

Foreword

The Joint Working Group (JWG) between the International Gravity Field Service (IGFS) and the Commission 2 of the International Association of Geodesy (IAG), entitled “**Evaluation of Global Earth Gravity Models**”, was officially established in 2005. The main objective of this JWG is to study standard validation/calibration techniques for global geopotential models, and to perform quality assessment procedures of GRACE, CHAMP and GOCE based satellite-only and combined solutions for the static part of Earth’s gravity field. The external data sets that are commonly used for such purposes include GPS and leveling height data, airborne and surface gravity data, mean oceanographic sea-surface-topography (SST) models and altimetric data, orbit data from other geodetic and altimetric satellites, and astro-geodetic vertical deflections. The initial membership of the JWG included 24 scientists from 15 countries, which has finally increased to 30 scientists from 20 countries due to the strong international interest in evaluating the PGM2007A model, a preliminary version of the official Earth Gravitational Model 2008 (EGM2008).

The IGFS/IAG JWG has successfully coordinated the evaluation of both PGM2007 and EGM2008, in close collaboration with the EGM development team from the U.S. National Geospatial-Intelligence Agency (NGA). This joint evaluation project was carried out through three phases: the implementation and testing of the NGA software for spherical harmonic synthesis using ultra-high degree geopotential models (2006-2007), the evaluation of the PGM2007 model (2007-2008), and finally the evaluation of the official EGM2008 model (2008-2009). Most of the results of the above tasks are publicly available at the official webpage of the working group: http://users.auth.gr/~kotsaki/IAG_JWG/IAG_JWG.html.

The first splinter meeting of the JWG was held on July 31, 2006 in Istanbul during the first IGFS international symposium, and it marked the end of Phase 1. The PGM2007A model was released to the members of the JWG in July 2007, initiating the beginning of Phase 2. A total of thirty evaluation reports for PGM2007A were completed and published at the JWG’s website by December 2007. Phase 3 started right after the official release of EGM2008 at the EGU General Assembly in April 2008. The first results of the EGM2008 evaluation tests were presented by the working group members in a dedicated session during the IAG international symposium ‘Geoid, Gravity and Earth Observation’ that was held in Chania, Greece, June 23-27, 2008.

This special issue of *Newton’s Bulletin* consists of 25 peer-reviewed evaluation papers of EGM2008 (and partially of PGM2007A), which are grouped into four different sections according to the geographical region of the evaluation tests: Global, the Americas, Europe and Africa, and Asia, Australia and Antarctica. Their results provide a thorough external assessment of EGM2008, using a variety of geodetic data and testing methodologies.

We are grateful to all people who made the publication of this special issue possible. First of all, we would like to express our deep appreciation to all contributing authors of the evaluation papers for their interest and dedication to the project. The success of this project is primarily attributed to their continuous participation and close cooperation. Secondly, we would like to thank the development team of EGM2008 for their support and continuous collaboration towards the successful completion of this international project. Last but not least, the IGFS and the Commission 2 of the IAG are acknowledged for their effective international leadership, guidance and coordination.

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