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Combination Service for Time-variable Gravity Fields (COST-G) – operations

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With the release of the combined GRACE monthly gravity field time-series COST-G RL01 the Combination Service for Time-variable Gravity fields (COST-G) of the International Association of Geodesy (IAG) became operational in July 2019. We present the COST-G RL01 time-series and provide validation in terms of orbit fit, ice mass trends, lake altimetry and sea level budget. We identify weak points in the combined monthly gravity fields and discuss possible improvements of the combination strategy for future combinations.

While COST-G RL01 is based on sets of re-processed GRACE monthly gravity fields, COST-G also provides combinations of monthly Swarm high-low satellite-to-satellite tracking (hl-SST) gravity fields on an operational basis with a latency of 3 months. Combinations of GRACE-FO monthly gravity fields are in the process of operationalization. We provide a status report and first results of GRACE-FO combinations. Combined GRACE, Swarm and GRACE-FO gravity fields complement each other to provide a long-term time-series of mass variation in the system Earth.