

FORWARD MODELING AND 3D-VISUALIZATION OF THE DENSITY AND/OR SUSCEPTIBILITY OF THE EARTH'S CRUST BY IOGIS

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The problem of forward and backward modelling (inversion) of potential field data, which deal with any quantitative modelling in Geophysics, is the integration of constraining information from Geology and Petrology for the modeling process from independent methods and observations. This information - data in a geophysical sense - differ in nature and origin in many cases: most of the data sets are inhomogeneous and unevenly distributed, bear method dependent solution and in many cases uncertainties to some extent, especially if they describe human knowledge and experience. An approach is described to integrate these data into an interactive modelling process by means of 3D computer graphics and the combination of constraining data from an open interoperable Geo Information System (IOGIS) with the density/susceptibility model. This visual combination of different 2- and 3-D models (e.g. from borehole data, seismic, potential fields, geometry and topology of geological bodies) enables the quantitative comparison and adjustment, and results in a model which comprises as much independently derived information as possible. Examples are shown mainly from the Andes, and some from the NW German basin. This research has been done in the Collaborative Research Center 267 and is financially supported by the Deutsche Forschungsgemeinschaft (Bonn).