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Introducing EGM2020

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The National Geospatial-Intelligence Agency [NGA], in conjunction with its U.S. and international partners, has completed its next Earth Gravitational Model (EGM2020), to replace EGM2008. The new 'Earth Gravitational Model 2020' [EGM2020] will retain the same harmonic basis and resolution as EGM2008. As such, EGM2020 will be a ellipsoidal harmonic model up to degree (n) and order (m) 2159, but will be released as a spherical harmonic model to degree 2190 and order 2159. EGM2020 has benefited from new data sources and procedures. Updated satellite gravity information from the GOCE and GRACE mission, will better support the lower harmonics, globally. Multiple new acquisitions (terrestrial, airborne and shipborne) of gravimetric data over specific geographical areas (Antarctica, Greenland ...), will provide improved global coverage and resolution over the land, as well as for coastal and some ocean areas. Ongoing accumulation of satellite altimetry data as well as improvements in the treatment of this data, will better define the marine gravity field, most notably in polar and near-coastal regions. NGA and partners are evaluating different approaches for optimally combining the new GOCE/GRACE satellite gravity models with the terrestrial data. These include the latest methods employing a full covariance adjustment. NGA is also working to assess systematically the quality of its entire gravimetry database, towards correcting biases and other egregious errors where possible, and generating improved error models that will inform the final combination with the latest satellite gravity models. Outdated data gridding procedures have been replaced with improved approaches. For EGM2020, NGA intends to extract maximum value from the proprietary data that overlaps geographically with unrestricted data, whilst also making sure to respect and honor its proprietary agreements with its data-sharing partners.