Teilnehmer: Folker Pappa
Titel: Antarctica’s lithospheric structure from integrated 3d modelling
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Abstract:

Current studies on the lithospheric structure, in particular the Moho depth, of the Antarctic continent contradict each other in many cases, depending on the applied geophysical method. This has large implications for predictions of numerical models of glacial isostatic adjustment (GIA). We present a new 3-dimensional model of the Antarctic lithosphere and upper mantle, integrating seismological and gravity gradient data in a thermodynamically self-consistent framework, which helps to reduce the inconsistencies and ambiguities from separate geophysical methods.

Our results indicate that Antarctica is largely in isostatic equilibrium, however, the topography of some regions seem to have components which cannot be explained by pure isostasy. Based on this, we establish new estimations of the crustal thickness of the Antarctic continent. The subsurface thermal field of our model can be used to derive the mantle’s viscosity for the purpose of GIA modelling. Our forward-calculated surface heat flow estimations may serve as background values for modelling basal melt rates of Antarctica’s ice sheets.