THE GRIM5-S2 EARTH GRAVITY FIELD MODEL

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ABSTRACT
A new model of the Earth's gravity field, called GRIM5-S2, was prepared in a joint German-French effort, upgrading slightly the first version GRIM5-S1. The solution is based on satellite orbit perturbation analysis and exploits tracking from 22 satellites (whose all DORIS bearer satellites) to solve simultaneously for the gravitational and ocean tide potential and tracking station positions.
The satellite-only solution results in a homogeneous representation of the geoid with an approximation error of about 45 cm in terms of 5*5 degree block mean values, and performs at best in satellite orbit restitution. The GRIM5 normals, which were generated taking into account the latest computational standards, shall be the reference for use during the coming geopotential satellite mission CHAMP and should provide new standards in computing orbits of next altimetric mission like Jason and ENVISAT. The GRIM5-S2 normals also give the basis for the tracking/surface data combined solution GRIM5-C2.