Assessment of individual and combined gravity field solutions from Swarm GPS data and mitigation of systematic errors

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Although ESA’s Earth Explorer Mission Swarm is primarily dedicated to measure the Earth’s magnetic field, it currently also serves as a gravity field mission. Equipped with GPS receivers, accelerometers, star-tracker assemblies and laser retro-reflectors, the three Swarm satellites provide the necessary instrumentation to be used as a high-low satellite-to-satellite tracking (hl-SST) observing system. Since GRACE-B, one of the two satellites of the GRACE mission dedicated to measure the time-variability of the Earth’s gravity field, has been decommissioned on 12 Oct 2017, Swarm is now in the focus to close the gap between the GRACE and its Follow-On (GRACE-FO) mission.

In this presentation we will report the current state of Swarm gravity field determination as performed at various analysis centers. Besides the individual contributions we will also present combined Swarm solutions computed by the scientific combination service established in the frame of the European Gravity Service for Improved Emergency Management (EGSIEM) initiative. Besides this, we will assess the various efforts made to mitigate systematic errors in the Swarm Level-1B GPS data related to ionospheric activity that are affecting the Swarm gravity field solutions.