

Description of the geoid file FIN2023N2000.gri

The FIN2023N2000 is a quasigeoid model (height conversion surface) of Finland. The model is recommended to be used inside of the Finnish borders as well as in the territorial waters of Finland. The model contains quasigeoid heights that are used to convert EUREF-FIN ellipsoidal heights to normal heights in the national height system of Finland, N2000.

The model is given as a grid file in ASCII-format (FIN2023N2000.gri). The dimensions of the model with grid spacings are given in the first row (header) of the file:

58.80000000 70.19000000 19.00000000 31.98000000 0.01000000 0.02000000

Header:

Minimum latitude: 58.80°

Maximum latitude: 70.19°

Minimum longitude: 19.00°

Maximum longitude: 31.98°

Latitude spacing: 0.01°

Longitude spacing: 0.02°

After the header, the quasigeoid heights for each grid point are given as following:

- The first 650 values $((31.98 - 19.00) / 0.02 + 1 = 650)$ are the heights of the northernmost latitude (70.19°). The values of a single latitude consists of two (30 rows * 8 columns) and one (21 rows * 8 columns + 1 row * 2 columns) grids: $(30 + 30 + 21) * 8 + 2 = 650$.
- The next 650 values are the heights of the second northernmost latitude (70.18°), etc.
- Total number of heights: $1140 * 650 = 741\ 000$
- Heights are given in meters with millimeter accuracy.

An example after the header, N = quasigeoid height:

Lat. 70.19°, Lon. 19.00°, $N = 31.498$ m (the first value of the file: row 3, column 1)

Lat. 70.19°, Lon. 19.02°, $N = 31.457$ m (the second value of the file: row 3, column 2)

Lat. 58.80°, Lon. 31.98°, $N = 14.902$ m (the last value of the file: row 96901, column 2)

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