



## **Validation of South American terrestrial gravity anomalies by GOCE**

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Since its launch in 2009, ESA's GOCE mission has generated high-accuracy gravity field information, of near-global coverage, for the long- to medium-wavelength part of the gravity field ( $\leq$ degree/order 260). These highly accurate gravity data are especially important for regions such as South America, Africa or Asia, where coverage and/or accuracy of alternate data sets, mostly gravimetry, are relatively poor.

In these regions, the GOCE data can be useful in identifying and assessing suspect terrestrial data. Specifically, in coordination with partner organizations, we are already leveraging satellite gravity field missions to identify inconsistencies between different regional gravity anomaly data sets. Many of these inconsistencies relate to data quality issues. Resolving these issues better enables the terrestrial gravity data to strengthen and correct the satellite gravity models at their higher end (degree/order 200 to 260). The harmonization between terrestrial and satellite datasets reduces the commission error in gravity modeling over the associated range. Remaining issues not related to data quality can then be isolated for additional study. For example, a host of geophysical and temporal issues may be contributing to irregularities.

In this paper, the quality of a South America data set of gravity anomalies shall be analyzed. The accuracy of the gravity anomalies shall be assessed, and systematic errors shall be detected. For this purpose, consistent gravity field corrections have to be applied. The aim of the revision of the data set is to exclude bad data and to provide accuracies which can serve as a stochastic model in the frame of a combined solution. By this procedure, the performance of a gravity field model based on the combination of satellite and terrestrial observations should be improved for South America.