

IMOS Bulletin

Issue #77 June 2018

Welcome to the IMOS Bulletin. Please feel free to distribute this email bulletin to others. The Bulletin is also available for download from the website at <http://imos.org.au/news/news-publications/bulletin/>.

If you have any comments or questions regarding the IMOS Bulletin please contact IMOS Communications, communication@imos.org.au.

From the IMOS Office and AODN

Below is a brief roundup of activity and engagement done through the IMOS Office and AODN over the last month.

- As reported in the last Bulletin, the 8 May Federal Budget included significant new funding for IMOS. Our planning activities have been dominated by this announcement over the last month.
- AODN staff presented "The Marine Data enhanced Virtual Laboratory" at the ANDS Techtalk, 1 June 2018.
- AODN Director presented "Progress in the Marine Research Data Cloud and the Marine Data enhanced Virtual Laboratory" as the first seminar of the ANDS-Nectar-RDS lunchtime series, 4 June 2018.
- AODN Software Engineer presented "Tasmanian Voice of the Customer - Cloudification" at the AWS Summit Sydney - Highlights Tasmania on 13 June 2018
- IMOS Assistant Director attended the Developing Northern Australia Conference in Alice Springs on 18-19 June to engage with marine science users and initiatives related to the Office of Northern Australia. Information about the conference can be found [here](#). The conference included a Business Leaders breakfast hosted by the NESP Earth Systems and Climate Change, Northern Australia Environmental Resources, and Threatened Species Recovery Hubs.
- Environmental Genomics Team seminar and workshop, Hobart 19-20 June.
- AODN Director attended the RimRep steering committee meeting 20-22 June 2018.
- Mooring Steering Committee meeting on 21 June.
- AODN Information Systems Architect attended an Amazon hosted session in Hobart on Security improvements and a workshop on machine learning 21 June.
- On 22 June IMOS Assistant Director met with Jo Evans, Deputy Secretary of the Department of Environment and Energy, to discuss IMOS involvement in decadal forecasting and other climate-related science.
- FOO Surface Waves and Data Sharing Working Group meetings.
- FOO Steering Committee meeting on 26 June.
- IMOS Assistant Director attended the NESP Earth Systems and Climate Change Steering Committee meeting in Canberra 28 June.
- AODN staff met with staff from Griffith University to discuss future collaboration between the two Virtual laboratories: MARVL (Marine Virtual Laboratory) and BCCVL (Biodiversity and Climate Change Virtual Laboratory).

The latest news from the Australian Ocean Data Network (AODN)

Delayed mode wind and wave data now available for the IMOS WERA sites of Ocean Radar

IMOS Phased Array WERA HF ocean radar systems are presently operating at several locations across Australia: in the South Australian Gulf - South Australia (Cape Spencer and Cape Wiles), in the Rottne Shelf - Western Australia (Fremantle and Guilderton) and in Coffs Harbour - New South Wales (Red Rock and North Nambucca). A fourth site was in operation in Queensland until April 2017, Capricorn Bunker Group (Tannum Sands and Lady Elliot Island), when it was decommissioned to be relocated to the northwest shelf region of Western Australia.

Coastal ocean surface radar is a land-based technique, which uses scattering from the rough sea surface to obtain echoes, which are Doppler shifted by the dynamics of the sea. Sea echo data contains information on ocean surface currents, wind direction and sea-state parameters such as significant wave height, wave direction and wave period. While surface currents are generally the data of most interest, and which are easy to retrieve for both direction-finding and phased-array systems, the latter can provide sea-state and wind direction maps at each grid point and a calculation of the full directional wave spectrum at ranges of up to about half the maximum range.

Until recently, sea water velocity data (both real-time and delayed) was the only data available on the Australian Ocean Data Network (AODN) Portal, however we are now providing both wave and wind data in delayed-mode using a dedicated software developed by the University of Sheffield.

A series of factors contribute to a successful retrieval of wave information, such as: the operating frequency and the presence of matching ocean waves, the signal-to-noise ratio, the bandwidth and the presence of interference sources; the geometrical configuration of the system and the number of receive elements. These data collections can be discovered on the [AODN Portal](#) by selecting the “WERA beam forming HF radar” under the platform facet, and then further selecting the appropriate wave or wind parameter.

The IMOS data holdings are detailed in a suite of reports generated by the AODN on a monthly basis. The summary reports for June 2018 can be downloaded directly via the IMOS website <http://imos.org.au/data/data/datareports/>.

Did you know?

This section features news from the marine science community and highlights various ways in which you can discover, access and use IMOS data.

Developing improved plankton data products for the IMOS community

Written by Jason D. Everett (UNSW, SIMS), Claire H. Davies (CSIRO) and Anthony J. Richardson (CSIRO).

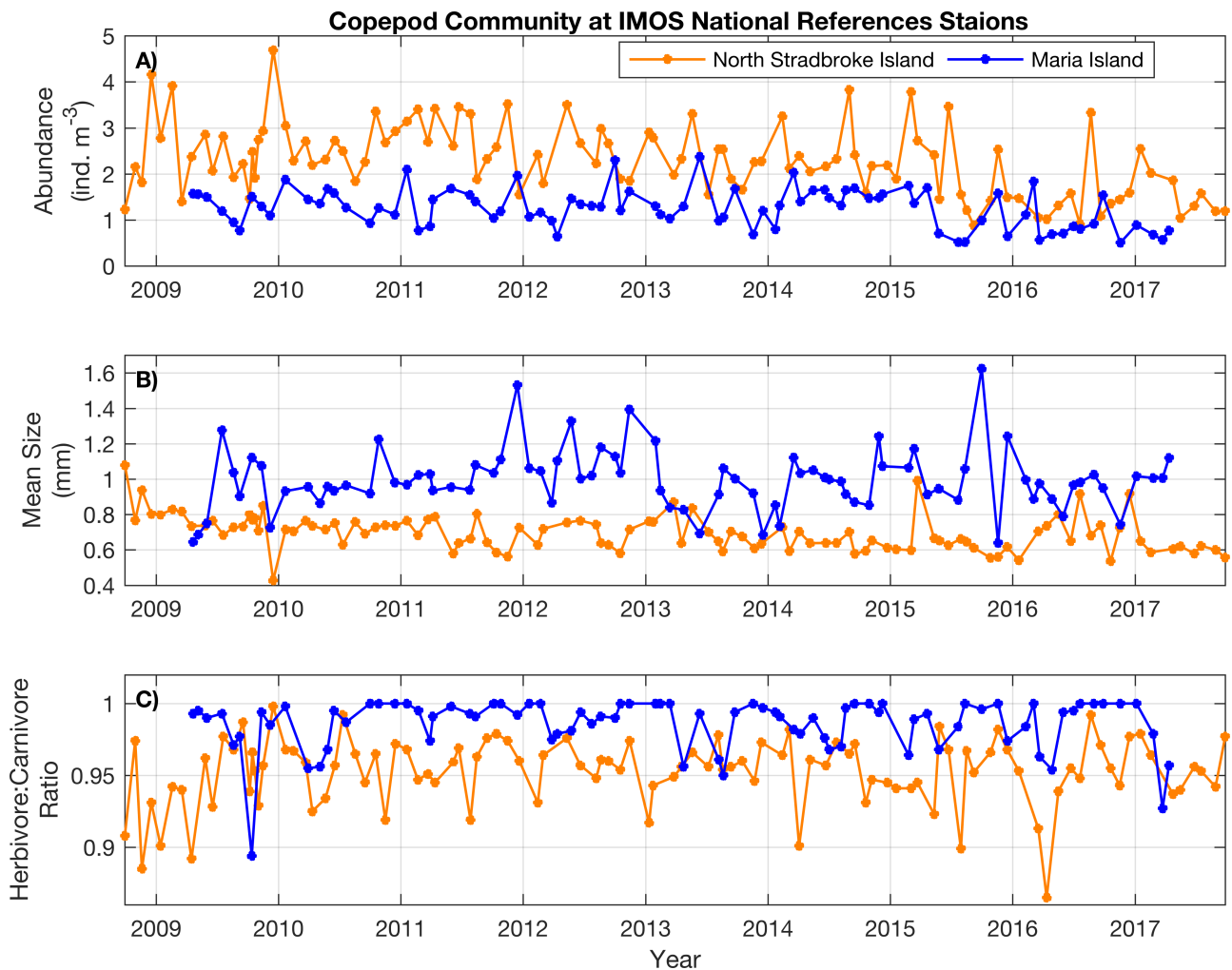
The key goal of the IMOS Zooplankton Ocean Observation and Modelling (ZOOM) Task Team is to bring modellers and observationalists together in order to maximise the collaborative research efforts being undertaken from the continuous IMOS and intermittent non-IMOS zooplankton observations.

Zooplankton observations are made at a range of spatial and temporal scales around Australia, and therefore provide us a unique opportunity to address sources of significant uncertainty in ecosystem models at multiple scales. However, due to the diverse types and nature of these zooplankton observations, the challenge of using these observations in models, and the different languages and backgrounds of the observational and modelling research communities, there has been relatively little uptake of these IMOS observations into biogeochemical and ecosystem models.

One of the focuses of the ZOOM Task Team has been to understand what data products are most useful for the modelling community to parameterise or assess their models. At our workshop in December 2017 a prioritised list of products was put together, and work has begun to deliver these products to the community via the Australian Ocean Data Network (AODN) Portal. The types of products being developed using National Reference Station (NRS) and Continuous Plankton Recorder (CPR) samples include:

1. Zooplankton biomass in units of carbon, nitrogen, wet weight and dry weight for all observations;
2. Mapped monthly climatology biomass fields around Australia;
3. Indexes of zooplankton diet preference (herbivore:carnivores), mean copepod size, phytoplankton and zooplankton species diversity, energy capture method (autotrophic:heterotrophic);
4. Summary tables of phytoplankton/zooplankton abundance at higher taxonomic grouping (e.g. copepods, salps, larvaceans) for all sites and sampling periods.

These products are continuing to be developed throughout 2018 and will be released through the AODN Portal when ready. These products will be used by the ZOOM modelling group in late 2018 when we meet for the final time in order to “Confront Models with Data”. The IMOS-ZOOM Task Team is co-convened by Jason Everett (UNSW) and Anthony J. Richardson (UQ/CSIRO) and currently comprises more than 20 scientists from universities and government research organizations.



A time-series of copepods from the North Stradbroke Island (NSI) and Maria Island (MAI) National Reference Stations showing A) The abundance of copepods, B) Mean copepod size and C) Ratio of herbivore:carnivores. The figure shows a higher abundance (A) yet smaller size (B) of copepods at NSI. The copepod community at MAI is predominantly herbivorous with few carnivorous copepods appearing throughout autumn and winter (C). On average, NSI has a larger proportion of carnivorous zooplankton throughout the year.

Paper of the month

This month we'd like to highlight the following paper that references IMOS data:

Joachim Ribbe, Liv Toasperm, Jörg-Olaf Wolff, Mochamad Furqon Azis Ismail. 2018. Frontal eddies along a western boundary current. *Continental Shelf Research*, **165**: 51-59.

This new paper is the first study to detail the existence of small frontal eddies in northern East Australian Current (EAC) region by analysing two types of IMOS data: remotely sensed sea surface temperature (SST) and chlorophyll-a (Chl-a) data.

The authors conclude that the observed frontal eddies of the northern intensification zone of the EAC potentially play an important role in determining cross-shelf exchanges, contribute to on-shelf marine conditions, enhancing coastal primary productivity and are possibly important to the export of shelf water properties such as the fish larvae of subtropical species via entrainment.

To read the full paper: <https://www.sciencedirect.com/science/article/pii/S0278434317305861>

Upcoming Events

- **1-5 July 2018** Australian Marine Sciences Association (AMSA) Conference, Canyons to Coast, Adelaide, SA. <http://amsa18.amsa.asn.au/>
- **6 July 2018** How to access and use IMOS data for your research. Workshop as part of AMSA conference at the University of Adelaide, SA. **Cost:** AMSA delegate: \$20, student: free. <http://amsa18.amsa.asn.au/workshops/>
- **4-6 July 2018** 4th Geo Blue Planet Symposium, Toulouse, France. <https://symposium.geoblueplanet.org>
- **20-24 August 2018** Ocean Hack Week, University of Washington, USA. <https://oceanhackweek.github.io/>
- **18-20 September 2018** Connecting glider data flows in Europe and beyond, Aquario du Genova, Italy. For more information <https://www.ego-network.org/dokuwiki/doku.php?id=public:egodmmeeting:september2018>.
- **9-11 October 2018** Australian Coastal and Oceans Modelling and Observations Workshop (ACOMO) 2018 Workshop, Canberra, ACT. Contact Ana Lara-Lopez for more information Ana.Lara@utas.edu.au
- **22-25 October 2018** Oceans Conference Charleston, South Carolina, USA. <http://charleston18.oceansconference.org>
- **5-7 November 2018** International Conference on Marine Data and Information Systems (IMDIS) 2018, Barcelona <https://imdis.seadatanet.org/>. The one-line registration is open until **1st November 2018** (discount rate until 15th September 2018).
- **20-22 November 2018** Australian Ocean Renewable Energy Symposium, Indian Ocean Marine Research Centre UWA, Western Australia. <https://aores2018.com.au/> Deadline abstract – **20 July 2018**.
- **10-14 December 2018** Forum on Fisheries Science. Rome, Italy. <http://www.fao.org/gfcm/fishforum2018/en/>.
- **14-17 August 2018** Antarctic and Southern Ocean Forum on Engineering Science and Technology (ASOF-FEST), Hobart, Tasmania. <https://asof2018.ieee.org/>. The forum aims to bring together scientists and engineers working to face the challenges in conducting ocean science in the Antarctic and Southern Ocean.
- **15-19 April 2019** 1st International Buoy Workshop- Marine Technology Society, Hobart Tasmania. The workshop will bring together engineers and operators working on a variety of sustained observing applications. In particular this workshop will focus on the design and development of oceanographic moorings.
- **10-13 September 2019** Australasian Coasts & Ports 2019, Hobart, Tasmania. <https://coastsandports2019.com.au/>. Abstract submissions will open on **10 September 2018**.
- **16-20 September 2019** OceanObs'19, Honolulu, Hawaii, USA. <http://www.oceanobs19.net>. The Community White Papers will then be due by **30 September 2018**.

For a full list of upcoming conferences please visit the Calendar page at <http://imos.org.au/calendar/>. If you would like an event or conference featured on our website calendar please contact communication@imos.org.au.