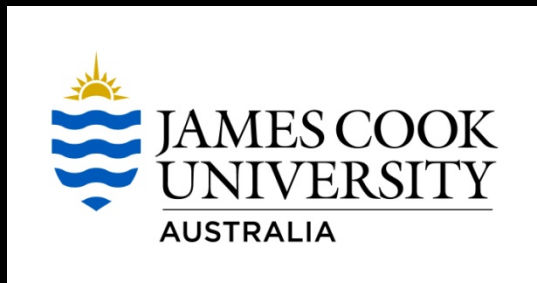# A new 30 m-resolution bathymetry model for the Torres Strait

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Torres Strait

- Pilot "...studded with literally thousands of reefs, coral cays, islands, rocks and shoals between which swirl tidal currents of varying intensity and direction (up to 13 kn)"

- Paleao-land bridge was available since the last 65ka (and earlier), up until 9-10ka when the connection was severed.

- Home to unique culture as Torres Strait Islanders.
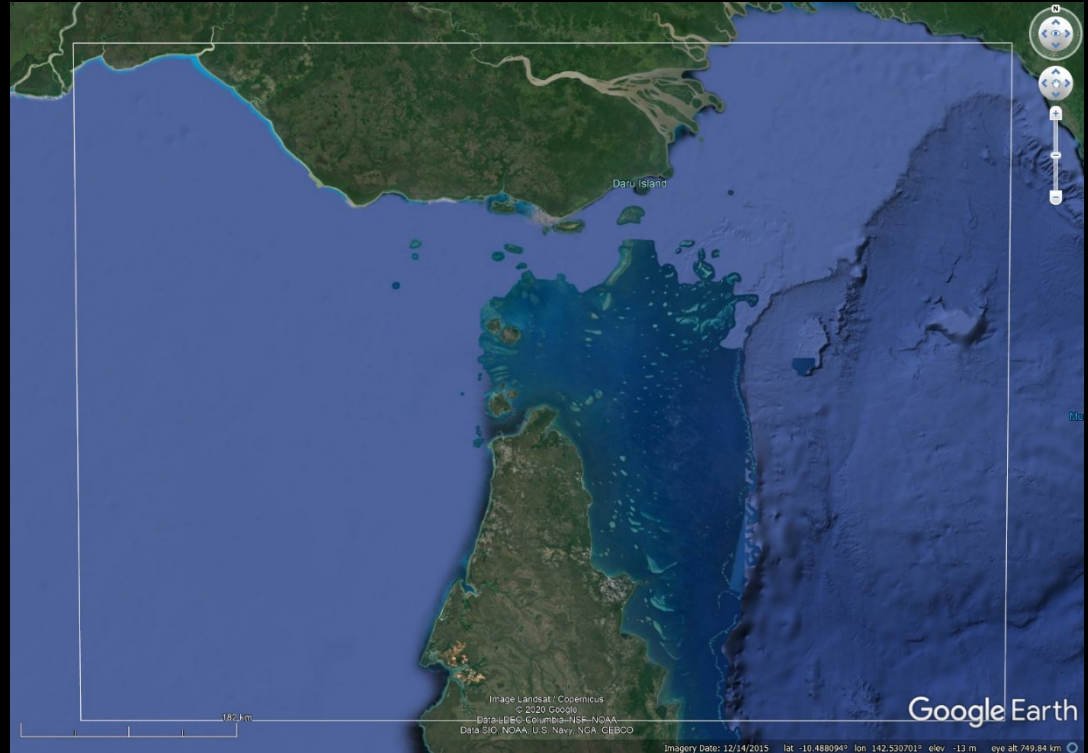
Early European explorers:

- Luis Vas de Torres (*San Predrico*) 1606

- James Cook (*Endeavour*) 1770

- William Bligh (open boat) 1788

- Matthew Flinders (Investigator) 1802

Maritime jurisdiction

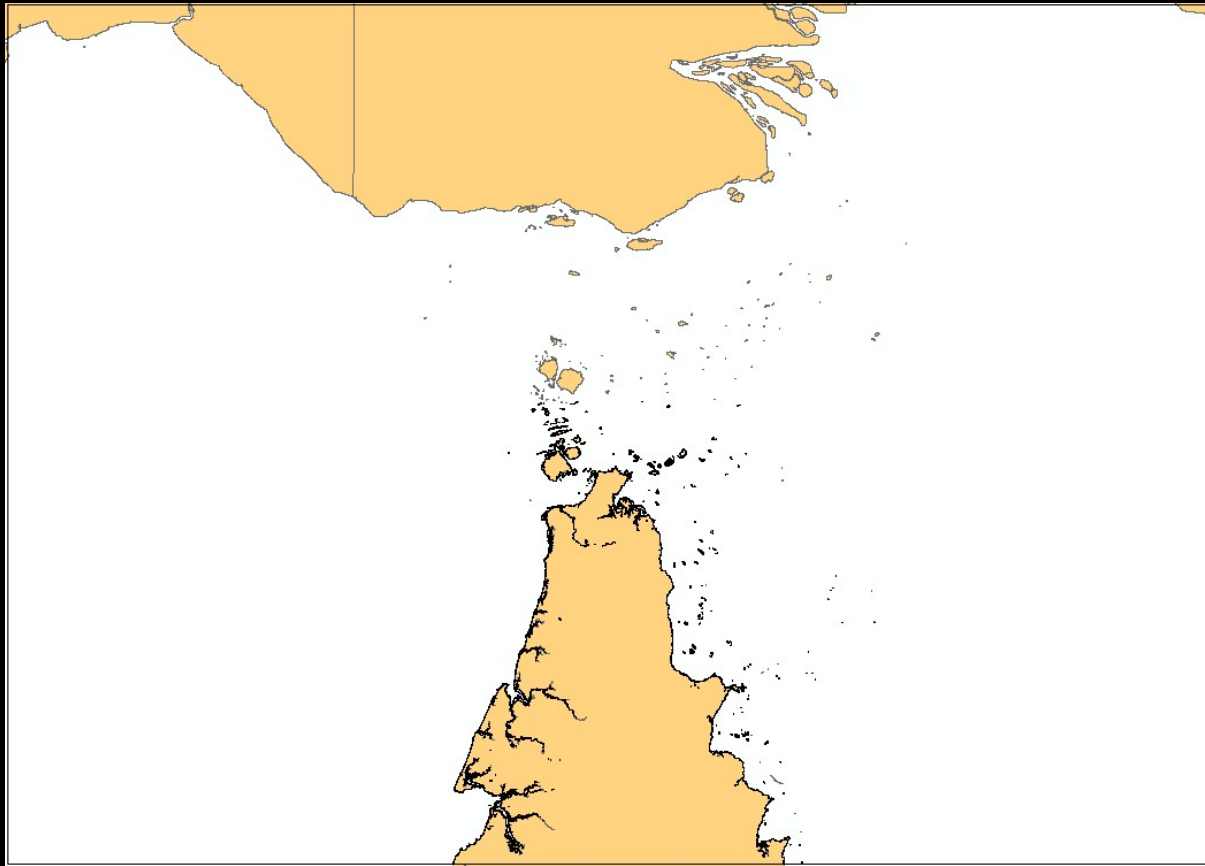Australia's Maritime Jurisdiction in the Torres Strait
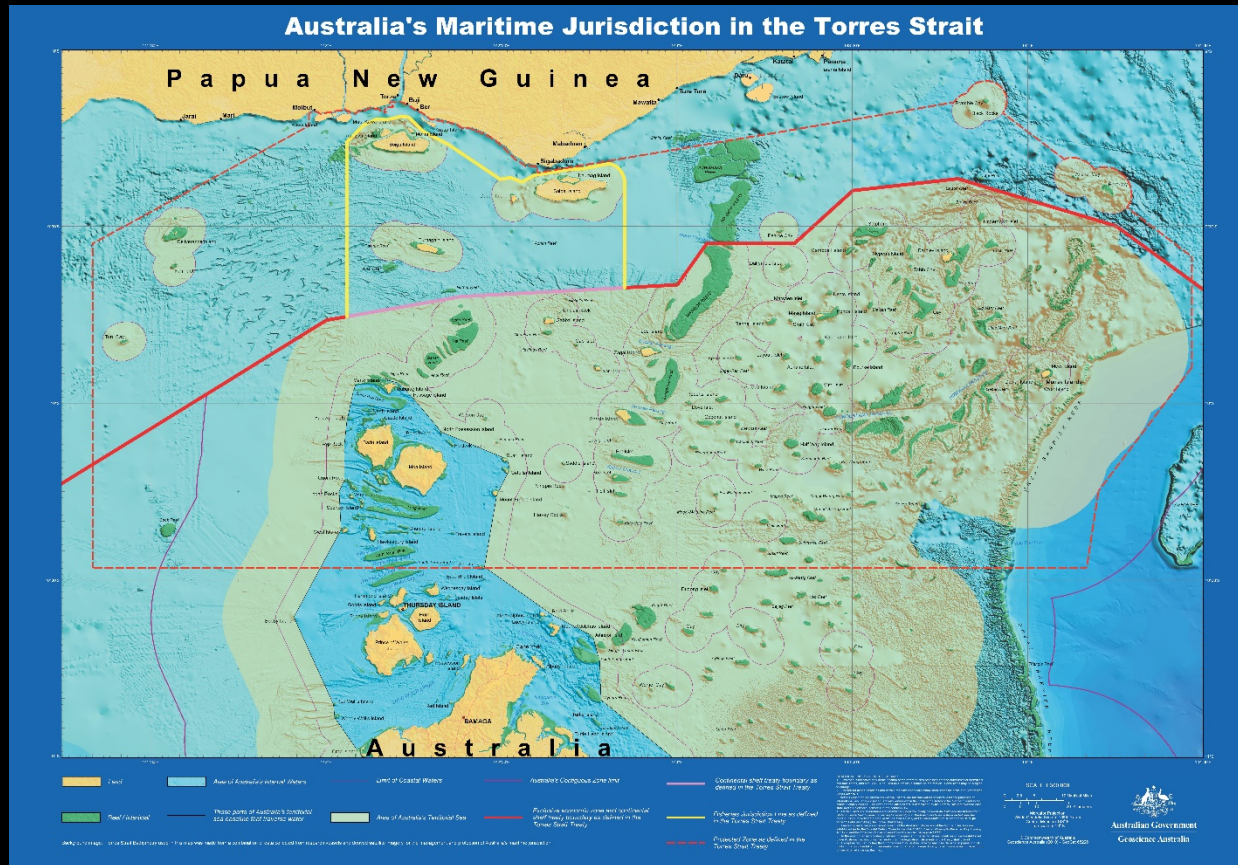
Treaties with PNG and Indonesia, Torres Strait Regional Authority, GBR/Coral Sea/West Cape York marine parks, critical shipping routes
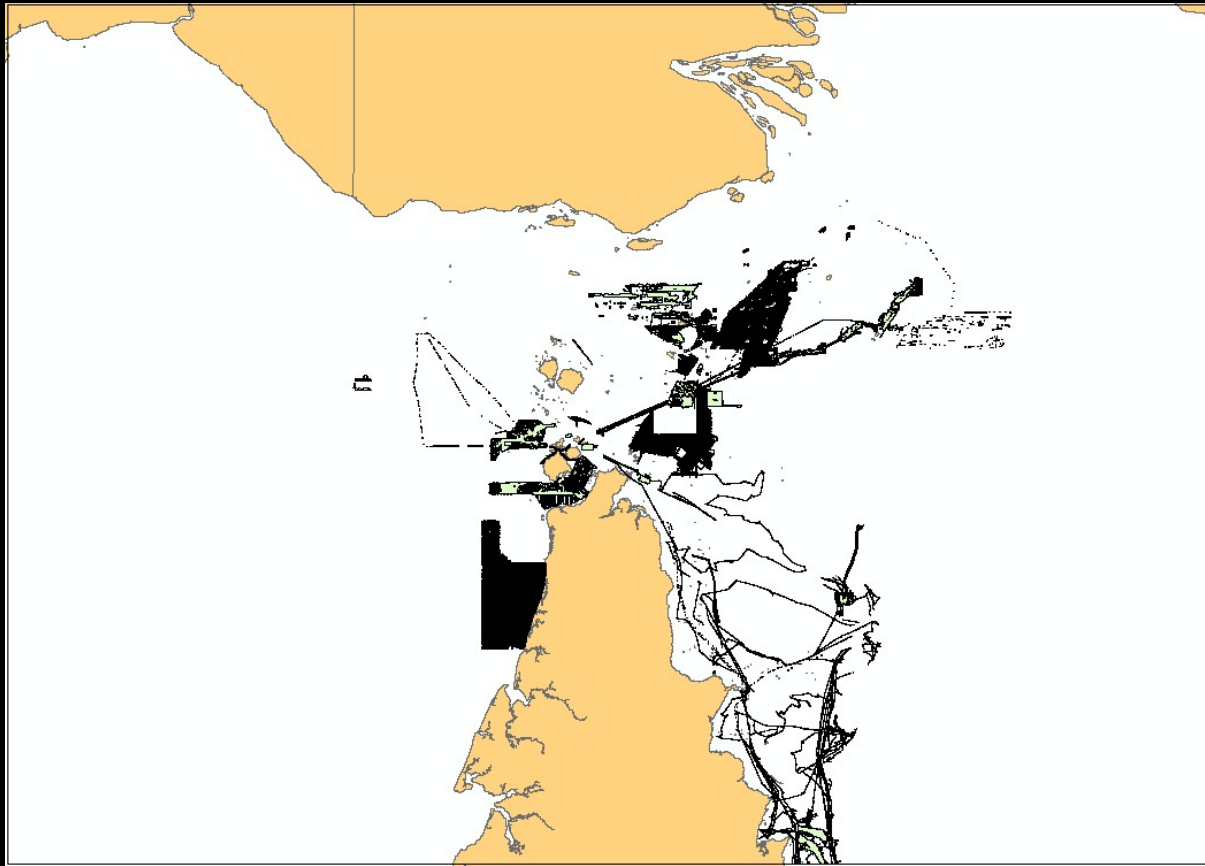
ENC spot depths
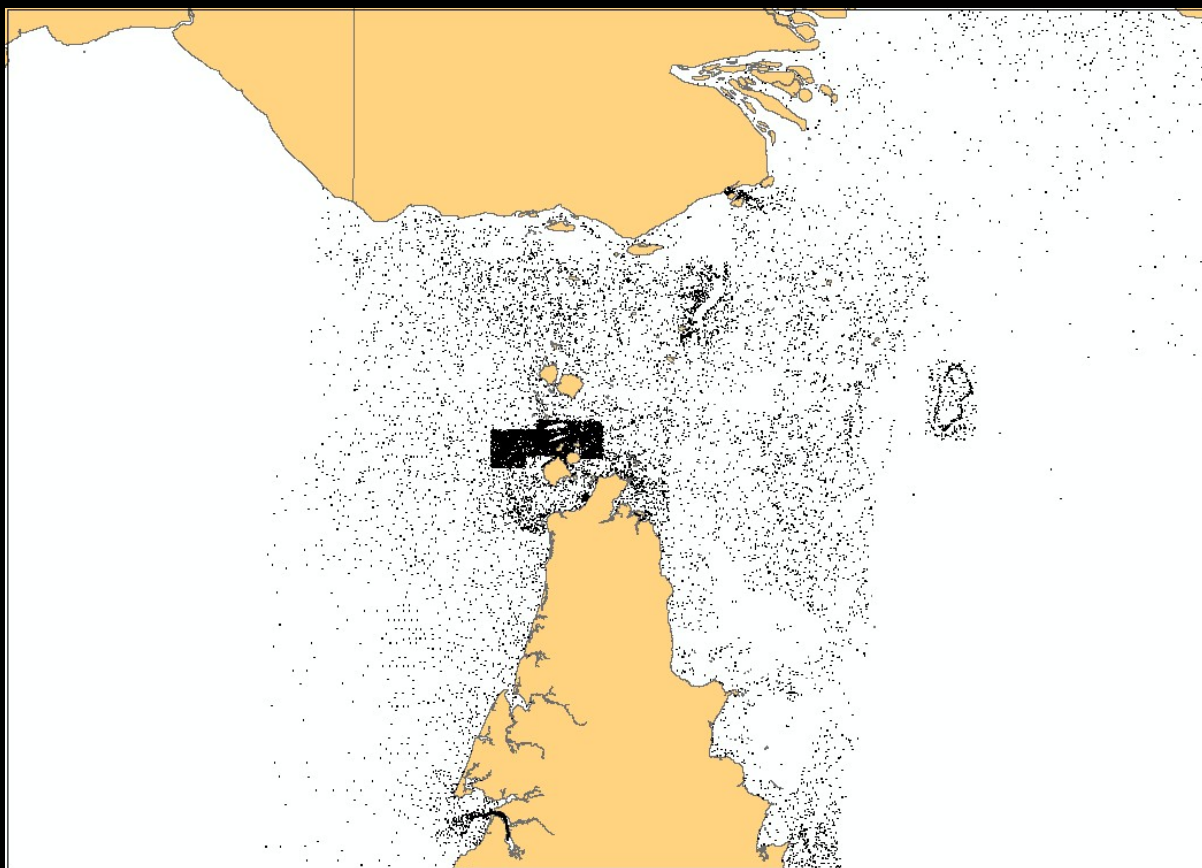
39 tiles supplied by AHO, most at 1:90,000 scale, some at 1:12, 000 scale

NIDEM

19 tidal modeling polygons from Bishop-Taylor et al. 2019. Modelling the elevation of Australia's exposed intertidal zone at continental scale. Estuarine, Coastal and Shelf Science 223, 115-128.
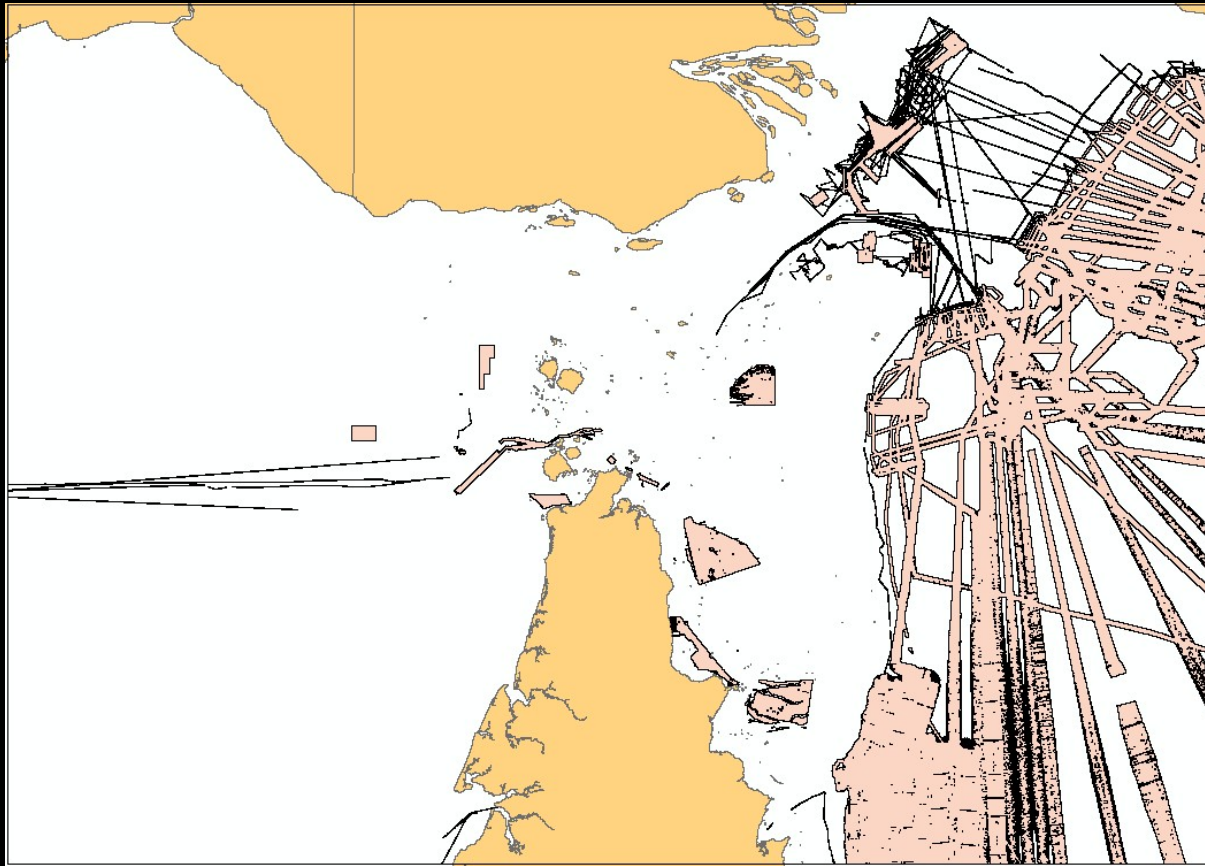
Singlebeam echosounder

55 surveys, most supplied by the AHO, some from the 'Crowdsourced bathymetry on the Great Barrier Reef' project

Airborne lidar bathymetry
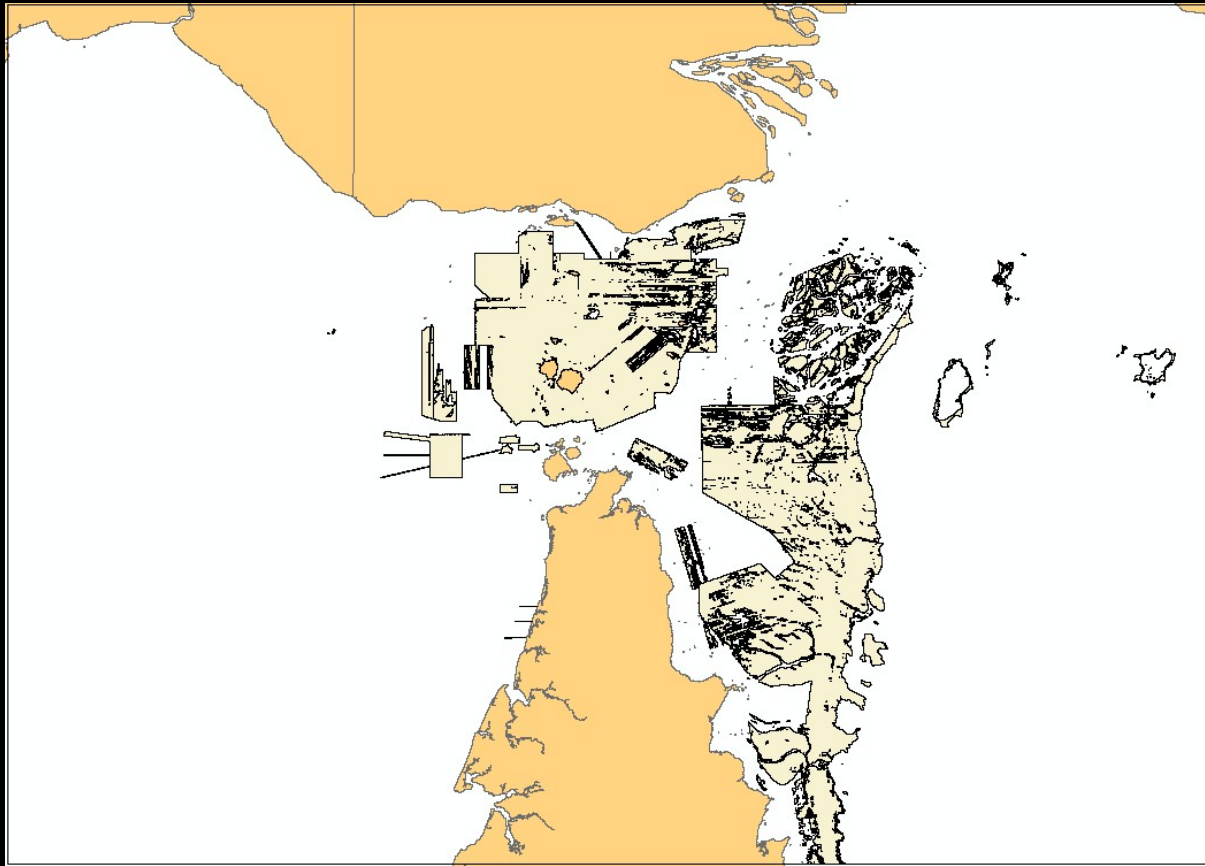
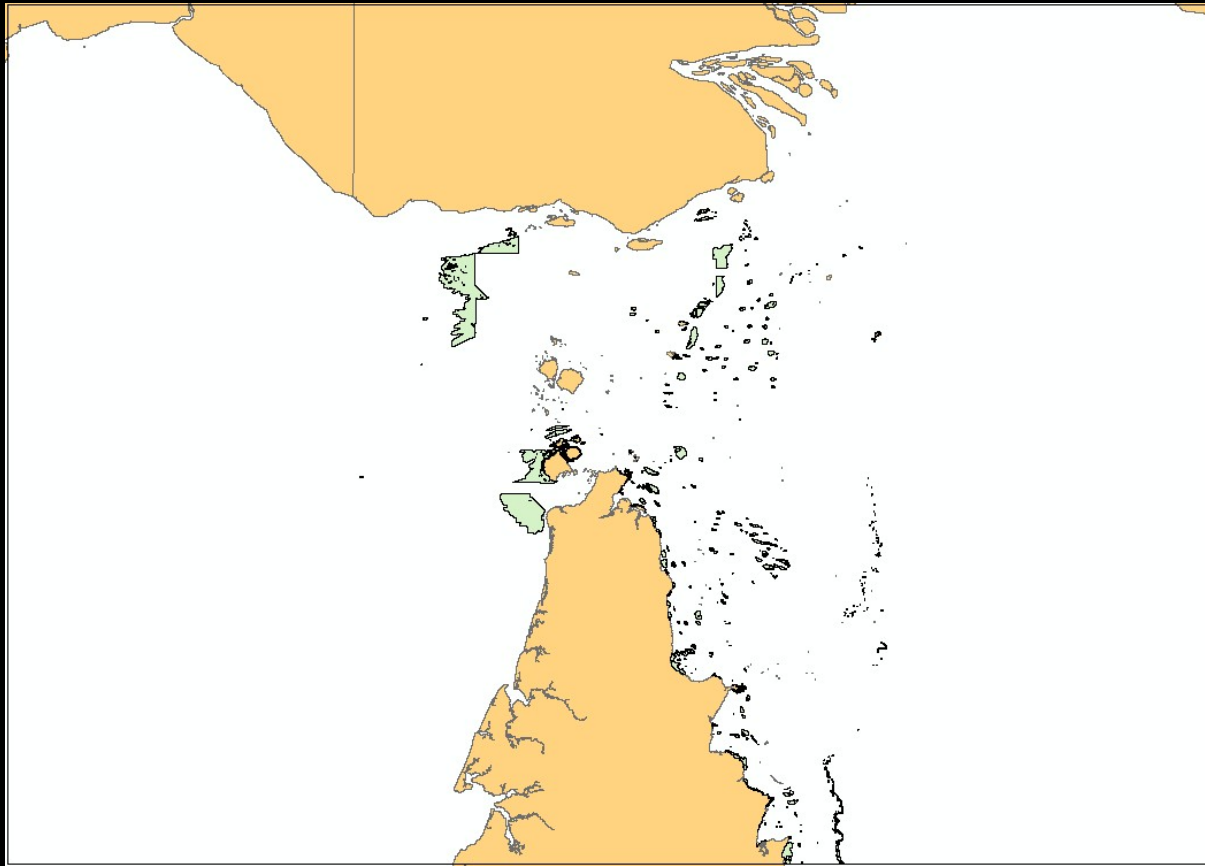65 surveys, all supplied by the AHO, most from LADS Flight and some SHOALS-1000T

Multibeam echosounder

63 surveys, with 23 provided by AHO, remainder as CARIS HIPS
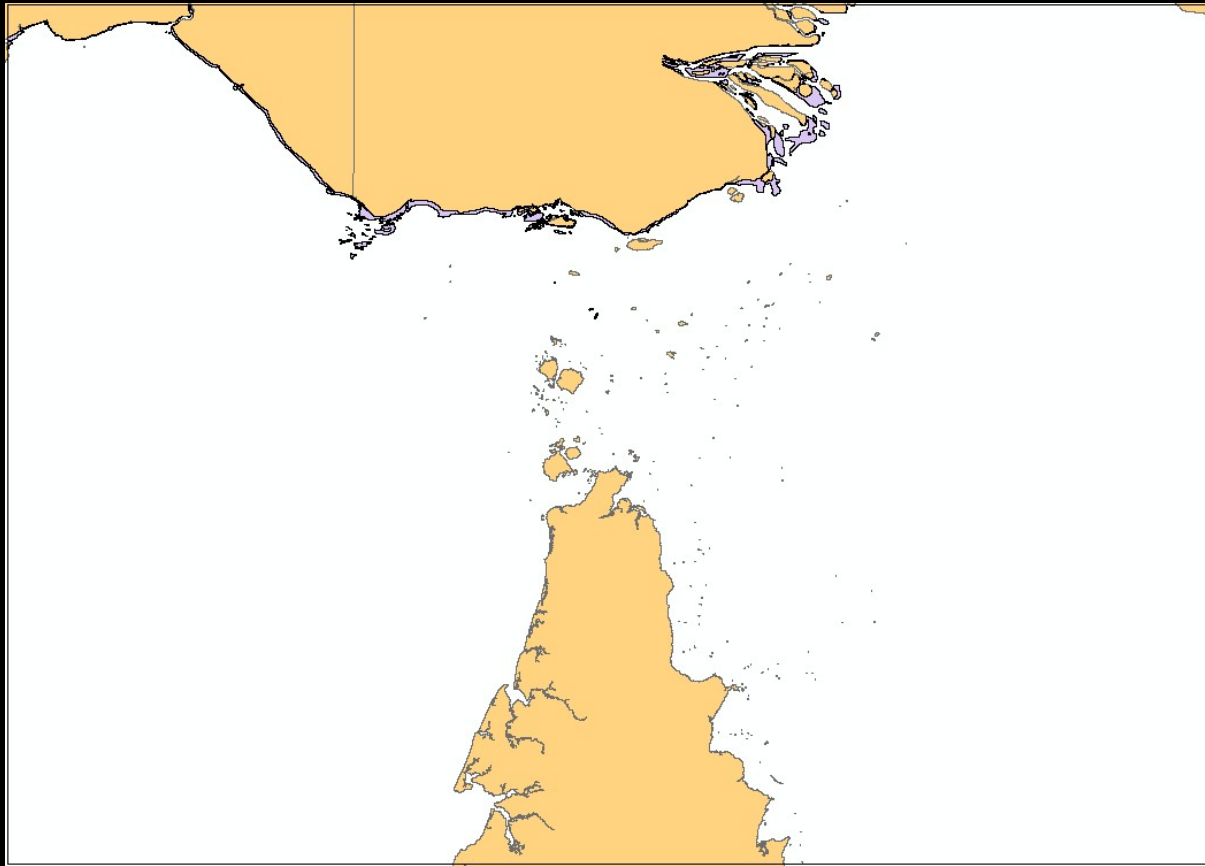projects from GA, universities, foreign research ships
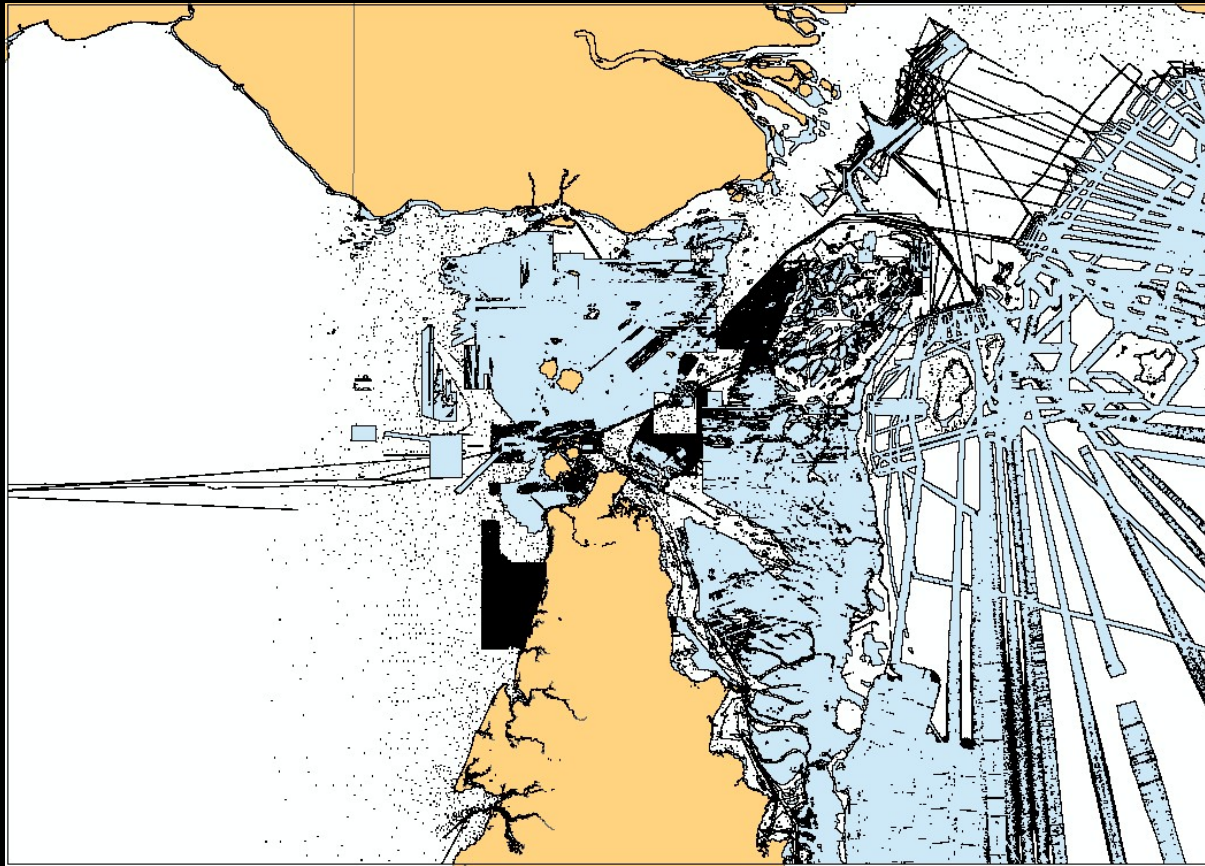
8

Satellite derived bathymetry

6 discrete areas using physics-based Sentinal-2 provided by the GBRMPA, and empirical-based Landsat-8 done by JCU
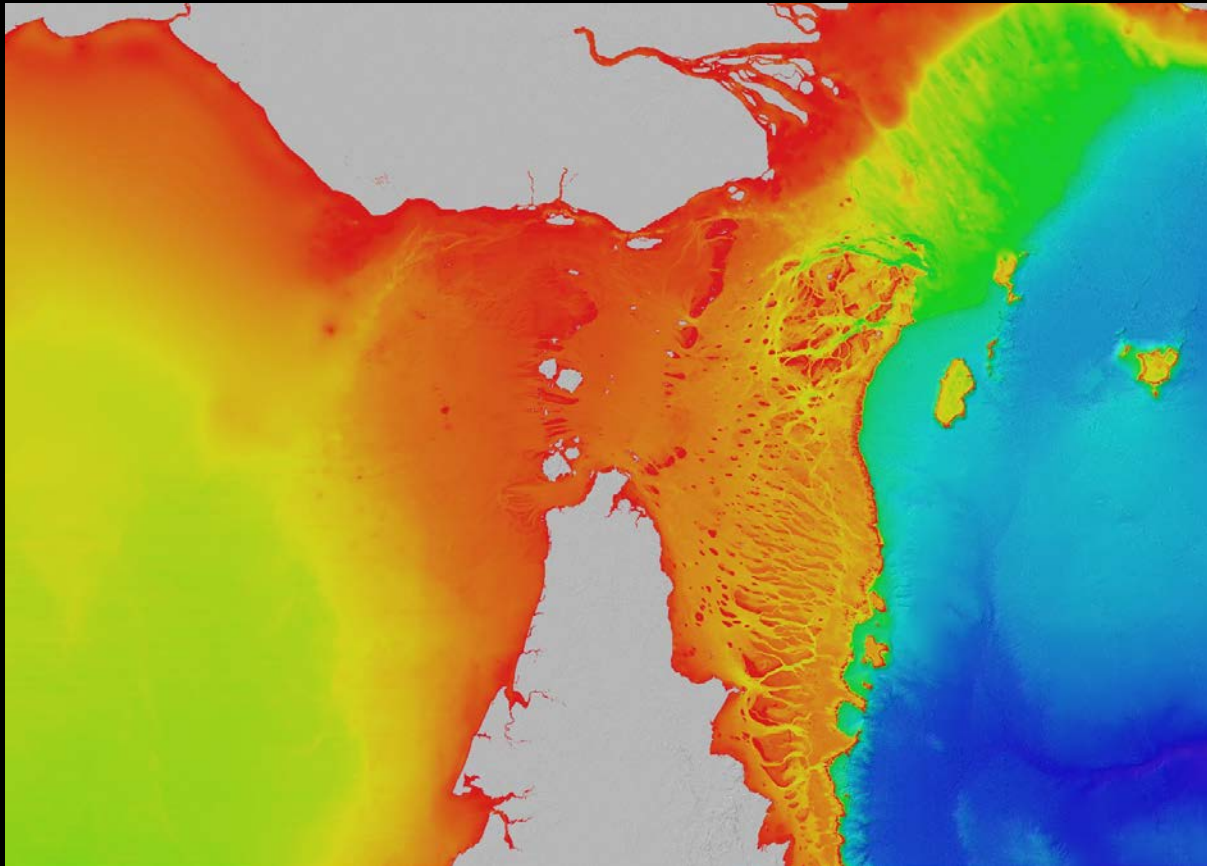
Drying areas

muddy banks along Indonesia/PNG coastline between chart datum
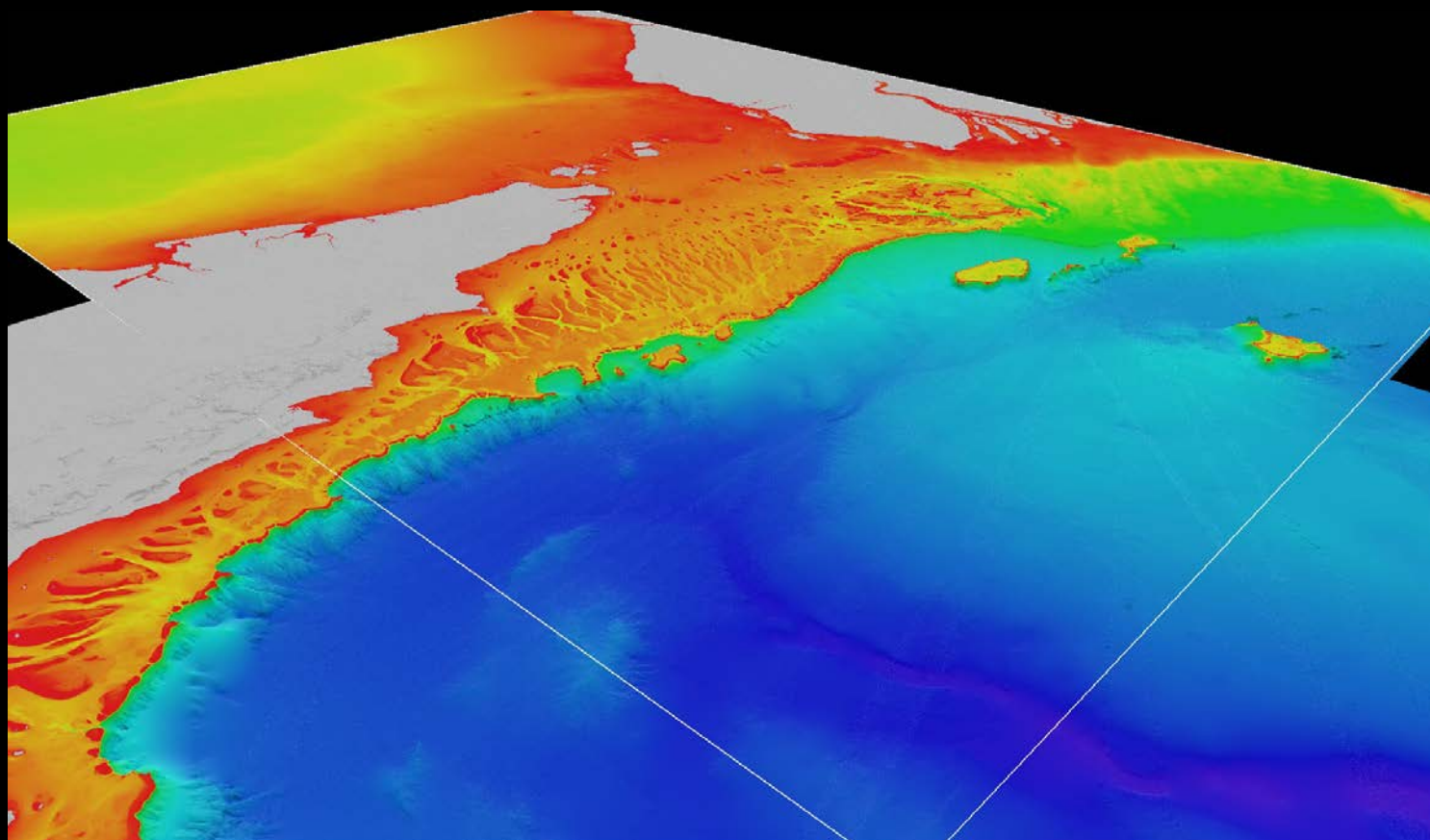and drying contour, identified in Sentinal-2 imagery

All source data

255 separate files = 34.8 GB raw data, then median binned at ~15 m to 7.41 GB, then gridded/interpolated to 1.4 GB raster at ~30 m pixel

ts30 grid

~770 km x 550 km, ~423 thousand square km at 0.0003° (~30 m),
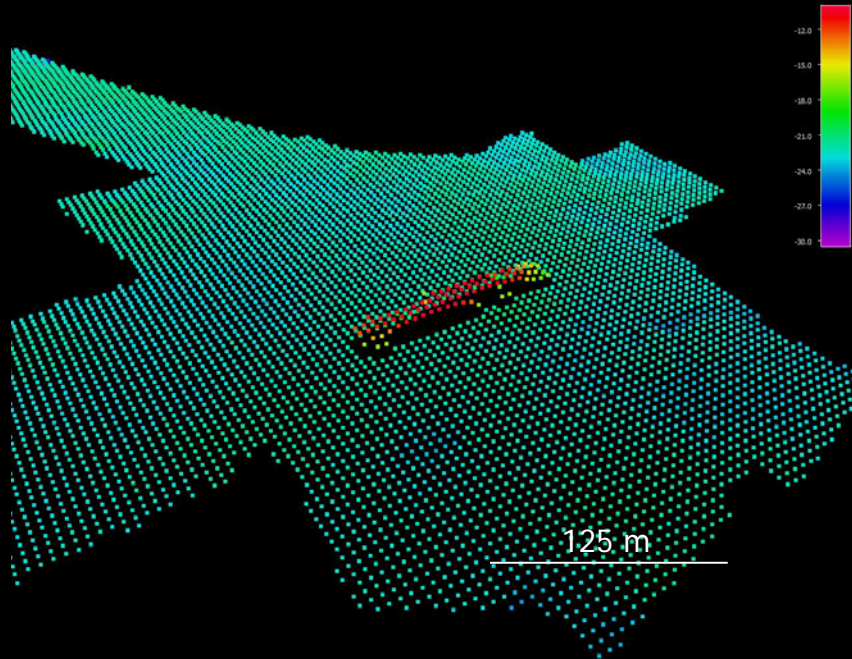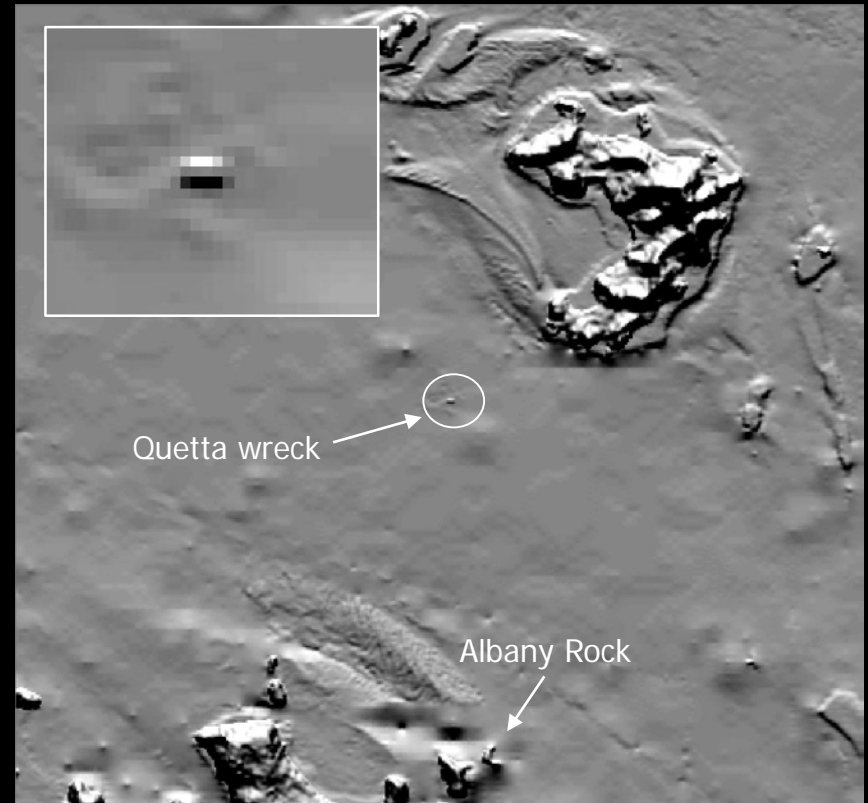horizontal datum WGS84, vertical datum approximates MSL

ts30 grid

seamless with gbr30/100 grids over the northern GBR

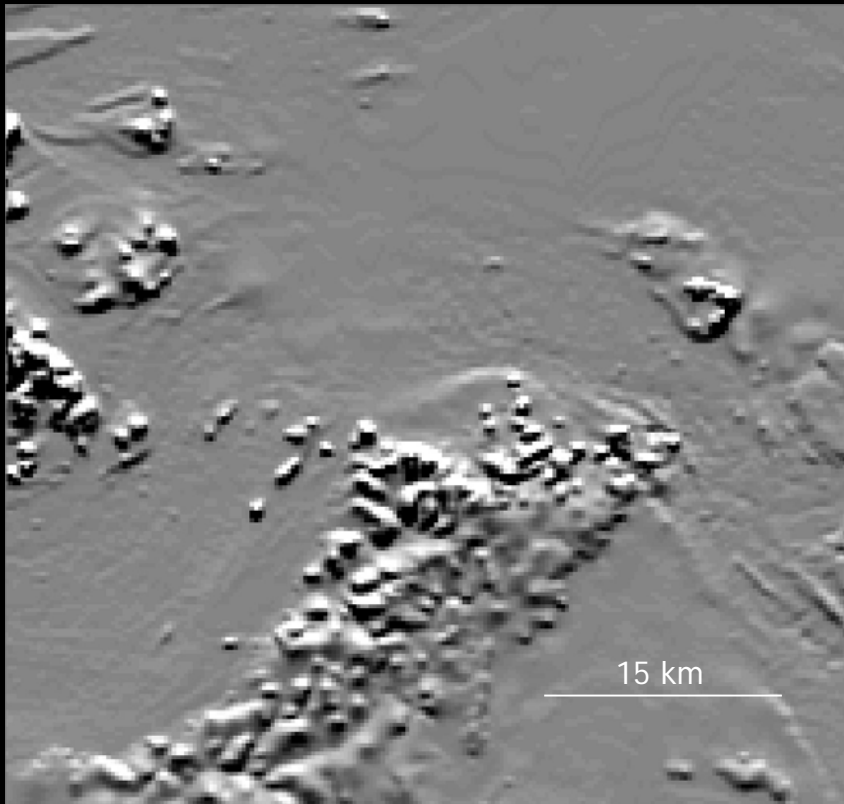# Resolution

Source data e.g. 5 m grid
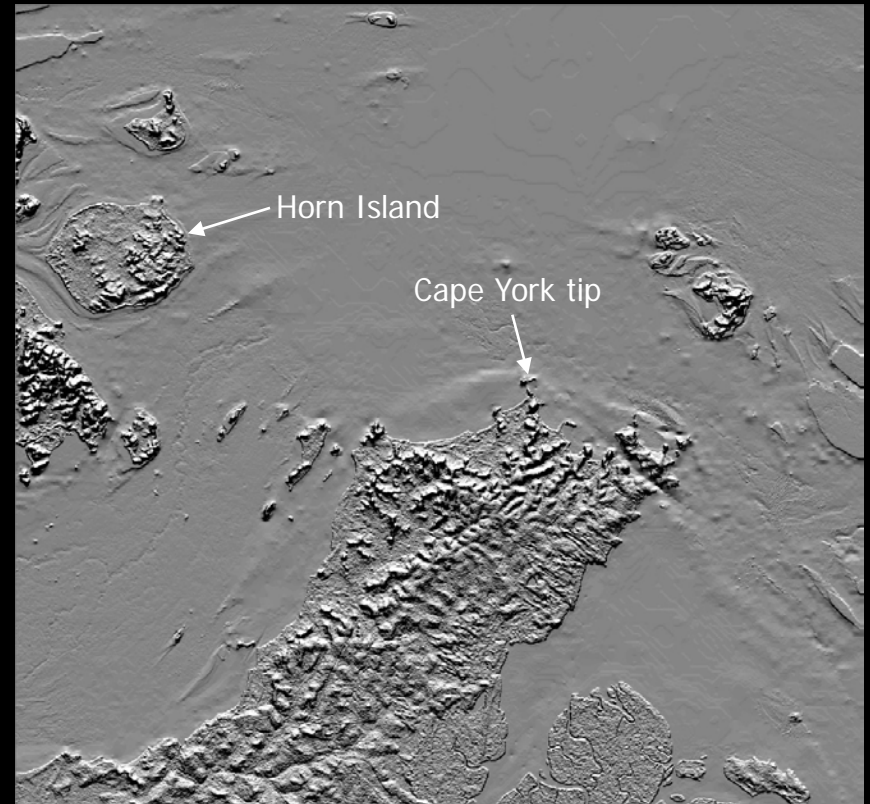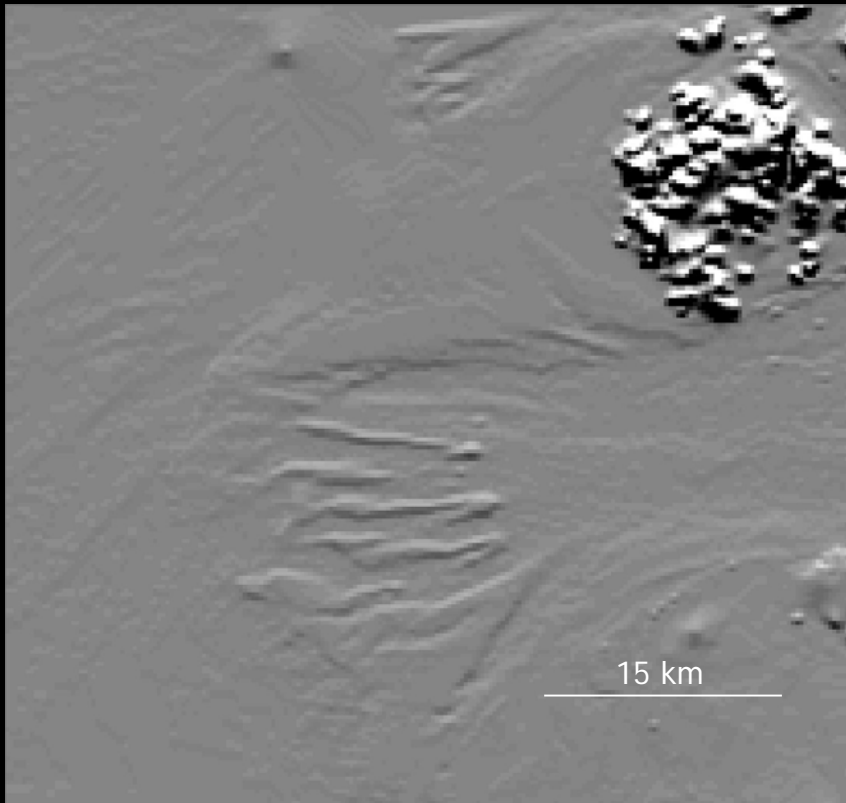over Quetta wreck 116 m

ts30 (~30m) shows wreck

125 m

Quetta wreck

Albany Rock

Comparison

AusBathyTopo (~250m)   ts30 (~30m)

15 km

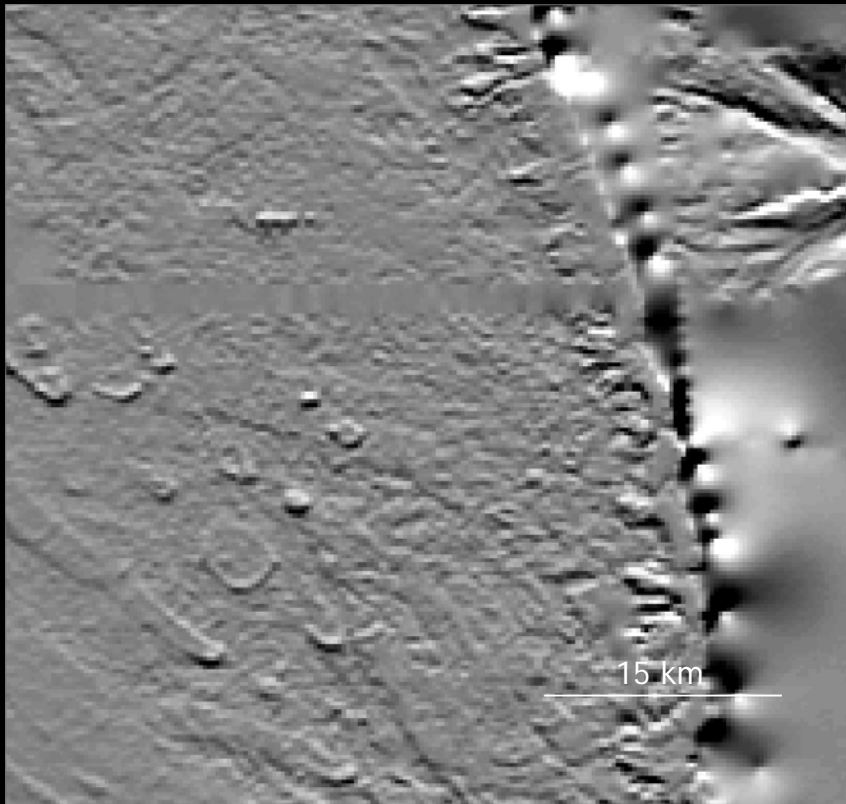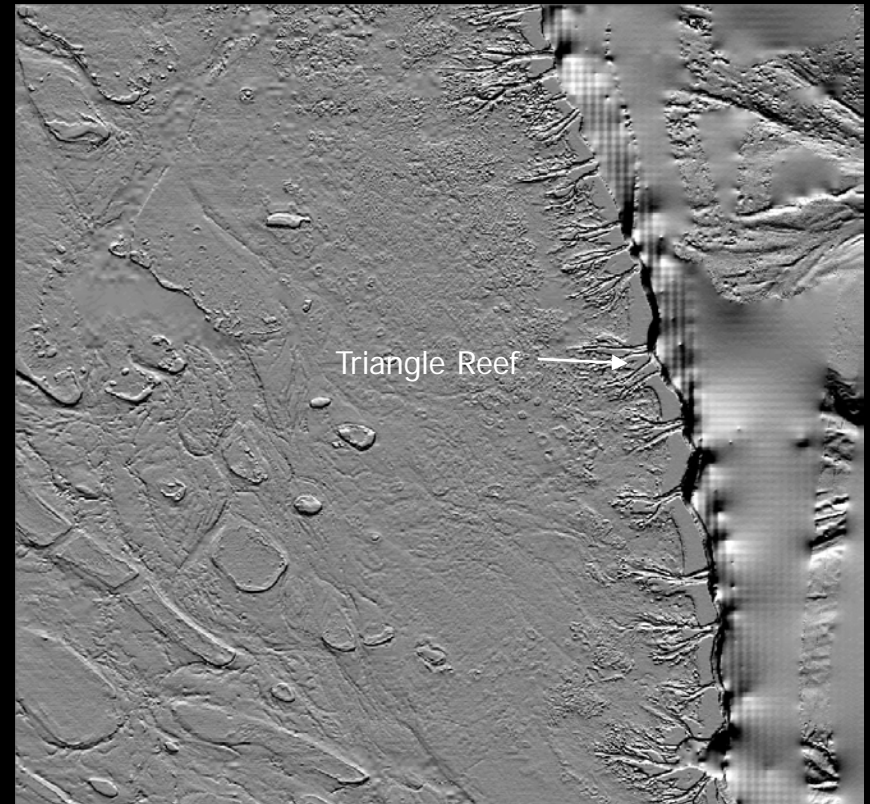Horn Island

Cape York tip

Comparison

AusBathyTopo (~250m)

ts30 (~30m)

15 km

Prince of Wales Island

Crab Island

Comparison

AusBathyTopo (~250m)

ts30 (~30m)

15 km

Triangle Reef
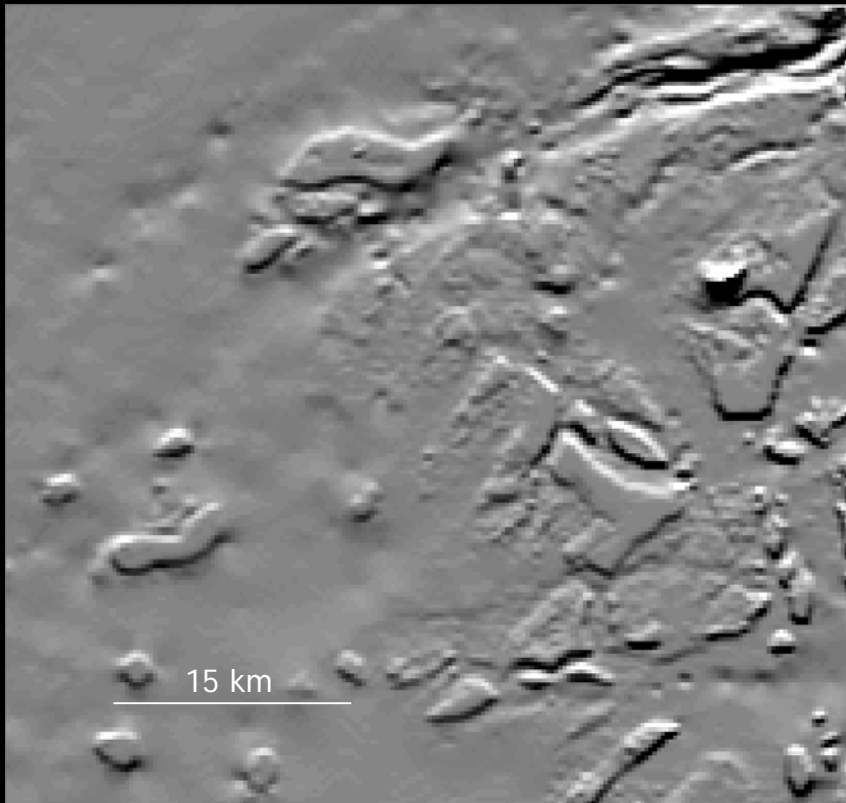
Comparison

AusBathyTopo (~250m)

ts30 (~30m)

15 km

Stephens Islet

Darnley Island

Comparison

AusBathyTopo (~250m)

ts30 (~30m)

15 km
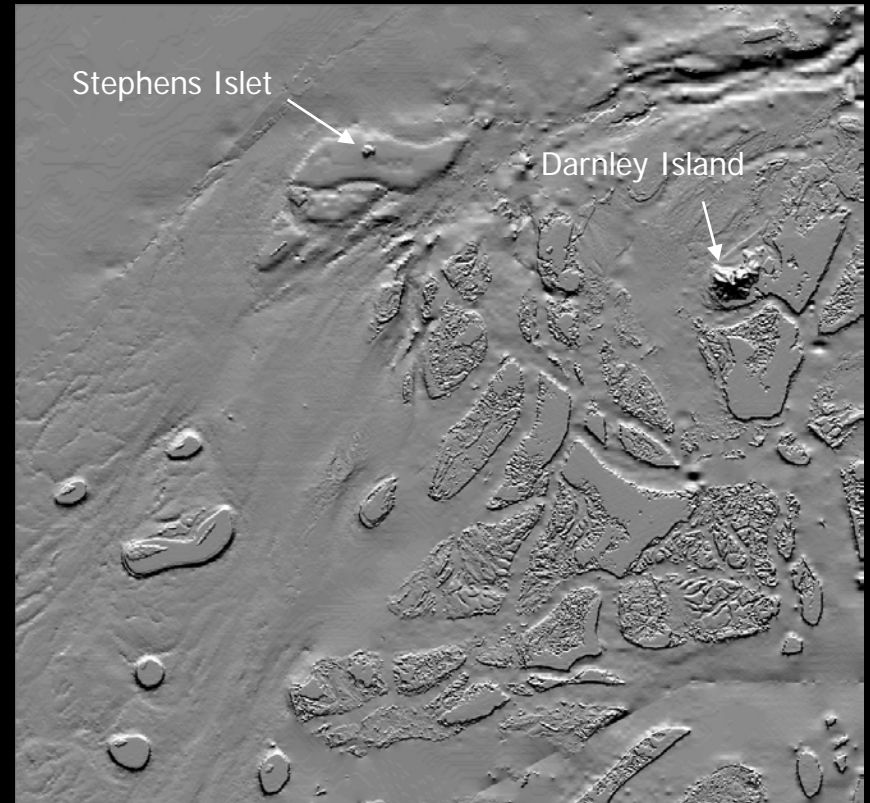

Saibai Island

Warrior Reefs

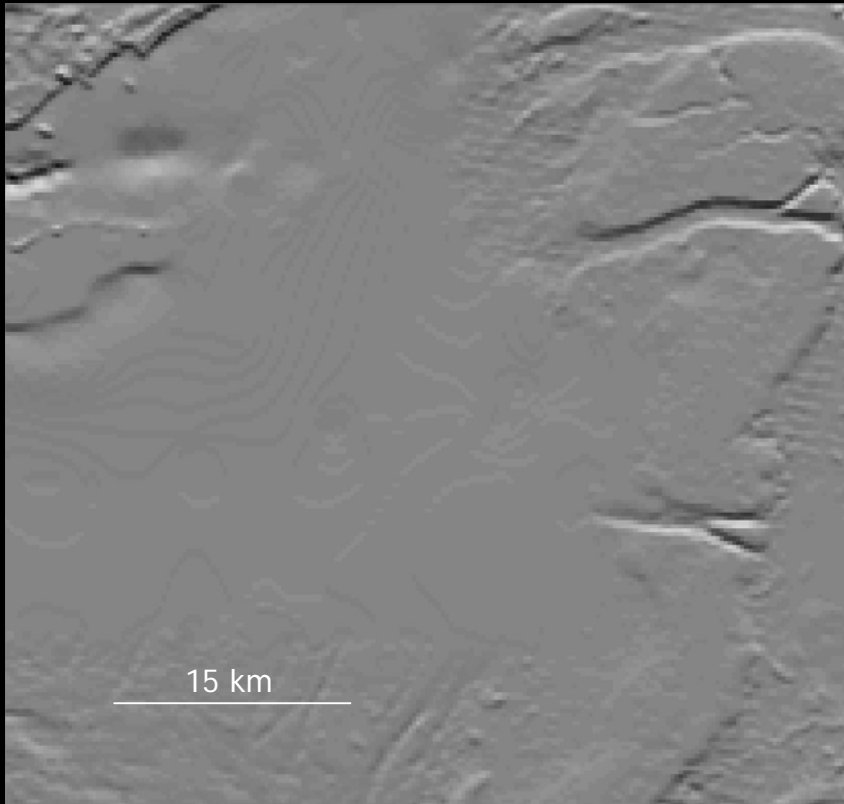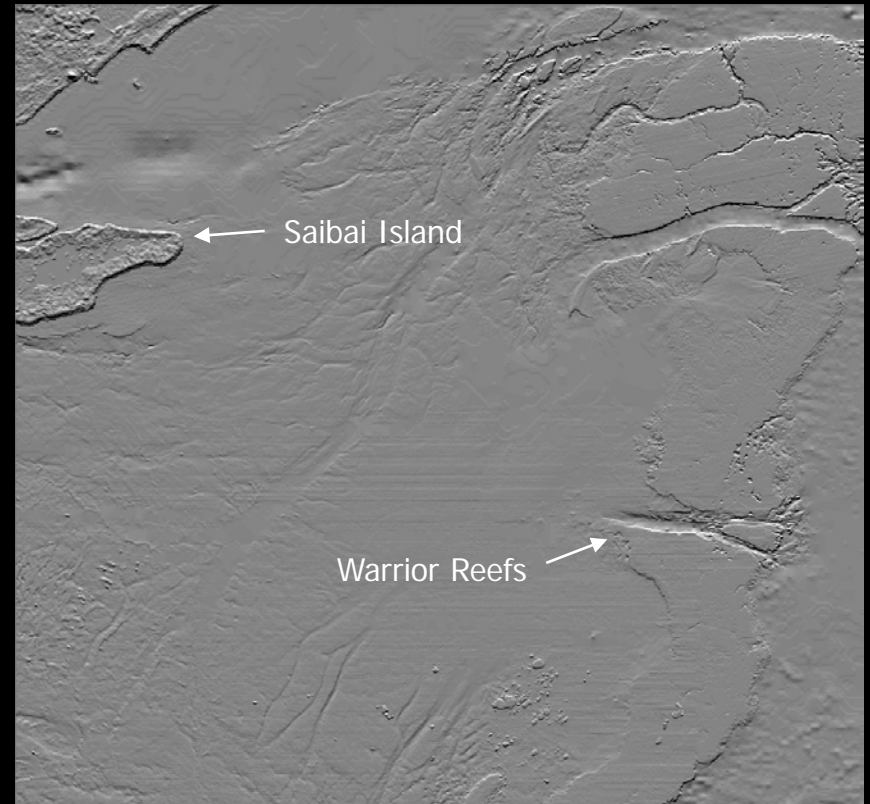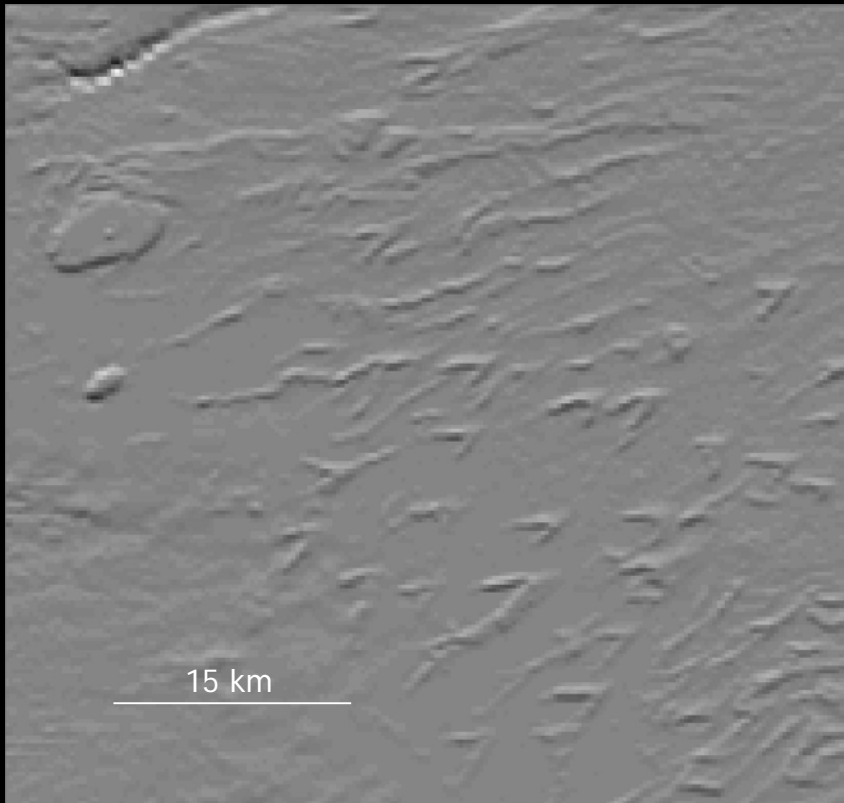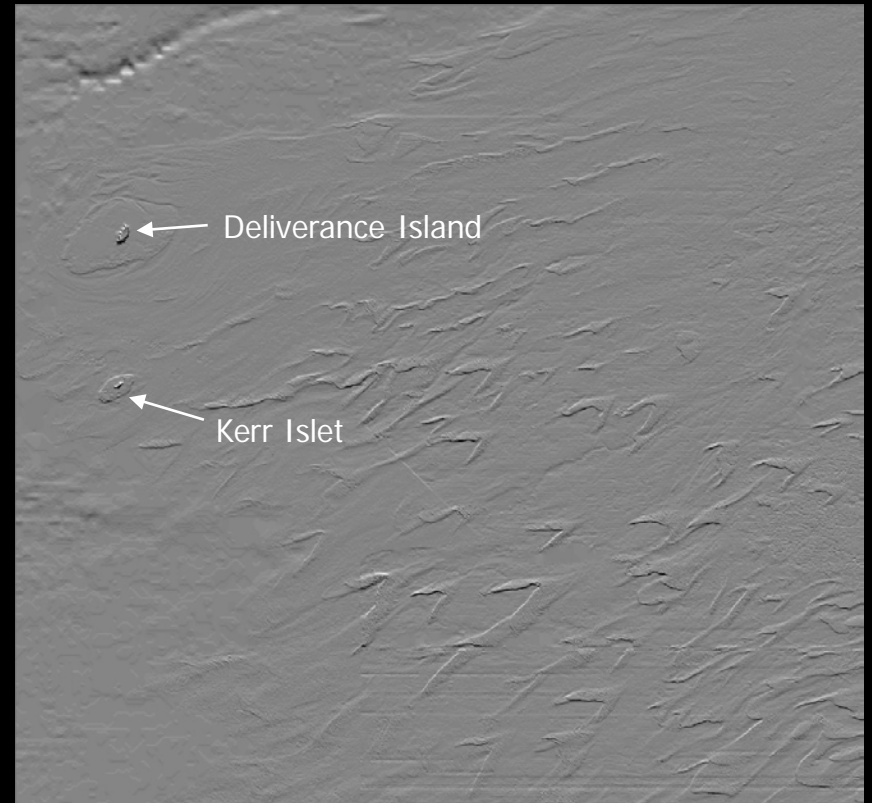# Comparison

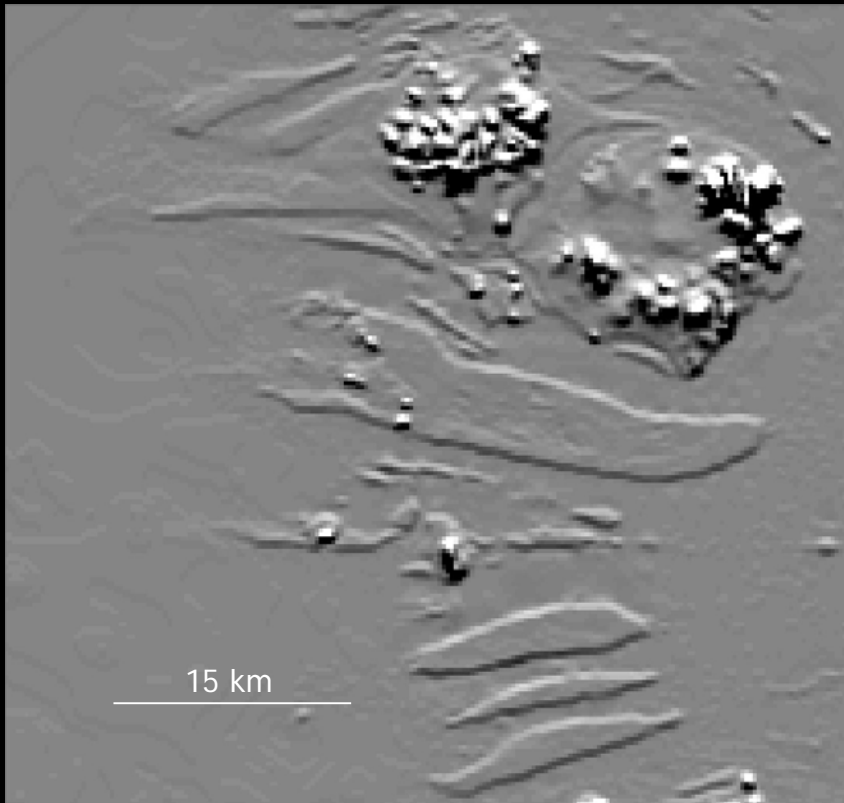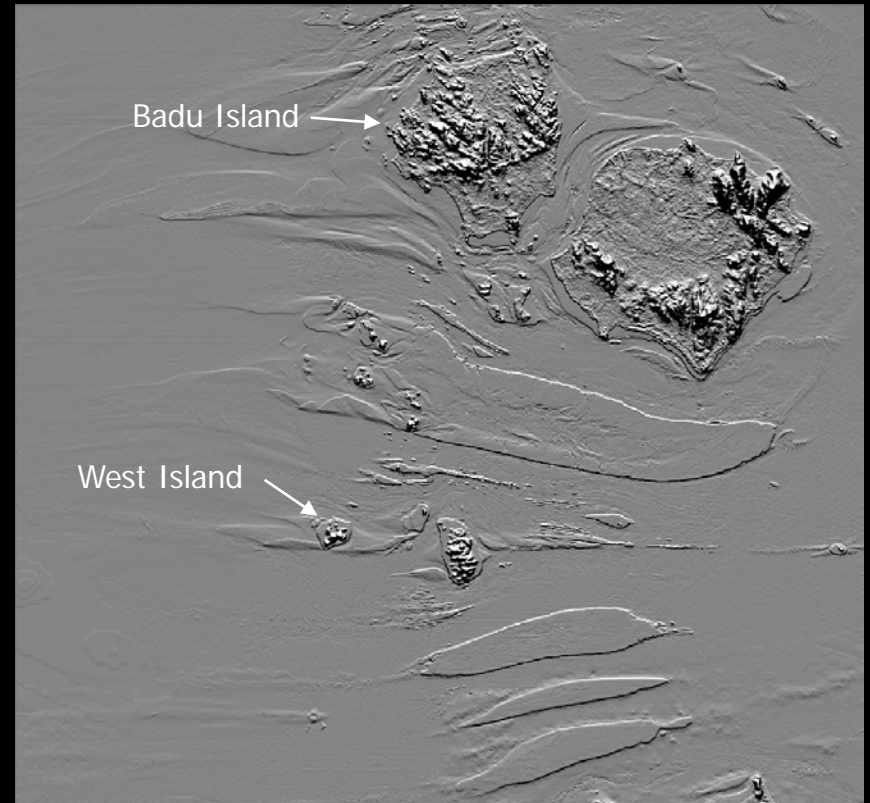AusBathyTopo (~250m)   ts30 (~30m)

Comparison

AusBathyTopo (~250m)   ts30 (~30m)

Future Bass Strait 30 m grid