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New realization of time-varying mean gravity field model based on 8 years of GRACE data

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The extended life time of the GRACE gravity mission provides the opportunity to observe the gravity changes in the Earth over a period of time greater than 8 years. It enables the computation of better mean models as well as more stable and accurate mean temporal variations of the gravity field.
Based on the Release 2 of EIGEN-GRGS GRACE gravity field time series, we have recomputed a mean gravity field model, complete to degree and order 160, based on 8 years of GRACE data, that includes a time-varying part in the form of secular and periodic (annual and semi-annual) terms up to degree and order 50. A correction, full to degree and order 50, is also provided to represent the gravity field prior to the December 2004 Sumatra earthquake.
This new mean gravity field model, named EIGEN-GRGS.RL02bis.MEAN-FIELD, displays more stable time-variable terms, particularly drifts, compared to the previous realization, EIGEN-GRGS.RL02.MEAN-FIELD, which was based on 4.5 years of GRACE data.
In this poster we show the geographical plots of the time-variable components expressed in terms of water height and, in the case of the drift, in terms of Mt of water / square km after correction by a GIA model. We compare the mean part of this model with other GRACE-based mean models and with GOCE-based mean models.
We present the impact of the time-variable part on the POD of low Earth orbiting satellites, in terms of orbit differences and measurement residuals reduction (SLR, Doris, GPS).