Description of Files Containing Free-air Gravity Anomalies and Deflections of the Vertical Computed From EGM2008

A. Point Values on a global 2.5'x2.5' grid

Point values of Free-air Gravity Anomalies (Δg) and point values of the Deflection of the Vertical (DOV) components (ξ) and (η) are provided in the following three files. All computations were performed using the **Tide-Free** version of **EGM2008** to degree **2190**. The **WGS 84** Geodetic Reference System (GRS) was used to define the geometry and the normal gravitational potential of the reference ellipsoid. The computed values refer to the surface of this reference ellipsoid. The free-air gravity anomalies correspond to the spherical approximation of the boundary condition (i.e., they correspond to the selection "isw=1" in the run of the Harmonic Synthesis program).

The following three gridded data files are sequential, unformatted, binary files containing REAL*4 values (see the "read_3files_min2.5" program for details on their structure). The data are stored one latitude row at a time (from North to South), and within each row from West to East. In these 2.5'x2.5' files the first row has latitude 90°-1.25', and the first column has longitude 1.25' East, i.e., the registration of the data values corresponds to the center of the cell.

The data files were created on a SUN computer, which uses a **BIG ENDIAN** internal binary representation. Each of the following three data files contains **149333760** bytes in total.

(1) Dg01_cnt2.5x2.5_EGM08_to2190_WGS84_ell_nh

Point Free-air Gravity Anomalies in **mGal**. Their statistics are tabulated next.

Statistics of Point Free-air Gravity Anomaly Values
(mGal)

Number of Values	37324800
Percentage of Area	100.000
Minimum Value	-385.543
Latitude of Minimum	35.896
Longitude of Minimum	74.771
Maximum Value	966.334
Latitude of Maximum	10.854
Longitude of Maximum	286.271
Arithmetic Mean	-0.471
Area-Weighted Mean	0.000
Arithmetic RMS	33.379
Area-Weighted RMS	35.028
Arithmetic S.Dev.	33.376
Area-Weighted S.Dev.	35.028

(2) xi_cnt2.5x2.5_EGM08_to2190_WGS84_ell_nh

Point values of the meridional component (ξ) of the DOV in **arc-seconds**. Their statistics are tabulated next.

Statistics of xi DOV Values (arc-second)

Number of Values	37324800
Percentage of Area	100.000
Minimum Value	-122.315
Latitude of Minimum	28.479
Longitude of Minimum	84.062
Maximum Value	104.391
Latitude of Maximum	10.938
Longitude of Maximum	286.271
Arithmetic Mean	-0.453
Area-Weighted Mean	-0.175
Arithmetic RMS	5.417
Area-Weighted RMS	5.640
Arithmetic S.Dev.	5.398
Area-Weighted S.Dev.	5.637

(3) eta_cnt2.5x2.5_EGM08_to2190_WGS84_ell_nh

Point values of the prime vertical component (η) of the DOV in **arc-seconds**. Their statistics are tabulated next.

Statistics of eta DOV Values (arc-second)

Number of Values	37324800
Percentage of Area	100.000
Minimum Value	-88.282
Latitude of Minimum	28.646
Longitude of Minimum	83.729
Maximum Value	91.924
Latitude of Maximum	28.021
Longitude of Maximum	92.771
Arithmetic Mean	0.000
Area-Weighted Mean	0.000
Arithmetic RMS	5.503
Area-Weighted RMS	5.709
Arithmetic S.Dev.	5.503
Area-Weighted S.Dev.	5.709

(4) read_3files_min2.5

FORTRAN program that can be used to read files (1), (2), and (3) above.

(5) read_3files_min2.5.out01

Output from a run of the above program (4).

B. Area-mean Values of Free-air Gravity Anomalies on a Global 5.0'x5.0' Grid

Area-mean values of Free-air Gravity Anomalies (Δg) are provided in the following file. The computations were performed using the **Tide-Free** version of **EGM2008** to degree **2190**. The **WGS 84** Geodetic Reference System (GRS) was used to define the geometry and the normal gravitational potential of the reference ellipsoid. The computed values refer to the surface of this reference ellipsoid. The area-mean free-air gravity anomalies correspond to the spherical approximation of the boundary condition (i.e., they correspond to the selection "isw=1" in the run of the Harmonic Synthesis program).

The following gridded data file is a sequential, unformatted, binary file containing REAL*4 values (see the "read_1file_min5.0" program for details on its structure). The data are stored one latitude row at a time (from North to South), and within each row from West to East. In this 5'x5' file the center of the cells in the first row has latitude 90°-2.5', and the center of the cells in the first column has longitude 2.5' East.

This data file was created on a SUN computer, which uses a **BIG ENDIAN** internal binary representation. This data file contains **37342080** bytes in total.

(6) Dg01_mean5.0x5.0_EGM08_to2190_WGS84_ell_nh

Area-mean values of free-air Gravity Anomalies in **mGal**. Their statistics are tabulated next.

Statistics of Area-mean Free-air Gravity Anomaly Values (mGal)

Number of Values	9331200
Percentage of Area	100.000
Minimum Value	-361.775
Latitude of Minimum	19.375
Longitude of Minimum	293.542
Maximum Value	869.094
Latitude of Maximum	10.792
Longitude of Maximum	286.292
Arithmetic Mean	-0.471
Area-Weighted Mean	0.000
Arithmetic RMS	32.899
Area-Weighted RMS	34.457
Arithmetic S.Dev.	32.896
Area-Weighted S.Dev.	34.457

(7) read_1file_min5.0

FORTRAN program that can be used to read file (6) above.

(8) read_1file_min5.0.out01

Output from a run of the above program (7).