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An Earth Gravitational Model to Degree 2160: EGM2008

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A new Earth Gravitational Model (EGM2008) to degree 2160 has been developed, from the final re-iteration of our modelling approach that has produced several Preliminary Gravitational Models (PGM) of increasingly better performance. Of these models, PGM2007A was evaluated by an international Working Group, sponsored by the Int'l Association of Geodesy (IAG). EGM2008 incorporates improved 5x5 minute gravity anomalies and has benefited from the latest GRACE based satellite solutions. EGM2008 also incorporates improved altimetry-derived gravity anomalies estimated using PGM2007B (a variant of PGM2007A) and its implied Dynamic Ocean Topography (DOT) model as reference. For the Collocation prediction of the final 5x5 minute mean gravity anomalies, we used PGM2007B as our reference model, and employed a formulation that predicts area-mean gravity anomalies which are effectively band-limited to degree 2160. This minimizes aliasing effects during the harmonic analysis process. We have placed special emphasis on the calibration of our model's error estimates. We will present the main aspects of our model's development and the results from our own evaluation of EGM2008. This was done through the comparison of various model derived quantities with independent data and models (e.g., geoid undulations derived from GPS/levelling, deflections of the vertical, DOT from ECCO, etc.). Finally, we will discuss the availability of EGM2008, which will also be provided to the IAG Working Group for evaluation.