



The static contribution of Glacial Isostatic Adjustment on the Geoid

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The Glacial Isostatic Adjustment (GIA) is due to the unloading of ice on the Earth surface following the last deglaciation period a few thousand years ago. The ice mass redistributions induce an adjustment of the planet. Following this adjustment, there are viscoelastic deformations of the solid Earth, sea level rise, gravity variations, geocenter motions, and also disruption of the Earth's rotation.

We investigate here the present-day impact of GIA on the “static” component of the geoid. It is well known that GIA processes induce slow time variations of the gravity and the geoid shape. The total accumulation of the geoid changes since the beginning of the last deglaciation induces a total geoid perturbation that seems today constant in time at the human time scale. We want here to infer precisely the magnitude of this constant component in order to construct a GIA free-geoid. We tested different GIA models and tested different Earth viscosity profiles. We show that the GIA induces a constant perturbation of the geoid that can be quite important over North America and Scandinavia regions, depending on Earth models.