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EIGEN-6S4 A time-variable satellite-only gravity field model to d/o 300 based on LAGEOS, GRACE and GOCE data from the collaboration of GFZ Potsdam and GRGS Toulouse

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Files

ICGEM Model Viisualisation
ICGEM Calculation Service

Download Model Data: EIGEN-6S4v2.zip 8.3 Mb

Dataset Description

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http://icgem.gfz-potsdam.de/Foerste-et-al-EIGEN-6S4.pdf

Related Work

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Förste, Christoph; Bruinsma, Sean; Rudenko, Sergiy; Abrikosov, Oleh; Lemoine, Jean-Michel; Marty, Jean-Charles; Neumayer, Karl Hans; Biancale, Richard (2016): EIGEN-6S4 A time-variable satellite-only gravity field model to d/o 300 based on LAGEOS, GRACE and GOCE data from the collaboration of GFZ Potsdam and GRGS Toulouse. GFZ Data Services. http://doi.org/10.5880/icgem.2016.004

References

Bruinsma, S., Lemoine, J.-M., Biancale, R., & Valès, N. (2010). CNES/GRGS 10-day gravity field models (release 2) and their evaluation. Advances in Space Research, 45(4), 587–601. doi:10.1016/j.asr.2009.10.012

Bruinsma, S. L., Förste, C., Abrikosov, O., Lemoine, J.-M., Marty, J.-C., Mulet, S., … Bonvalot, S. (2014). ESA's satellite-only gravity field model via the direct approach based on all GOCE data. Geophysical Research Letters, 41(21), 7508–7514. doi:10.1002/2014gl062045

Metzler, B., & Pail, R. (2005). GOCE Data Processing: The Spherical Cap Regularization Approach. Studia Geophysica et Geodaetica, 49(4), 441–462. doi:10.1007/s11200-005-0021-5

Pail, R., Bruinsma, S., Migliaccio, F., Förste, C., Goiginger, H., Schuh, W.-D., … Tscherning, C. C. (2011). First GOCE gravity field models derived by three different approaches. Journal of Geodesy, 85(11), 819–843. doi:10.1007/s00190-011-0467-x

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Abstract

EIGEN-6S4 (Version 2) is a satellite-only global gravity field model from the combination of LAGEOS, GRACE and GOCE data. All spherical harmonic coefficients up to degree/order 80 are time variable. Their time variable parameters consist of drifts as well as annual and semi-annual variations per year. The time series of the time variable spherical harmonic coefficients are based on the LAGEOS-1/2 solution (1985 to 2003) and the GRACE-LAGEOS monthly gravity fields RL03-v2 (August 2002 to July 2014) from GRGS/Toulouse (Bruinsma et al. 2009).

The herein included GRACE/LAGEOS data were combined with all GOCE data which have been processed via the direct numerical approach (Pail et al. 2011). The polar gap instabilty has been overcome using the Sperical Cap Regularization (Metzler and Pail 2005). That means this model is a combination of LAGEOS/GACE with GO_CONS_GCF_2_DIR_R5 (Bruinsma et al. 2013).

Version History: This data set is an updated version of Foerste et al. (2016, http://doi.org/10.5880/icgem.2016.004) Compared to the first version, EIGEN-6S4v2 contains an improved modelling of the time variable part, in particular for C20.

Parameters

format	icgem2.0
product_type	gravity_field
modelname	EIGEN-6S4v2
earth_gravity_constant	0.3986004415E+15
radius	0.6378136460E+07
max_degree	300
errors	calibrated (sigma calibration factor = 2.00)
norm	fully_normalized
tide_system	tide_free

Dataset Contact

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Keywords

ICGEM, Global Gravitational Model, GRACE, GOCE, LAGEOS

GCMD Science Keywords

EARTH SCIENCE > SOLID EARTH > GEODETICS > GEOID CHARACTERISTICS
EARTH SCIENCE > SOLID EARTH > GRAVITY/GRAVITATIONAL FIELD > GRAVITATIONAL FIELD

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