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# Complete 5-years time series of combined monthly gravity field models derived from Swarm GPS data

Pieter Visser (1), Joao Teixeira da Encarnacao (1,2), Eelco Doornbos (1), Jose van den IJssel (1), Xinyuan Mao (1), Elisabetta Iorfida (1), Daniel Arnold (3), Adrian Jaeggi (3), Ulrich Meyer (3), Ales Bezdek (4), Josef Sebera (4), Jaroslav Klokocnik (4), Matthias Ellmer (5), Torsten Mayer-Guerr (5), Junyi Guo (6), Ck Shum (6), and Yu Zhang (6)

(1) Delft University of Technology, Faculty of Aerospace Engineering, Space Engineering, Delft, Netherlands (p.n.a.m.visser@tudelft.nl), (2) Center for Space Research, University of Texas at Austin, Austin, Texas, (3) Astronomical Institute of the University of Bern, Bern, Switzerland, (4) Astronomical Institute of the Czech Academy of Sciences, Prague, Czech Republic, (5) Institute of Geodesy of the Graz University of Technology, Graz, Austria, (6) School of Earth Science of the Ohio State University, Columbus, Ohio, USA

Since 2013, the Swarm satellite constellation has allowed us to observe the Earth's large-scale mass transport processes. We present the nearly complete time series of monthly gravity field models derived from the data collected by Swarm's GPS receivers, from December 2013 to September 2018. These models are the result of the combination of four individual solutions, produced by the Astronomical Institute of the University of Bern, the Astronomical Institute of the Czech Academy of Sciences, the Institute of Geodesy of the Graz University of Technology and the School of Earth Sciences of the Ohio State University, each considering a different gravity field estimation approach. The combination is done at the level of normal equations, with weights derived from Variance Component Estimation, much like what was done by the European Gravity Service for Improved Emergency Management (EGSIEM) initiative.

We illustrate the geophysical signal captured by Swarm's GPS receivers over large hydrological basins, the errors represented by the variability of the models over the oceans and the agreement with GRACE and GRACE-FO. All analyses span the GRACE/GRACE-FO gap, to illustrate the importance of the Swarm satellites to bridge the absence of low-low satellite-to-satellite tracking data.