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10:30 Science and User Needs for Observing Global Mass Transport to Understand Global Change and to Benefit Society

Pail, Roland (1); Bingham, Rory (2); Braitenberg, Carla (3); Dobslaw, Henryk (4); Eicker, Annette (5); Güntner, Andreas (4); Horwath, Martin (6); Ivins, Eric (7); Longuevergne, Laurent (8); Panet, Isabelle (9); Wouters, Bert (10) *1: TU Munich, Astronomical and Physical Geodesy, Germany; 2: Bristol Glaciology Centre, University of Bristol, UK; 3: Università degli Studi di Trieste, Dipartimento di Matematica e Geoscienze, Italy; 4: Deutsches Geoforschungszentrum GFZ, Germany; 5: University of Bonn, Institute of Geodesy and Geoinformation, Germany; 6: Technische Universität Dresden, Institut für Planetare Geodäsie, Germany; 7: Jet Propulsion Laboratory, US; 8: Géosciences Rennes, France; 9: Institut Géographique National, Laboratoire de Recherche en Géodésie, France; 10: University of Colorado at Boulder, Department of Physics, US*

In an internationally coordinated initiative among the main user communities of gravity field products the science requirements for a future gravity field mission constellation (beyond GRACE-FO) have been reviewed and defined. This activity was realized as a joint initiative of the IAG (International Association of Geodesy) Sub-Commissions 2.3 and 2.6, the GGOS (Global Geodetic Observing System) Working Group on Satellite Missions, and the IUGG (International Union of Geodesy and Geophysics). After about one year of preparation, in a user workshop that was held in September 2014 consensus among the user communities of hydrology, ocean, cryosphere, solid Earth and atmosphere on consolidated science requirements could be achieved.

The consolidation of the user requirements became necessary, because several future gravity field studies have resulted in quite different performance numbers as a target for a future gravity mission (2025+). Based on limited number of mission scenarios which took also technical feasibility into account, a consolidated view on the science requirements among the international user communities was derived, research fields that could not be tackled by current gravity missions have been identified, and the added value (qualitatively and quantitatively) of these scenarios with respect to science return has been evaluated. The resulting document shall form the basis for further programmatic and technological developments.

In this contribution, the main results of this initiative will be presented. An overview of the specific requirements of the individual user groups, the consensus on consolidated science and user needs for observing global mass transport to understand global change and to benefit society, as well as the new research fields that have been identified during this process will be outlined and discussed.