



## **The influence of high resolution 3D Earth structure in West Antarctica on Glacial Isostatic Adjustment**

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The one-dimensional Earth structure adopted in many glacial isostatic adjustment (GIA) models leads to bias in model predictions in regions where rheological parameters differ significantly from the 1D structure used. The advancement of 3D GIA modelling techniques in recent years has led to improvements in the representation of the Earth through the incorporation of laterally varying structure. This study investigates the influence of 3D Earth structure on deformation rates in West Antarctica using a finite element GIA model with power-law rheology, where the effective mantle viscosity depends on stress. We use a high resolution model of seismic velocity to infer temperatures and derive creep parameters from a flow law for the crust and upper mantle with the aim of determining a data-driven model of Earth rheology across Antarctica. We investigate the range of plausible mantle viscosities this model predicts, given uncertainties in the input parameters to the flow law.