Geophysical Research Abstracts
Vol. 19, EGU2017-19284, 2017
EGU General Assembly 2017

Bayesian inversion of the global present-day GIA signal uncertainty from RSL data

Lambert Caron, Erik R. Ivins, Surendra Adhikari, and Eric Larour
Jet Propulsion Laboratory, California Institute of Technology, Pasadena, USA (lambert.caron@jpl.nasa.gov)

Various geophysical signals measured in the process of studying the present-day climate change (such as changes in the Earth gravitational potential, ocean altimery or GPS data) include a secular Glacial Isostatic Adjustment contribution that has to be corrected for.
Yet, one of the current major challenges that Glacial Isostatic Adjustment modelling is currently struggling with is to accurately determine the uncertainty of the predicted present-day GIA signal. This is especially true at the global scale, where coupling between ice history and mantle rheology greatly contributes to the non-uniqueness of the solutions.
Here we propose to use more than 11000 paleo sea level records to constrain a set of GIA Bayesian inversions and thoroughly explore its parameters space. We include two linearly relaxing models to represent the mantle rheology and couple them with a scalable ice history model in order to better assess the non-uniqueness of the solutions. From the resulting estimates of the Probability Density Function, we then extract maps of uncertainty affecting the present-day vertical land motion and geoid due to GIA at the global scale, and their associated expectation of the signal.