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Hydraulic and thermal soil Parameter combined with TEM data at quaternary coastal regions

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In order to generate a more efficient method of planning and dimensioning small- and medium sized geothermal power plants at quaternary subsurface a basic approach has been attempted.

Within the EU-project CLIWAT, the coastal region of Denmark, Germany, Netherlands and Belgium has been investigated and air borne electro magnetic data was collected. In this work the regional focus was put on the isle of Föhr. To describe the subsurface with relevant parameters one need the information from drillings and geophysical well logging data. The approach to minimize costs and use existing data from state agencies led the investigation to the combination of specific electrical resistivity data and hydraulic and thermal conductivity. We worked out a basic soil/hydraulic conductivity statistic for the isle of Föhr by gathering all well logging data from the island and sorted the existing soil materials to associated kf –values. We combined specific electrical resistivity with hydraulic soil properties to generate thermal conductivity values by extracting porosity.

Until now we generated a set of rough data for kf - values and thermal conductivity. The air borne TEM data sets are reliable up to 150 m below surface, depending on the conductivity of the layers. So we can suppose the same for the differentiated parameters. Since this is a very rough statistic of kf –values, further more investigation has to be made.

Although the close connection to each area of investigation either over existing logging data or laboratory soil property values will remain necessary.

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