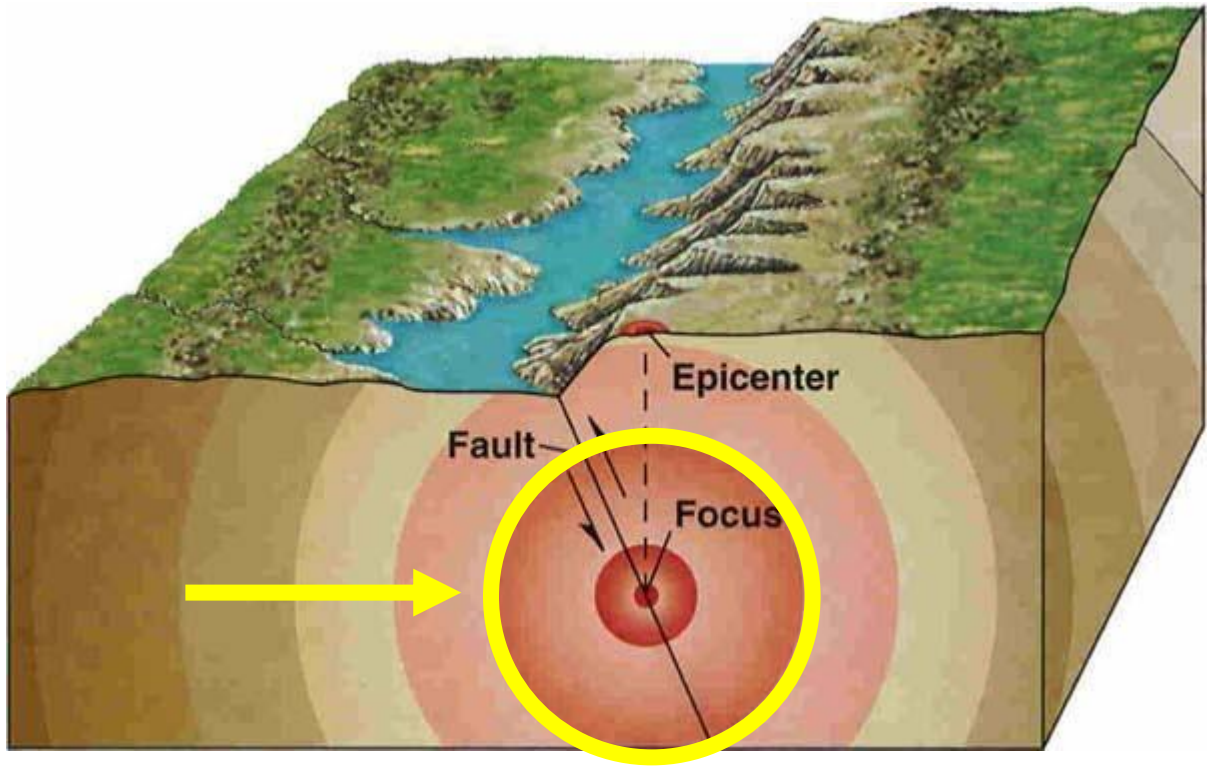
Mid- to Deep-Focus Seismicity as Extent Implications of the Molucca Sea Microplate Subduction beneath the Celebes Sea Basin

Olario, K.R. and Pelingon, K.J.

OUTLINE

- Introduction
- Related Literature
- Methodology
- Data Presentation
- Conclusion and Recommendations

INTRODUCTION

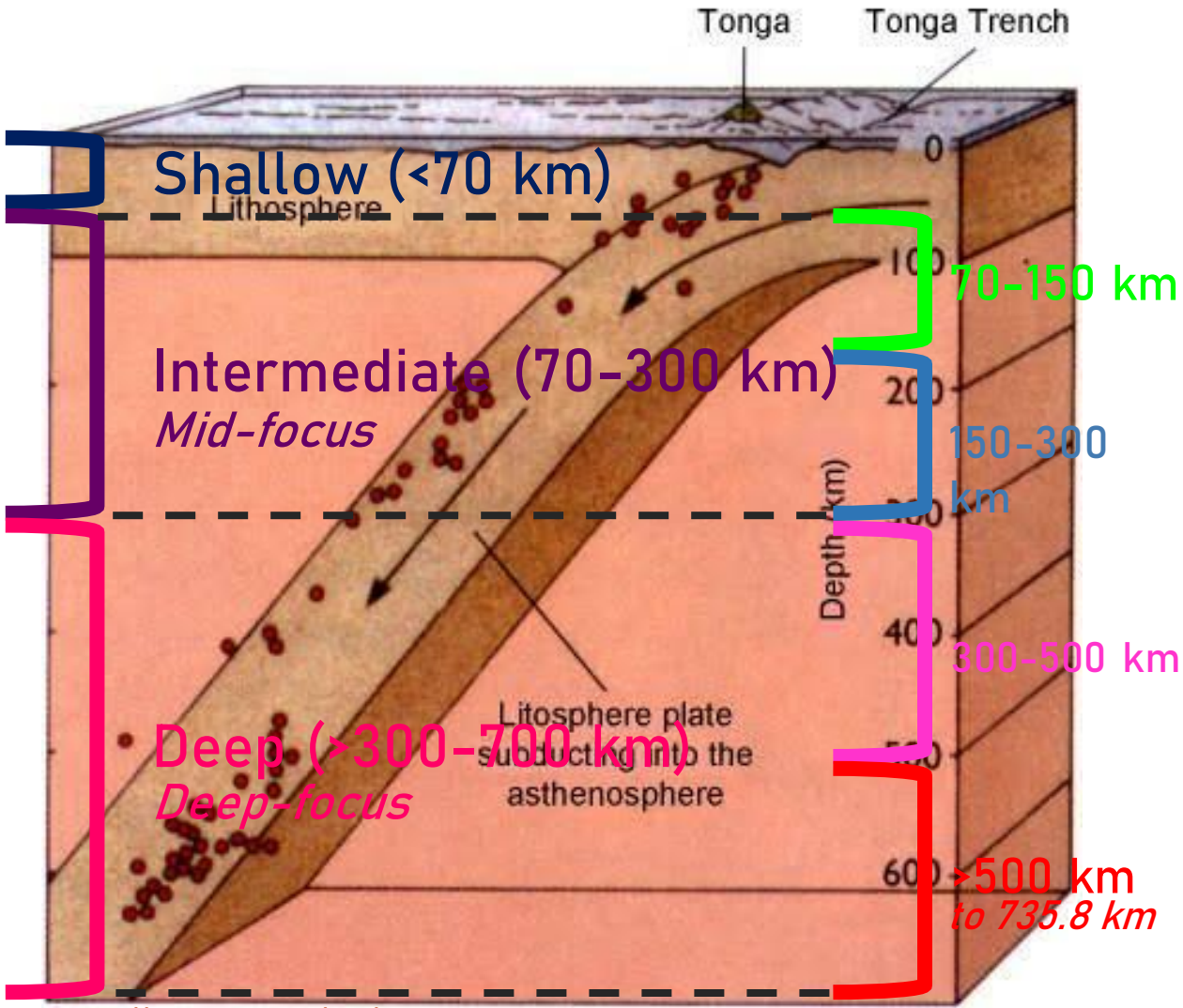


https://legacy.etap.org/demo/Earth_Science/es3/instruction5tutor.html

Earthquakes are natural geologic phenomena caused by sudden and rapid movement of large rock volume (Lutgens, et al., 2012).

INTRODUCTION

Wadati-Benioff zones are planar zones of seismicity produced by interaction of down-going slabs in a subduction process (USGS, n.d.).



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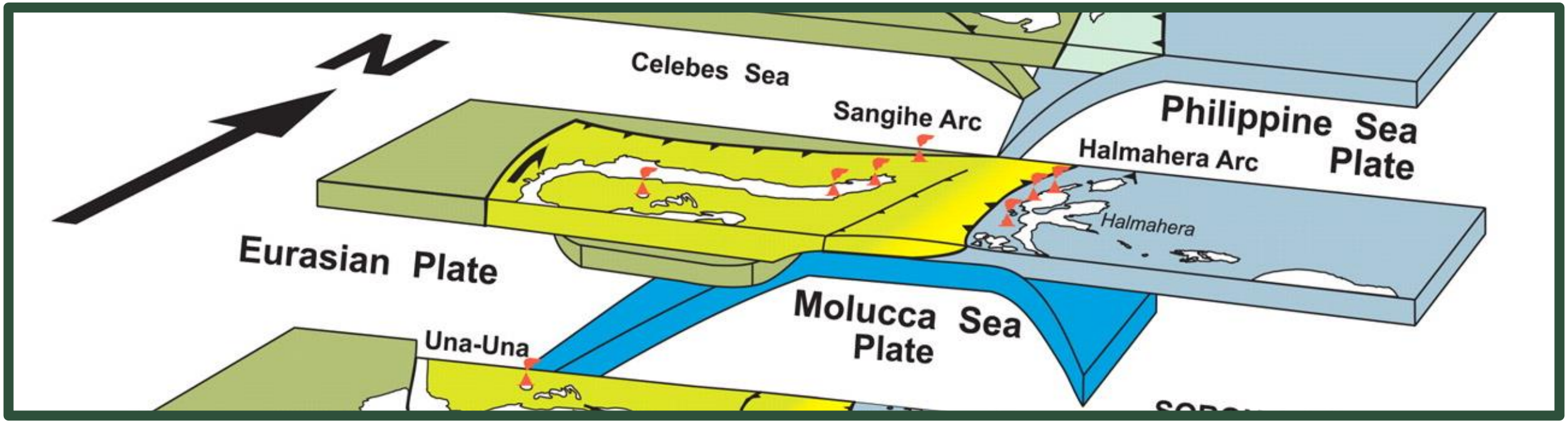
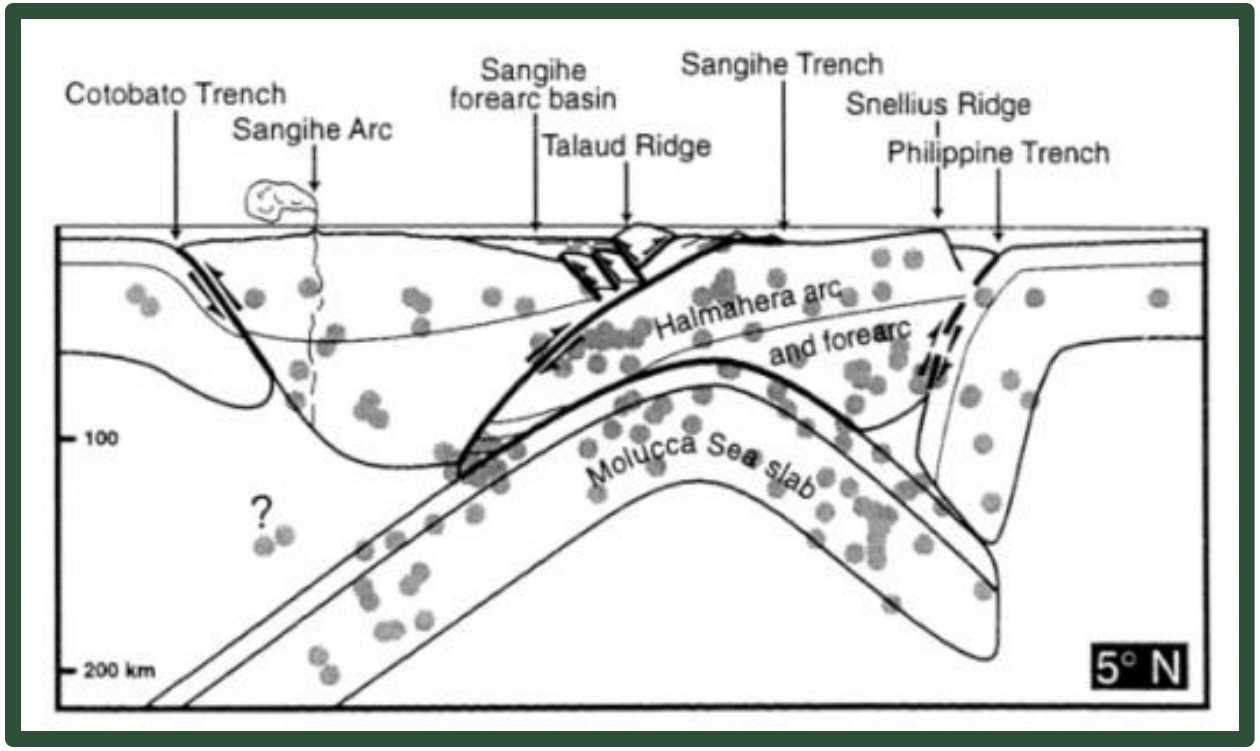
INTRODUCTION



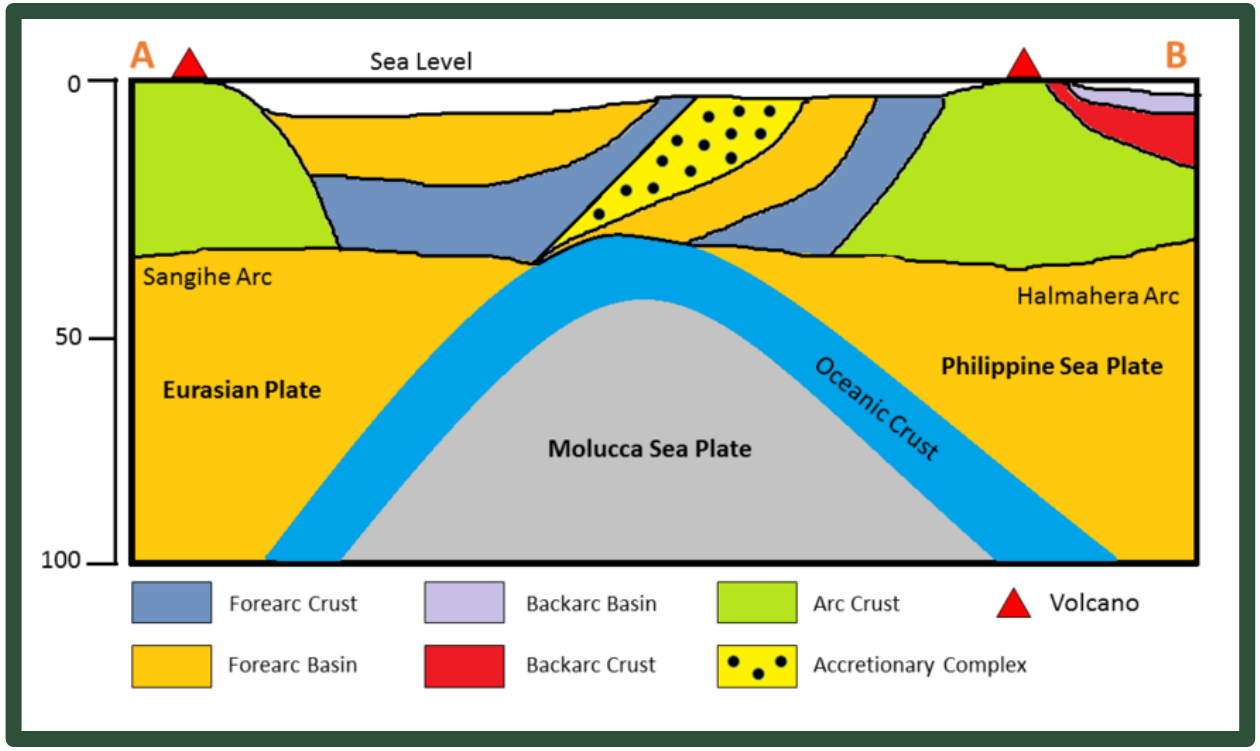
http://earthjay.com/earthquakes/20170408_phillipines/F19.large.jpg

The Molucca Sea Collisional Zone includes the Molucca Sea Microplate, which is dominantly theorized to be completely subducted beneath the overriding Sangihe (west) and Halmahera (east) plates.

RELATED LITERATURE

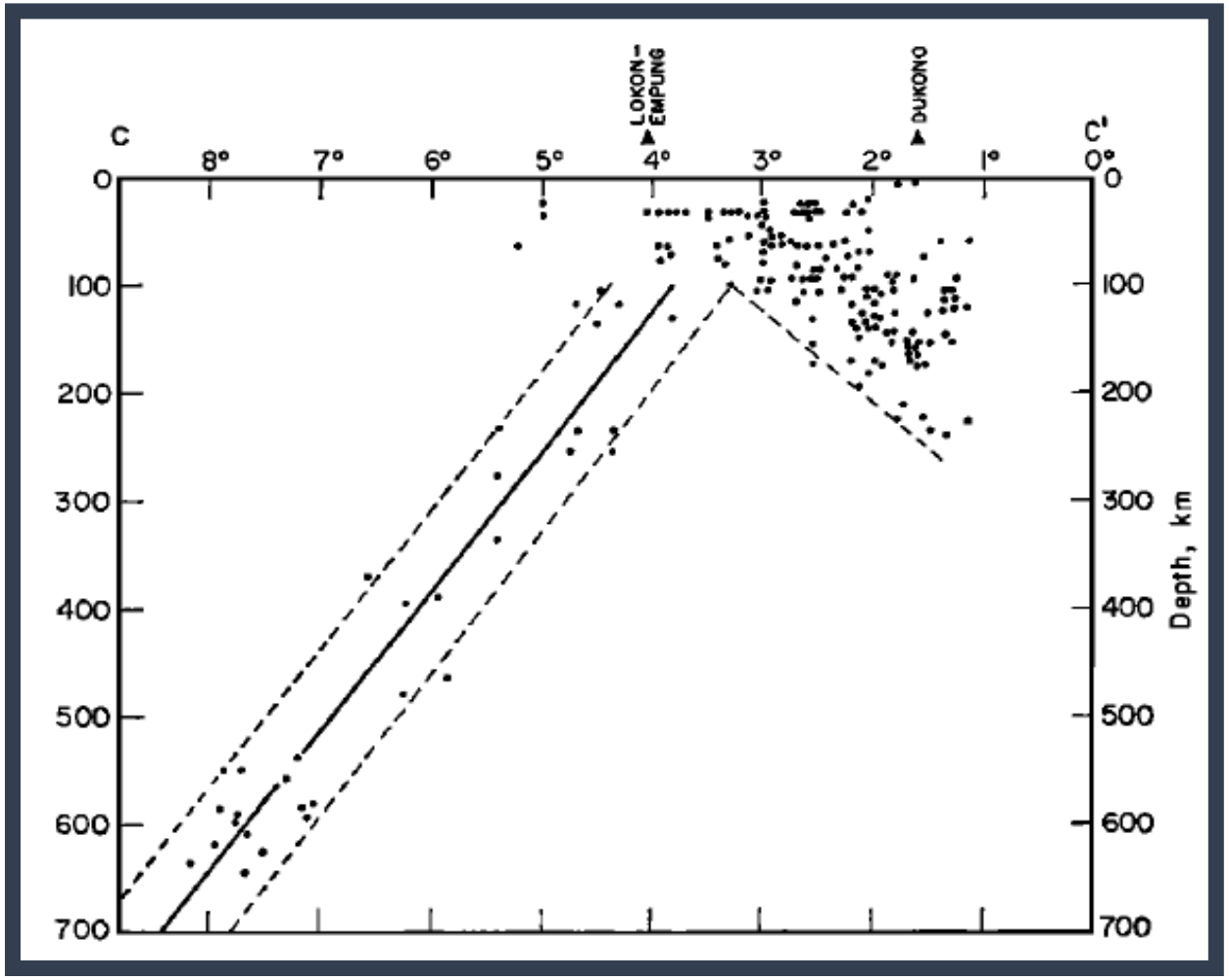


(Lallemand, et al., 1998)

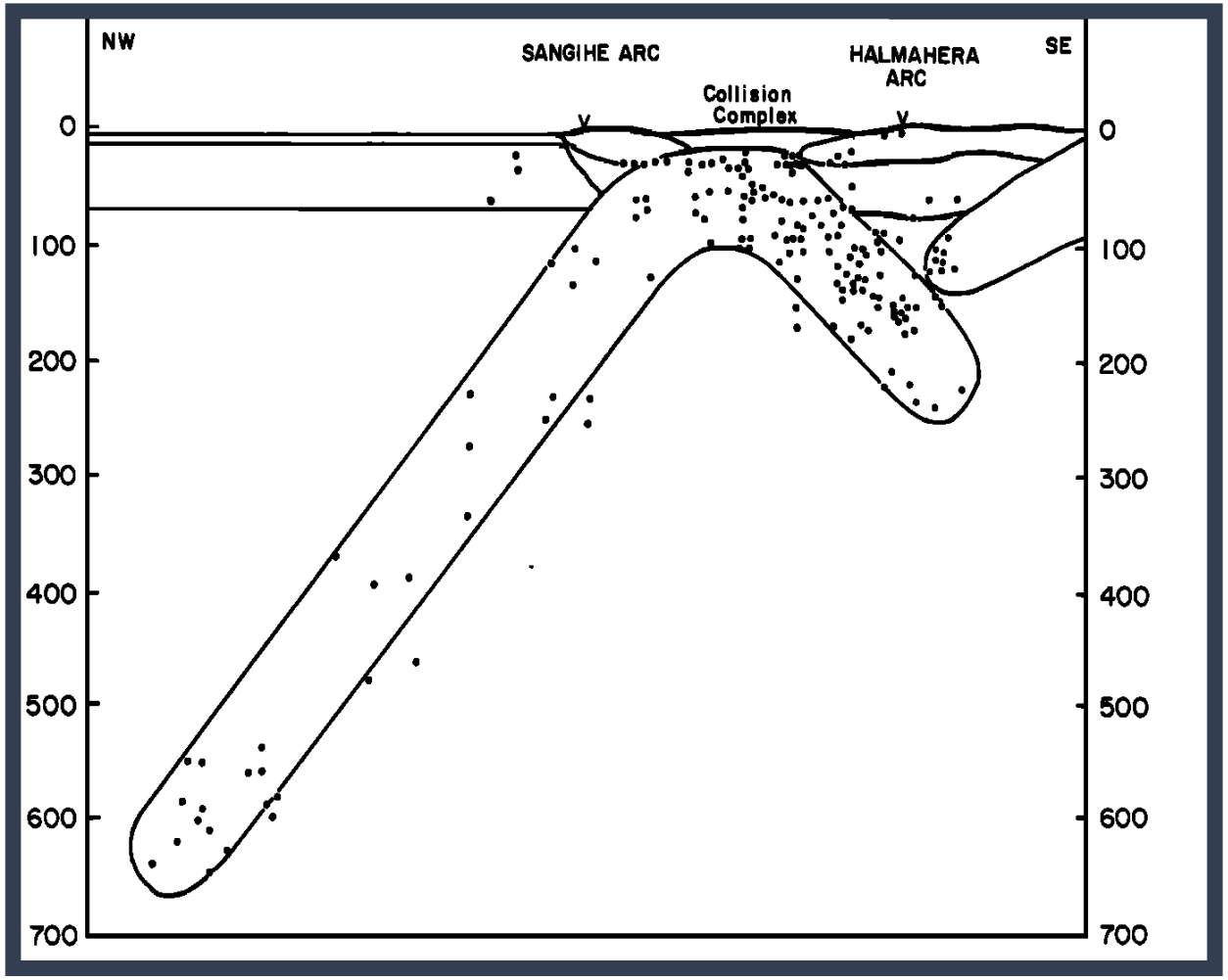


(Zhang, Q., F. Guo, L. Zhao, and Y. Wu, 2017)

SIMILAR STUDIES



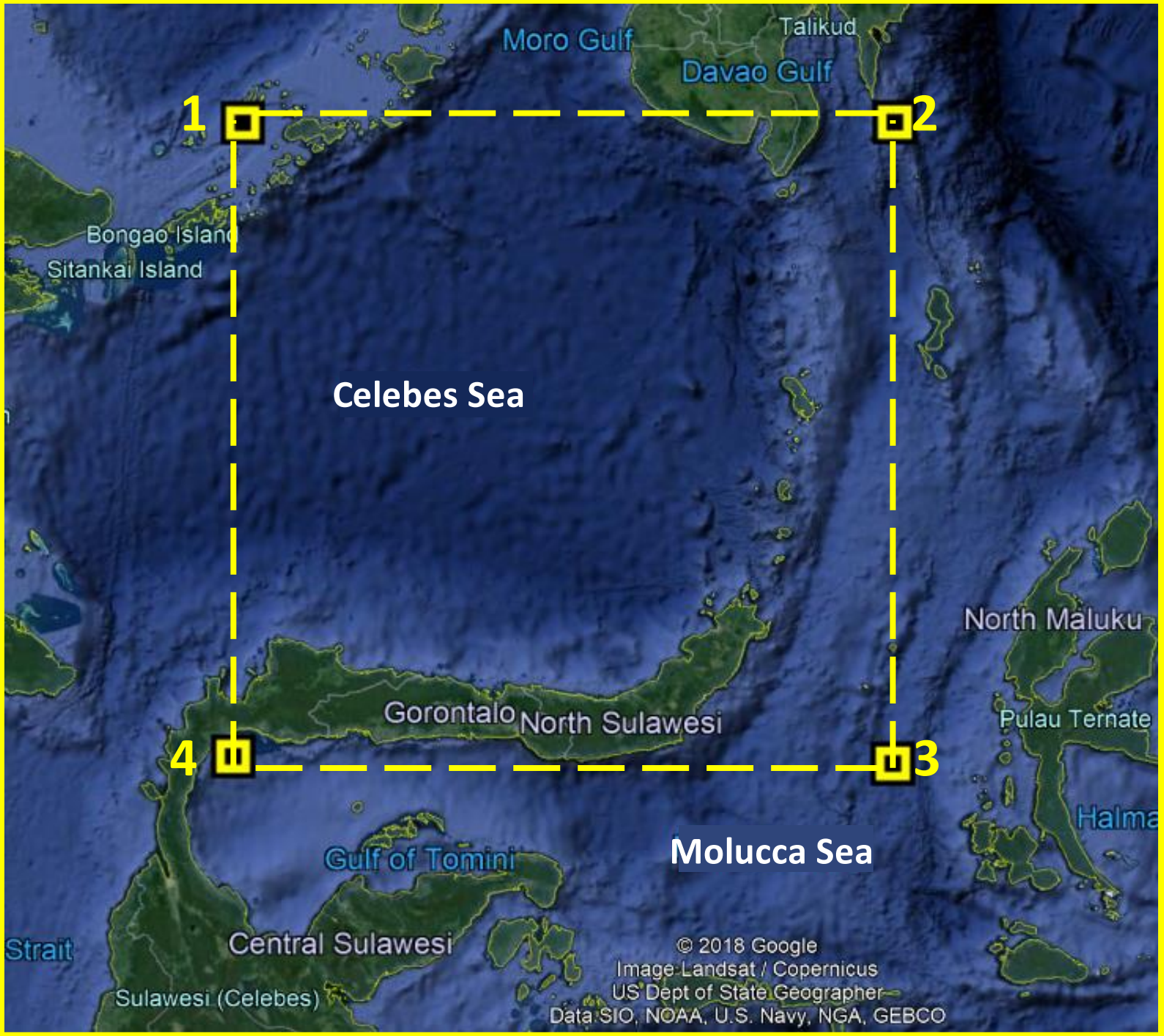
(Hatherton, T. and Dickinson, W., 1969)



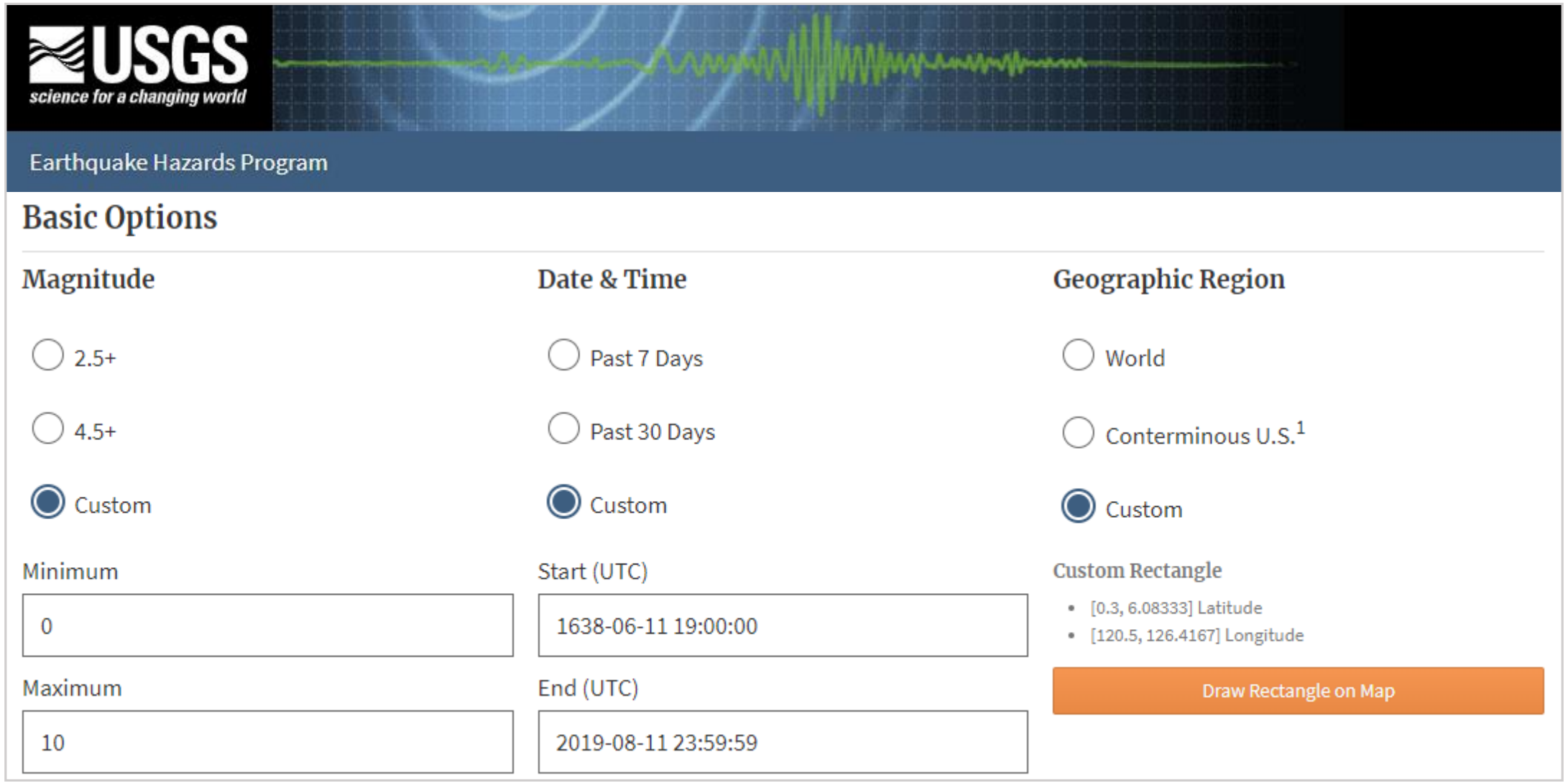
(Silver, E.A. and Moore, J.C., 1978)

STUDY AREA

1	6° 5' 0.00" N 120° 30' 0.00" E
2	6° 5' 0.00" N 126° 25' 0.00" E
3	0° 18' 0.00" N 126° 25' 0.00" E
4	0° 18' 0.00" N 120° 30' 0.00" E



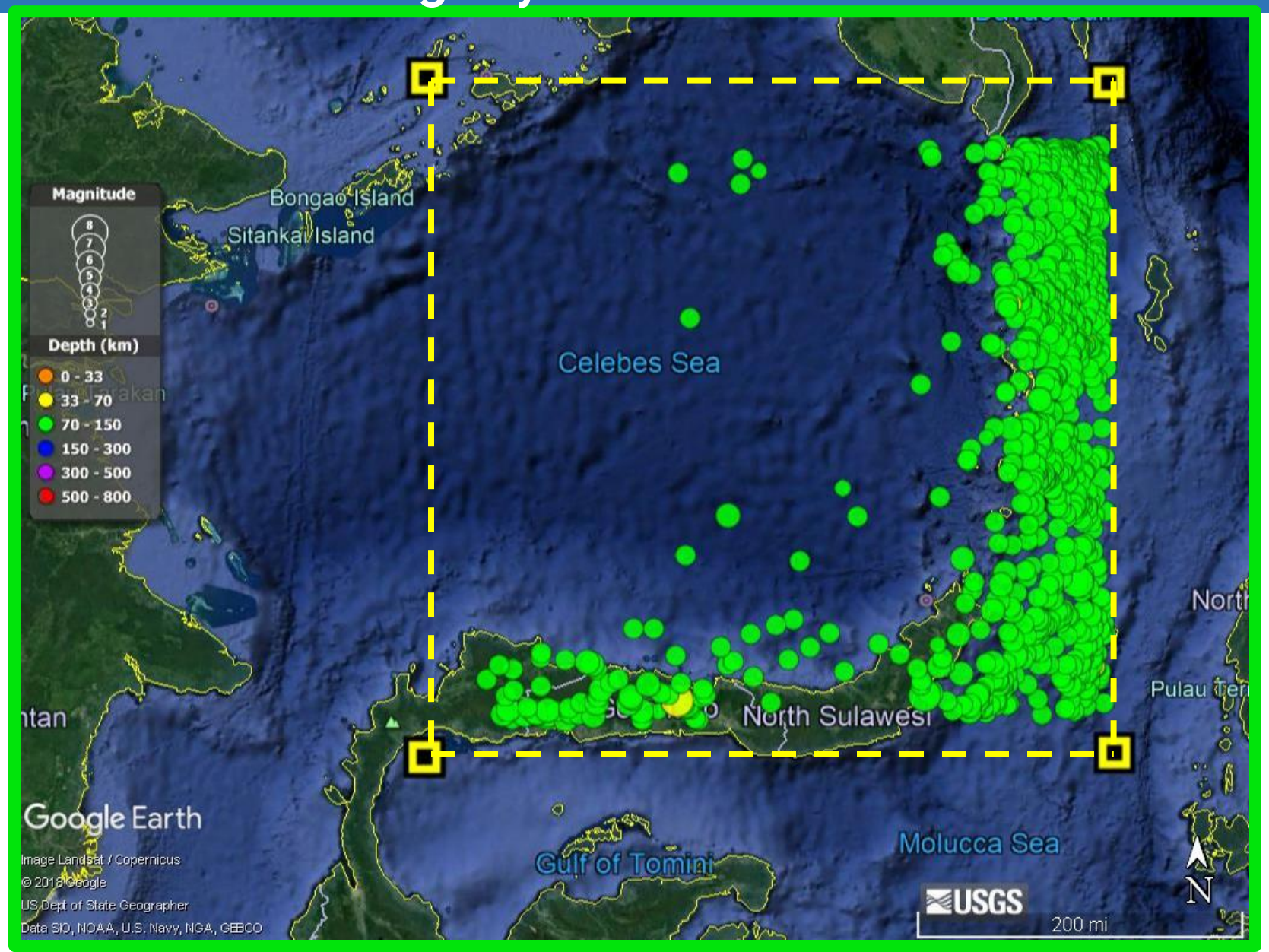
DATA COLLECTION



Advanced National Seismic System Comprehensive Earthquake Catalog (ANSS-ComCat)
https://doi.org/10.5066/F7MS3QZH

PRESENTATION OF DATA

Plotting on Satellite Imagery



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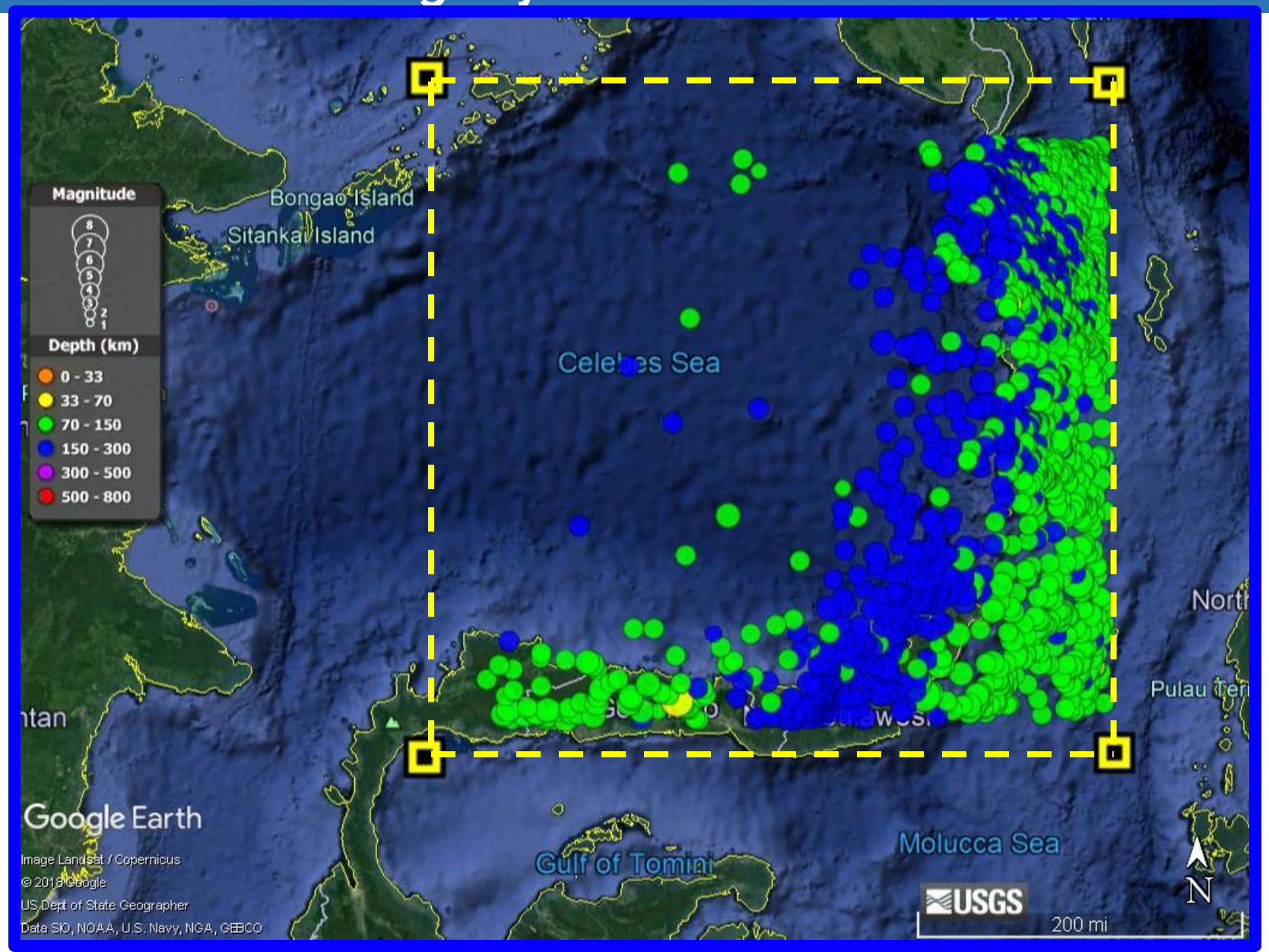

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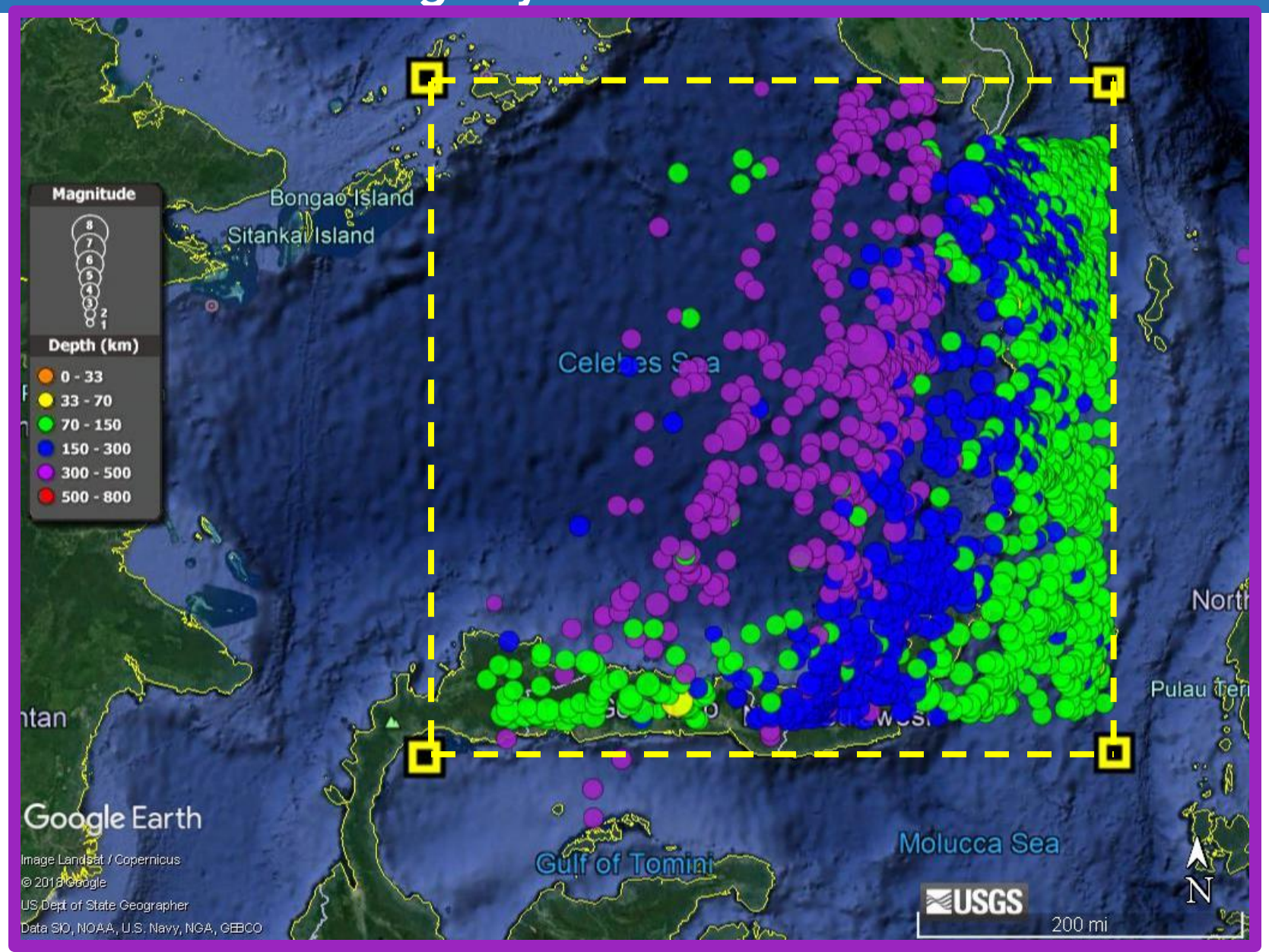

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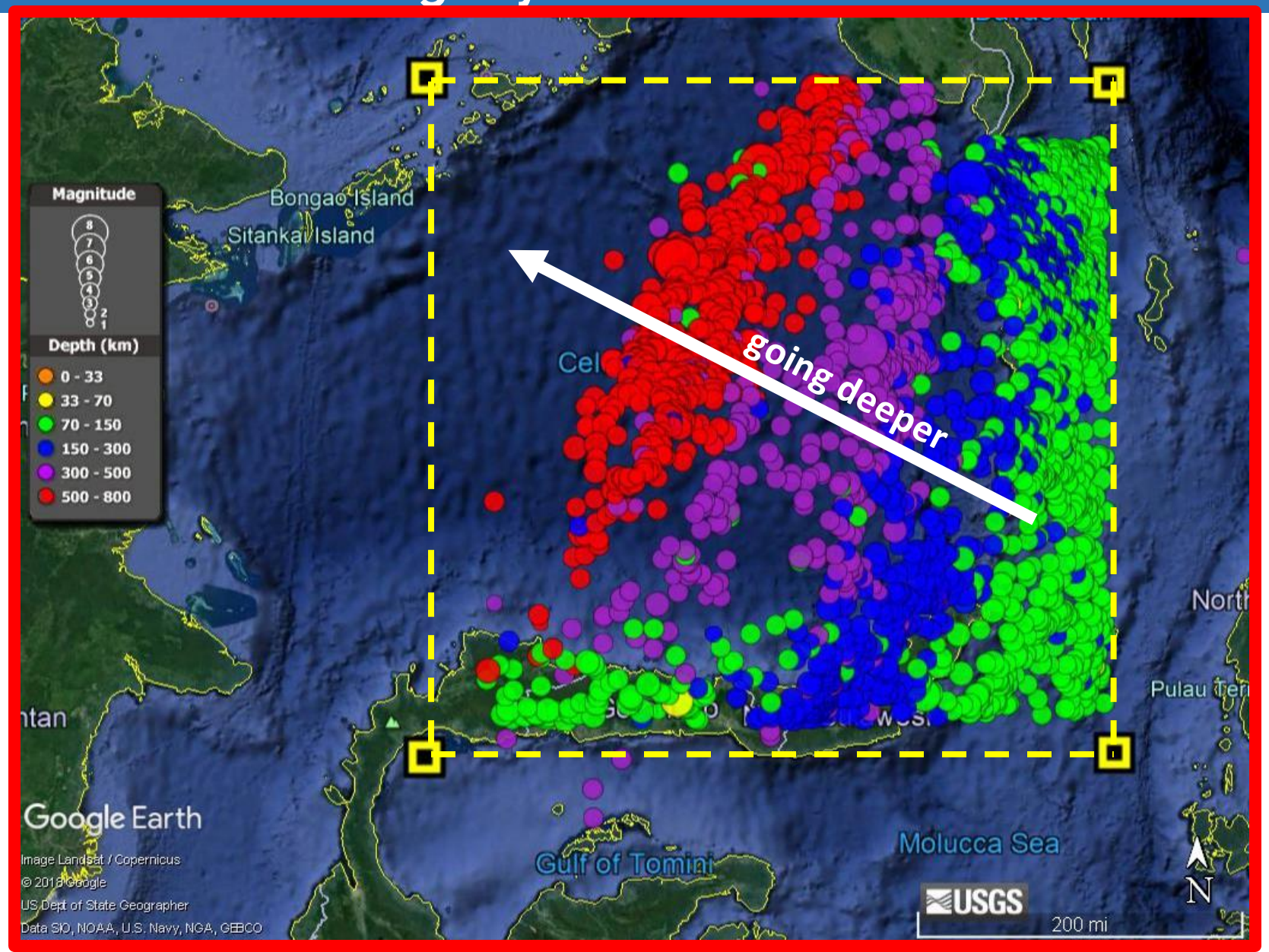
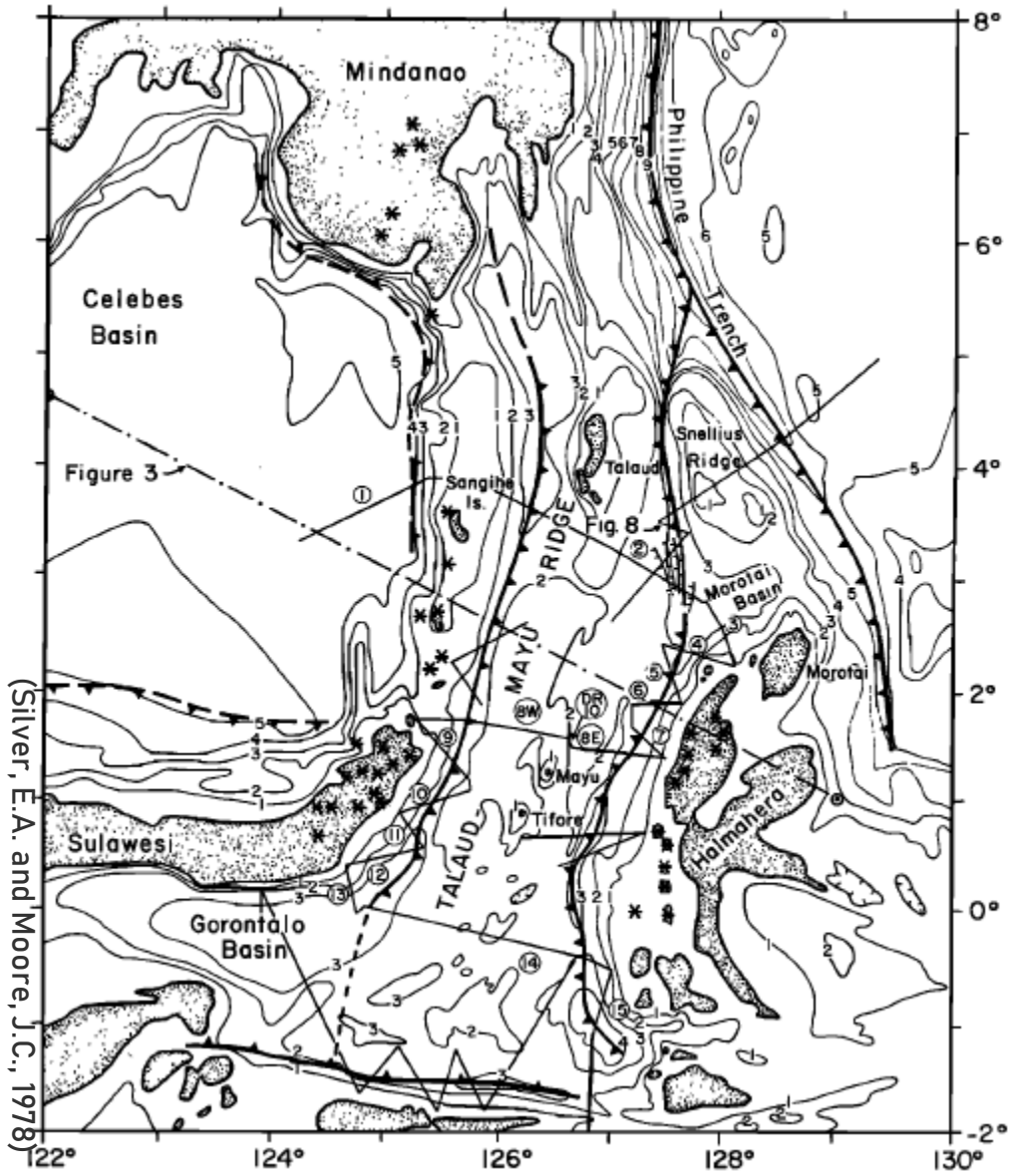
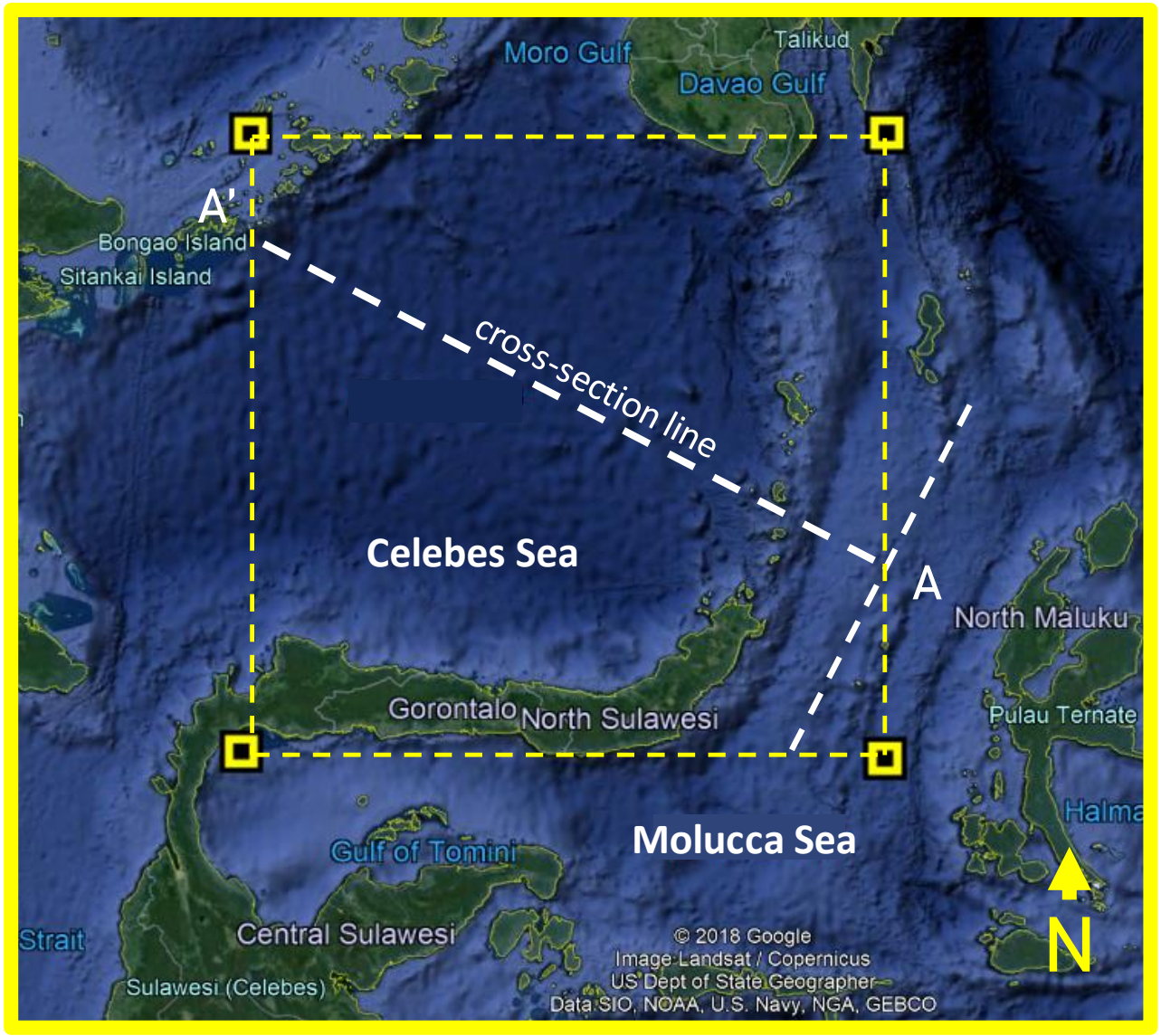


PRESENTATION OF DATA

Cross-section of seismicity



(Silver, E.A. and Moore, J.C., 1978)



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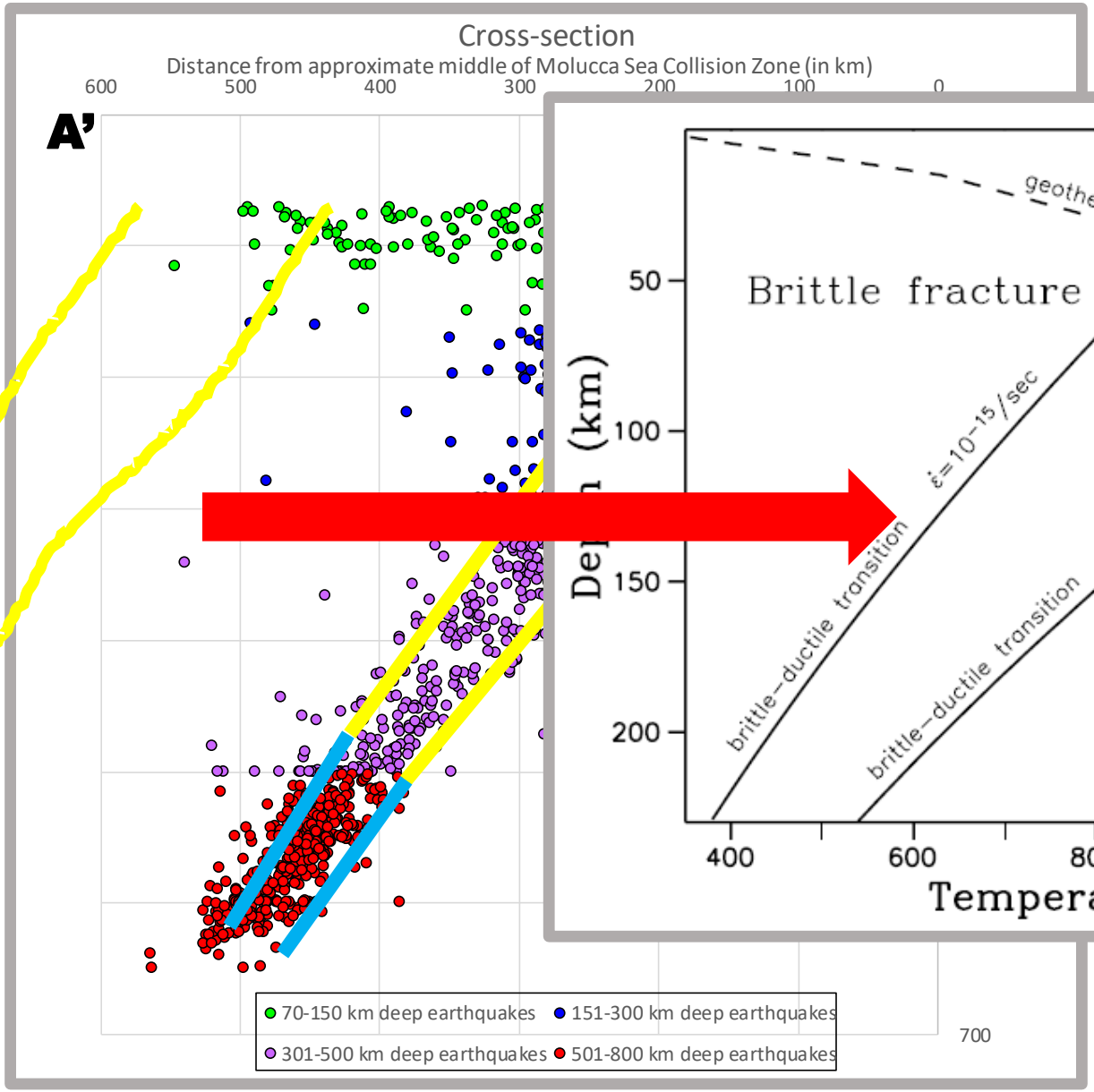
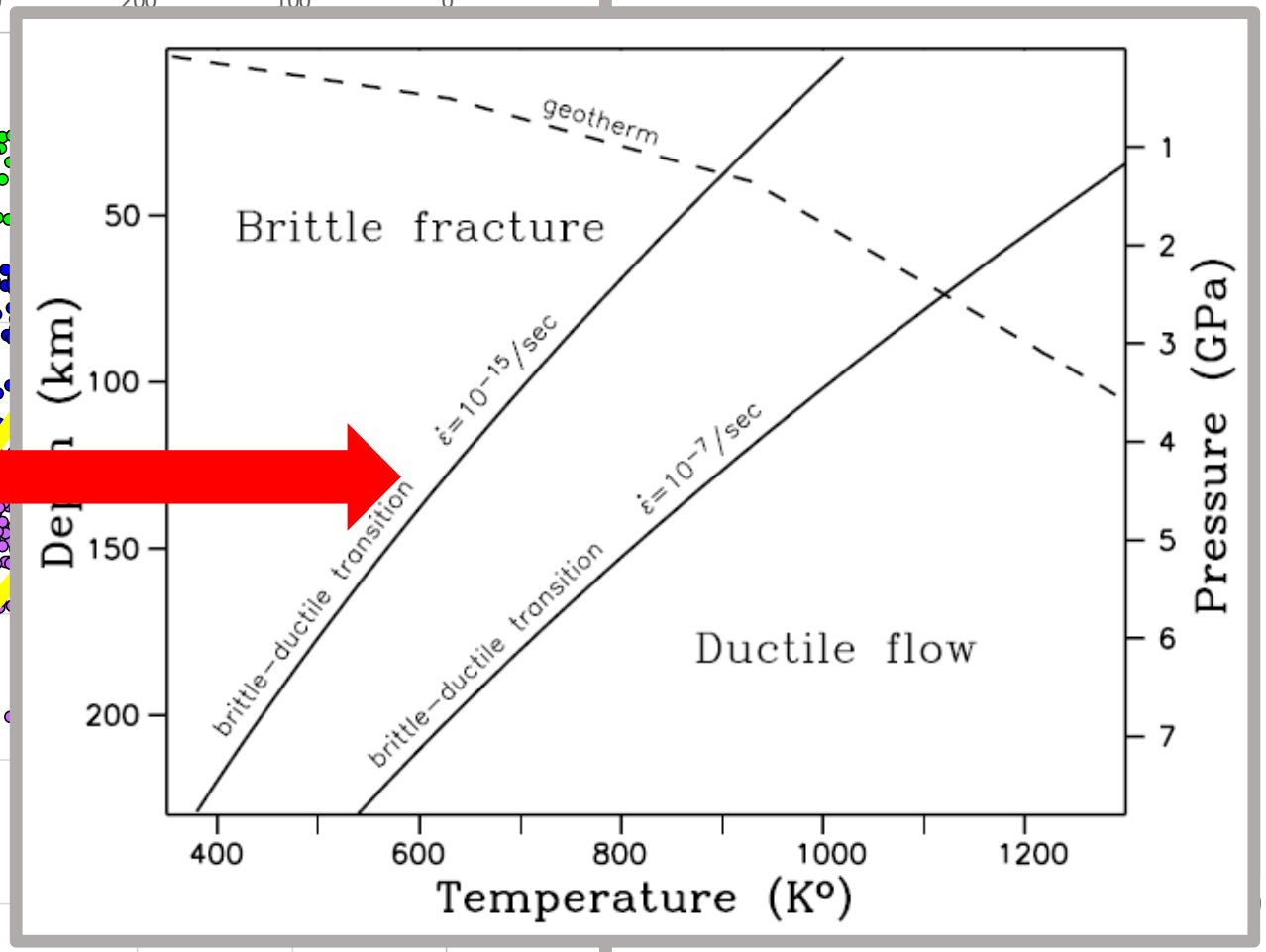
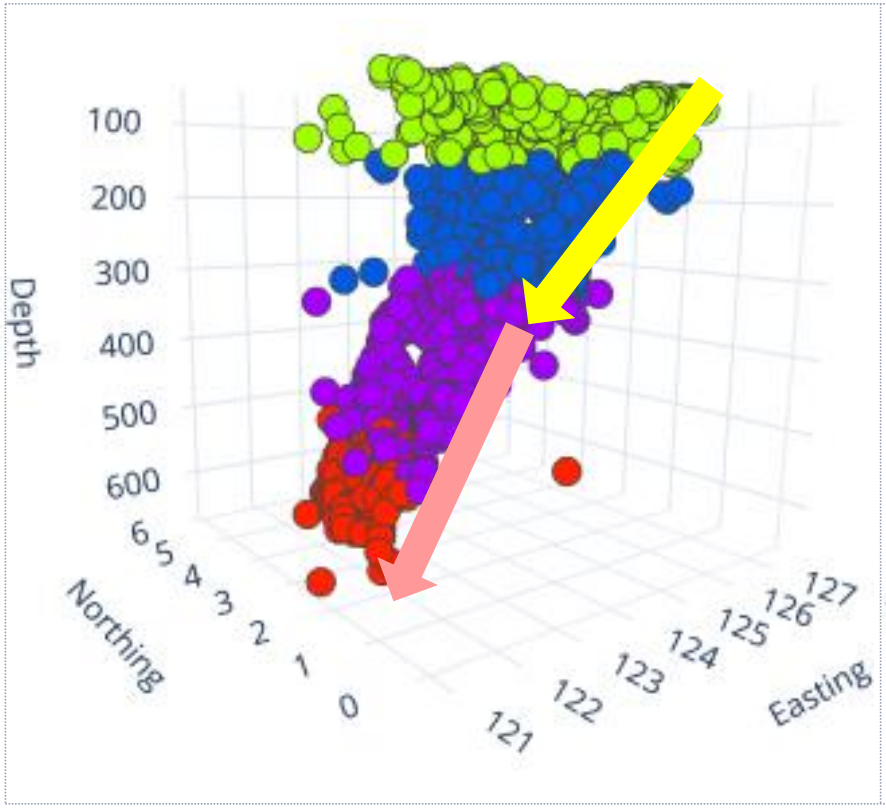
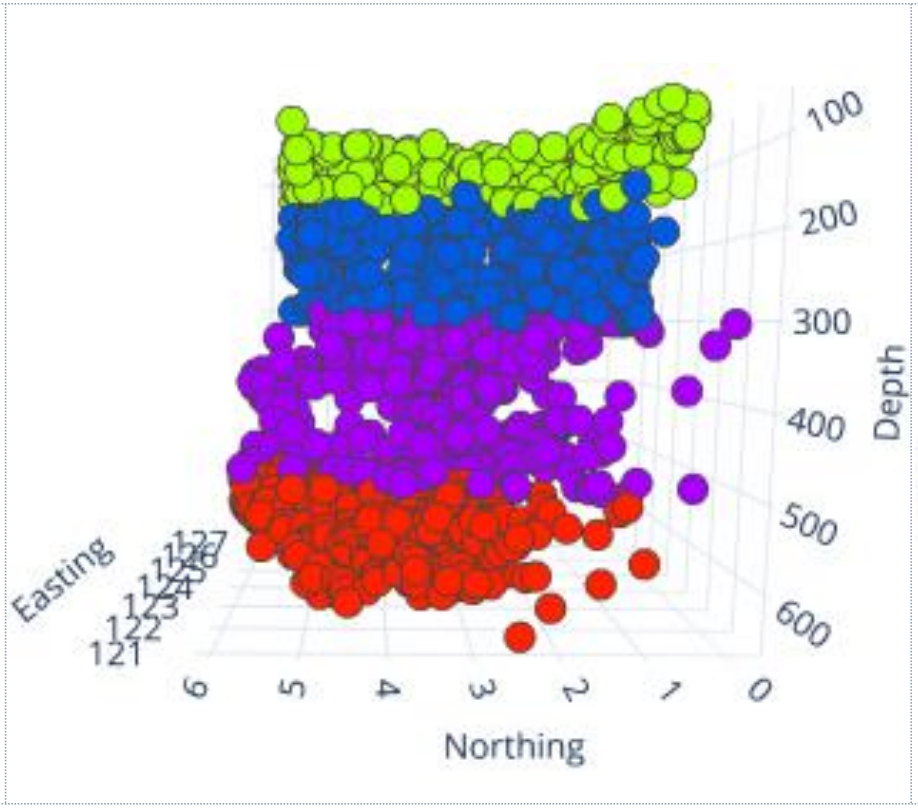


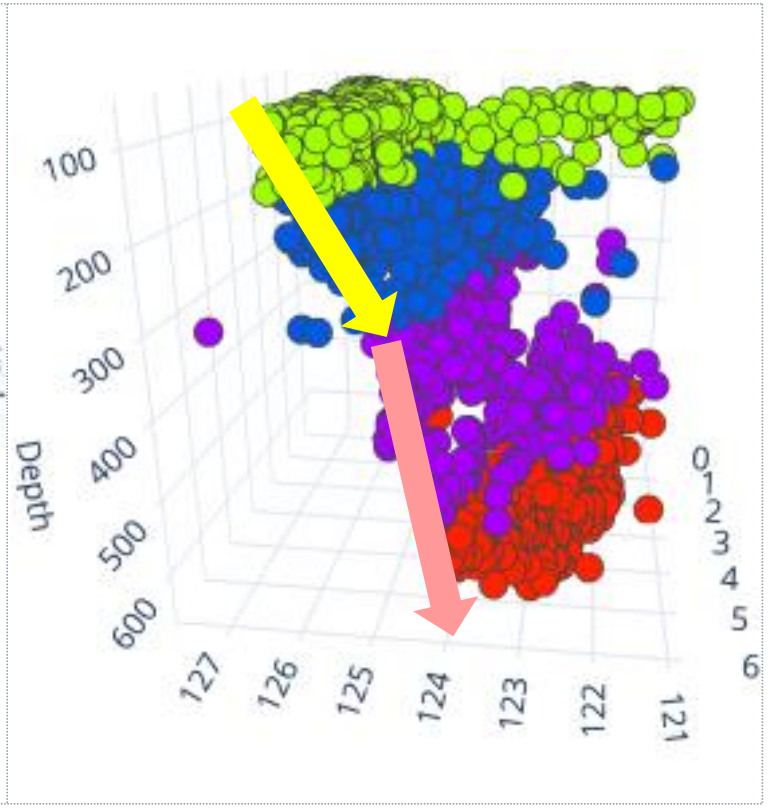


PRESENTATION OF DATA

Three-dimensional (3D) scatter-plotting



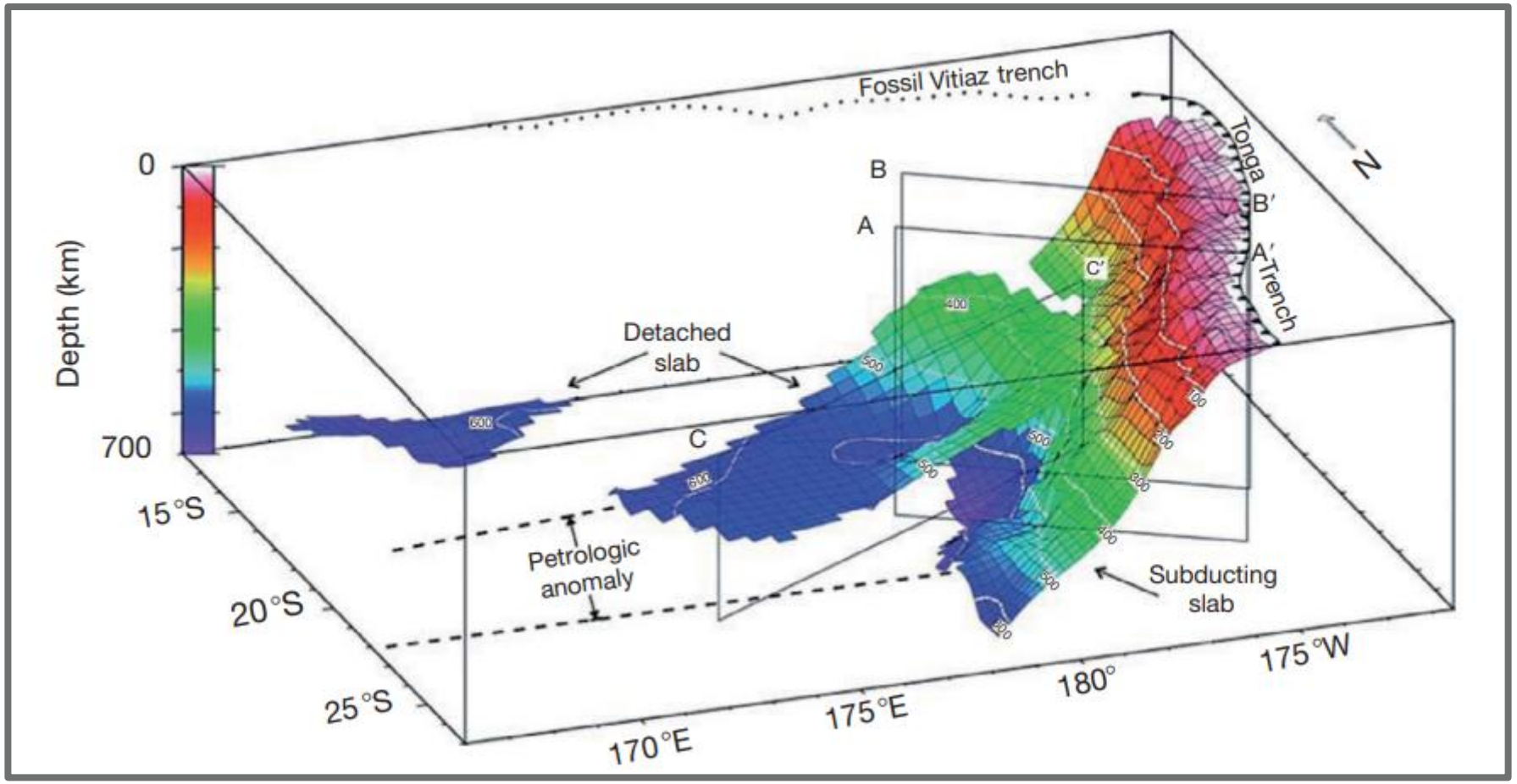




Generated through: plotly Chart Studio

PRESENTATION OF DATA

Three-dimensional (3D) scatter-plotting

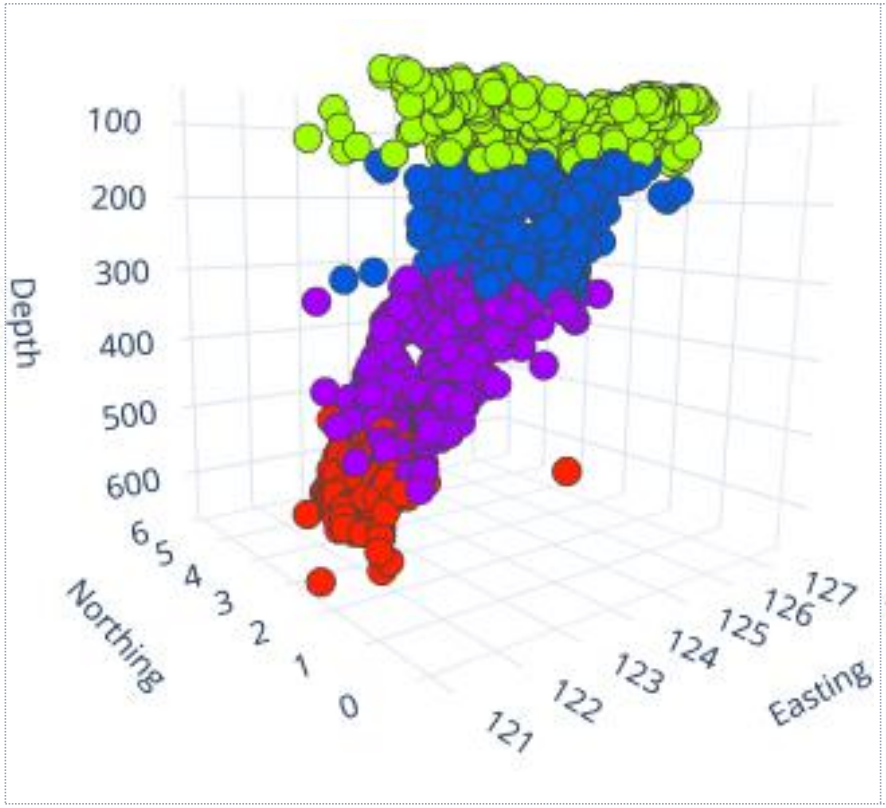


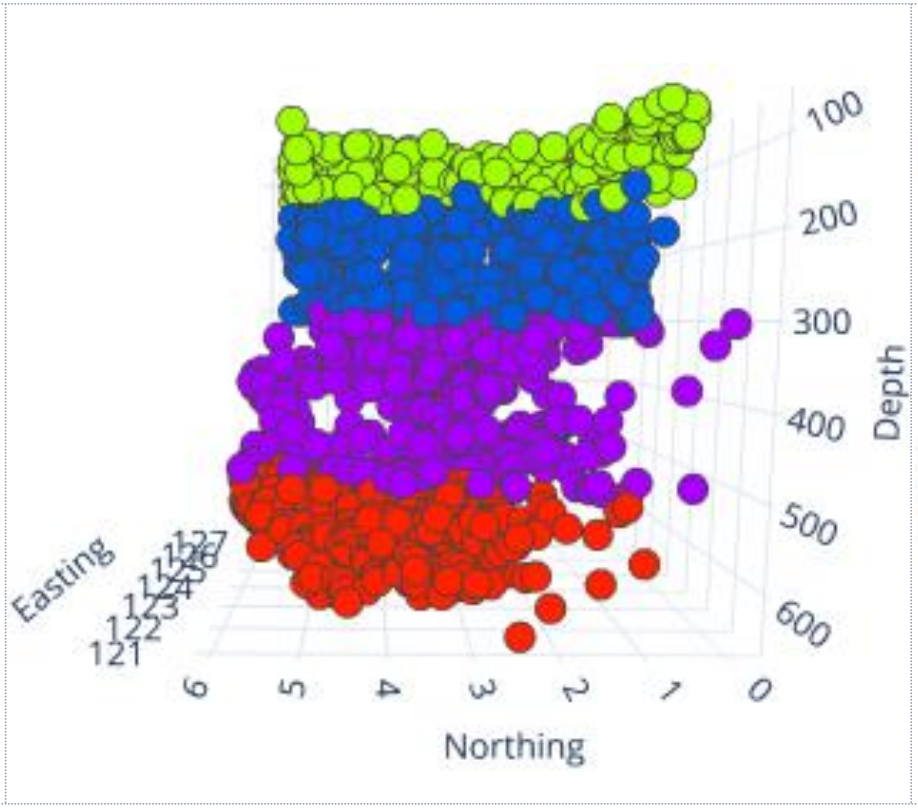
(Chen and Brudzinski, 2001)

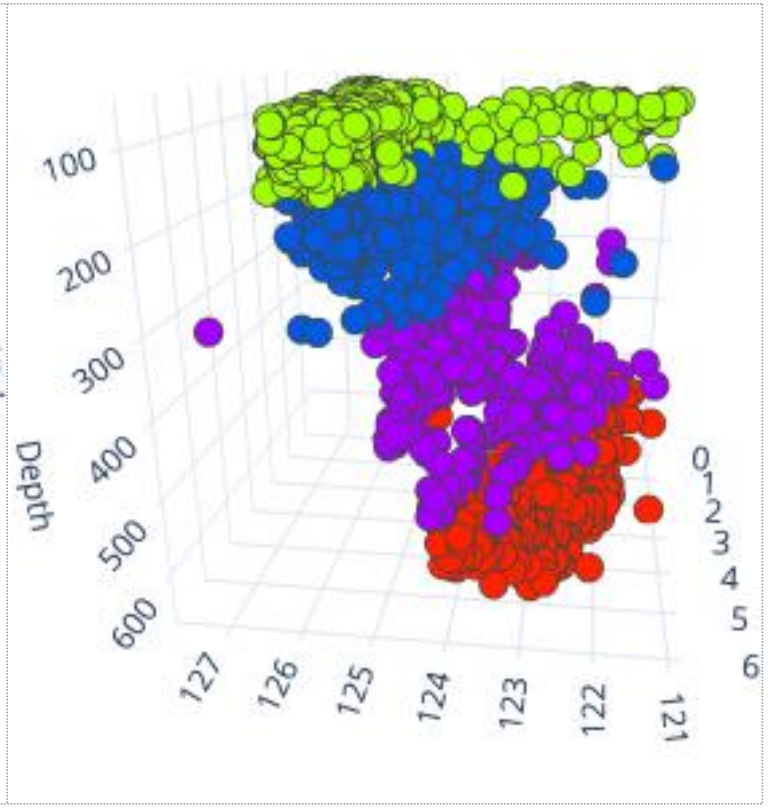
Slab detachment is the natural last stage of lithospheric subduction (Wortel, 2000).

PRESENTATION OF DATA

Three-dimensional (3D) scatter-plotting







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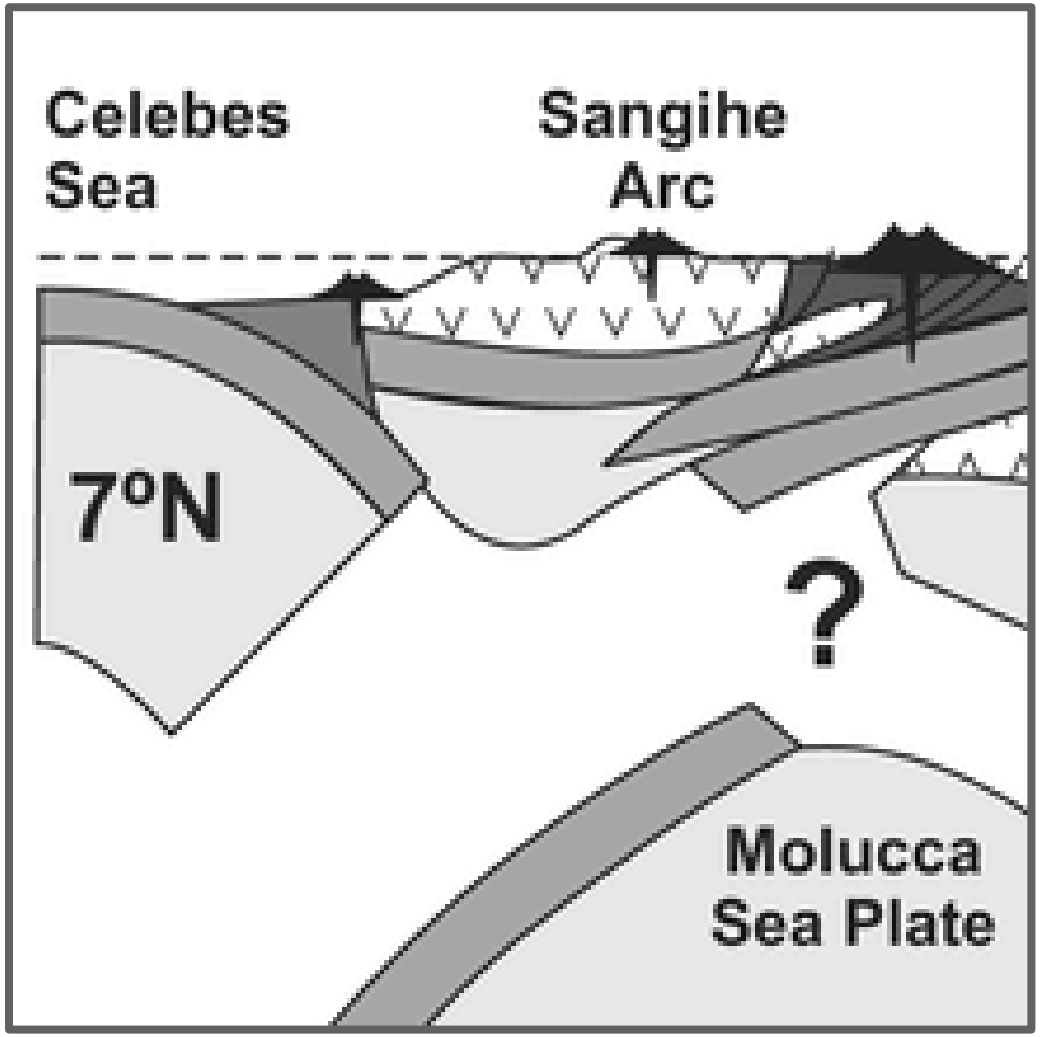
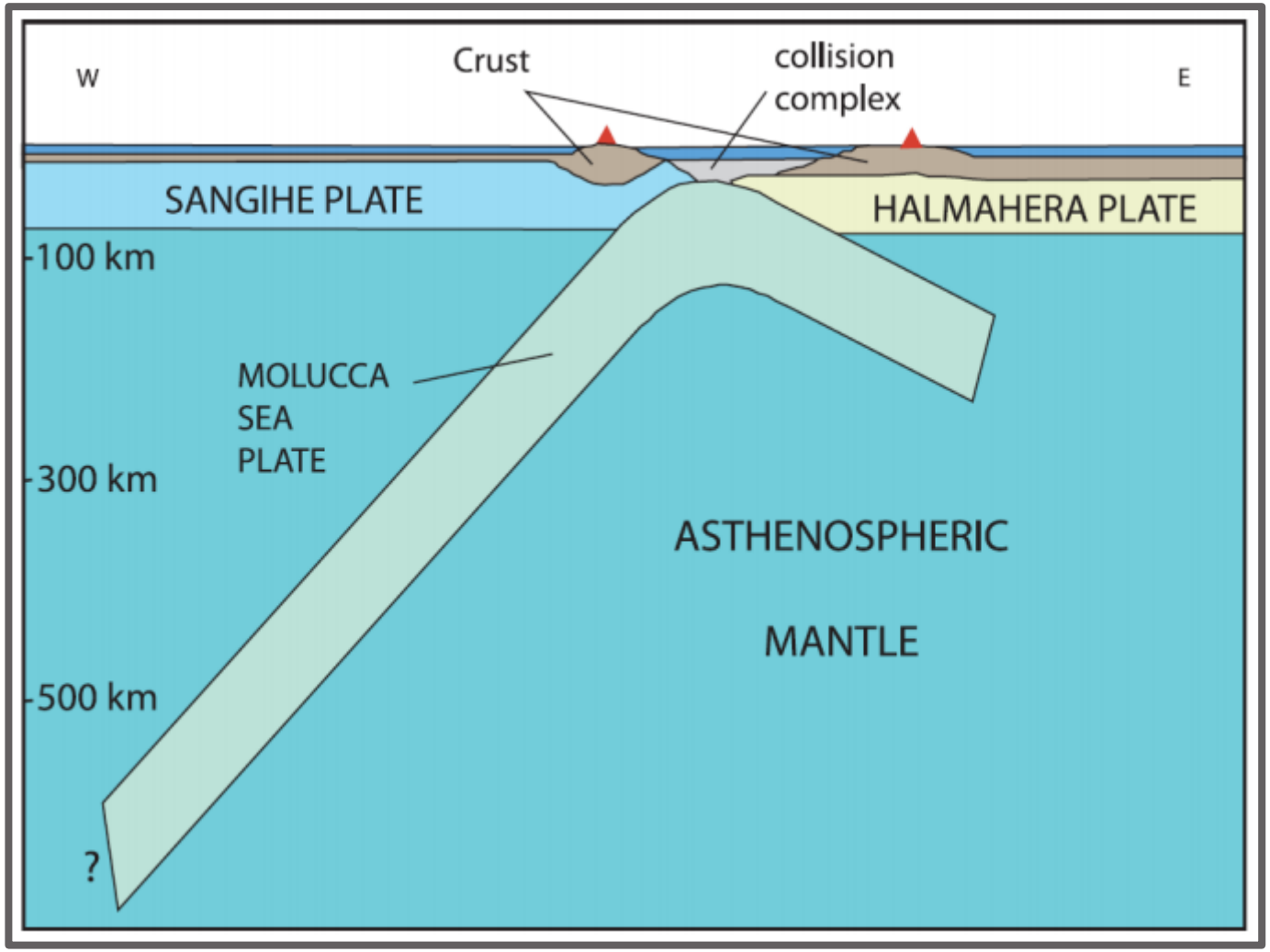
CONCLUSION



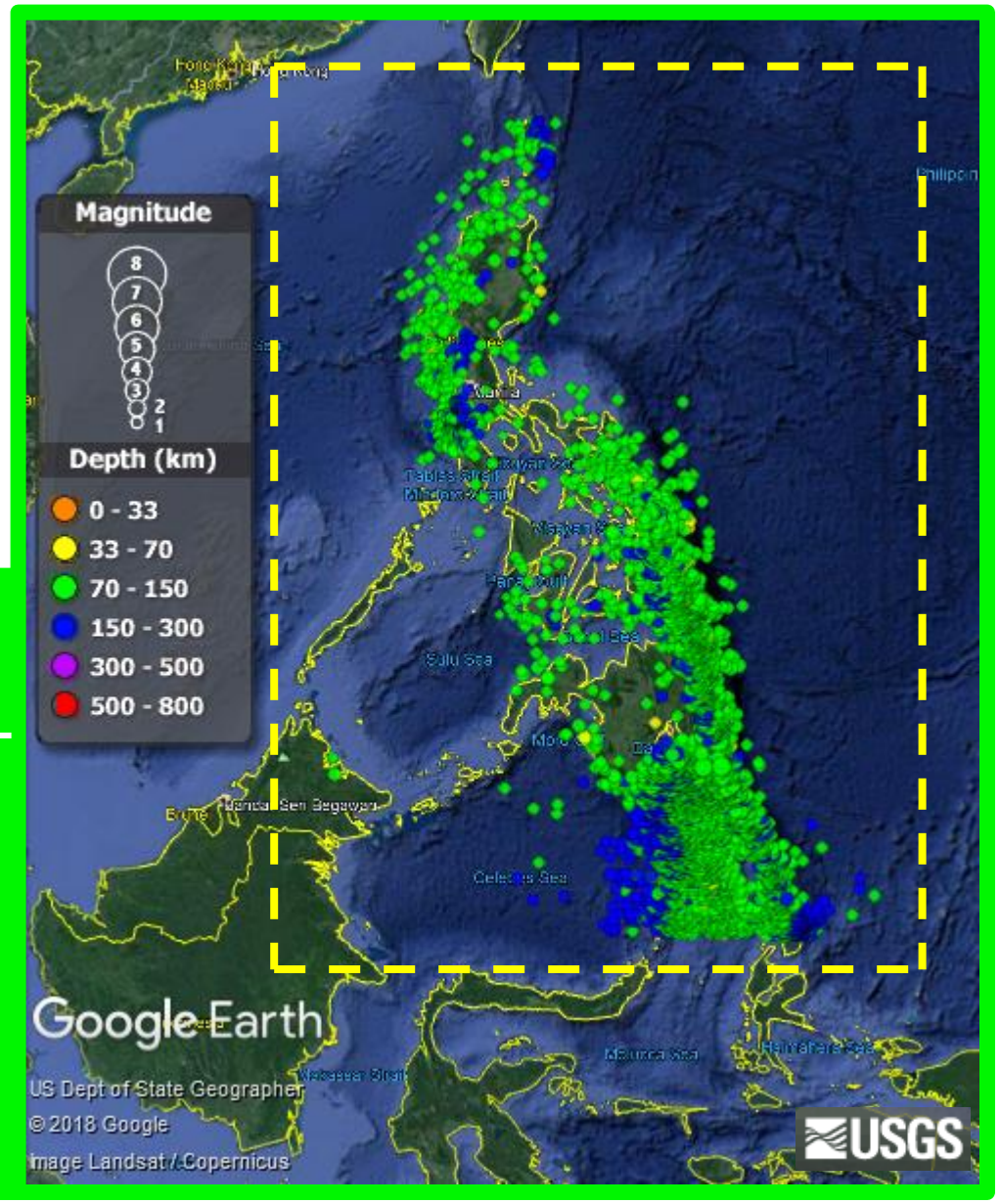
(*Earthjay Science,* 2014)



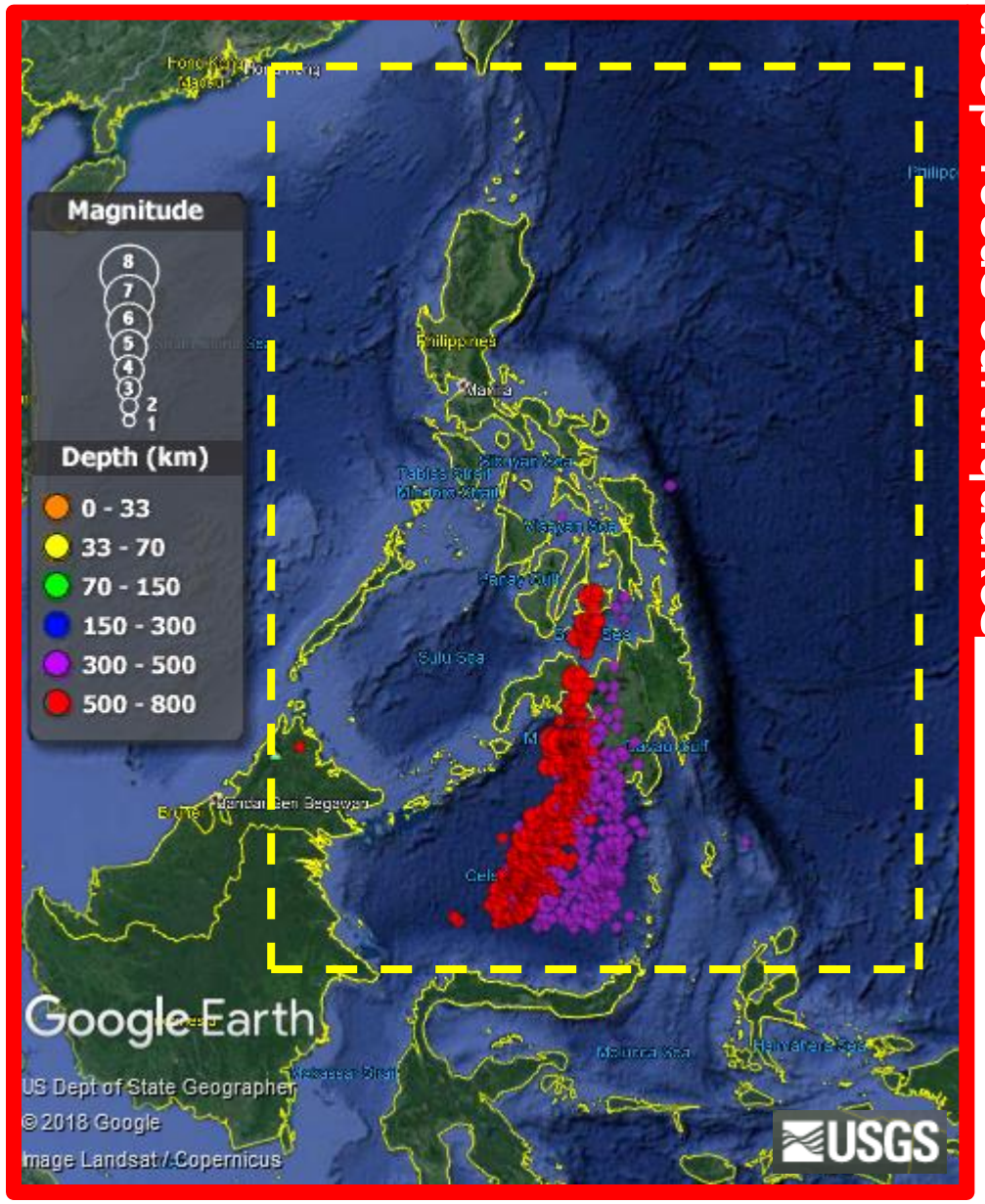
(Van Gorsel, 2018)

RECOMMENDATION

mid-focus earthquakes



deep-focus earthquakes




Thank you!