
Geophysical Fluid Layer Modelling for Geodetic Applications

Henryk Dobslaw*¹, Robert Dill², and Maik Thomas³

¹GFZ Potsdam – Telegrafenberg, 14473 Potsdam, Germany

²GFZ Potsdam – Telegrafenberg, Germany

³GFZ Potsdam – Telegrafenberg, 14473 Potsdam, Germany

Abstract

The Earth System Modelling group at Deutsches GeoForschungsZentrum (ESMGFZ) in Potsdam is routinely processing a number of geophysical background or correction models for geodetic applications. Those include the Atmosphere and Ocean Non-Tidal De-Aliasing Product AOD1B of the GRACE mission, Earth rotation excitation functions, and surface crustal deformations. All products are consistently processed from identical global mass re-distributions in atmosphere, oceans, and the continental hydrosphere. The data-sets all start in 1976 and are routinely updated once per day. In addition, 6-days-long predictions are provided for near-realtime applications. All data and its associated documentation are publicly available via www.gfz-potsdam.de/en/esmdata.

This contribution will describe the latest product version released by ESMGFZ in spring 2017. We will discuss in particular the improved long-term consistency achieved by reducing both artificial drifts in the ocean and land simulations as well as jumps associated with occasional ECMWF model changes. Further, we will demonstrate that the sub-daily variability is substantially improved due to the newly imposed separation of atmospheric pressure tides and its associated oceanic response. And finally, the quality of the 6-days-long is evaluated against the (subsequently available) final products in order to discuss the prospects of using geophysical background information in rapid GNSS network processing.

*Speaker