



## **Time rate of change of gravity in North America and Greenland due to Glacial Isostatic Adjustment and other tectonic movements**

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In the process to regain isostatic equilibrium following the Last Glacial Maximum, the Earth's crust is experiencing continuous uplift and/or subsidence, a phenomenon called Glacial Isostatic Adjustment (GIA). We determine the time rate of change of gravity ( $\dot{g}$ ) due to GIA by estimating it directly from a Least-Squares adjustment of an integrated gravity network covering Canada, the US and Greenland. Observation equations are created based on historical relative gravity measurements and the network is constrained using  $\dot{g}$  values obtained from recent absolute gravity measurements. Recognizing that gravity variation is also influenced by other significant continuous geophysical processes (tides, tidal load and hydrology), such effects are removed by correcting all gravity measurements at the pre-adjustment stage. Results are presented in the form of a  $\dot{g}$  map that demonstrates remarkably similar pattern with vertical uplift rates derived from the Canadian Base Network (GNSS Control Network) and with the uplift rates from the ICE-6G GIA forward model.