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Supplement of

A history-matching analysis of the Antarctic Ice Sheet since the last interglacial – Part 2: Glacial isostatic adjustment

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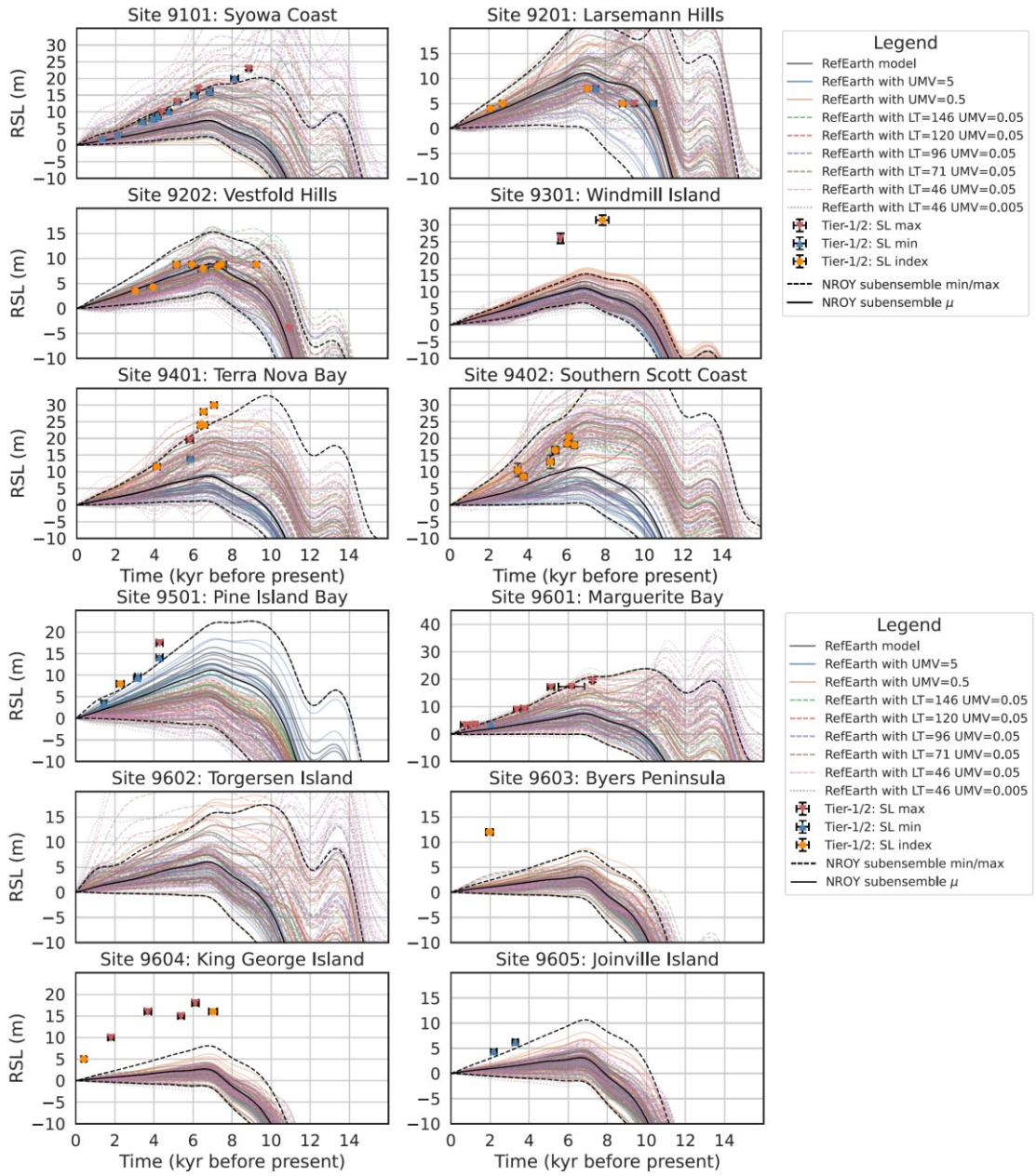

Figure S1: Paleo relative sea level data-model comparison of the not-ruled-out-yet (NROY) sub-ensemble high variance subset. A sensitivity analysis was performed on the NROY HVSS based on their respective reference Earth (RefEarth) model with a progressively lower upper mantle viscosity (UMV) and thinner lithospheric thickness (LT) to investigate the impact of lateral Earth structure. The LT and UMV experiments range from 146 to 46 km and $5 \cdot 10^{21}$ to $0.005 \cdot 10^{21}$ Pa·s, respectively.

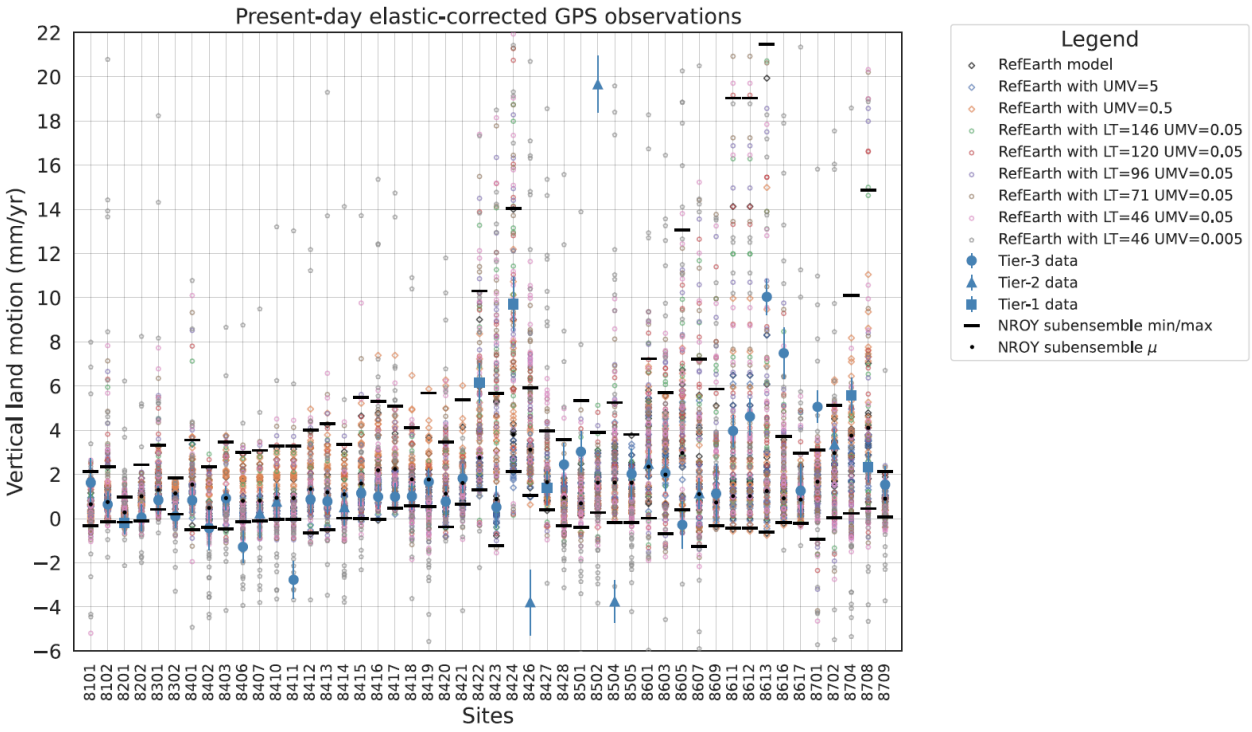

Figure S2: Global Positioning System elastic-corrected rate of bedrock displacement data-model comparison of the not-ruled-out-yet (NROY) sub-ensemble high variance subset. A sensitivity analysis was performed on the NROY HVSS based on their respective reference Earth (RefEarth) model with a progressively lower upper mantle viscosity (UMV) and thinner lithospheric thickness (LT) to investigate the impact of lateral Earth structure. The LT and UMV experiments range from 146 to 46 km and $5 \cdot 10^{21}$ to $0.005 \cdot 10^{21}$ Pa·s, respectively.

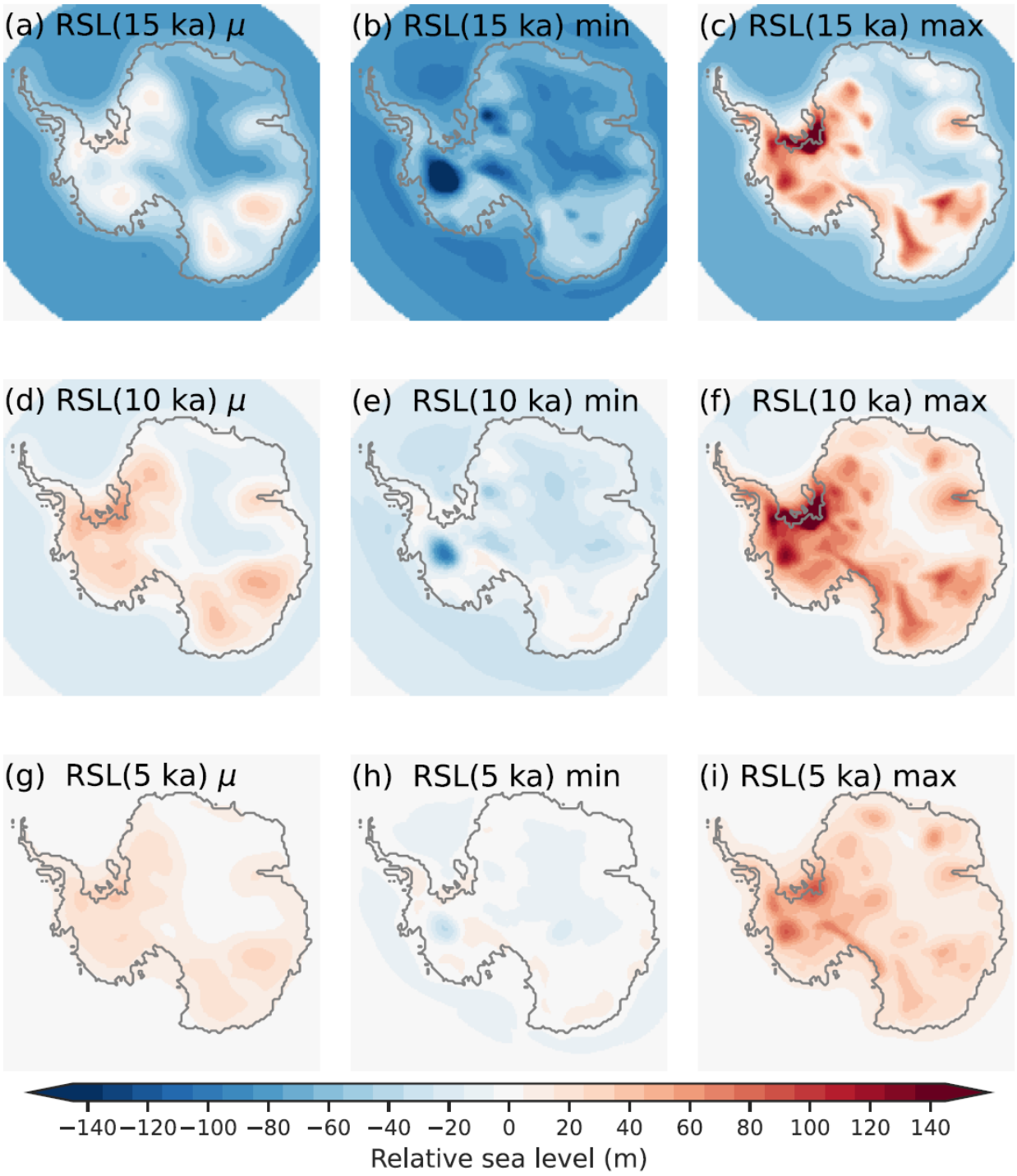

Figure S3: The not-ruled-out-yet (NROY) sub-ensemble mean (left), min (middle), and max (right) regional Antarctic RSL during the deglaciation at 15 ka (top), 10 ka (middle), and 5 ka (lower).

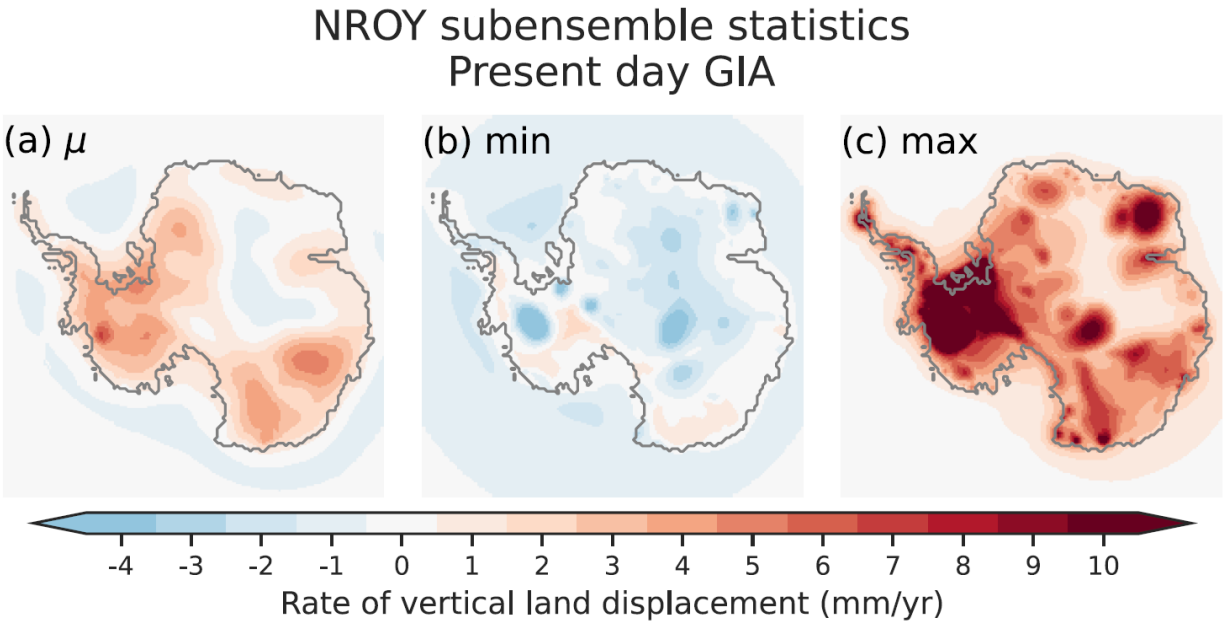

Figure S4: Present-day rate of bedrock displacement for the not-ruled-out-yet (NROY) sub-ensemble a) mean, b-c) minimum and maximum.

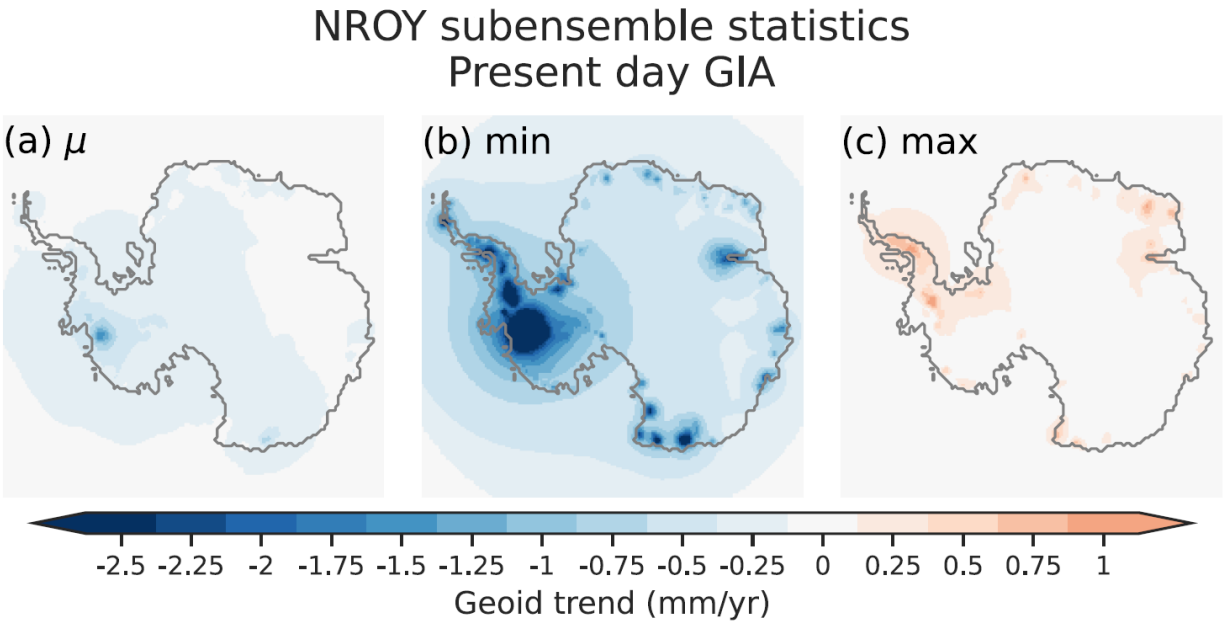

Figure S5: Present-day Antarctic rate of geoid displacement for the not-ruled-out-yet (NROY) sub-ensemble a) mean, b-c) minimum and maximum.

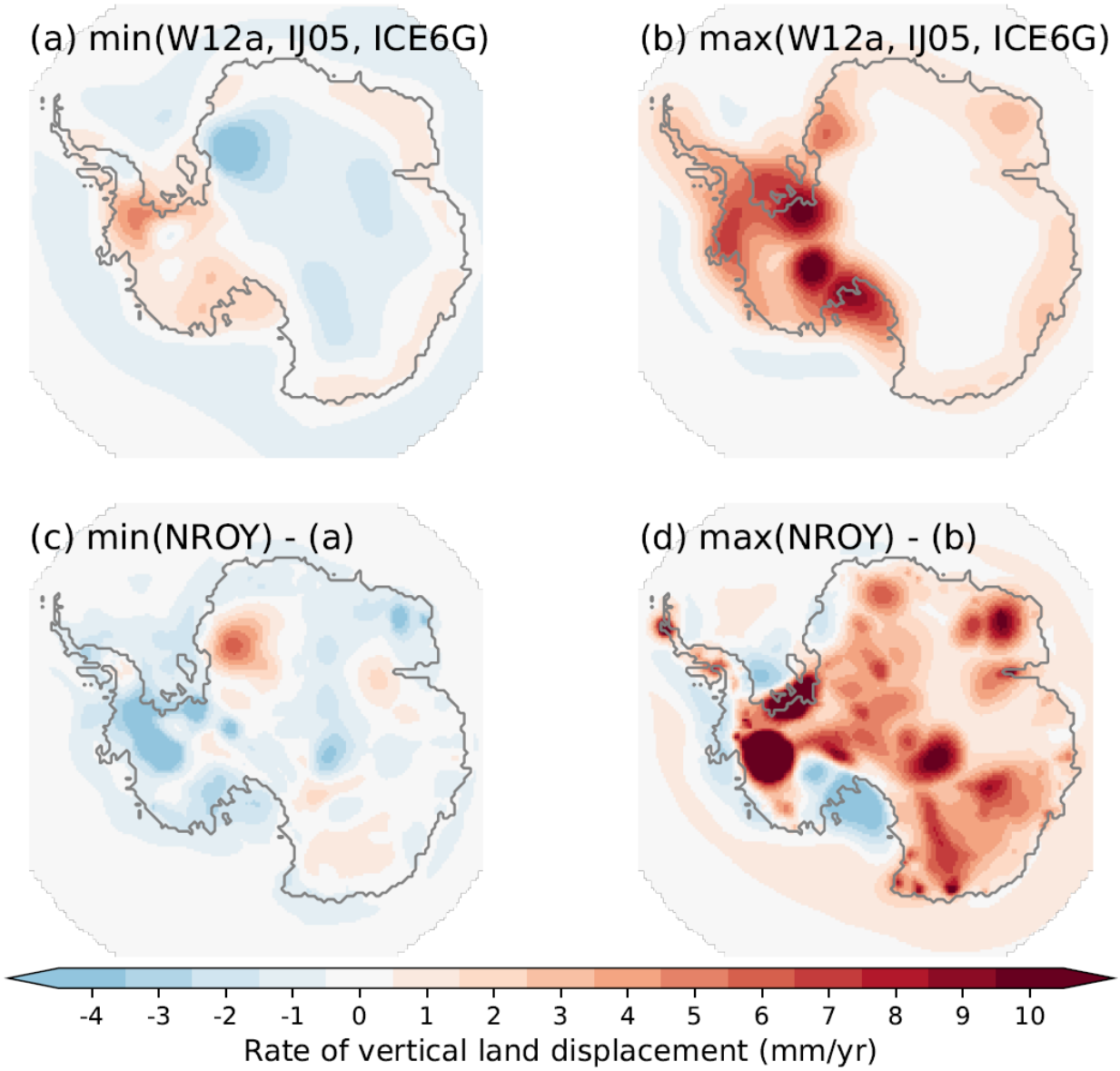

Figure S6: The (a) minimum and (b) maximum bounds for the PD rate of bedrock displacement for the three reference Antarctic GIA inferences (IJ05_R2 - Ivins and James, 2005; W12a - Whitehouse et al., 2012; ICE-6G_D - Peltier et al., 2015). These three GIA inferences represent nominal 2σ bounds on the PD GIA corrections applied in the IMBIE studies to infer contemporary mass balance of the AIS. (Shepherd et al., 2018; Otosaka et al., 2023). The not-ruled-out-yet (NROY) sub-ensemble (c) minimum and (d) maximum minus the respective bounds of the three reference GIA inferences. The differences shown in (c) and (d) demonstrate regions where the three reference GIA inferences underestimate PD GIA uncertainties or where the NROY sub-ensemble better constrain the regional GIA response relative to the three reference GIA inferences.