sustainable Development programmes and activities, contributing data to support global weather forecasting and climate prediction, delivering data to inform the SDGs and essential ocean variables, and more. As we continue to enhance our connections within and beyond the region IMOS has a lot to offer to the international community.

We also continue to push into new areas as we explore and develop Indigenous Partnerships in ocean observing. Integration of Traditional Ecological Knowledge and western science has the potential to provide a more holistic view of the health and sustainability of our marine estate at this critical point in time.

Leadership of the NCRIS CoastRI initiative also sees IMOS poised to help ensure Australia has the data it needs to understand, plan for and mitigate coastal change. As a coastal nation, these data could not be more critical to informing our future. The relevance of IMOS and national need for ocean data is undeniable.

Keeping an observing or monitoring program running for 20 years is an amazing achievement. We are continually thankful for the support of our partners and the National Collaborative Research Infrastructure Strategy who ensure we have IMOS as a national resource. The success of IMOS is grounded in the dedicated commitment of IMOS partners, collaborators, and community members and the passion of Australia's marine science community. Thank you for your continued contributions, effort and energy – your commitment and efforts underpin the impact and success of IMOS.

As you read through this highlights document I hope you have the opportunity to see how far IMOS has come, how much the program has grown, and how much more we can do in the future.

Michelle Heupel
IMOS Executive Director

IMOS
Integrated **Marine Observing** System



IMOS acknowledges the Traditional Custodians and Elders of the land and sea on which we work and observe, and recognise them as Australia's first marine scientists and carers of sea Country. We pay our respects to Aboriginal and Torres Strait Islander peoples past and present.

2006
The Australian Government establishes the National Collaborative Research Infrastructure Strategy (NCRIS).

The first NCRIS Roadmap identifies an Integrated Marine Observing System (IMOS) as one of 16 national priorities.

2007
IMOS is awarded $50 million over five years (NCRIS), operated as a consortium of institutions led by the University of Tasmania.

Dr Gary Meyers appointed as IMOS Director.

2009
IMOS receives $52 million from the Education Investment Fund to sustain and expand its scope to 2013.

Tim Moltmann appointed as IMOS Director.

IMOS Ocean Portal launched.

2011
IMOS OceanCurrent launched to offer synoptic visualisations of ocean conditions using IMOS data.

2013
IMOS receives 7.2 million from the Collaborative Infrastructure Scheme, plus renewed NCRIS funding of $18.3 million to 2015.

2014
IMOS recognised as a GOOS Regional Alliance

2015
IMOS receives $57.7 million and $5.3 million in Agility funding (NCRIS) to 2019.

2016
IMOS becomes an Unincorporated Joint Venture.

IMOS eMII Facility evolves into the Australian Ocean Data Network (AODN).

2018
IMOS receives $70.4 million NCRIS funding to 2023, plus $16.4 million in RIIS Opex and $12.8 million in RIIS Capex.

2019
Dr Michelle Heupel appointed as IMOS Director.

IMOS receives $70.4 million (NCRIS) plus $16.4 million in Opex and $12.8 million in Capex from the Research Infrastructure Investment Plan (RIIP) to 2023.

IMOS launches the State and Trends of Australia's Ocean report.

2022
IMOS Biological Ocean Observer launched, offering summarised biological indicators and insights.

2023
1 billion IMOS measurements delivered.

IMOS receives $95 million to 2028 (NCRIS), plus $26.2 million for continued observations and $37 million for step-change observing, data uplift and CoastRI phase 1 (RIIP).

2024
IMOS AODN accredited as a National Oceanographic Data Centre by the UNESCO International Oceanographic Data and Information Exchange Programme.

2026
IMOS celebrates 20 years of sustained ocean observing.

New AODN portal launched.

IMOS Live data application launched for near real-time data visualisation.

CoastRI receives $59.5M and IMOS $6.4M of NCRIS investment.

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Global leadership in ocean observing and stewardship

Oceans and oceanographic processes extend across international boundaries, and Australia benefits from understanding conditions beyond its borders.

Internationally IMOS plays a key role in the Global Ocean Observing System, as one of the 13 GOOS Regional Alliances. IMOS collaborates with other regional alliances, particularly in the Indo-Pacific, to better understand global and regional conditions.

IMOS provides leadership in GOOS through contributions to governance, impact tracking and contributing to ten GOOS observing networks including:

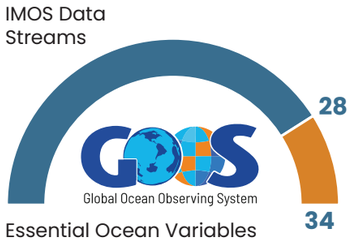
- Argo
- OceanSITES
- Animal-Borne Ocean Sensors
- Ships of Opportunity
- Global Ocean Ship-Based Hydrographic Investigations Programme (GO-SHIP)
- OceanGliders
- Data Buoy Cooperation (DBCP)
- Voluntary Observing Ships (VOS)
- Fishing Vessel Observing Network (Emerging network)
- Surface CO_2 Observing Network (Emerging network)

Sustainable Development Goals

IMOS data are valuable in underpinning numerous benefits to society, including nine of the United Nations' Sustainable Development Goals (SDGs). 2430 publications using IMOS data significantly contribute to this subset of the SDGs: 7 Affordable and Clean Energy, 13 Climate Action, 14 Life Below Water and 15 Life on Land.

GOOS Essential Ocean Variables

Understanding and predicting ocean change is critical for climate change, food security and extreme events. This is only possible with sustained collection of key ocean observations. GOOS coordinates international efforts to measure Essential Ocean Variables (EOVs) which span physics, biogeochemistry, biology and ecosystem realms. 66 IMOS data streams are delivered to address 28 of the 34 EOVs.



IMOS is a key partner and leading infrastructure in the global ocean observing system. IMOS's leadership in innovation in observing systems, data management and developing value from the observing system means that it is a key reference for GOOS and contributes greatly to global ocean observing.

Dr Emma Heslop | Former Programme Specialist
Intergovernmental Oceanographic Commission (IOC) / UNESCO

The IMOS Australian Ocean Data Network is a global leader in data delivery

The UNESCO International Oceanographic Data and Information Exchange (IODE) programme of the Intergovernmental Oceanographic Commission (IOC) maintains a global network of National Oceanographic Data Centres (NODC) responsible for the collection, quality control, archive, and online publication of millions of ocean and marine observations. The AODN received accreditation as an NODC in 2024, recognising the team for providing access and stewardship for a national resource of oceanographic data.

IMOS is also the first NCRIS program to be approved as a Trustworthy Data Repository through CoreTrustSeal Certification. Reinforcing the quality and integrity of IMOS data systems and management.

In 2025 the AODN successfully deployed Australia's first World Meteorological Organization (WMO) Information System version 2.0 (WIS 2.0) node, marking a major step in connecting Australia's marine observing systems to the WMO's global data exchange framework.

A new partnership with Mercator Ocean International, established in 2025, will help AODN drive innovation in ocean forecasting through co-developed digital tools, joint infrastructure studies, and integration of socio-economic and traditional knowledge. Collaboration and shared insights will expand the impact of ocean services nationally and globally.

From its early days, IMOS was on the international radar as 'one to watch' and rapidly evolved to a world-class model of how a sustained ocean observing program should be designed and operated. Where other groups struggle, IMOS has overcome the existential questions of what is and what is not 'observing' and just gets on with it, providing clear information about the observing system and access to data and information products.

IMOS is also recognised as a world leader in demonstrating how to monitor and communicate on the impacts of ocean observations - an essential task for sustaining any observing system - providing user uptake statistics by sector and by societal benefit area as well as tracking data streams and their contributions to the global ocean and global climate observing systems.

Celebrating its 20th anniversary, IMOS is now the 'one to follow' and we are proud to expand our collaborations to align our systems for mutual benefit.

Dr Maria Hood | Mercator Ocean International/
EU Copernicus Marine Service

IMOS HIGHLIGHTS **2025–2026**

IMOS data informs the National Climate Risk Assessment

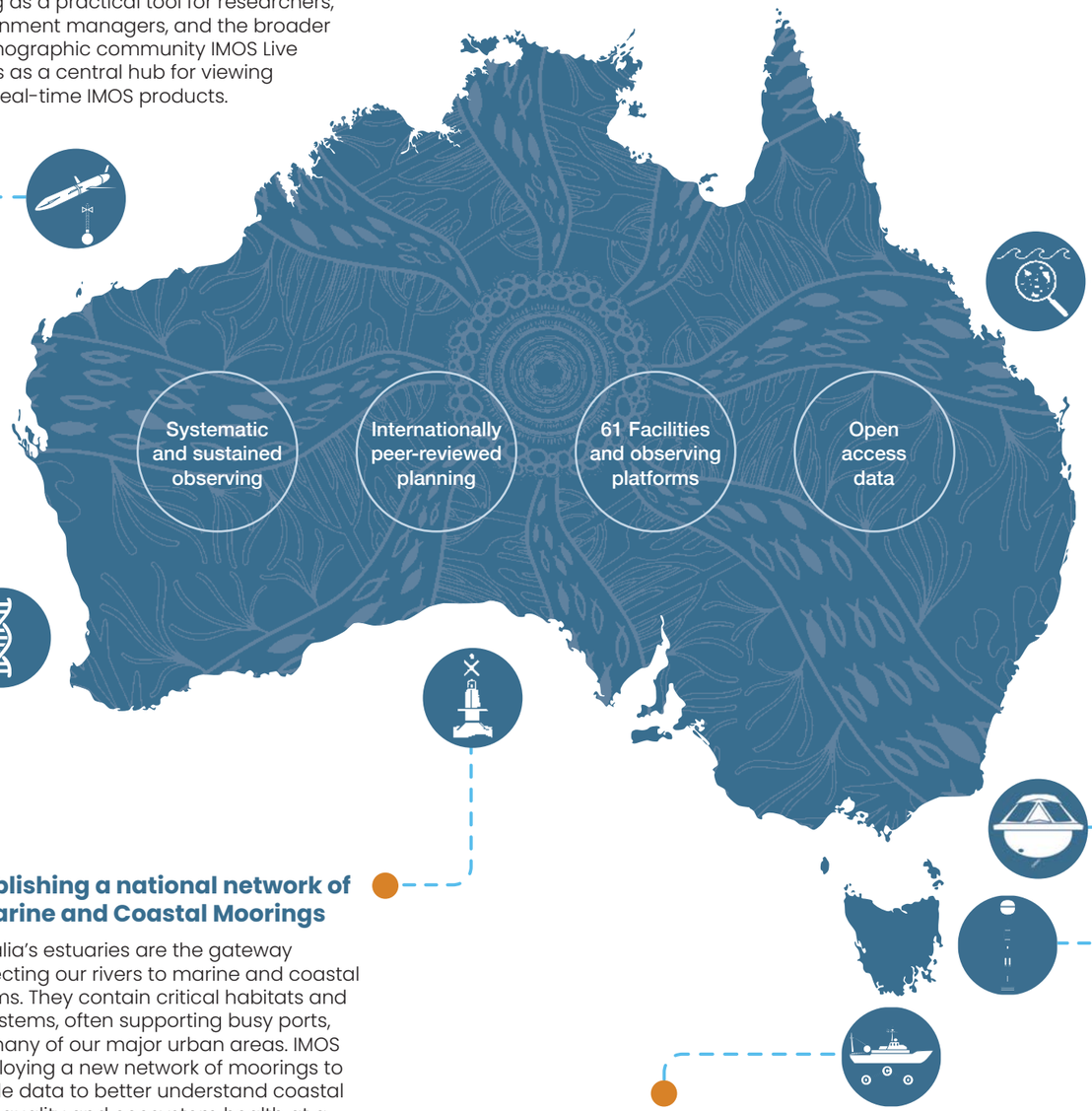
The Australian Government delivered Australia's first National Climate Risk Assessment (the National Assessment) in 2025. The National Assessment identified to what degree Australia's people, infrastructure, the economy, and landscapes are exposed and vulnerable to climate change now and for the rest of the century. The Assessment and three of the supporting technical reports cited 46 publications based on IMOS data.

IMOS Live: providing streamlined access to Australia's marine data

IMOS has released a new web-based platform to provide streamlined access to Australia's marine data: IMOS Live. Acting as a practical tool for researchers, government managers, and the broader oceanographic community IMOS Live serves as a central hub for viewing near real-time IMOS products.

Extending our monitoring of extreme marine events

IMOS is increasing efforts to track extreme marine events as they unfold. With ocean gliders collecting high-resolution data and a national steering committee guiding priorities, near real-time insights into events like marine heatwaves, floods and storms can be delivered. This knowledge helps protect ecosystems, industries and communities as our oceans change.



New season of turtle tracking in Northern Australia

IMOS worked alongside Crocodile Islands Rangers to satellite-tag 26 olive ridley turtles to collect valuable oceanographic measurements and provide vital information about their behaviour and habitat use. The project combined Indigenous knowledge with western science, supporting sea Country stewardship, improved ocean monitoring, cyclone forecasting, and marine conservation.

Microplastics monitoring reveals highest level of contamination

In 2025 IMOS sampling revealed national microplastic contamination reached its highest level since monitoring began in 2021, with a national average of 0.38 MPs m^{-3} (microplastic abundance per cubic metre of water). All sites along the north and east coasts fell within the highest contamination range, while only two sites in South Australia reported low levels of contamination.

New environmental DNA sub-Facility

A new IMOS Environmental DNA (eDNA) sub-Facility is enhancing Australia's capacity to monitor marine biodiversity from coastal waters to the sub-Antarctic. Building on the Marine Microbiome Initiative, it extends monitoring from microbes to larger marine life using samples from IMOS National Reference Stations and the Southern Ocean Time Series mooring.

Making marine environmental data more assessment-ready

IMOS is improving access to Australia's marine environmental data by developing new "assessment-ready" products to make existing datasets easier to use for environmental reporting (such as State of the Environment reporting), planning and decision-making.

The project, supported by the NESP Marine and Coastal Hub, harmonises and integrates quality-controlled data from multiple sources, creating six priority publicly available datasets, including seagrass, seabirds, kelp, reefs, dugongs and vessel tracking, to better support marine management and policy.

Establishing a national network of Estuarine and Coastal Moorings

Australia's estuaries are the gateway connecting our rivers to marine and coastal systems. They contain critical habitats and ecosystems, often supporting busy ports, and many of our major urban areas. IMOS is deploying a new network of moorings to provide data to better understand coastal water quality and ecosystem health at a national scale. These moorings are a key investment of the NCRIS Coastal Research Infrastructure (CoastRI) initiative.

Lost buoy completes extraordinary voyage

An IMOS coastal wave buoy deployed off Wilsons Promontory broke free during a storm in late 2024 and drifted more than 3,000 km across the Tasman Sea. After travelling via the East Australian Current and losing communication, it resurfaced on Stewart Island, New Zealand, in 2025. Recovered by a local fisher, the buoy inspired a unique educational collaboration between scientists and schoolchildren, highlighting ocean connectivity and the value of Australia's observing system.

Near Real-Time added to National Reference Stations

National Reference Stations provide baseline information to understand how large-scale, long-term climate change and variability is affecting Australian coastal seas. Each station continuously monitors physical ocean conditions, combined with regular vessel-based biogeochemical sampling.

Some stations are being upgraded to deliver near real-time data, ensuring timely access to information about developing events such as marine heatwaves, harmful algal blooms, or low-oxygen conditions.

CO_2 monitoring carbon uptake

A system measuring the partial pressure of carbon dioxide (pCO_2) in surface seawater was deployed on RSV *Nuyina* in late 2025. Data collected will provide valuable insights into how much atmospheric CO_2 is absorbed by the ocean each year, contributing to understanding changes in ocean acidification and improving global climate models.

Impact in action

Harmful Algal Bloom crisis response

A significant Harmful Algal Bloom (HAB) was identified in South Australian waters in March 2025, causing mass fish kills, ecosystem damage and millions in losses to marine industries, especially fishing, aquaculture and tourism.

SARDI used multiple IMOS data streams to identify and predict changes in HAB conditions and location while historical microbial samples were instrumental in understanding presence of the toxic algae in the region prior to the bloom event.

IMOS data were crucial to understanding the South Australian HAB event and will assist with forecasting similar extreme events and their impacts on marine ecosystems in the future.



Image: Yvo Werner, Deakin University

Data Summary

1.5 B Measurements

88 TB Data

110 M Files

154 Dataset collections

15,000 Metadata records

Imagery

3 M Satellite images

10.2 M Radar images

6.3 M Annotated benthic images

Fixed platform deployments

830 Coastal wave buoys

3,600 Deep water & shelf moorings

Animals & ecosystems

282 Plankton surveys

500 Bioacoustics transects

36,000 Reef Monitoring surveys

211.7 M Animal detections

Vessel Campaigns

1,440 Voyages across research & industry vessel

325 Contributing industry vessels

Ocean Profiles

232,000 Australian region Argo Floats

135,000 Expendable Bathythermographs

440,000 Animal borne

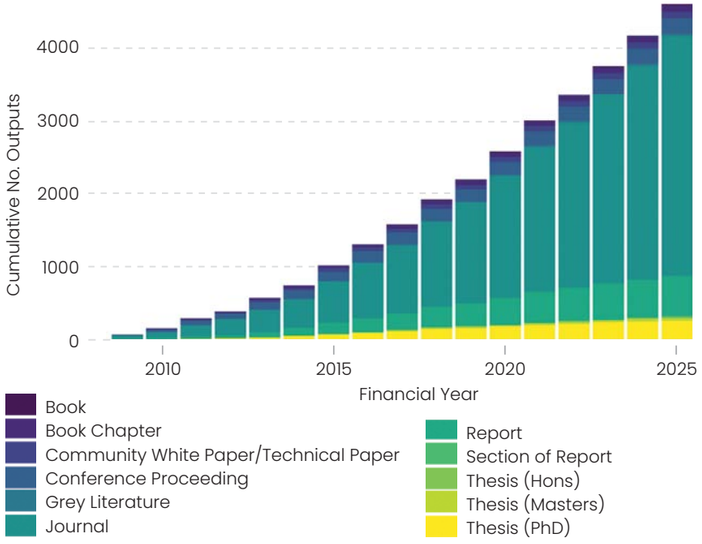
54,000 FishSOOP

456 Ocean Glider deployments

IMOS Contributions

In 2026, IMOS marks 20 years of delivering sustained, national-scale observations of Australia's coastal and open oceans. Over two decades, IMOS has built a coordinated network of Facilities providing open, high-quality marine and climate data that support First Nations communities, research, government and industry in addressing complex environmental, economic and social challenges. IMOS data is taken up and used thousands of times, creating impact and benefits at local, national and global scales.

IMOS helps drive and support world-class scientific discovery with over 15,700 people from 108 countries producing over 5000 publications.



Financial Summary

A summary of the IMOS finance for the 2025-26 financial year:

FINANCIAL OVERVIEW	2025–26	2024–25
Capital	5,813,494	6,607,896
Personnel	19,856,866	17,545,913
Other	8,269,979	8,410,414
Expenditure relating to NCRIS Funds	**33,940,339**	**32,564,223**
Cash Co-investments	4,023,900	3,363,839
In-Kind Co-investments	52,490,852	50,152,365
Total - Resources utilised	**90,455,091**	**86,080,428**
Full-time equivalent staff numbers	**FTE 2025–26**	**FTE 2024–25**
NCRIS Funded	123.38	117.98
Co-investment funded	37.25	31.07
Total FTE Staff	160.63	149.05

The core uptake and use of IMOS data is measured through numbers of journal articles, reports, theses, research projects, postgraduate student projects, products, conference presentations, training and education activities. Over the course of 20 years of IMOS has made significant contributions to marine science.

Scientific

5011 publications including 3605 journal articles

Technology & Innovation

249 products including:
- IMOS OceanCurrent
- IMOS Live
- Biological Ocean observer

Education & Training

- 333 postgraduate theses
- 45 current postgraduate students

Societal benefit

- Data that informs policy, decision making, maritime safety and more
- 591 policy or policy related documents

19
Nature publications

16
Science publications

2974
publications with international authors

8
average number of publication authors

485
maximum number of publication authors

20
All of the top 20 Australian universities have published with IMOS data

36
Australian universities have published with IMOS data

90%
of the top 20 world universities have published with IMOS data

162
Australian government agencies have used IMOS data

377
International government agencies have used IMOS data

Image; Antonia Cooper, University of Tasmania

NCRIS
National Research Infrastructure for Australia
An Australian Government Initiative

Australia's Integrated Marine Observing System (IMOS) is enabled by the National Collaborative Research Infrastructure Strategy (NCRIS). It is operated by a consortium of institutions as an unincorporated joint venture, with the University of Tasmania as Lead Agent.
www.imos.org.au

PRINCIPAL PARTICIPANTS

University of Tasmania (Lead Agent)
Australian Government
Australian Institute of Marine Science
Australian Government Bureau of Meteorology
CSIRO
Government of South Australia
SARDI South Australian Research and Development Institute
The University of Western Australia
sims sydney institute of marine science
UTS
The University of Sydney
Macquarie University
UNSW Sydney

SIMS is a partnership involving four universities.

ASSOCIATE PARTICIPANTS

Curtin University
Australian Government Department of Climate Change, Energy, the Environment and Water Australian Antarctic Division
Australian Antarctic Program
Deakin University
The University of Melbourne

IMOS thanks the many other organisations who partner with us, providing co-investment, funding and operational support, including investment from the Tasmanian and Western Australian State Governments.

IMOS acknowledges the Traditional Custodians and Elders of the land and sea on which we work and observe, and recognise them as Australia's first marine scientists and carers of sea Country. We pay our respects to Aboriginal and Torres Strait Islander peoples past and present.

"Around the Campfire" Designer: Tarquin Singleton, Yirrganydji. ingeous Studios.

PARTNERS

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