# Individual lava flow thicknesses in Oceanus Procellarum and Mare Serenitatis determined from Clementine multispectral data


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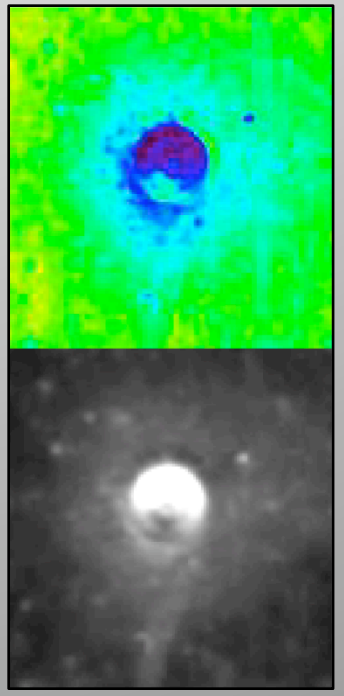

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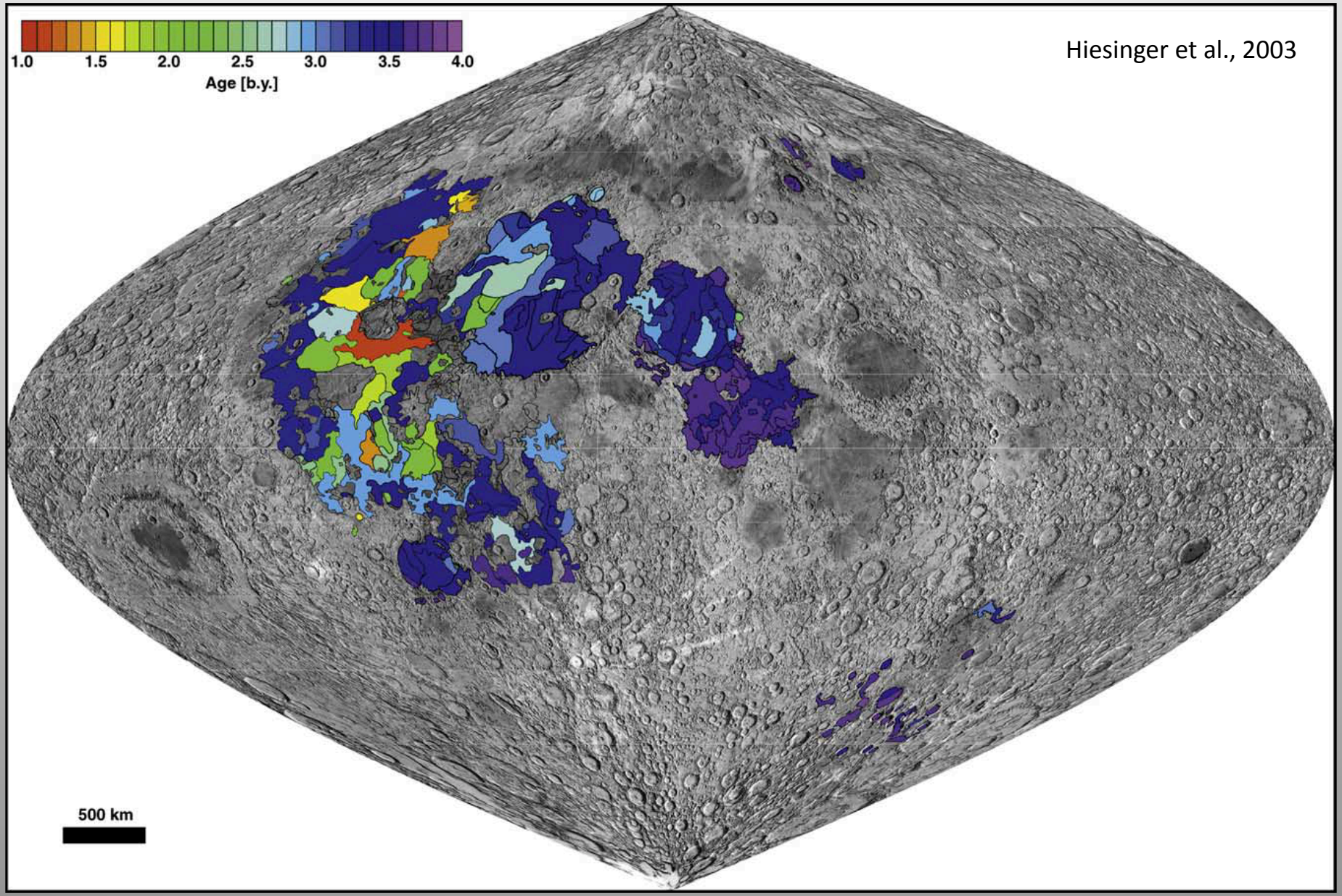
# Rationale




Hiesinger et al., 2003

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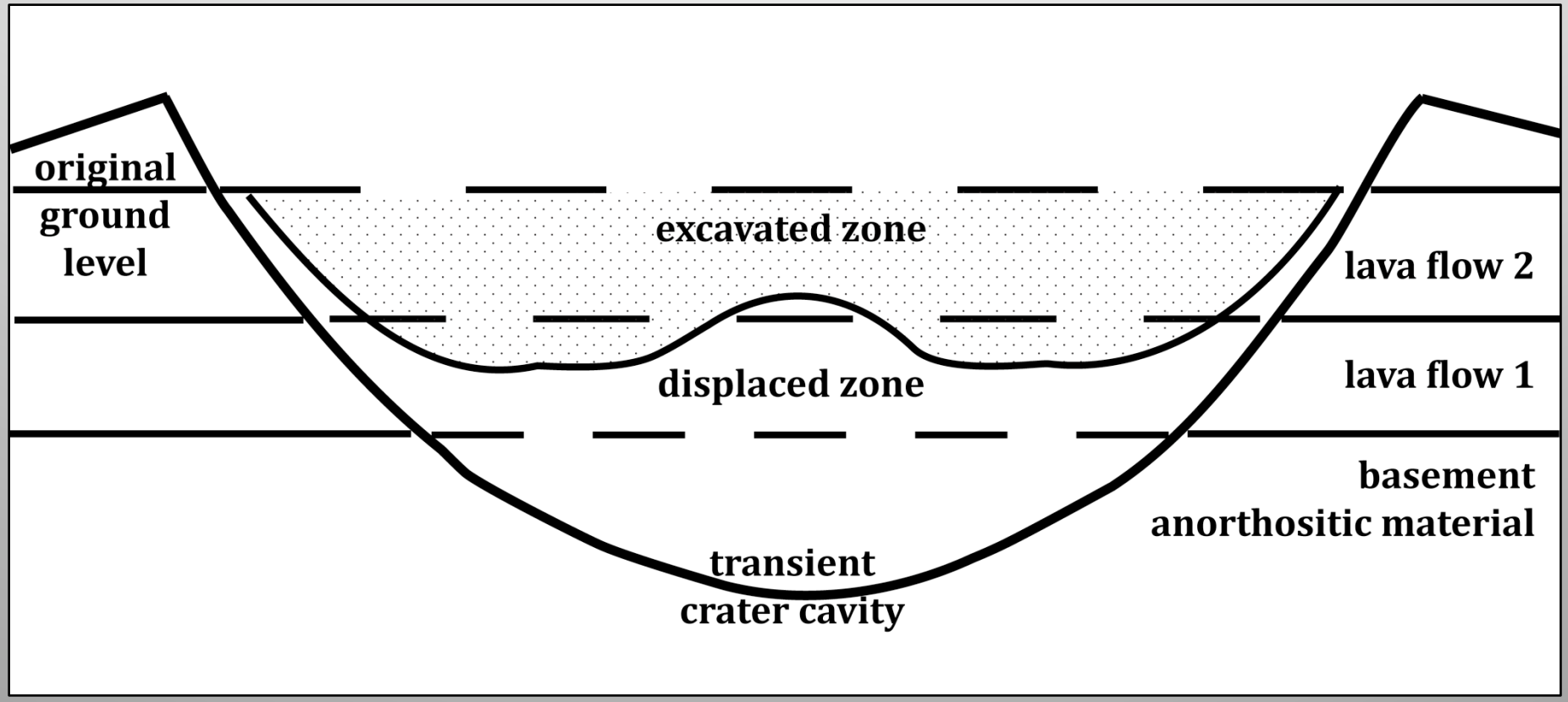
Weider et al., in press, *Icarus*

# Impact craters: windows into lava flows

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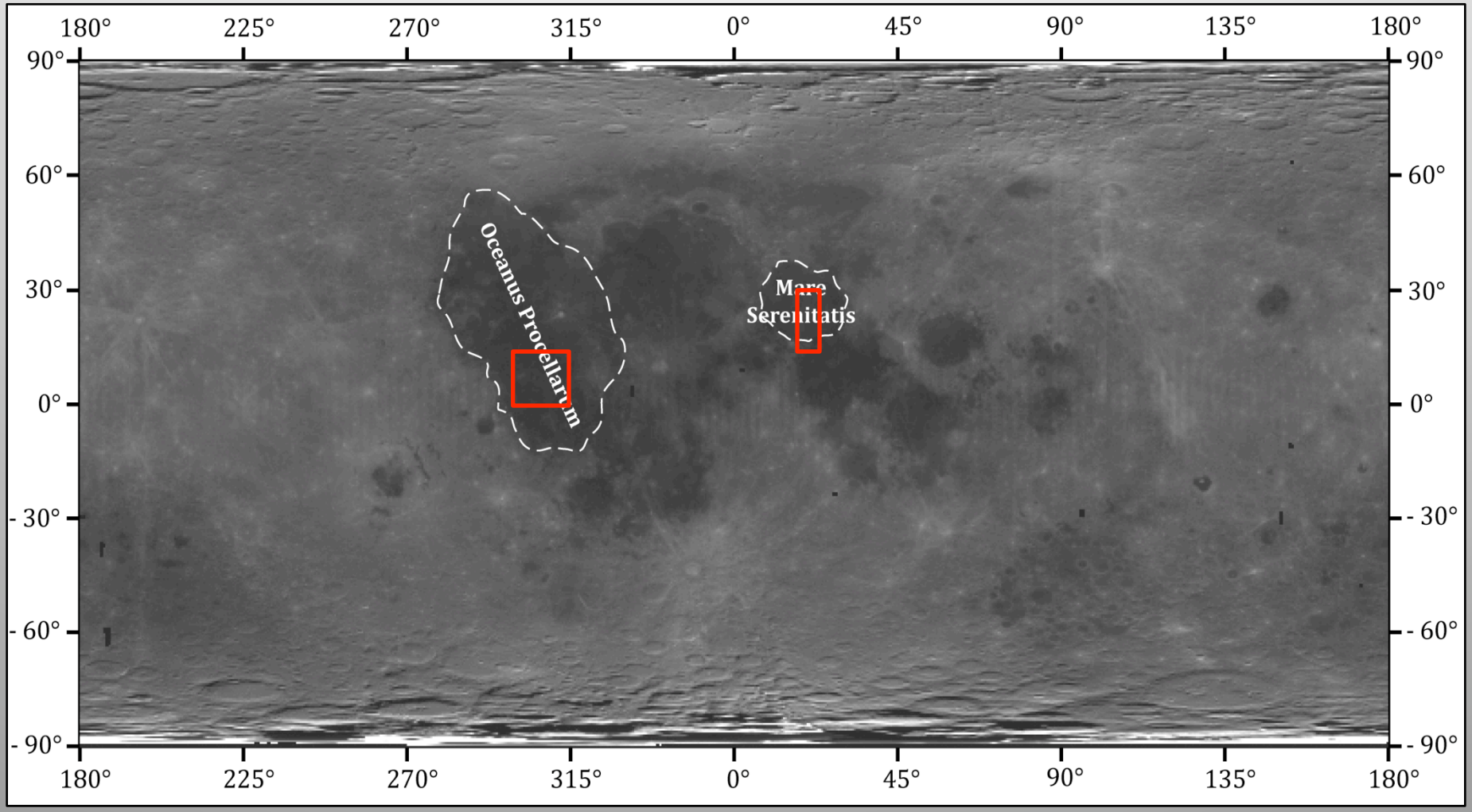
# Study Regions

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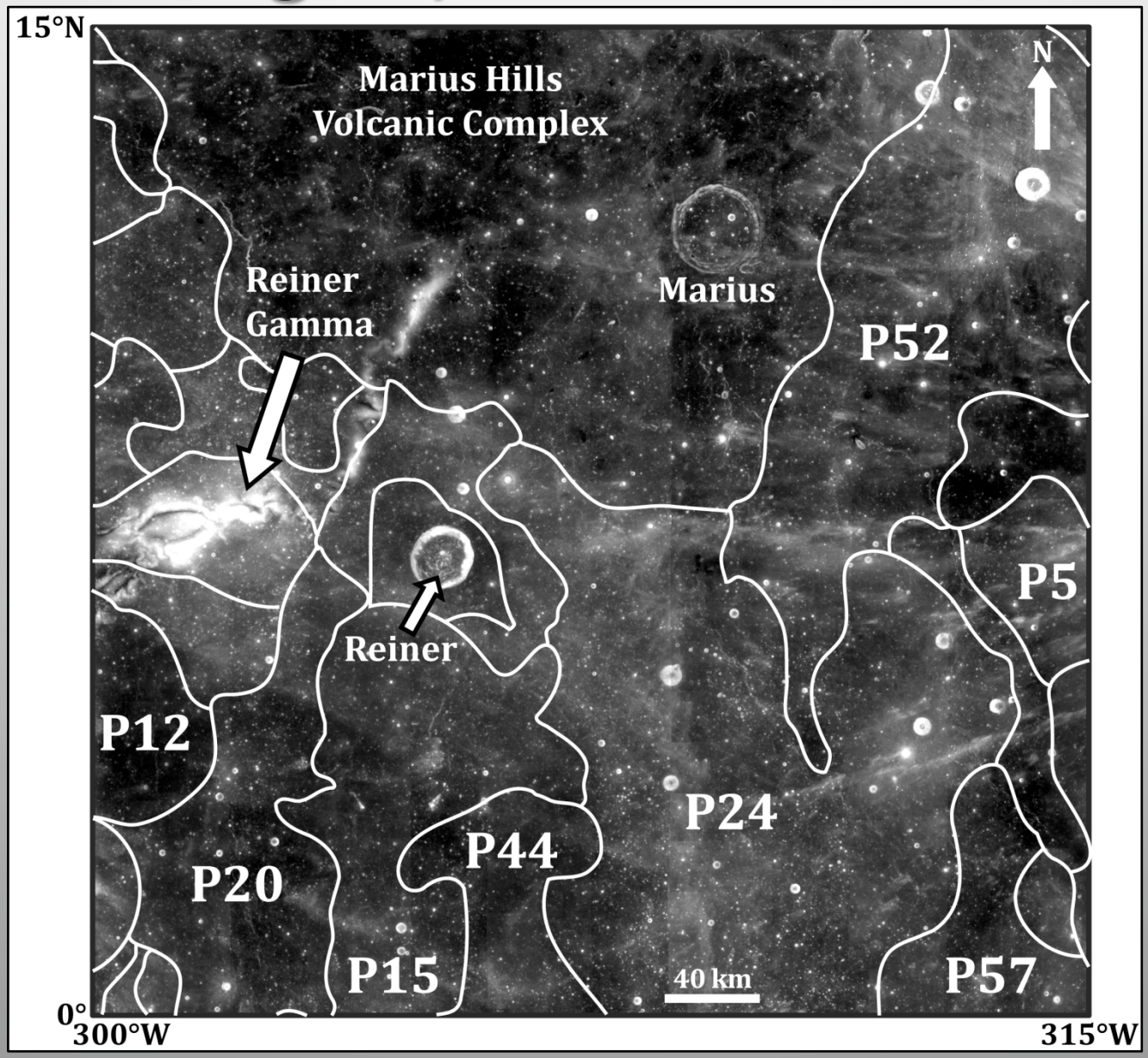
# Marius Region, Oceanus Procellarum

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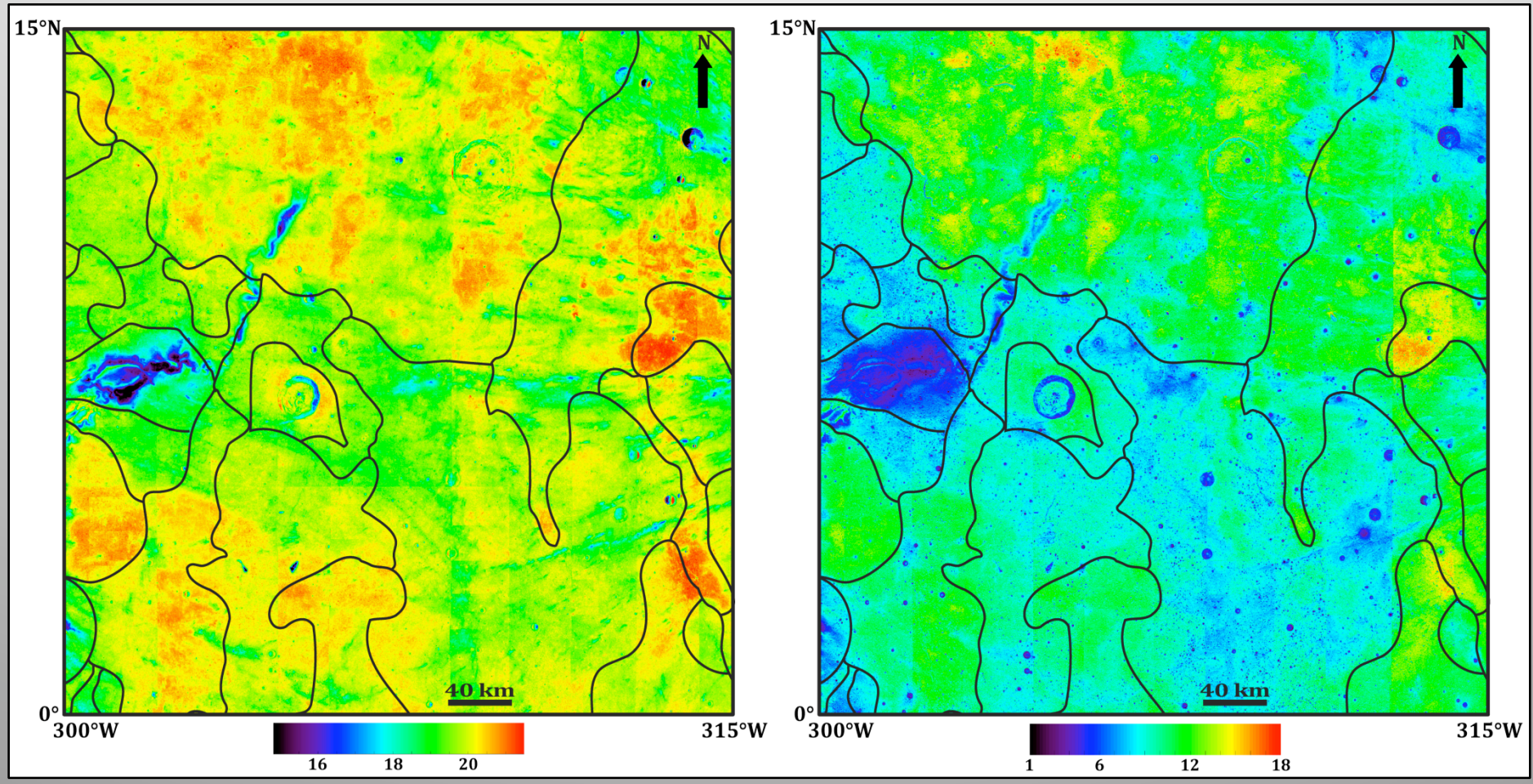


FeO wt. % Wilcox et al. 2005

$TiO_2$ wt. % Lucey et al. 2000

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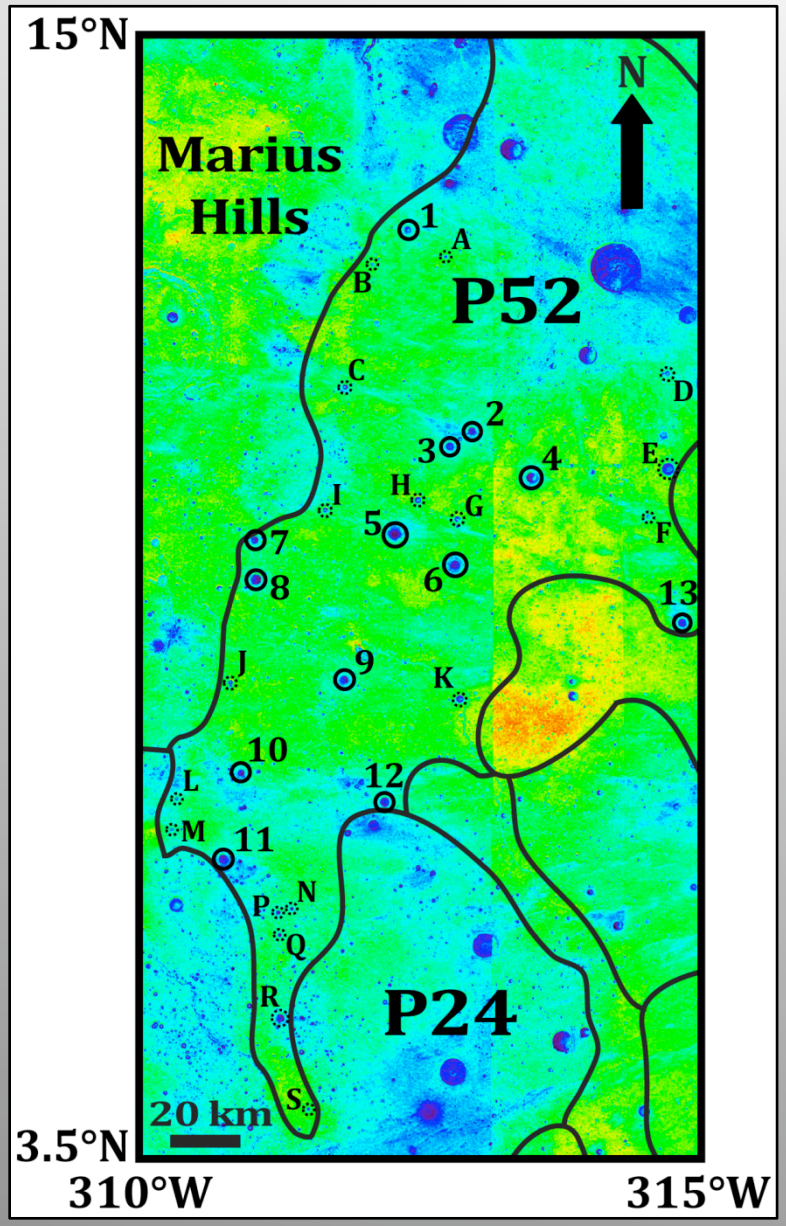


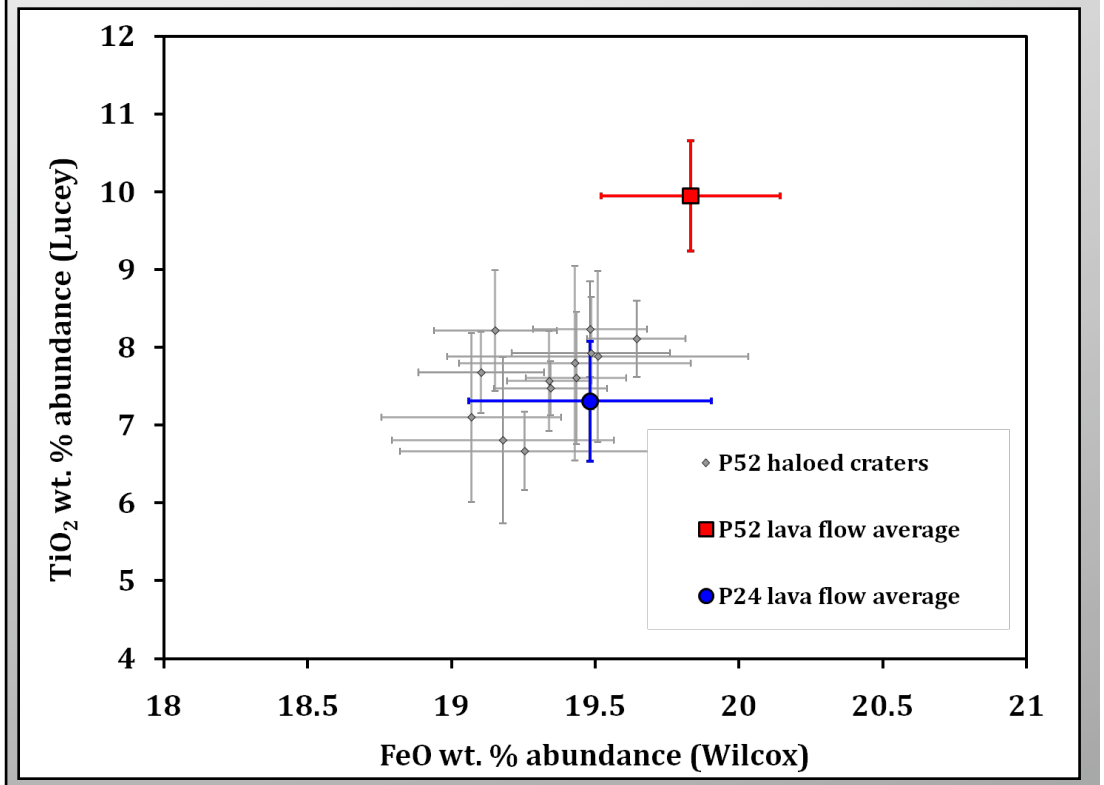


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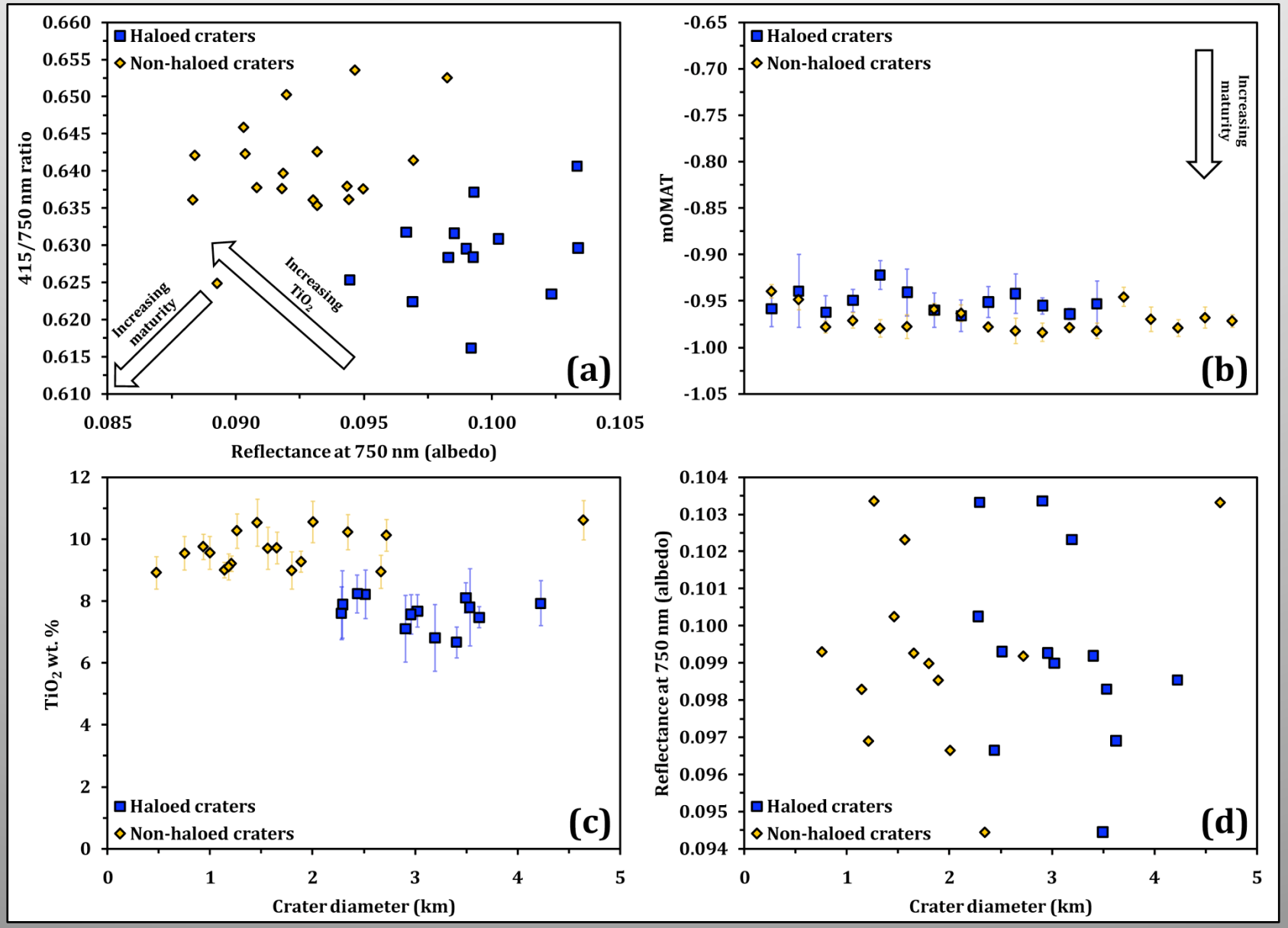


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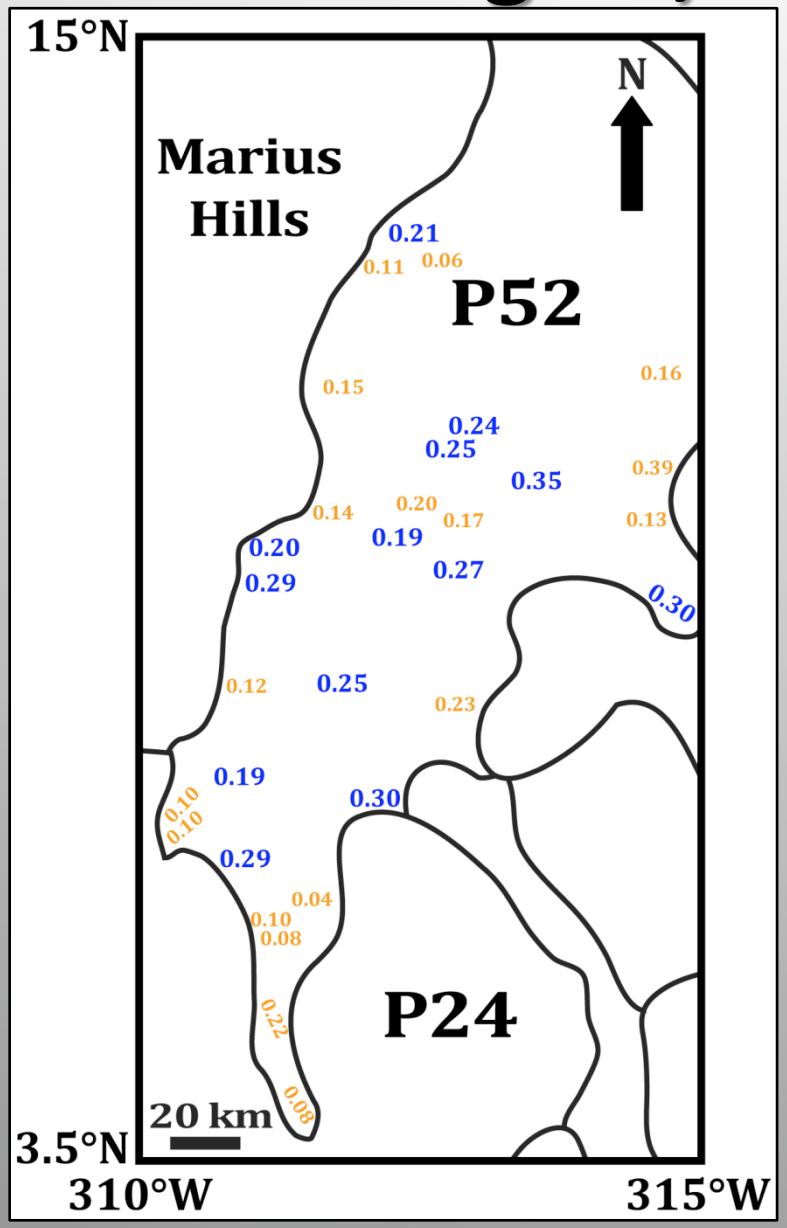


## Basalt thickness estimates

**Total fill**: 500 m

**P52**: 100 – 300 m

**P24**: 250 m

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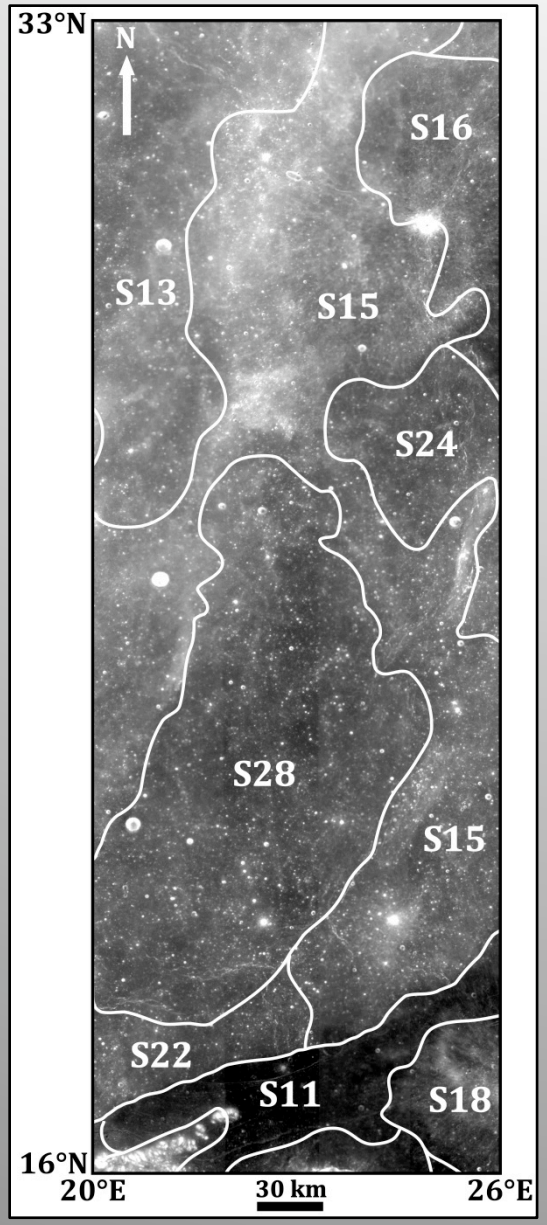
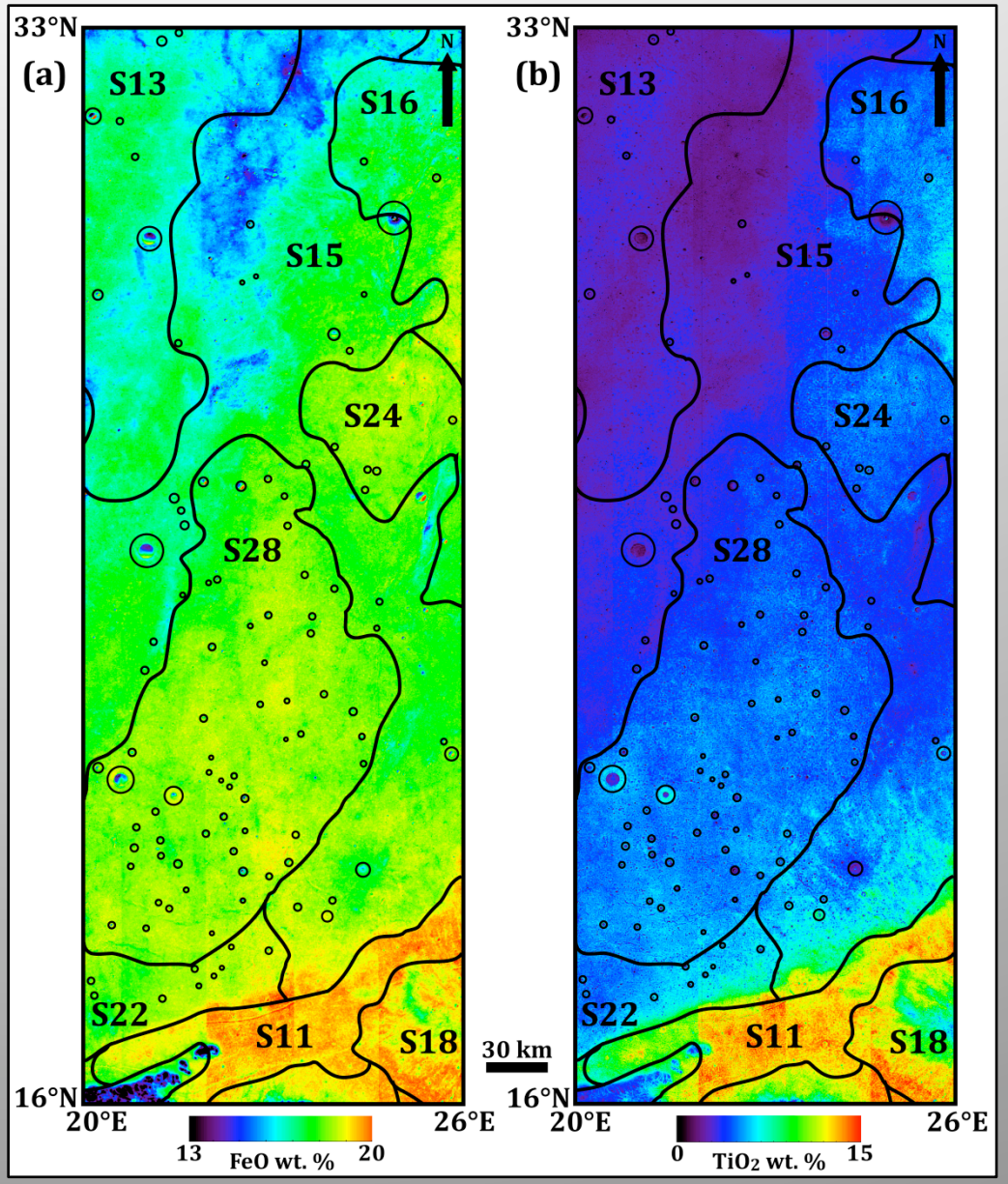
# Central southern Mare Serenitatis

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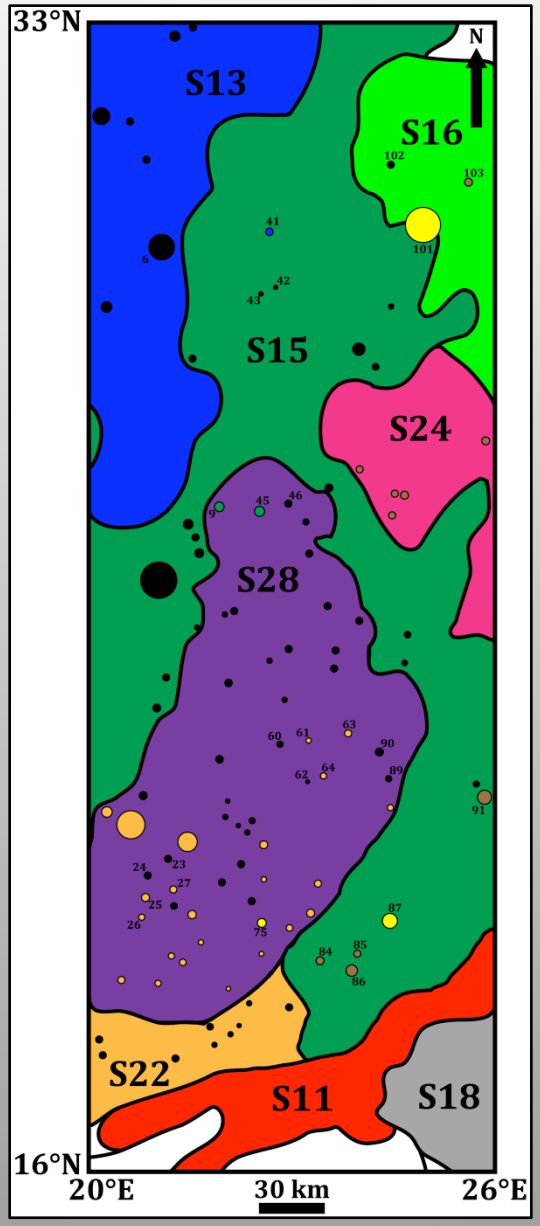


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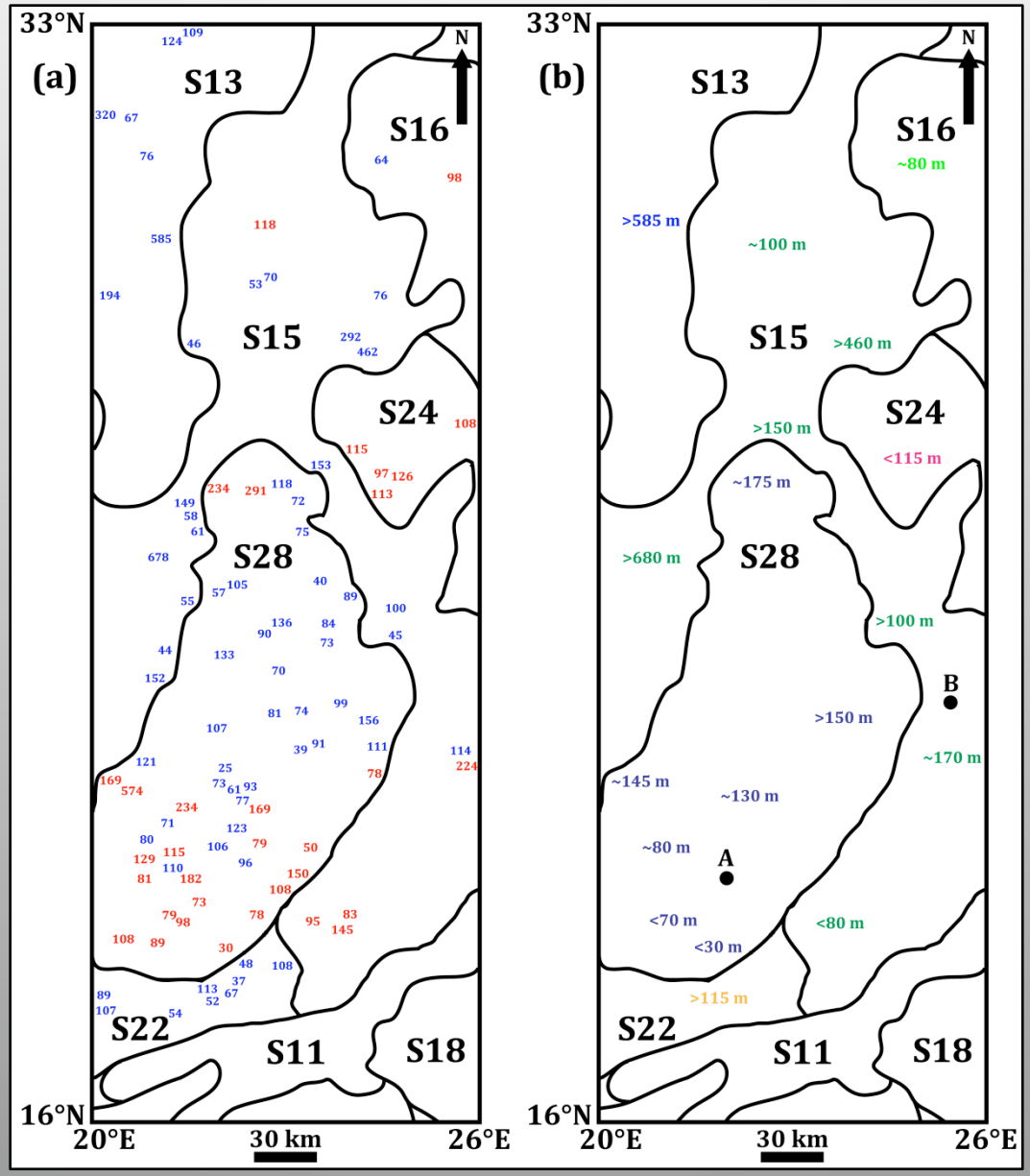


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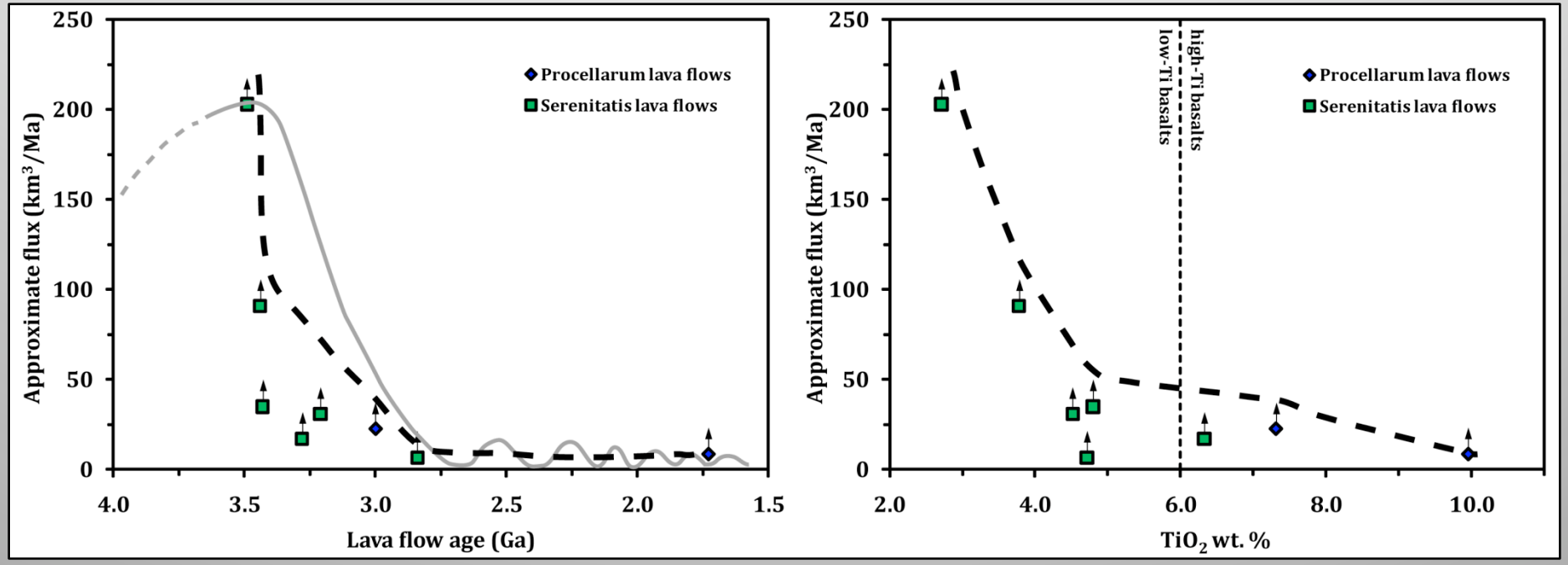
# Synthesis

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# Conclusions

- Used Clementine multispectral reflectance data to estimate FeO and $TiO_2$ contents of impact crater ejecta in two study areas.
- Identified crater populations which excavated material form deeper, compositionally distinct lava flows.
- Depth-diameter relationship of simple craters used to constrain to thickness of surface units.
- Our data are in general agreement with previous studies.
- Improves understanding of regional volcanic history and provides more detailed examination of spatial and temporal variations in lunar thermal history.
- Recommend extending approach to additional regions, using more recent data, e.g. $M^3$ on Chandrayaan-1 or Spectral Profiler (SP) on Kaguya, with better spatial and spectral resolutions.

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