



Evaluation of 80 geopotential models using line of sight micro-gravimetry observation of GRACE as the benchmark

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In this study 80 geopotential models are compared by synthesizing the GRACE satellite micro-gravimetry observation called Line Of Sight (LOS) gravitational difference. The tested geopotential models, which are developed between the years 1966-2007, are as follows: ITG-Grace03, AIUB-CHAMP01S, ITG-Grace02s, EIGEN-GL04S1, EIGEN-GL04C, EIGEN-CG03C, GGM02C, GGM02S, EIGEN-CG01C, EIGEN-CHAMP03S, EIGEN-GRACE02S, TUM-2S, DEOS-CHAMP-01C, ITG-Champ01K, ITG-Champ01S, ITG-Champ01E, TUM-2Sp, TUM-1S, GGM01C, GGM01S, EIGEN-GRACE01S, EIGEN-CHAMP03Sp, EIGEN-2, EIGEN-1, EIGEN-1S, PGM2000A, TEG4, GRIM5C1, GRIM5S1, GRIM4S4G, EGM96, GFZ96, TEG3, EGM96S, GFZ95A, GRIM4S4, JGM3, JGM2, JGM2S, GFZ93A, JGM1S, GRIM4S3, OSU91A, GRIM4C2, GRIM4S2, GEMT3, GEMT3S, GRIM4C1, GRIM4S1, GEMT2, OSU89B, OSU89A, GEMT1, OSU86F, OSU86E, GPM2, GRIM3L1, GEML2, GRIM3, OSU81, GEM10B, GEM10A, GEM10, GEM9, GRIM2, GEM8, GEM7, GRIM1, KOCH74, GEM6, GEM5, OSU73, SE3, GEM4, GEM3, KOCH71, KOCH70, SE2, OSU68, and SE1. Considering the global coverage and spectral resolution of the GRACE observations, the conducted test can be regarded as an external evaluation for the geopotential models derived without GRACE observations and internal evaluation for the GRACE derived geopotential models. Results of all statistical tests, accuracy evaluations, and rankings of the geopotential models are presented.