Geophysical Research Abstracts,
Vol. 11, EGU2009-3042-1, 2009
EGU General Assembly 2009

Influence of glacial isostatic adjustment on the center-of-figure motion

V. Klemann (1) and Z. Martinec (1,2)

(1) Helmholtz Centre Potsdam, GFZ, Department 1: Geodesy and Remote Sensing, Potsdam, Germany (volkerk@gfz-potsdam.de, +49 331 288-1163), (2) Department of Geophysics, Faculty of Mathematics and Physics, Charles University in Prague, Czech Republic

Glacial-isostatic adjustment (GIA) induces a motion of the center of figure relative to the geocenter. The motion is particularly evident if the variations of the center of figure detected by GPS are not only analysed for periodic variations but also for a linear trend.

In this study, we determine the GIA-induced center-of-figure motion for a viscoelastic earth model, in which the degree-one variations are self-consistently determined. This allows the calculation of displacement field in different realisations of the reference frame.

The dominant contribution to this motion originates from the Laurentian uplift motion. Therefore, the center-of-figure motion points towards North America and exhibits amplitudes up to 1 mm/yr. The actual velocity value depends on the considered earth/ice-model combination in which the lower-mantle viscosity is of significant importance.