

AIDA (SP 5) - Model development and evaluation of results

Steinmetz, D.¹, Menzel, P.², Haase, C.², Barrio-Alvers, L.⁴, Brandes, C.¹, Siemon, B.³, Götze, H.-J.² and Winsemann, J.¹

¹ Leibniz Universität Hannover, ² Christian-Albrechts-Universität zu Kiel, ³ Bundesanstalt für Geowissenschaften und Rohstoffe (BGR), ⁴ TU Dresden

Introduction

- In the AIDA sub-project SP 5, two synthetic 3D subsurface GOCAD® models will be generated
- These subsurface models will be combined with real geophysical data sets of the BGR and of partner sub-projects
- The aim of sub-project SP 5 is to iteratively connect the heterogeneity distribution of synthetic subsurface models with airborne geophysical data and to test and evaluate the plausibility of these models

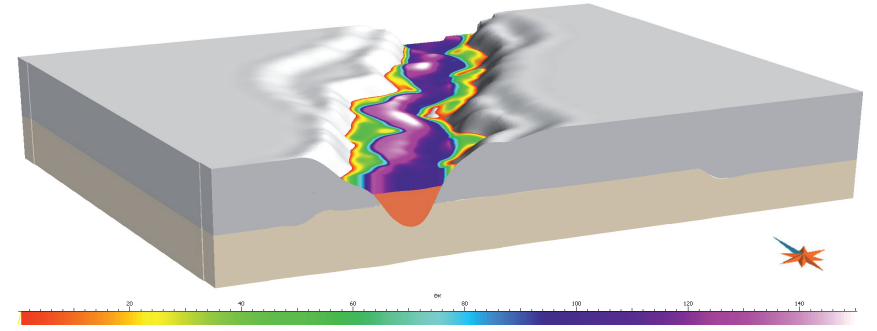


Fig. 1: Synthetic GOCAD® model of a subglacial tunnel valley

IGMAS+

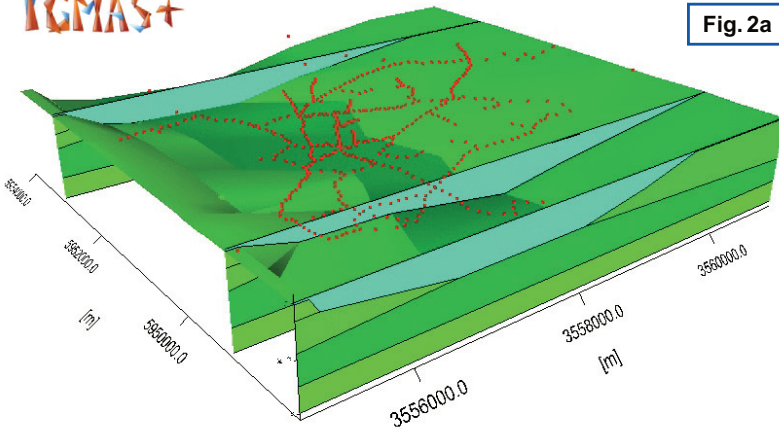


Fig. 2a

Software IGMAS+

IGMAS+ software provides three-dimensional interactive modelling and interpretation of geoid, gravity and magnetic fields. The 3D models are generated by triangulated polyhedral bodies with constant parameters for e.g. density and / or susceptibility. Interactive adaption of model parameters (geometry, density, susceptibility) enable the user to generate the model as realistic as possible.

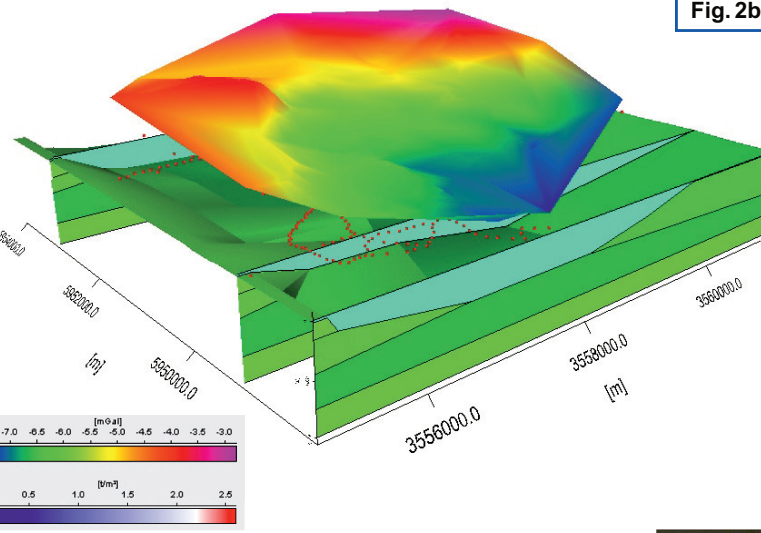


Fig. 2b

- Fig. 2a shows the subsurface model of the subglacial *Ellerbeker Rinne* (Götze et al. 2009)
- Fig. 2b shows the subsurface model of the *Ellerbeker Rinne* combined with gravimetric data
- Fig. 2c shows a 2D section of the *Ellerbeker Rinne* with measured and calculated gravity profiles
- The subsurface model will be adjusted to match the measured and calculated gravity profiles

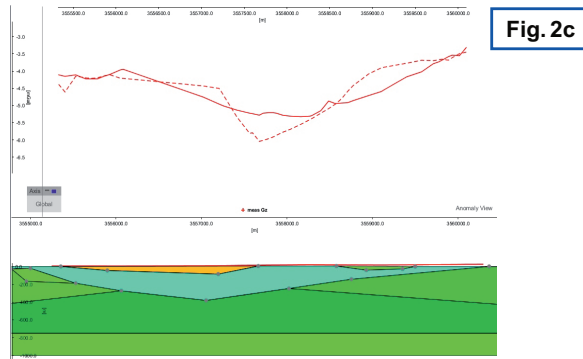


Fig. 2c

Visualisation at CAU Kiel

- The visualisation of GOCAD® and IGMAS+ models will be carried out in a low-cost graphic cave at CAU Kiel (Fig. 3)
- To exchange results and to enable their common and uniform comparison IGMAS+ will be extended towards a high-end software for 3D visualisation
- Interfaces between IGMAS+ and GOCAD® and / or other user software in the AIDA project will be developed and implemented (Fig. 4a and b)

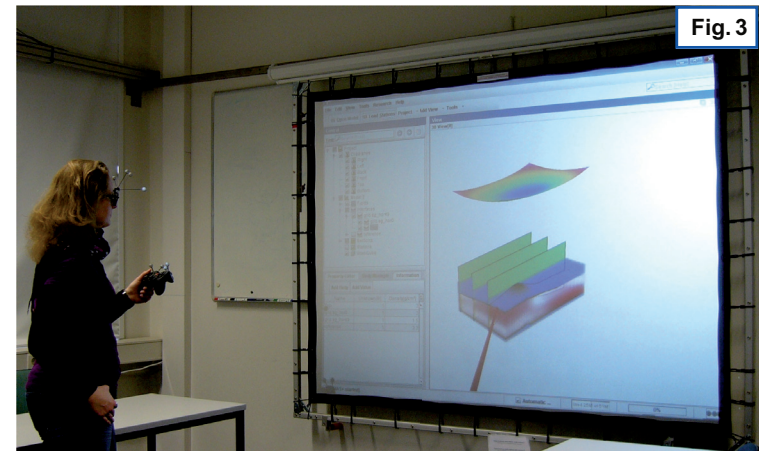


Fig. 3

Fig. 4a

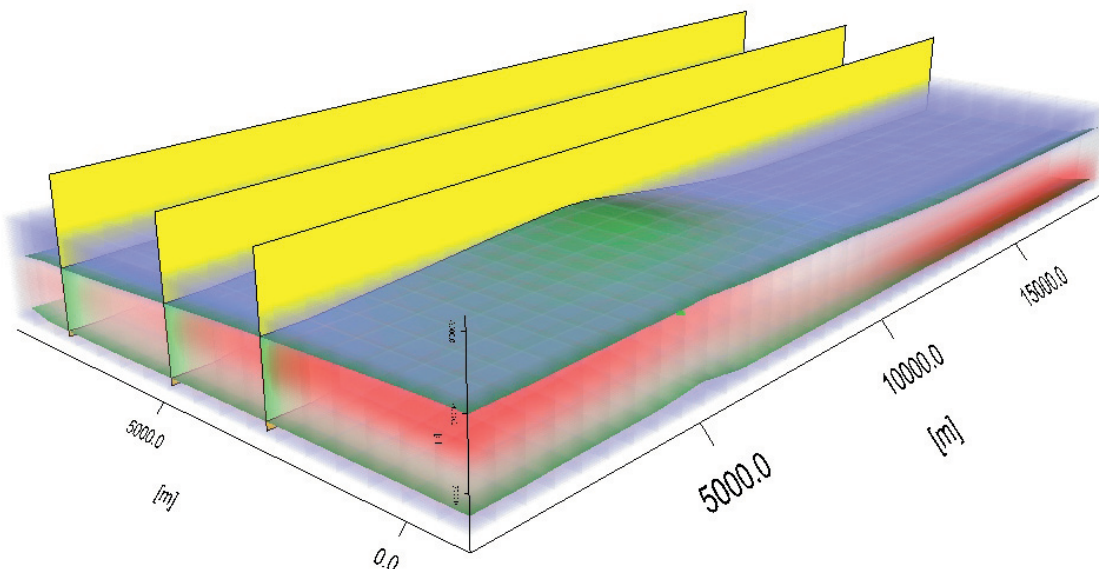
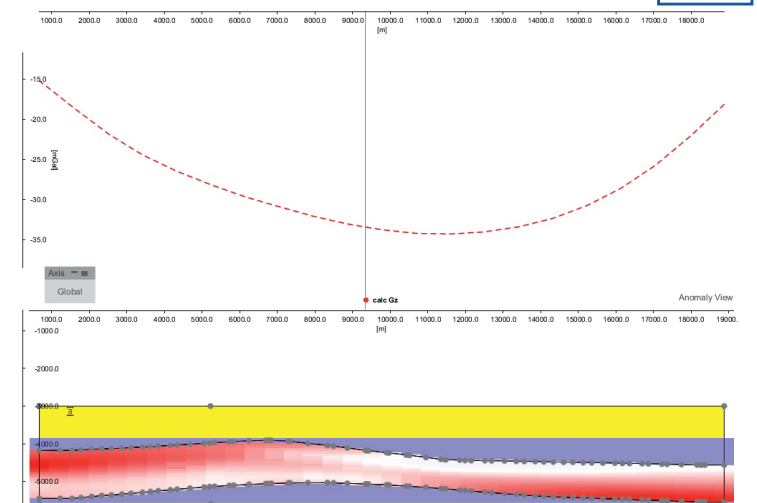


Fig. 4: a) Combined GOCAD® and IGMAS+ model, b) 2D section with calculated gravity profile

Fig. 4b



References:

Götze, H.-J.; Gabriel, G.; Gíszas, V.; Hese, F.; Kirsch, R.; Köther, N. and Schmidt, S. (2009): The ice age paleo-channel „Ellerbeker Rinne“ - an integrated 3D gravity study. ZDGG, Vol. 160/3, pp. 279-293

Contact:

Dipl.-Geow.
Dominik Steinmetz
Email: steinmetz@geowi.uni-hannover.de
Tel.: +49-(0)511 762 3872

Dipl.-Geoinf.
Peter Menzel
Email: menzelp@geophysik.uni-kiel.de
Tel.: +49-(0)431 880 2113

Funded by:

