

Regional-scale 100/30 m resolution bathymetry grids for north-eastern Australia

Robin Beaman

College of Science and Engineering

robin.beaman@jcu.edu.au



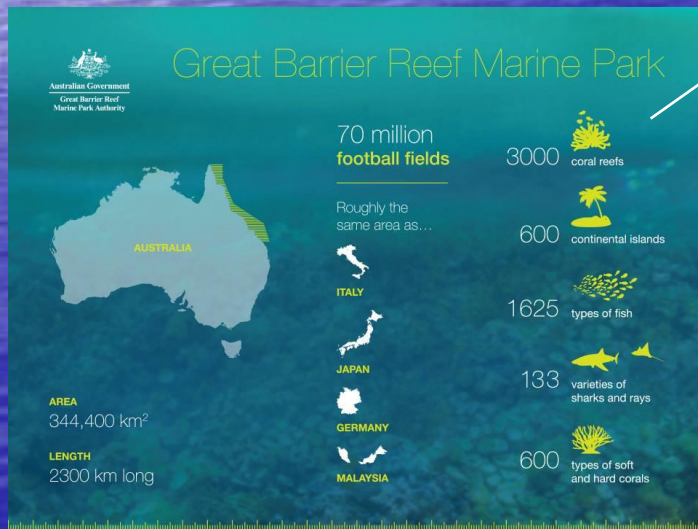
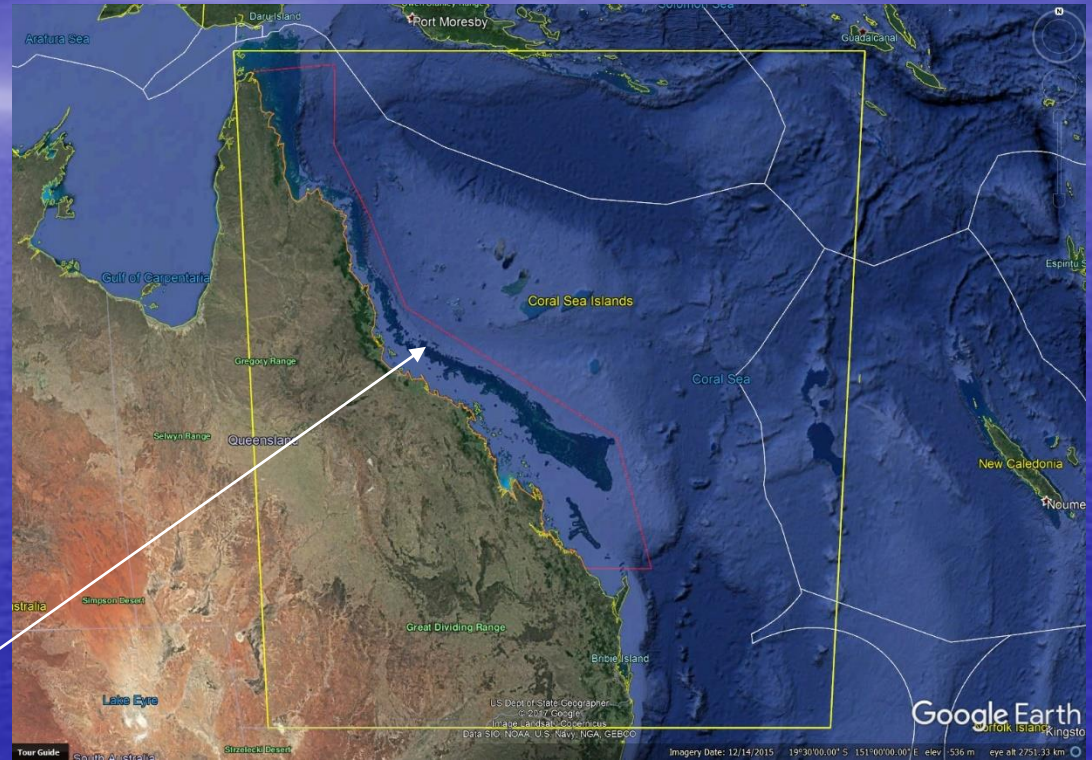
Australia's Great Barrier Reef and Coral Sea

Project 3DGBR since 2009

~3,000,000 km² in area

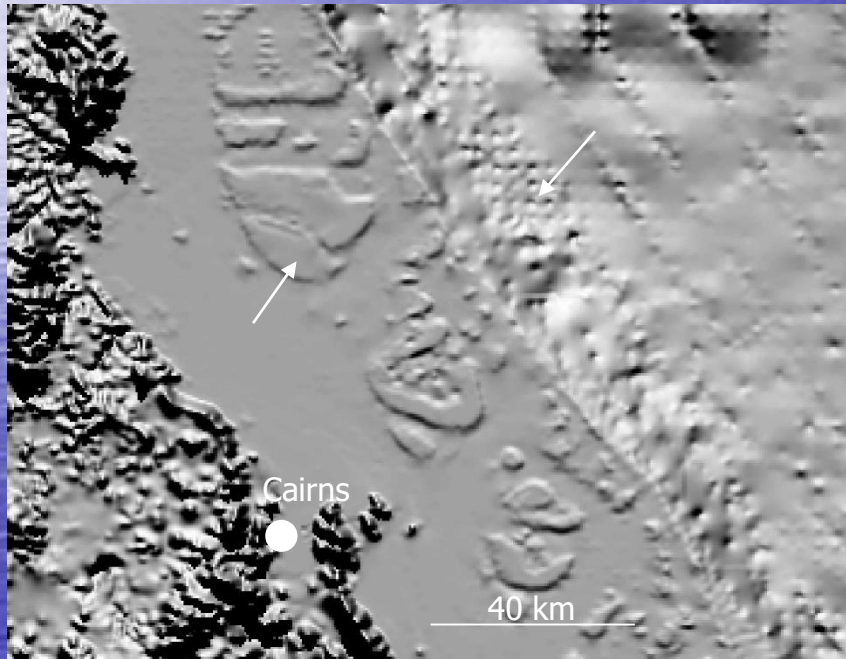
Australia, PNG, Solomon Is, New Caledonia EEZs, high seas

GBR Marine Park world's largest coral reef ecosystem

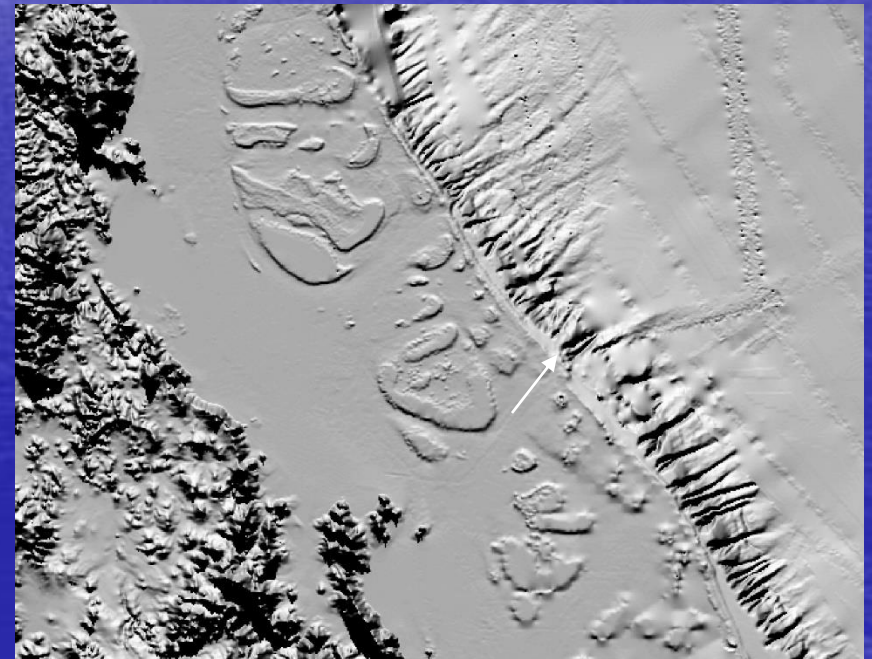


History

GBRDEM @ ~250 m



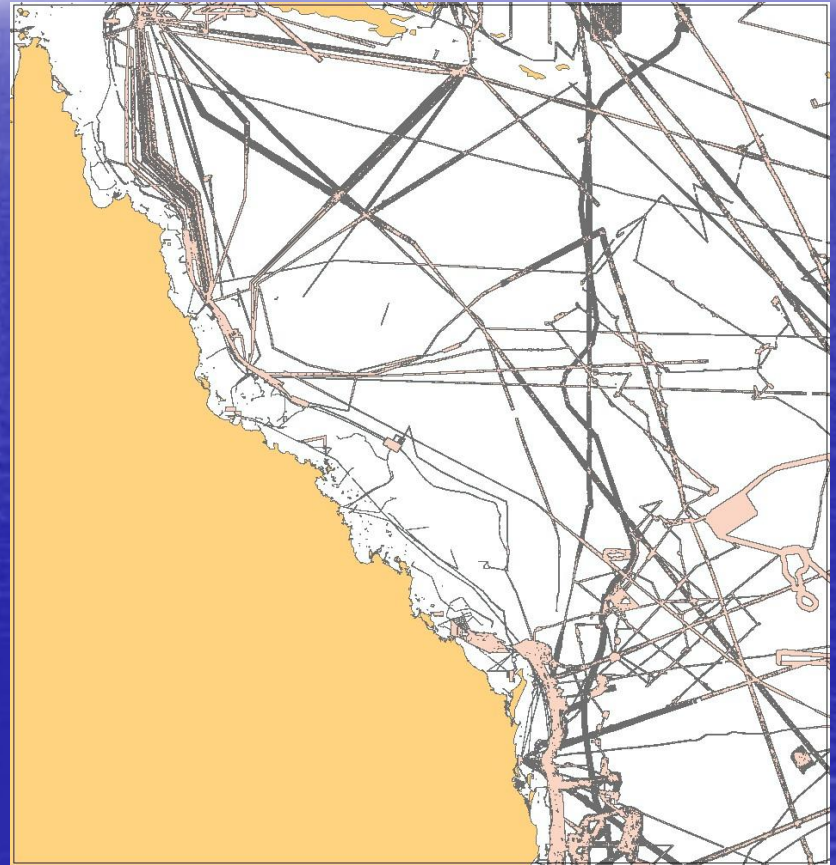
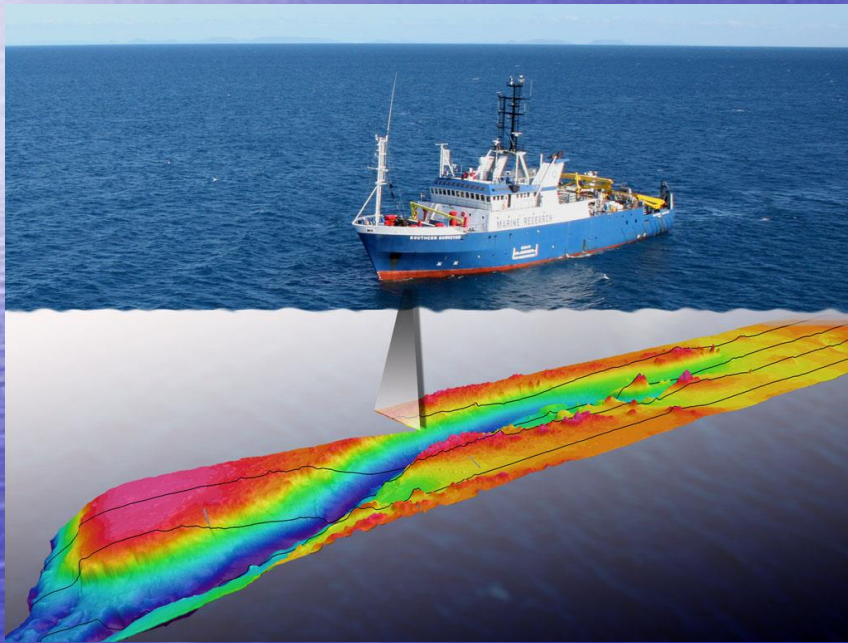
AusBathyTopo @ ~250 m



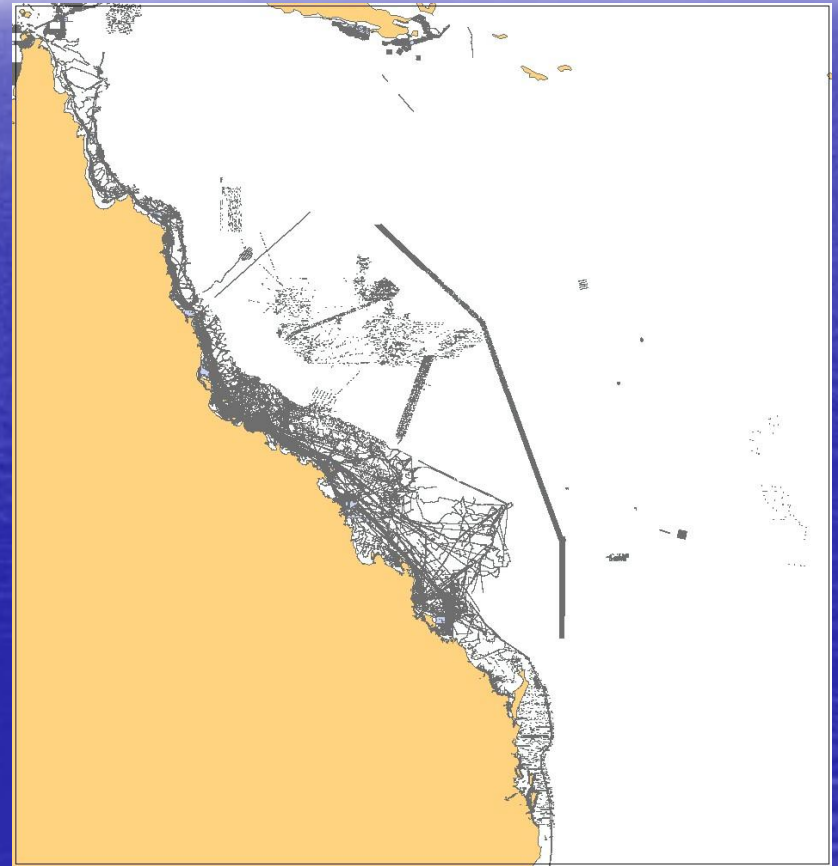
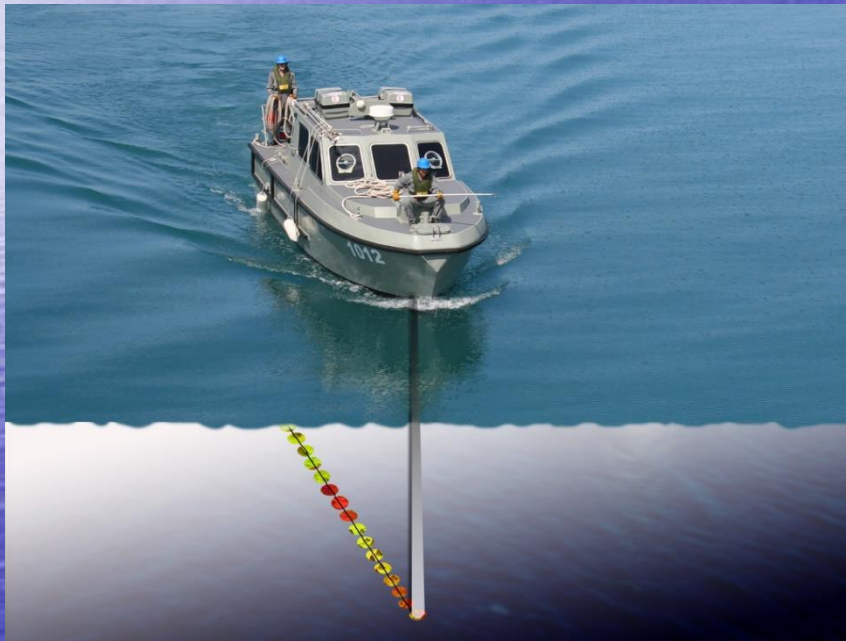
Lewis, A., 2001. Great Barrier Reef Depth and Elevation Model: GBRDEM. Technical Report No. 33, Townsville, Australia, pp. 58.

Whiteway, T.G., 2009. Australian Bathymetry and Topography Grid, June 2009. Geoscience Australia Record 2009/21, Canberra, Australia, pp. 46.

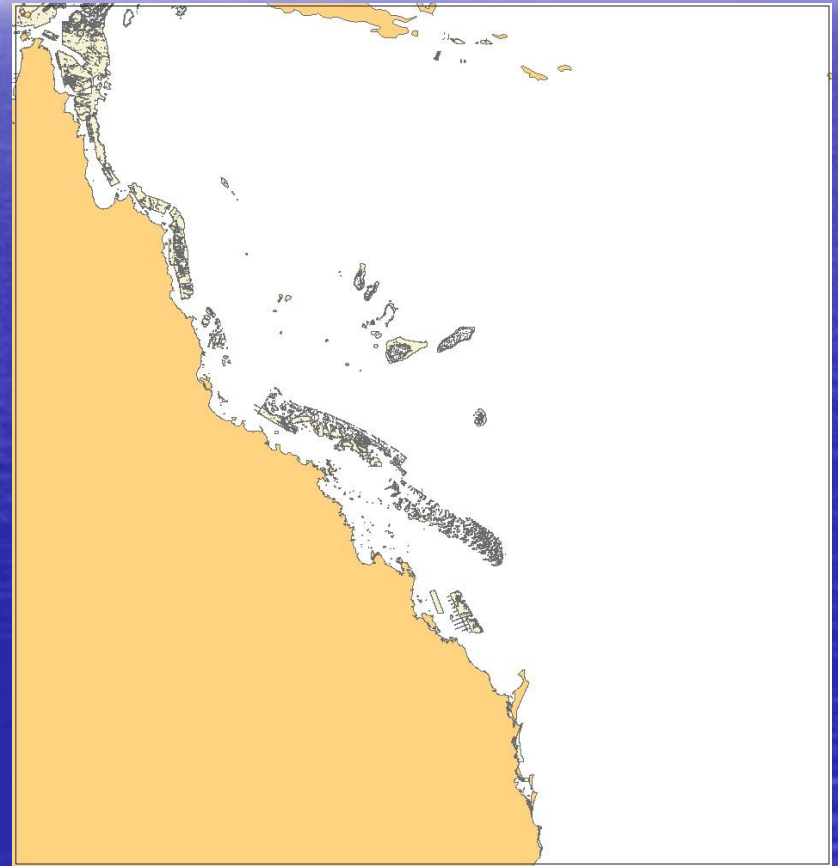
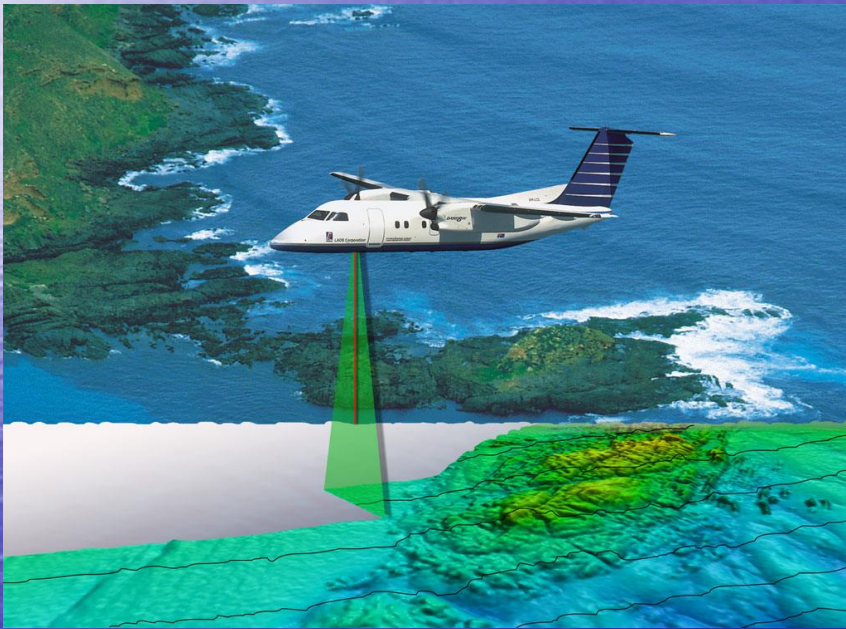
Multibeam



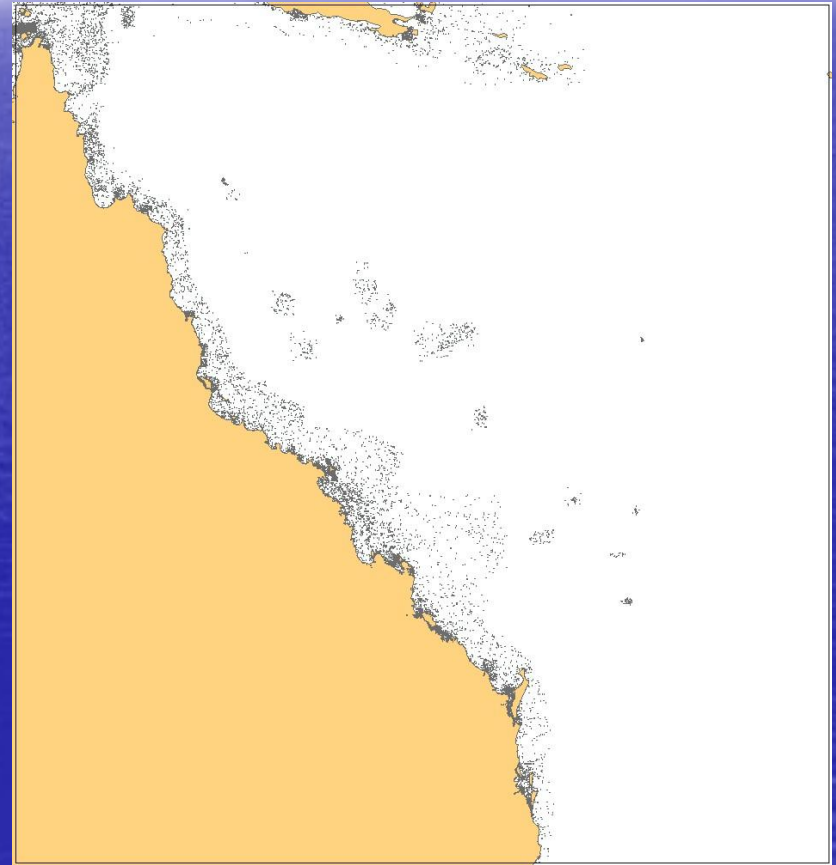
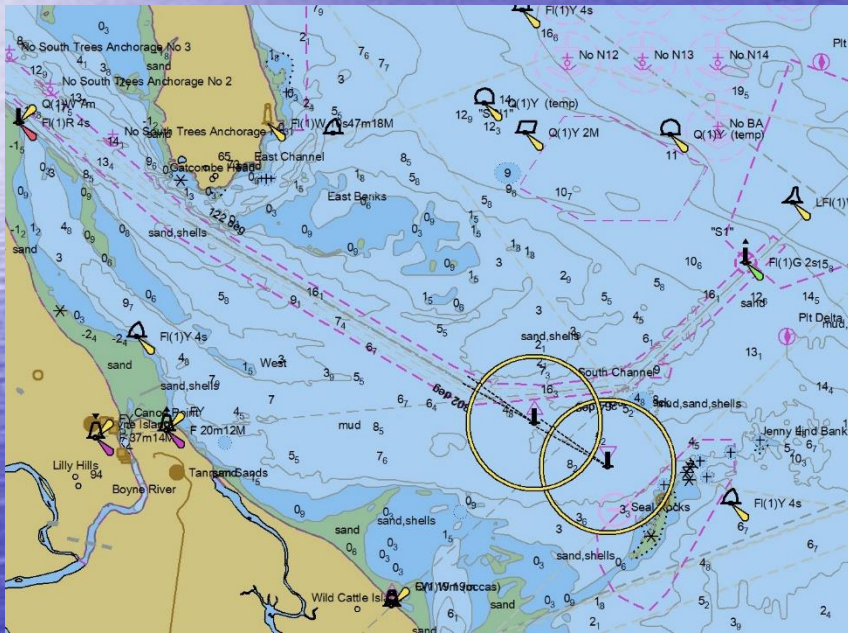
Singlebeam



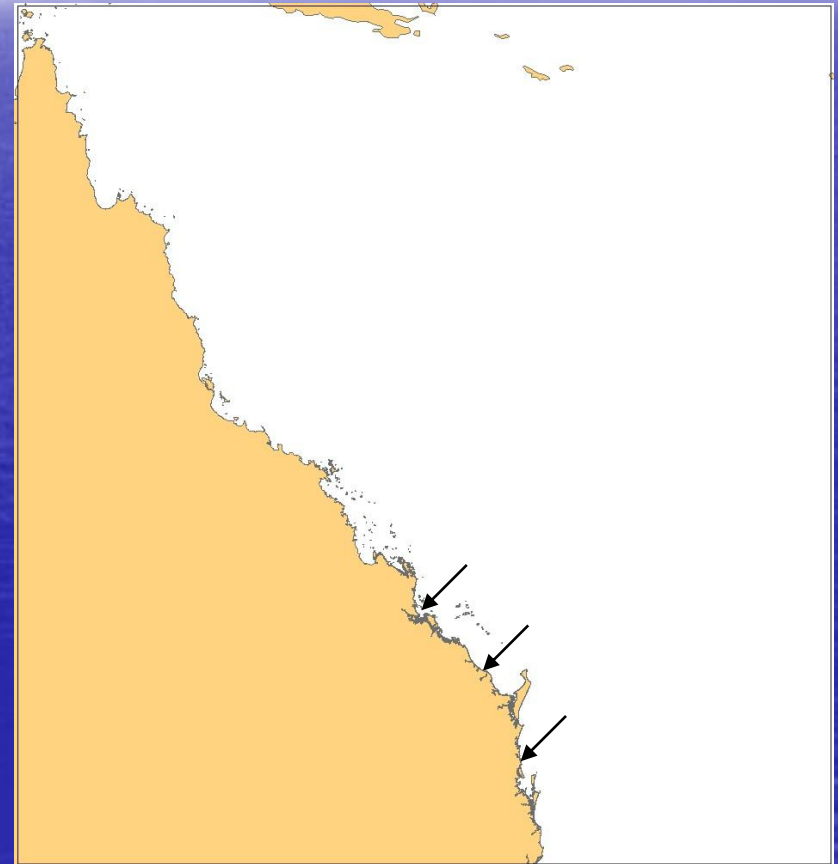
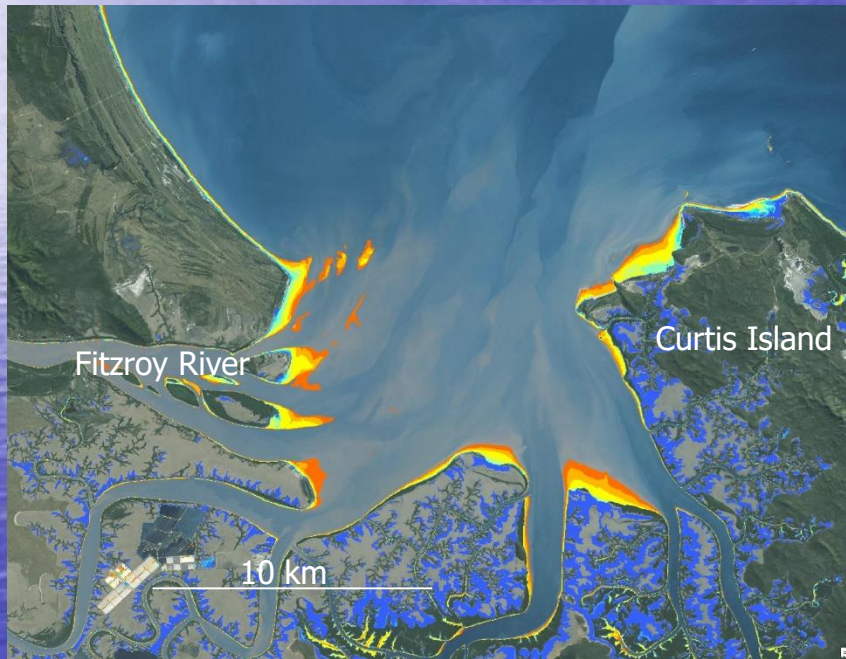
Lidar



ENC spot depths



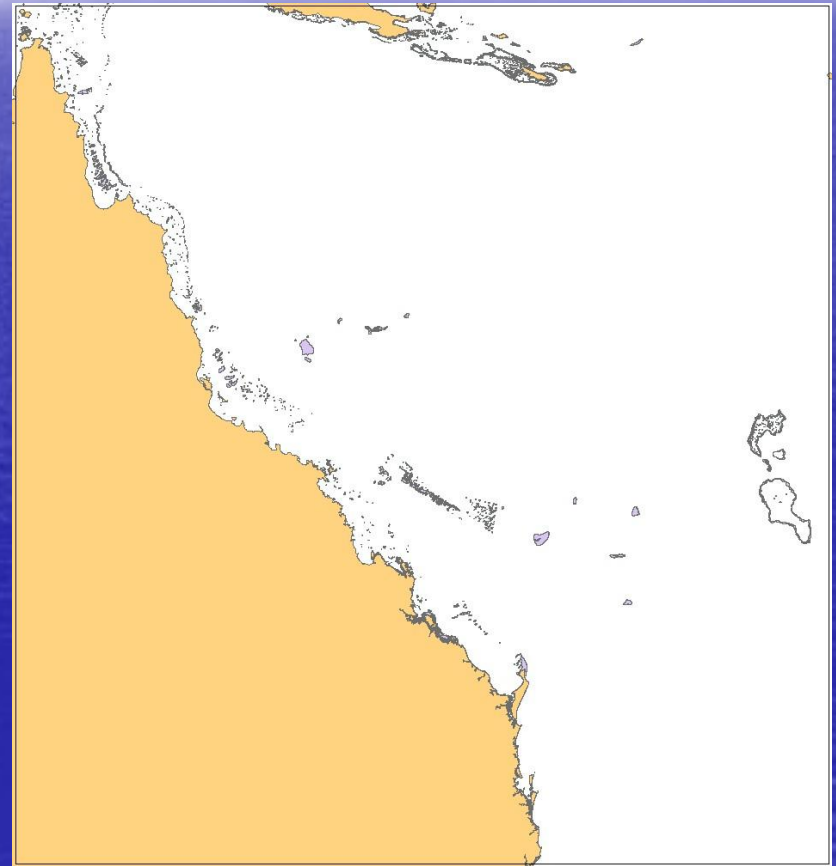
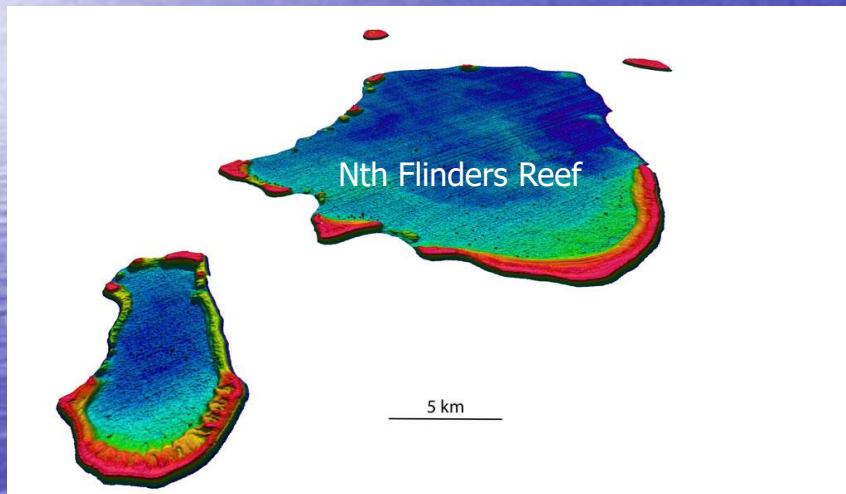
Intertidal Extents Model DEM



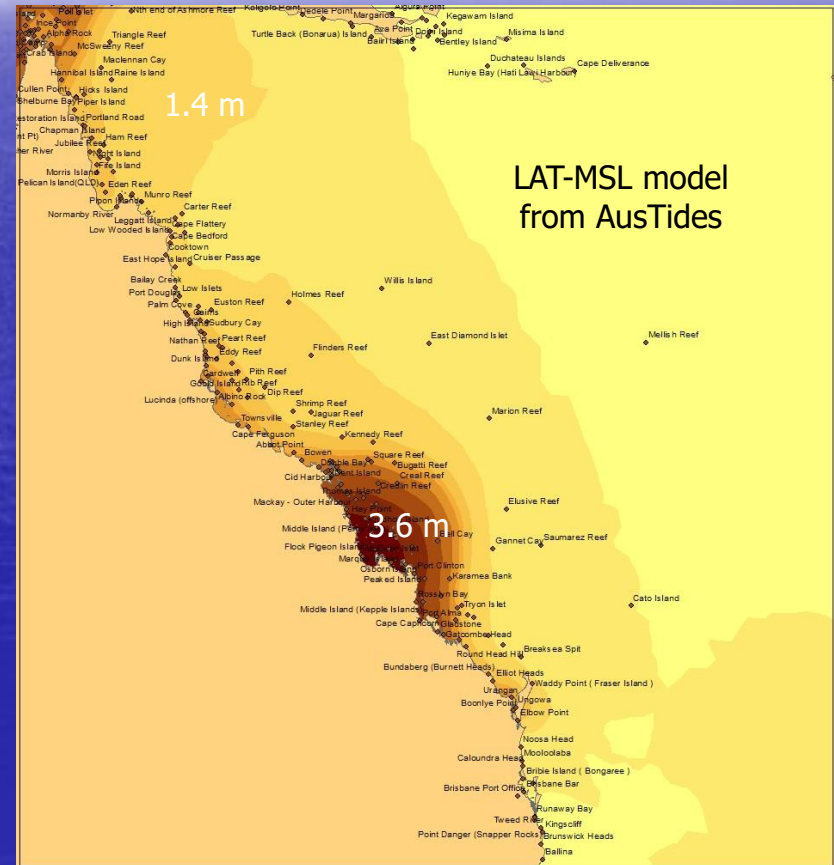
Digital Earth Australia: <http://www.ga.gov.au/about/projects/geographic/digital-earth-australia>

Sagar, S., Roberts, D., Bala, B., Lymburner, L., 2017. Extracting the intertidal extent and topography of the Australian coastline from a 28 year time series of Landsat observations. Remote Sensing of Environment 195, 153-169.

Satellite derived bathymetry



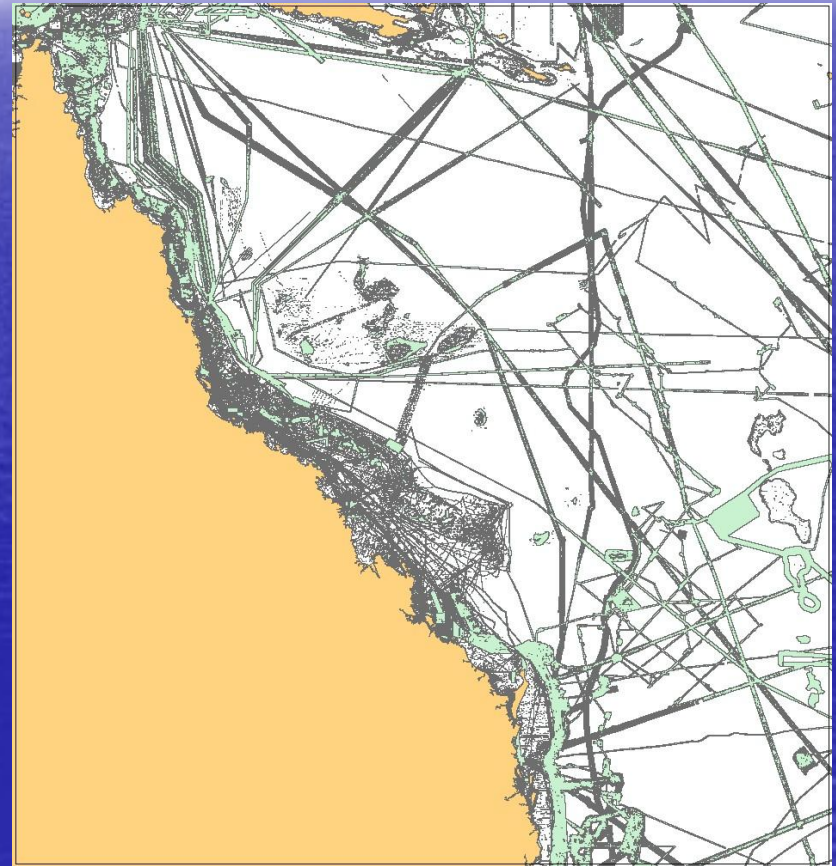
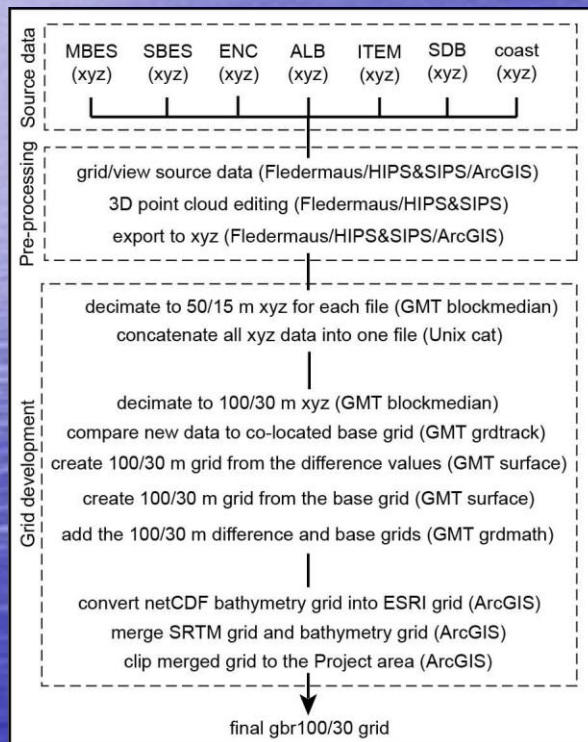
Tides



AusCoastVDT: <http://www.crcsi.com.au/research/commissioned-research/auscoast-vdt/>

AusTides: <http://www.hydro.gov.au/prodserv/publications/ausTides/tides.htm>

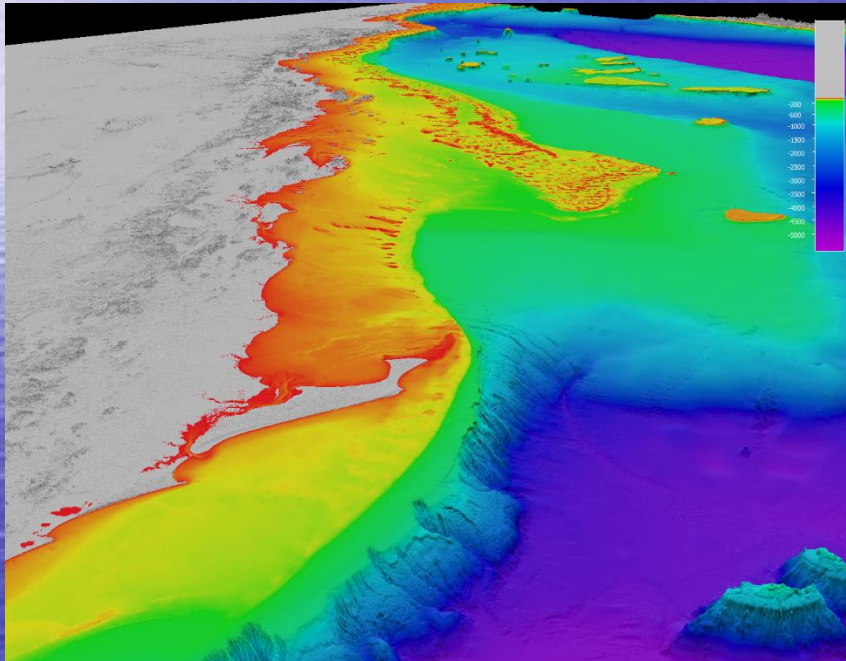
Grid development



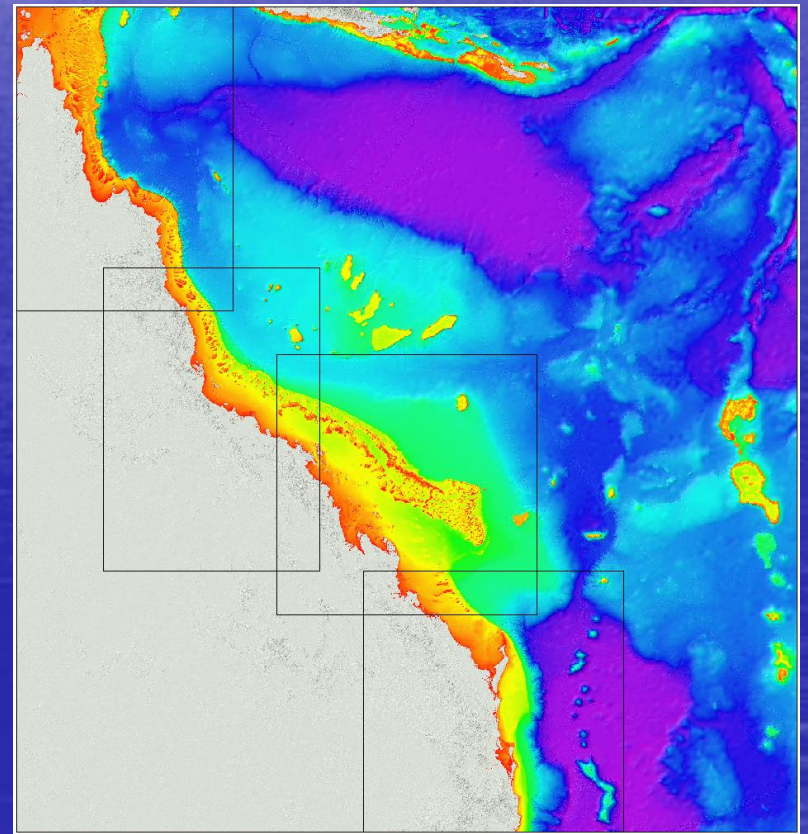
Becker, J.J., Sandwell, D.T., Smith, W.H.F., Braud, J., Binder, B., Depner, J., Fabre, D., Factor, J., Ingalls, S., Kim, S.-H., Ladner, R., Marks, K., Nelson, S., Pharaoh, A., Trimmer, R., Von Rosenberg, J., Wallace, G., Weatherall, P., 2009. Global bathymetry and elevation data at 30 arc seconds resolution: SRTM30 PLUS. *Marine Geodesy* 32(4), 355-371.

gbr100/30 grids

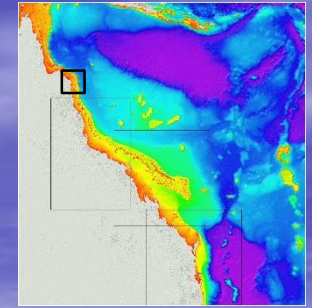
gbr100



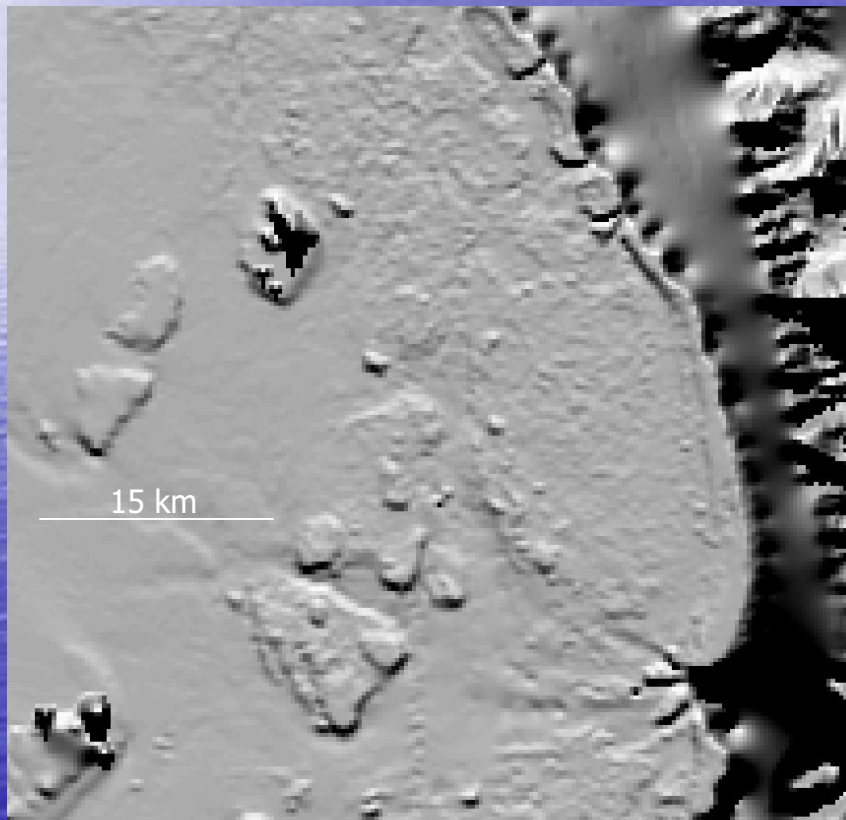
gbr30



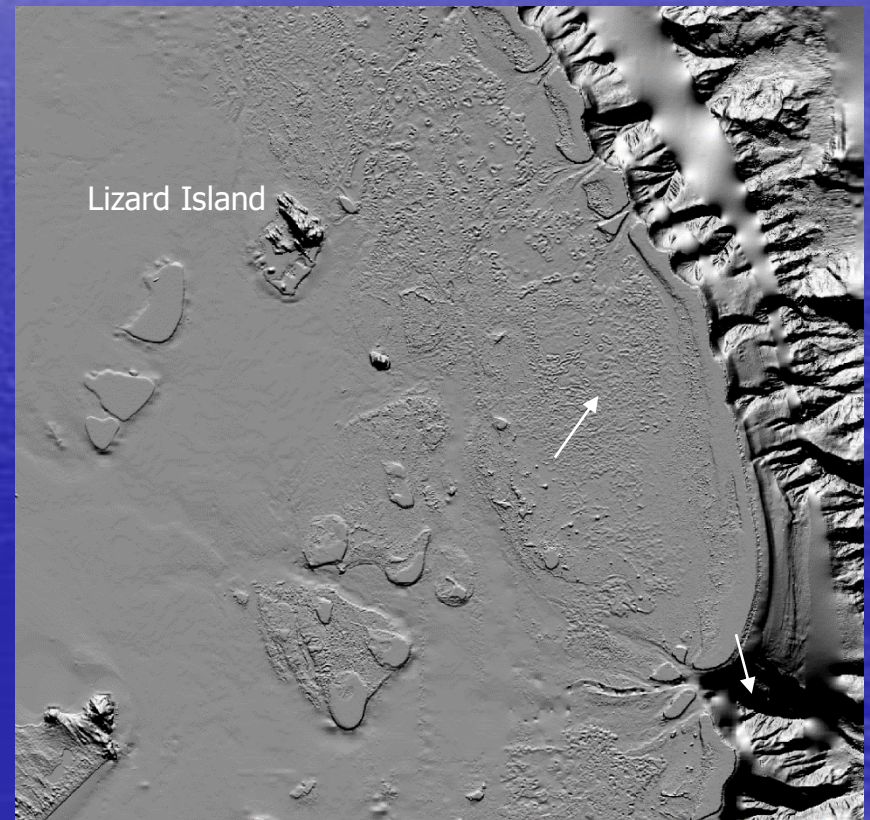
Comparison



AusBathyTopo

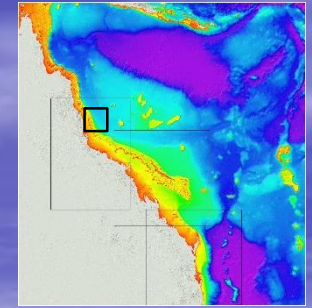


gbr30a

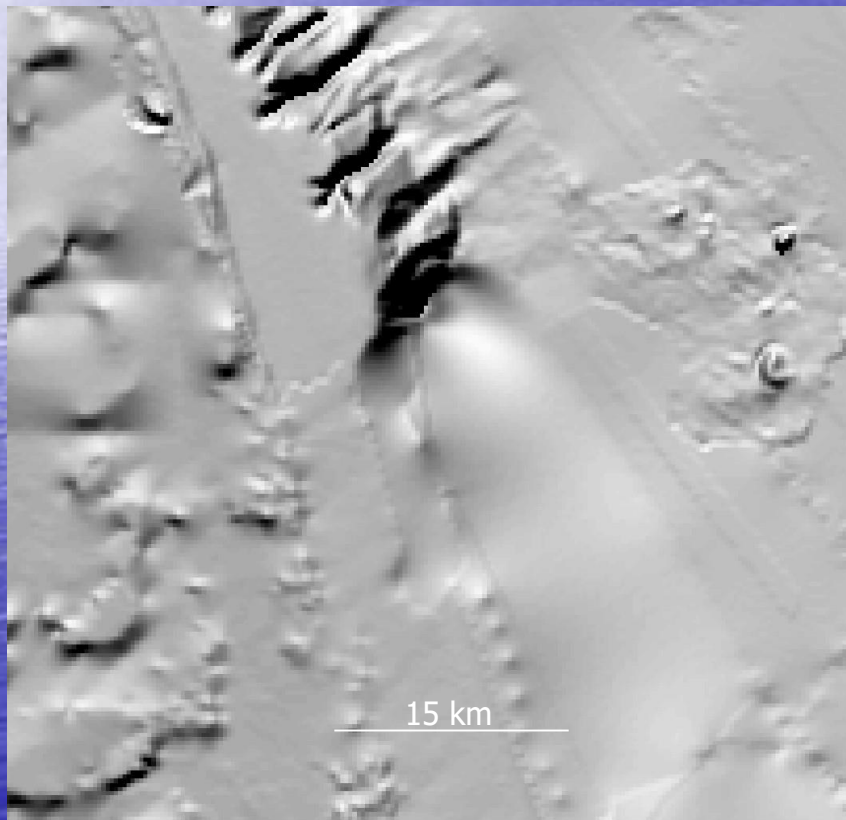


Puga-Bernabéu, A., Webster, J.M., Beaman, R.J., Guilbaud, V., 2013. Variation in canyon morphology on the Great Barrier Reef margin, north-eastern Australia: The influence of slope and barrier reefs. *Geomorphology* 191, 35-50.

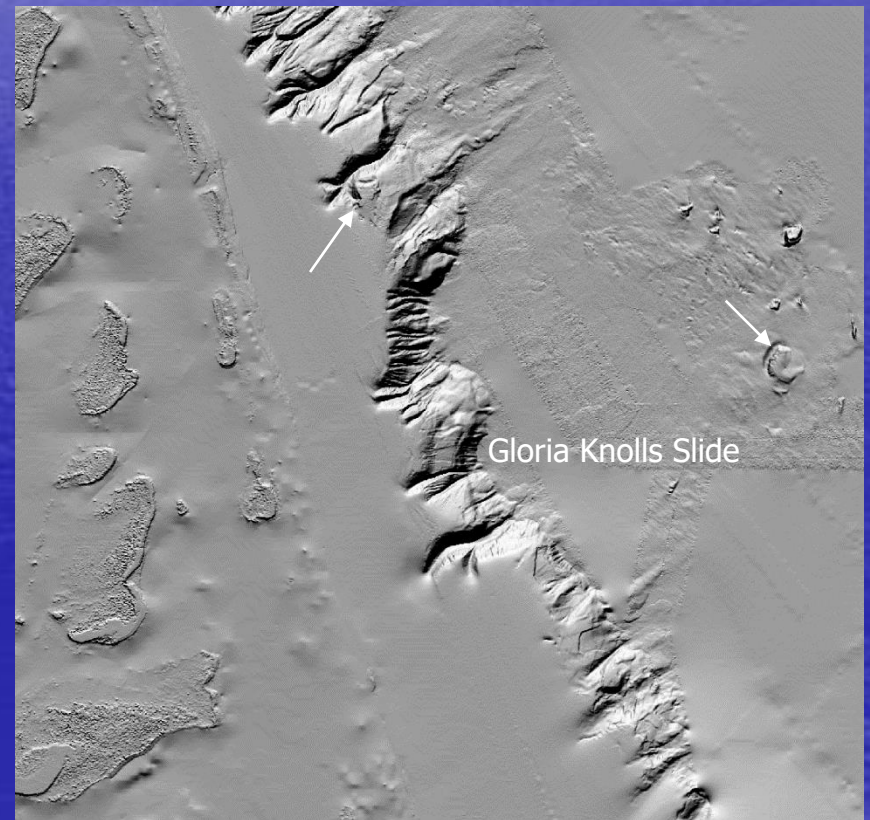
Comparison



AusBathyTopo

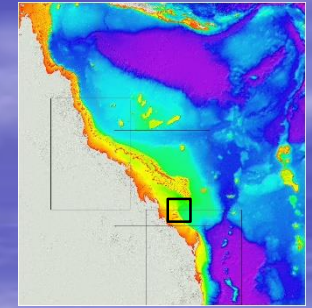


gbr30b

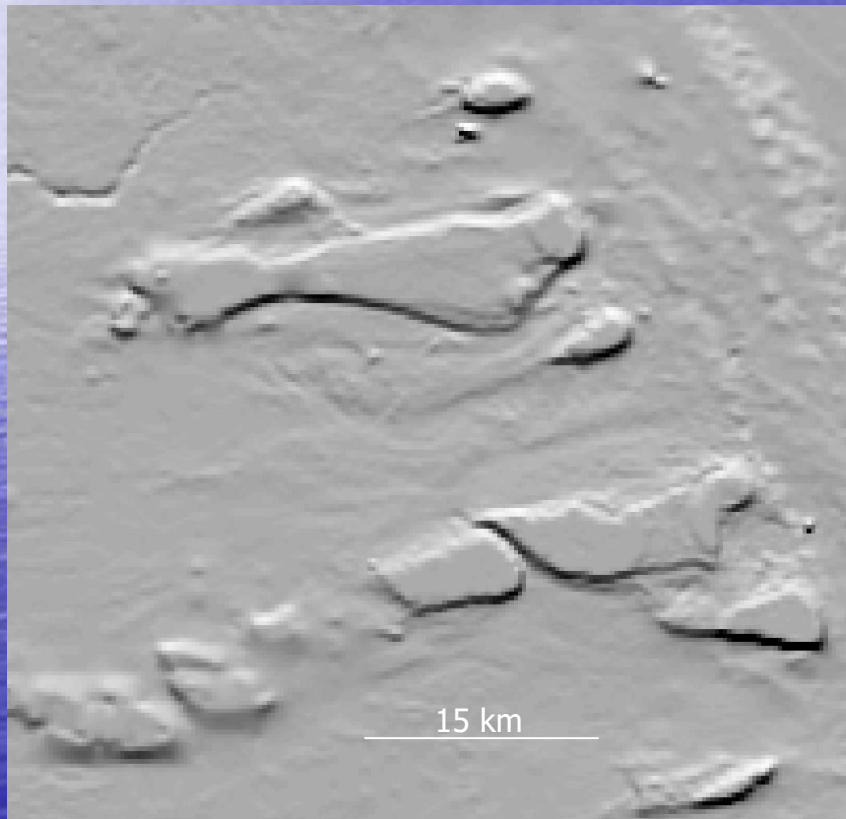


Puga-Bernabéu, A., Beaman, R.J., Webster, J.M., Thomas, A.L., Jacobsen, G., 2017. Gloria Knolls Slide: A prominent submarine landslide complex on the Great Barrier Reef margin of north-eastern Australia. *Marine Geology* 385, 68-83.

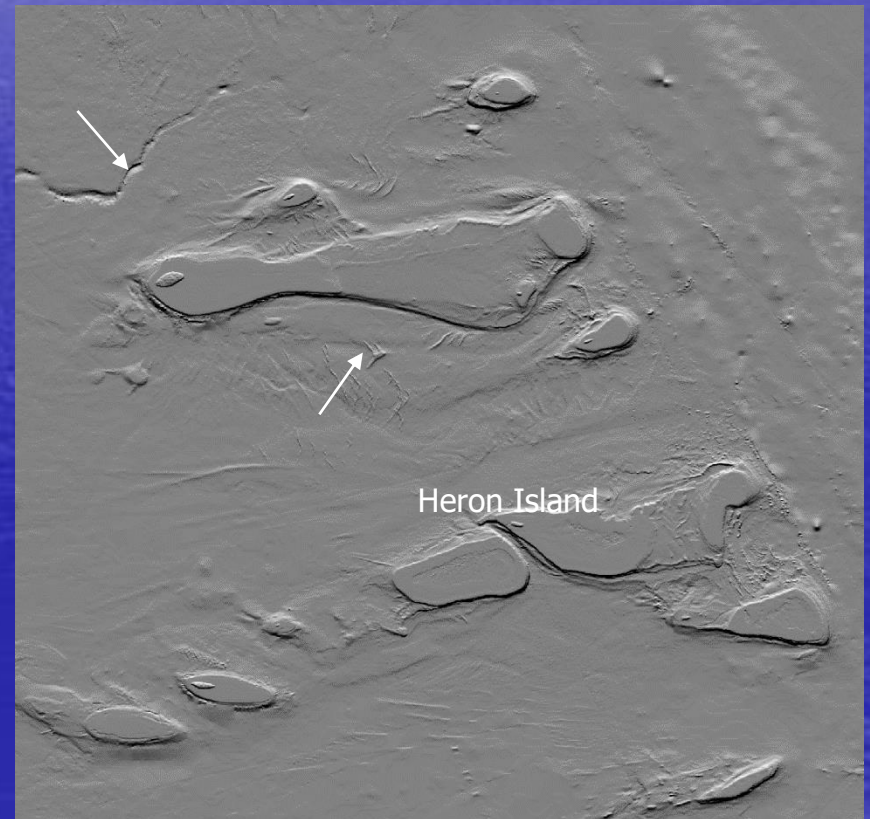
Comparison



AusBathyTopo

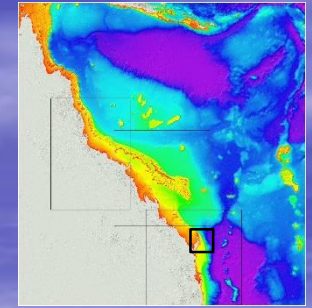


gbr30c

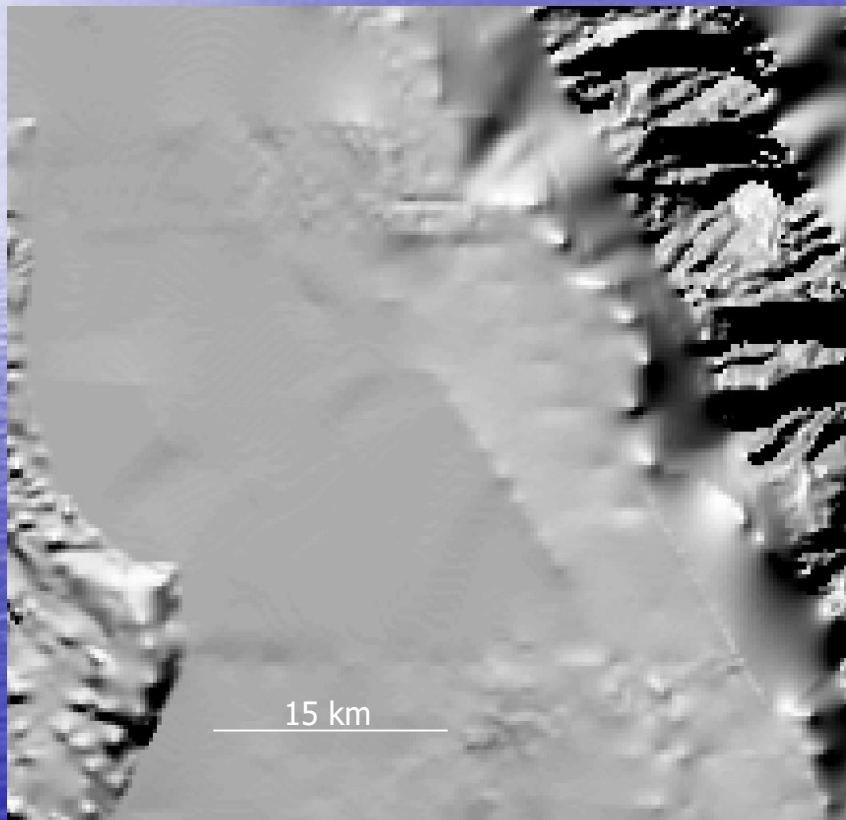


Duce, S., Vila-Concejo, A., Hamylton, S.M., Webster, J.M., Bruce, E., Beaman, R.J., 2016. A morphometric assessment and classification of coral reef spur and groove morphology. *Geomorphology* 265, 68-83.

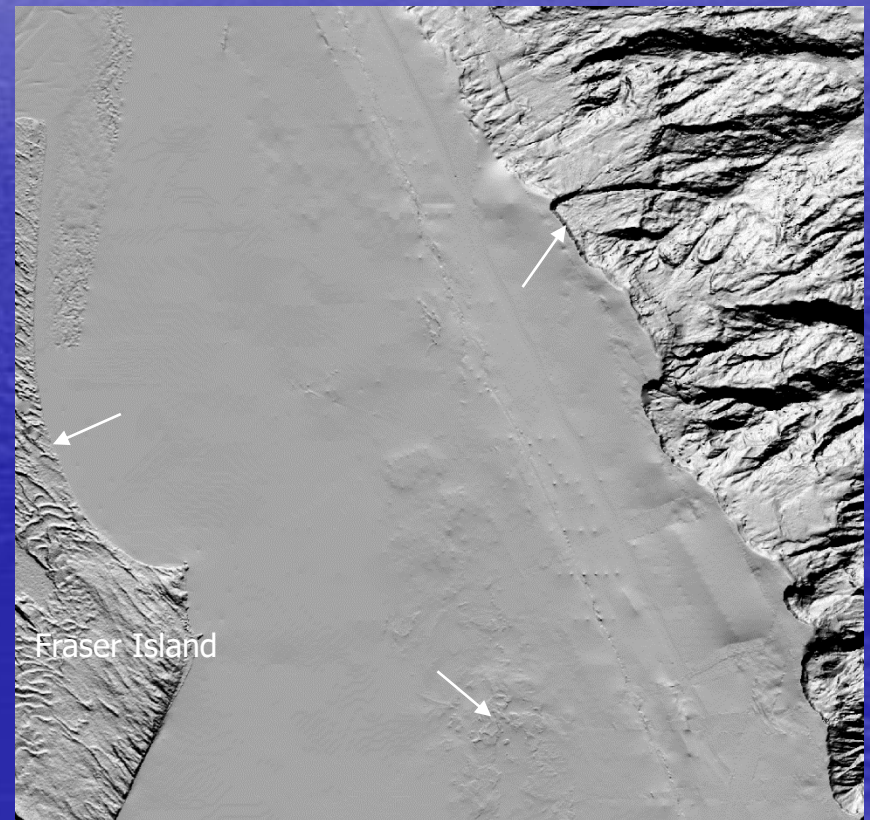
Comparison



AusBathyTopo



gbr30d



Boyd, R., Ruming, K., Goodwin, I., Sandstrom, M., Schroder-Adams, C., 2008. Highstand transport of coastal sand to the deep ocean: A case study from Fraser Island, southeast Australia. *Geology* 36(1), 15-18.

Delivery

gbr100 - [deeppreef.org](http://www.deeppreef.org)

gbr30 - [GA ELVIS](http://www.ga.gov.au/elvis/)

Home Biography Projects Publications **Bathymetry** Technology Gallery Search Contact

Bathymetry

Great Barrier Reef and Coral Sea bathymetry

This dataset provides the high-resolution bathymetry model of the Great Barrier Reef and Coral Sea, called gbr100, an output of Project 3DGBR. The 100 metre-resolution gridded bathymetry dataset covers an area of about 3,000,000 km², from the Gulf of Papua to northern New South Wales, and easterly into the deep Coral Sea. This page provides the data in a range of formats for public download.

Copyright Notice

NOT TO BE USED FOR NAVIGATION.

Additional content (posters, Google Earth imagery, Web Map) can be obtained at the e-Atlas website.

If using the data for publications, please quote the following reference:

- Beaman, R.J., 2010. Project 3DGBR: A high-resolution depth model for the Great Barrier Reef and Coral Sea. Marine and Tropical Sciences Research Facility (MTRSF) Project 2.5i.1a Final Report, MTRSF, Cairns, Australia, pp. 13 plus Appendix 1. ([internal link to report](#))

Seminar presented to the Australian Hydrographic Service 8 July 2010:

- [Project3DGBR_AHS2010.pdf](#) 3.59 Mb

Poster presented at Australian Marine Sciences Association conference 3-7 July 2011:

- [GBRCoralSea_AMSA2011.pdf](#) 909.79 Kb

Gallery images

NW Qld Plateau Tasmanid Seamounts SE Qld Plateau Offshore Townsville
Offshore Bowen Offshore Brisbane Offshore Bundaberg Offshore Cairns

Australia Government
Geoscience Australia

ELVIS - Elevation Information System

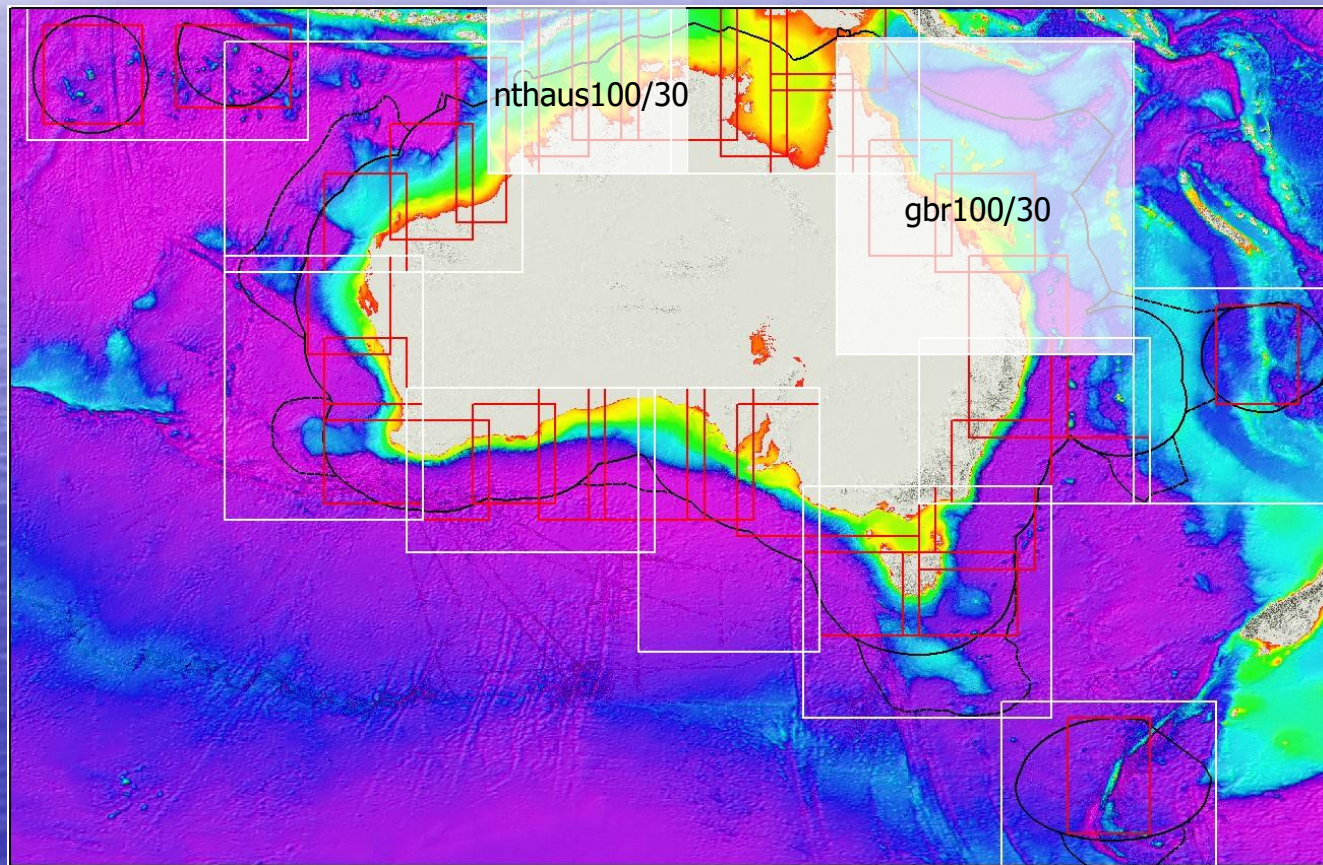
Available datasets

- 1:50,000 derived 1 Second Digital Elevation Model Version 1.0
- The 1 Second Shuttle Radar Topography Mission (SRTM) Digital Elevation Model
- ICES SRTM 1 Second Hydrologically Enforced
- This Service represents the National Digital Elevation Model (DEM) 1 Second
- 5 metre Digital Elevation Model (DEM)
- The Digital Elevation Model (DEM) 5 Metre Grid of Australia derived from LIDAR
- 25 metre Digital Elevation Model (DEM)
- The Digital Elevation Model (DEM) 25 Metre Grid of Australia derived from LIDAR

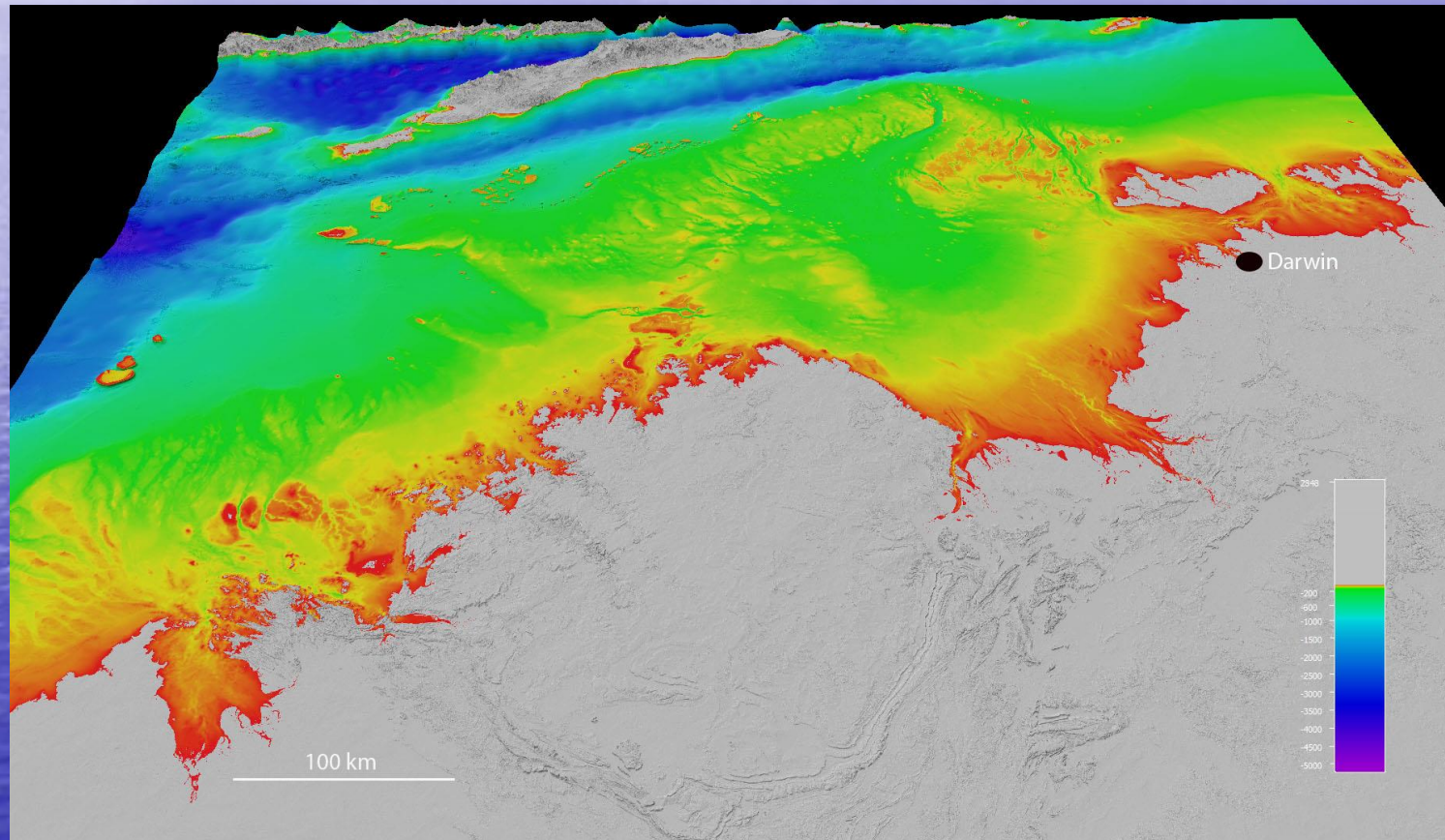
gbr100: <https://www.deeppreef.org/bathymetry/65-3dgbr-bathy.html>

gbr30: <http://www.ga.gov.au/elvis/>

Future

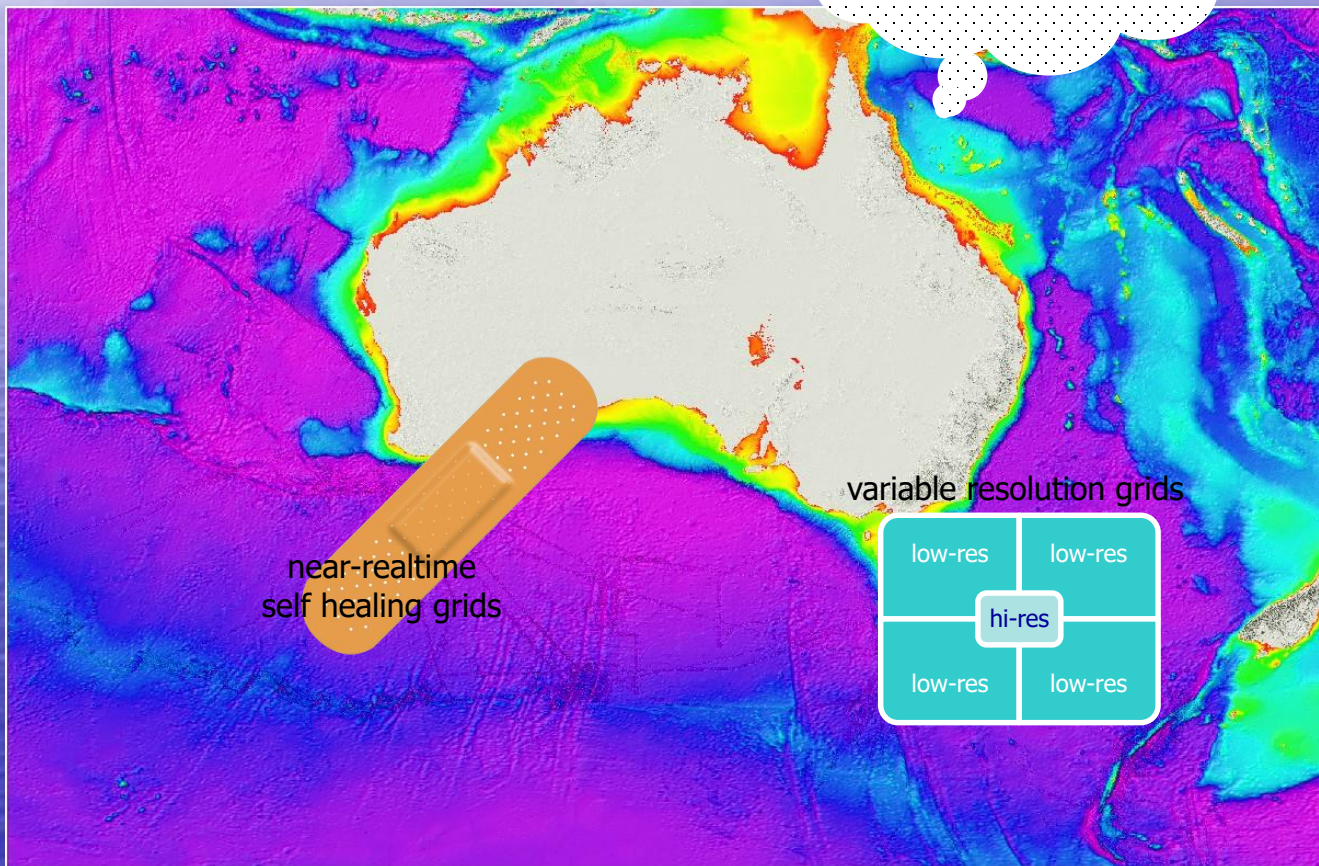


nthaus grid (release Feb 2018)



Future

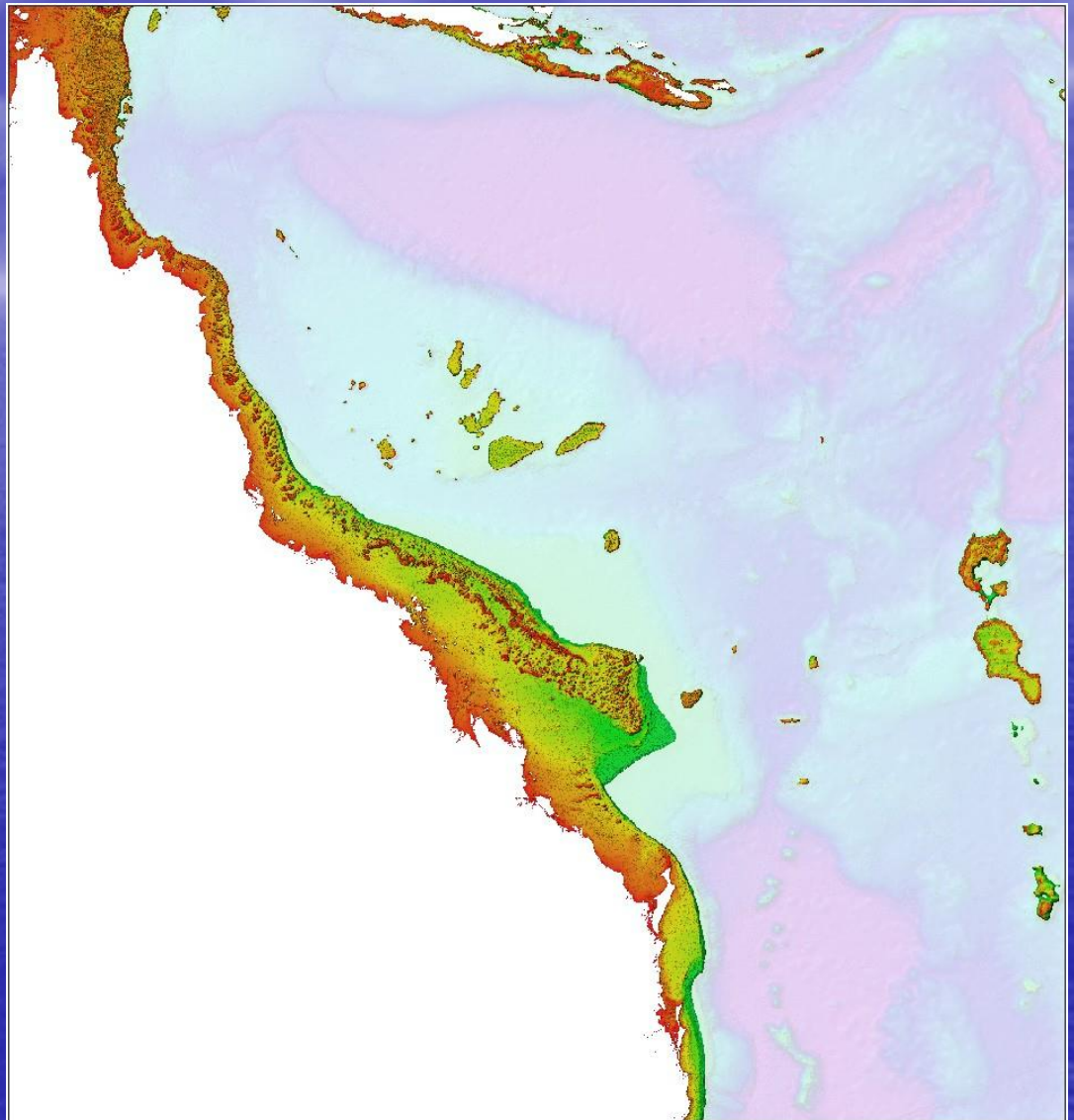
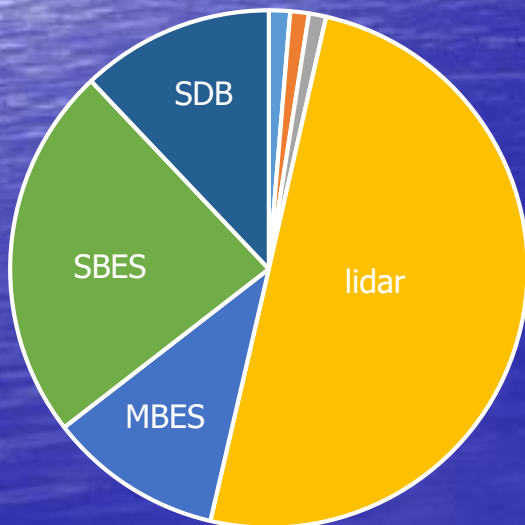
source bathy data point clouds



Cover: 0-200m

Source bathy data area: 36.6%

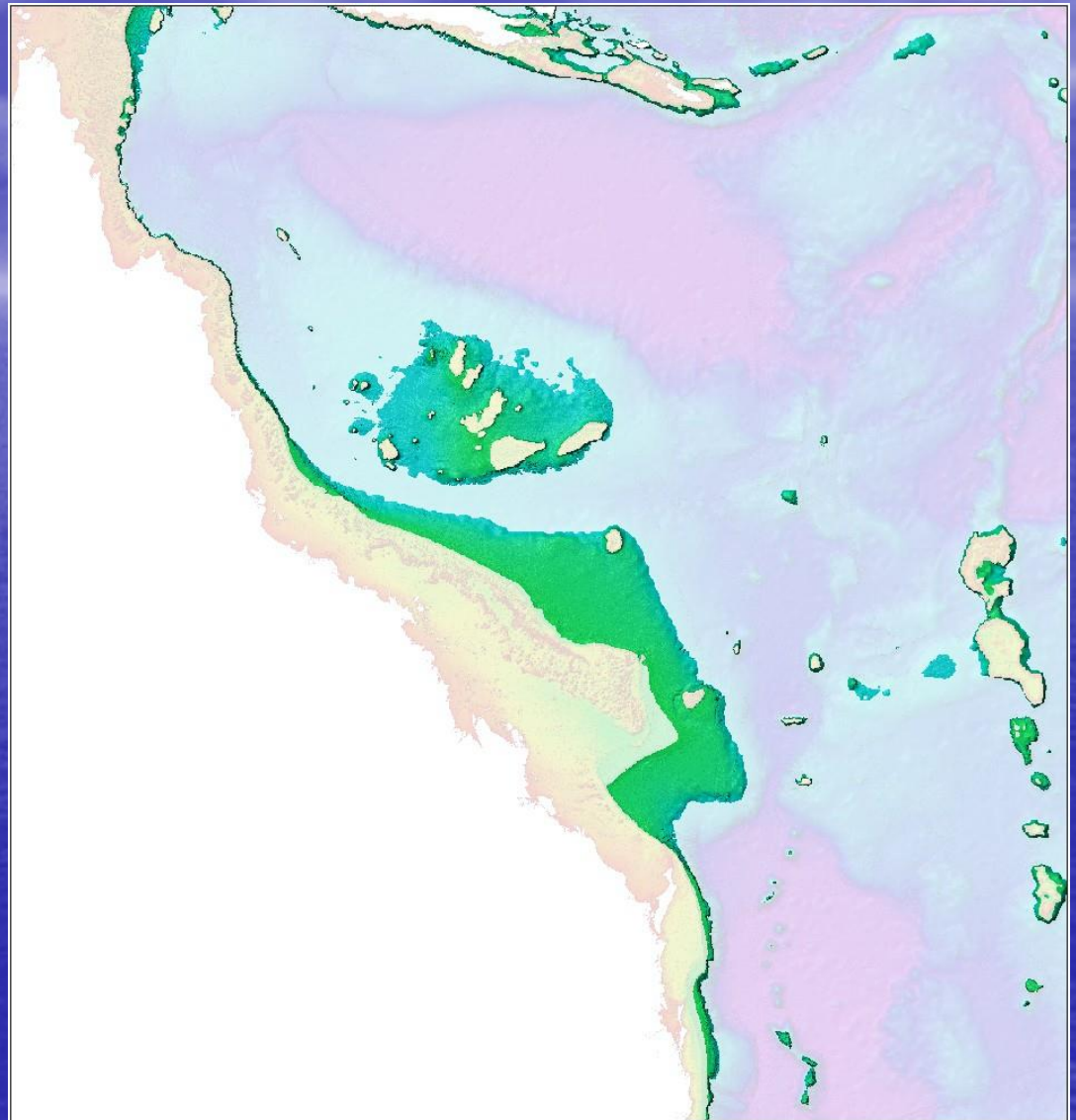
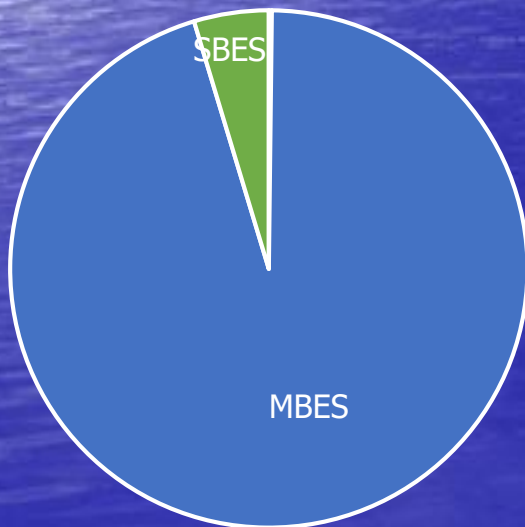
coast	0.5
ENC	0.4
ITEM	0.4
lidar	18.3
MBES	4.0
SBES	8.6
SDB	4.4



Cover: 200-1000m

Source bathy data area: 13.1%

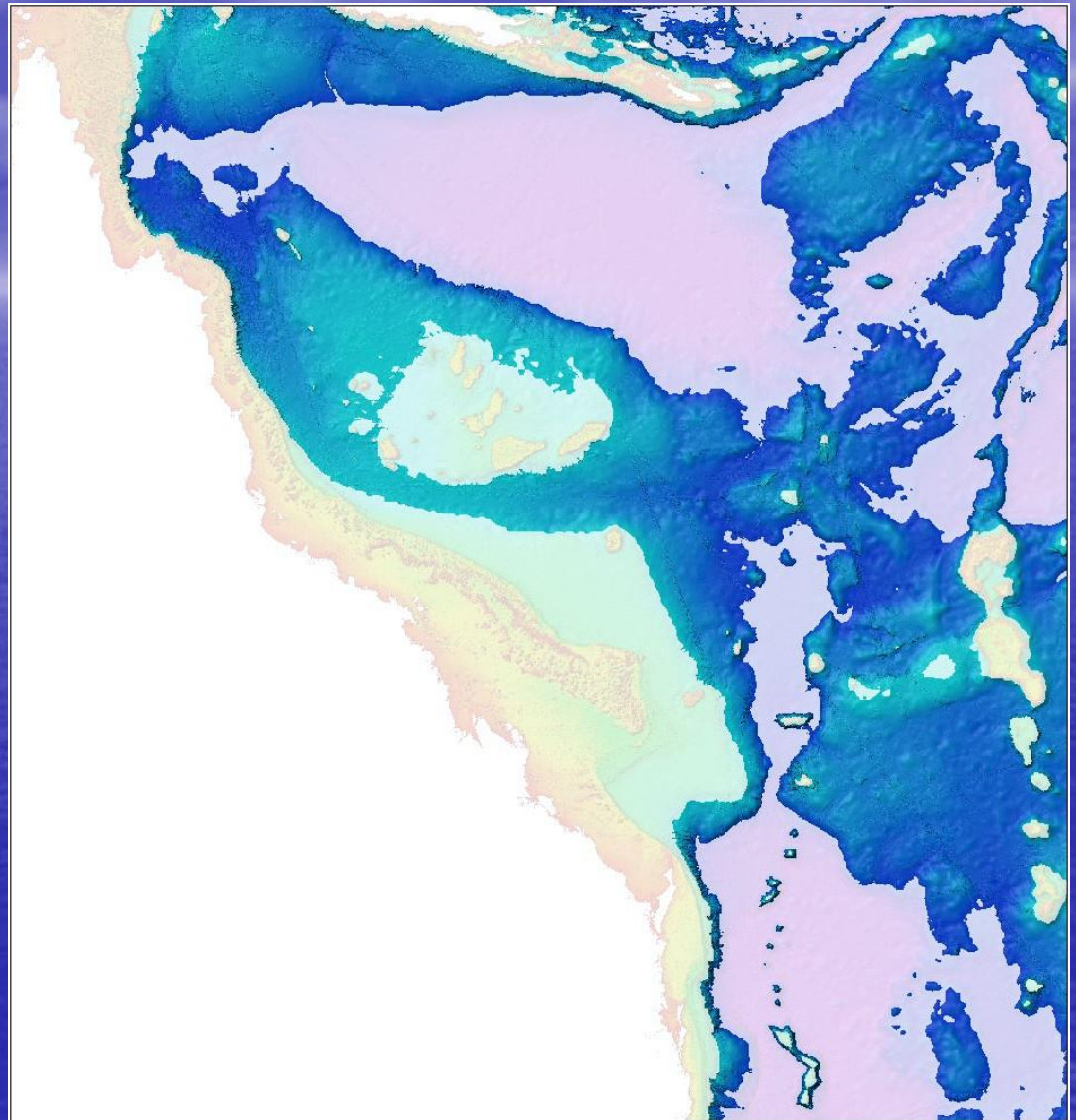
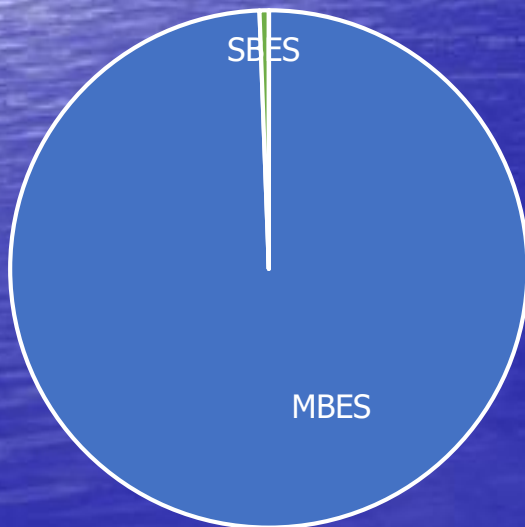
coast	0.0
ENC	0.0
ITEM	0.0
lidar	0.0
MBES	12.5
SBES	0.6
SDB	0.0



Cover: 1000-3000m

Source bathy data area: 19.9%

coast	0.0
ENC	0.0
ITEM	0.0
lidar	0.0
MBES	19.7
SBES	0.2
SDB	0.0



Cover: >3000m

Source bathy data area: 16.9%

coast	0.0
ENC	0.0
ITEM	0.0
lidar	0.0
MBES	16.9
SBES	0.0
SDB	0.0

