



ThermoMap - Spatially explicit mapping of superficial geothermic resources

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The EU funded (ICT PSP) project ThermoMap aims to estimate spatially explicit superficial geo-thermal potentials out of existing geoscientific data sets. In the project involved are 12 partners from industry and research in nine countries (France, Iceland, Hungary, Romania, United Kingdom, Belgium Austria, Greece and Germany). ThermoMap will combine and analyse already existing data collections (geological, hydrological, geophysical and pedological geo-data, climate, topographical and land use & land cover) to calculate the geothermal potential in the first ten meters below surface on a large to medium scale. The project is divided into three phases: First the data collection and data harmonisation, setting up the model and including processing, analysis and visualisation, and finally testing the results.

Variations of temperature and heat flow in depth up to 10m below earth surface are predominantly controlled by external variables. Energy income is steered by sun radiation while heat transport is regulated by the infiltration of water as transport medium as well as internal soil conditions like soil texture (grain size), soil matter and mixture of soil substances, absorptive capacities, etc. Especially the first three meters can be exploited in terms of geothermal power use with cost efficient, inexpensive methods with an amortization of the invested budget in a relatively short time period.

The analysis of geodata will be performed in a GIS environment and is facilitated by standardized methods, valid for the entire EU. The method developed is taking into account latest available standards and project works (e.g. from the GS Soil project funded by eContentplus) which are likely to become INSPIRE standard in future. The resulting geothermal potential mapped on a local scale in pilot sites and a pan European medium scale (1:250.000) will be integrated in a Web Service. ThermoMap will provide different user-groups with an interactive information tool running in a web browser. Private users may check the potential of their own parcels, community planning and administration authorities may test the geothermal potential of their entire administrative unit. Researchers participating in ThermoMap will have access to the entire geo-data pool, which will be set up in Web Map Service (WMS), Web Coverage Service (WCS) and Web Feature Service (WFS).

Each project partner will define local representative test-areas in its country. The scale in these test areas depends on the availability of data in each country. The already existing data collection combines different parameters (slope, topographical wetness index, groundwater level, land use and land cover, grain size, bulk density, precipitation and temperature) to provide heat capacity and heat conductivity for three depth levels according to the bulk density.

The aim is to provide an applicable modeling environment to cost-efficiently estimate the potential of the renewable energy source with a special focus on household and industry exploitation. Therefore the spatially differentiated maps also give information about different constraints like for example hard rock surfaces, permafrost and protected zones (e.g. national parks, water protected zones).