

Marine mapping on CSIRO RV *Investigator*

Dr Robin Beaman

College of Science and Engineering

robin.beaman@jcu.edu.au





- CSIRO research vessel *RV Investigator* is Australia's dedicated ocean research vessel
- *RV Investigator* is part of the CSIRO Marine National Facility (MNF)
- CSIRO is owner/operator of both the MNF and *RV Investigator*

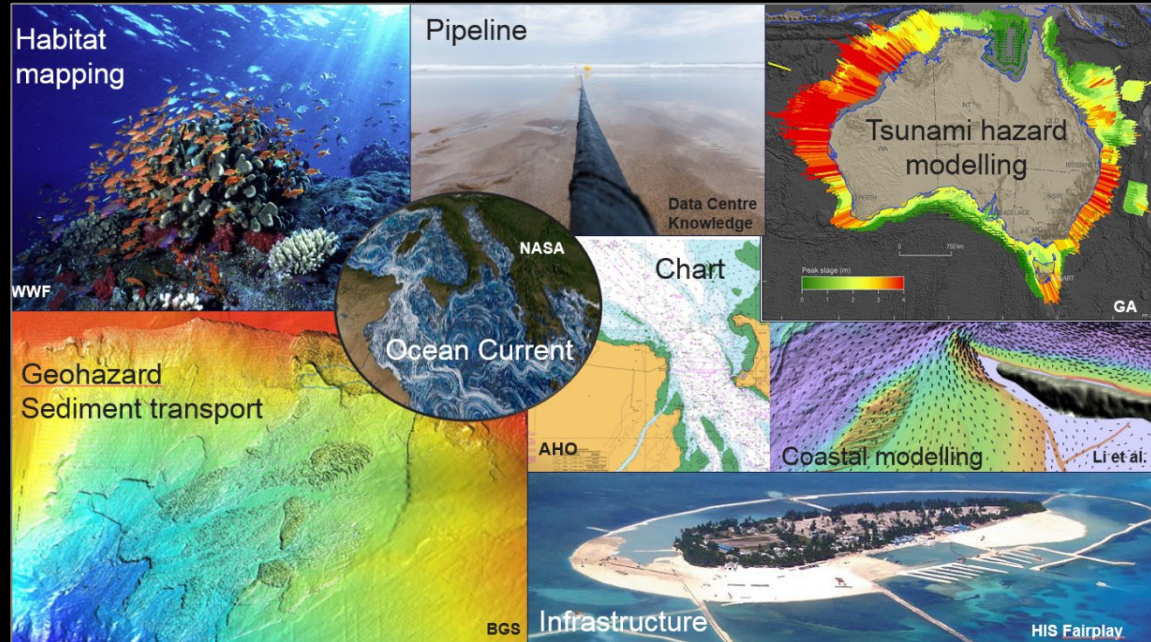
RV *Investigator*

- Atmospheric, oceanographic, biological, geoscience
- Works from Antarctic ice edge to the tropical north
- Length 94 m, beam 18 m, draft 6 m, gross 6080 t
- Berths 20 ship's crew and up to 40 science crew
- Operates ~300 days per year, home port Hobart
- Voyages last up to 60 days, average is ~30 days
- Awarded ship time through competitive proposals
- Streams policy-driven, discipline-driven, strategic partnerships, tech & innovation, user-funded



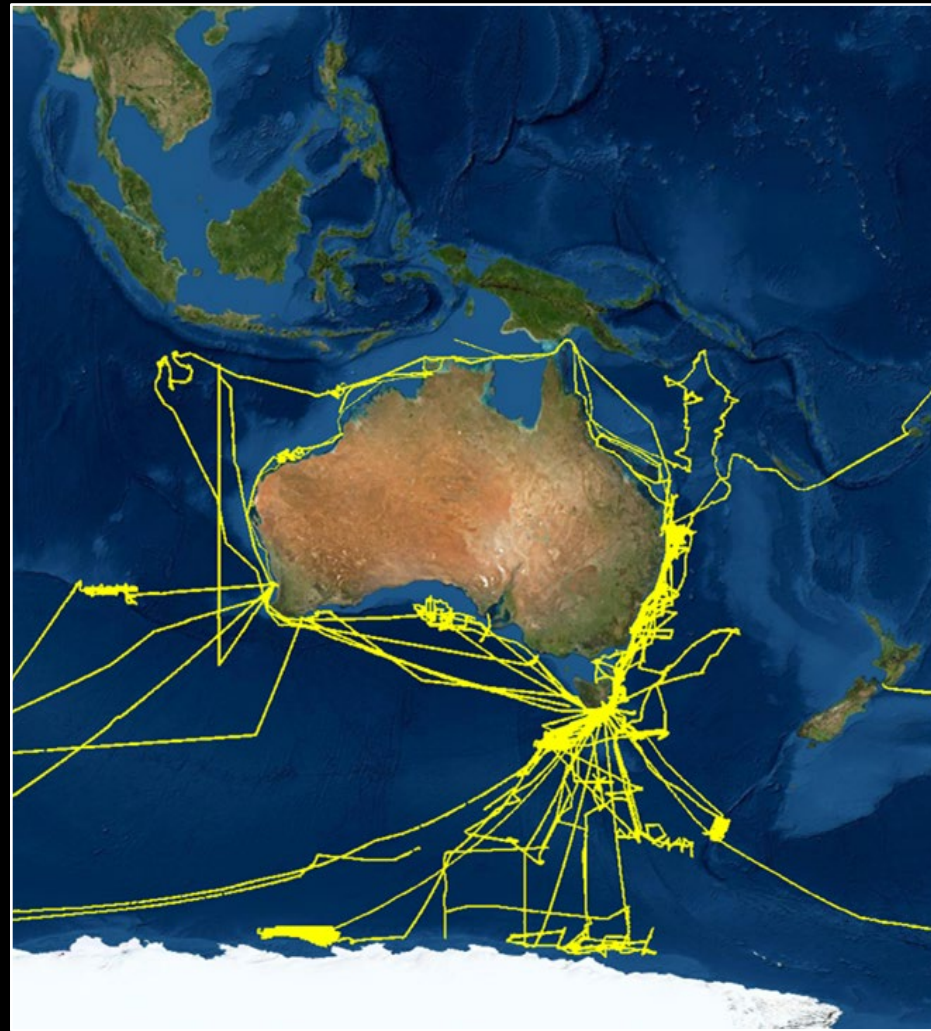
How are seafloor mapping data used?

- Sustainable development
- Climate predictions
- Renewable energy
- Hazard modelling
- Safe navigation
- Resource management
- Habitat identification
- Cultural heritage

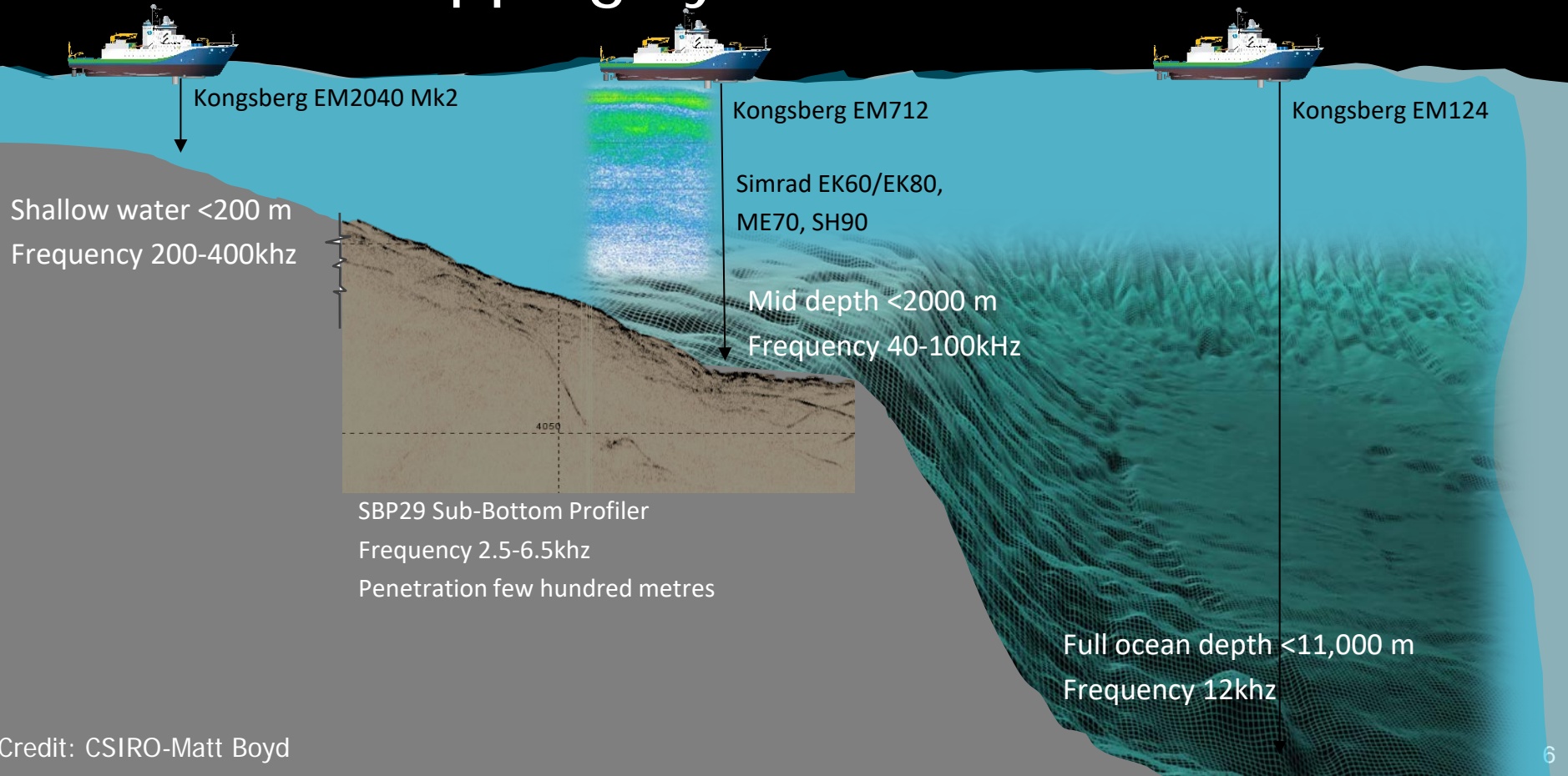


Mapping context

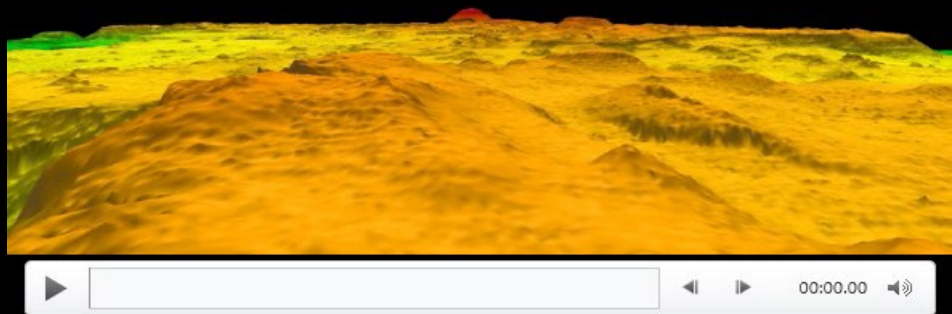
- Australian mainland EEZ: ~13.8 million km²
- Approx. 38.5% bathymetry coverage mapped in total to modern standards
- Approx. 28.7% of world's ocean floor mapped to modern standards (GEBCO)



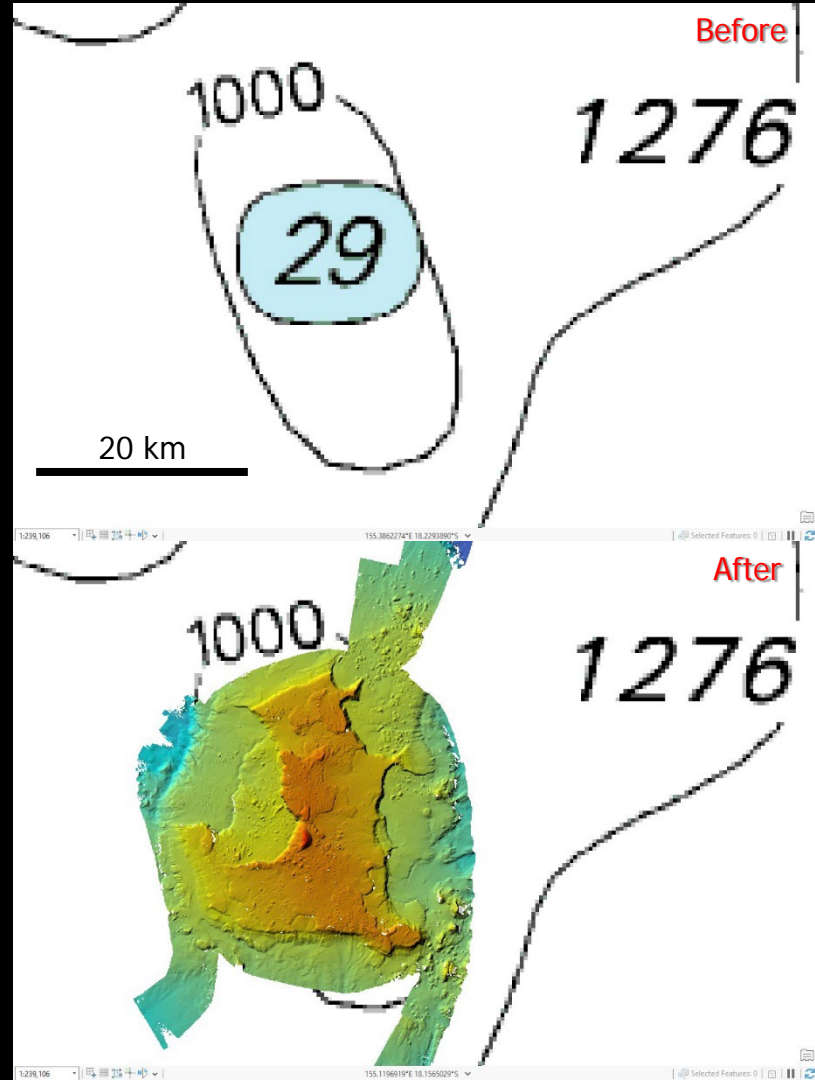
Seafloor mapping systems



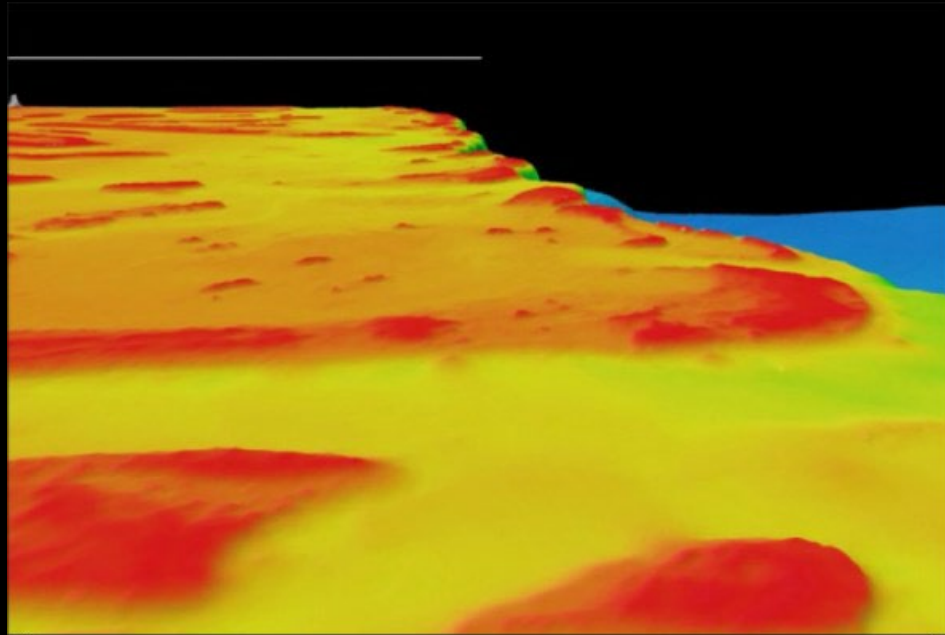
Mellish Seamount



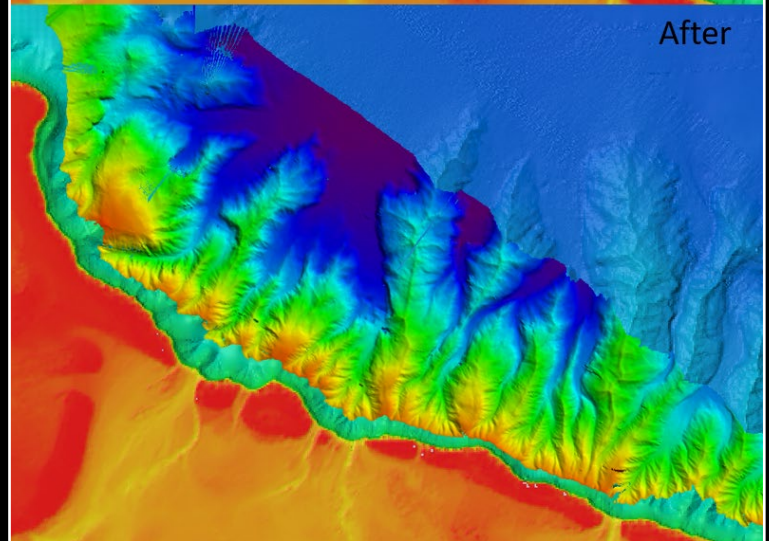
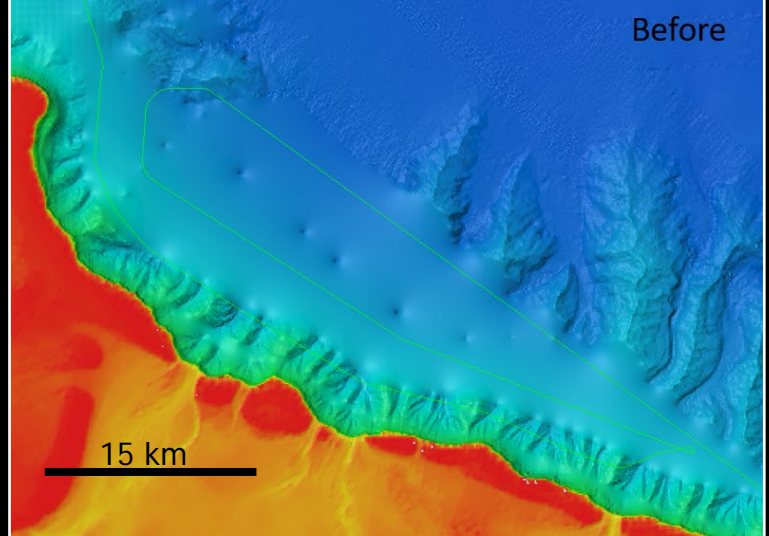
Credit: CSIRO-Chris Yuleridge



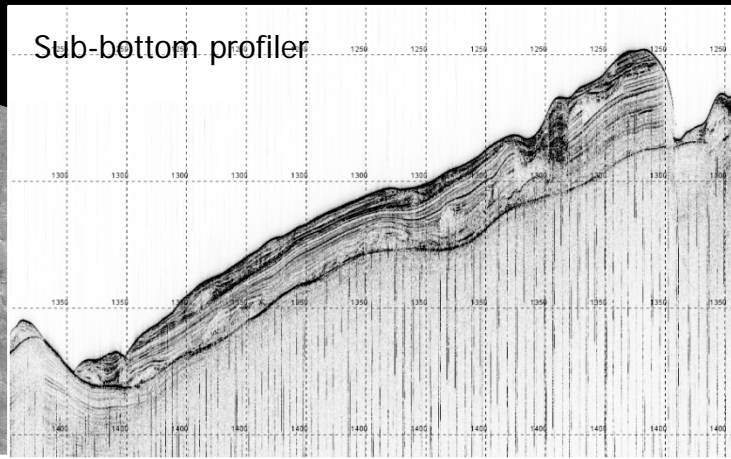
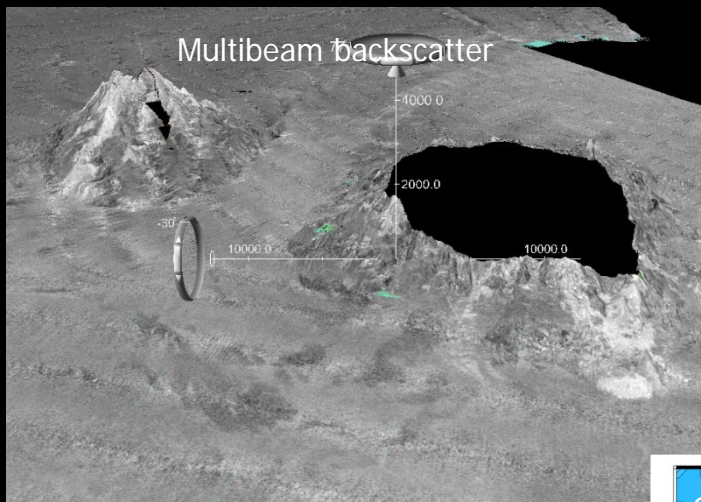
GBR canyons



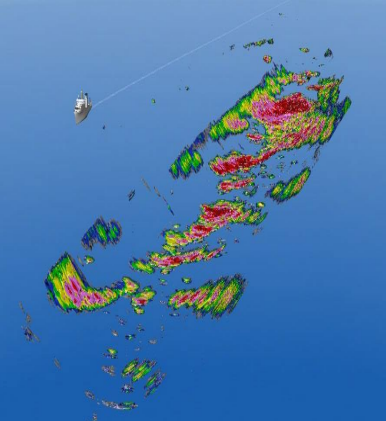
Credit: CSIRO-Matt Boyd



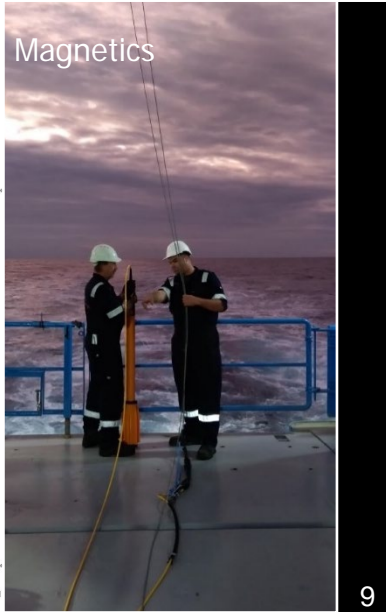
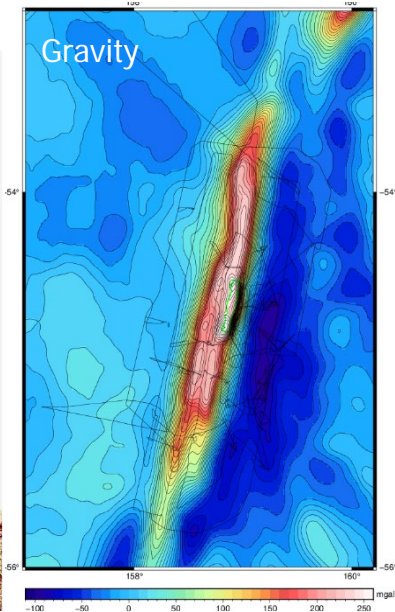
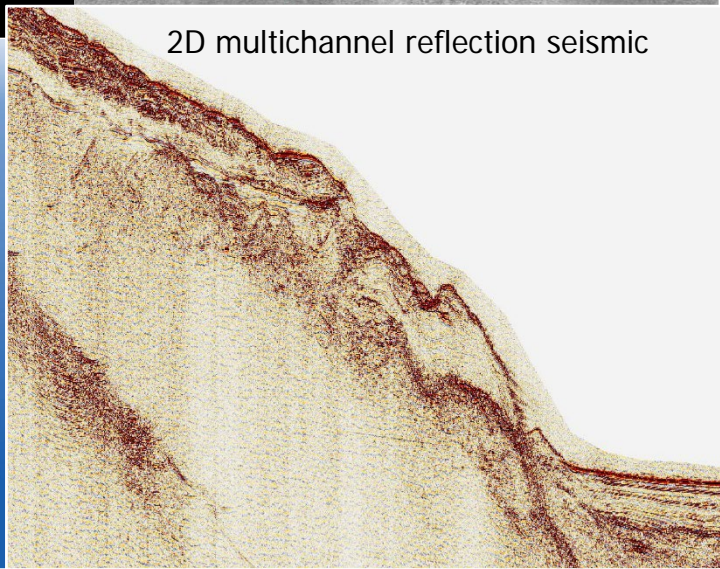
More than bathymetry



Multibeam watercolumn

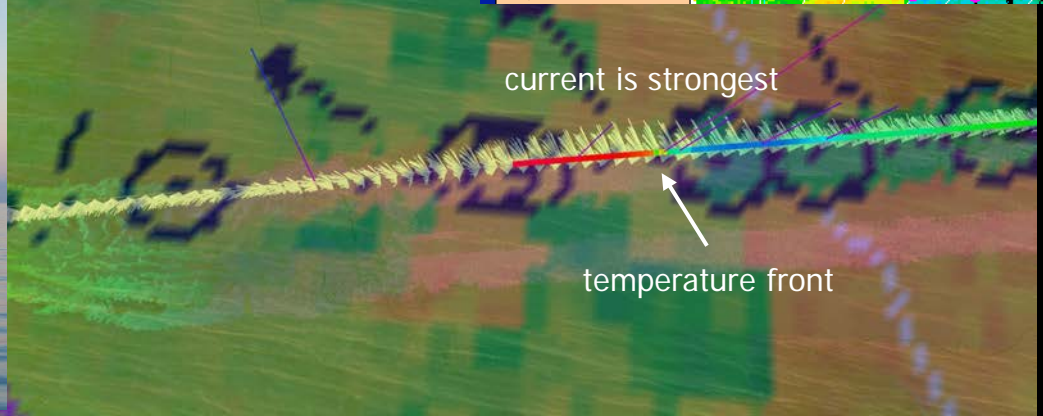
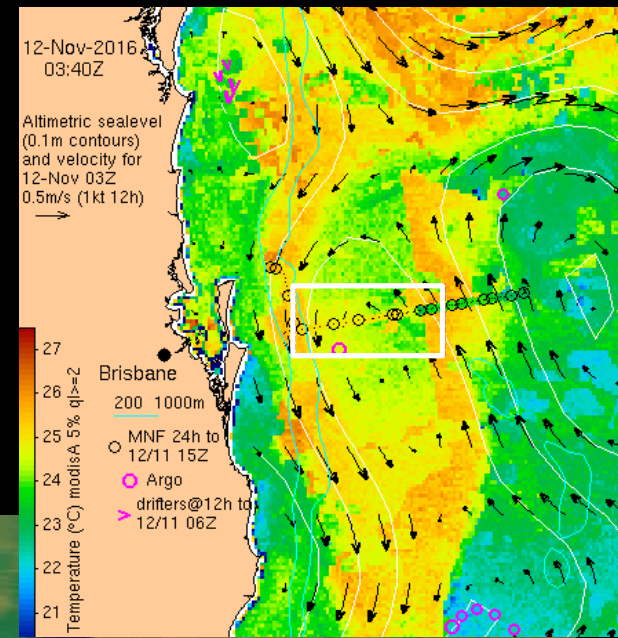


Credit: CSIRO-Matt Boyd



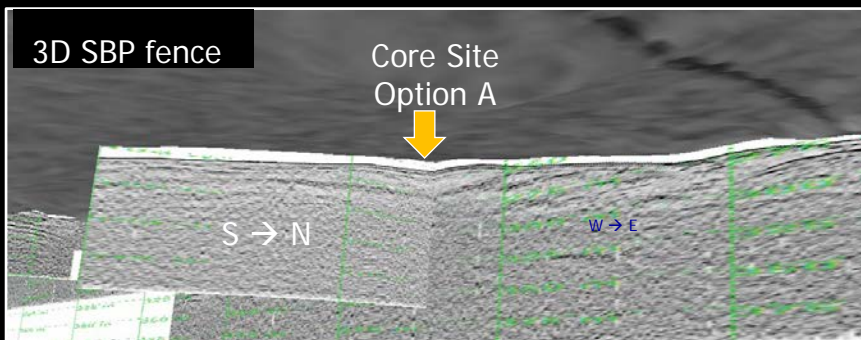
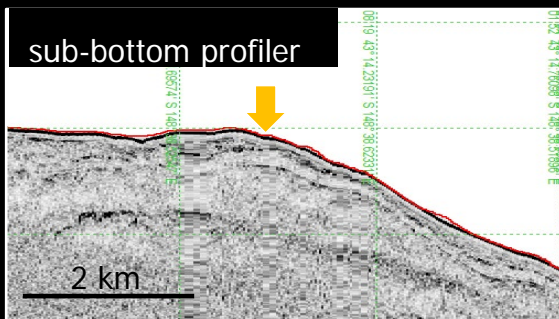
Oceanography

- Acoustic Doppler Current Profiler (ADCP)
- Underway Sea Surface Temperature (SST)
- Conductivity Temperature Depth (CTD) profilers
- E.g. ADCP velocity/SST data vs satellite altimetry



Sediment coring

- Giant piston coring
- E.g. Identify sediments and features



Deep-towed camera

- Ground truth acoustic results
- Identify benthic habitats, benthic and demersal fish and invertebrates
- E.g. The Coral Sea Frontier voyage to discover benthic/demersal biodiversity in the Coral Sea Oct-Nov 2025



Voyage livestream



Benthic trawls

- Deep-sea trawls, dredges, nets
- Study and catalog marine life to 3000 m
- E.g. The Coral Sea Frontier voyage to discover benthic/demersal biodiversity in the Coral Sea Oct-Nov 2025

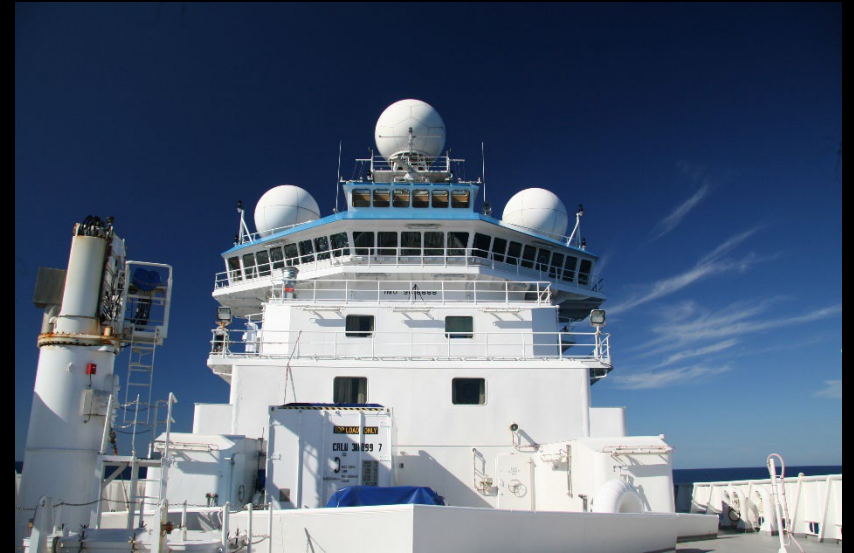


Image: CSIRO-Kiah Grogan



Atmosphere/Meteorology

- Collect weather data up to 150 km radius and 20 km above ship
- Advanced weather radar to map clouds, ice, aerosols
- RVI is first mobile station for WMO Global Atmosphere Watch (GAW)





This research was supported by a grant of sea time on RV *Investigator* from the CSIRO Marine National Facility