GFZ Software Flagship Store and Helmholtz Software Spotlights

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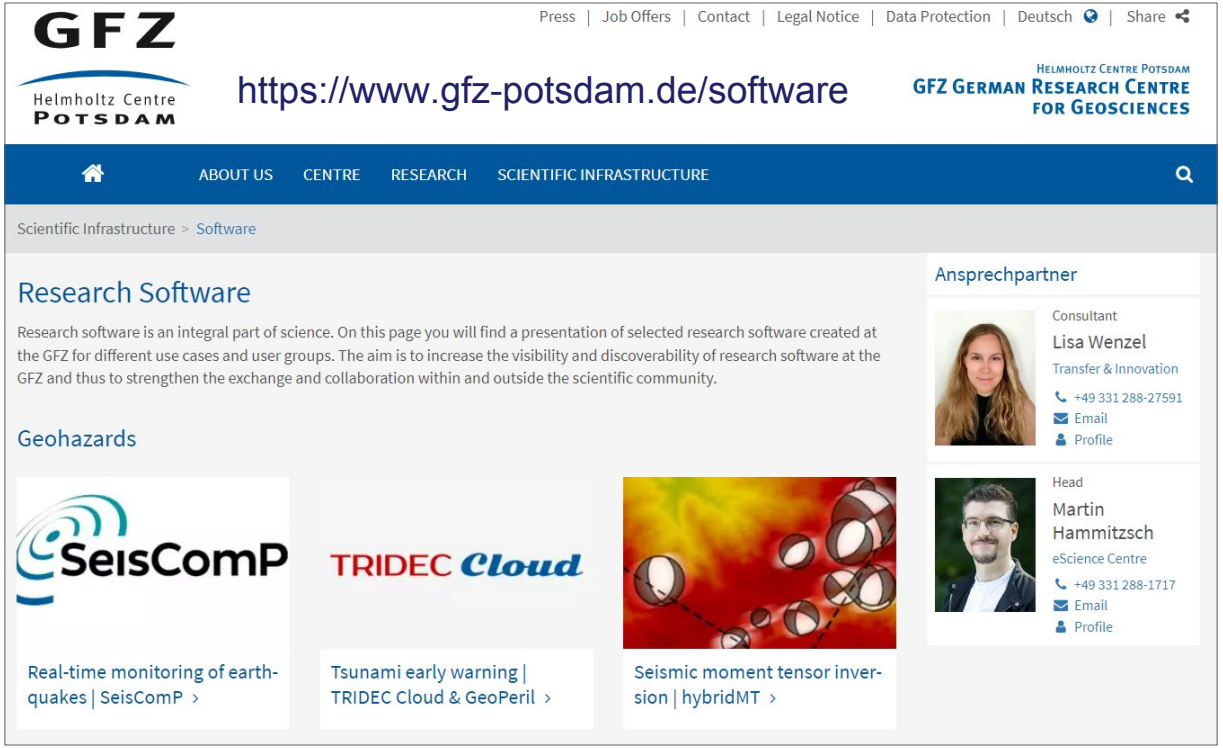
Showing our software engineering competence…

- strategic importance: increase the **visibility** and **discoverability** of research software from GFZ
- strengthen increased **exchange and collaboration** both within and outside the scientific community
- selected software was made accessible to internal and external users via a portal created for this purpose ☾ **GFZ Software Flagship Store**

GFZ Software Flagship Store



GFZ Software Flagship Store

IGMAS+

IGMAS+ is a software for 3-D modelling of potential fields and its derivatives under the condition of constraining data and independent information. It comes with tools for forward and inverse modelling. IGMAS+ has a long history starting 1988 with the basic and key publication of Götze and Lahmeyer and has seen continuous improvement since then with input by many contributors (publications). Since 2019, IGMAS+ is maintained and developed at The Helmholtz Centre Potsdam - GFZ German Research Centre for Geosciences by the staff of Section 4.5 – Basin Modelling and ID2 – eScience Centre with strong ongoing support by H.-J. Götze and S. Schmidt from CAU Kiel.

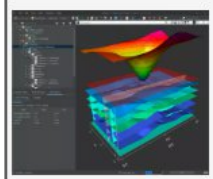
User group

IGMAS+ is an important and user-friendly tool for scientific and industrial stakeholders who need an integrative and multi-disciplinary analysis of spatial variabilities in the subsurface and want to contributes to the sustainable use of georesources.

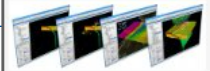
Features

IGMAS+ includes features as:

- Interactive 3D modelling of potential fields: gravity and magnetics
- High performance due to parallelisation and hardware acceleration
- User friendly graphical interface with powerful customization and timeline-based project management
- Cross-platform implementation
- Support of spherical modelling and visualization on the globe with WorldWind, usage of WMS map service of GFZ Potsdam
- Long history: over 40 years of development
- Extensive documentation online and in print
- World-wide user community



What makes IGMAS+ highly efficient and user-friendly is that it allows adjusting the geometries and physical properties of modelled subsurface bodies interactively, i.e. while the corresponding calculated and measured potential field components are visualized together with independent observations. An extensive user manual as well as an interactive online workflow guide through the various functionalities IGMAS+ offers.



A timeline based project management allows a user to navigate through different time with a model and data. It implements a structured project directory that keeps the chronology of valuable information about model changes. Such functionality is used to recover any previous model state.

Contacts

Scientist

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Basin Modelling

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Email

Profile

Additional Information

Get started:

Website

Licence:

No-cost license upon request (personal or group license)

Release:

Version v1.4.8707 *on 13 Jul 2021*

Programming language:

Java + Python interface

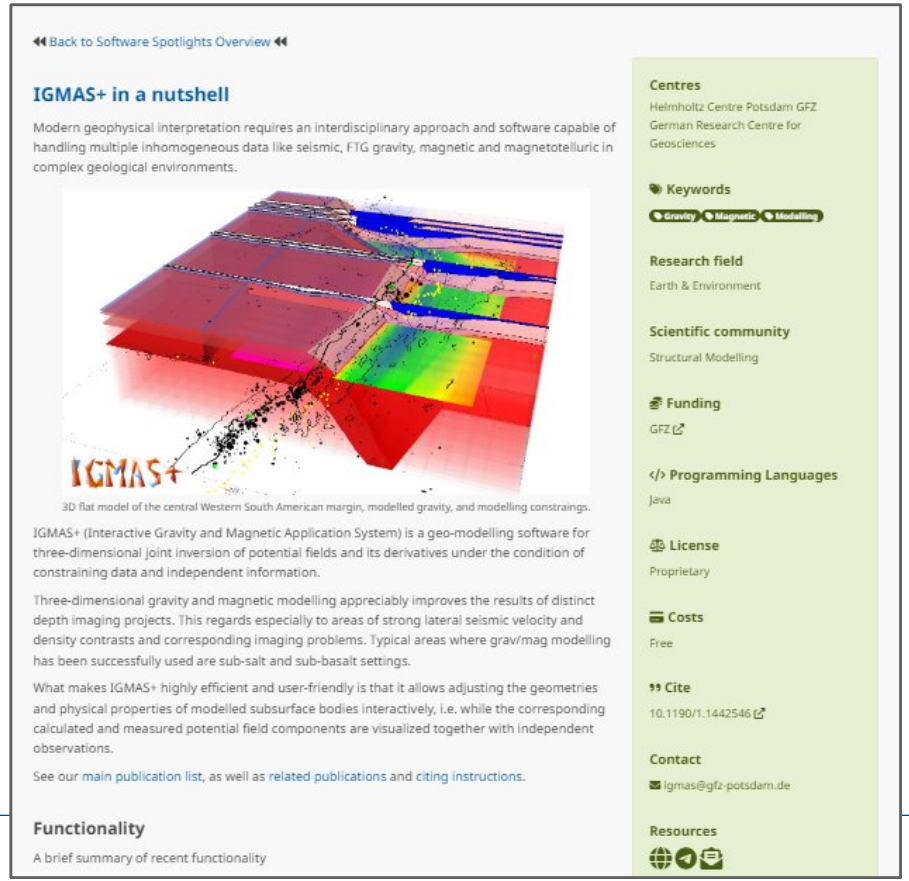
Keywords:

#potential fields #3D modelling #gravity #magnetics #interactive #inversion #triangulation #spherical modelling #global visualisation #density distribution #susceptibility distribution #voxels #high-performance #user-friendly

DOI:

10.5194/egusphere-egu2020-8383

Helmholtz Software Spotlights on HIFIS



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IGMAS+ in a nutshell

Modern geophysical interpretation requires an interdisciplinary approach and software capable of handling multiple inhomogeneous data like seismic, FTG gravity, magnetic and magnetotelluric in complex geological environments.

3D flat model of the central Western South American margin, modelled gravity, and modelling constraings.

IGMAS+ (Interactive Gravity and Magnetic Application System) is a geo-modelling software for three-dimensional joint inversion of potential fields and its derivatives under the condition of constraining data and independent information.

Three-dimensional gravity and magnetic modelling appreciably improves the results of distinct depth imaging projects. This regards especially to areas of strong lateral seismic velocity and density contrasts and corresponding imaging problems. Typical areas where grav/mag modelling has been successfully used are sub-salt and sub-basalt settings.

What makes IGMAS+ highly efficient and user-friendly is that it allows adjusting the geometries and physical properties of modelled subsurface bodies interactively, i.e. while the corresponding calculated and measured potential field components are visualized together with independent observations.

See our main publication list, as well as related publications and citing instructions.

Functionality

A brief summary of recent functionality

Centres
Helmholtz Centre Potsdam GFZ German Research Centre for Geosciences

Keywords
Gravity · Magnetic · Modelling

Research field
Earth & Environment

Scientific community
Structural Modelling

Funding
GFZ

Programming Languages
Java

License
Proprietary

Costs
Free

Cite
10.1190/1.1442546

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Resources

https://www.hifis.net/spotlights