



AusSeabed Newsletter No. 31 August 2022

Dear AusSeabed Community

I am honoured to take on the role as Chair of AusSeabed and look forward to building on the fantastic foundation the Kim Picard has given AusSeabed through her tireless work. Kim was fulfilling two roles at AusSeabed: Chair of the Steering Committee and the AusSeabed Program Director within Geosciences Australia. I would like to welcome into the role of AusSeabed Program Director Dr. Scott Nichol from GA in Kim's absence.

The work at AusSeabed continues at a pace, we recently held our annual workshop in Cairns at the AMSA conference as well as the Steering Committee meeting. The Steering group endorsed a new Strategic Plan which we hope to publish once approved by the AusSeabed Executive Board in September and continues to develop road map to further enhance the offerings of AusSeabed. We were fortunate to have Mr Geoff Laws, current chair of the FIG Commission 4 Working Group 1 (hydrographic Standards and Guidelines) present in Cairns for the Steering Committee meeting. Geoff briefed us on the current plans of this important working group, and we hope to collaborate with Geoff's working group to further develop and promote Hydrographic Standards in data transfer.

The National Areas of Interest Tool, which was recently released on the AusSeabed Site has proven to be a great success, with over 300 areas of interest identified. This tool will be a key to promoting collaboration and coordination in the seabed mapping community in Australia, I encourage you all to promote its use.

I am thrilled to announce that data collected through the HydroScheme Industry Partnership (HIPP) will now be published on the AusSeabed platform as a 30m grid. The first grids are now available at Mavis Reef East (WA), North King Island (TAS) and Banks Strait (TAS). These grids will be progressively published as they are released by the Australian Hydrographic Office (AHO). Full resolution versions of this data are available directly from the AHO.

In addition, thirteen surveys were published in the last quarter which were made available on the AusSeabed Data Portal covering a total of 201,233 km². AusSeabed is now ready to accept submissions from Data Partners via a new submission portal.

I look forward to leading and working with the AusSeabed Steering Committee and community as we move forward over the next few years. These are exciting times for

seabed mapping in Australia as new initiatives in data collection such as the arrival of the RSV Nuyina, the HIPP program, and the ongoing RV Investigator work driving the mapping of Australia's seabed.

At AusSeabed we look forward to playing our part helping to coordinate these activities and publish this data to you our community as quickly as possible.

Nigel Townsend

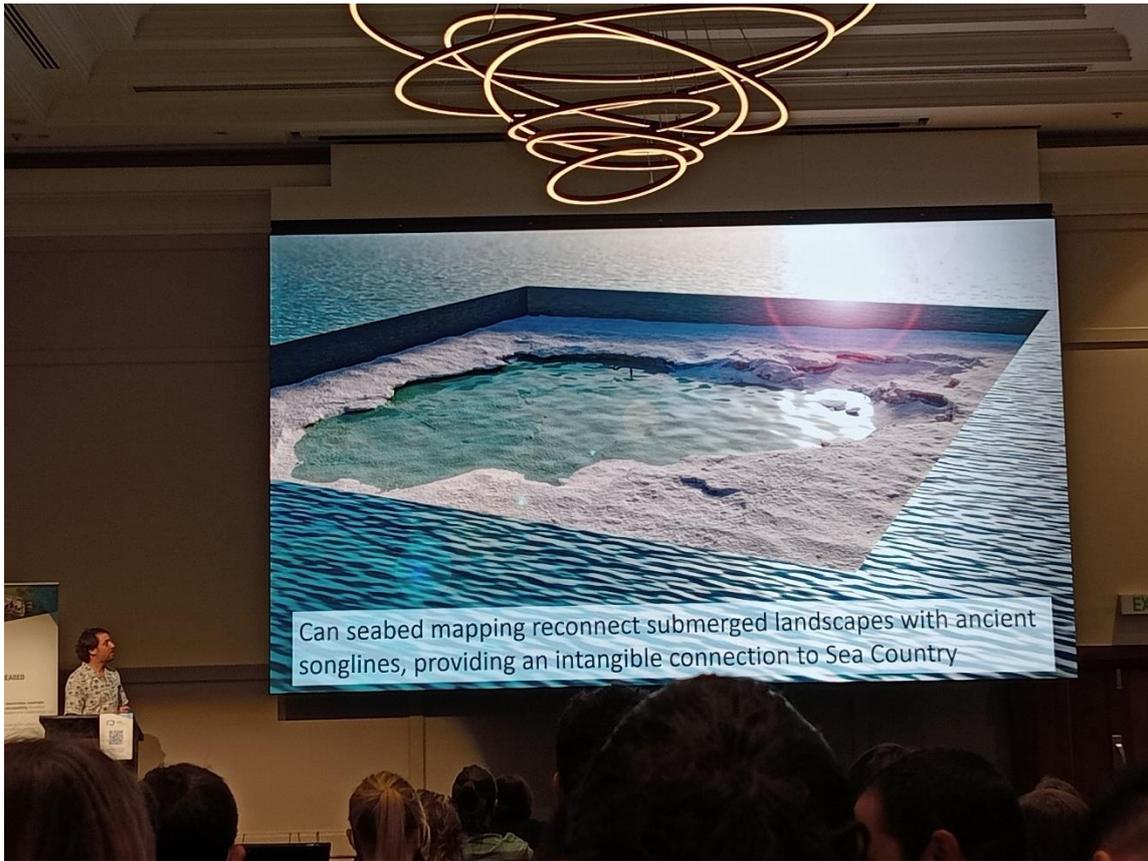
AusSeabed Steering Committee Chair

AusSeabed at AMSA 2022

Thank you to everyone who engaged with us last week at AMSA. Our sponsored symposia "Multi-disciplinary approaches to monitor change and connections through seafloor mapping" was filled with interesting talks. Mick O'Leary kicked off the session with his keynote "Saltwater Song Lines and the Deep History of Sea Country" – just one of the many talks at AMSA that addressed First Nations connections to Sea Country.

The strong representation of First Nations science and traditional knowledge within the conference was valued by our AusSeabed representatives. Listening to what First Nations peoples need from AusSeabed is the first step to participating in the change being made within the wider marine science community. We look forward to taking our learnings away from the conference, joining the conversation and creating impactful actions.

We concluded the week with our AusSeabed workshop. During this workshop we provided training in AusSeabed tools, including QAX, a new Data Submission tool, a Seabed Morphology Mapping Tool and the GMRT-AusSeabed prototype. Through the workshop we were able to engage with new organisations and gain further insights into what the community needs from us. Thank you to all who participated in productive conversations with us throughout the week, we are looking forward to continuing to collaborate and build some exciting projects into the future!



Congratulations to PhD candidate Allison Broad UOW won the Ron Kenny Award at AMSA for her work on Effects of Commercial Ship Anchoring on Seabed communities offshore Port Kembla and Wollongong!



AusSeabed Upcoming Webinars

Our annual AusSeabed webinars will be held on **Wednesday the 21st of September from 1pm - 3 pm**. Come along to see what the Program has been up to in 2020/21 and participate in community discussions.

Webinars this year will include:

- Our Annual AusSeabed Chair update which will include the release of a new AusSeabed Strategy
- Data sharing policies and community challenges
- An overview on the technology required to enable data sharing connections
- A semi-automated classification tool for seabed morphology
- A HydroScheme Program update
- A National Areas of Interest update

HIPP update August 2022

HIPP has had a busy start to the 2022/23 financial year with a productive meeting of the Hydrographic Review Panel at the Australian Hydrographic Office, Wollongong. The meeting brought together representatives from Department of Defence, AMSA, AusSeabed, CSIRO, IMOS, Geoscience Australia, Parks Australia, AIMS and the Australian Antarctic Division, and resulted in the successful endorsement of the *HydroScheme 2023*. The *HydroScheme 2023* will be publicly released in October this year and is the culmination of more than a year's planning, preparation and consultation and will cover the HIPP program for the 2023/2024 Financial Year.

Excellent results have been achieved in the field as we strive to wrap up *HydroScheme 2021* and commence *HydroScheme 2022* projects with our contracted survey companies delivering high quality bathymetric products completing all *HydroScheme 2022* areas despite some extremely challenging conditions.

Of particular note is the completion of SI's 1024, 1035 & 1036 undertaken by iXblue, EGS and Guardian Geomatics respectively. These survey areas extended upon the HIPP Banks Strait Survey, SI 1020 (iXblue/Ocean Infinity), conducted in 2020. Further

survey work is currently underway with a HIPP ALB survey, SI 1032, being undertaken by Fugro. The results of these efforts by the HIPP is the collection of a massive dataset encompassing the Furneaux Group of Islands, the entirety of the Banks Strait and East to the Tasman Sea 300m contour. This is an area that has been identified on the AusSeabed National Areas of interest tool as an area of extremely high interest to a large number of stakeholders. Together these projects are an impressive collaborative achievement by the HIPP Team, contracted companies and AusSeabed and show what can be achieved by collaboration through AusSeabed platform.

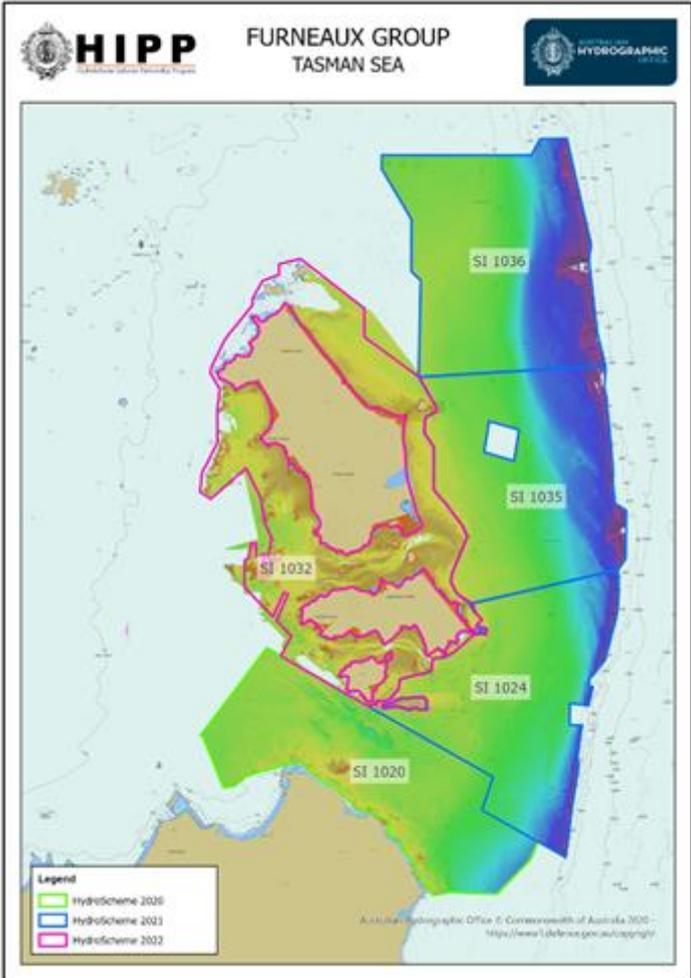


Image 1. HYDROSCHEME 2020-2022 Surveys Furneaux Group

Bathymetric Data Publication through AUSSEABED

The start of August saw yet another long-awaited achievement in the publishing of the first three 30m resolution bathymetric survey grids by AusSeabed, this was publicly announced by CMDR Nigel Townsend at the 2022 AMSA conference in Cairns, QLD. SI 1011 Mavis Reef East, conducted by MMA Offshore, and SI 1013 King Island (North), conducted by EGS Survey, and SI 1020 Banks Strait, conducted by iXblue,

are now available for public access on the AusSeabed Marine Data Portal with more being added as they become available.

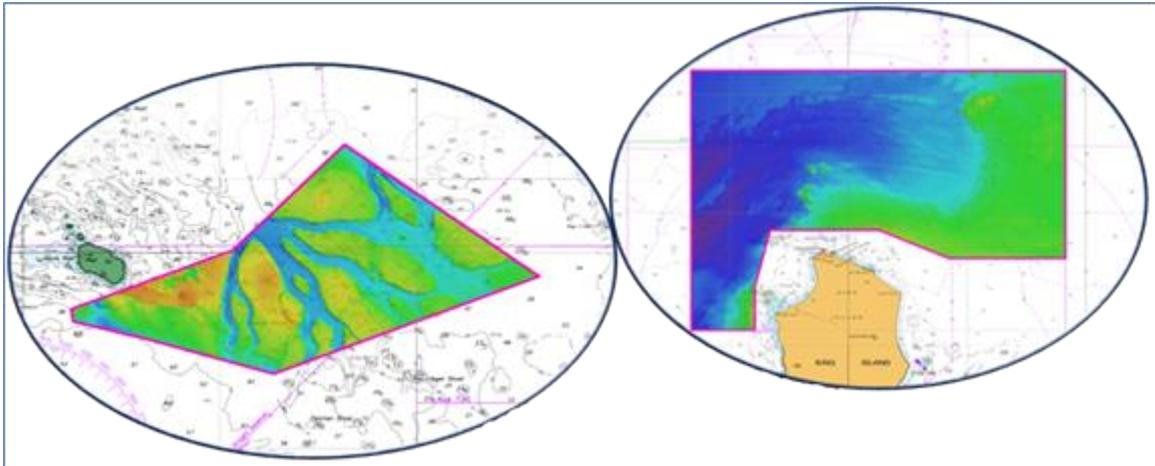


Image 2. SI1011 Mavis Reef East & SI 1013 King Island (North) 30m Bathy Grids

HydroScheme Achievements Story map

In order to publicise HIPP Achievements and upcoming projects the AHO has developed and published a series of ESRI *StoryMaps* available to view via the HIPP ‘Quick Link’ on the Australian Hydrographic Office homepage. We have also published a HydroScheme Achievements story maps which compiles all completed areas into a single story map. These story maps provide an overview of survey areas by *HydroScheme* and provide a wealth of information along with some stunning imagery of HIPP projects completed. These *StoryMaps* are available at www.hydro.gov.au/NHP

Improved bathymetry underpins more reliable coastal ocean models

Dr Mark Doubell (SARDI)

The accuracy of ocean circulation models relies on the quality of input forcing data and bathymetric data. Oceanographers at the South Australian Research and Development Institute (SARDI) have developed several regional ocean models to describe the circulation and climate of South Australia’s shelf and gulf systems. For example, the eSA-Marine system, operated in partnership the Bureau of Meteorology, provides short-term forecasts of ocean conditions for South Australian waters and was developed to support the state’s fisheries and aquaculture sectors

(https://pir.sa.gov.au/research/esa_marine). Historically, the spatial domain of these ocean models has spanned hundreds of kilometres with model grid development typically based on the 0.0025° resolution Geoscience Australia (GSA) bathymetric grid for Australia.

In South Australia, due to the informative role ocean models have played in supporting decision making and planning there is increasing demand to improve ocean model predictions in coastal areas, particularly areas which are used by multiple stakeholders. To achieve this better resolved seafloor bathymetry is required. For example, Port Lincoln is a regional centre located on the sheltered shores of Boston Bay approximately 250 km west of Adelaide (Figure 1). Known as Australia's seafood capital, Port Lincoln and its surrounding bays support a diverse range of valued fisheries and aquaculture industries. To improve the reliability of ocean model predictions within the embayment's surrounding Port Lincoln, SARDI is developing a high-resolution ocean model (0.3km grid spacing) for the area. To provide the best possible predictions the Port Lincoln model is nested within a lower resolution ocean model (1.5 km grid spacing) for South Australia's gulfs which is based on GSA bathymetric data.

Figure 1 A & B show examples of ocean model grid bathymetries developed for the Port Lincoln model. The initial model grid was developed using solely GSA data (A) which underestimates nearshore water depths in the bays surrounding Port Lincoln. An improved model grid (B) was then developed by merging data from the Australian Hydrographic Office (AHO) with the GSA bathymetry. The addition of the AHO data significantly enhanced the grid bathymetry in the inshore areas of the bays. In developing the model grid, the AHO and GSA data was merged to provide consistency and the smooth exchange of information between the high-resolution Port Lincoln and lower resolution gulfs ocean models. Comparisons between ocean model predictions and field observations for temperature, salinity and currents show the inclusion of better resolved seafloor bathymetry data has improved the accuracy of the ocean model predictions within the bays. The model is currently being developed to better understand the dispersal of nutrient emissions from tuna and finfish aquaculture, larval and harmful algal bloom transport, and investigations into the areas the capacity to adequately disperse desalination associated brine discharges.

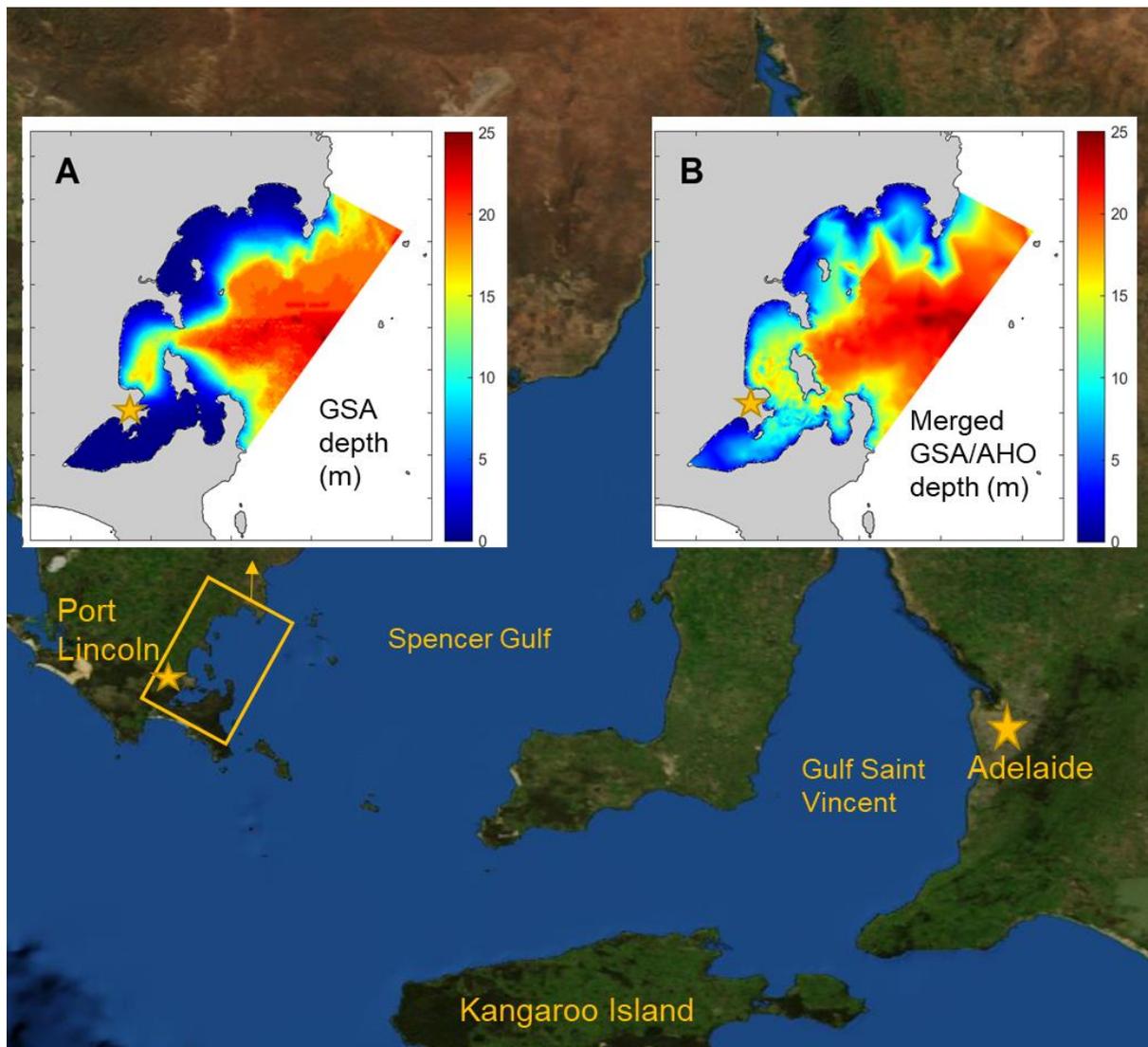


Figure 1. Port Lincoln is located approximately 250 km west of Adelaide and provides a safe harbour from the Southern Ocean. Inset: (A) model grid bathymetry developed using Geosciences Australia (GSA) data and (B) improved model grid bathymetry developed using a combination of GSA and Australian Hydrographic Office (AHO) data.

AODN Portal User Survey

Dear All,

As you are well aware, we are currently undertaking a review of the Australian Ocean Data Network (AODN) data architectures, including the AODN Portal. This survey seeks to understand how the AODN Portal is used and what features are important to the data user. You can help us by completing our online survey [here](#). If you'd like to discuss any aspect of the review, please reach out to Mark Rehbein at info@aodn.org.au. Regards Sebastien

AUSSEABED AND AODN PORTAL USED FOR NSW FLOOD RESPONSE

When the 2021, and shortly thereafter, 2022 flood events came to NSW, satellite imagery began to demonstrate the extent of inundation caused by not only high rain falls but also the nature of the terrain. In order to conduct flood modelling, the physical nature of a river system needs to be determined. In doing this, identifying not only depth, but also width and riverbed composition are important data types. What's interesting, is that data collected commercially for Government agencies, often doesn't make it into an open-source location. The reasons for this could be a combination of copyright, contractual arrangements and perhaps even that the location of data is out of the geographic scope of the repository. An example of this mix of all three of these components is seen in Images 1 and 2 where no datasets are available. Image 3 represents the same area however there is a total length of bathymetric information totalling 517km. So, is there a use of inland river data in Government supported portals?

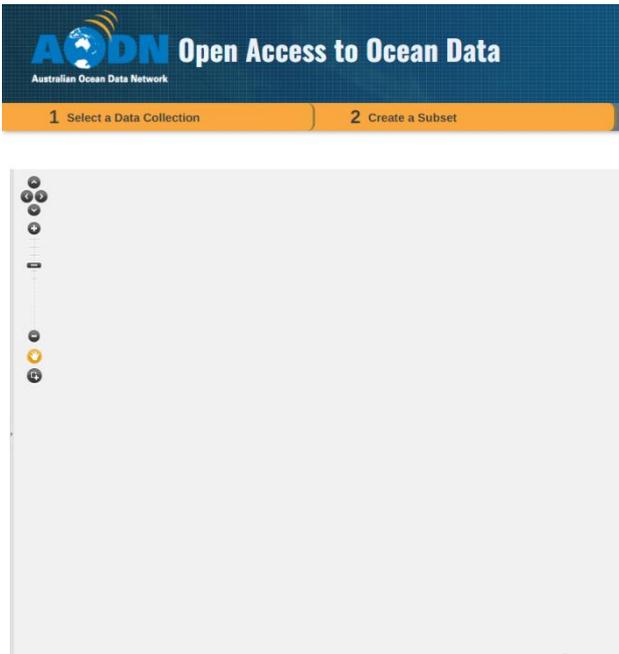


Image 1 – AODN Regional NSW

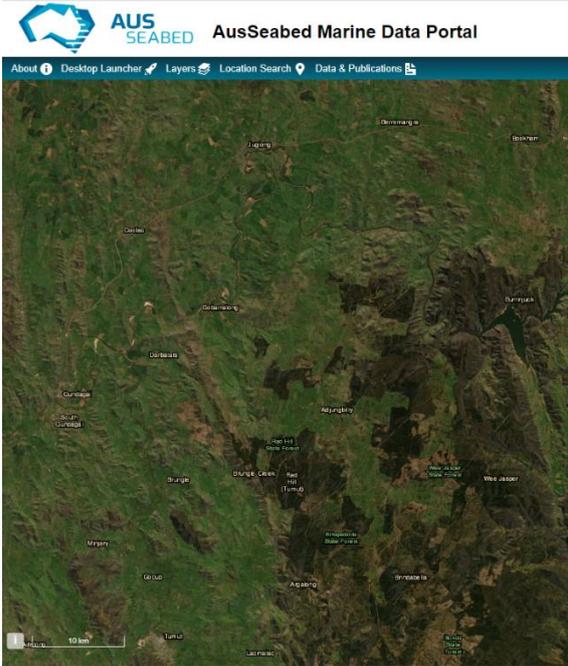


Image 2 – AusSeabed, Regional NSW

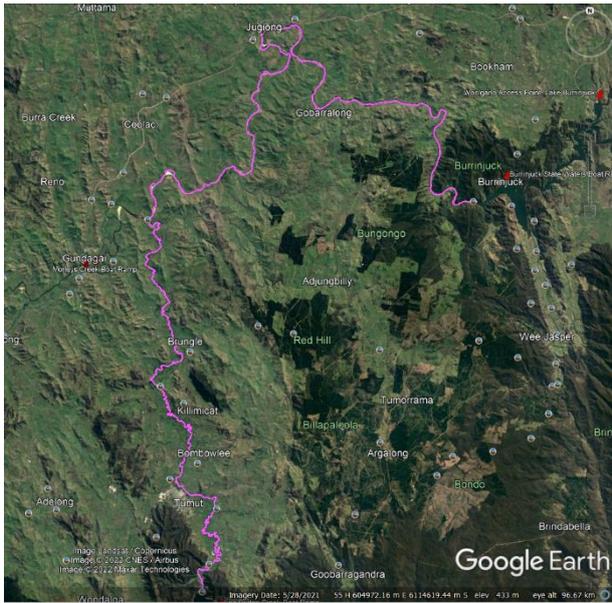


Image 3 – Contracted Data Collect, not in a Portal

Government Portals can provide “centralised” and publicly available data with an appropriate level of metadata which aids users in determining quality and subsequent use. With respect to the 21/22 floods, environmental assessment for downstream debris not only included harbours and coastlines, but upper reaches of inland river systems. The Hawkesbury River which transits over 120km to Broken Bay is one of these targeted river systems.

Image 4 represents data collected by the former NSW Office of Environment and Heritage, of which the green oval contains areas required for clean-up of artificial debris and navigational hazards. Image 5 is the same dataset located in AusSeabed. Having these datasets freely available, provides data with a known point of truth which is highly important to hydrographic survey contractors involved in river clean-up operations under contract to the NSW Environmental Protection Authority.

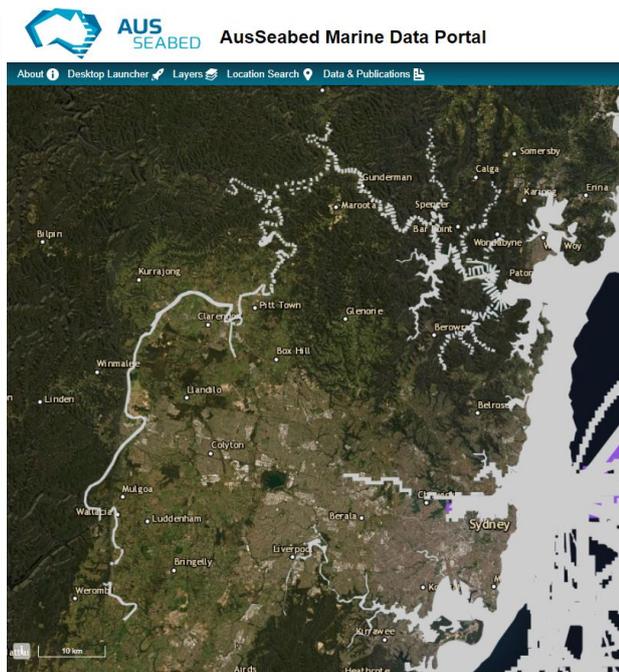
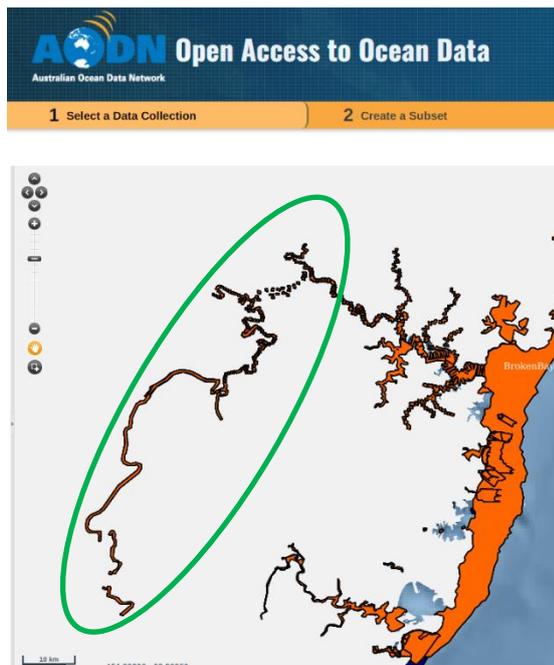


Image 4 – AODN Image 5 – AusSeabed

For the purpose of the contracted survey works, the data supports informed decision making and increases the effectiveness of planning water operations where navigational charts don't exist. The data value adds in the validation of new bathymetric data collection post flood and therefore assists in change monitoring, but also reduces the required survey effort when and area is validated with respect to assessing the depth of a feature relative to the safe navigable depth of water for recreational craft, water skiers and commercial operations. More broadly, the open data allows more user access and a wider range of uses.

IBSC Recognised S-5B Hydrographic Surveyor and S-8B Nautical Cartographer Program

DON'T MISS OUT! – The 2022 IBSC Recognised S-5B Hydrographic Surveyor and S-8B Nautical Cartographer Program 2022 Enrolments Are About To Close.

IIC Academy in partnership with Deakin University and O2 METOCEAN would like to advise that enrolments for the 2022 deliveries of the IBSC* Recognised S-5B Hydrographic Surveyor and S-8B Nautical Cartographers Programs will close at the end of the month.

The S-5B Hydrographic Surveyors Program will be delivered in partnership with Deakin University and O2 METOCEAN, commencing Sep 22. The industry partnership with O2 METOCEAN will allow the Practical Components of the Program to be run at the O2

METOCEAN facilities in Fremantle, allowing easier access to students from Western Australia. If interest is strong enough, two Practical deliveries in Australia will be considered.

The S-8B Nautical Cartographers Program will be delivered as a 22 week Global Delivery commencing Oct 22. This Programme provides students with the necessary theoretical and practical knowledge and skills required to undertake Nautical Chart production.

Course numbers are strong already, however if you wish to join it is not too late – so contact us today at david.crossman@iictechnologies.com or hydrographicsurveyor@iicacademy.com.

Further details on the Programs can also be found at:

<http://iicacademy.com/>



** International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers*

IBSC S-5B & S-8B Program Success Summary

It was with a great deal of excitement and satisfaction that the inaugural Australasian class of the IIC Academy S-5B Hydrographic Surveyors Program graduated on 9 Jun 22. This long-awaited course was the first delivery to the public in the region and despite COVID concerns commenced the Theoretical learning component in Sep 2021. The students studied utilising distance learning methods which included instructor led sessions, self-paced learning, guest lectures from Deakin University and more. Having successfully completed all modules and assessments the students were eligible to undertake the Practical and Comprehensive Final Field Project (CFFP).

Final Field Project 2022 S-5B Hydrographic Survey Program



Jeremy M; Maggie C | Team 3

Survey Objectives

Survey of Portland harbour area at IHO special order for the Global S-5, as part of the Hydrographic Survey Training Comprehensive Final Field Project. Moreover, this Multi Beam Echo Sounder (MBES) survey is also aimed to collect the seafloor data for identifying the geological features and have basic understanding at the seabed at Port of Portland.

Overview

Based on the survey, which was conducted on the 25th and 27th of May 2022, we managed to comply with Special Order survey limits designated for a full sea floor search. This resulted in a 100 percent seabed coverage being achieved in this survey. The value for the Total Horizontal uncertainty shown in the error budget table is better than 1m.

Survey Plan

Due to the shallow water depth, the survey was planned to start at various run lines from the relatively deeper water due to dynamic depth changes. The survey lines ran as parallel as possible to the seabed contours and to adapt with the traffic around the docks. These are to ensure a full seabed coverage will be achieved within the survey area.

Mobilization / Calibration

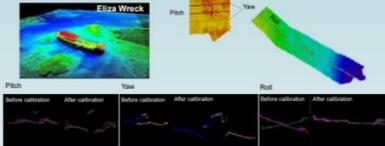
Mobilization: From Deakin University Warrnambool campus to Port of Portland.



Offsets

| | X (mm) +ftwd | Y (mm) +ftbd | Z (mm) +down |
|------------|-----------------|-----------------|-----------------|
| GPS | 0.687 | 0.653 | 3.869 |
| MRU | 1.040 | 1.086 | 0.838 |
| Sonar Head | 0 | 0 | 0 |
| Water Line | | -60 | |

Calibration: Patch test



Survey Equipment

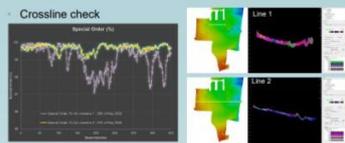
| ITEM | Model / Version | Manufacturer | Product |
|---------------|---------------------|--------------|---------|
| Multibeam | EM2040C | Kongsberg | |
| GNSS system | GPS Antennae | Trimble | |
| INS | POS MV | Applanix | |
| SVP (Profile) | Wiwisswiler SWFTSVP | Valeport | |
| SVP (Surface) | Mini SVS | Valeport | |

Survey Conduct

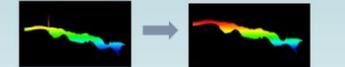


- Step 1** Plan the survey area. The factors need to be taken into consideration such as weather, tide, traffic in the port, etc.
- Step 2** Cast the sound velocity profile (SVP) before the survey started.
- Step 3** Carry out the patch test to calibrate the static configuration of the sonar head (roll, pitch, yaw) before the survey started.
- Step 4** Start the survey after patch test; full attention to be given during this step to monitor the surface and vessel traffic.
- Step 5** Data processing and QC check. Data cleaning is needed for some areas such as jetty and breakwater.

Data Quality



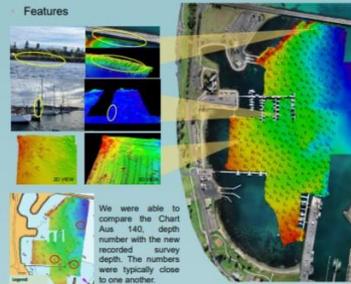
Noise and spike filters should be monitored during the survey to ensure the data quality.



Total Propagated Uncertainty (TPU) - Error budget based on this project.

| Parameter | Horizontal (m) | Vertical (m) | Comment |
|-----------------------------------|----------------|--------------|----------------|
| Global Geometric Uncertainty (L1) | 0.1 | 0.033 | |
| Total Propagated Uncertainty (2σ) | 0.3 | 0.064 | 2σ = 1σ * 1.96 |
| IHO Requirement (SURVEY ORDER) | 2 | 0.292 | |

Results



We were able to compare the Chart Aus 140, depth number with the new recorded survey depth. The numbers were typically close to one another.

Special Order - Uncertainty: Any values less than zero achieved special order. The survey went well, and uncertainties were properly displayed, the image where the compute statistics tool shows all the sounding were less than zero.

Conclusion

- The survey is done in the Portland Harbour at IHO special order for the Global S-5 as the Comprehensive Final Field Project for S-5B Hydrographic Surveying course.
- The field work produced good coverage. The group was able to carry out the field work under the supervision from the tutor.

Lesson Learned

- During the survey, there is a vessel berthed at the jetty, hence, to avoid her, one survey line was deviated from the original plan. The survey team tried to run the line as close as possible to ensure no gap. However, there is some room for improvement, such as more attempts should be performed to fill the tiny gap between the jetty and the vessel.

The Practical and CFFP were undertaken at Deakin University's Warrnambool campus and supported by Deakin University staff and utilising Deakins' excellent facilities. The 3 week Practical learning reinforced the Theoretical learning and was greatly enhanced by the contribution of the Deakin Life and Marine Sciences staff, opportunities and equipment. The students then deployed to Port of Portland to undertake their 4 week Comprehensive Final Field Project. For this the students were divided into small teams, issued a survey instruction, briefed by the client, then set to work planning, data gathering, data cleaning and preparing their deliverables, including the uplift of their data to AusSEABED.

All students graduated in a ceremony that was supported by the Australasian Hydrographic Society who combined their World Hydrographic Day celebrations to support the students and welcome them into the community.



This IBSC recognised program and the S-8B Nautical Cartographers Program

will now run annually, with registrations now open for the next courses commencing in Sep 22. IIC and Deakin are very pleased to be partnering with O2 METOCEAN for the S-5B Program commencing Sep 22, which will allow the practical and CFFP to be conducted in O2 METOCEANs facilities in Fremantle, making it easier for students from WA to attend. Further, as the interest in this delivery is already very strong it is hoped run a second Practical and CFFP back in Deakin University's facility in Warrnambool

Places are filling fast so if you would like more information on attending either of these courses please contact hydrographicsurveyor@iicacademy.com or david.crossman@iictechnologies.com



Abstracts now open for the combined Forum for Operational Oceanography (FOO) and Australian Coastal and Ocean Modelling and Observations (ACOMO) workshop

12 August 2022

Dear FOO and IMOS Community Members,

Abstracts are now open for the combined **Forum for Operational Oceanography (FOO) and Australian Coastal and Ocean Modelling and Observations (ACOMO) workshop** which will be at the Esplanade Hotel, Fremantle, Western Australia on 21-23 November 2022.

The theme for the combined workshop this year is 'Improving Integration to Optimise Operational Outcomes'. Our goal for this meeting is to stimulate debate about ways that our observations, and outputs from the models into which they flow, can be used to support maritime safety and security, maximise the productivity of marine industries while minimising environmental impacts, and assist in the management of biodiversity and coastal environments. The combined workshop will feature invited speakers, submitted abstract presentations and finish with a panel discussion on the following topic:

How can we integrate existing models to provide a national scale operational forecasting capability?

ABSTRACT SUBMISSION:

We are seeking **abstract submissions** for Oral Presentations from delegates who wish to share their work with the FOO/ACOMO community.

Submission requirements will include the following: the main body of the abstract should be up to 300 words. Please Include a descriptive title (max 20 words) and include the authors' names and affiliations.

You are invited to submit abstracts in the following sub themes:

- Operational ocean prediction
- Ocean extremes
- Emerging tools/methods/observation platforms in operational oceanography
- Best practices in operational oceanography
- Real time data/forecast model use and applications
- Coastal – shelf – open ocean connections to improve operational oceanography

Abstracts can be submitted online via the **abstract submission portal** on the conference website. Submissions will close 5th September 2022.

We look forward to seeing you in Fremantle.

Kind regards,

Paul van Ruth, on behalf of the Organising Committee.

International Conference on Seafloor Landforms, Processes and Evolution, Valetta (Malta)

AusSeabed are always glad to share collegial collaborative efforts and from all accounts, the Geomorphology Classification Scheme workshop held by Rachel in July 2022 had a great turnout! We welcome any commentary and opportunities to engage further with the wider AusSeabed Community.



For more info, <http://www.geomorph.org/2022/05/international-conference-on-seafloor-landforms-processes-and-evolution-4-6-july-2022-valetta-malta/>

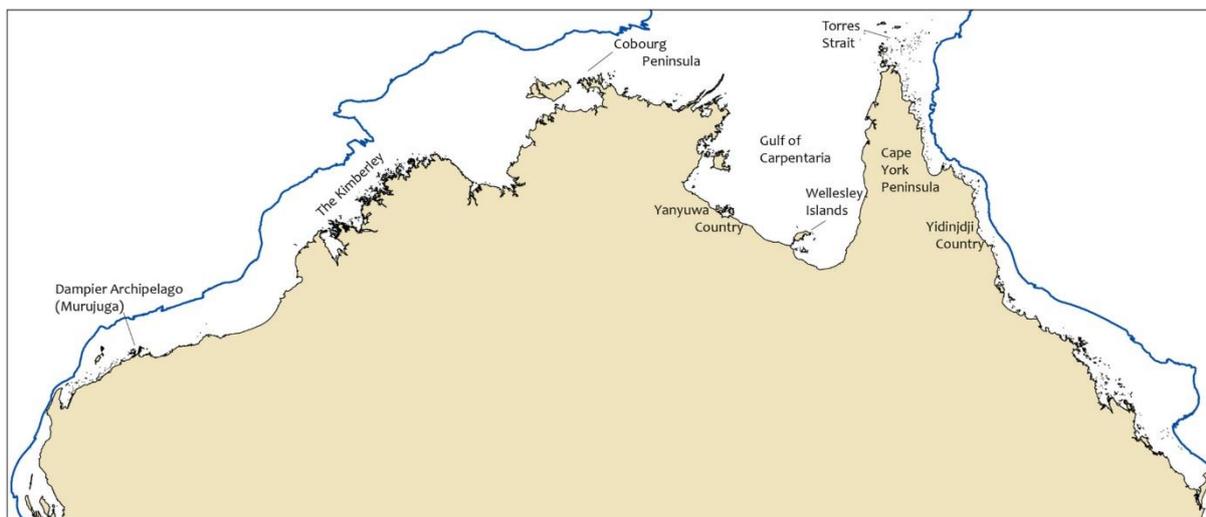
Sea Country: Plurality and knowledge of saltwater territories in Indigenous Australian contexts

The Geographical Journal offers a timely review and discussion of Indigenous knowledges attached to the sea, as inclusive of submerged landscapes.

Focused on the sea territories of northern Australia we approach this paper from a pluralist perspective taking as our focus, recorded Indigenous accounts of submerged landscapes and recent scientific sea floor mapping efforts which draw back the water to reveal rich and familiar geographies.

We argue that these two bodies of knowledge are highly complementary and generate information on submerged landscapes that calls for an expansion of thinking on where the land ends and the sea begins, and how submerged landscapes are understood as part of human geography.

The authors, Prof Amanda Kearney (UniMelb – amanda.kearney@unimelb.edu.au), Dr Mick O’Leary (UWA - mick.oleary@uwa.edu.au) and Spencer Platten (NLC)



Map of northern Australia showing locations mentioned in the text. The blue line is the -125 m isobath and represents the former position of sea level at the peak of the last glacial maximum

LINK: <https://rgs-ibg.onlinelibrary.wiley.com/doi/full/10.1111/geoj.12466>

Reading corner

- Deep Sea Roundup webpage produced by the Deep Ocean-Stewardship Initiative: <https://mailchi.mp/noc/dosi-deep-sea-roundup-07-14-2022>
- Sea Country: Plurality and knowledge of saltwater territories in Indigenous Australian context LINK: <https://rgs-ibg.onlinelibrary.wiley.com/doi/full/10.1111/geoj.12466>
- new publication by the Deep Ocean Stewardship Initiative on the value of the deep ocean: <https://www.dosi-project.org/wp-content/uploads/Deep-Ocean-Ecosystem-Services-Brief.pdf>
- Field application of 3D CHIRP for geological surveys of shallow coastal regions: <https://link.springer.com/article/10.1007/s11001-022-09477-x>
- Sea Country: Plurality and knowledge of saltwater territories in Indigenous Australian contexts: <https://rgs-ibg.onlinelibrary.wiley.com/doi/full/10.1111/geoj.12466>

If you do not have access to materials, contact us for a PDF copy

UPCOMING EVENTS

37th International Conference on Coastal Engineering

WHEN: 4-9 December 2022

WHERE: International Convention Centre, Sydney NSW

The goal of the ICCE is to promote academic and technical exchange on coastal related studies covering a wide range of topics including coastal waves, nearshore currents, coastal structures, sediment transport, coastal morphology, beach nourishment, natural hazards and coastal management. [More Info](#)

Share your work with the AusSeabed community

Finally, a reminder as always that anyone with an interest in AusSeabed can sign up to the newsletter mailing list on our website, where you can also check out past issues. And please send any items for the next newsletter to AusSeabedNews@ga.gov.au