Multi-approach gravity field models from Swarm GPS data

Swarm Gravity Field Model Product Description

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Version history

Version 1, 20/03/2019

- Initial release

Product Description

Product identifier	EGF_SHA_2_
Definition	Monthly gravity field of the Earth
Input data	GPSA_RO_1B, GPSB_RO_1B, GPSC_RO_1B, STRAATT_1B, STRBATT_1B, STRCATT_1B
Input Time Span	1 calendar month
Spatial representation	Spherical harmonic coefficients
Time representation	Monthly average of Earth's gravity field, i.e. with an implicit epoch located at the middle of the calendar month
Resolution	12 significant digits in scientific notation
Uncertainty	Typically 1-2 mm geoid height or 1-2 cm Equivalent Water Height discrepancy w.r.t. GRACE over land areas during low solar activity periods, considering Gaussian smoothing with 750km spherical cap radius
Quality indicator	RMS over ocean areas that are 6 degrees away from coast lines, after removing long-term trend, annual and semi-annual variations estimated from monthly un-weighted averages of numerous GRACE models (AIUB02, CSR05, GRGS03, ITSG14, GFZ05a, JPL05 and TNJ01)
Data volume	20Kb
Data format	ASCII file with Stokes Coefficients following the ICGEM-format (http://icgem.gfz-potsdam.de/ICGEM-Format-2011.pdf)
Output Data	Degree, order, cosine coefficient, sine coefficient (columns 5 and 6 set to zero)
Output time span	1 calendar month
Update rate	Quarterly
Latency	3 months
Notes	• Stokes coefficients available up to degree 40 • No smoothing applied • GRACE comparison indicates that there is little useful geophysical signal above roughly degree 12, i.e. it suggest the signal-to-noise ratio

	drops below 1 at those degrees and above • Further product details in Swarm ITT1.1 TN-01