

## GRACE Gravity Model EIGEN-GRACE01S

The GRACE gravity model EIGEN-GRACE01S was estimated from 39 days (August and November 2002) of GRACE GPS, K-band range-rate, accelerometer and attitude data. The satellite-only solution was generated using Kaula a-priori information from degree 70 with very low weight. EIGEN-GRACE01S was estimated to degree and order 120 plus selected coefficients up to degree 140. The solution appears to have 'full power' up to degree 90 (see figure 1). The geoid error is about 1 cm @ 360 km half wavelength (see figure 2).

Some details on EIGEN-GRACE01S:

- Ocean tide model: FES2002
- Solid earth tide model: IERS96
- Short-term atmosphere and ocean mass variations: 6-hourly, 0.5° ECMWF data, barotropic ocean model

Estimated parameters:

- Initial conditions
- Accelerometer biases and scaling factors
- K-band range-rate bias and drift, periodic coefficients
- GPS ambiguities

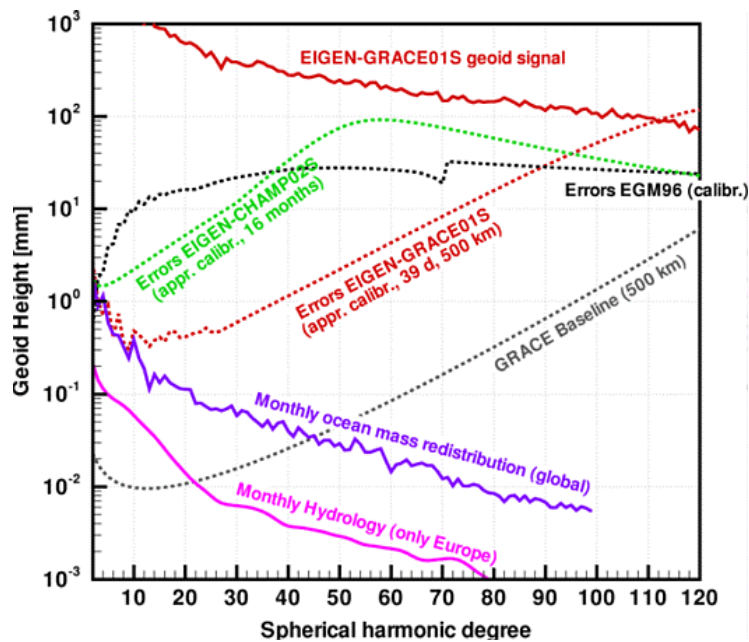


Figure 1: Estimated degree variance and degree error variance for EIGEN-GRACE01S and EGM96. The calibration of the EIGEN-GRACE01S errors is approximate, but is consistent with comparisons of various subsets and independent solutions.

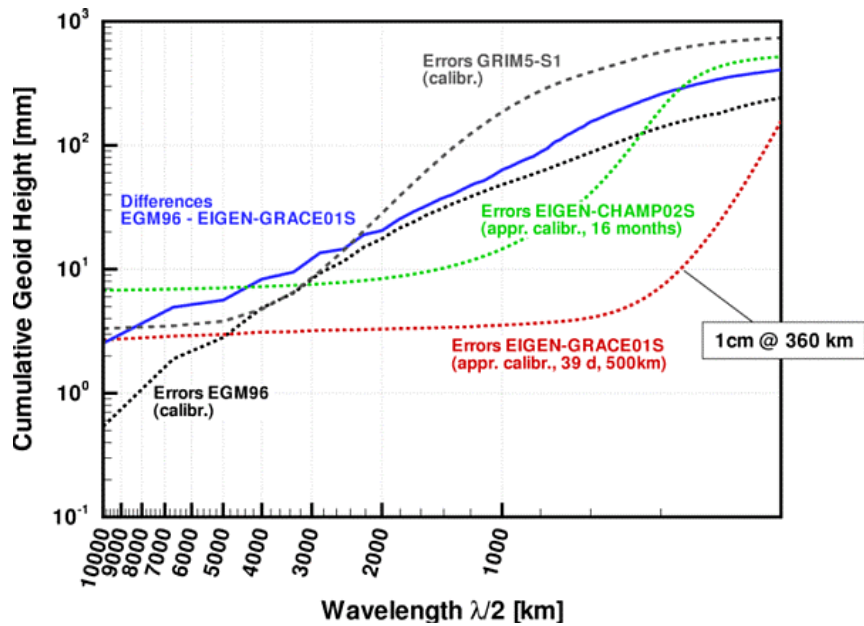


Figure 2: Cumulated geoid error for EIGEN-GRACE01S, EIGEN-CHAMP02S, EGM96 and GRIM5-S1 solutions and cumulated geoid differences between EIGEN-GRACE01S and EGM96

#### Coefficient file description:

The coefficients for EIGEN-GRACE01S are available in the “CHAMP gravity field solution data format”. The format is described on the CHAMP web pages under <http://op.gfz-potsdam.de/champ>. If you follow the links “References & More” and “Online Documents & References” you find the document “Förste, Schwintzer, Reigber: CHAMP Gravity Field Solution Data Formats, CH-GFZ-FD-003.pdf (0.10 MB)”

**Comments or Questions? Please contact [grace@gfz-potsdam.de](mailto:grace@gfz-potsdam.de)**