GravIS Portal: User-friendly Ocean Bottom Pressure data from GRACE and GRACE-FO

Christoph Dahle[1], Eva Boergens[1], Henryk Dobslaw[1], Ingo Sasgen[2], Thorben Döhne[3], Sven Reißland[1], Frank Flechtner[1]

[1] GFZ German Research Centre for Geosciences, Potsdam, Germany, [2] Alfred-Wegener-Institut, Helmholtz-Zentrum für Polar- und Meeresforschung, Bremerhaven, Germany, [3] Technische Universität Dresden, Institut für Planetare Geodäsie, Dresden, Germany

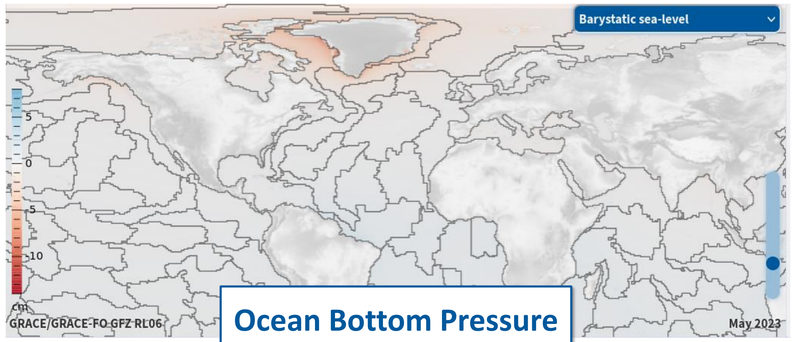
EGU2024-13354

gravis.gfz-potsdam.de

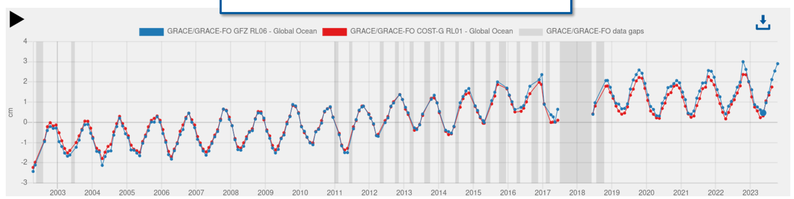
GravIS

GravIS facilitates the dissemination of user-friendly data of mass variations in the Earth system, based on observations of the satellite missions GRACE (Gravity Recovery and Climate Experiment, 2002-2017) and GRACE-FO (GRACE Follow-On, since 2018). The data sets

- can be interactively viewed (choice of displayed month, zoom, or animation);
- are based on monthly global gravity field models: either GFZ RL06 or COST-G RL01 (both versions are provided);
- include corrections applied to the monthly gravity fields such as filtering using the VDK method, insertion of estimates of the geocentre motion, replacement of particular gravity field coefficients (C_{20}, C_{30}), corrections for co- and post-seismic deformations after megathrust earthquakes (Sumatra-Andaman 2004, Chile 2010, Japan-Tohoku 2011) as well as glacial isostatic adjustment (ICE-6G model).



Ocean Bottom Pressure



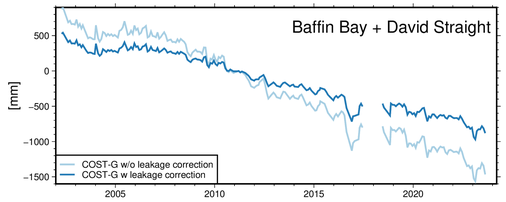
Provided Ocean Bottom Pressure (OBP) data:

Gridded products including the following variables:

Barystatic sea-level (incl. uncertainty estimates):
Combination of gravity-based trend component (VDK5 filtered) with annual, semi-annual and remaining month-to-month and inter-annual variations (VDK2 filtered).

Residual circulation (incl. uncertainty estimates):
Difference between gravitationally consistent sea-level anomalies (based on TWS estimates from GRACE/-FO and associated modelled atmospheric mass distributions) and gravity-based OBP.

Spatial leakage:
Based on scaled differences between OBP fields filtered with neighbouring VDK versions (e.g. VDK3-VDK1 for VDK2) (Dobslaw et al., 2020).



Modelled atmospheric mass and ocean circulation:
Monthly mean estimates of the atmospheric and the non-tidal oceanic background models applied during gravity field determination.

Spatially averaged time series:

Time series are provided globally and for ocean regions based on similar OBP patterns. The same variables as mentioned above are contained.

Data availability:
All datasets can be directly downloaded:

- Gridded data as netCDF files from FTP-Server
- Time series as CSV files directly from GravIS website

GFZ data

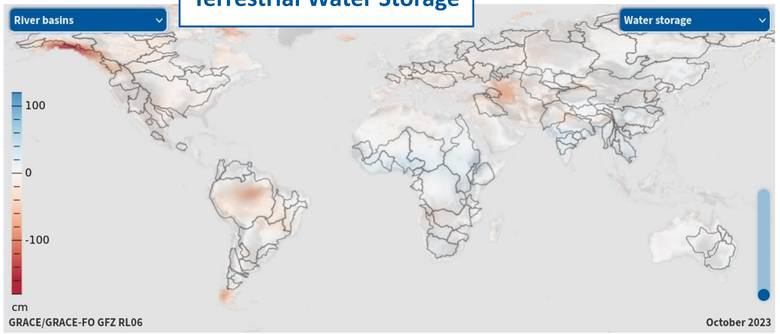
COST-G data

Citation of data sets:
GFZ GravIS RL06 OBP: https://doi.org/10.5880/GFZ.GRAVIS_06_L3_OBP
COST-G GravIS RL01 OBP: https://doi.org/10.5880/COST-G.GRAVIS_01_L3_OBP

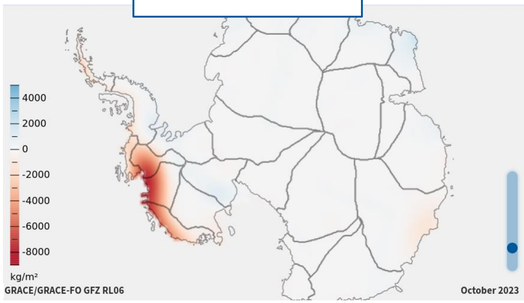
Further data sets on GravIS:

Groundwater Storage (G3P prototype, see also: www.g3p.eu)

Terrestrial Water Storage



Antarctic Ice Sheet



Greenland Ice Sheet