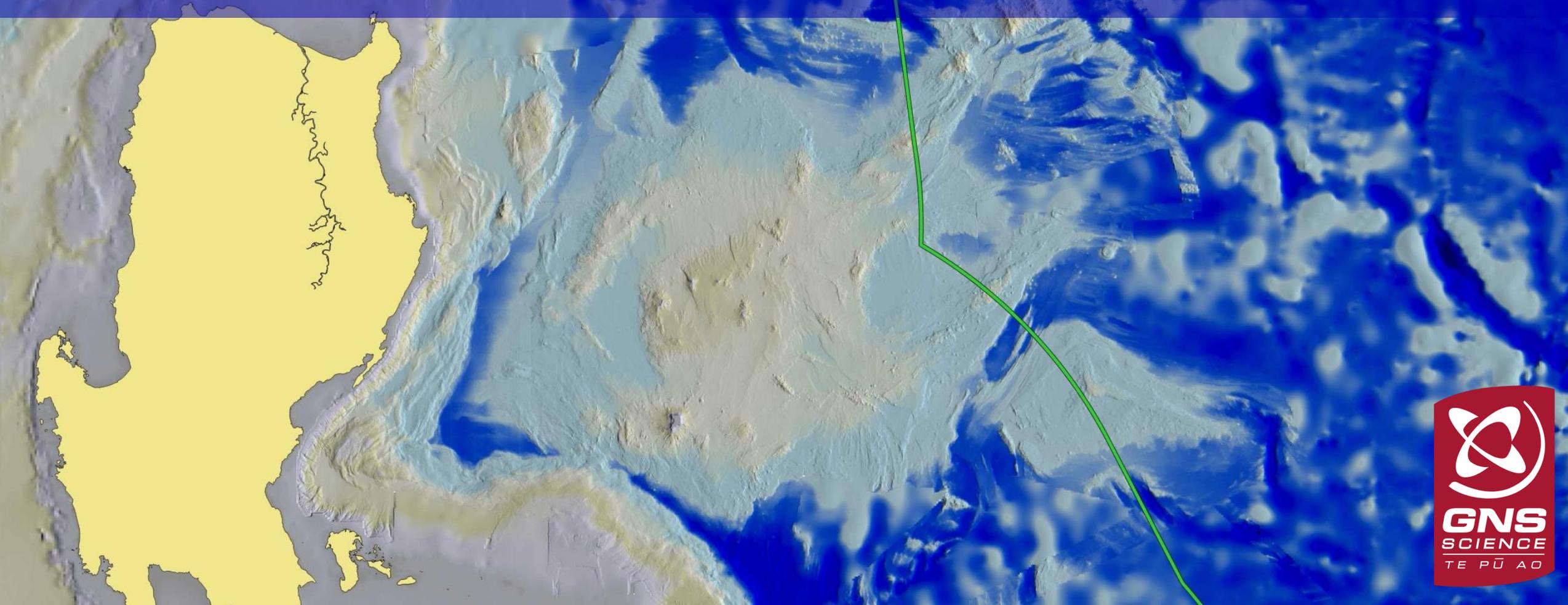


The Philippines submission in the Benham Rise region: lessons learned from establishing the outer limits of the continental shelf around a large igneous province

J. Barretto¹, R. Wood² and D. Bringas³

¹GNS Science, ²CRP-OCS Ltd, ³NAMRIA

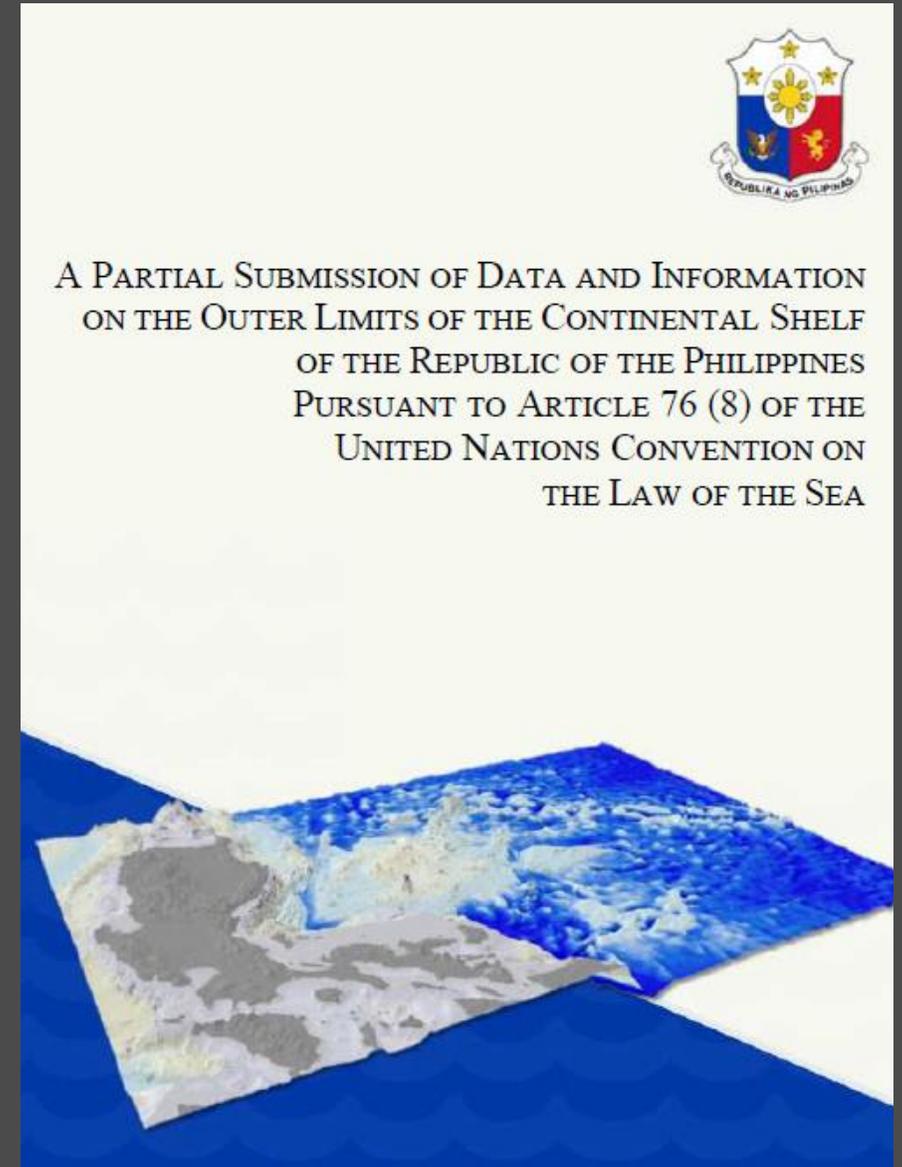
ABLOS X (2019)



Philippines continental shelf submission in the Benham Rise region

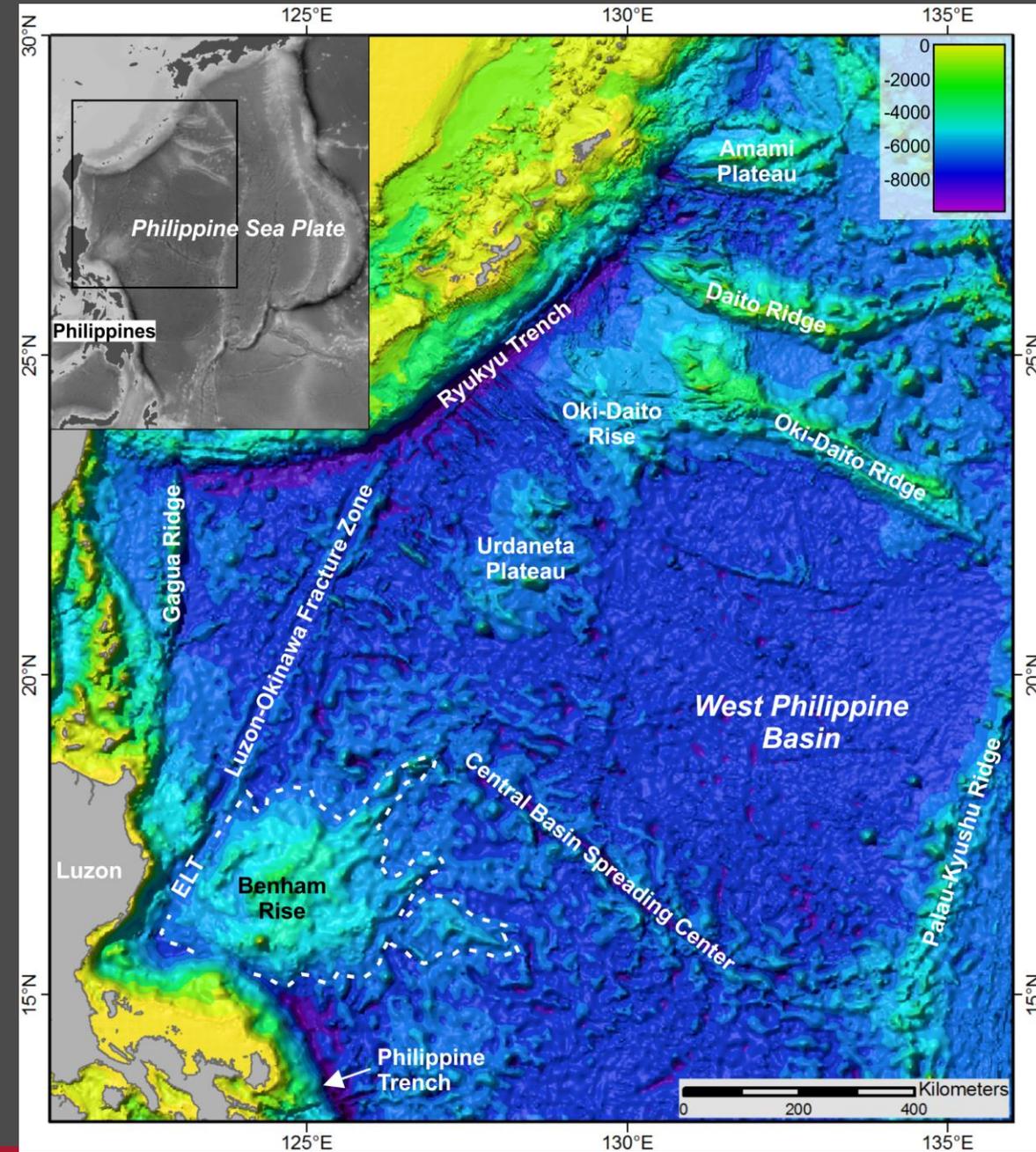
2009 – Philippines made a partial submission to the CLCS

2012 – CLCS adopted recommendations in regard to Benham Rise submission



Geographic and tectonic setting

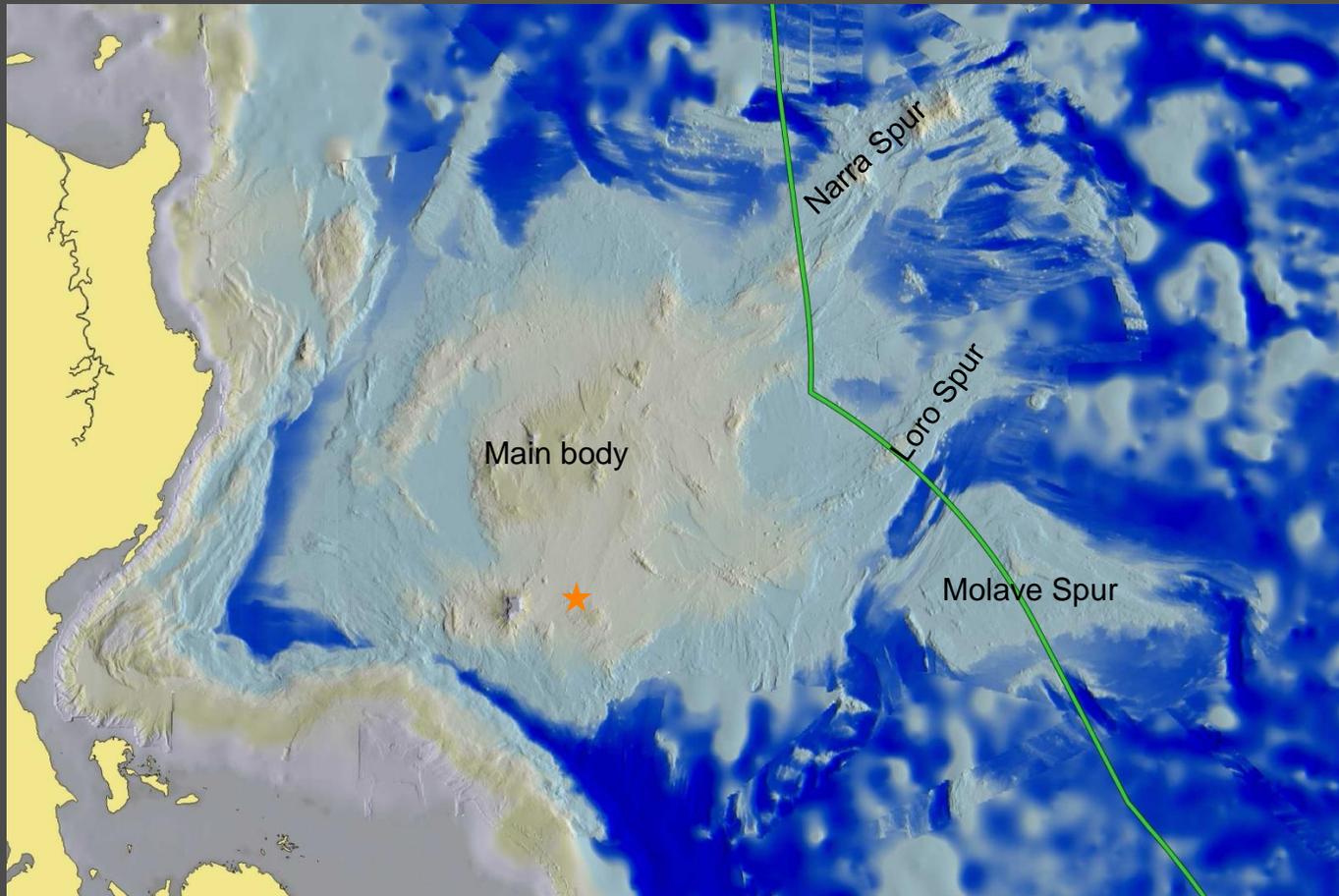
- Benham Rise is located to the east of Luzon Island, Philippines
- One of several submarine elevations in West Philippine Basin



Test of appurtenance

Is Benham Rise a submerged prolongation of the Luzon land mass?

Is Benham Rise part of the deep ocean floor?



Challenges:

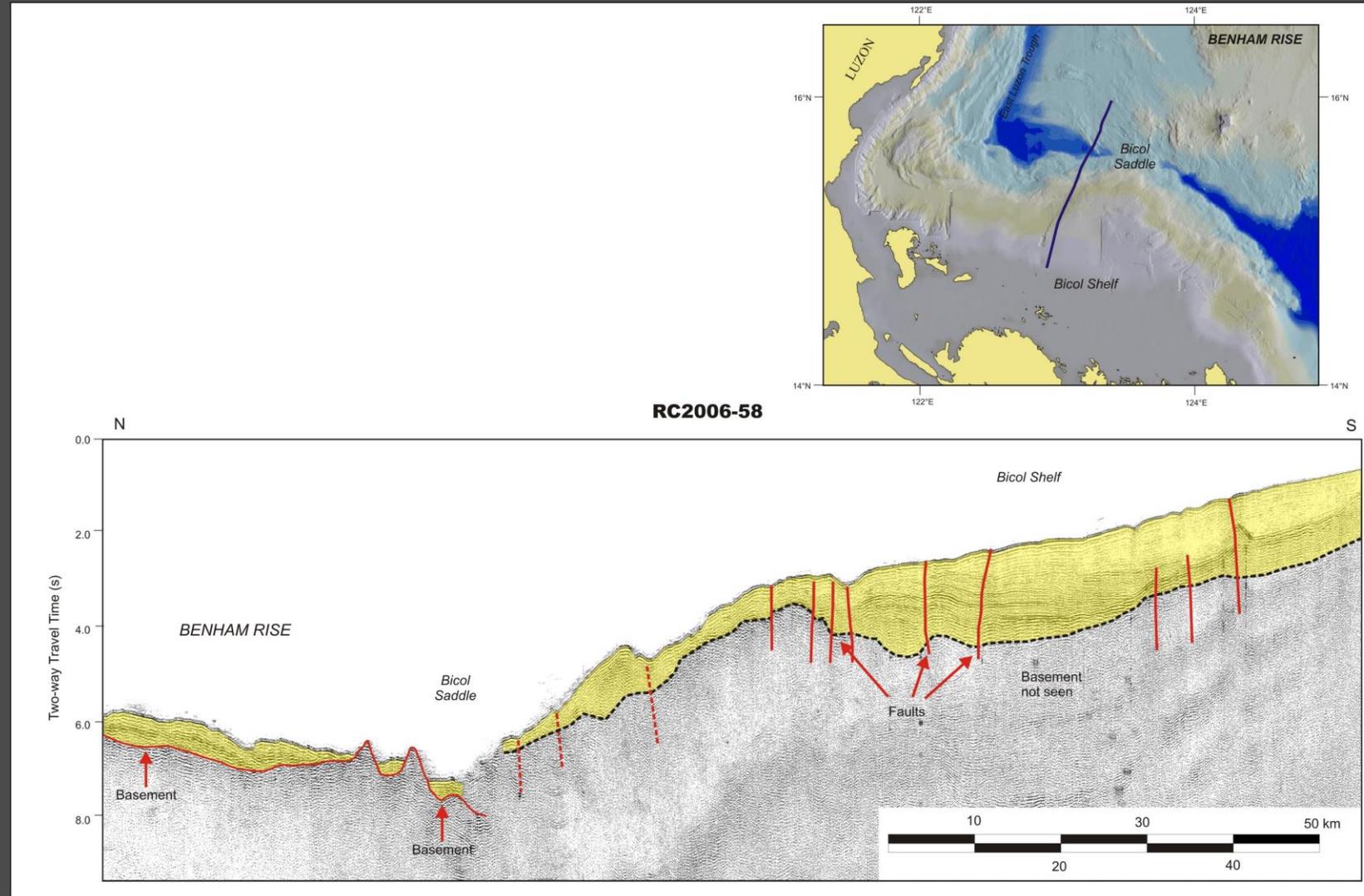
- Benham Rise is oceanic
- presence of a deep trough between landmass and rise
- presence of narrow saddles

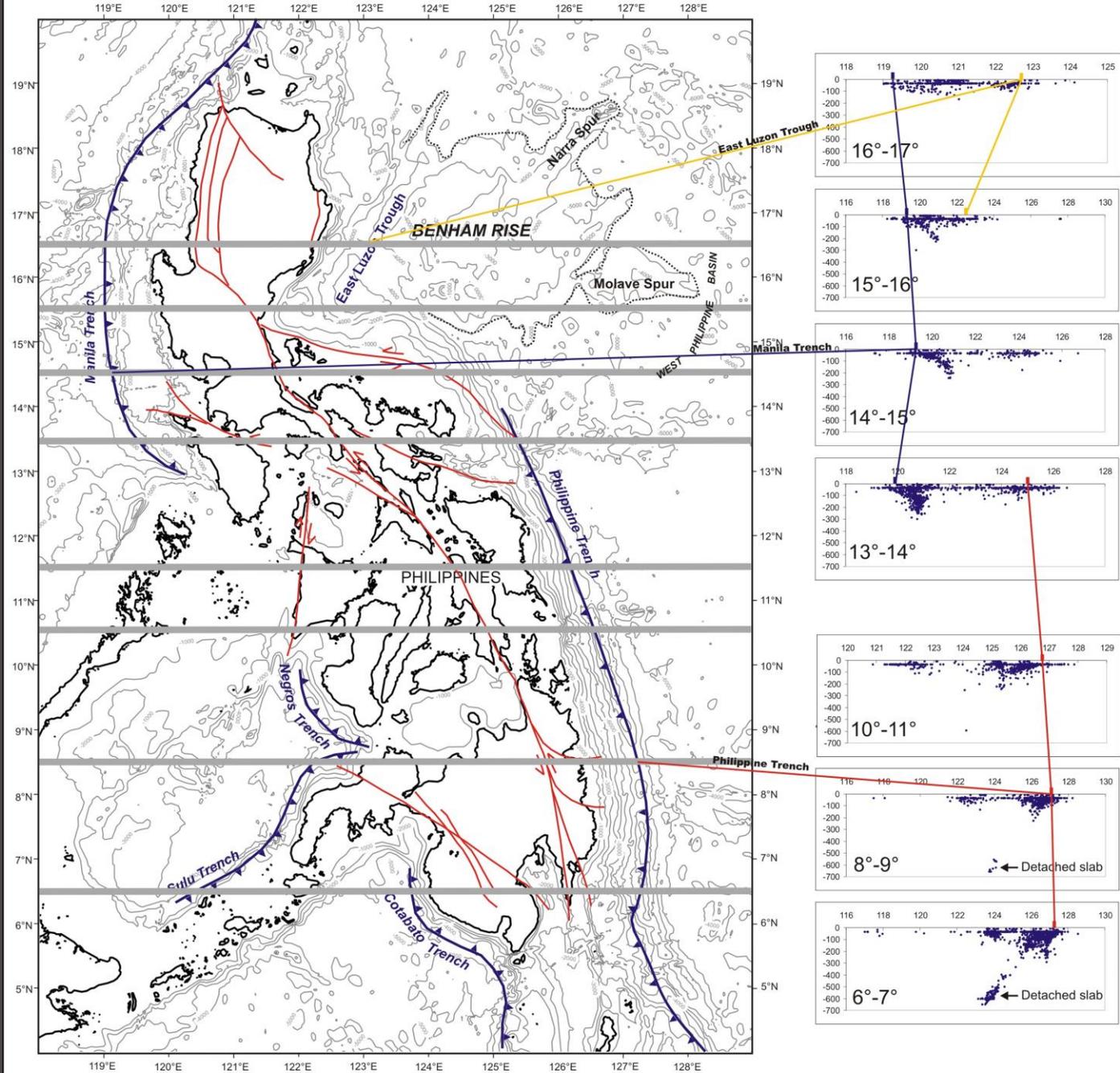
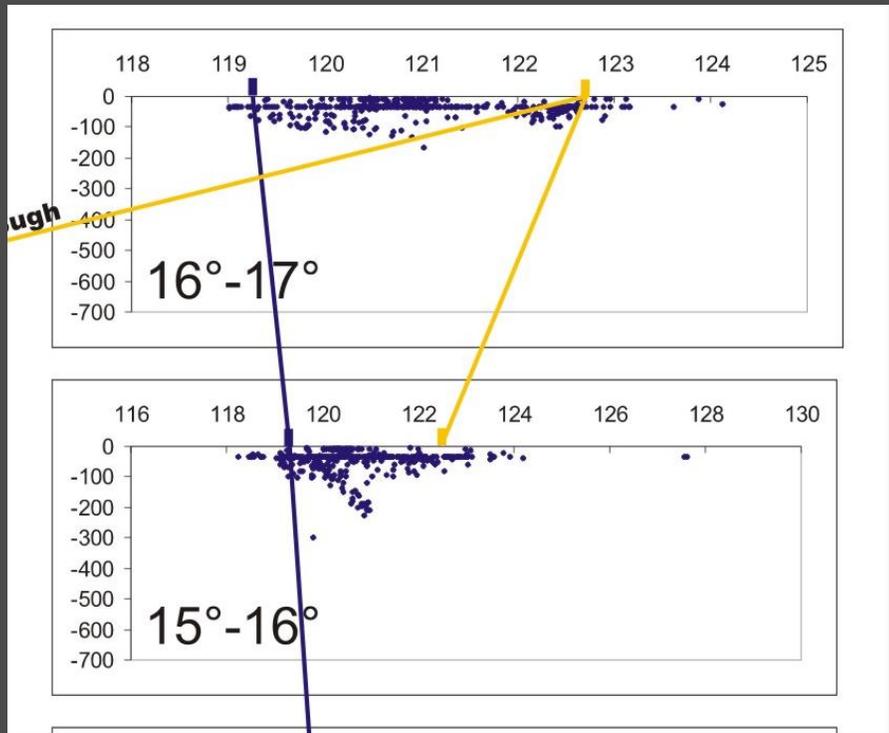
Is Benham Rise a submerged prolongation of the Luzon land mass?

Resolved by demonstrating:

- accretion of Benham Rise to Luzon land mass

Benham Rise acoustic basement extends beneath Bicol Shelf.

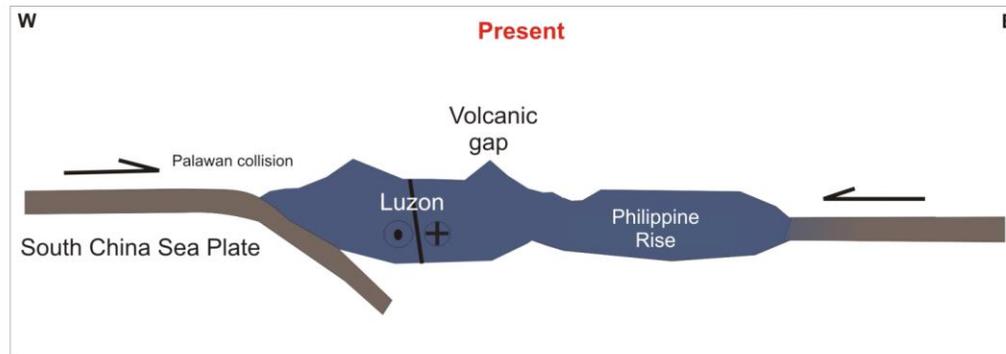
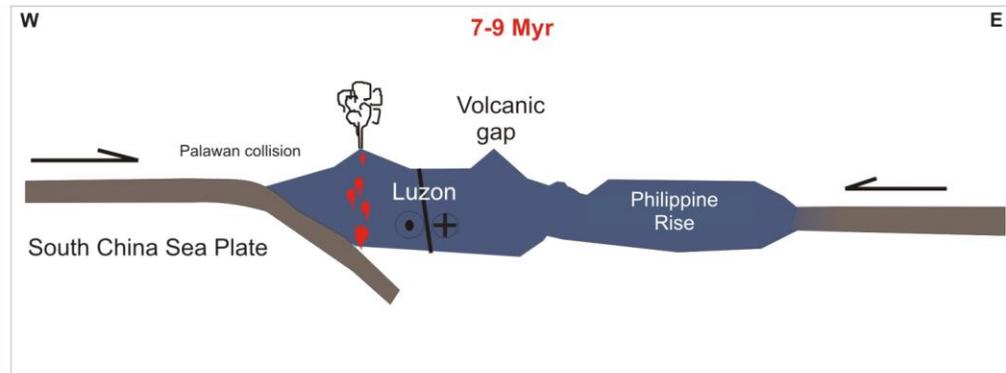
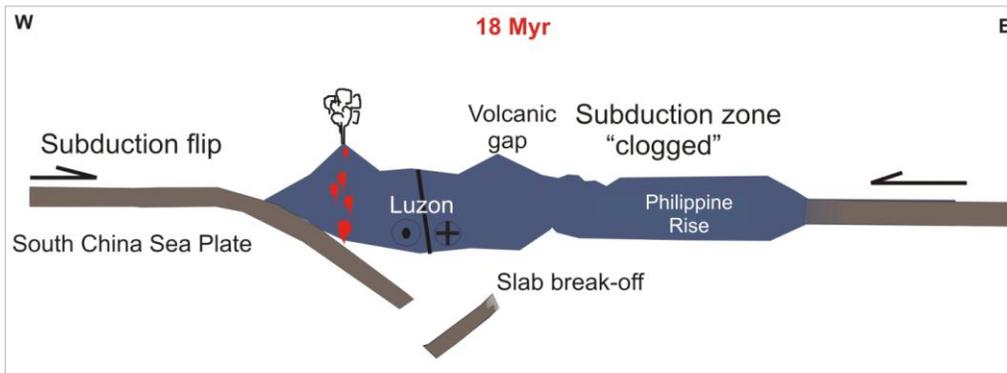
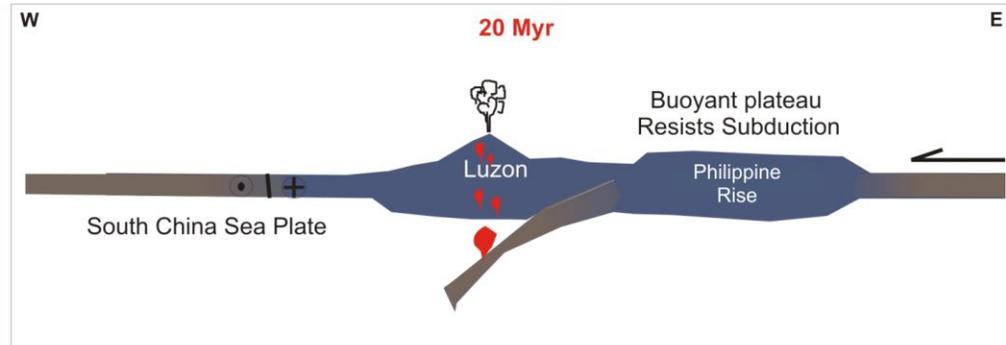
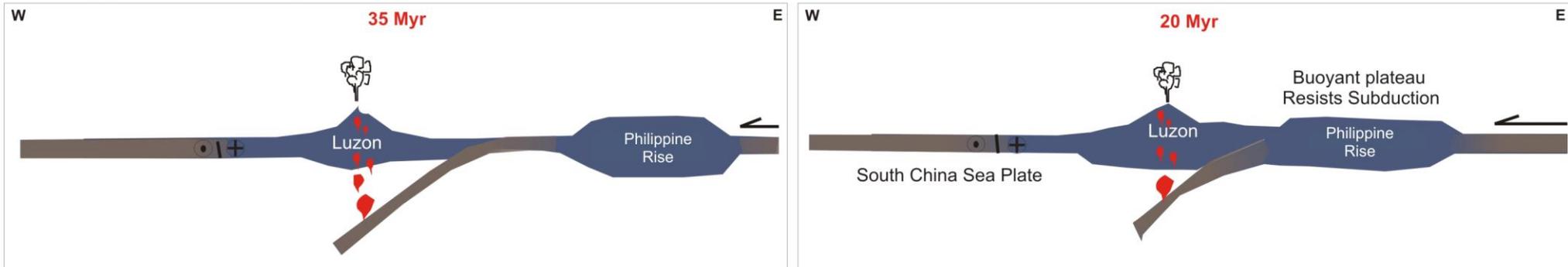




*Absence of deep earthquake foci
in East Luzon Trough.*

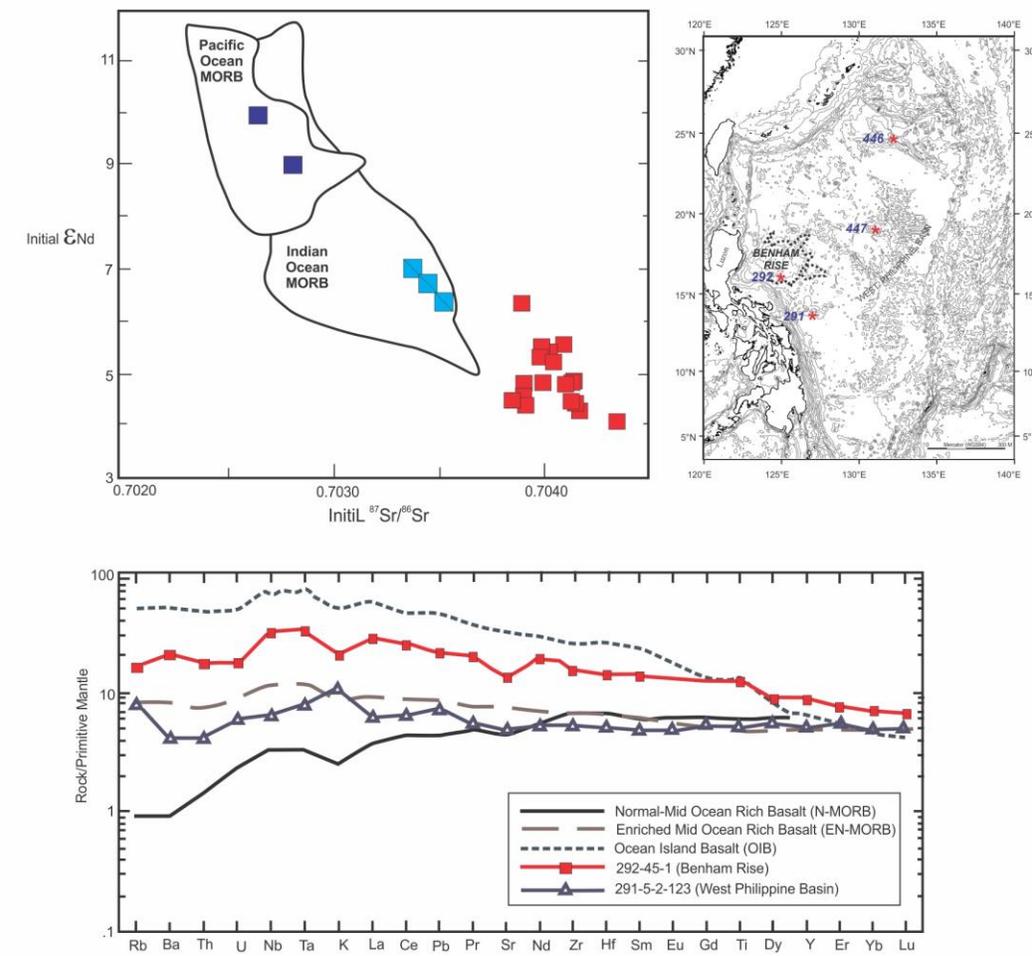
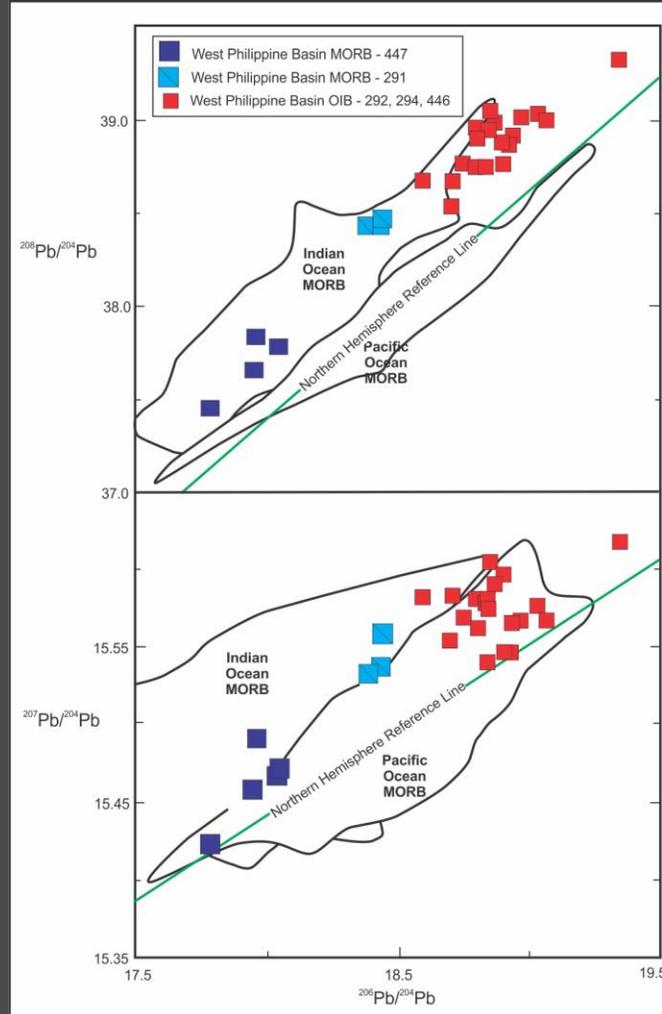
Accretion of Benham Rise to Luzon land mass

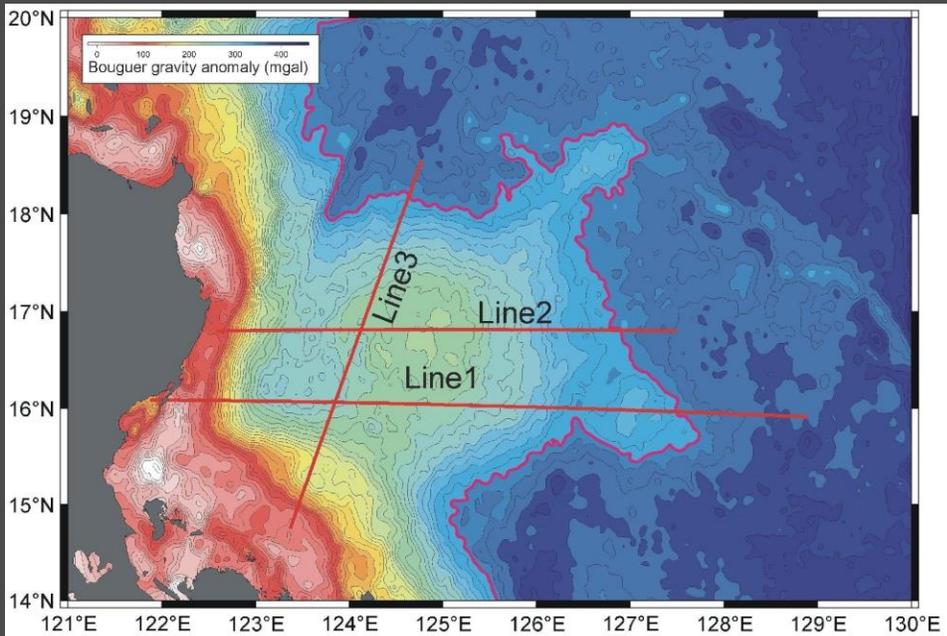
16° LATITUDE



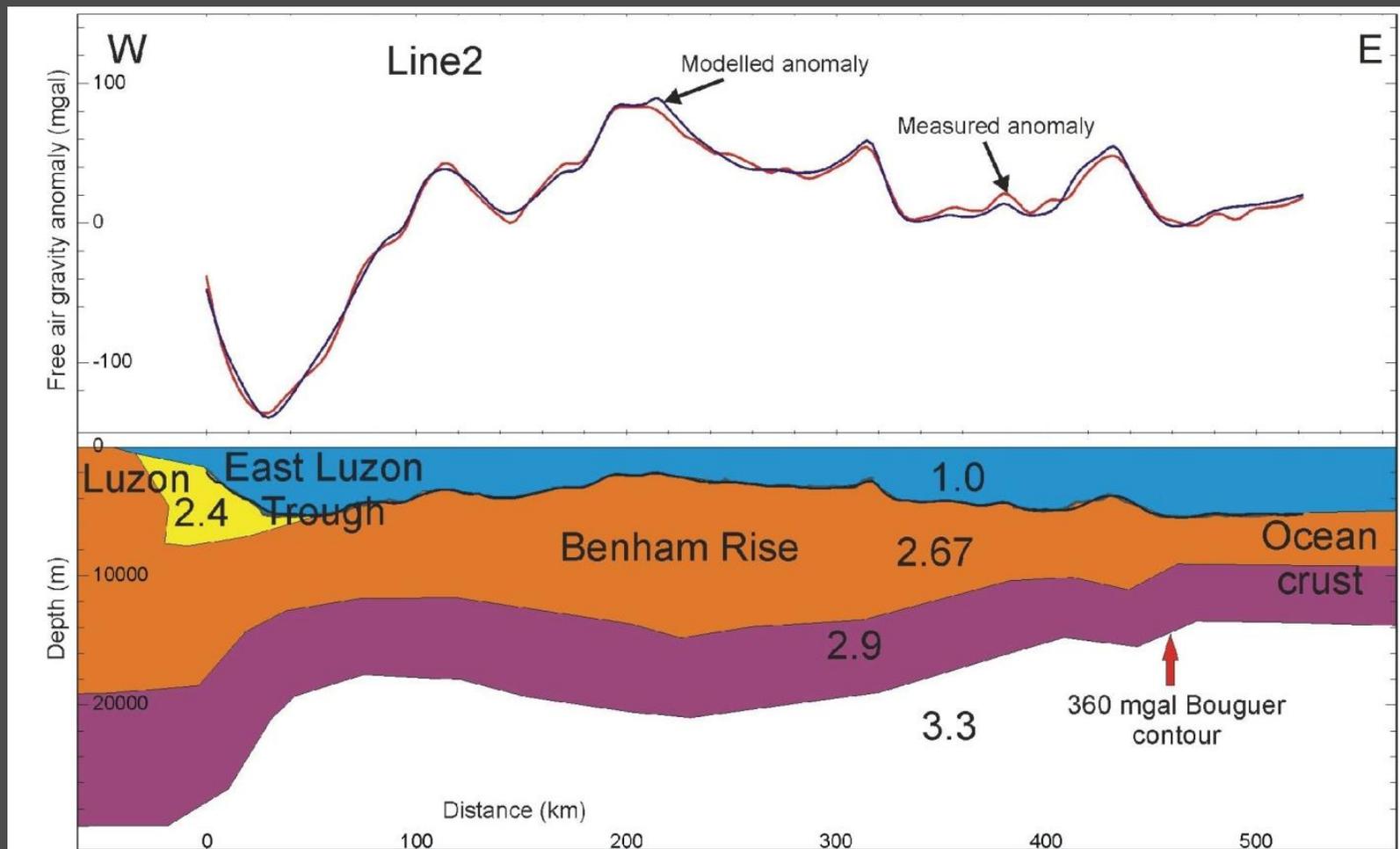
Is Benham Rise part of the deep ocean floor?

Benham Rise has an ocean island basalt (OIB) geochemical signature.



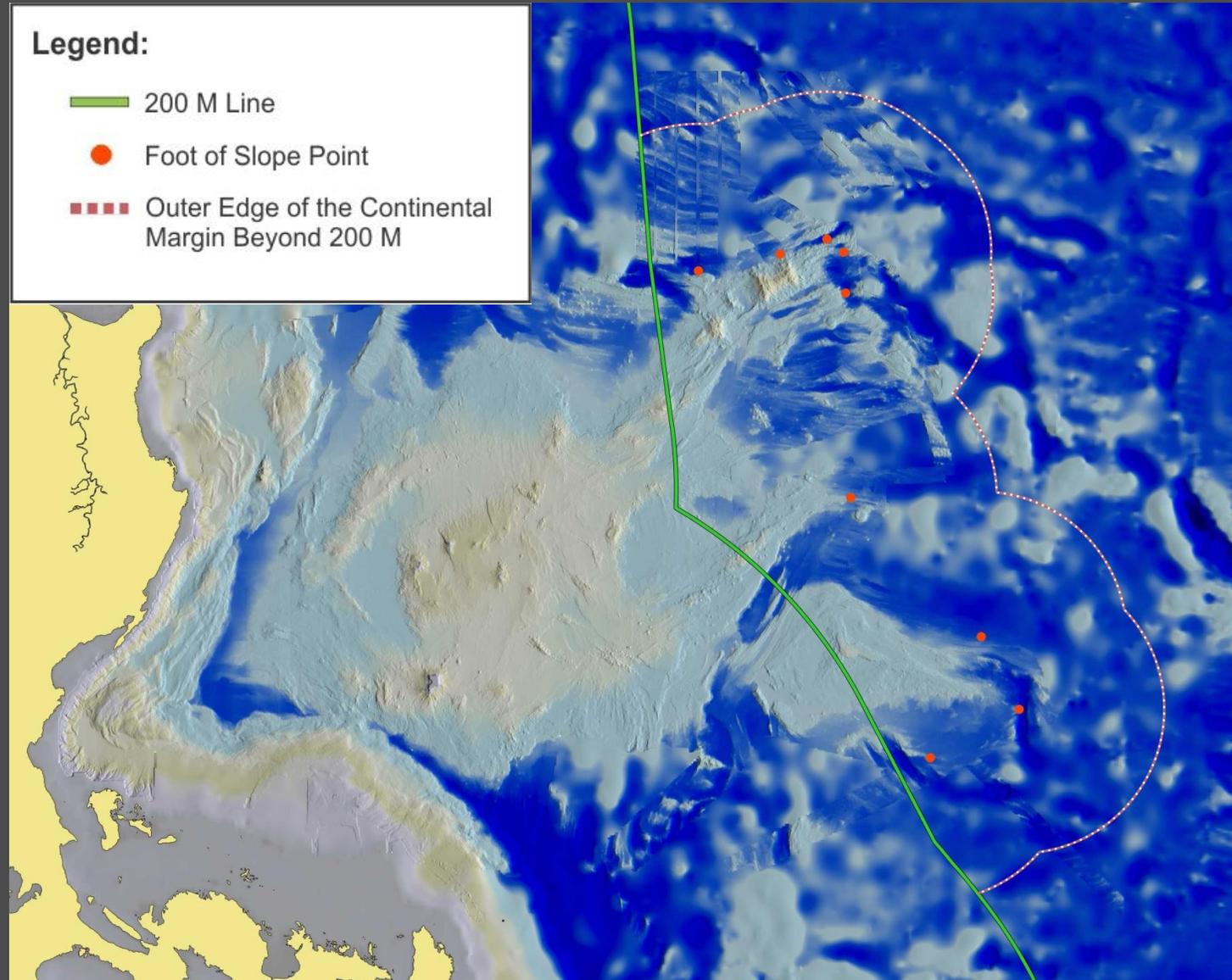


Benham Rise's crust is thicker (15-18 km) than normal oceanic crust (7 km).



Outer edge of continental margin

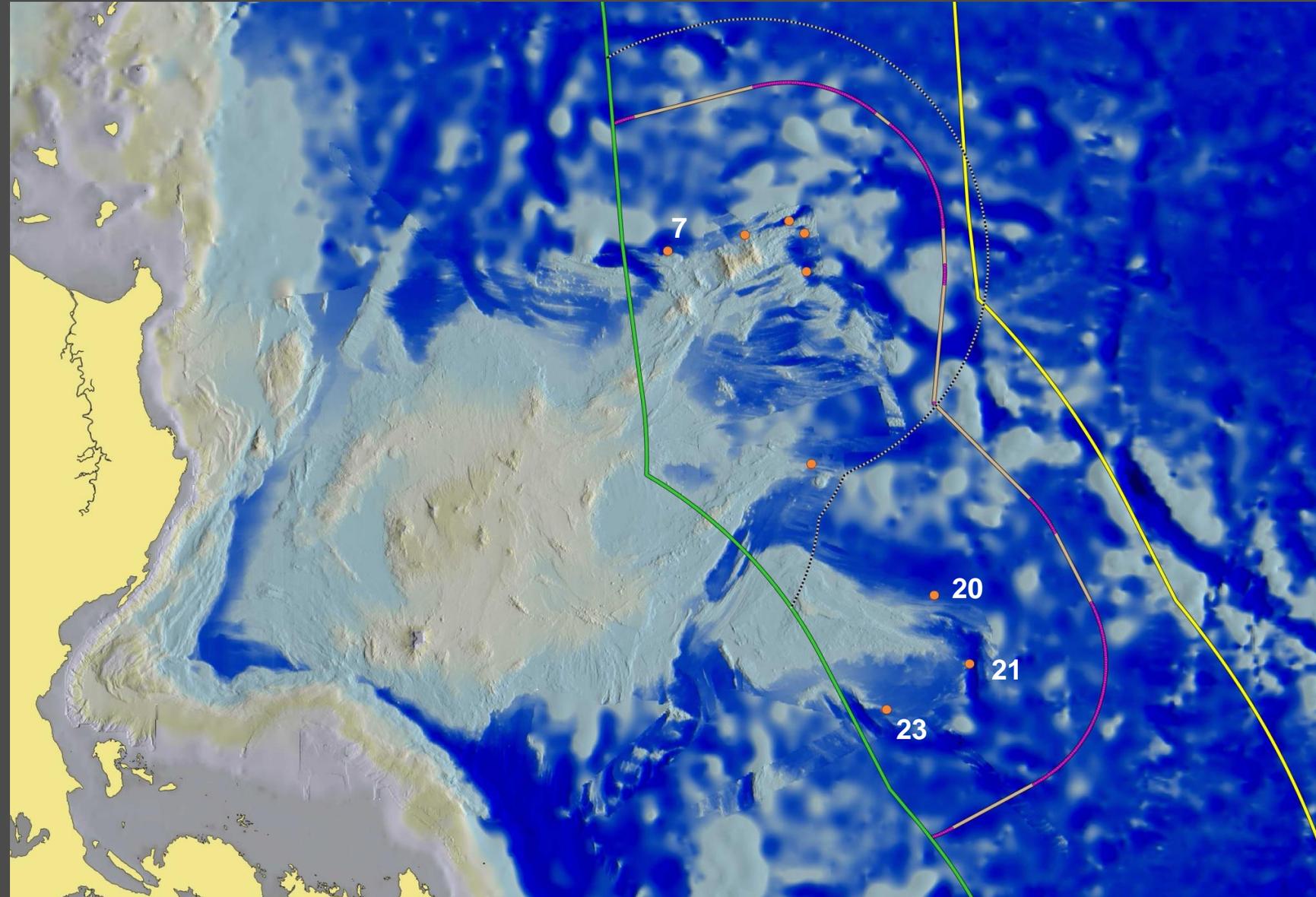
- Located nine foot of slope points.
- Used FoS + 60 M formulae.



Outer limits submitted to the CLCS

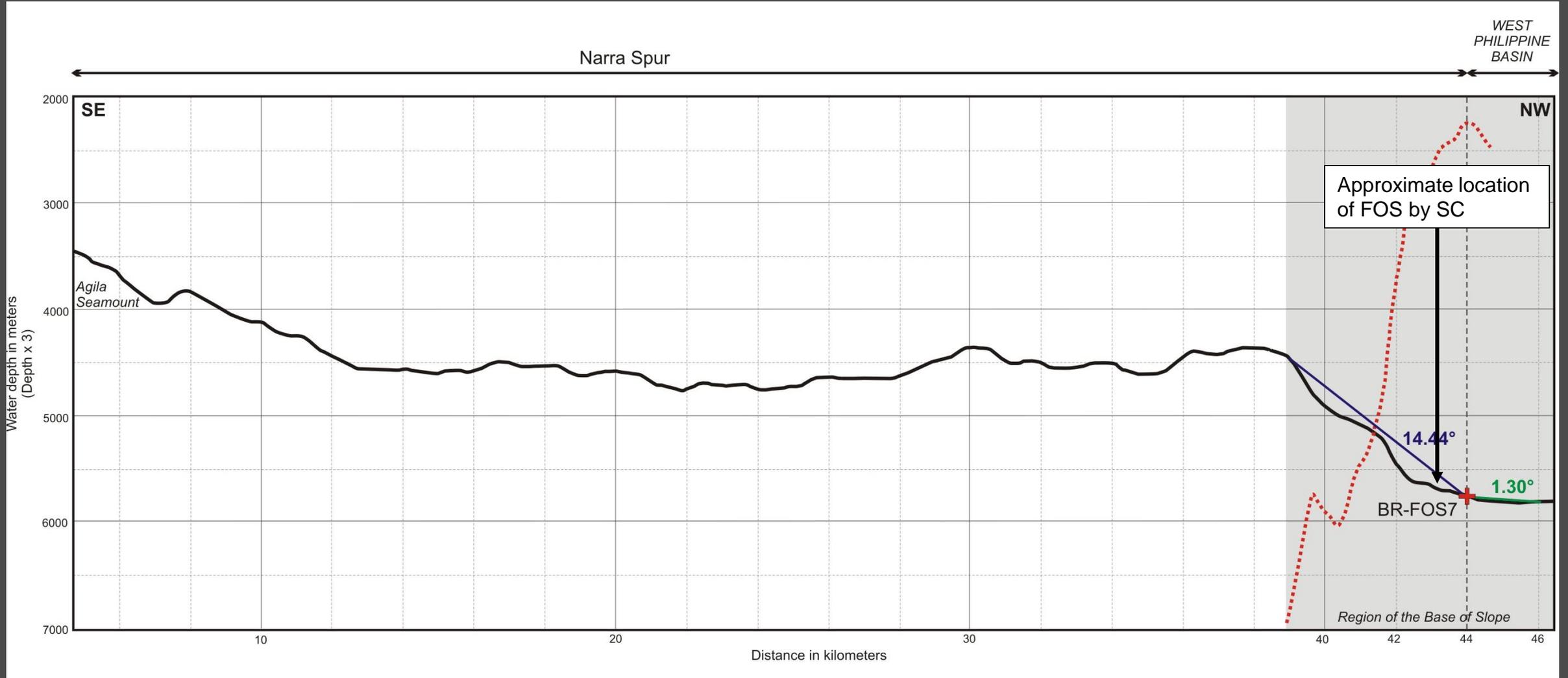
Legend:

- 200 M Line
- Foot of Slope Point
- Article 76 (7) Straight Line
- Fixed Points not more than 60 M from FOS
- 2,500m Isobath plus 100 M
- 350 M Constraint Line



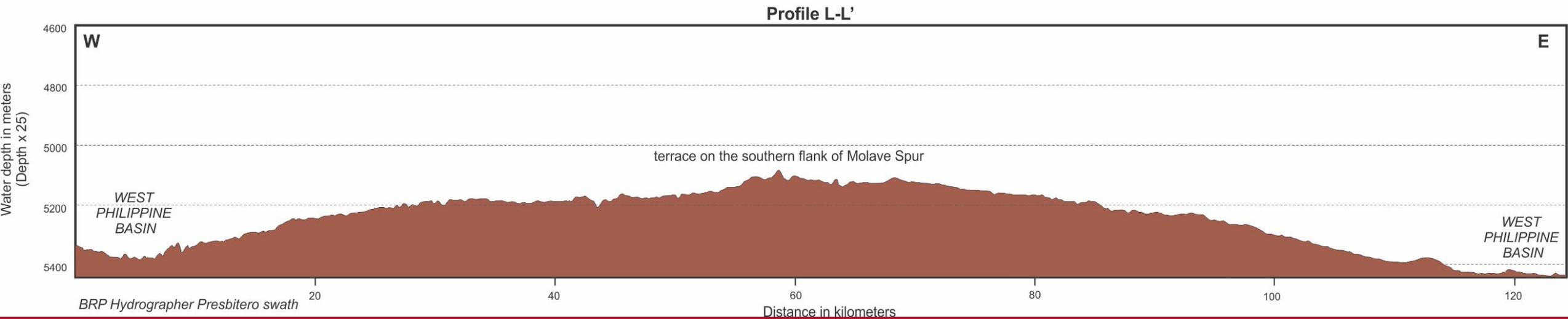
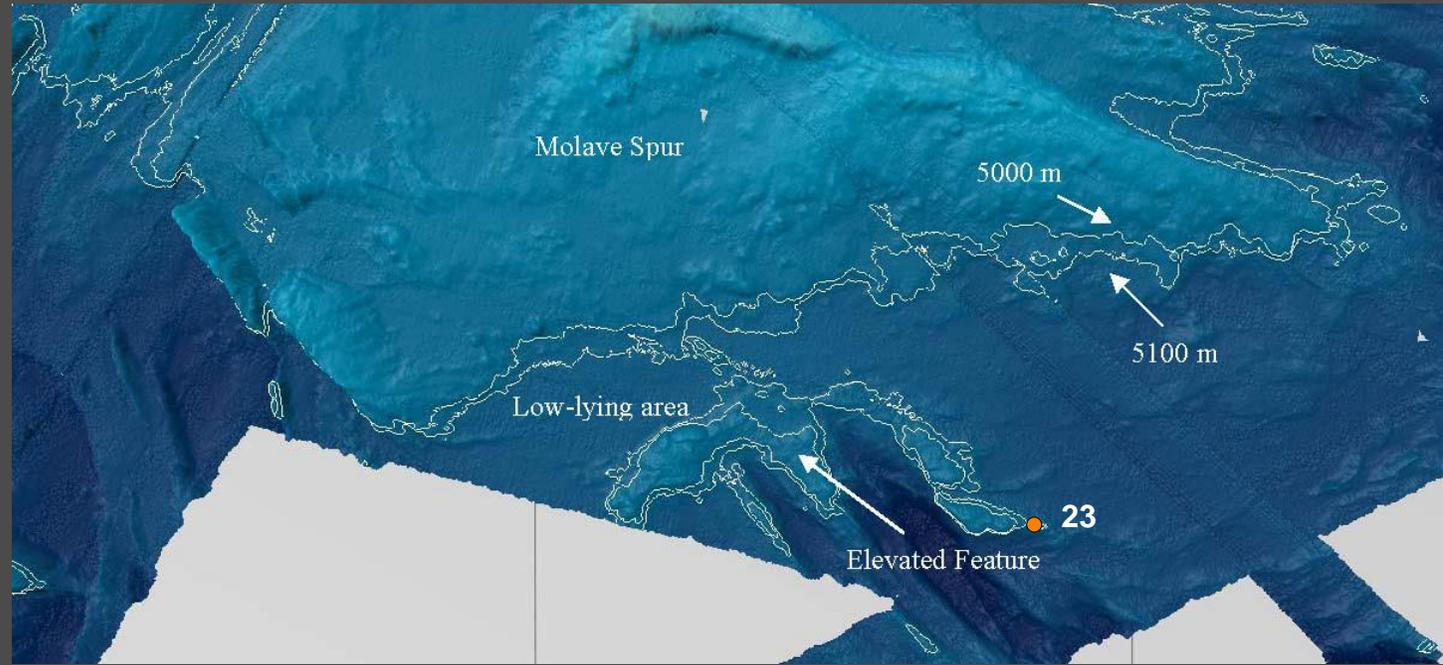
Subcommision's considerations

Relocate FOS 7 landward.



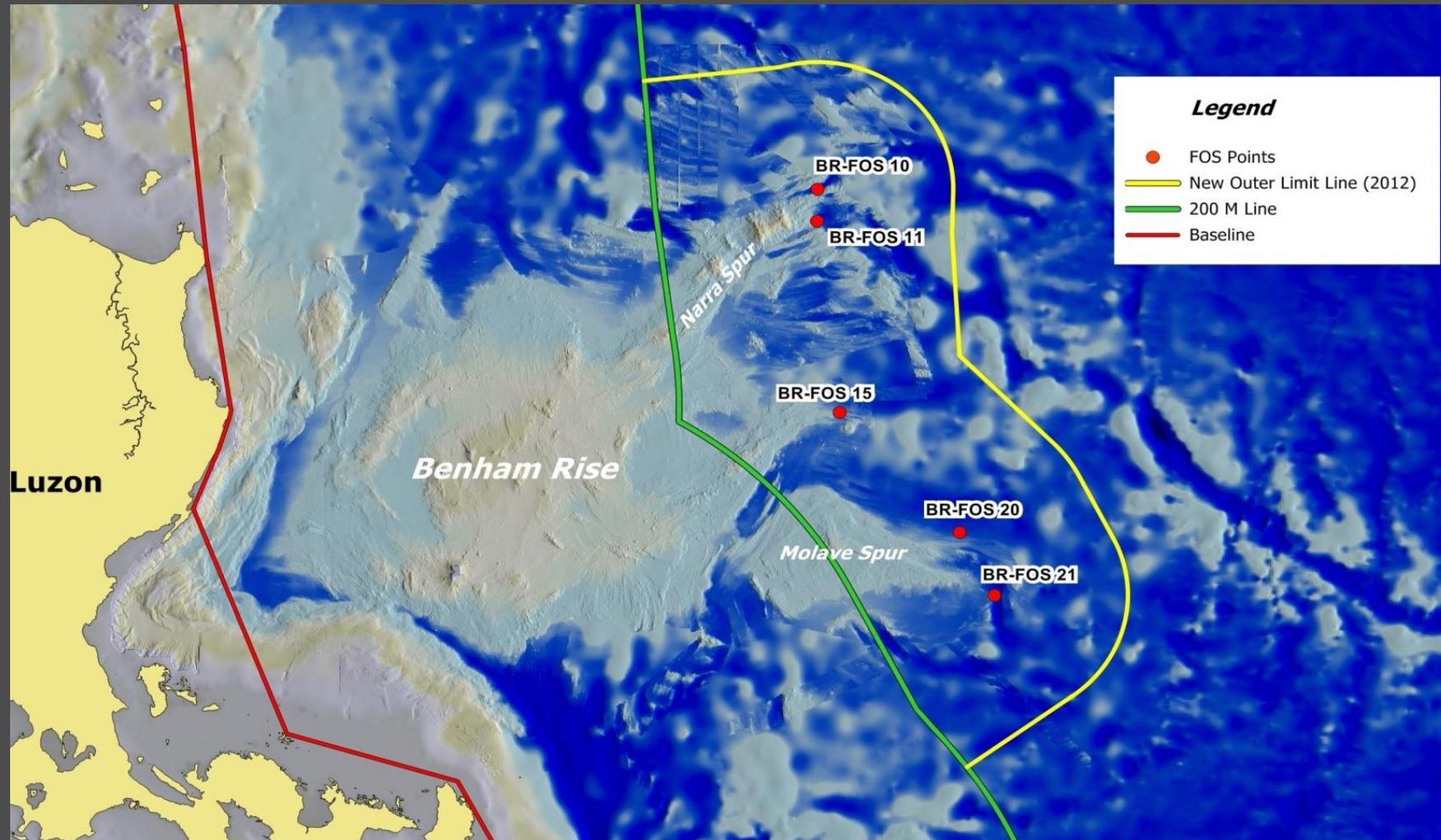
Subcommision's considerations

Elevated feature is not part of Molave Spur's prolongation, but part of the deep ocean floor.



Outer limits adopted by the CLCS

- Used “bridging lines”
- FOS points 7, 9 and 23 became redundant

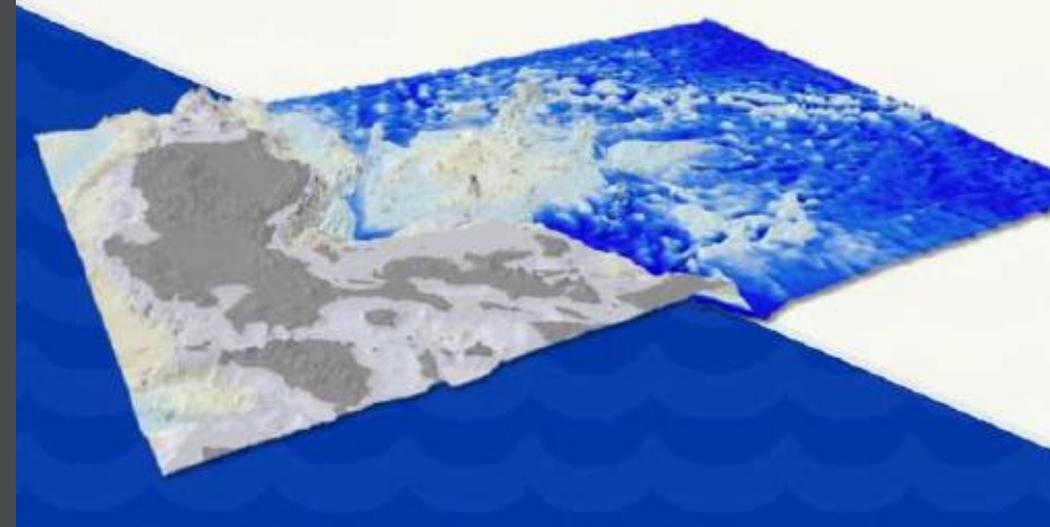


Lessons learned

- Geological and geophysical evidence can effectively set the stage for demonstrating natural prolongation when morphological evidence is not so obvious.
- Position of FOS points that maximize the outer limits
- Use of “bridging line” is acceptable.



A PARTIAL SUBMISSION OF DATA AND INFORMATION
ON THE OUTER LIMITS OF THE CONTINENTAL SHELF
OF THE REPUBLIC OF THE PHILIPPINES
PURSUANT TO ARTICLE 76 (8) OF THE
UNITED NATIONS CONVENTION ON
THE LAW OF THE SEA



In memory of

- Dr. Teodoro M. Santos (2014)
- Gen. Diony A. Ventura (2018)
- Rolando E. Peña (2018)



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