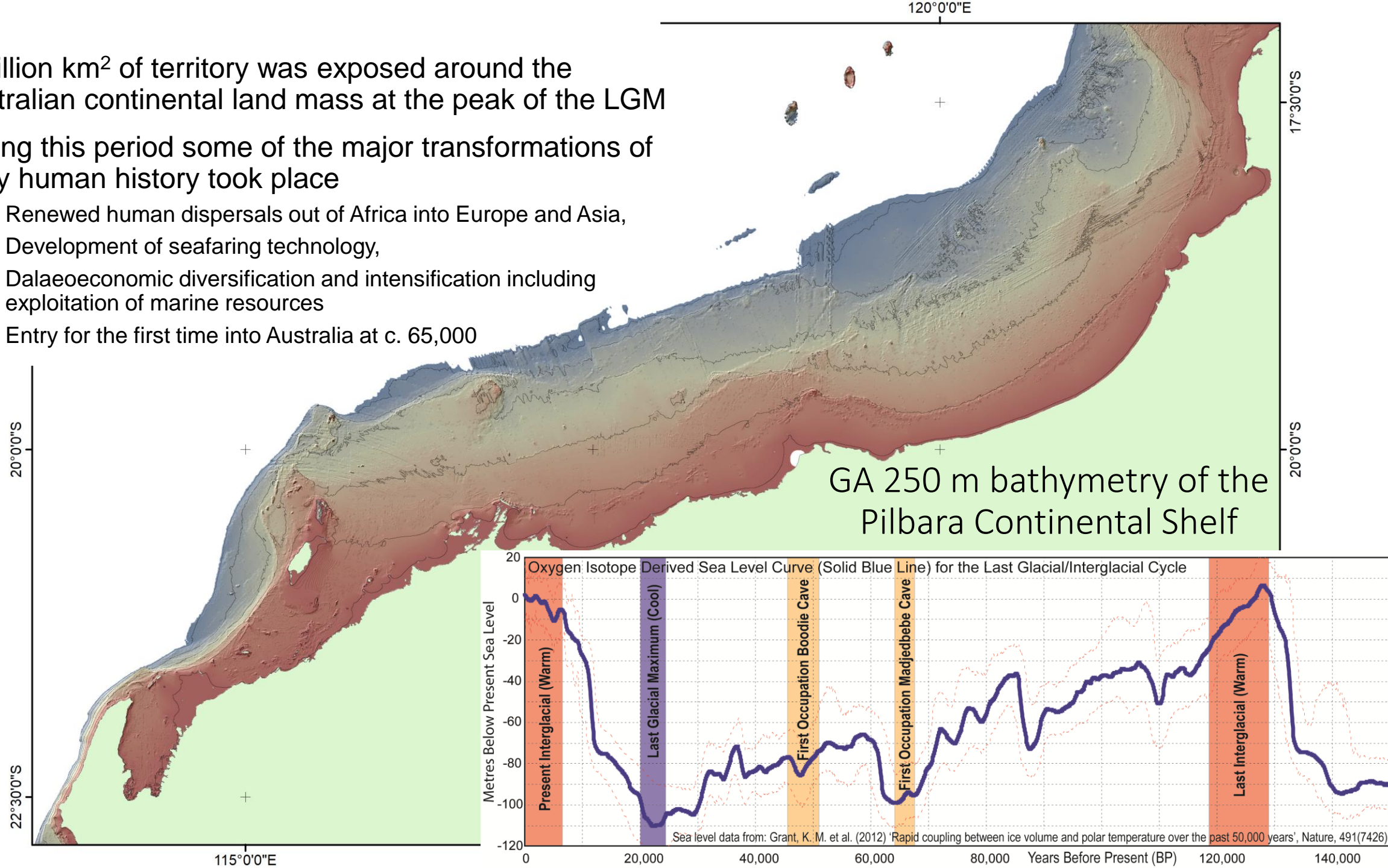


Exploring Sea Country: resolving early coastal landscapes and discovery of underwater cultural heritage

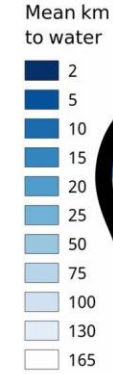


Mick O'Leary, School of Earth Sciences, & The UWA Oceans Institute
The University of Western Australia

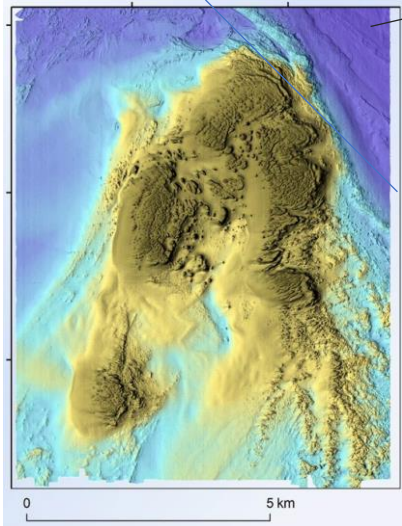
- 2 million km² of territory was exposed around the Australian continental land mass at the peak of the LGM
- During this period some of the major transformations of early human history took place
 - Renewed human dispersals out of Africa into Europe and Asia,
 - Development of seafaring technology,
 - Dalaeoeconomic diversification and intensification including exploitation of marine resources
 - Entry for the first time into Australia at c. 65,000



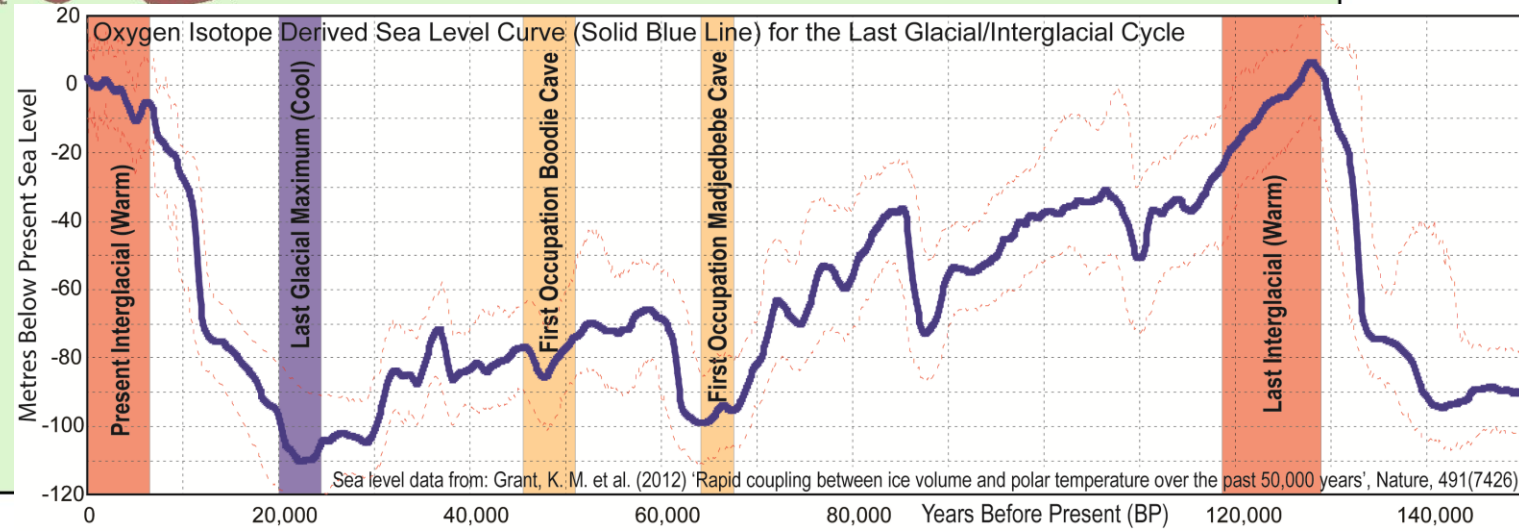
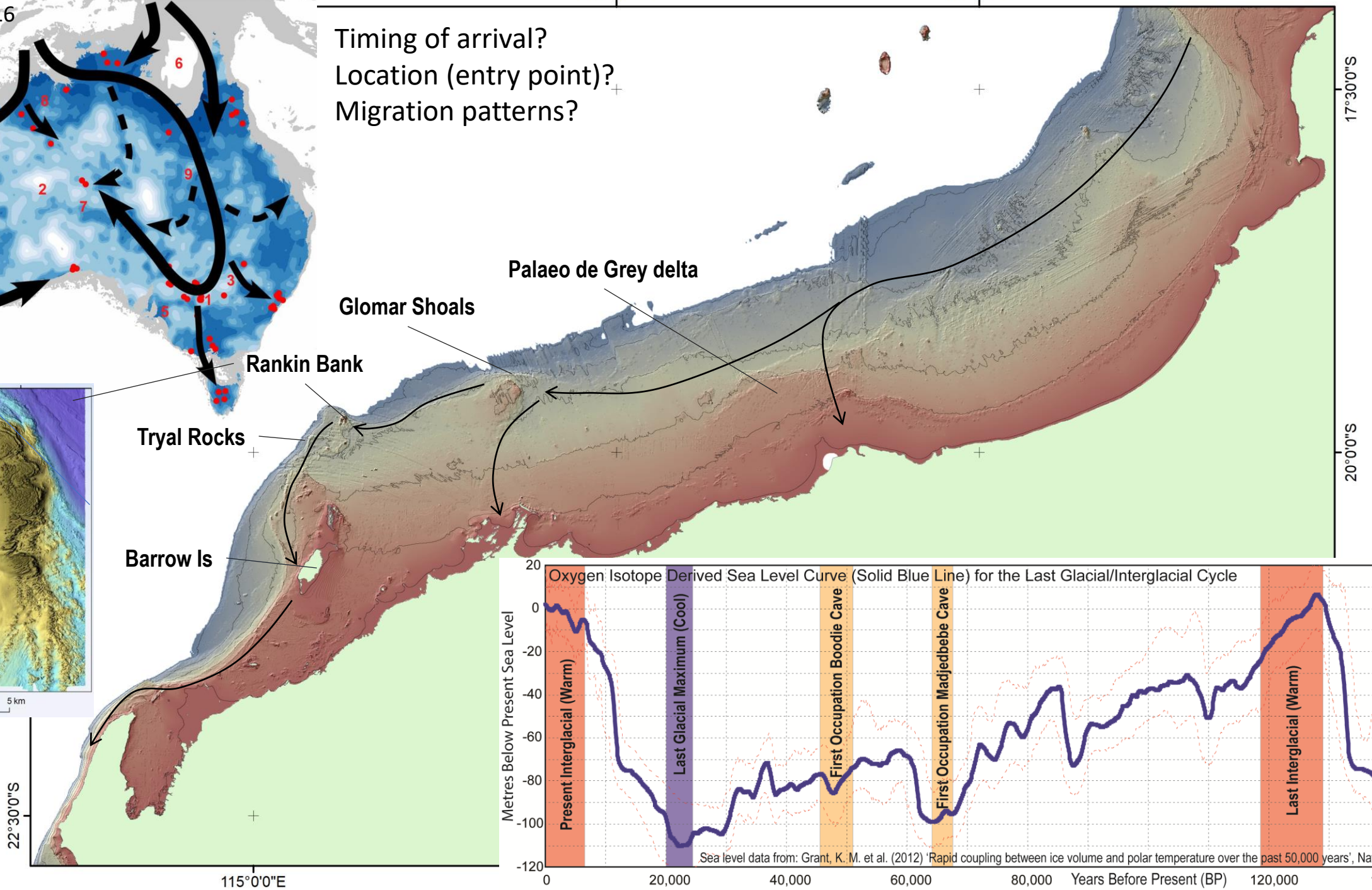
Bird et al., 2016



Sites
• > 30,000 BP

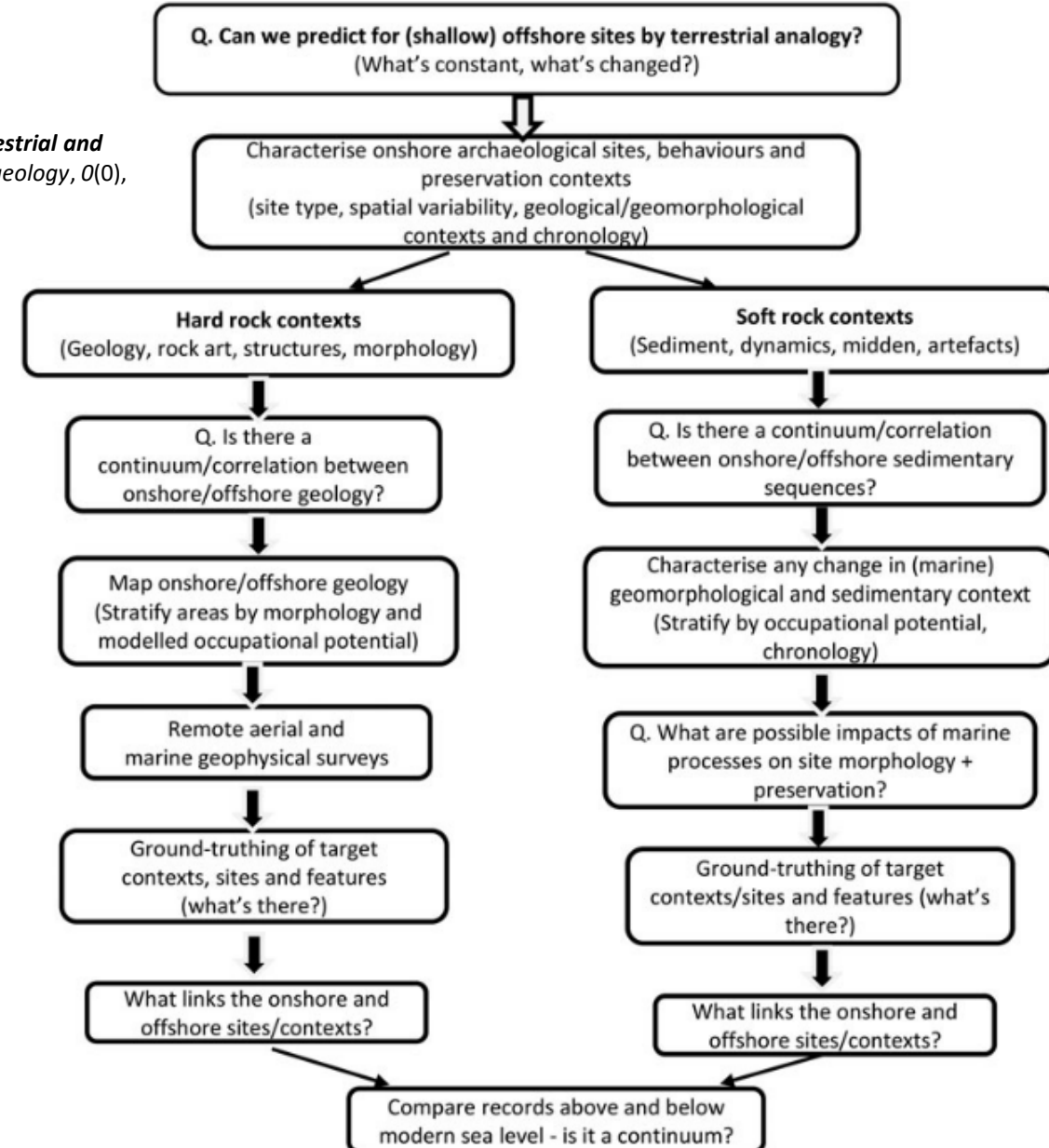
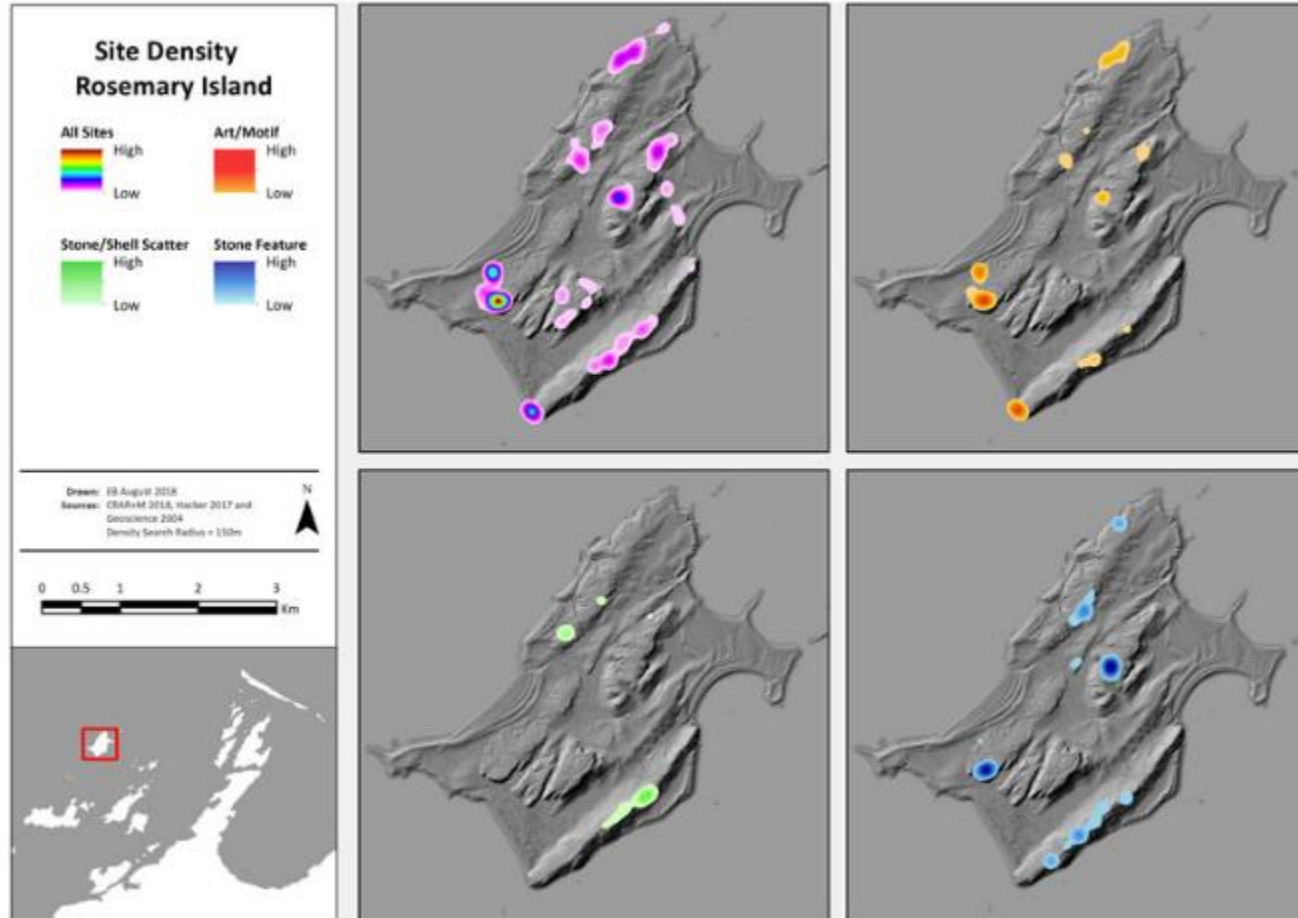


Timing of arrival?
Location (entry point)?
Migration patterns?



A Strategy for Assessing Continuity in Terrestrial and Maritime Landscapes

Veth, P., McDonald, J., Ward, I., O'Leary, M., Beckett, E., Benjamin, J., et al. (2019). *A Strategy for Assessing Continuity in Terrestrial and Maritime Landscapes from Murujuga (Dampier Archipelago), North West Shelf, Australia*. *Journal of Island and Coastal Archaeology*, 0(0), 1–27. <https://doi.org/10.1080/15564894.2019.1572677>

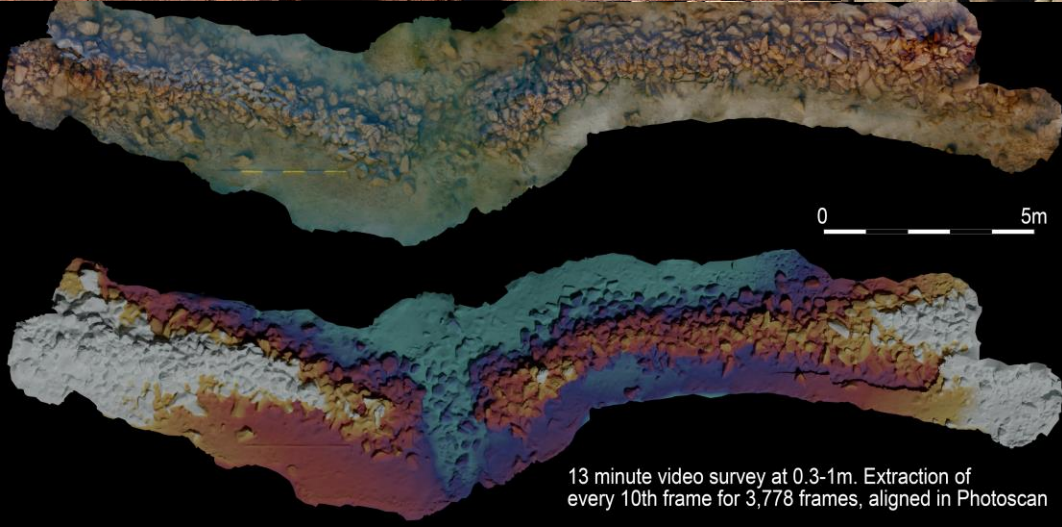


Dampier Archipelago
Murujuga Traditional Owners
NW Western Australia





20.56913°S
116.55118°E



13 minute video survey at 0.3-1m. Extraction of every 10th frame for 3,778 frames, aligned in Photoscan

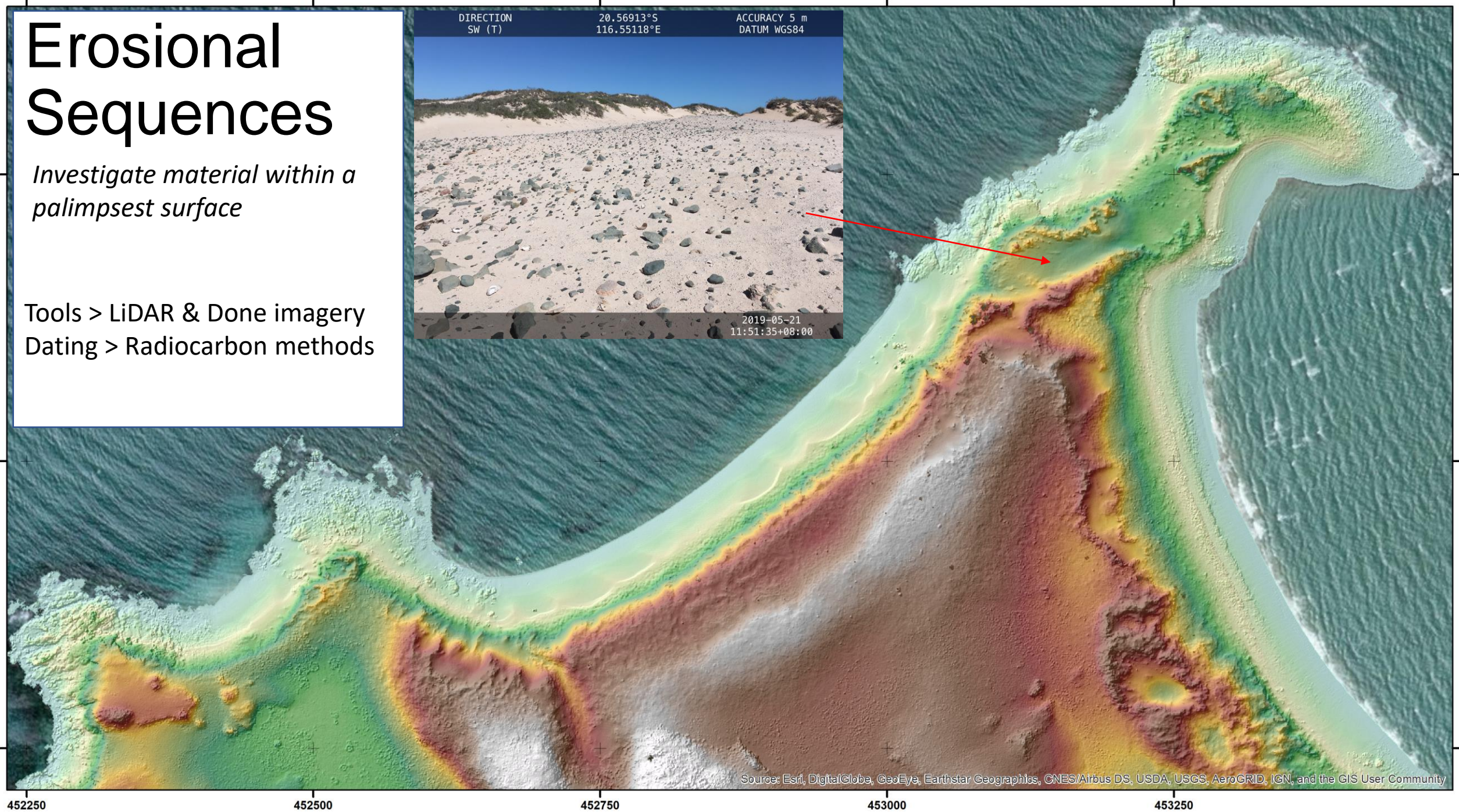


2019-05
11:51:35-

Erosional Sequences

Investigate material within a palimpsest surface

Tools > LiDAR & Drone imagery
Dating > Radiocarbon methods



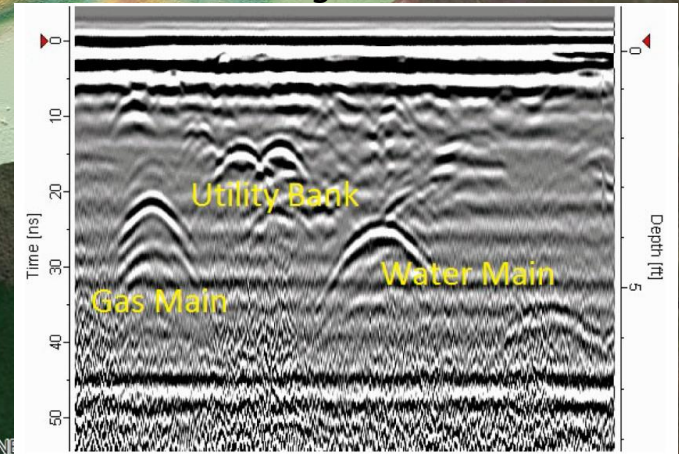
Construction Sequences

Investigate the presence/absence of cultural material contained within each beach ridge to establish periods of active use

Tools > Ground Penetrating Radar

Dating > OSL & Radiocarbon methods

GPR Signal



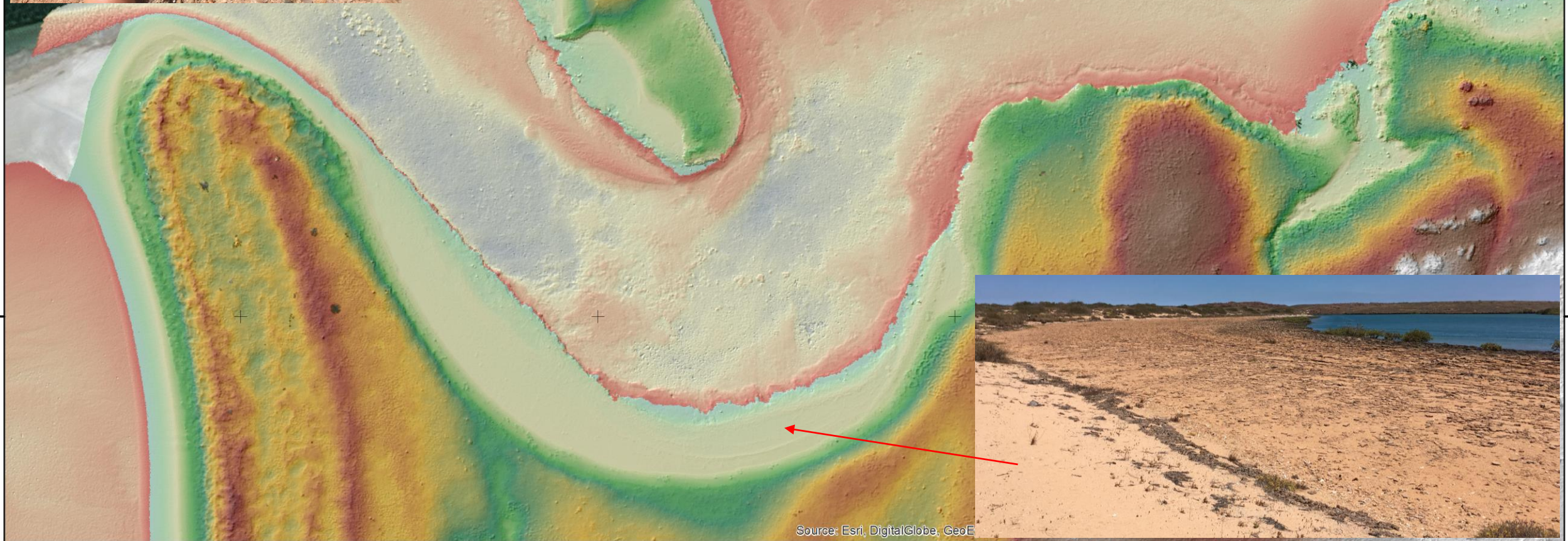
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNR

Cemented Sequences

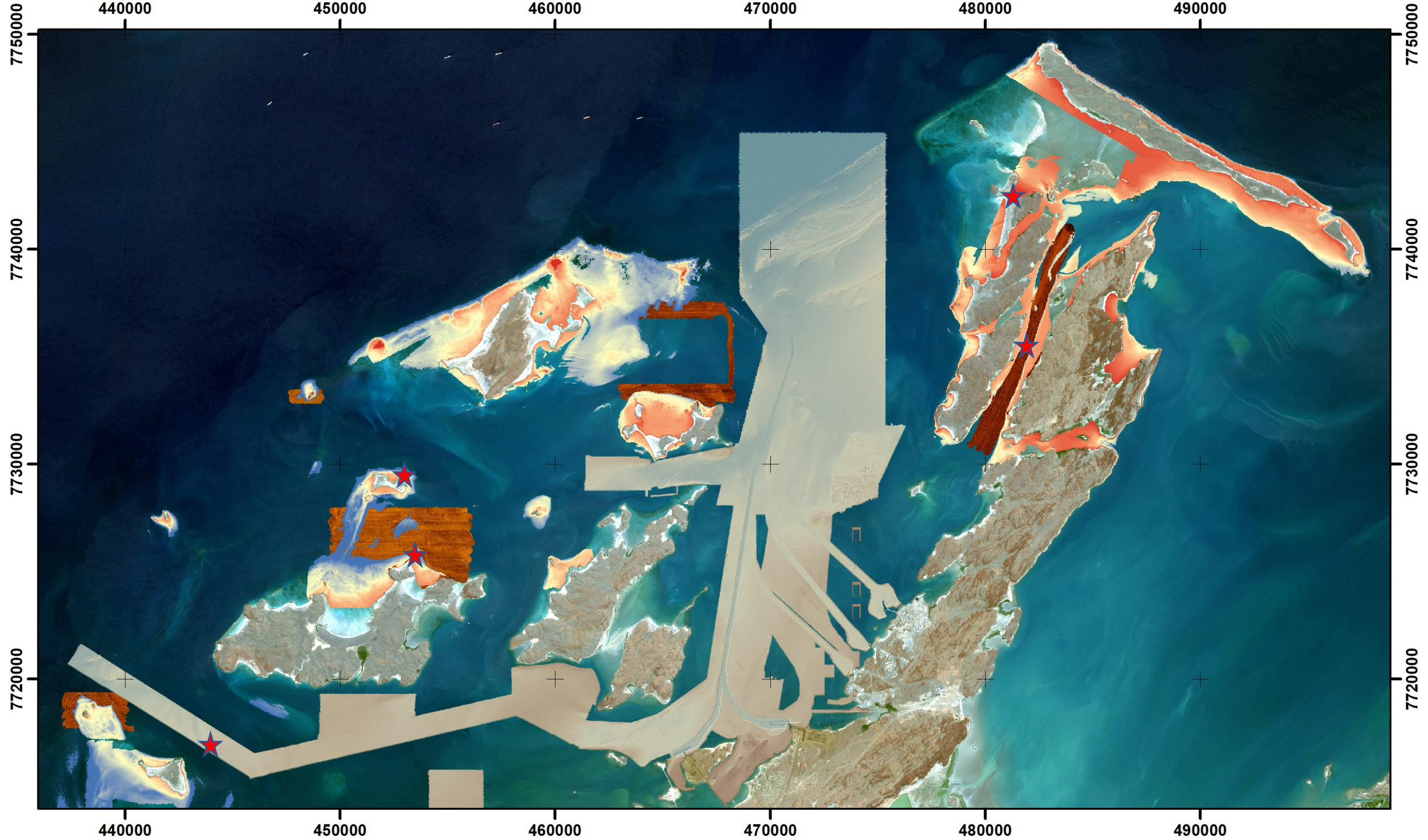
Investigate the presence/absence of cultural material contained within beachrock formations throughout the Dampier Archipelago

Tools > LiDAR & Drone imagery

Dating > OSL & Radiocarbon methods



Source: Esri, DigitalGlobe, GeoE





A20



A40



A10



A11



A23



A37



A29



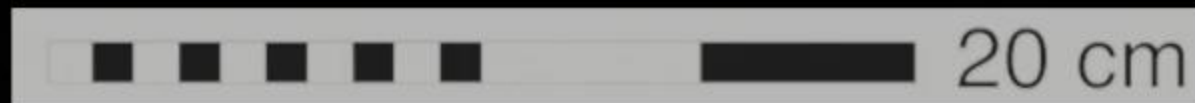
A44



A34



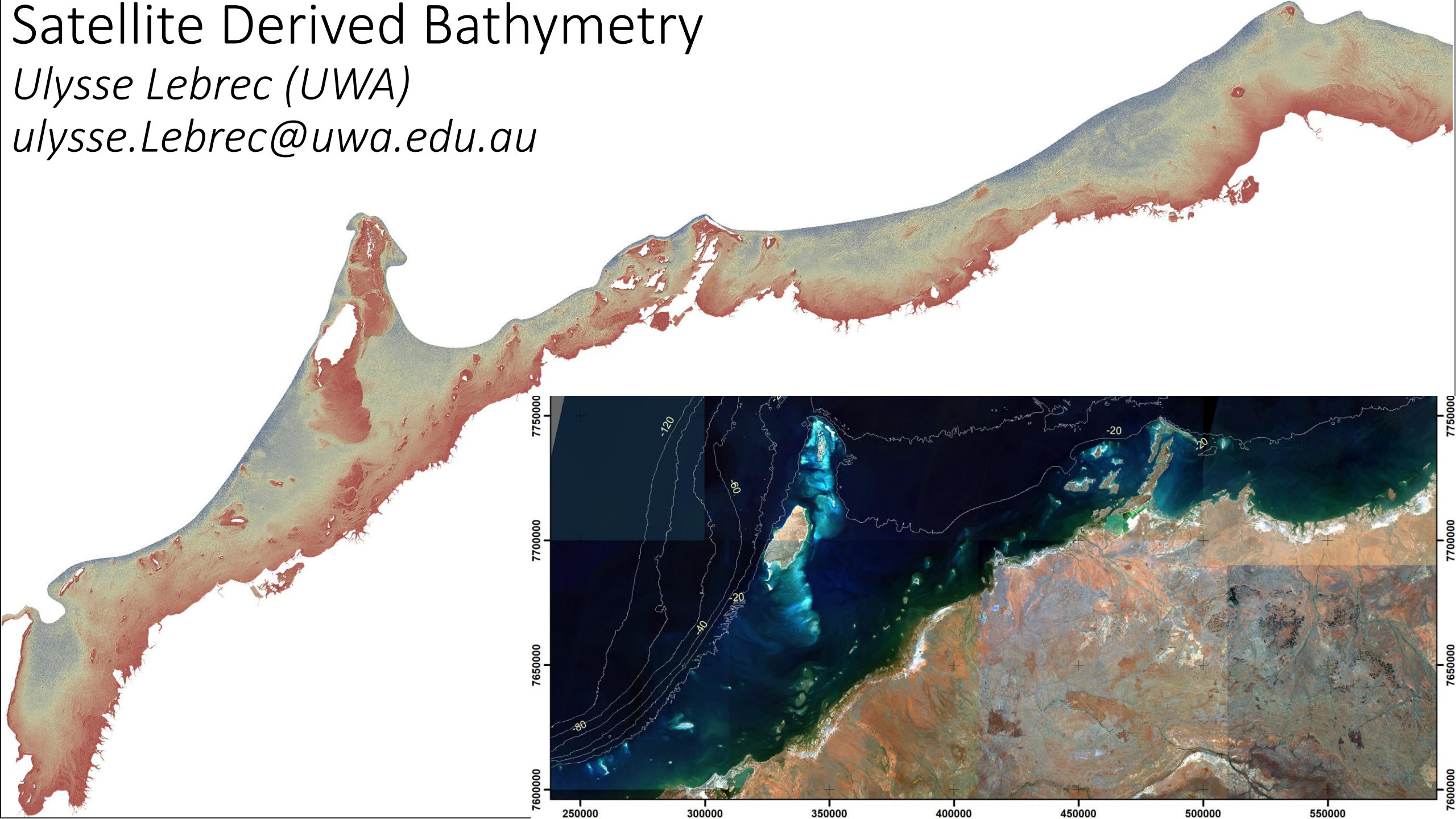
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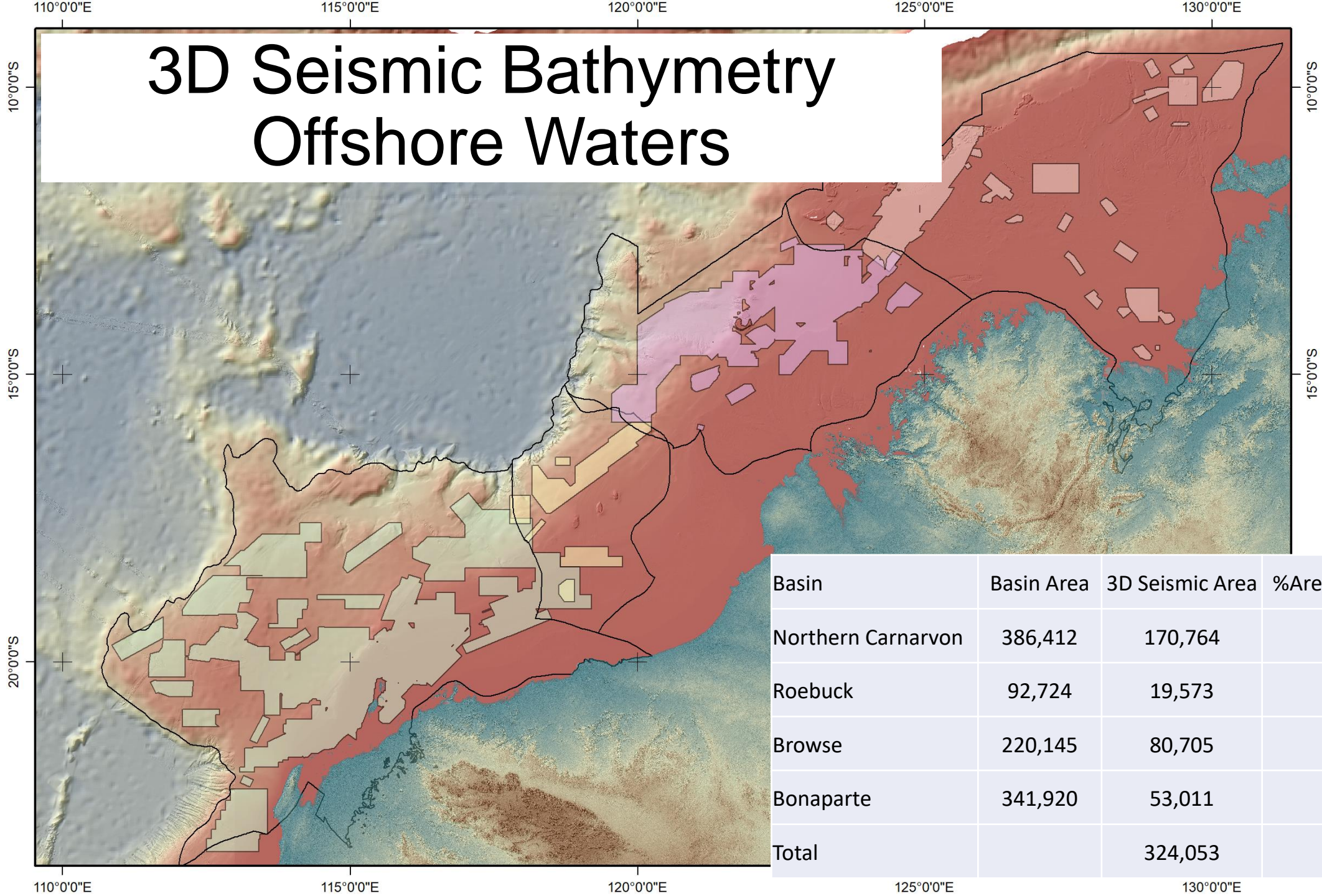
Satellite Derived Bathymetry

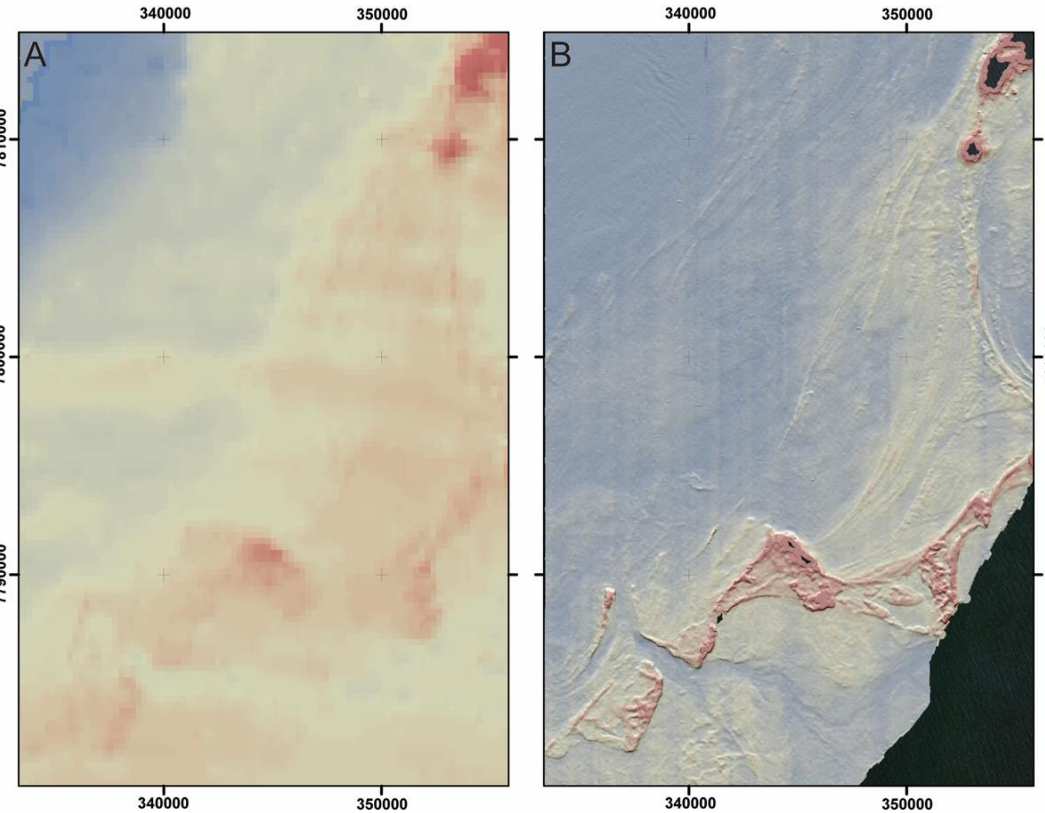
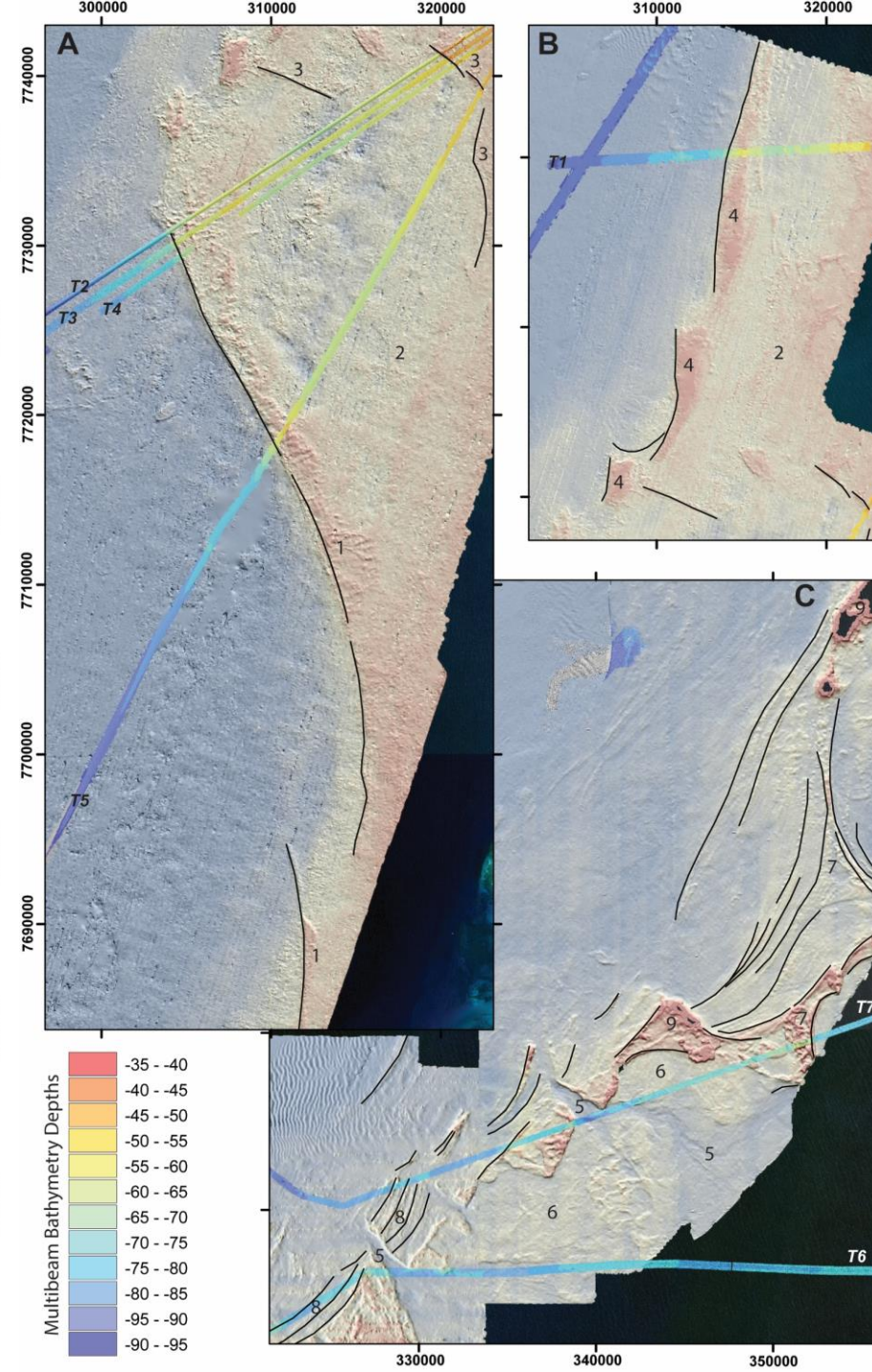
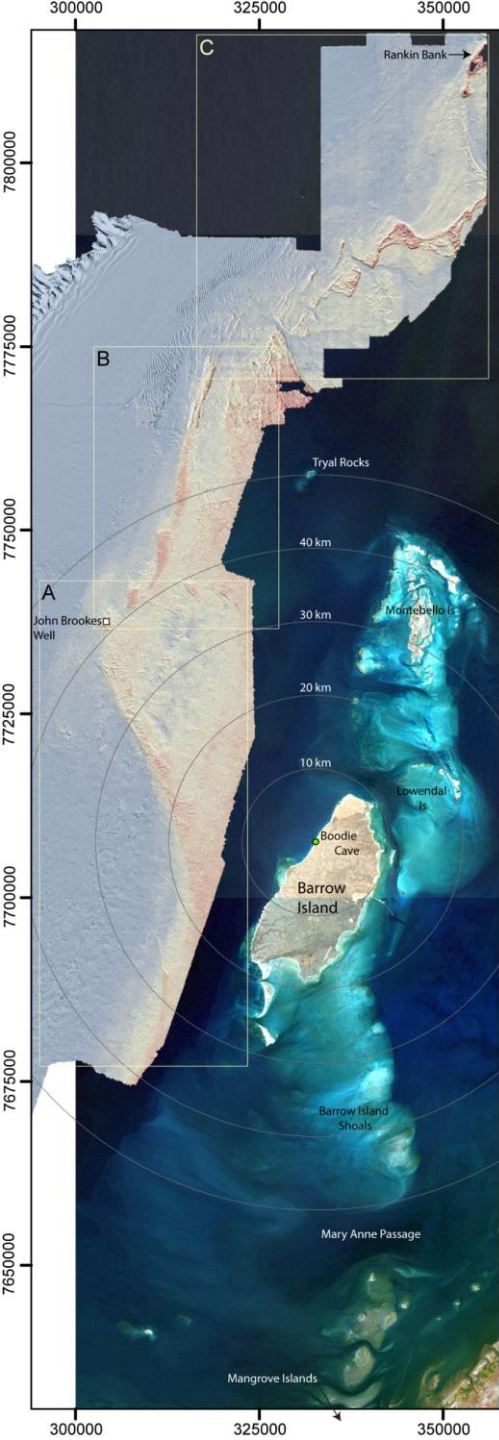
Ulysse Lebrec (UWA)

ulysse.Lebrec@uwa.edu.au



3D Seismic Bathymetry Offshore Waters





- Coastal Dune Ridge
- Coastal Barriers
- Estuarine Channels
- Tidal Flats
- Longshore Spits
- Suggests an extended interval of stable SL



Exploring Sea Country through high-resolution 3D seismic imaging of Australia's NW shelf: Resolving early coastal landscapes and preservation of underwater cultural heritage

Michael J. O'Leary ^{a, b, *}, Victorien Paumard ^a, Ingrid Ward ^c

^a Centre for Energy Geoscience, School of Earth Sciences, The University of Western Australia, Perth, WA, 6009, Australia

^b UWA Oceans Institute, The University of Western Australia, Perth, WA, 6009, Australia


^c School of Social Sciences, The University of Western Australia, Perth, WA, 6009, Australia

PLOS ONE

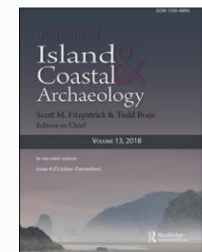
OPEN ACCESS PEER-REVIEWED

RESEARCH ARTICLE

Aboriginal artefacts on the continental shelf reveal ancient drowned cultural landscapes in northwest Australia

Jonathan Benjamin , Michael O'Leary, Jo McDonald, Chelsea Wiseman, John McCarthy, Emma Beckett, Patrick Morrison, Francis Stankiewicz, Jerem Leach, Jorg Hacker, Paul Baggaley, Katarina Jerbić, Madeline Fowler, [...], Geoff Bailey [view all]

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Peter Veth, Jo McDonald, Ingrid Ward, Michael O'Leary, Emma Beckett, Jonathan Benjamin, Sean Ulm, Jorg Hacker, Peter J. Ross & Geoff Bailey

