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Title: Influence of upper mantle viscosity variations on sea level change and GIA - A case study for Antarctic deglaciation models

Style: Poster

Abstract:
Uplift rates induced by glacial isostatic adjustment (GIA) are essential for constraining the current mass loss of the Antarctic ice sheets due to the climate change. Satellite gravity data constrain the total mass change and thus the measured signal contains a contribution from GIA uplift, which must be corrected. Most GIA models use a global 1D Earth model to solve the sea level equation (SLE) and determine the uplift rate. Recent studies have used a low upper mantle viscosity beneath West Antarctica, which is two orders of magnitude lower than employed by global Earth models. Most previous studies also do not include the feedback of GIA on Earth rotation parameters, which are known to affect patterns of sea level change. Here, we show the sensitivity of the common Antarctic deglaciation models to variations in mantle viscosity above 670 km. In a first study computed the GIA response for 192 Earth models using the Antarctic component of ICE6g. These results help to assess the influence of upper mantle viscosity variations beneath Antarctica on rotational feedback (RFB) and GIA uplift predictions.