Notes on Paper- “Moho Depths of Antarctica: Comparison of Seismic, Gravity, and Isostatic Results” Pappa(2019)

Introduction-

* Seismological investigations suffer from limited station coverage over large areas. This can lead to large discrepancies in Moho depth or upper mantle velocities.
* In theory satellite gravity data can complement seismological observations allowing development of 2D and 3D models of Antarctic crust and deeper lithosphere.

Data-

* Use data from the GOCO05 model.
* Differences in previous models with Moho thicknesses varying up to 20km for Antarctica.
* Seismological models often contradict the observed gravity signal when a certain density contrast at the Moho is assumed.

Moho Depth Inversion from Gravity-

* Follow method of Uieda(2017) who applied a nonlinear inversion algorithm on gravity and seismic data for South America.
* When comparing gravitational results to isostatic models the gravitational results often come out with larger values for the Moho.

2-D Lithospheric Cross-Sections and Results and Discussion-

* Main background on heat flux estimates to show thickness of ice sheet and previous history.

Conclusions-

* Strong contrast in crustal thickness is confirmed between West Antarctica and the composite East Antarctic craton and the larger misfits between gravity inversions and seismologically derived estimates of Moho depth likely stem from different density contrasts at the Moho.
* By comparing results to Airy-isostatic Moho depth model showed that different modes of compensation likely exist in East and West Antarctica.
* Quest is to better comprehend crustal and deeper lithospheric architecture in interior east Antarctica.