

Regional geoid model of the area of subglacial Lake Vostok, Antarctica

– Electronic supplementary material –

Joachim Schwabe, Heiko Ewert, Mirko Scheinert and Reinhard Dietrich

Mirko Scheinert
Institut für Planetare Geodäsie
Technische Universität Dresden
01062 Dresden
Germany

E-mail: mirko.scheinert@tu-dresden.de
Phone: +49(0)351-463-33683
Fax: +49(0)351-463-37063

Description of data grid

Data records form a regular but not equiangular grid with 600 m spacing in polar stereographic projection (71°S standard parallel).

A description of data columns can be found in Table 1.

Height anomalies (quasigeoid heights) were estimated by means of 3-d least-squares collocation in a remove–compute–restore approach. For that, regional airborne gravity and topography data (Studinger, 2003) were combined with the global geopotential model GOCO03S (at full degree and order). The height anomalies were then converted to geoid heights using the gravity data and a density model. For more details on the method see Schwabe et. al. (2014).

The estimated uncertainty of the height anomalies is ± 0.05 m.

To reference this dataset please cite

Schwabe, J., H. Ewert, M. Scheinert, R. Dietrich (2014): Regional geoid modeling in the area of subglacial Lake Vostok, Antarctica. *Journal of Geodynamics* 75 9–21, doi:10.1016/j.jog.2013.12.002.

Acknowledgements

The work is partly supported by the *German Research Foundation* (DFG).

We acknowledge the airborne geophysical data products. This material is based on work supported by the National Science Foundation under Grant: OPP-9911617. It is referenced by:

Studinger, M., R.E. Bell, G.D. Karner, A.A. Tikku, J.W. Holt, D.L. Morse, T.G. Richter, S.D. Kempf, M.E. Peters, D.D. Blankenship, R.E. Sweeney, V.L. Rystrom (2003): Ice cover, landscape setting, and geological framework of Lake Vostok, East Antarctica. *Earth Planet Sc Lett* 205 (3–4) 195210, doi:10.1016/S0012-821X(02)01041-5.

Table 1: Format description of ASCII grid file and metadata

| column | quantity | unit | tide system | reference ellipsoid |
|--------|----------------------------|---------|----------------|---------------------|
| 1 | longitude | degrees | not applicable | WGS84 |
| 2 | latitude | degrees | not applicable | WGS84 |
| 3 | ellipsoidal surface height | m | not applicable | WGS84 |
| 4 | height anomaly | m | mean-tide | WGS84 |
| 5 | geoid heights | m | mean-tide | WGS84 |