

Depth to main crustal interfaces calculated through potential field data analysis and modelling: Implications for the study of inherited structures in Southern Taiwan

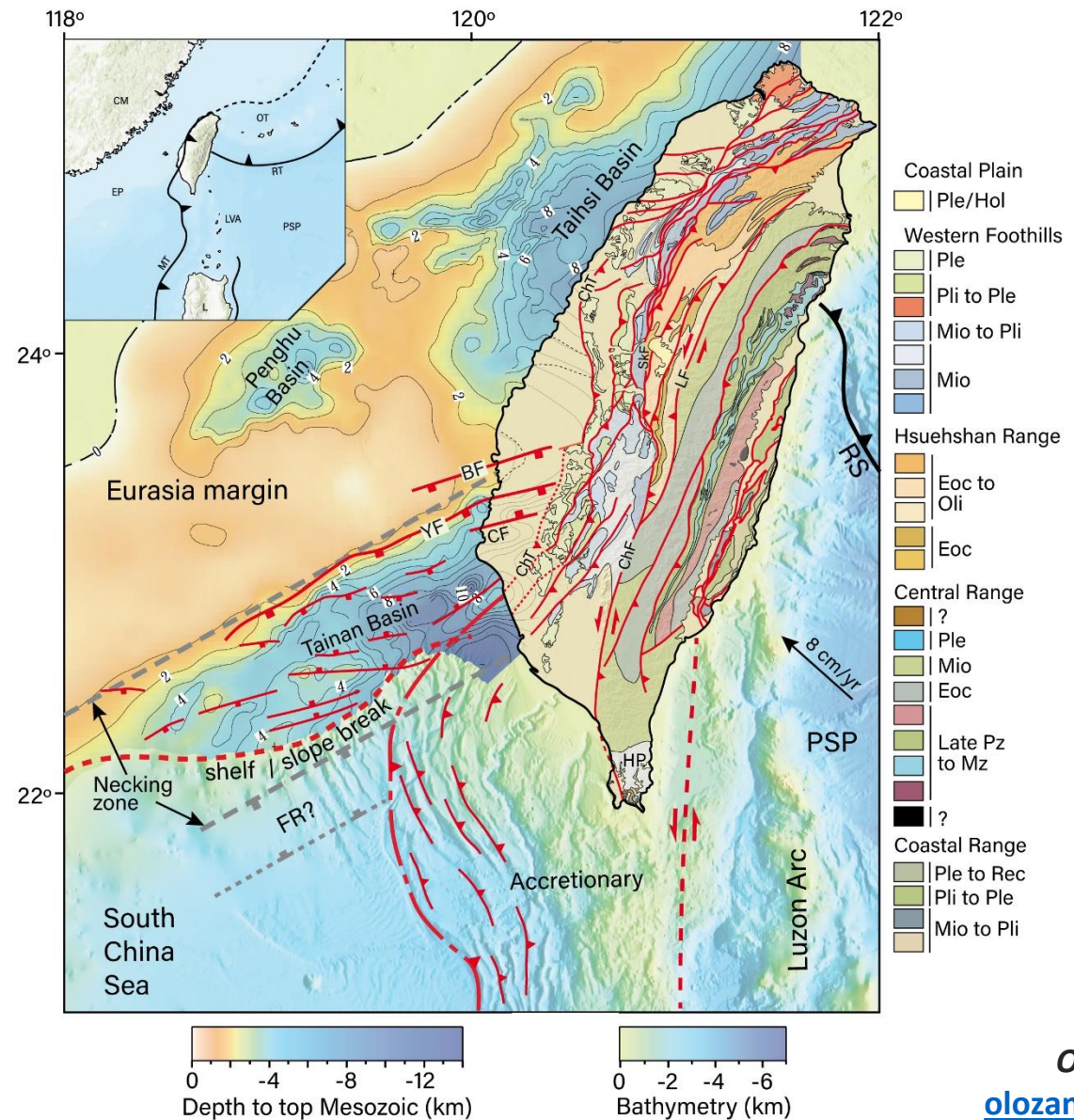
O. Lozano, P. Ayarza, J. Álvarez-Marrón, D. Brown

WHERE?

TAIWAN

GEOLOGICAL FEATURES

- ◆ Oblique arc-continent collision
- ◆ Eurasian Plate and Luzon Arc
- ◆ Reactivation of inherited structures





WHY?

TO UNDERSTAND...

1

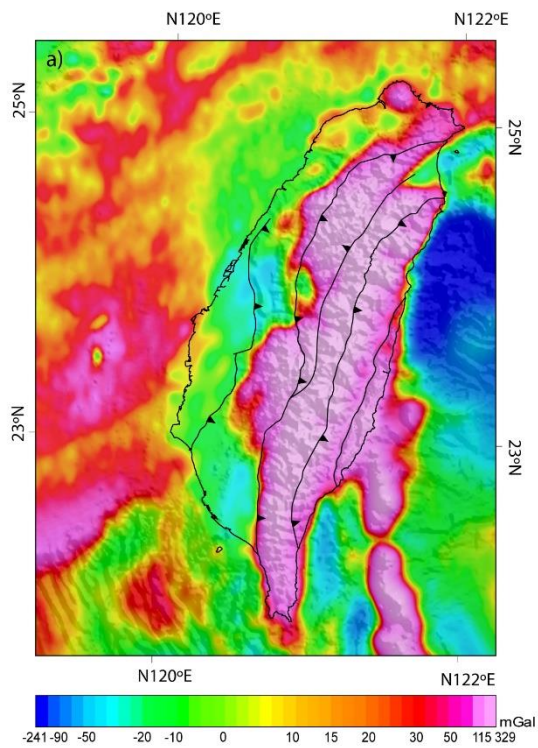
The role of the **crystalline basement** and the **inherited structures** in the deformation.

2

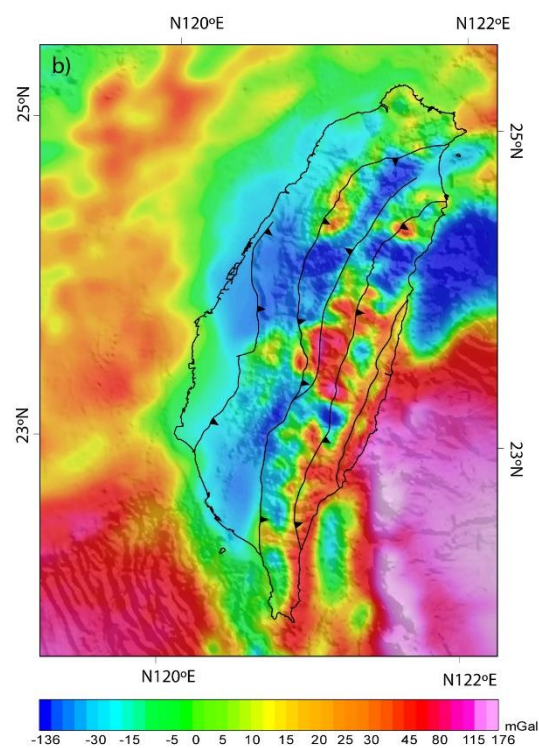
The overall **crustal geometry** resulting from this collision.

HOW?

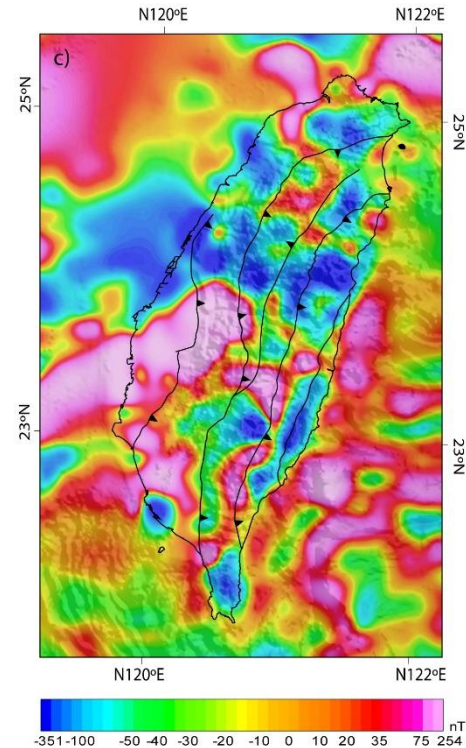
3 Datasets



Free-air gravity anomaly
(Sandwell et al., 2014)



Bouguer gravity anomaly
(Doo et al., 2018)

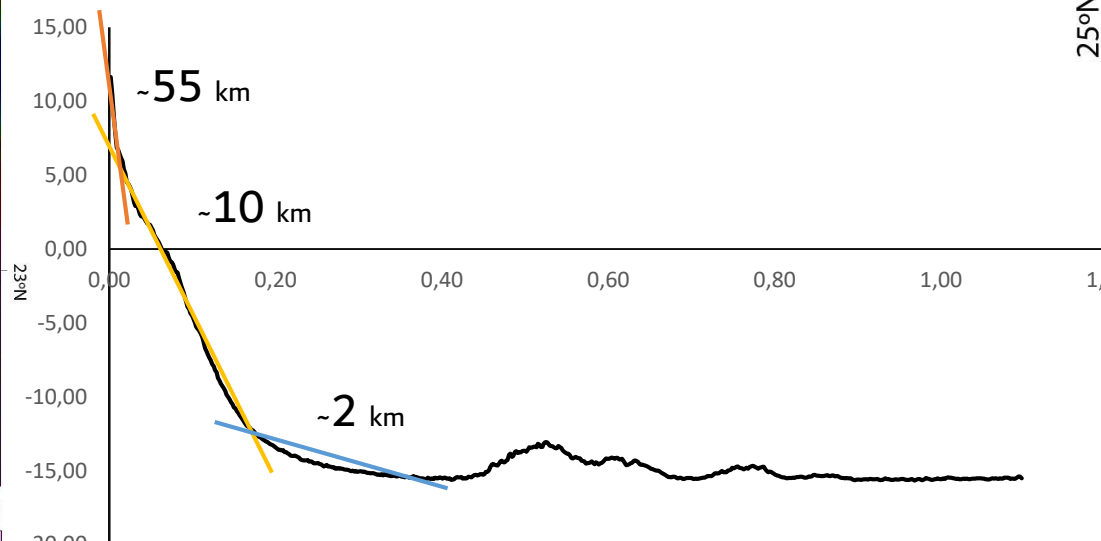
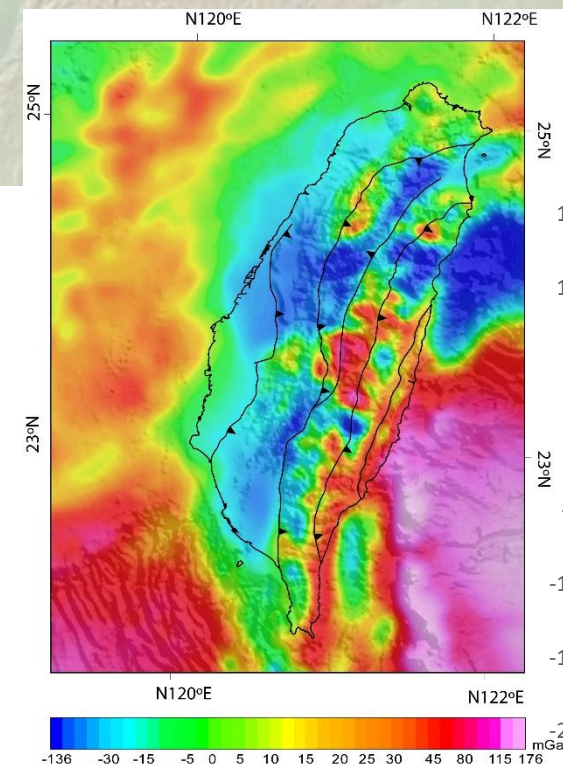


Absolute magnetic anomaly
(Hsieh et al., 2014q)

2 QUALITATIVE METHODS

- ◆ Radial Averaged Power Spectrum
- ◆ Directional Derivatives

INPUT

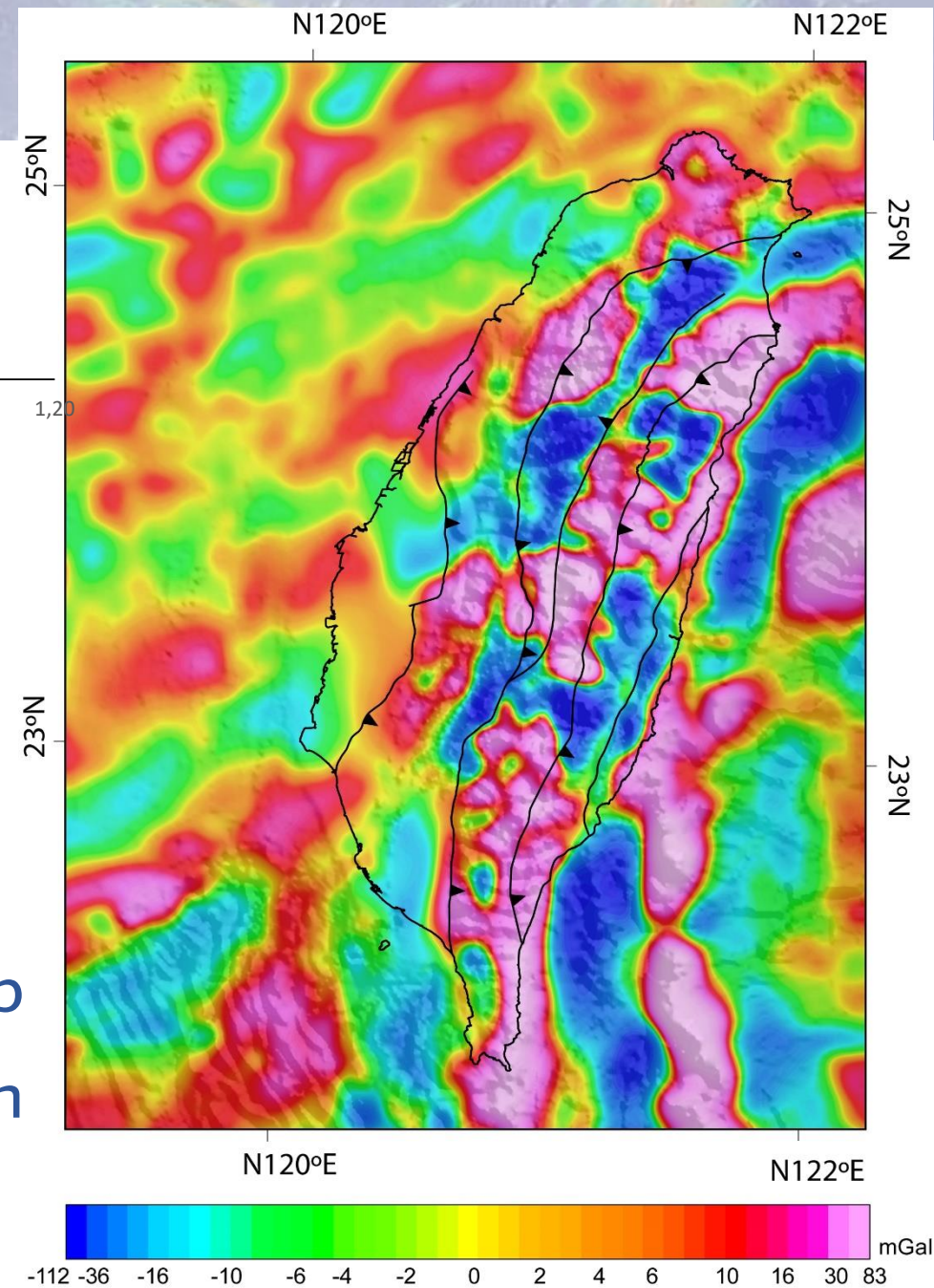


OUTPUT

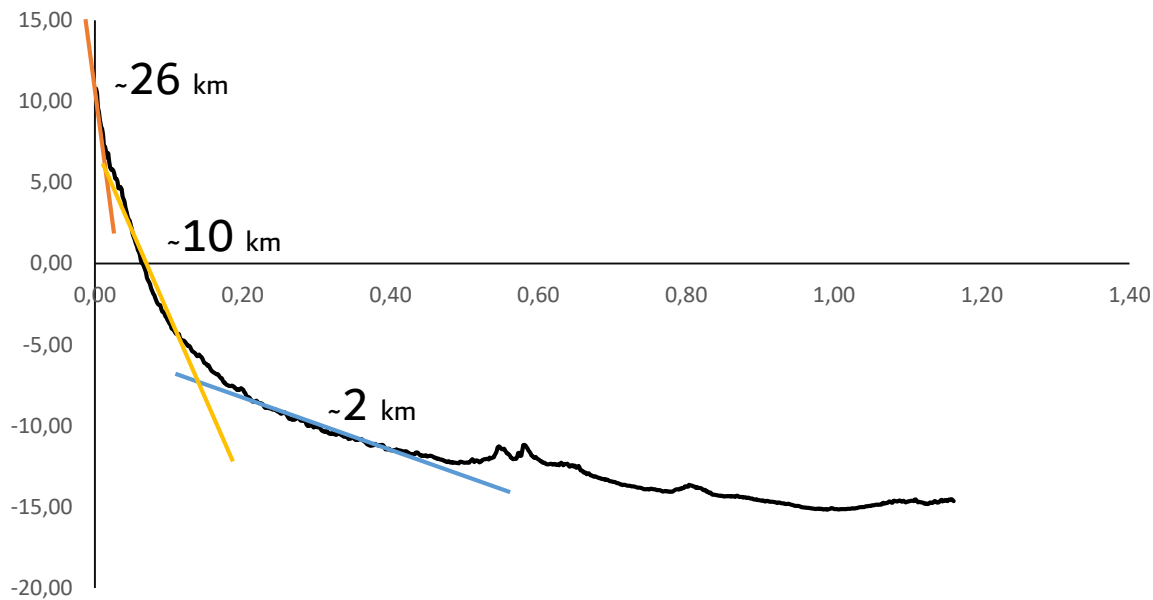
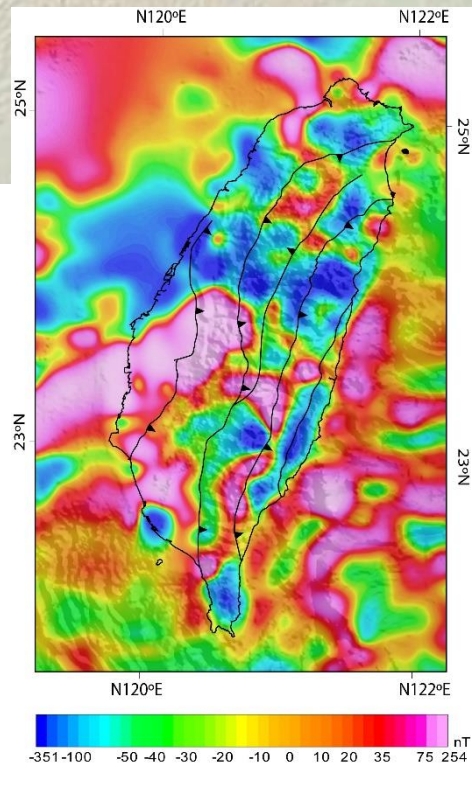
Radial Averaged
Power Spectrum

Residual map
10 to 55 km depth

Bouguer Anomaly Data
(Doo et al., 2018)



INPUT

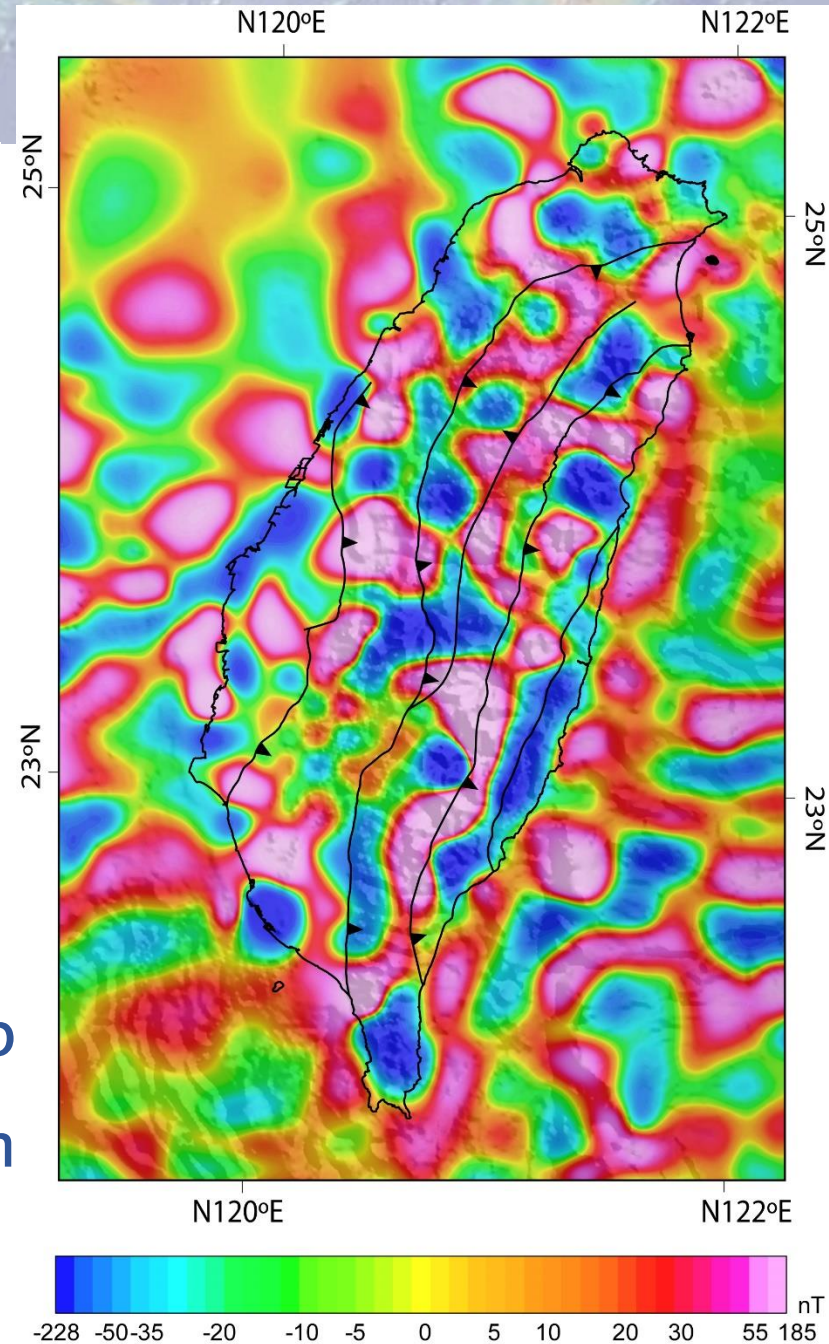


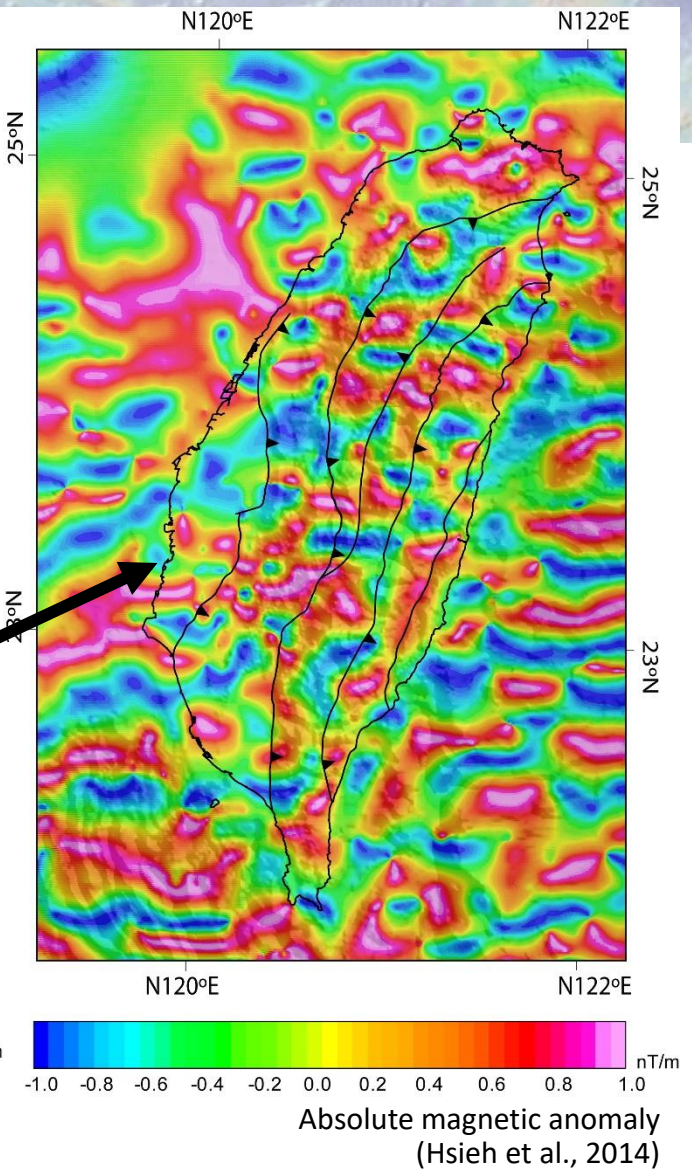
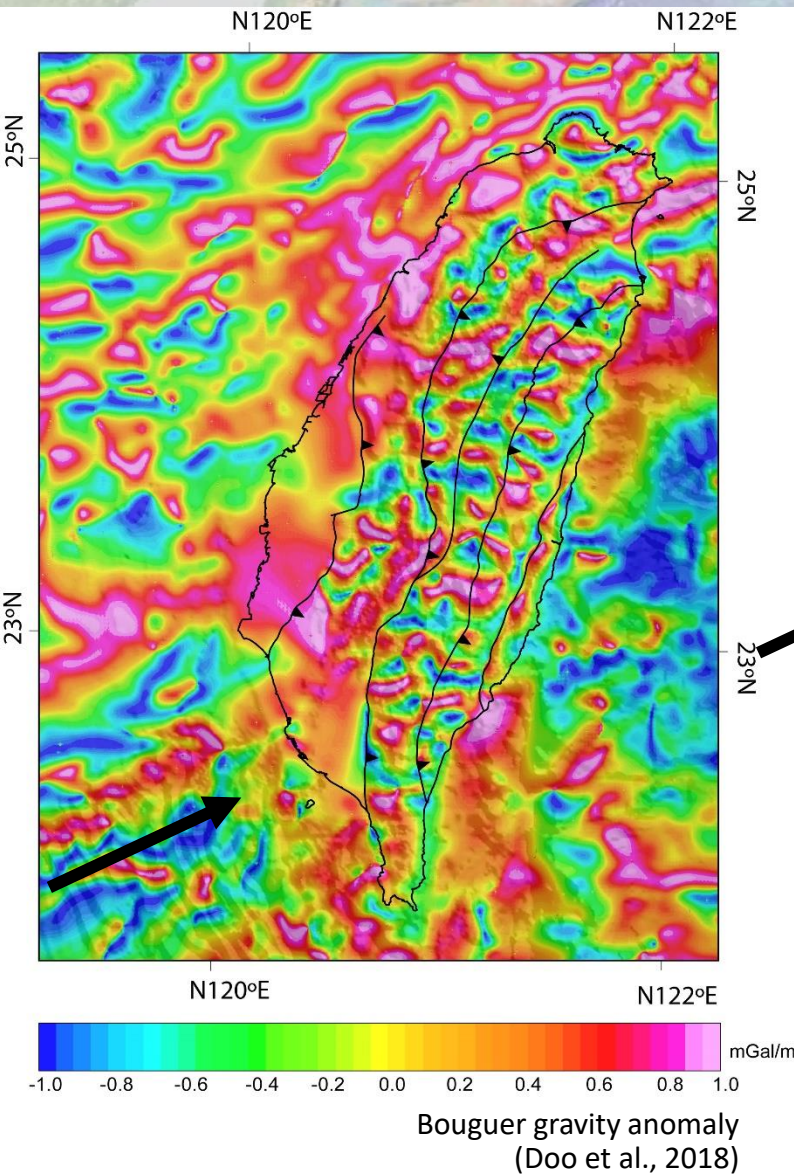
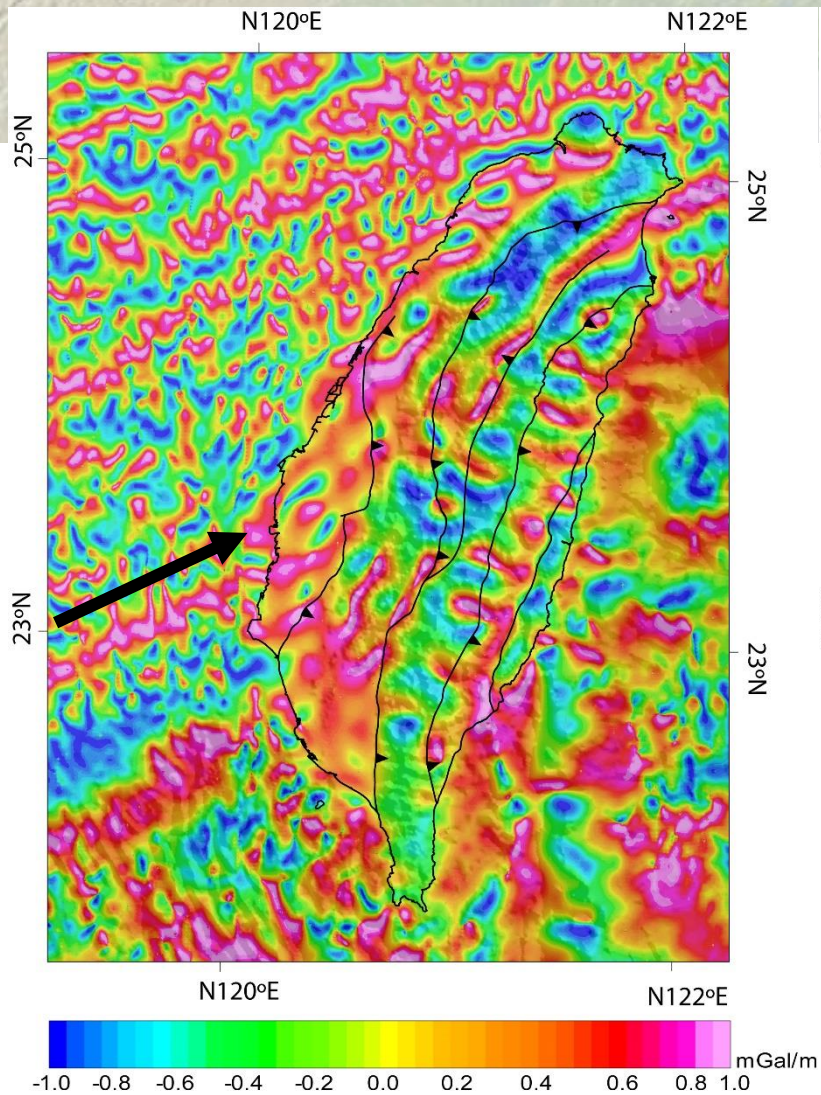
Radial Averaged
Power Spectrum

Magnetic Anomaly Data
(Hsieh et al., 2014)

Residual map
10 to 26 km depth

OUTPUT





Directional
Derivatives

Bouguer Anomaly Data

120° NE

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Conclusions

&

Next steps

- ◆ The calculation of radial averaged power spectra and derivatives allow to infer the **geometry and outreach** of the **inherited structures** of the Eurasian Margin underthrusting Taiwan.
- ◆ Qualitative methodologies give averaged values.

Results will be better constrained through:

- ◆ Potential field modelling
- ◆ Integration of structural data
- ◆ Comparison with tomography and seismic data

A **multidisciplinary approach** allows us to integrate results while minimizing the limitations of the different techniques, helping us to improve the comprehension of the **crustal structure** of Taiwan and the Eurasian continental margin.



THANK YOU FOR YOUR ATTENTION!

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