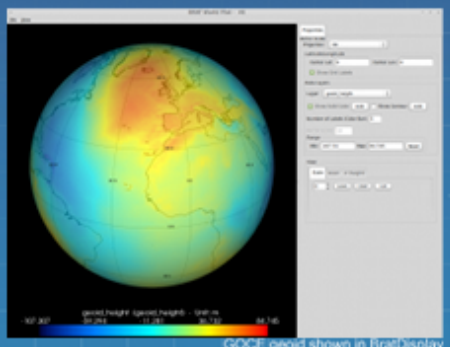
→ GUT

The GOCE User Toolbox

What is the GOCE User Toolbox?

GUT is a tool to facilitate the use, viewing and post-processing of GOCE Level 2 mission data products in the fields of geodesy, oceanography and solid Earth physics.

GUT generates all output files in netCDF format in compliance with the CF (Climate and Forecast) Convention, and gridded results may be visualised using the BratDisplay tool from the Basic Radar Altimetry Toolbox (BRAT, available at http://earth.esa.int/brat) and many other commonly used plotting tools.



GOCE geoid shown in BratDisplay

http://earth.esa.int/gut

The GUT software is a command-line processor that has been designed for users at all levels of expertise. For the novice user, it includes pre-built workflows for rapid computation of geophysical parameters.

More experienced users can generate their own workflows for enhanced or specialized processing or use the available API to develop their own tools based in GUT.

GUT is supplied as fully open source software under GNU GPL license.

What does GUT do?

GUT is able to:

> read the GOCE XML Level 2 Products (EGM_GOC_2), GRAVSOFT, ICGEM, netCDF in CF-Conventions (even multi-data), and ancillary datasets, including a priori surfaces (DEM, MSS, MDT);

> compute geoid heights at a chosen maximum degree and order over a grid or transect;

> compute gravity anomalies, height anomalies and vertical deflections on the surface of the terrain for a range of maximum degree and order expansions over a grid or transect;

> compute gridded field from its spherical harmonic expansion;

> compute the spherical harmonic expansion of a gridded field;

> compute the ocean's mean dynamic topography and the geostrophic velocities with the option of anisotropic filtering in the spatial or spectral domains;

> transform data between different reference ellipsoid and tide-systems;

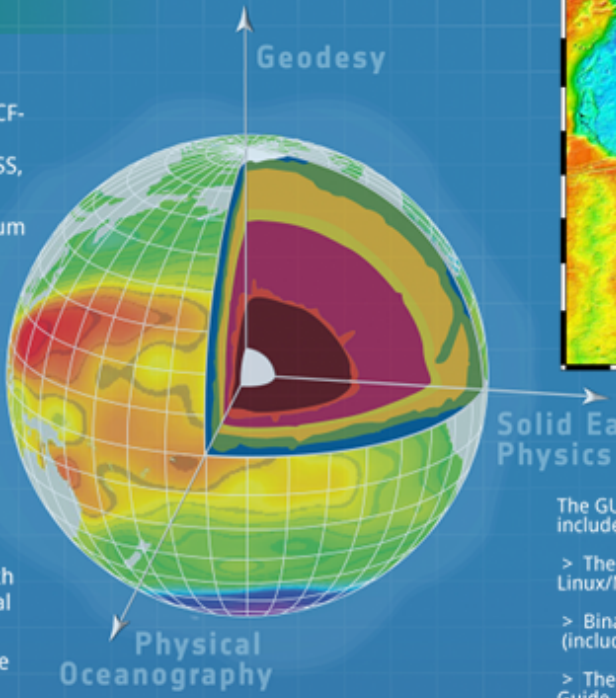
> translate a gridded surface to a different grid by bilinear or spline interpolation;

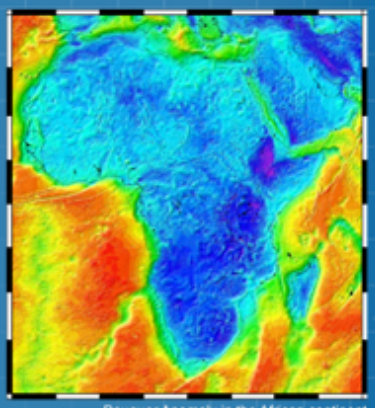
> introduce a height correction term to geoid heights from an external file;

> manage the time-system attribute of a time-varying surface;

> support configurable high-level processing;

> produce final output products in netCDF-CF format, GRAVSOFT, KML and TIFF.





Bouguer Anomaly in the African continent

The GUT package available online or via DVD includes:

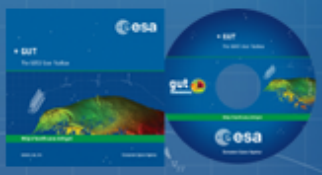
> The source package for building on UNIX/Linux/Mac

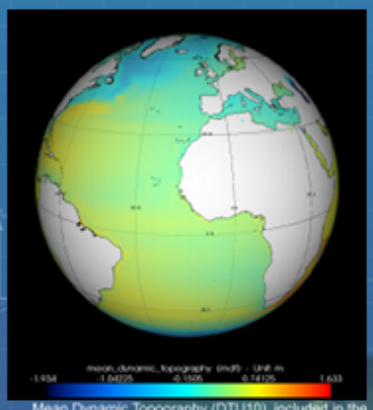
> Binary packages for Windows/Linux/Mac (includes BratDisplay)

> The GUT Algorithm Description and User Guide

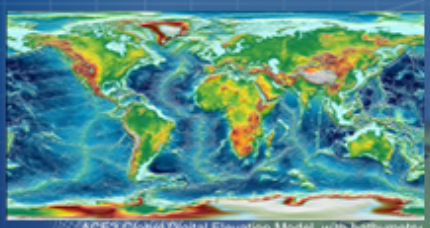
> The GUT Tutorial

> The a priori data package: (GOCE L2 EGM_GOC DATA, DEM, MSS, MDT)



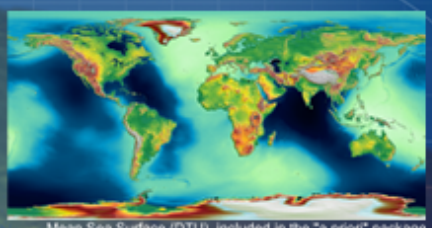


Mean Dynamic Topography (DTU10), included in the "a priori" package, exported by BratDisplay



ACE2 Global Digital Elevation Model, with bathymetry, included in the "a priori" package

GUT is being developed by a consortium of European research institutes and industry led by DTU Space under ESA contract.



Mean Sea Surface (DTU), included in the "a priori" package

National Oceanography Centre
NATURAL ENVIRONMENT RESEARCH COUNCIL

Newcastle University

European Space Agency