The Geothermal Information System of Germany

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Project

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Partners: Hydrogeology Section, Freie Universität Berlin
Geothermie Neubrandenburg GmbH
Geological Survey, Lower Saxony
Geological Survey, Bavaria
Geological Survey, Mecklenburg-Vorpommern
Department of Environment, RPF, Baden-Württemberg

Scientific Steering: Deep Geothermy Work Group of the Geological Surveys
The Geothermal Information System for Germany

TWO PARTS:

1. GEOTHERMAL INSTALLATIONS
   - Location of geothermal facilities
   - Operating parameters

2. GEOTHERMAL POTENTIALS
   - Areas of hydrothermal resources
   - Well data
   - Location of seismic surveys
   - Stratigraphic models & cross sections
   - Subsurface temperature
   - Hydraulic properties of formations

http://www.geotis.de
Hydraulic test data
Porosities and permeabilities of core samples

Geophysical Information System, LIAG (ca. 10,500 locations)

Stratigraphic maps
Well profiles
2D seismic surveys:
  - Western Molasse Basin
  - Upper Rhine Graben
Subsurface Temperature Data

**RECORD CATEGORY:**
- Quality A
- Quality B
- Quality C
- Discarded

**MAXIMUM DEPTH LEVEL OF RECORD:**
- 50 - 1000 m
- 1000 - 2000 m
- 2000 - 3000 m
- > 3000 m
Subsurface Temperature Data

- 3D Universal Kriging
  - 2 km x 2 km x 100 m
  - 5000 m b.s.l. to ground level
  - 2 regions: North & South

- Data validation
- Conversion to binary format
- Export to GeotIS

well data

ground level data

-2500 m bsl
Areas of geothermal Resources

- **North German Basin**
  - Aquifer complex Lias-Rhaetian
  - Middle Bunter Sandstone
  - Lower Cretaceous Sandstone
  - Dogger Sandstone
  - Keuper Sandstone

- **Upper Rhine Graben**
  - Upper Muschelkalk
  - Bunter Sandstone
  - Hauptrogenstein
  - Rotliegend

- **Southern German Molasse Basin**
  - Upper Jurassic (Malm)
3D Stratigraphic Modelling

1. Isobaths
2. Triangulated Surface
3. Grid (2½D)
4. Export to GeotIS
GeotIS Data Visualization

Lias Base

5 km
GeotIS Data Visualisation
GeotIS Data Visualisation

Upper Jurassic - Hydraulic Conductivity [m/s]

Birner et al. 2009
Summary:
- Digital geothermal atlas with interactive maps
- Catalogue of geothermal installations
- Compilation of data relevant for geothermal exploration
- Various query interfaces
- Fast data visualisation

Outlook:
- English version
- Annual production data
- New hydraulic conductivity maps for the North German Basin
- New stratigraphic models: Lower Saxony, Hesse, Thuringia etc.