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The crust-mantle density contrast estimated based on EGM2008, DTM2008, CRUST2.0 and ICE-5G

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The global geopotential model EGM2008, the global topography/bathymetry model DTM2006.0, the global continental ice thickness data ICE-5G (VM2 L90) and the global crustal model CRUST2.0 are used to compute globally the consolidated crust-stripped gravity disturbances and gravity anomalies. The consolidated crust-stripped gravity field quantities have the strongest correlation with the Moho density interface and are thus best suited for the refinement of the Moho discontinuity by means of the gravimetric modeling or inversion. These gravity field quantities are then used to estimate the global average value of the crust/mantle density contrast. The estimated values of 485 kg/m3 (using the consolidated crust-stripped gravity disturbances) and 481 kg/m3 (consolidated crust-stripped gravity anomalies) very closely agree with a theoretical value of the crust/mantle density contrast of 480 kg/m3, which is adopted in the definition of the Preliminary Reference Earth Model (PREM). Our estimates are also very similar to the corresponding value of 480 kg/m3 obtained from using the gravimetric method for estimating the Moho density contrast based in the Airy-Heiskanen theory of isostasy.