

# Crowdsourced bathymetry on the Great Barrier Reef, Australia

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# Crowdsourced bathymetry (CSB)

- Collection of depth measurements from vessels using standard navigation instruments
- Detailed knowledge of depth critical for understanding GBR ecosystems, flood modelling, COT starfish control
- ~40% of GBR shelf mapped with in situ depth soundings, with a need to preserve, share and fill data gaps



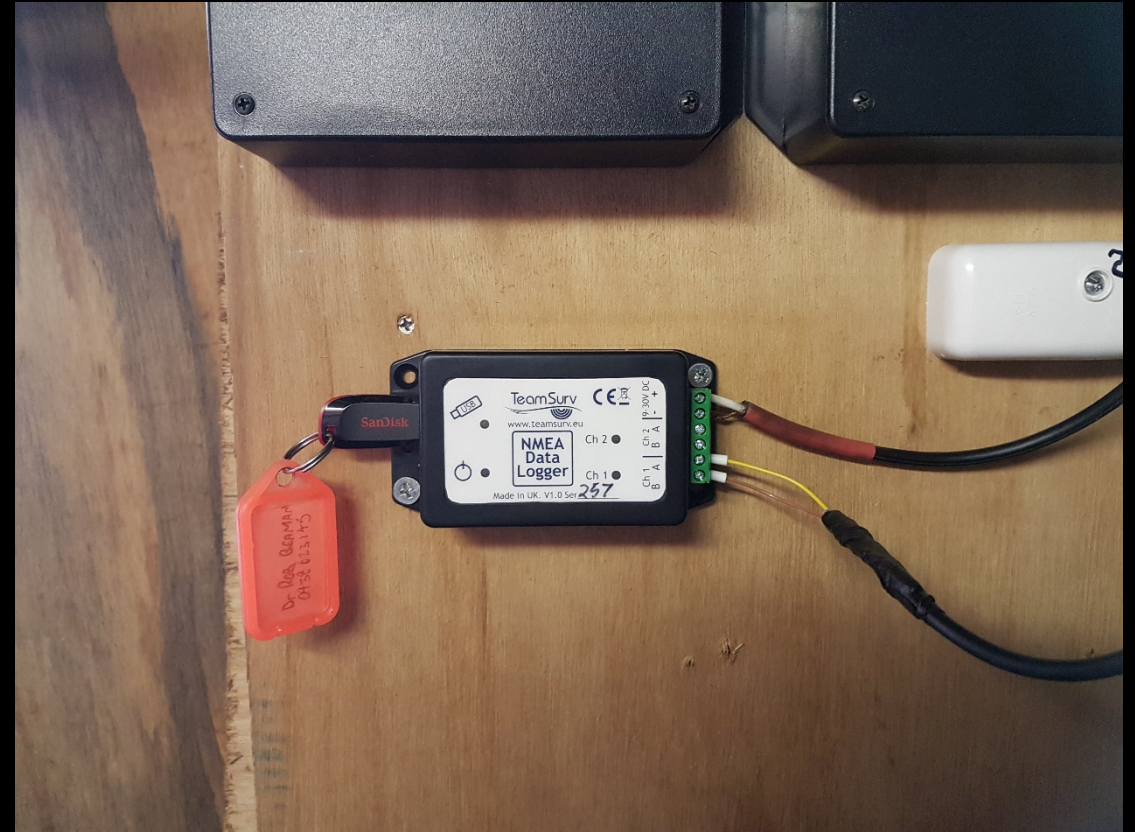


# TeamSurv data logger

MV ARGO



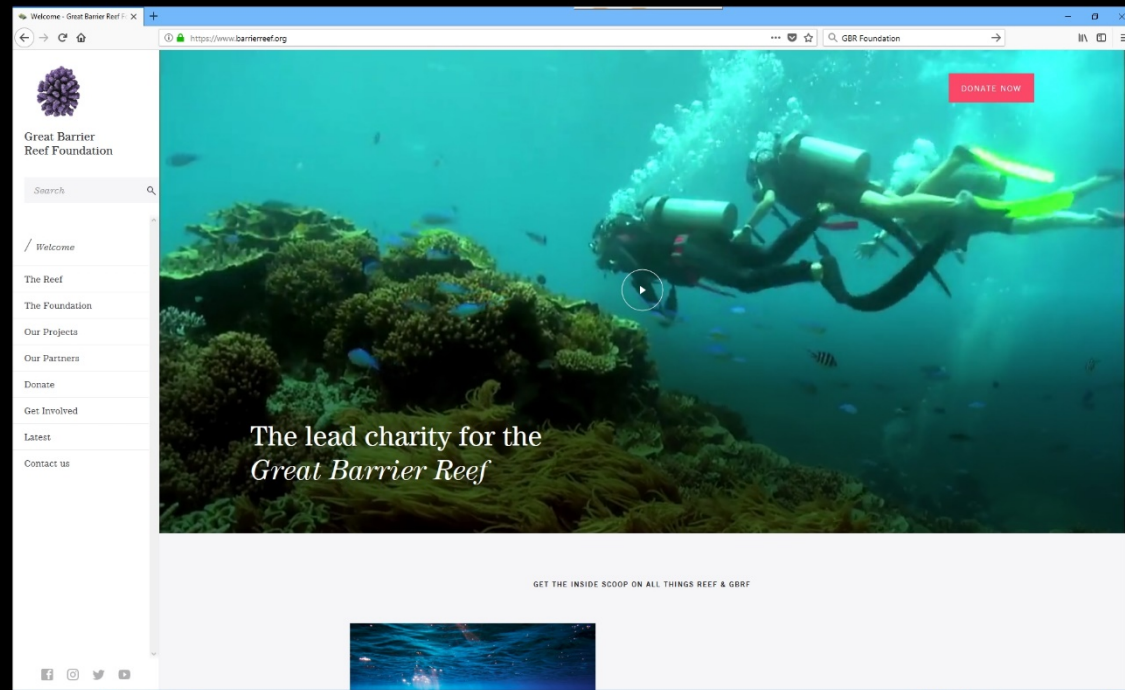
SmartLog NMEA data logger + USB



TeamSurv at: <https://www.teamsurv.com/>

# CSB funding and support

Great Barrier Reef Foundation



GBR Foundation at: <https://www.barrierreef.org/>

Citizens of the Great Barrier Reef



Citizens of the GBR at: <https://citizensgbr.org/>



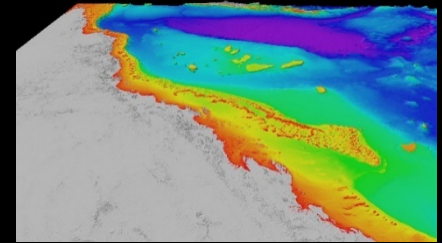
# CSB processing

raw NMEA → python filtered → Caris HIPS → gbr100/30

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$ECZDA,222112.41,28,06,2018,,*75  
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$SDDPT,2.8,0.0*5D  
$VWMTW,261.0,C*27  
$VWVLW,0.0,N,0.00,N*7C
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-16.8014333,145.7171667,20180628,222122.39,0.0,007.3,3.2
```

vessel configuration  
sound velocity for area  
tidal adjustment  
point cloud editing



datum adjustment

# CSB data flow

crowdsourced bathymetry

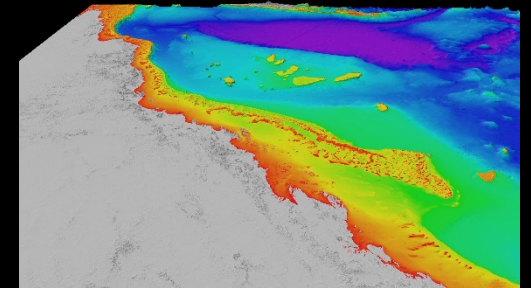
gbr100/30

JCU (Trusted Node)

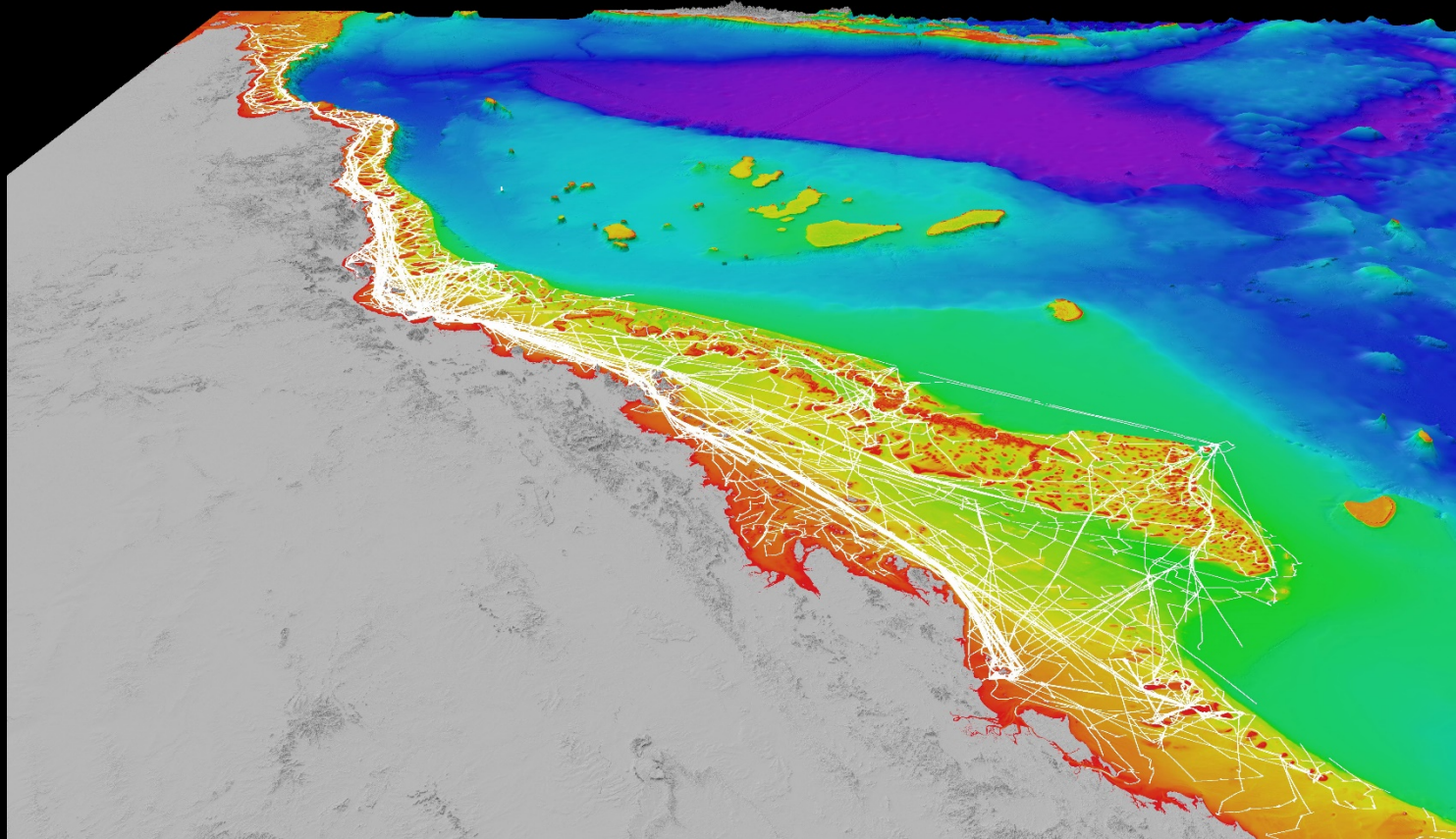
Australian  
Hydrographic  
Office

IHO Data Centre for Digital  
Bathymetry (DCDB)

TeamSurf



# CSB data coverage



2.25 million soundings (8 Nov 2018) growing by ~20 thousand soundings per month



# GA media release 19 January 2018



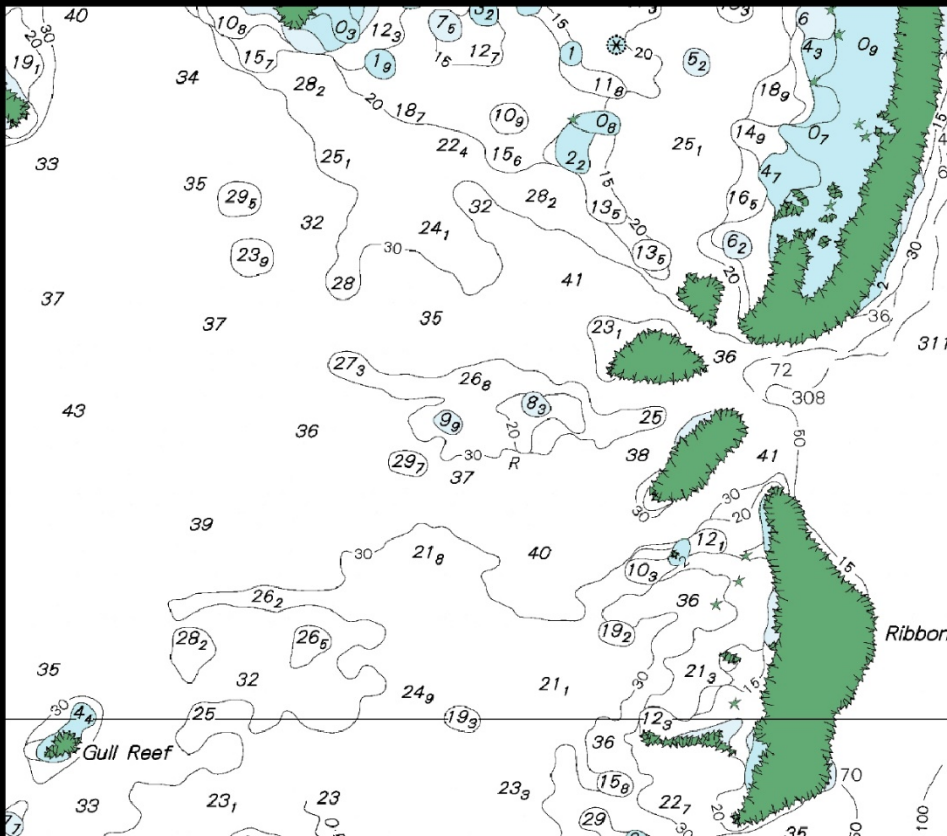
gbr30 data available at the AusSeabed Marine Data Discovery: <http://marine.ga.gov.au/#/>



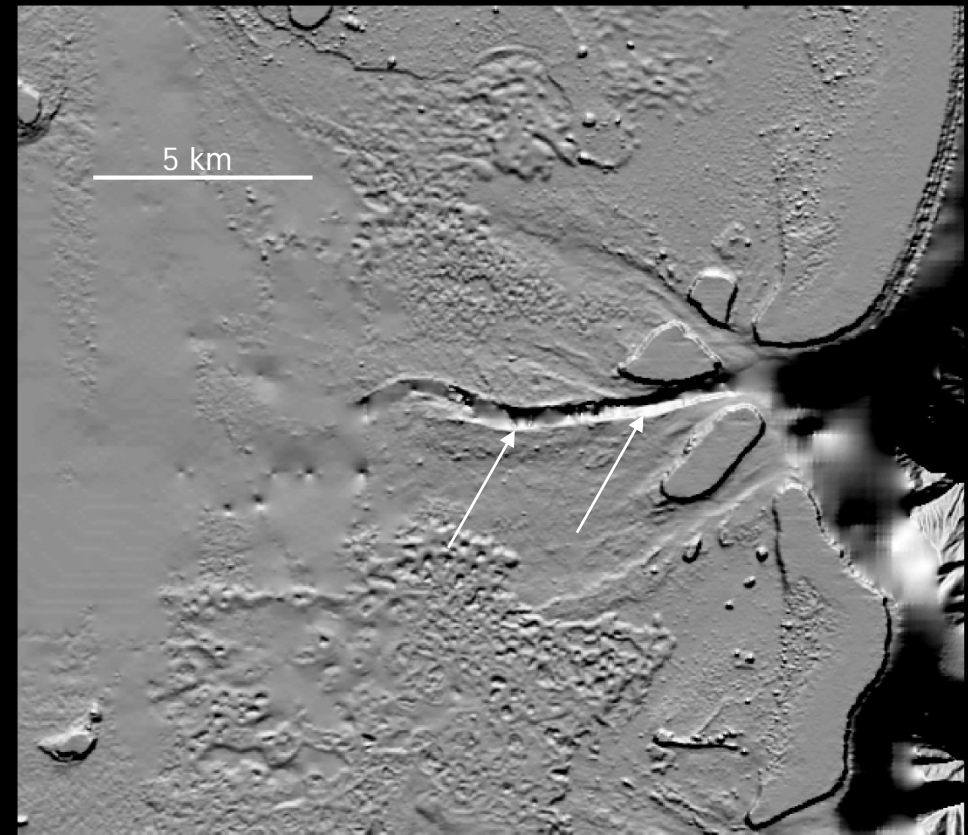
# MV ARGO data



Aus chart



palaeo-channel



# Legal

## Consent and Release Form

Crowdsourced bathymetry on the Great Barrier Reef Project  
Information, Consent and Release Form

Thank you for becoming a contributor to the Crowdsourced bathymetry on the Great Barrier Reef Project, with a description at: <https://www.deepreef.org/projects/246-crowdsourcedbathymetry.html>

Installation

James Cook University (JCU) will provide and install a SmartLog USB data logger made by UK-based Company TeamSurv. The data loggers comply with European standards and have internal fuses.

The data logger utilises the vessel's own 12/24V DC to log data to a USB stick from the vessel's own sensors (GPS and depth sounder) with opto-isolated input channels.

Permits

JCU will provide a Letter of Authorisation to conduct Limited Impact Research on the GBR. A copy of this Letter should be kept onboard the vessel and presented to any authority requesting it.

Data

The bathymetry data collected will be edited of any noise and be made publicly available. The publicly available data will include the vessel's name, date and time of data acquisition.


Consent and Release

- I warrant that I am the owner of the vessel named below and have authority to give the consent and release set out below.
- I consent to my vessel participating in the Crowdsourced bathymetry on Great Barrier Reef Project.
- I acknowledge that participation in the Project will include:
  - the installation of a SmartLog USB data logger which will use the vessel's 12/24VDC to log bathymetry data; and
  - myself or an employee liaising with the Project Leader, Robin Beaman at approximately 3 month intervals during the course of the Project to enable Dr Beaman to board the vessel and download data from the data logger's USB stick.
- I acknowledge that the data logger installed on the vessel will, at all times, remain the property of JCU and I will permit JCU or its contractors to remove the data logger from the vessel at any reasonably convenient time, including if I withdraw the vessel from participation in the Project or when the Project ends.
- To the fullest extent permitted by law I forever release and discharge JCU and each of its officers, employees, agents and contractors from any present or future claim, cause of action or liability relating or incidental to the vessel's participation in the Project, including the installation of the data logger on the vessel and its subsequent removal.

Signature of Owner: \_\_\_\_\_ Date: \_\_\_\_\_

Name of Owner: \_\_\_\_\_ Name of Vessel: \_\_\_\_\_

## Research Permit

  
**JAMES COOK UNIVERSITY AUSTRALIA**  
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Deputy Director TropWATER  
Estuary and Coastal Wetland Ecology  
College of Marine & Environmental Sciences  
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15 August 2018

AUTHORISATION LETTER number: CSE90

*LETTER OF AUTHORISATION FOR RESEARCH IN THE GREAT BARRIER REEF MARINE PARK*

This letter authorises Dr Robin Beaman from JCU to conduct crowdsourced bathymetry mapping in the Great Barrier Reef Marine Park. The approval number is: CSE90.

This authorisation is issued for the period of 09 May 2018 to 09 May 2023 and may be revoked at any time by Deputy Vice-Chancellor (Academic & Research) or delegated Head of School or the Great Barrier Reef Marine Park Authority.

The research mapping may be conducted in Habitat Protection (Blue), Conservation Park (Yellow), Marine National Park (Green), and Preservation (Pink) while on charter to Qld National Parks to Raine Island, within the Great Barrier Reef Marine Park, as per the Management Areas listed in the vessel transit locations of the Limited Impact Research GBR Marine Park Request for Authorisation, for the vessel:

- MV Argo (<http://www.argoexpeditions.com.au/>) 24 m long based at Yorkeys Knob Marina, Cairns.

Please see attached application form for brief description detailing the nature of the research being conducted including the sampling method.

The conditions of approval for this limited impact research are that:

- you conduct the research strictly in accordance with the proposal submitted and granted ethics approval, including any amendments required to be made to the proposal by the Office of Research or delegate;
- you make submission for approval of any proposed variations or modifications to the approved research before making any such changes;
- you provide written reports on the research, using the forms "Annual Report" by no later than 31 January of each calendar year, and "Final