Wave measurements in Gulf Saint Vincent: SAwaves

Assoc. Prof. Graziela Miot da Silva (Flinders University)

Beach and Dune Systems Laboratory
Flinders University

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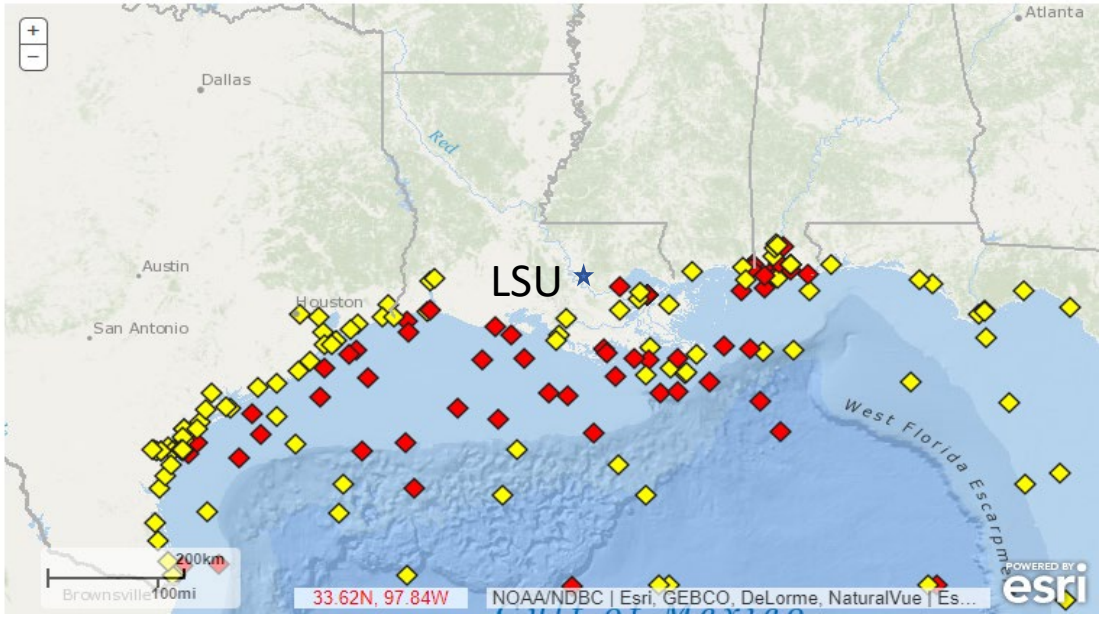
Brazil

Brazilian Navy Hydrographic Center

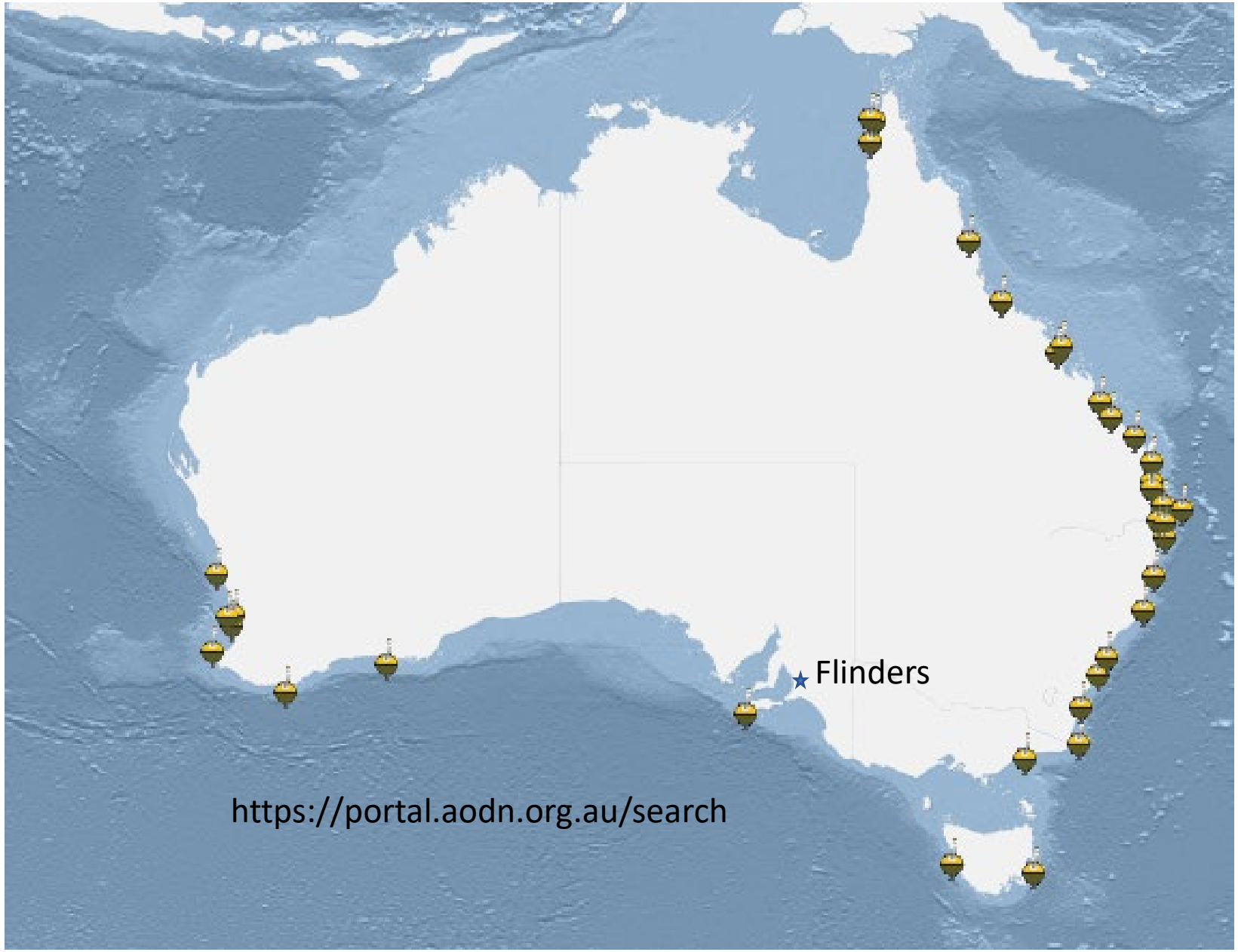
Gulf of Mexico



National Data Buoy Center/NOAA (https://www.ndbc.noaa.gov/)

https://www.wavcis.lsu.edu/

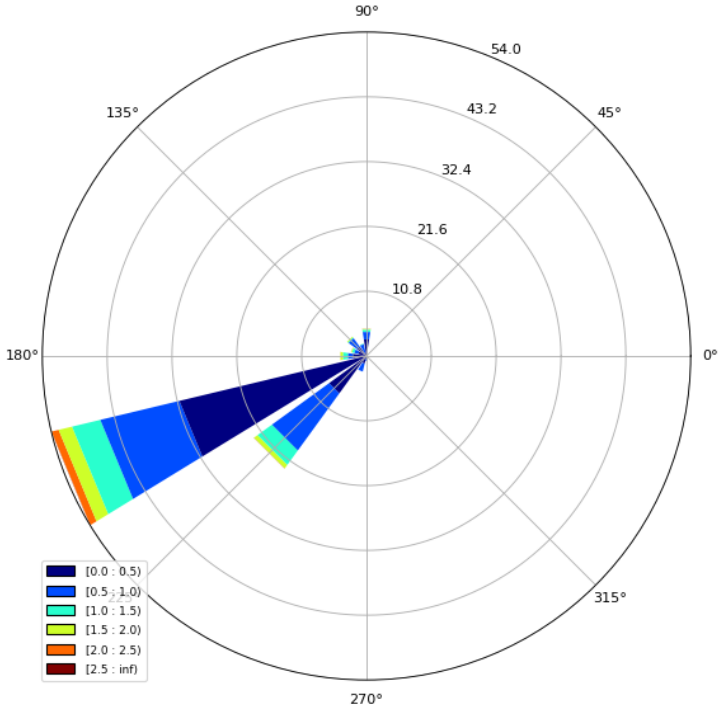
Australia



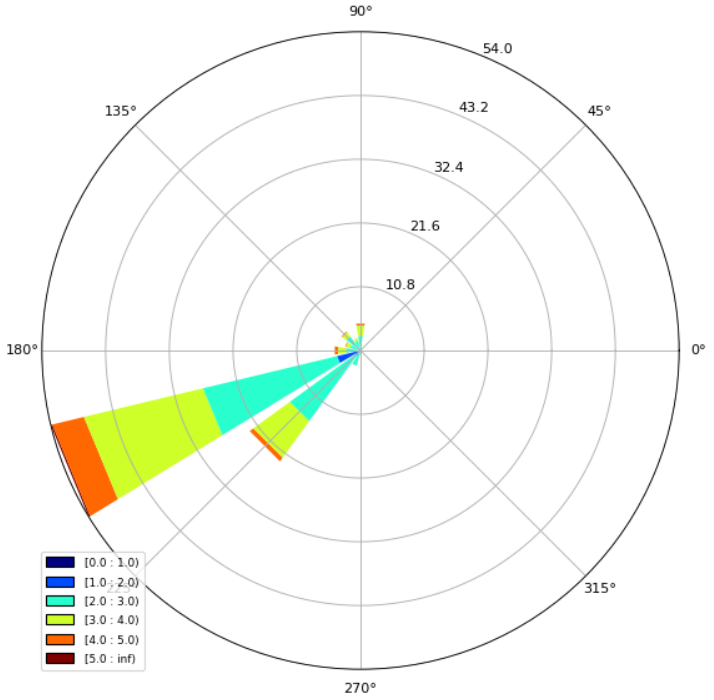
Hydrodynamic measurements

WAVES AND NEARSHORE CURRENTS

Nortek Sig1000 ADCP (current profiler) with directional wave measurement capability (~ 5km west of Brighton Jetty).

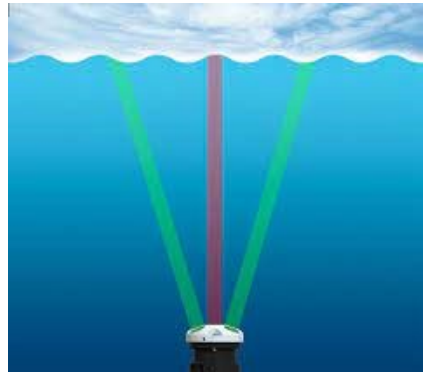


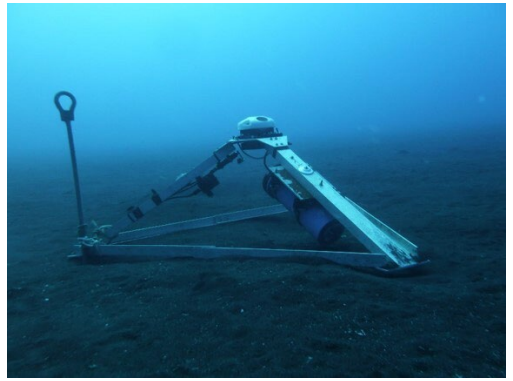
Hs (m)



T (s)

Significant wave height (Hs) and wave period (T)
Jan 2019 to October 2020





New funding from National Collaborative Research Infrastructure Strategy (NCRIS)/IMOS in 2019 to establish SAMGSV site (with SARDI, EPA and SA Water)

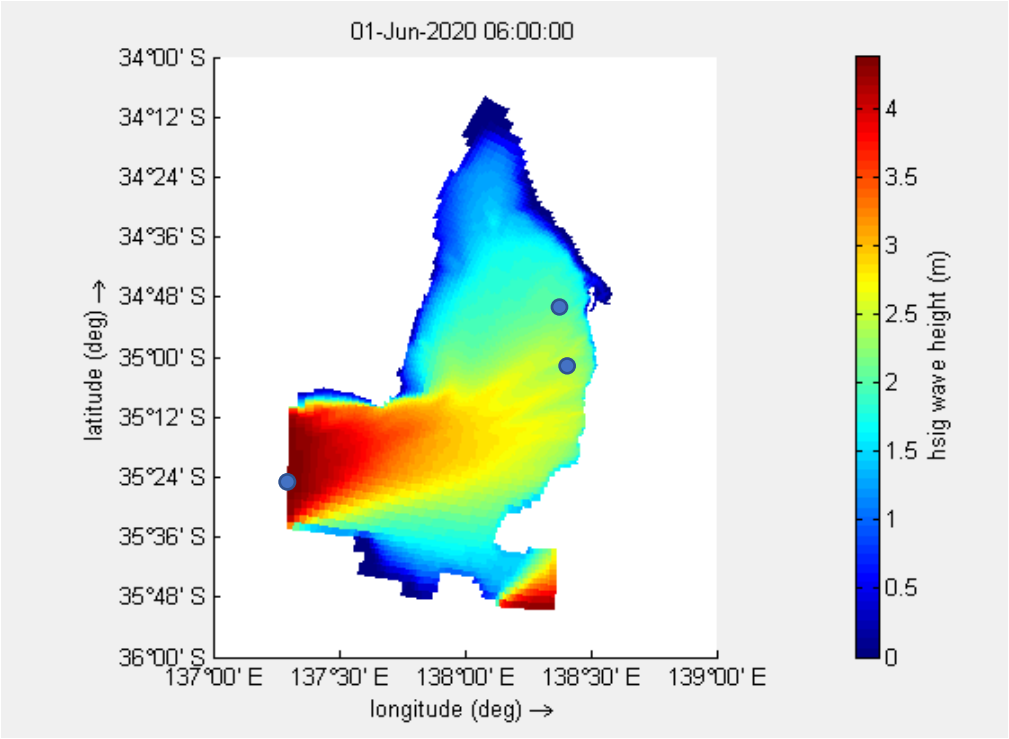
nortek.com

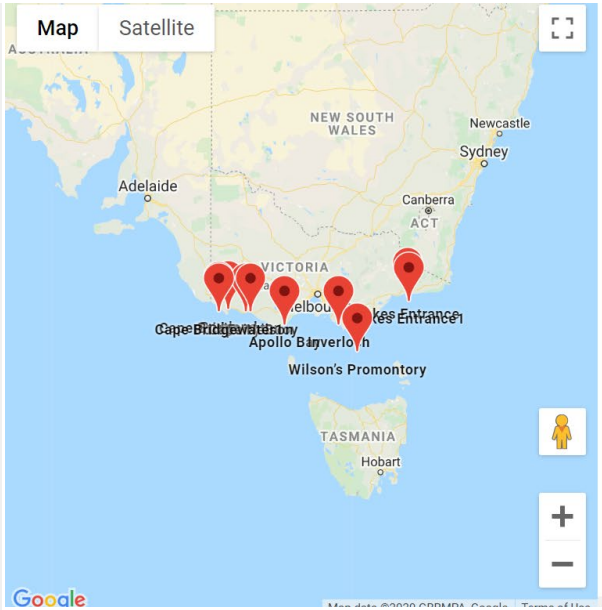
SAwaves

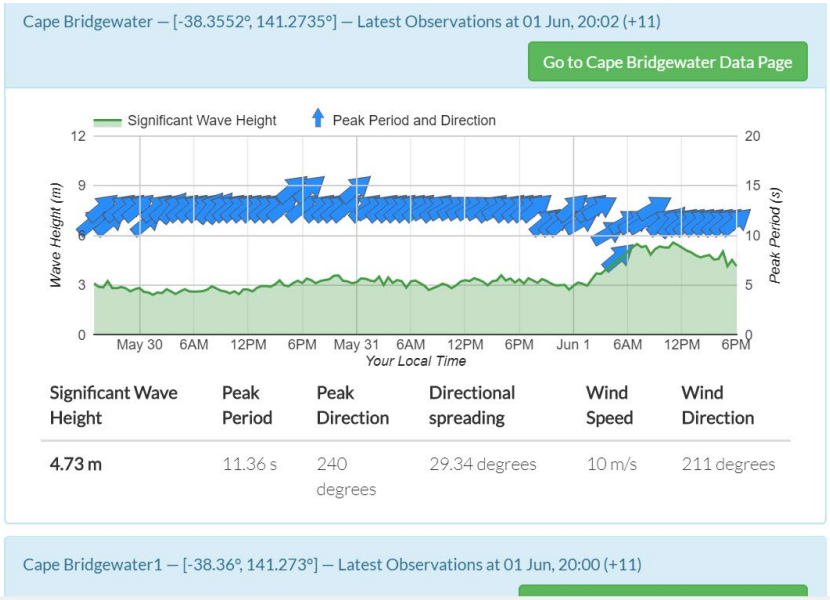
SAwaves is a wave monitoring program for South Australia (maintained by Flinders University and SARDI)

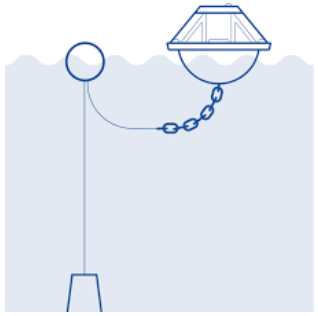
Array of wave buoys (Spotter) that provide real-time wave and SST data

DEW Coastal R&D grant (2020)









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South Australia

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Department for Environment and Water

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Primary Industries and Regions SA

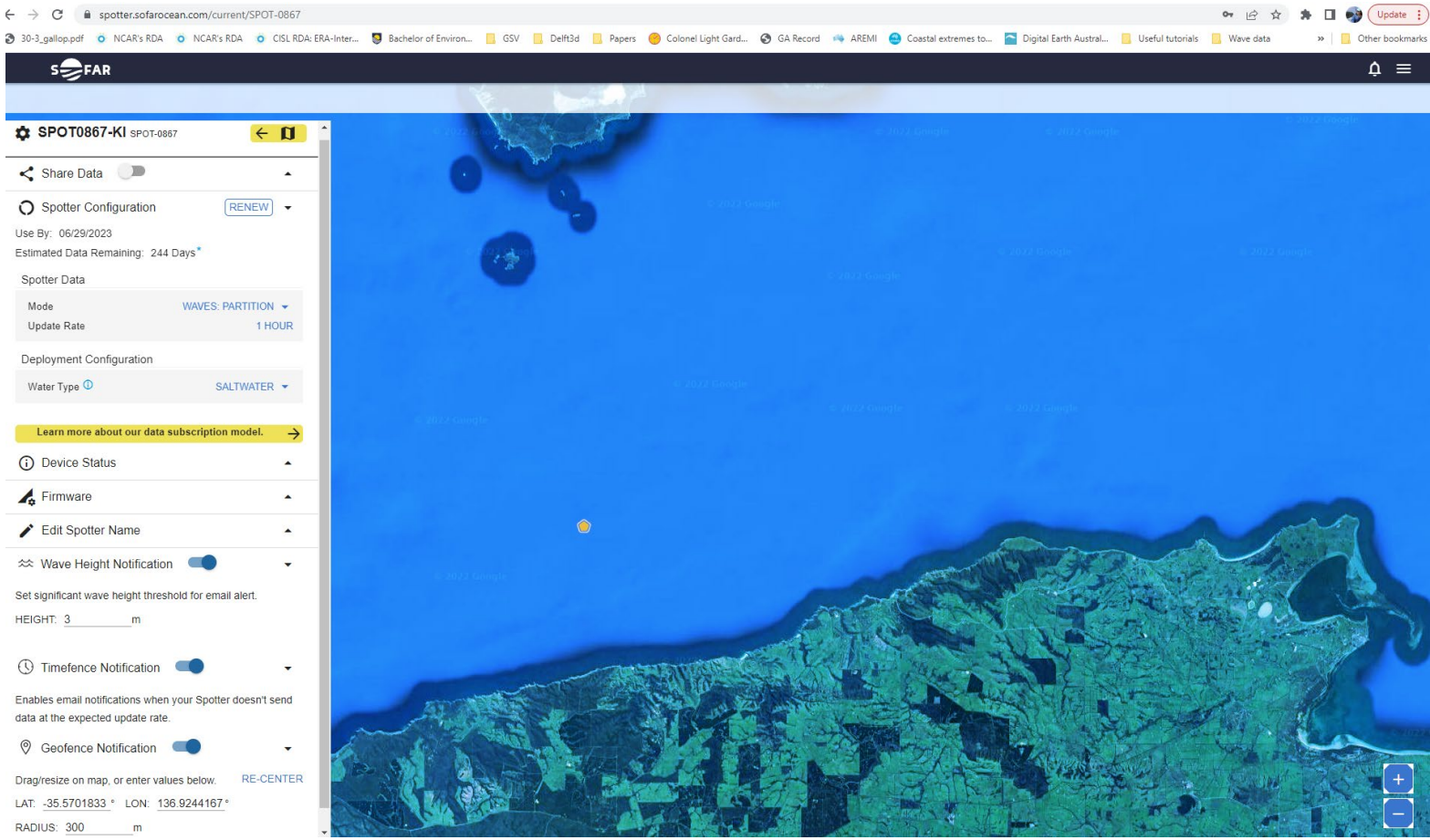
SARDI
South Australian Research and Development Institute

EPA South Australia

SA Water

The South Australia wave buoy network (SAwaves) is currently made up of moored SOFAR Spotter buoys which have been deployed for ~two years (1 year in Robe). The data provided by the buoys and displayed in this site are:

- Time (ACST), position (latitude and longitude);
- Significant wave height (Hm0);
- Peak period (Tp) and Peak direction (Dp) – period and direction associated with the most energetic waves in the total wave spectrum. The Dp is measured clockwise from North and indicates the direction the waves come from;
- Sea surface temperature via a thermistor mounted to the wave buoy hull;
- Wind speed and direction, estimated from the buoy's measurements of the short period waves.



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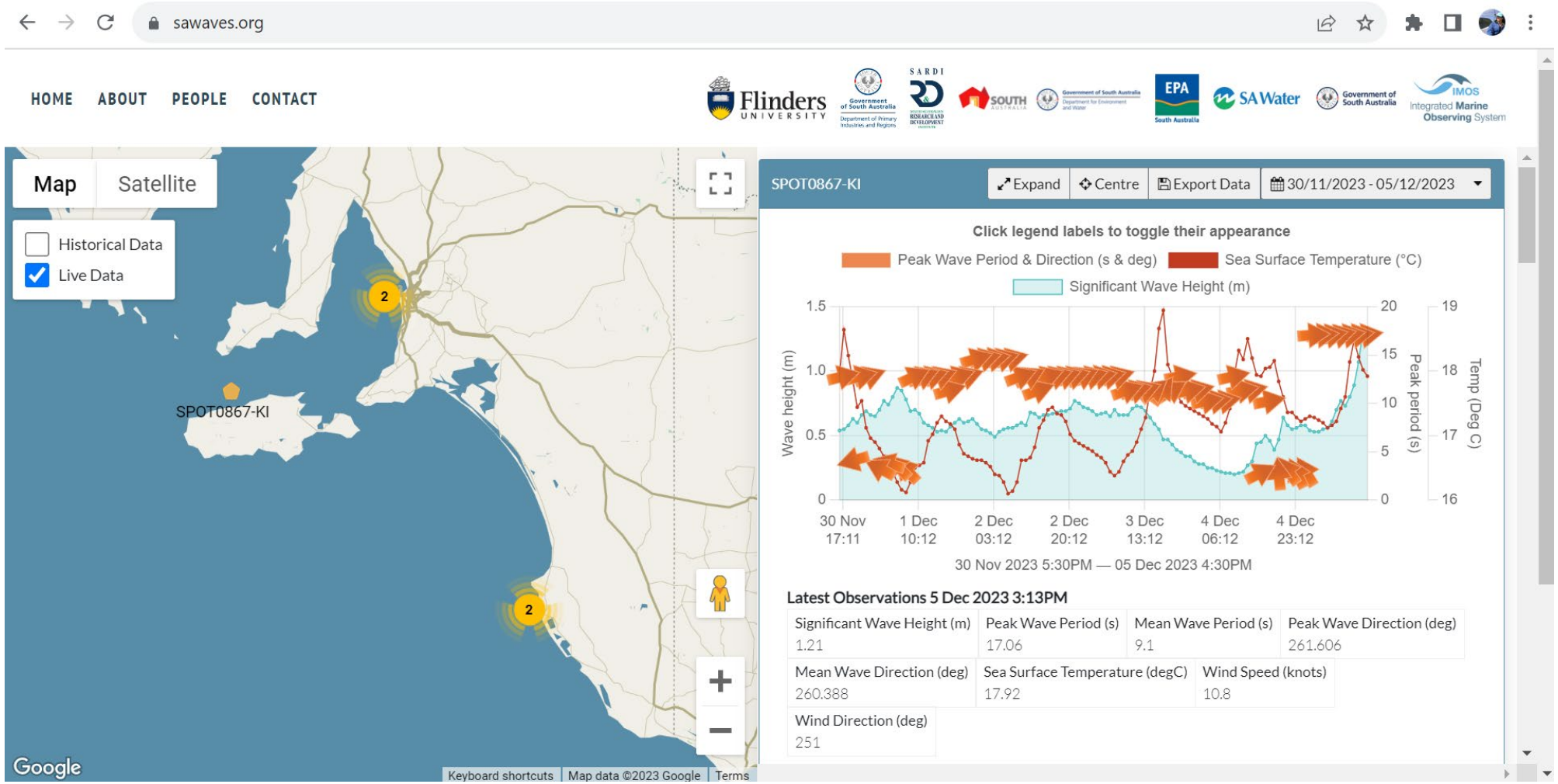
Real-time wave data: www.sawaves.org

- Bulk wave parameters (significant wave height, period and direction)
- Sea and swell wave partitions
- Full spectrum

www.sawaves.org



~4k views over the last year

Government of South Australia
Primary Industries and Regions SA
SARDI
SOUTH AUSTRALIAN RESEARCH AND DEVELOPMENT INSTITUTE
SA Water
SOUTH AUSTRALIA
Government of South Australia
Department for Environment and Water
EPA South Australia
Beach and Dune Systems Laboratory
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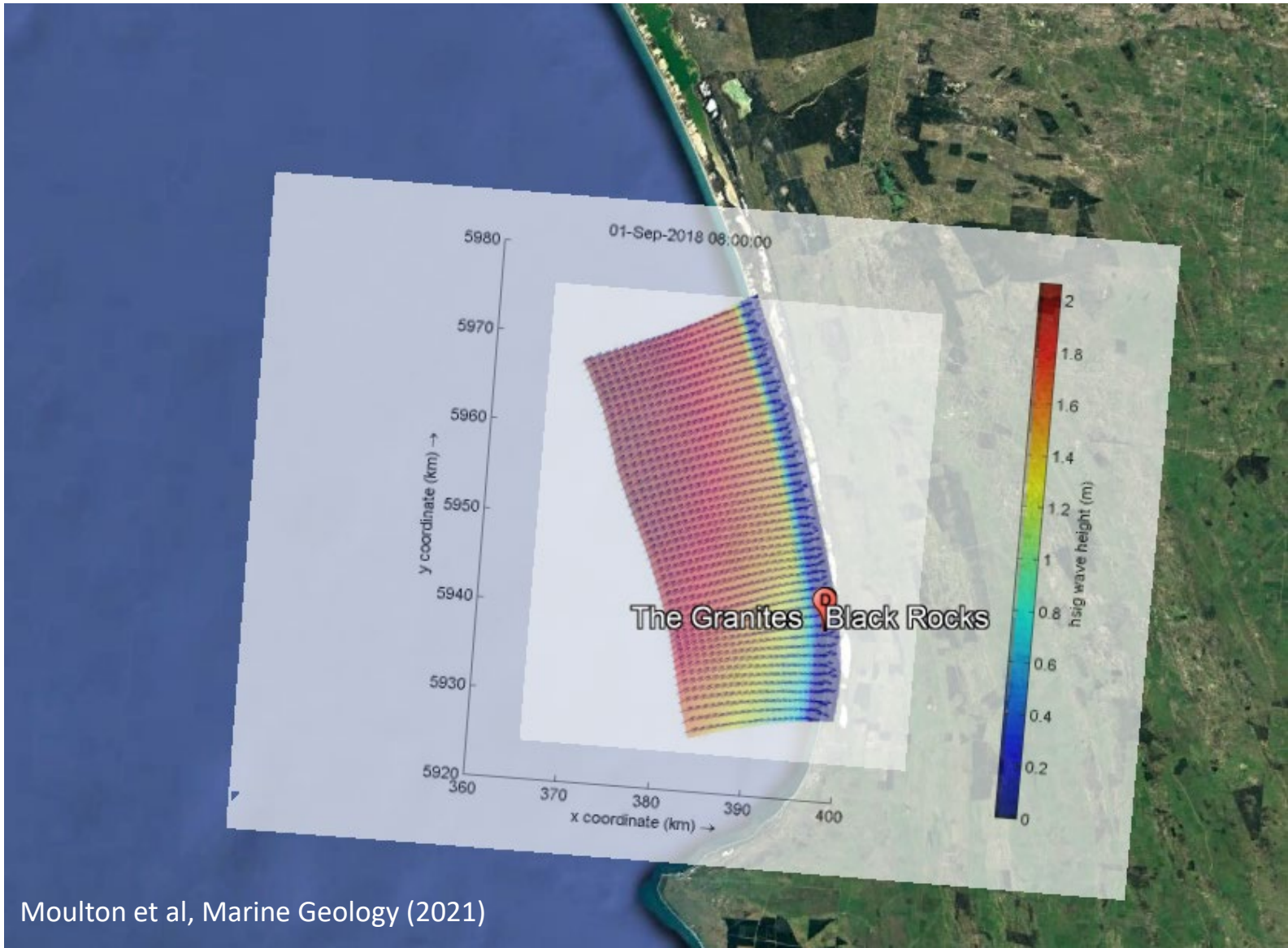
Why do we need data?

We need data to validate numerical models that inform:

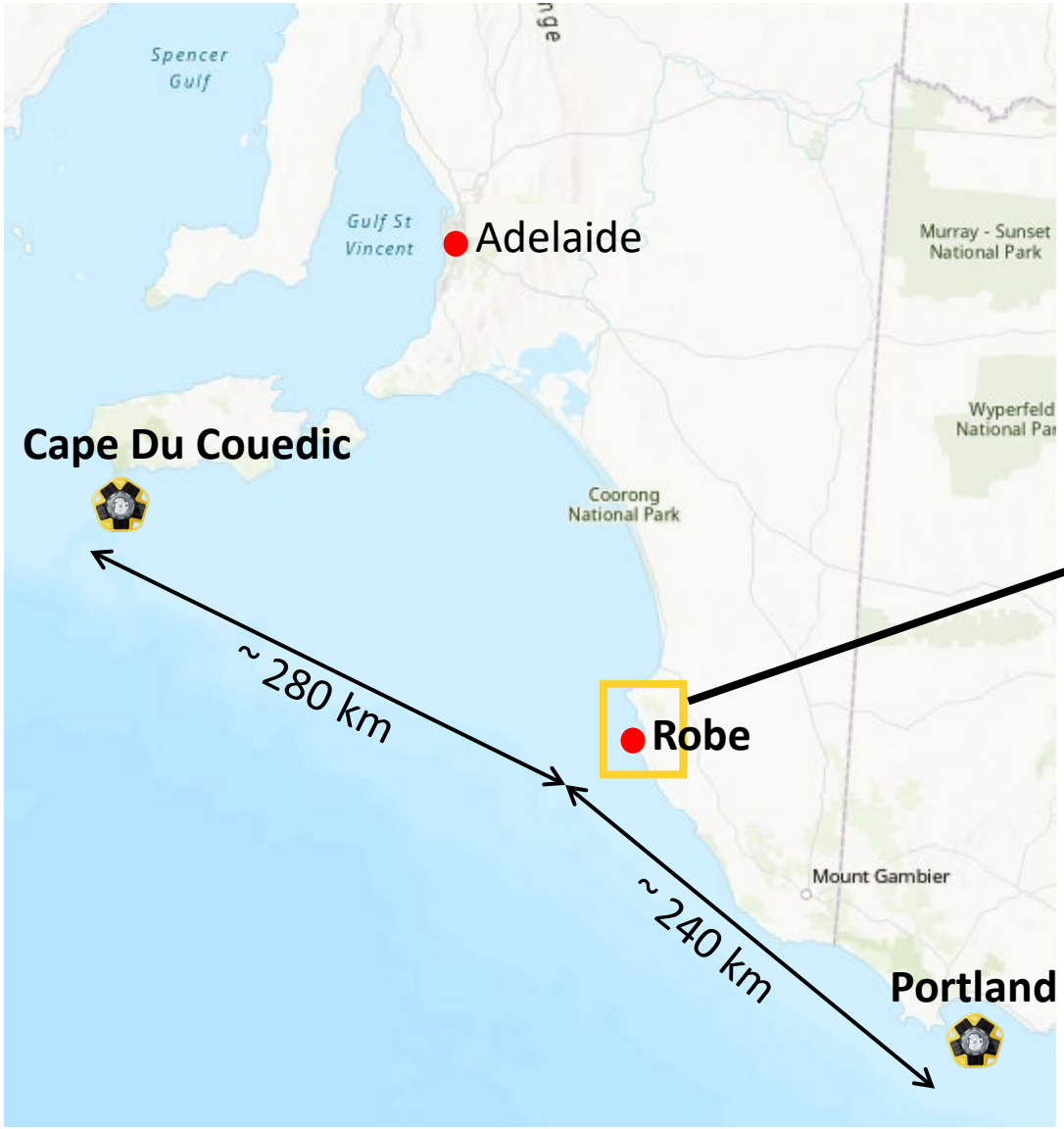
Longshore currents, tidal propagation
Sediment transport (bedload and suspended)
Coastal erosion
Storm impacts, changes in morphology (coasts, inlets, estuaries, lakes and rivers)
Water quality, circulation of nutrients

Current research with colleagues from Adelaide Uni, SA Water, TU Delft and Deltares in various projects.



Moulton et al, Marine Geology (2021)

Wave heights in Robe



Charlotte Uphues– PhD student at Flinders University (BEADS lab)

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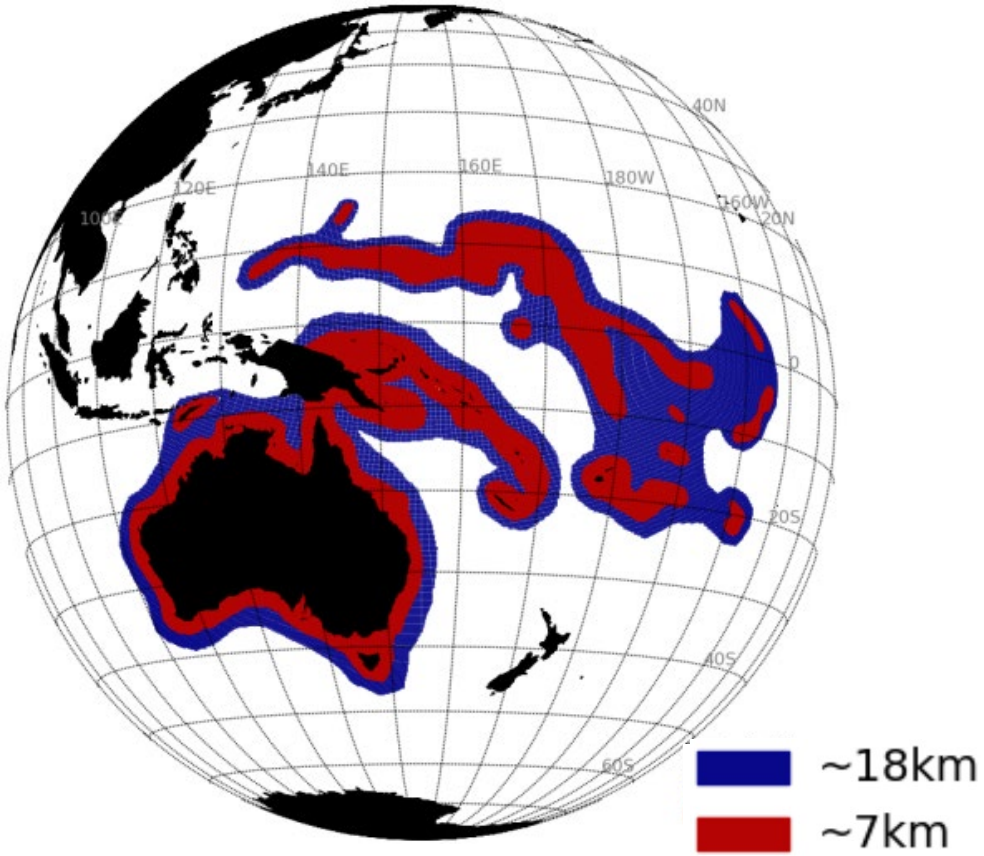
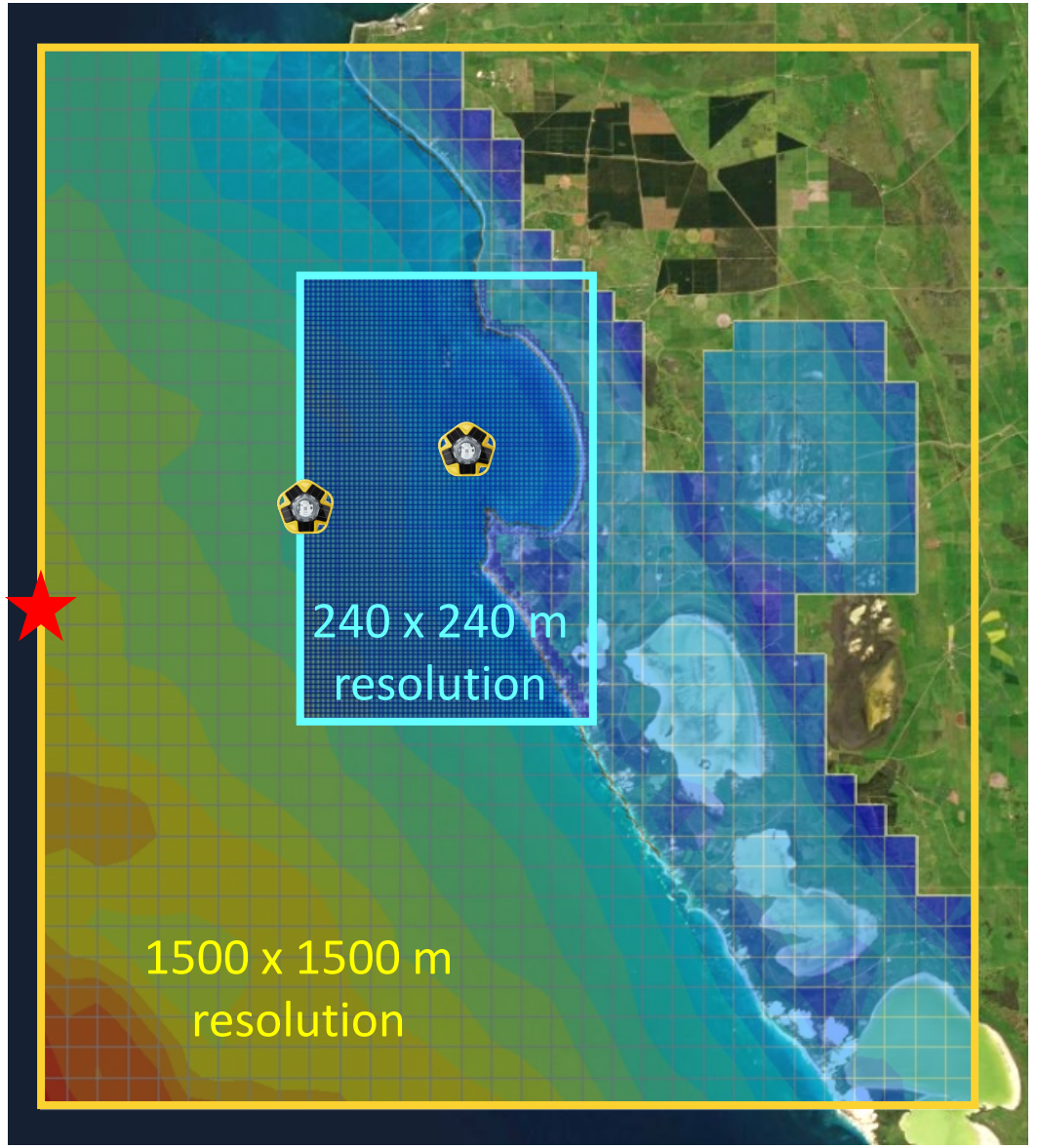
Wave measurements and models

CAWCR* wave hindcast model

*Centre of Australian Weather and Climate Research - CSIRO



CAWCR
wave model
Hs = 3 m
Tp = 14.5 s
Dir = 225°



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Future of the network

SA Climate Ready Coasts (CRC) Program

Monitoring buoys are part of the stage one of the project (July 2023 to June 2024) - DEW

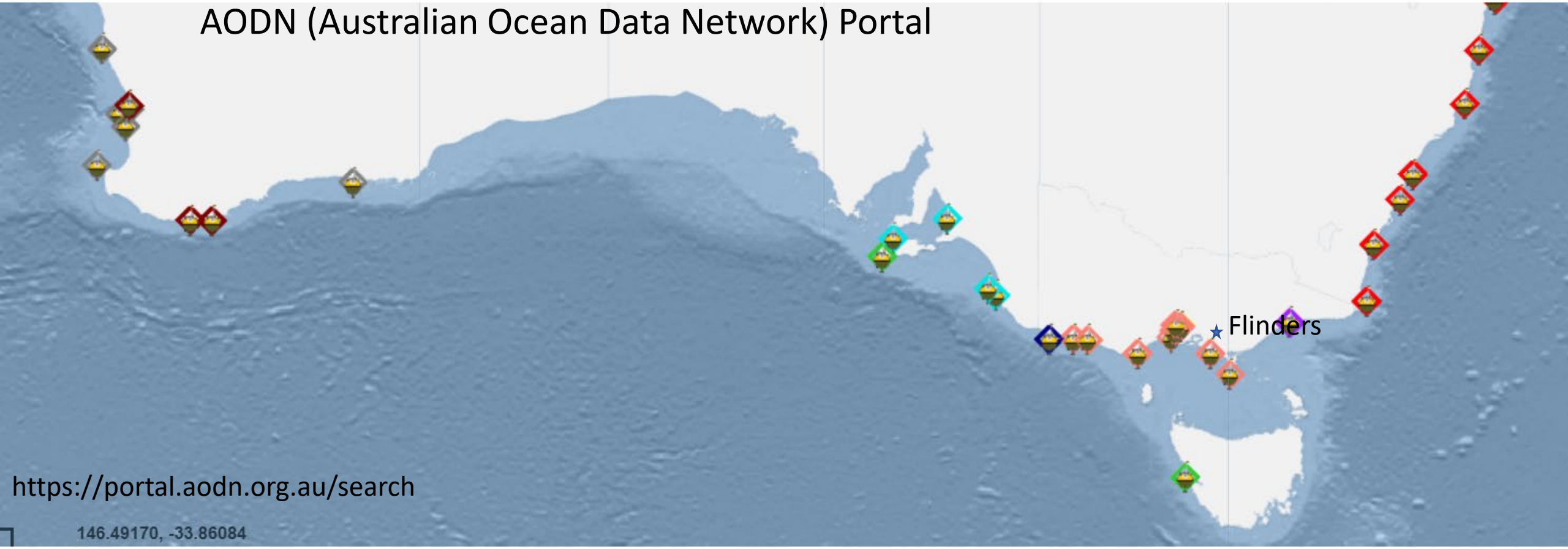
The priorities for the next quarter focus on purchase of buoys and engagement with stakeholders on:

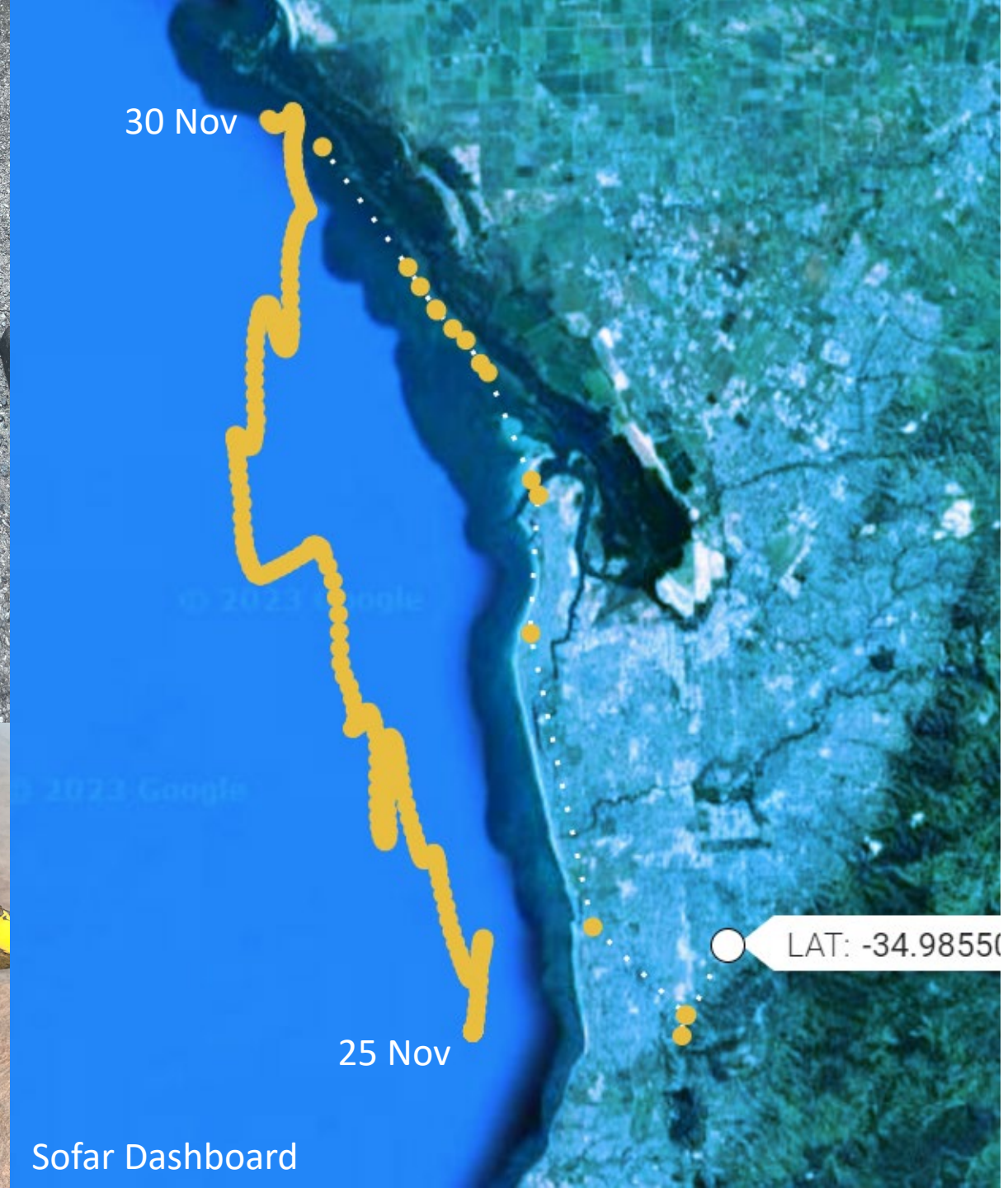
1. Interest in data,
2. Location of buoys,
3. Deployment and maintenance.

If anyone is interested in being involved, please contact nicole.pelton@sa.gov.au

IMOS (Integrated Marine Observing System) - Coastal Research Infrastructure (CoastRI)

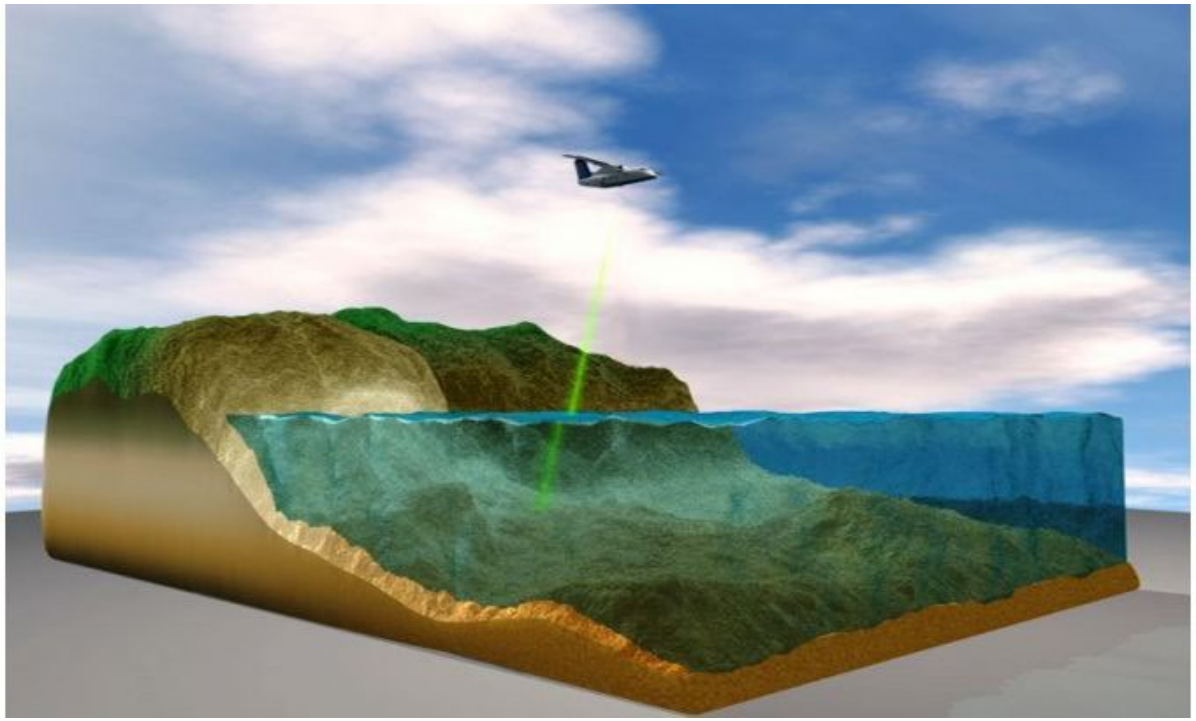
"developed to provide a national-scale coastal observing and modelling capability for Australia, including establishing partnerships with First Nations people, to collect and deliver valuable coastal data" (https://www.coastri.org.au/)




30 Nov
25 Nov
LAT: -34.9855(
Sofar Dashboard

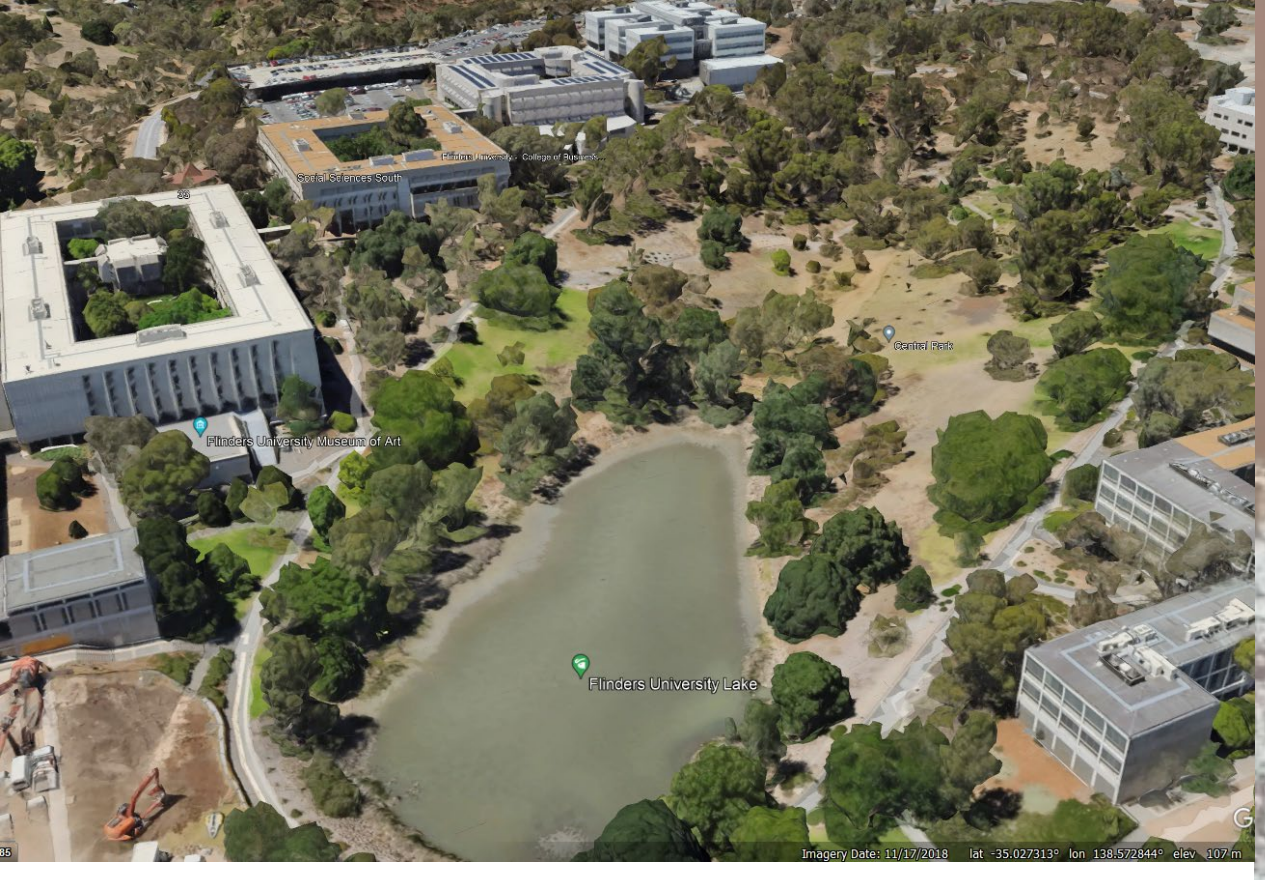
A High-Resolution Coastal Bathymetry Facility with Advanced Technologies (CoastBAT)

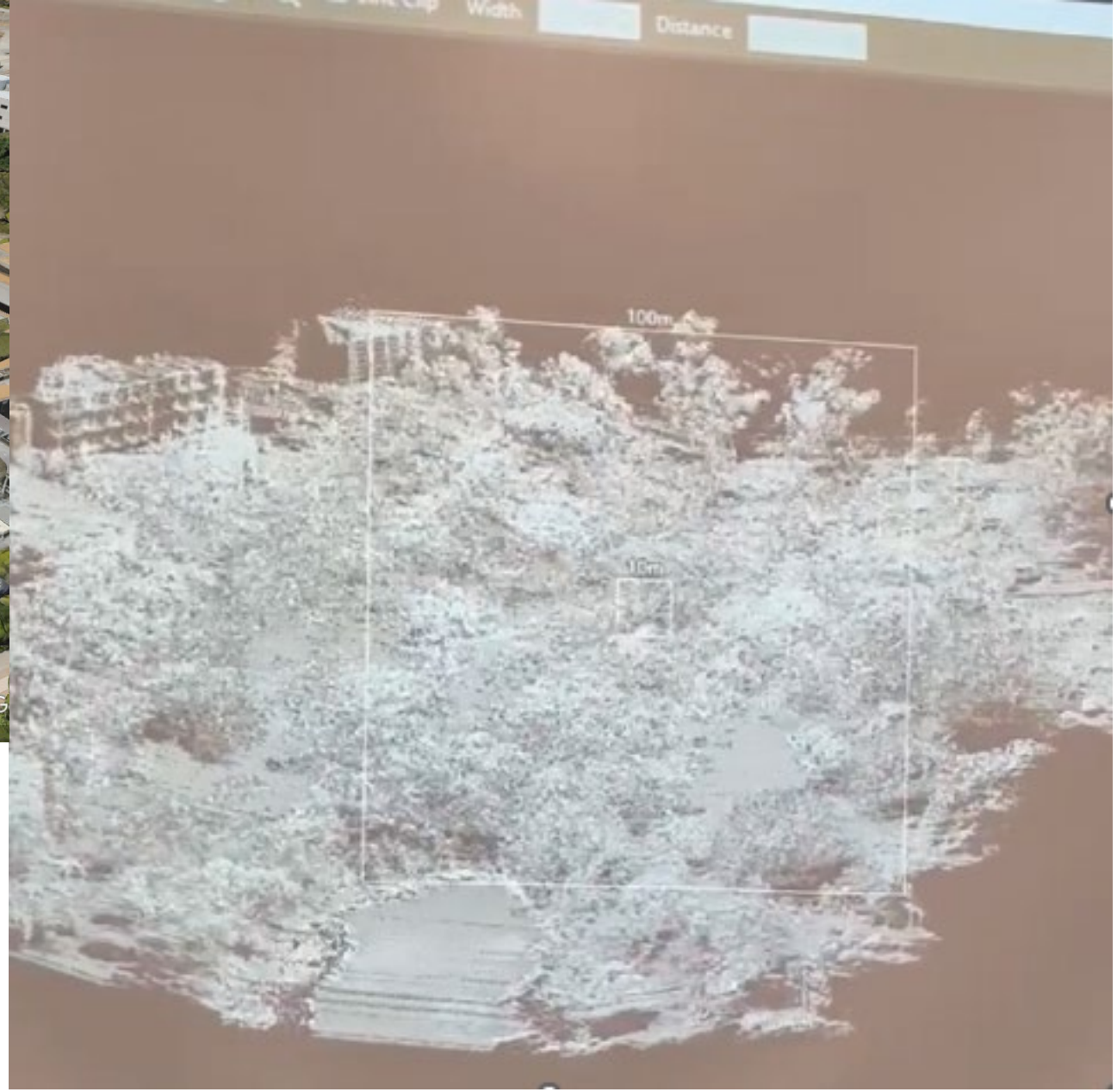
Provide high resolution bathymetry in nearshore and inland waters, where information is currently limited due to high cost and/or difficult access by traditional surveying operations.



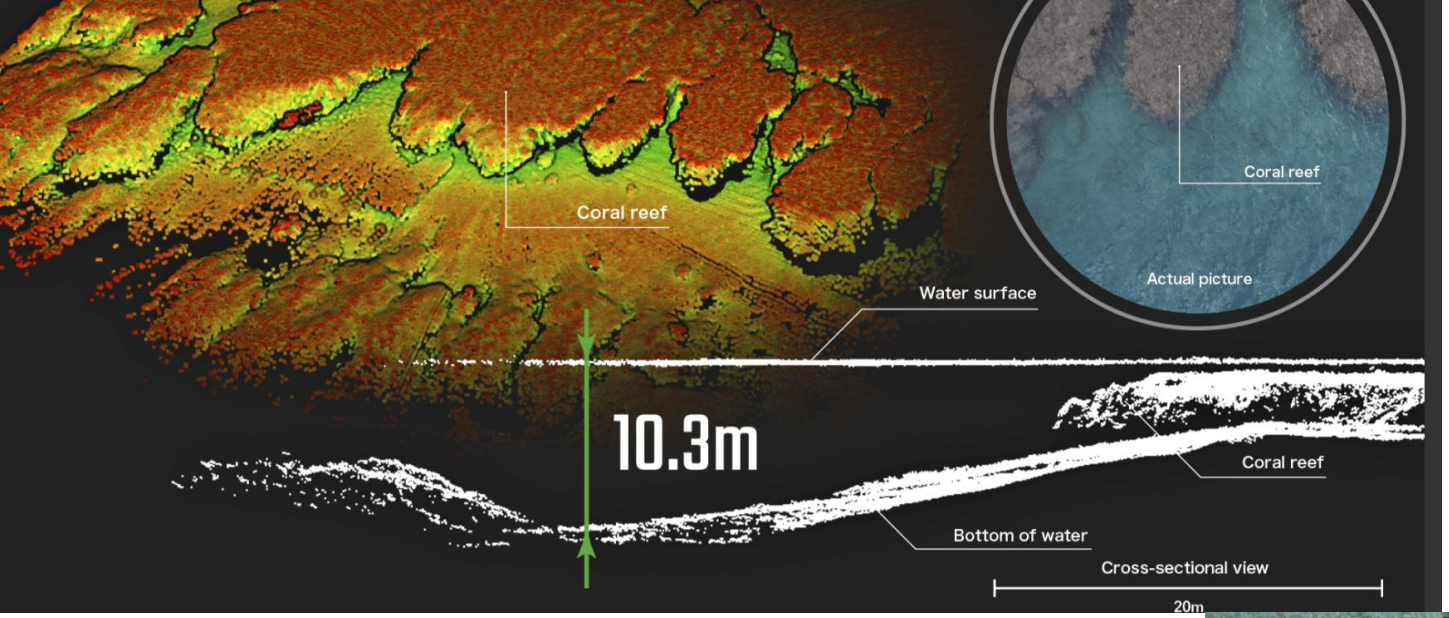
https://www.gim-international.com/content/article/technology-in-focus-bathymetric-lidar-2

TDOT (Amuse Oneself Inc., Japan)





Training at Flinders University (22 to 24 November)



The CoastBAT facility will be operational from early 2024. Data obtained will be shared with the community via AusSeabed.

This project is funded by the Australian Research Council (LE230100038), led by Flinders University in partnership with the SA Department for Environment and Water (DEW), SA Water, Deakin University, District Council of Robe and Monash University.