

Continental Prolongation a Review of CLCS Recommendations

Elana Geddis¹, Ray Wood² and Jenny Baretto³

1 Barrister, Wellington, NZ

2 CRP-OCS Ltd, NZ

3 GNS Science, NZ

Morphology is primary, but...

Geology, geophysics and tectonics are also important to:

- Distinguish between areas that are part of the continental margin and those that are part of the deep ocean floor.
- Distinguish between submarine ridges and submarine elevations that are natural components of the margin.
- Clarify the location of the foot of the continental slope.

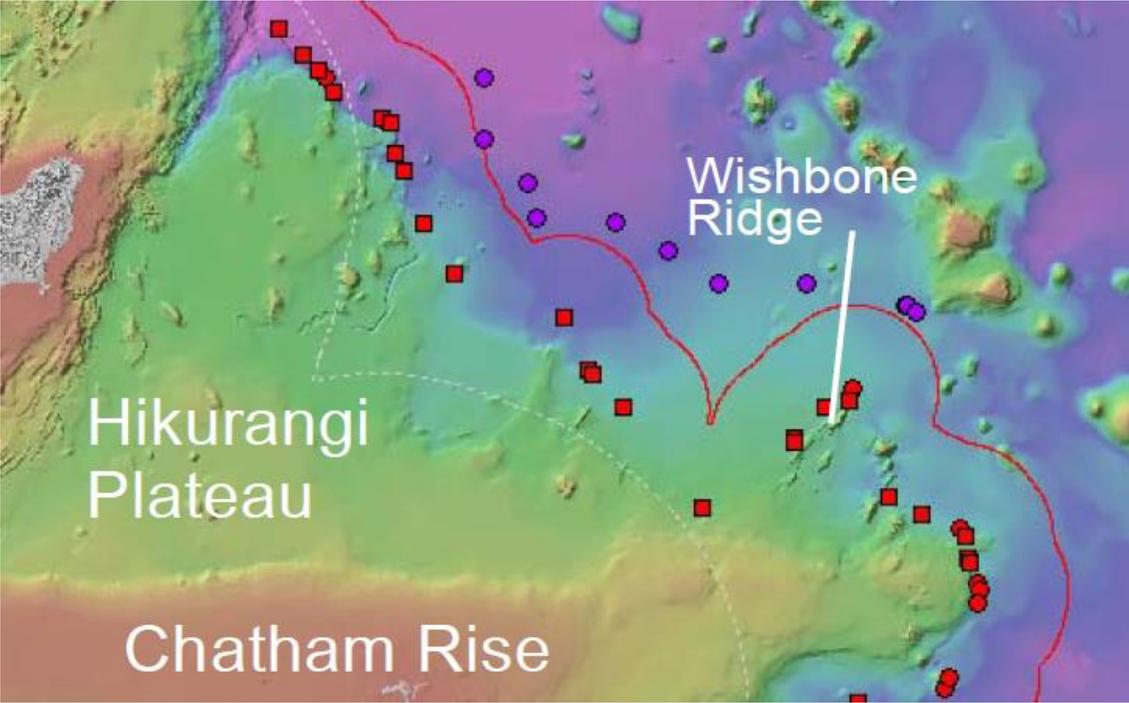
Overview of talk

- Accretion and prolongation
- Rocks of oceanic origin - continent or ocean
- Saddles and terraces - limits of morphological connection

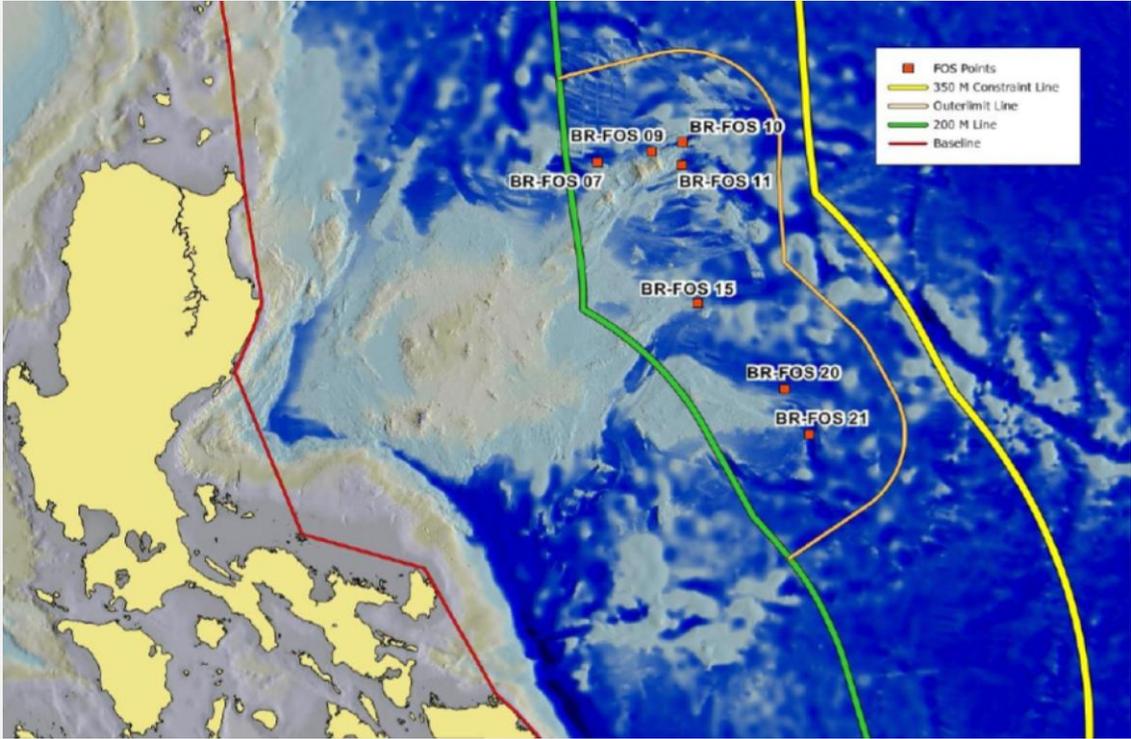
Accretion

Examples from New Zealand, the Philippines and Japan show that geology and tectonics contribute to the determination of the limits of prolongation from the land mass

Accretion

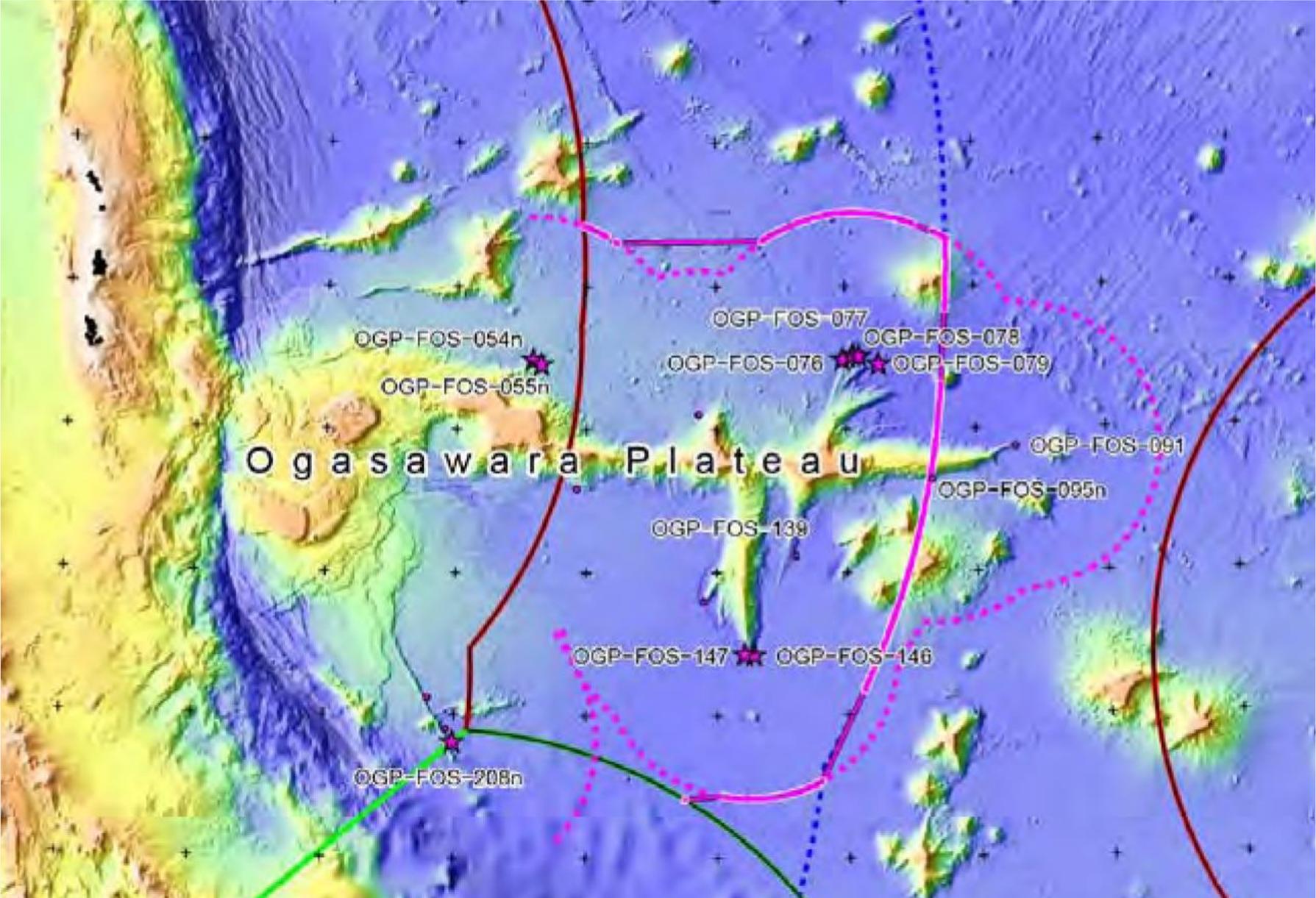


Hikurangi Plateau



Benham Rise

Accretion

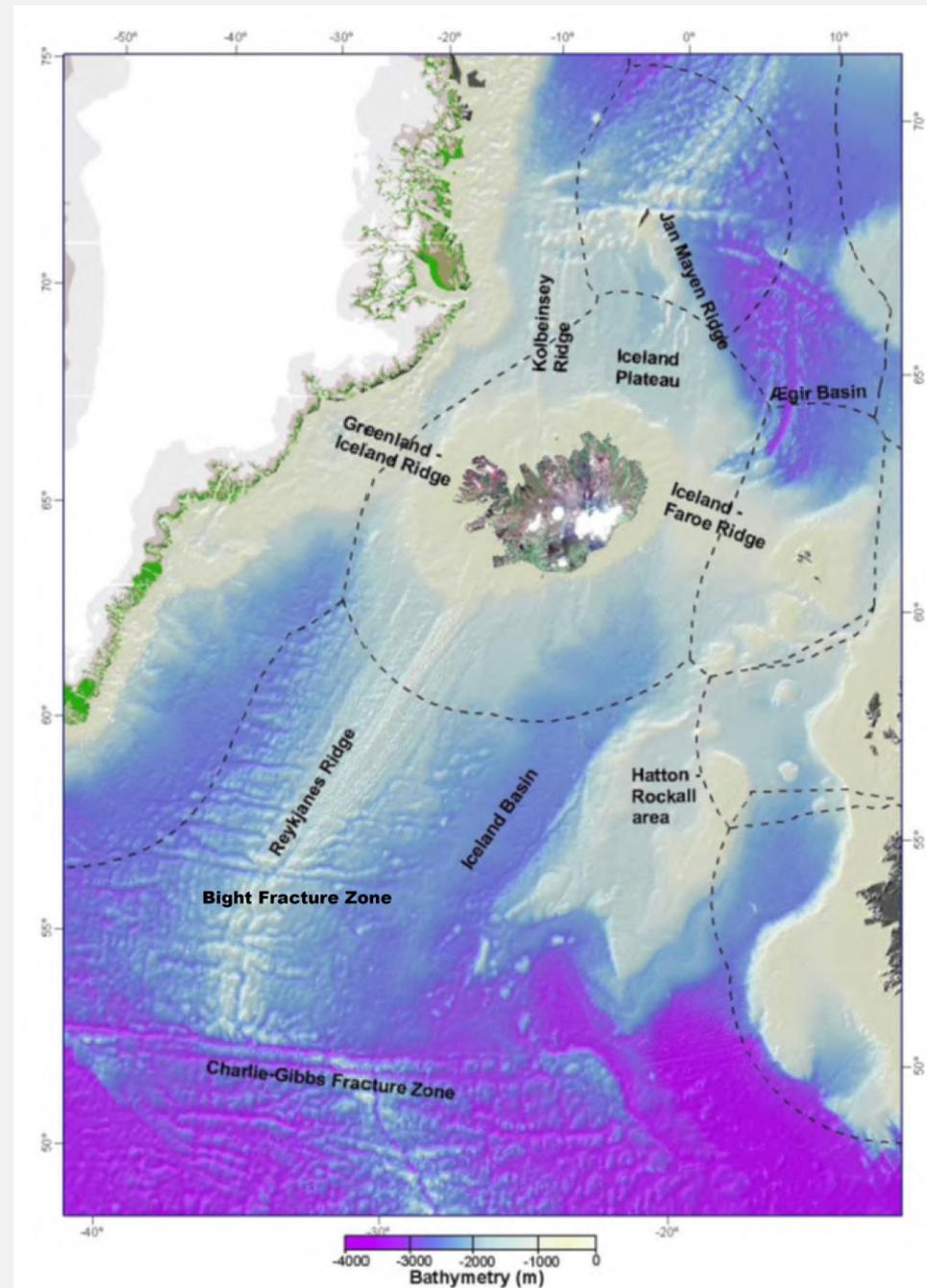


Ogasawara Composite High - Japan

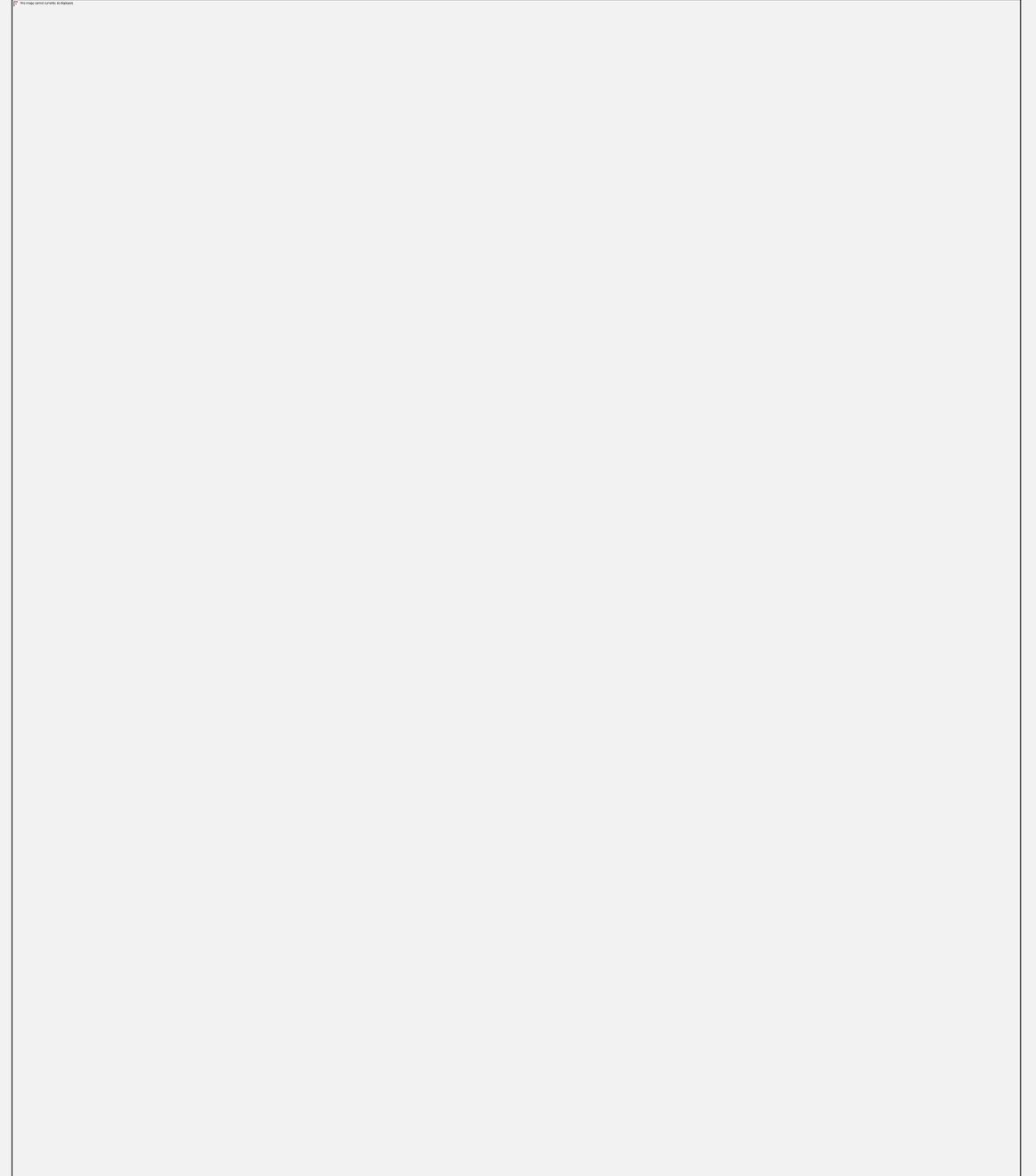
Rocks of oceanic origin - continent or ocean

Examples from Iceland, Ascension Island, Bouvetøya and the Kerguelan Plateau show that geology and tectonics contribute to the distinction between areas that are part of the continental margin and those that are part of the deep ocean floor

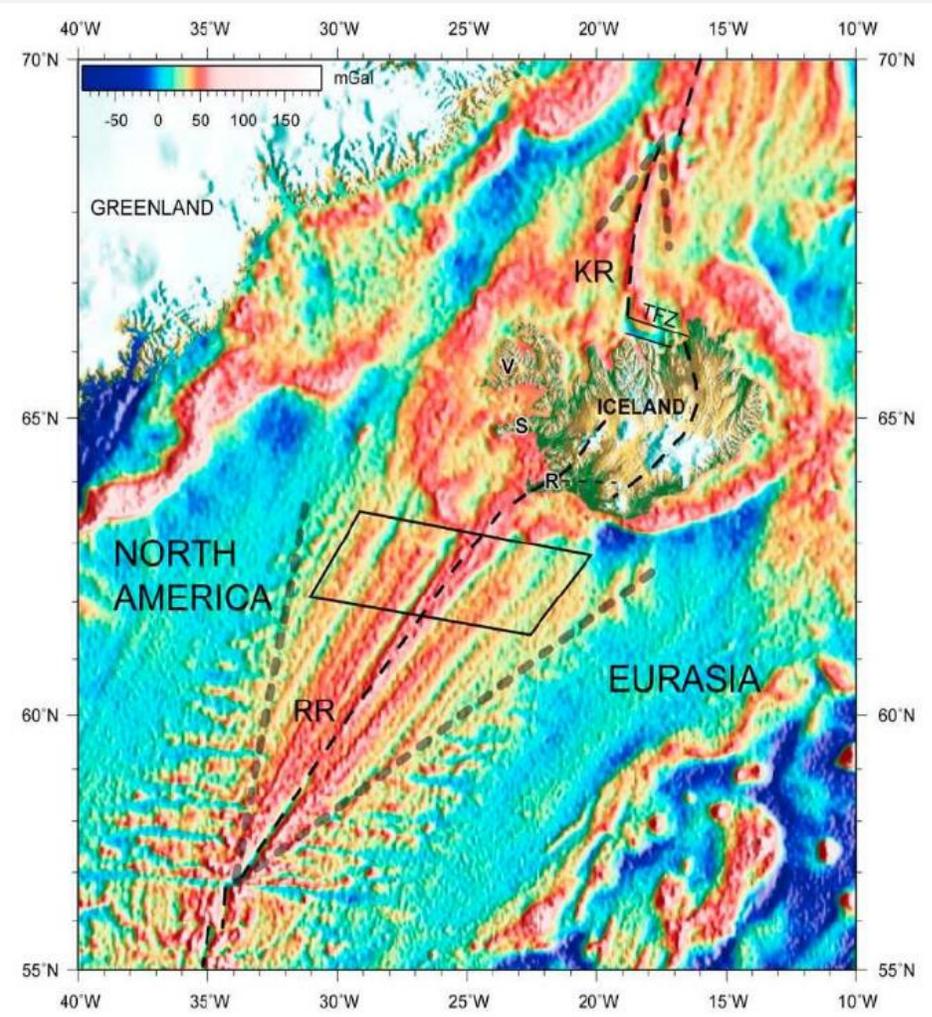
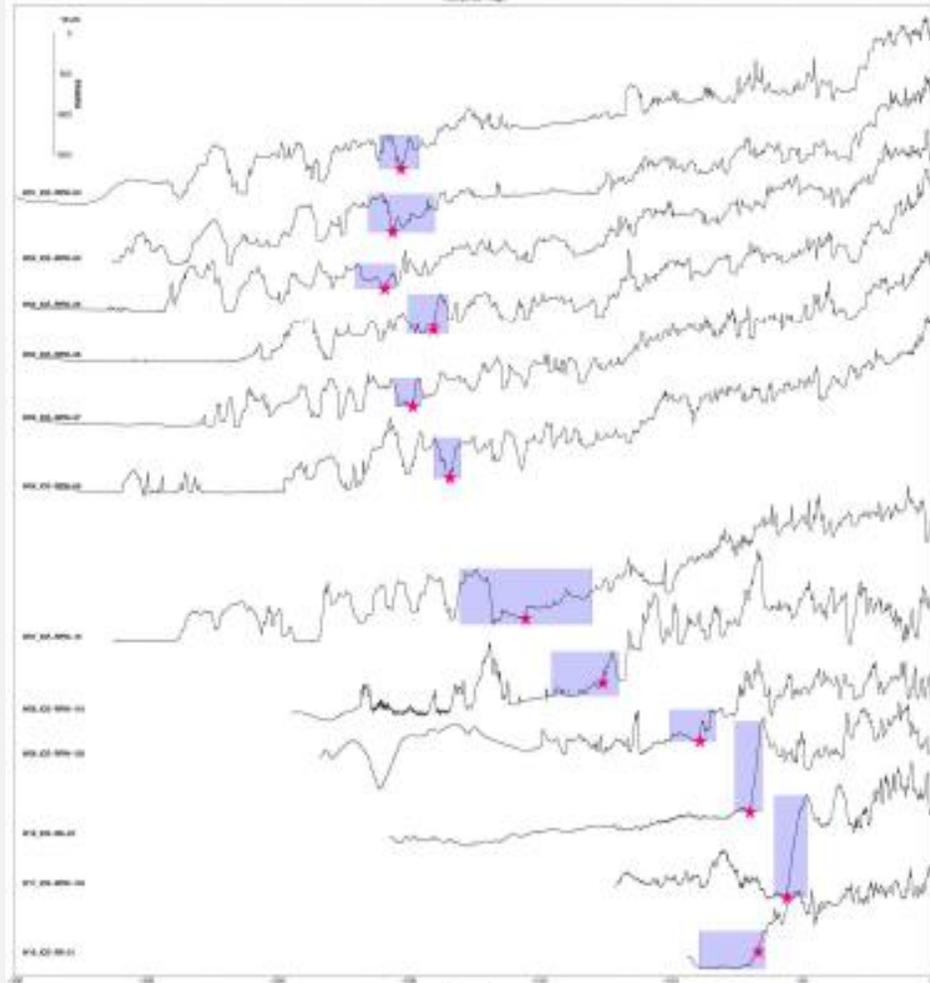
Iceland



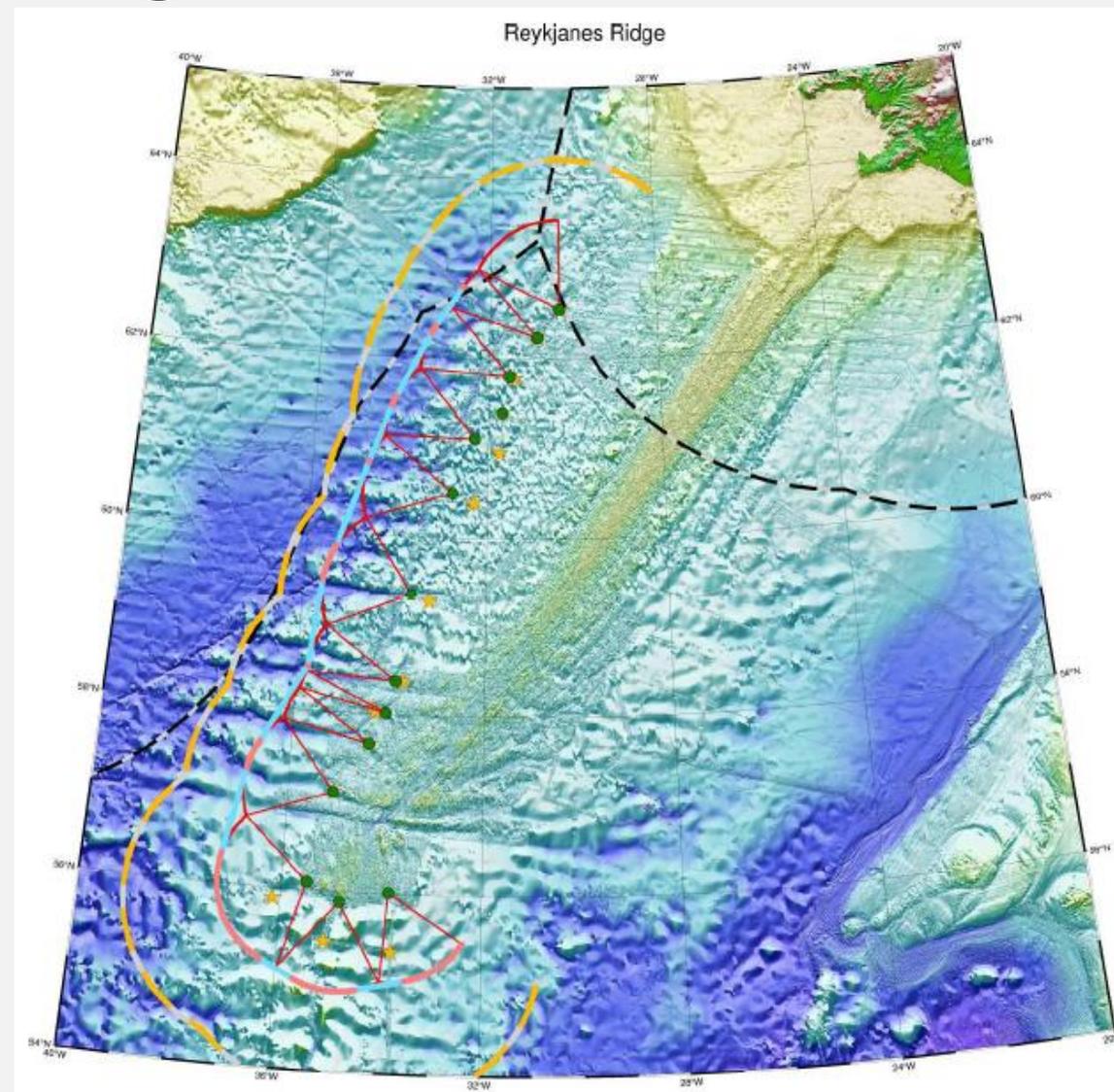
Ægir Basin - FoS



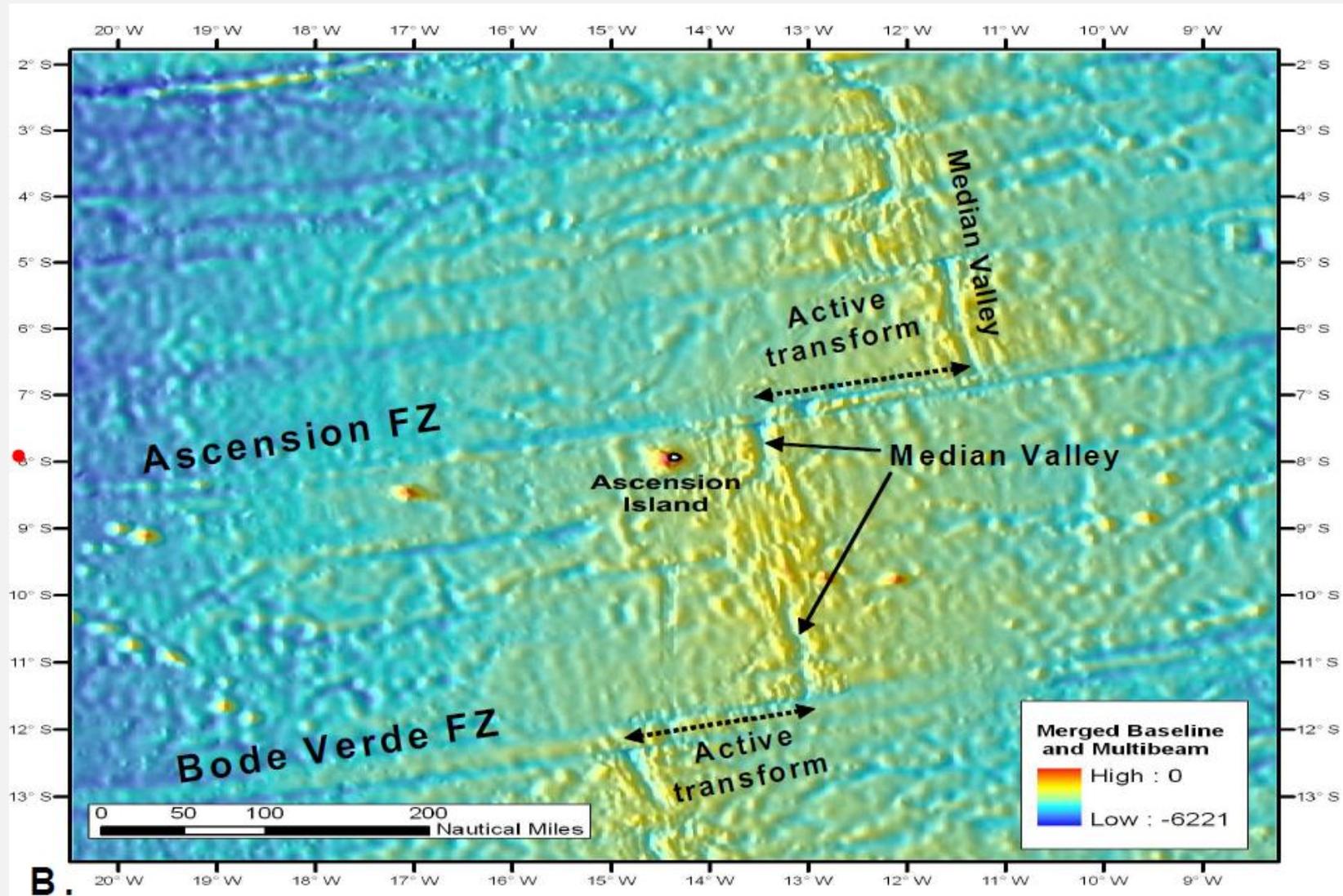
Reykjanes Ridge - FoS



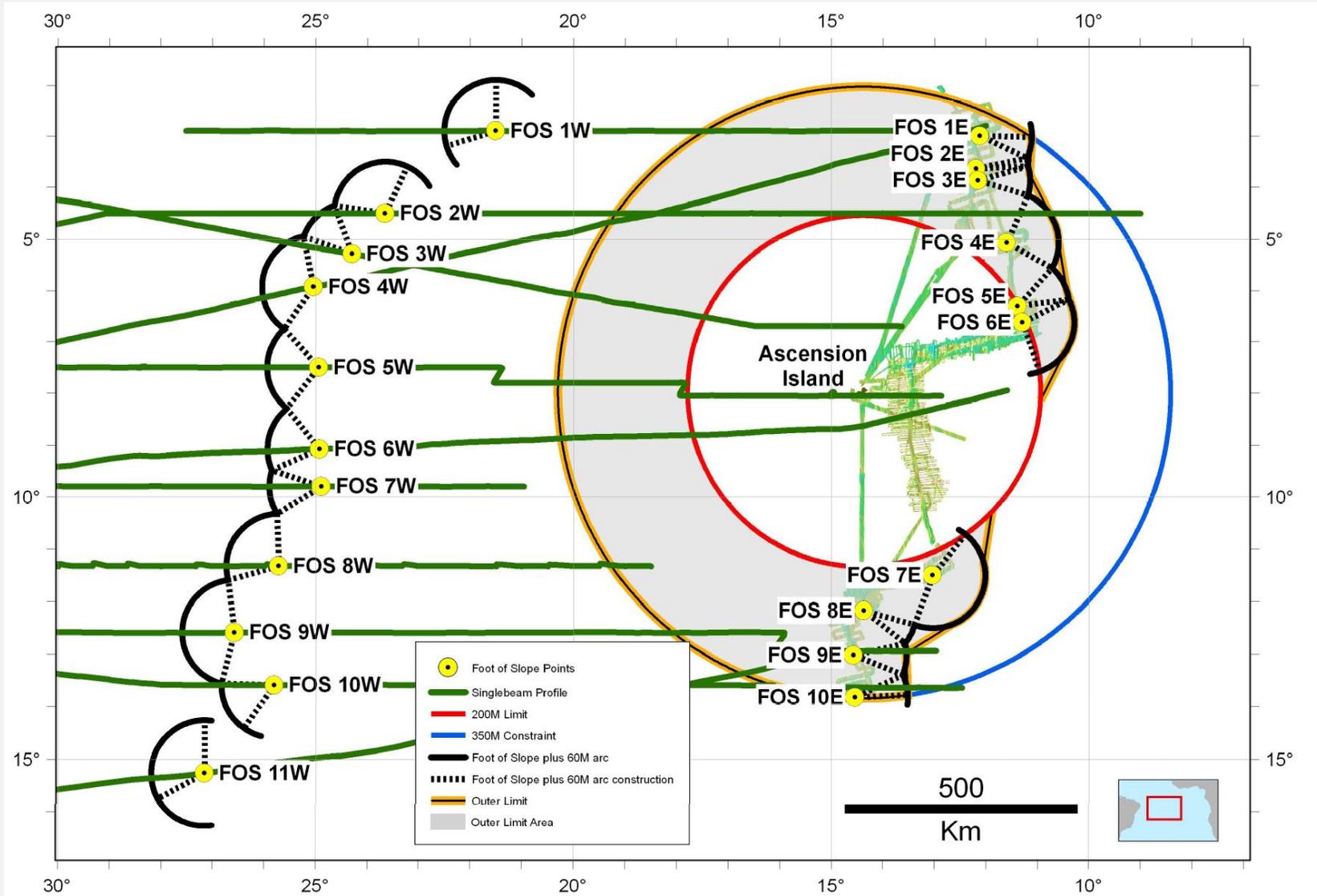
Reykjanes Ridge - FoS



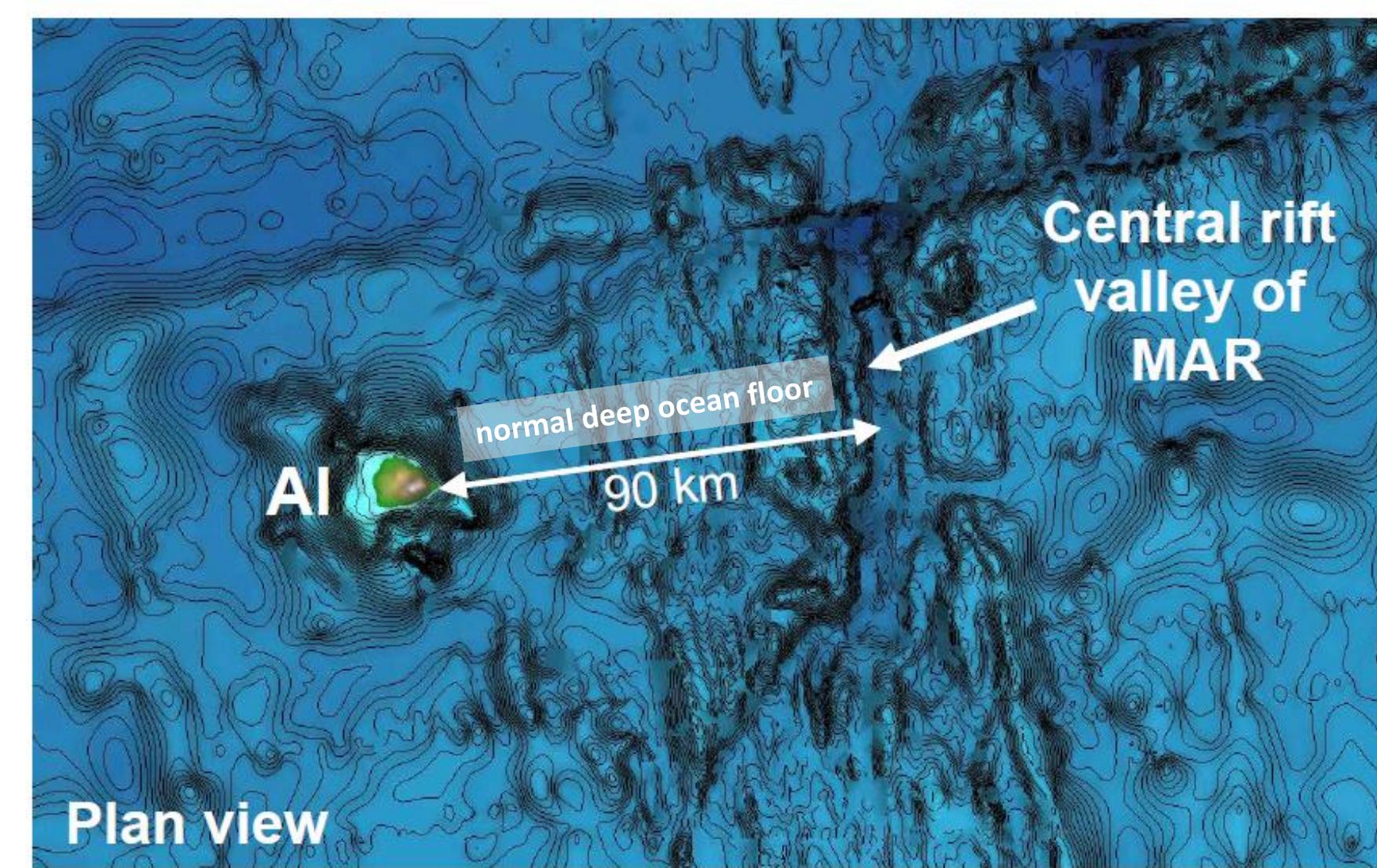
Ascension Island



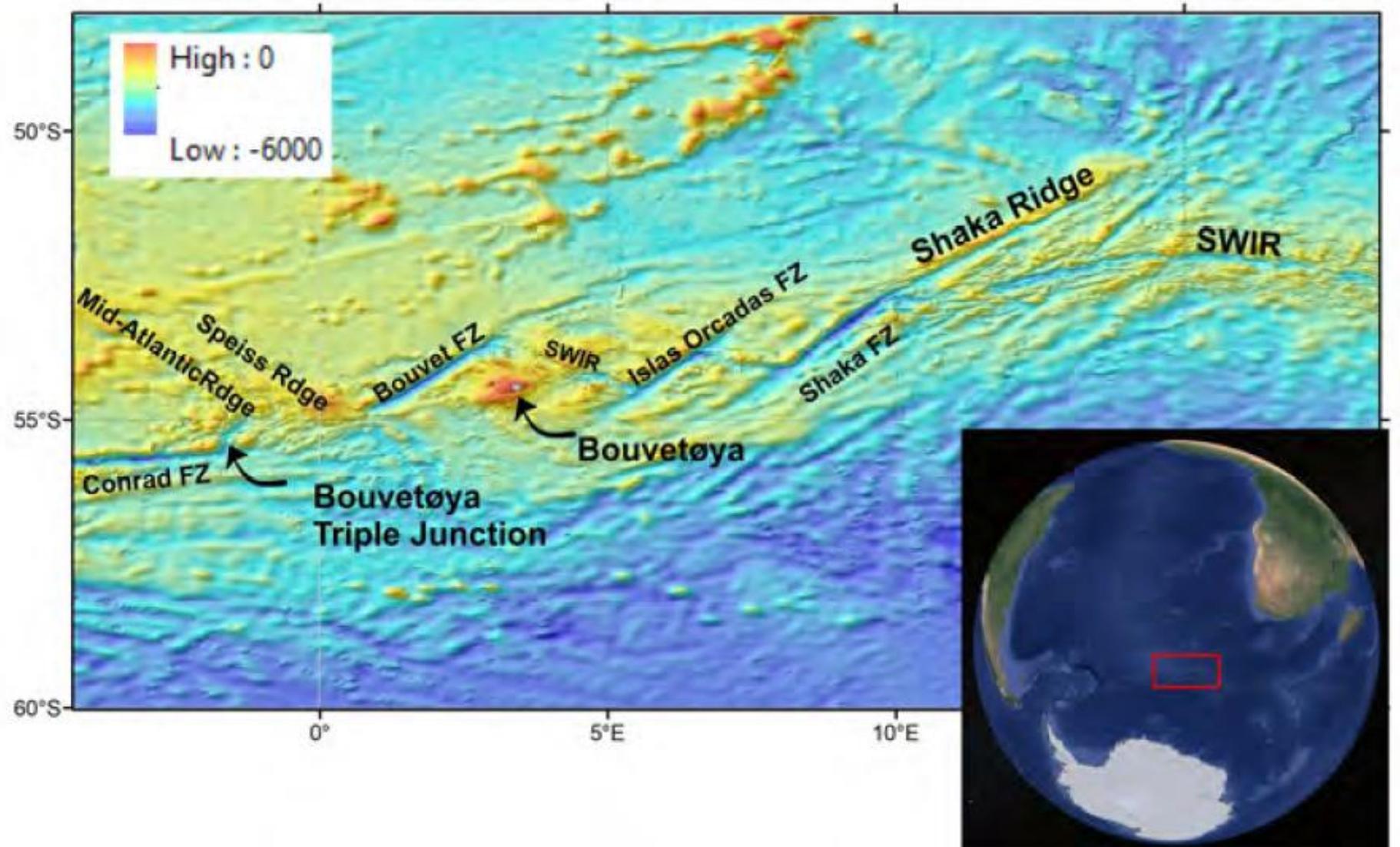
Ascension Island - FoS



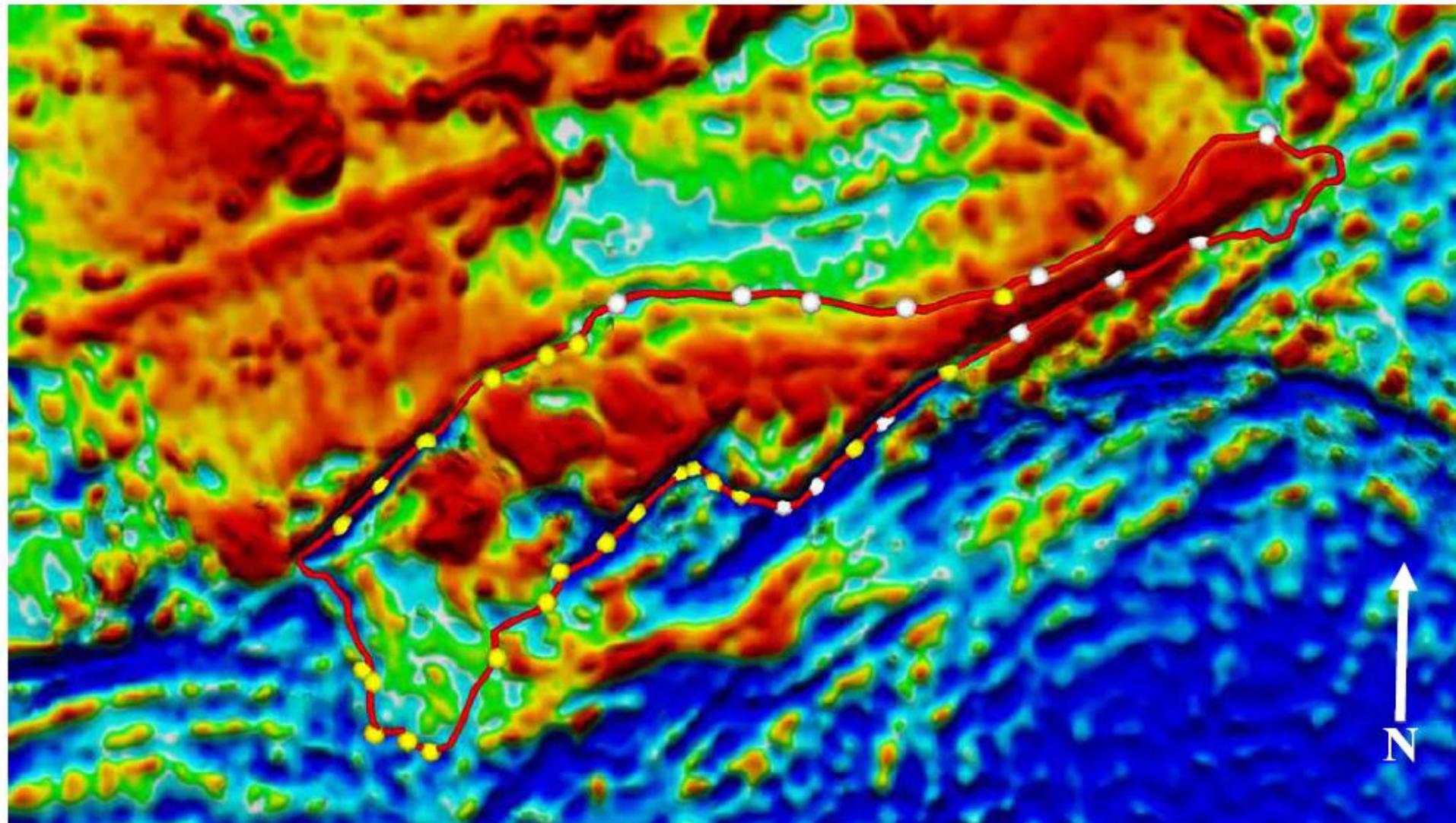
Ascension Island – deep ocean floor



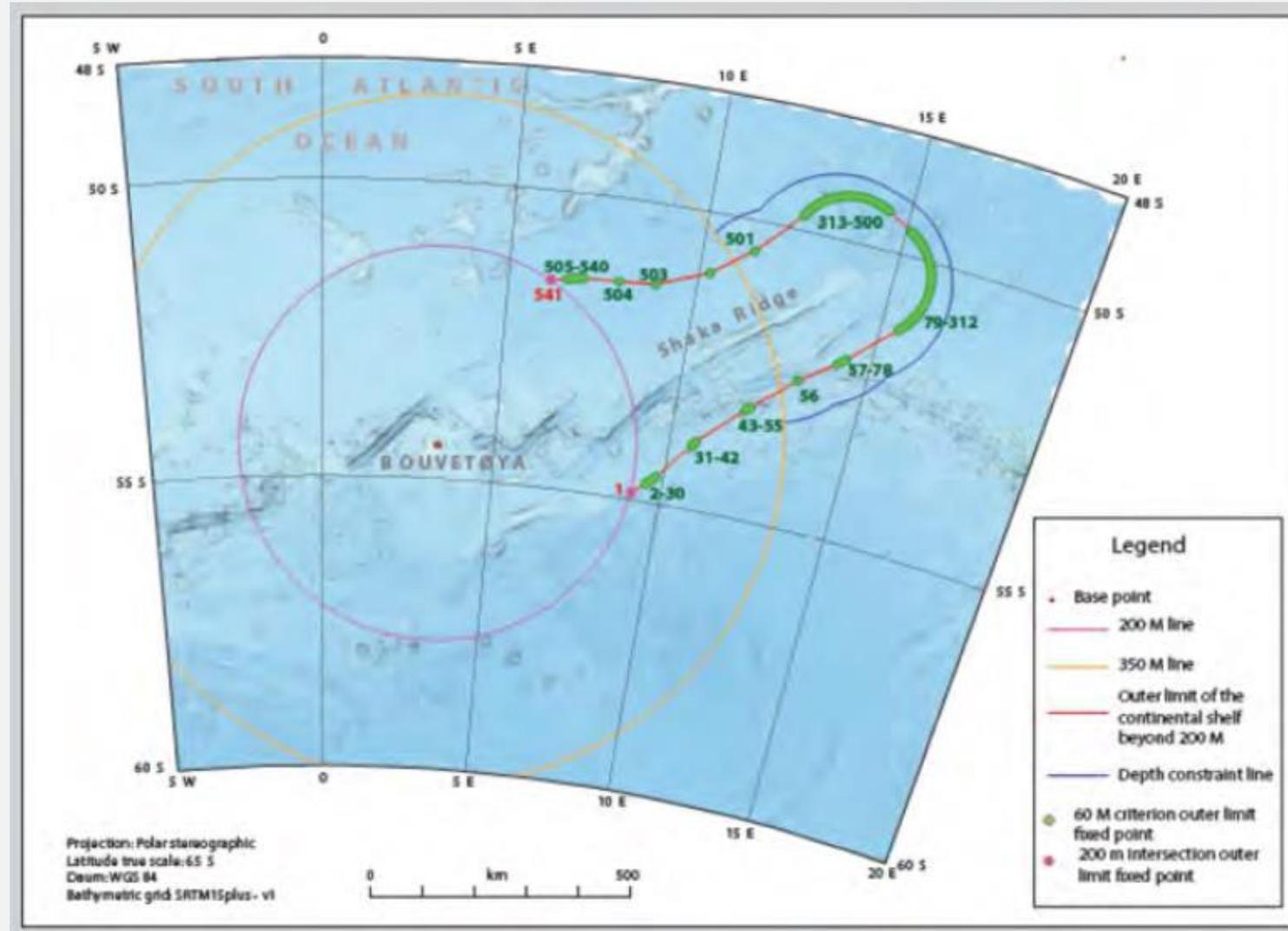
Bouvetøya



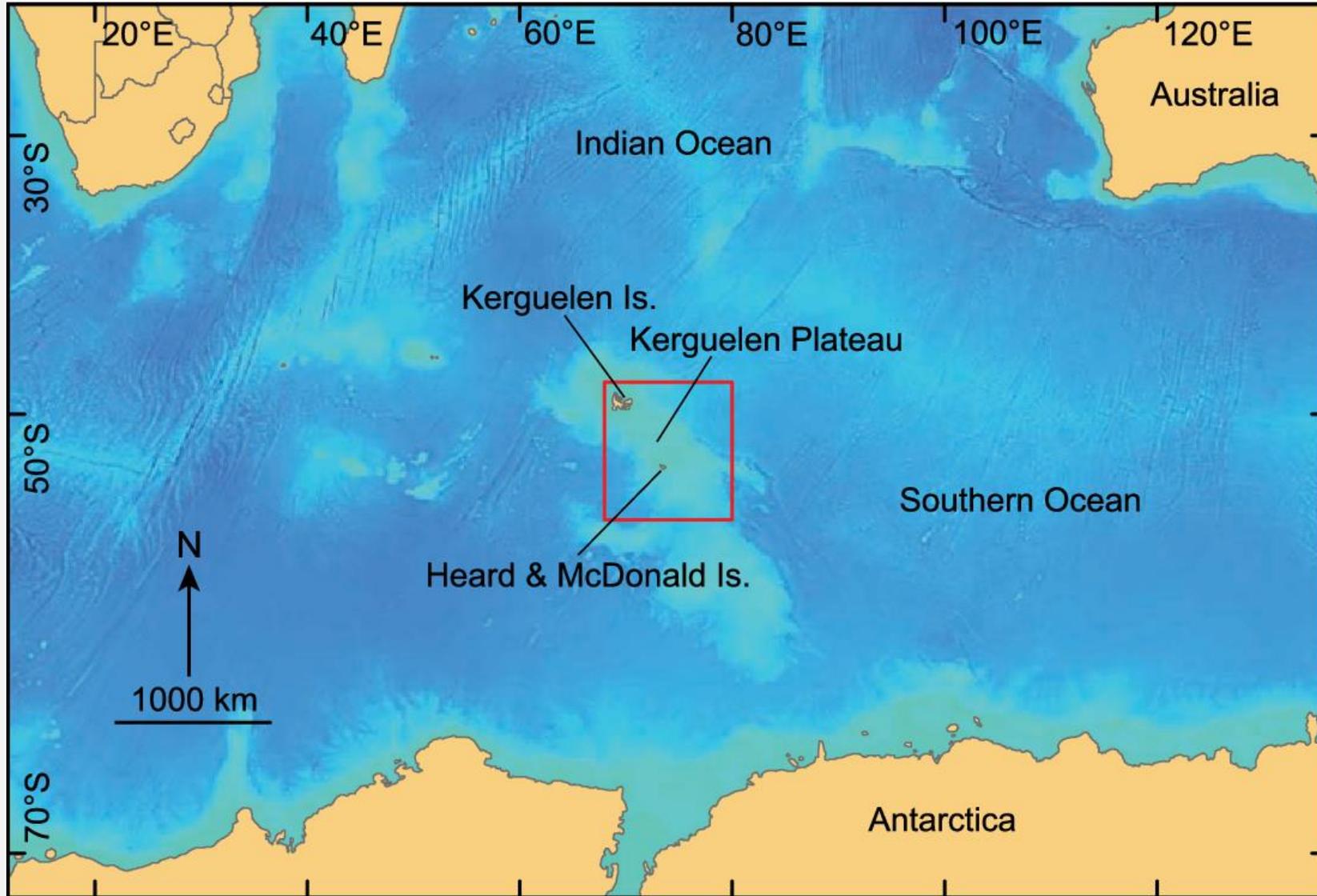
Bouvetøya - FoS



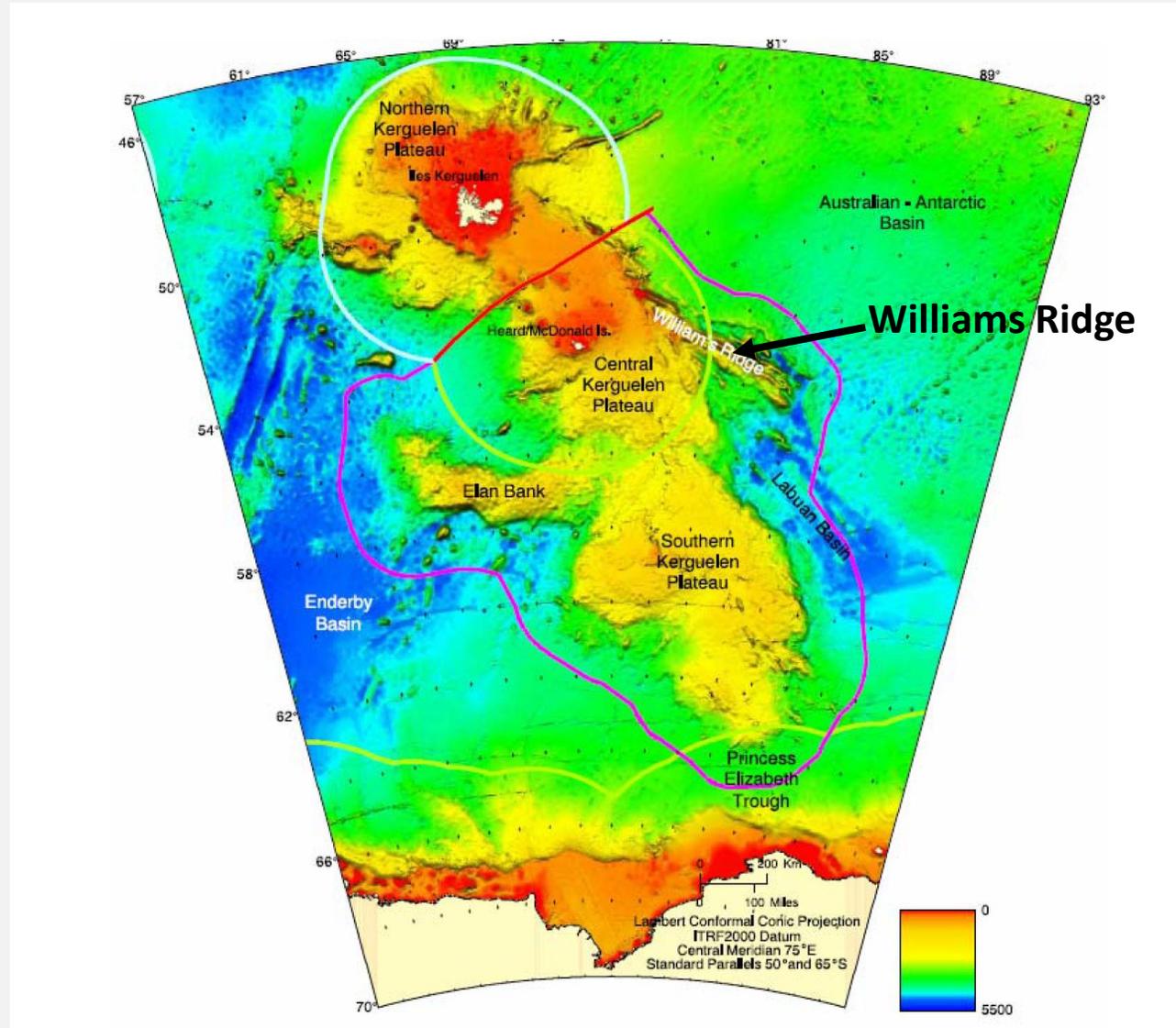
Bouvetøya – FoS



Kerguelan Plateau



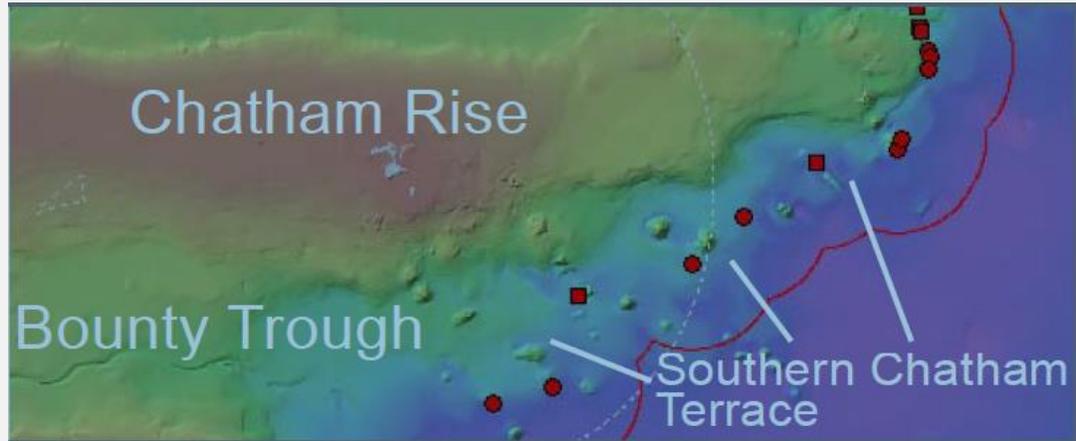
Kerguelan Plateau - Williams Ridge



Saddles and Terraces

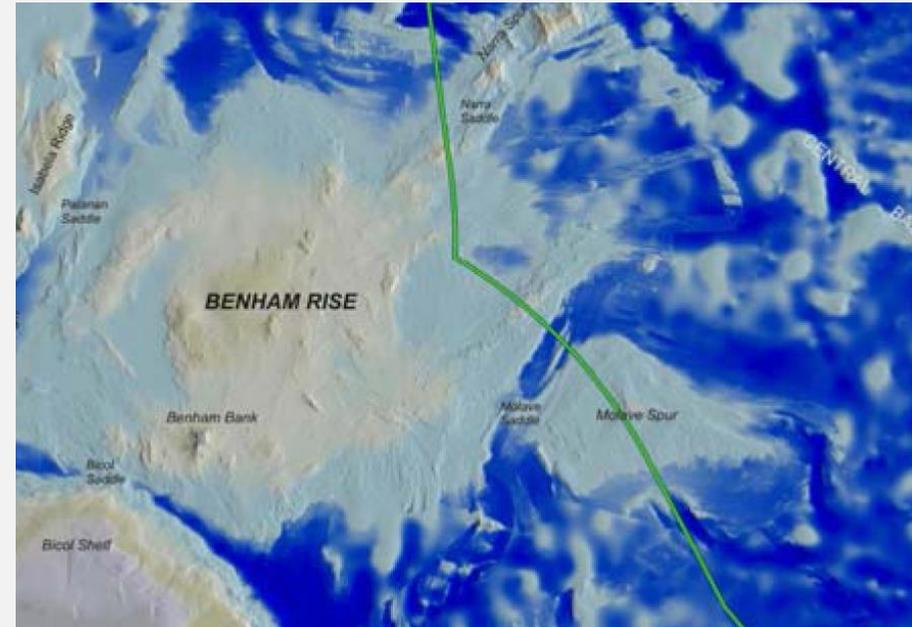
Recommendations related to saddles and terraces give insight into the limits of morphological connection acceptable to the Commission

Southeast Chatham Terrace



The outer edge of the terrace is at least 300m above the deep ocean floor

Molave Saddle



Molave Saddle stands about 300m above the deep ocean floor

Conclusions

- Prolongation is possible through accretion but it cannot cross an active plate boundary
- The distinction between rocks of oceanic origin that are a prolongation of the land mass and those that are part of the deep ocean floor depends not only on morphology but also on their degree of chemical alteration
- Saddles and terraces suggest that of the order of 300m difference in depth is sufficient to distinguish continental prolongation from the deep ocean floor