

A Geoid Model of Northern Chile from Airborne and Surface Gravity

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SUMMARY

Abstract

In recent decades many countries have participated in projects related to the determination of local geoid models combining global geoid model EGM08 and airborne gravity.

Today airborne gravimetry is an important technique to quickly collect gravity data over large regions, where terrestrial gravity data are sparse and/or of poor quality for use in geoid determination. Airborne gravity provide an obvious mean of gravity field data over large, inaccessible regions, such as polar and mountainous areas.

The joint work of the National Geospatial and Intelligence Agency of the United States of America (NGA), the National Space Institute of Denmark (DTU-Space) and the University of Bergen, along with work and data captured on the ground by the Military Geographic Institute of Chile (IGM) for decades, have given Chile the opportunity to own a local geoid model of the northern part of the country. The IGM made the field support, logistics and some of the members of the Geodesic Section participated actively in the project.

The northern Chile geoid was computed on a grid of $0.02^\circ \times 0.025^\circ$ resolution (corresponding to roughly 2×2 km grid). The area of computation is 39°S to 17°S and 75°W to 66°W . As a main characteristic the model is a combination of surface, airborne and satellite gravity and terrain models.

As a final product, a data grid with geoid undulation was obtained from Visviri to Concepción and it was possible to code an interpolation application to obtain the value for any point in the country.

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