

GEOELEC

Prospective for Geothermal Electricity in Europe

Regional Workshop-UK-Ireland -Iceland

Burkhard SANNER

European Geothermal Energy Council

London, 26/09/2011



Regional compilation of prospective areas and resource assessment

Geoelec Geothermal resource assessment protocol

Data compilation

Critical review of bibliographic compilation from:

- Geological surveys
- Oil & Gas company public reports
- Direct contacts with underground 'explorators'
- 7 regional workshops to complete data compilation



Early geothermal data compilations

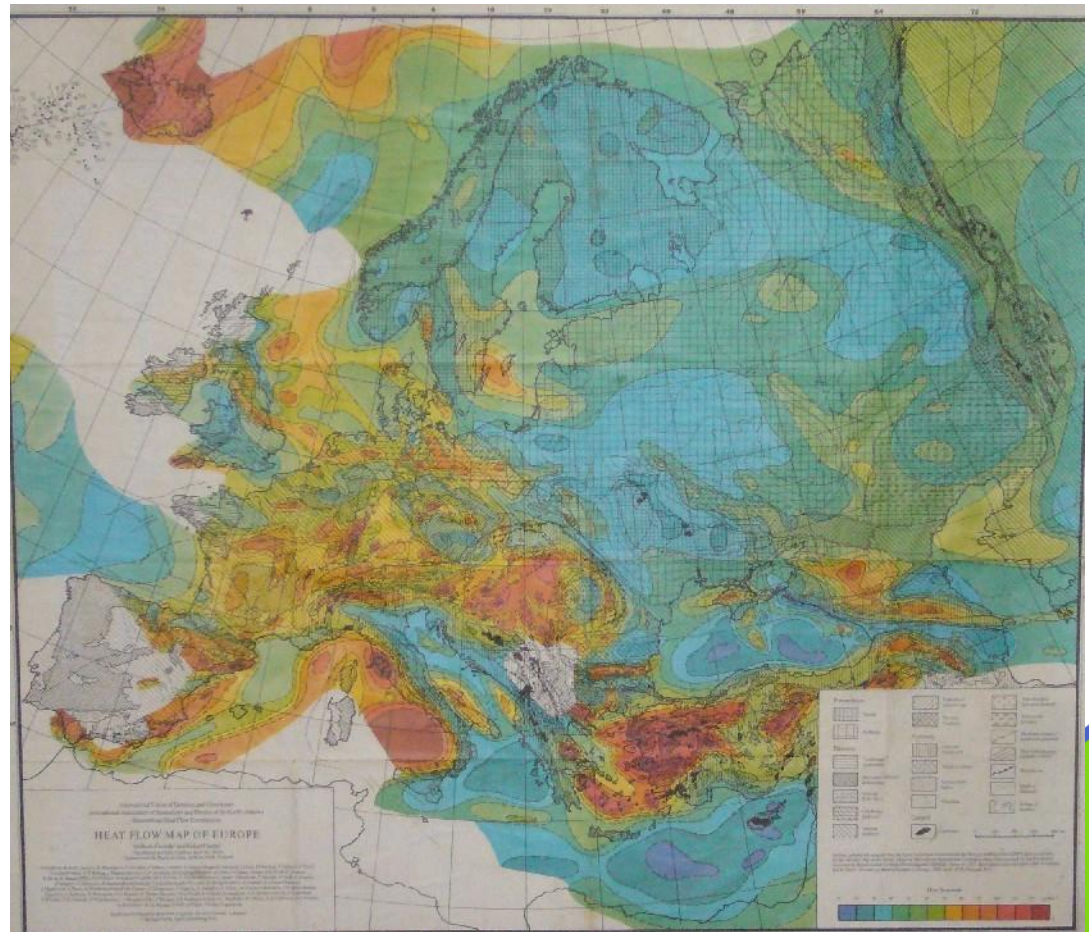
CERMAK, V. & RYBACH, L. (eds.) (1979): Terrestrial Heat Flow in Europe

Book with different papers from a Workshop

A map of heat flow density was included in that book

Similar book:

CERMAK, V. & HÄNEL, R. (eds.) (1980): Geothermics and Geothermal Energy, Symposium EGS/ESC Budapest

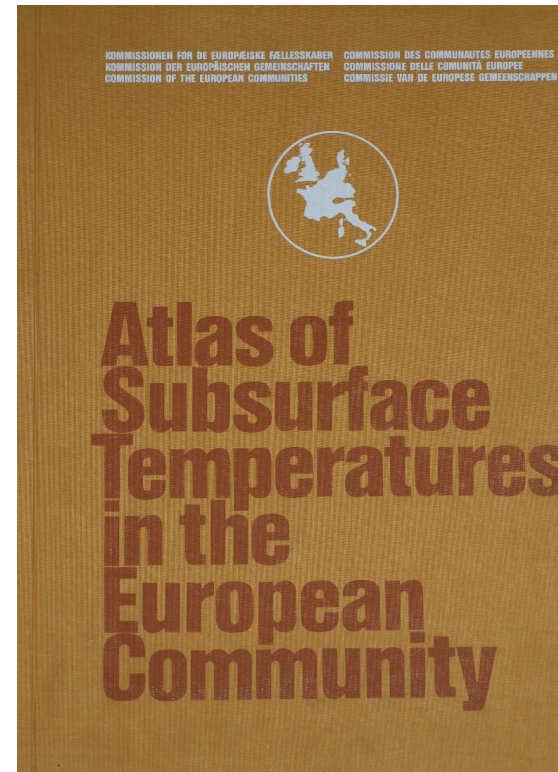


Early geothermal data compilations

EC 'Atlas of Subsurface Temperatures in the EC' (1980)

Coordinated by BGR, Hannover
(Ralph Hänel)

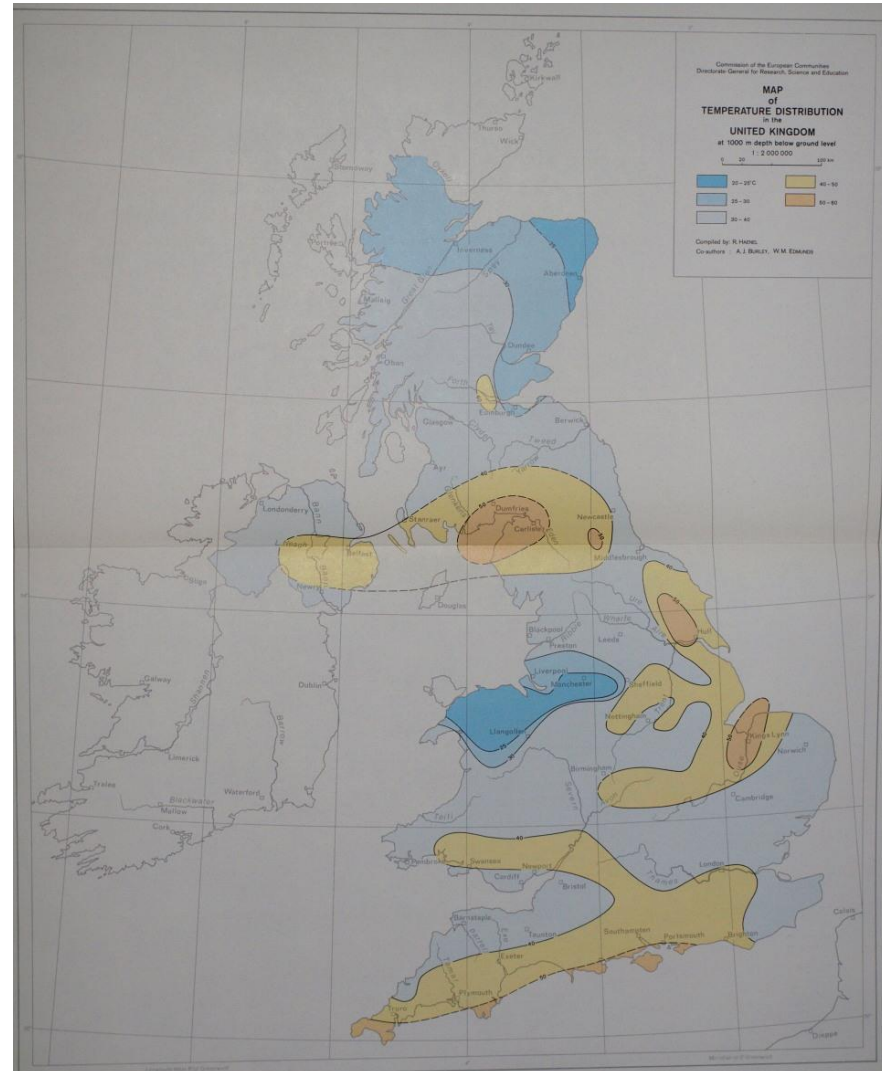
Only heat flow and temperatures
at depths between 500 and 5000,
for countries and regions
(e.g. Soultz-Landau)



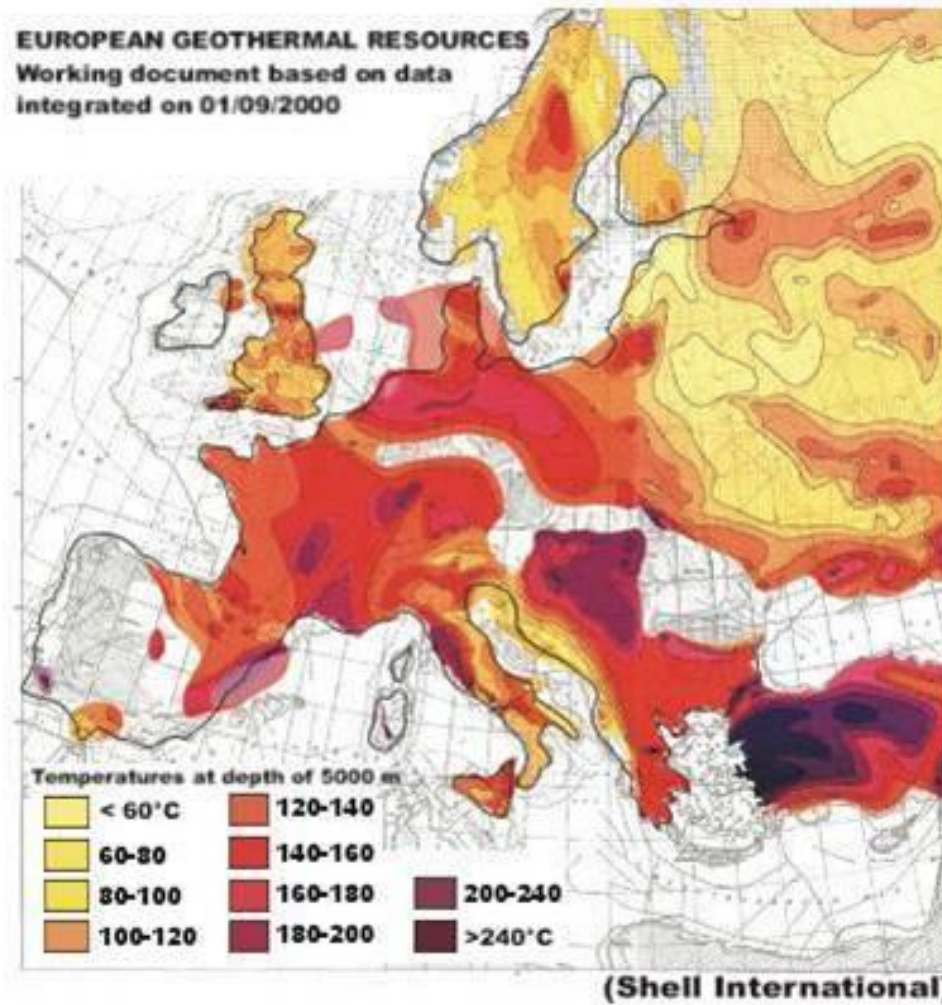
Early geothermal data compilations

EC 'Atlas of Subsurface Temperatures in the EC' (1980)

Temperature at 1000 m depth in the UK



SHELL Map (2000)



Regional compilation of prospective areas and resource assessment

EC 'Atlas of geothermal resources in Europe' (2002)

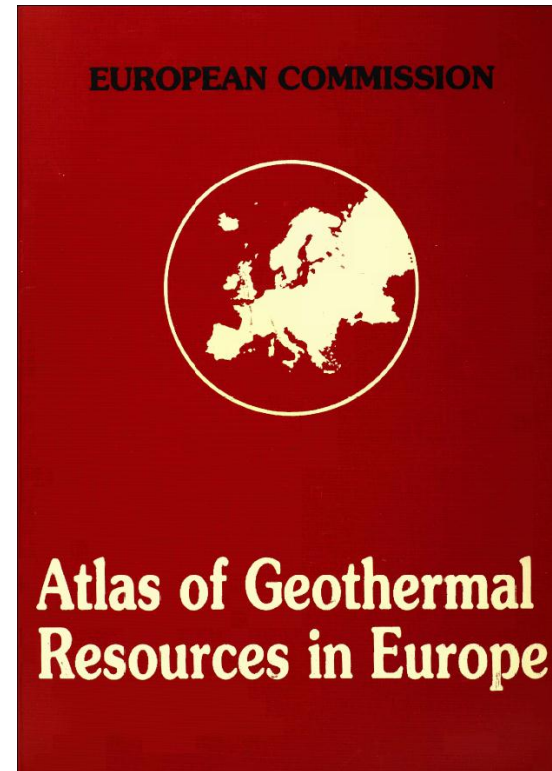
Coordinated by BGR, Hannover
(Suzanne Hurter)

Overview:

Heat Flow

Temperature at 1 Km and 2 Km depth

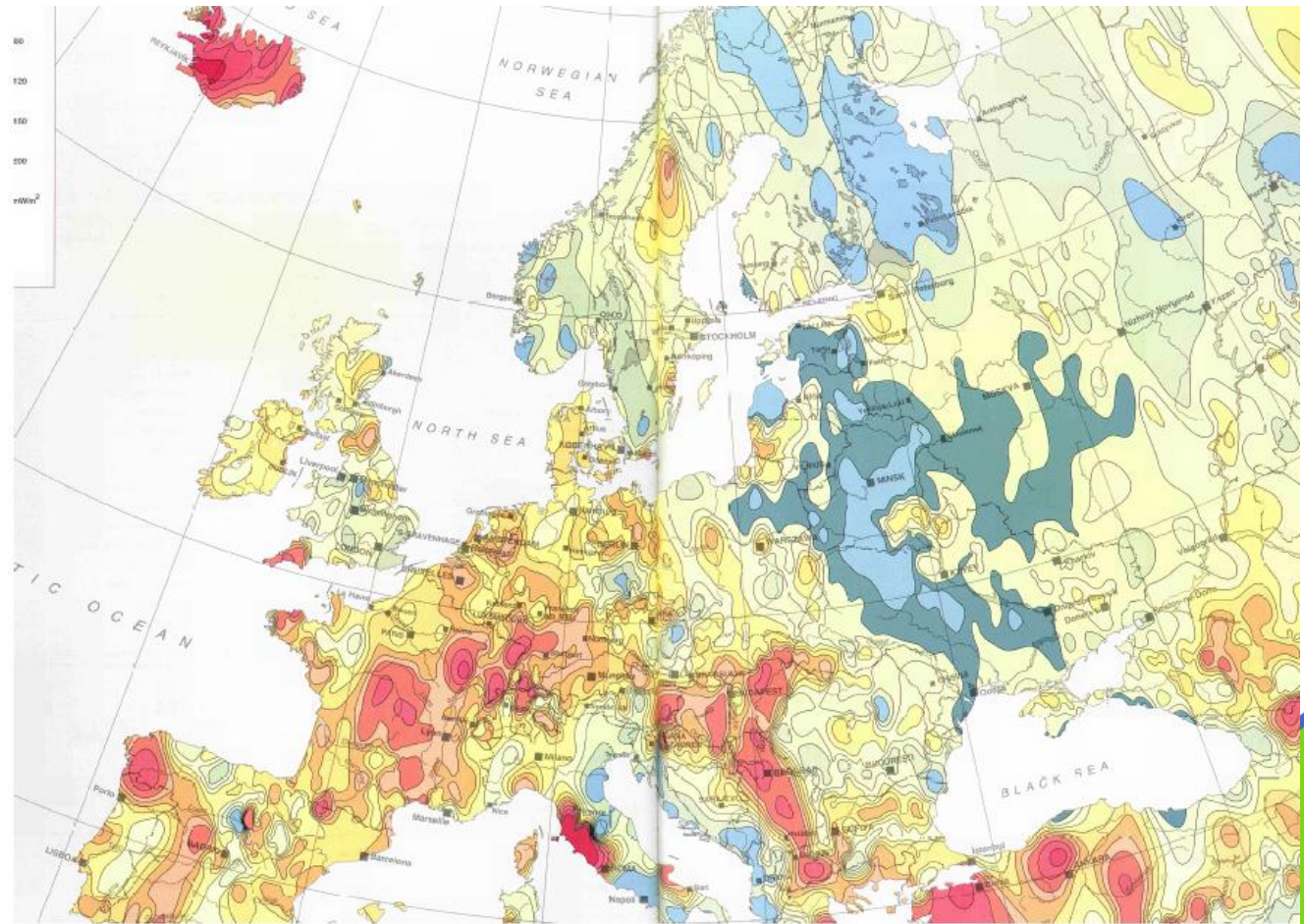
European Geothermal resources



Regional compilation of prospective areas and resource assessment

EC 'Atlas of geothermal resources in Europe' (2002)

Heat flow density



Regional compilation of prospective areas and resource assessment

EC 'Atlas of geothermal resources in Europe' (2002)

Resource assessment for UK
(hydrogeothermal resources)

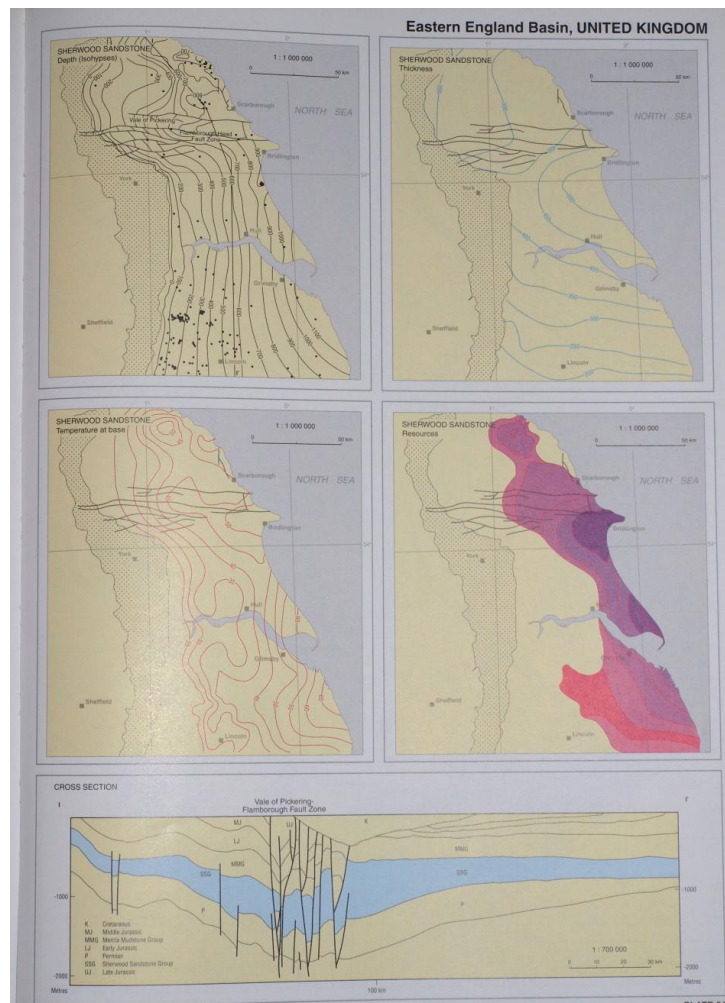


Regional compilation of prospective areas and resource assessment

EC 'Atlas of geothermal resources in Europe' (2002)

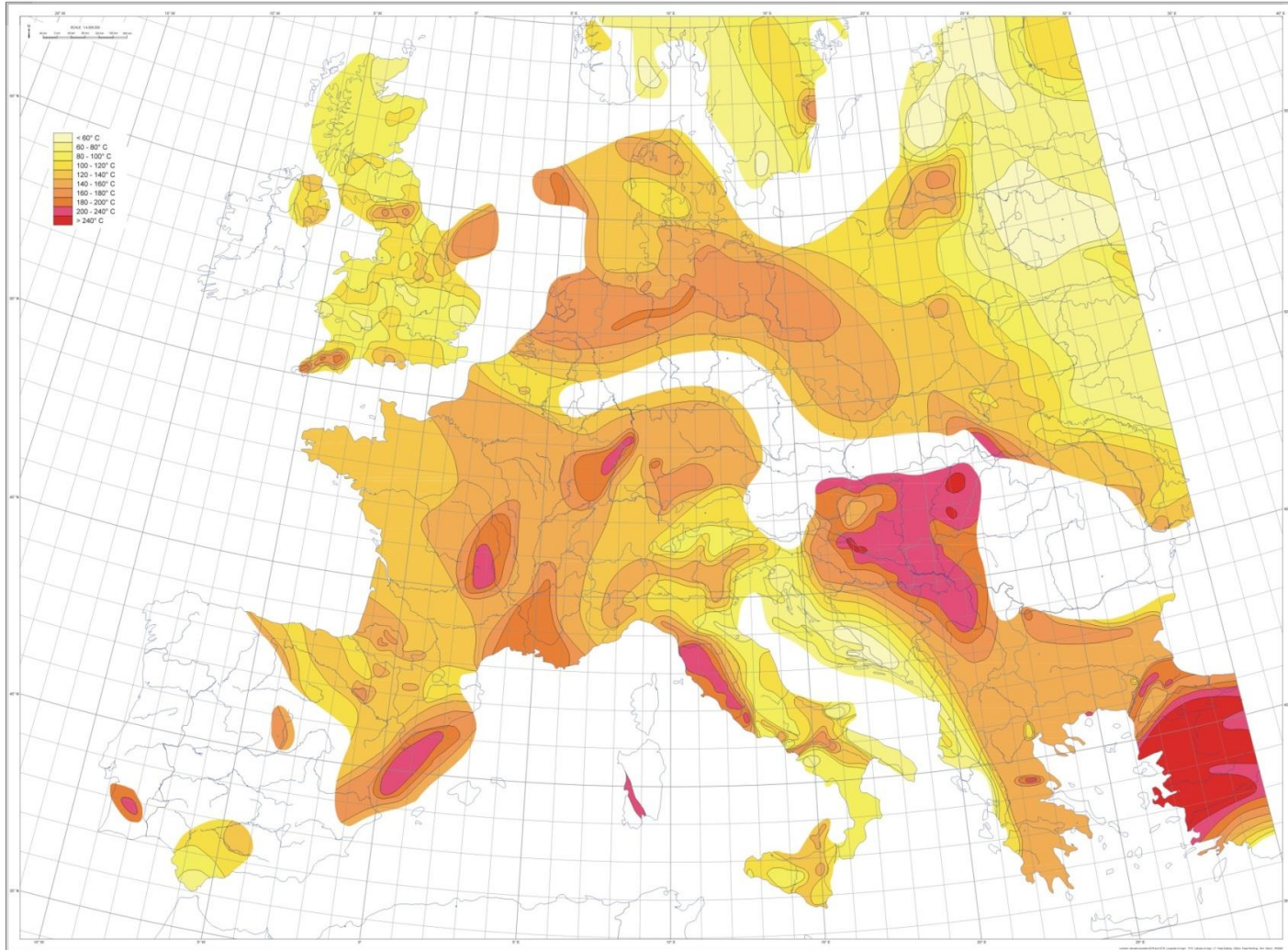
Resource assessment for UK
(hydrogeothermal resources)

Eastern England



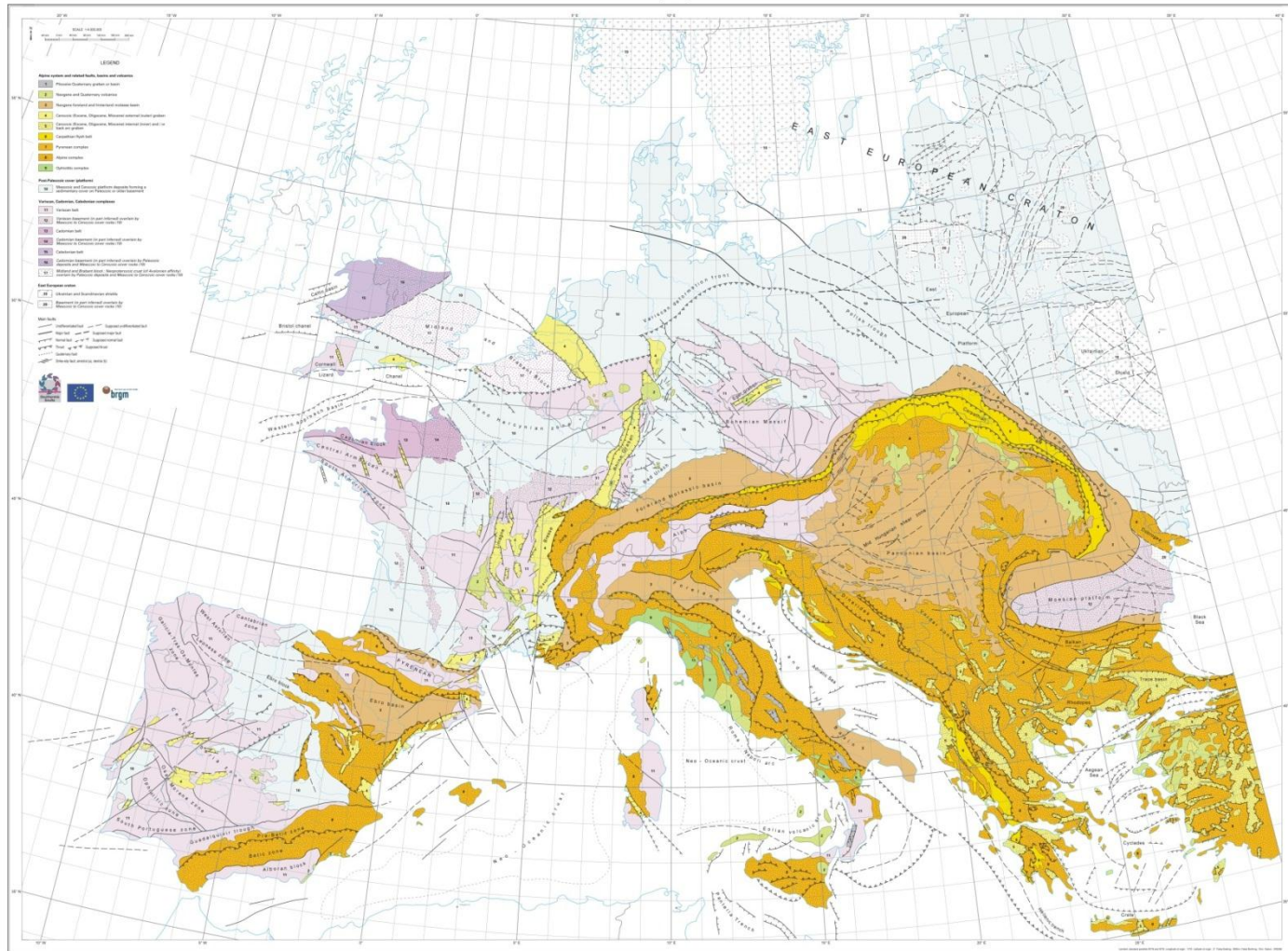
European Map

MAP OF THE TEMPERATURES EXTRAPOLATED AT 5 KM DEPTH
SCALE 1:4,000,000



ENGINE Project (FP6)

DEEP GEOTHERMAL ANOMALIES IN THEIR EUROPEAN GEODYNAMIC SETTING
SCALE 1:4,000,000



Other Public Sources:

- WGC 1995, 2000, 2005, 2010: Country Updates
- National geological databases
- Methodology from other continents:
 - Canada
 - USA
 - Australia

Canada

Geothermal energy resource potential of Canada (GS of Canada, 2011)

Contains maps on EGS potential !

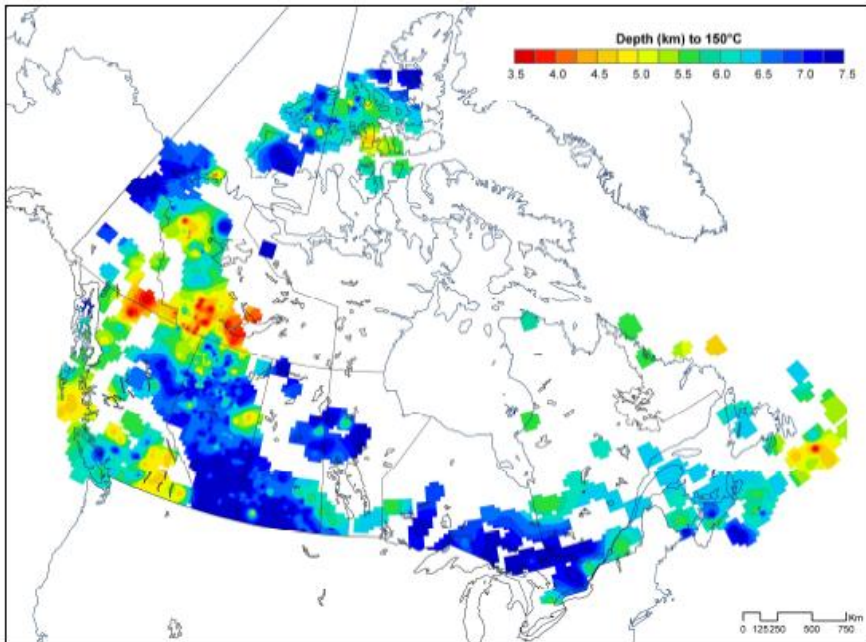


Figure 8.4. Depth (km) to 150 °C temperature.

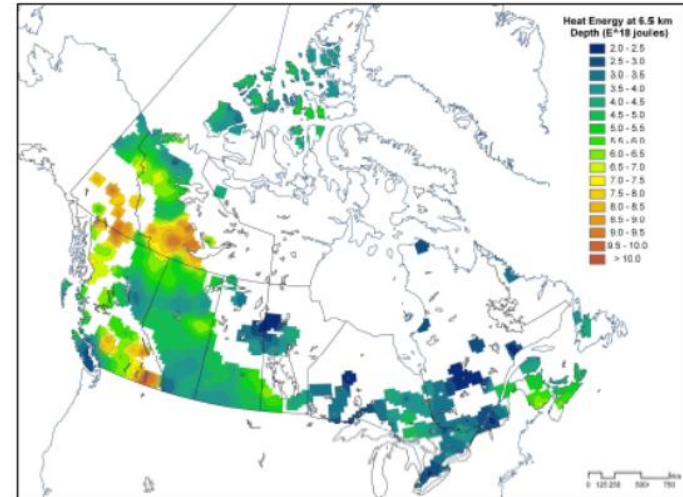


Figure 8.2. Heat Energy at 6-7 km depth.

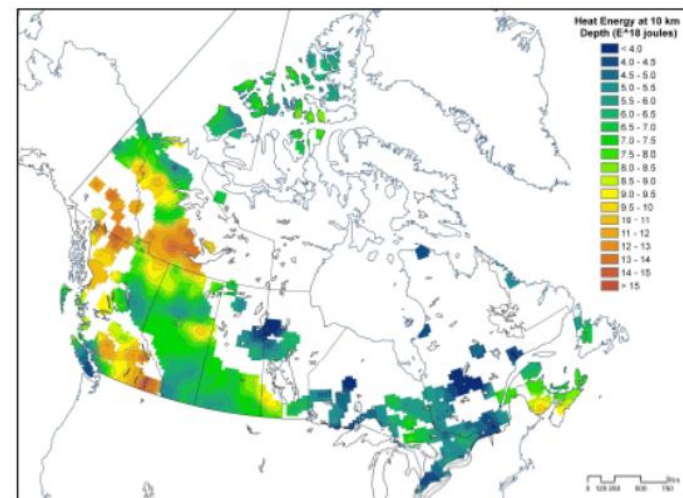


Figure 8.3. Heat Energy at 9-10 km.

Canada

Canadian Geothermal code for public reporting, Cangea, 2010



"Accelerate Canadian exploration and development of geothermal resources in order to provide secure, clean and sustainable energy"

5,000 MW BY 2015!

THE CANADIAN GEOTHERMAL CODE FOR PUBLIC REPORTING

REPORTING OF EXPLORATION RESULTS, GEOTHERMAL RESOURCES AND GEOTHERMAL RESERVES

2010 EDITION

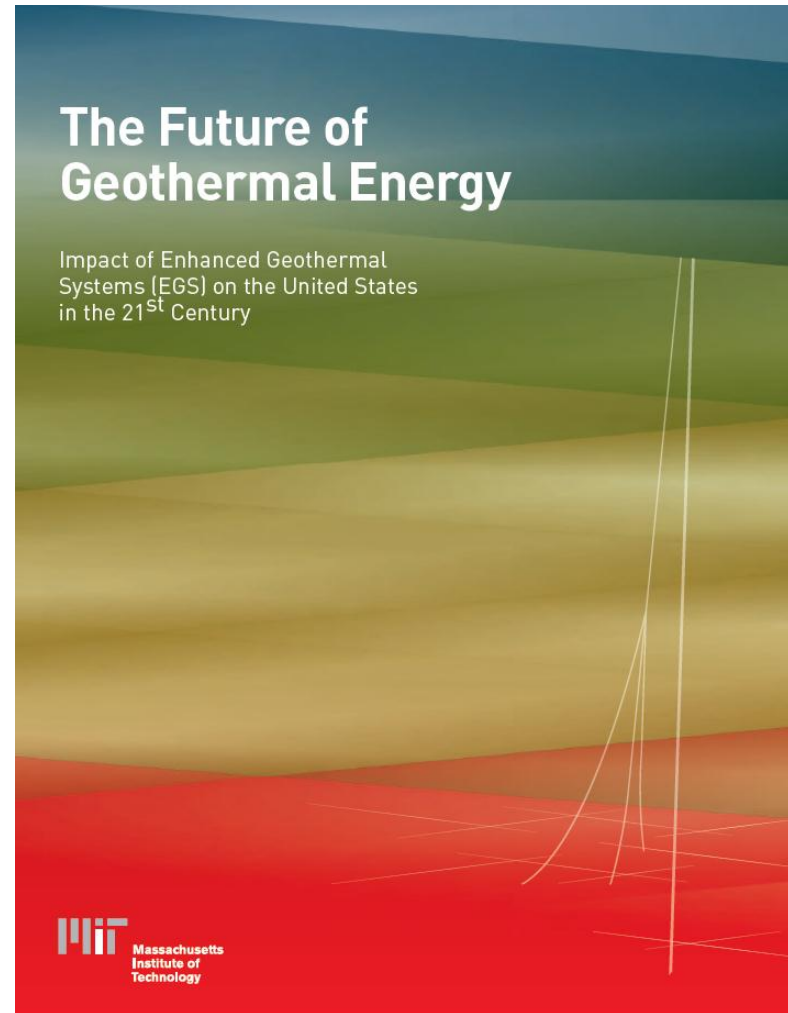
Prepared by
The Canadian Geothermal Code Committee (CGCC):

Mr. Lee Deibert, Meridian Environmental Consulting Ltd. (CanGEA Director and Committee Co-Chair)
Mr. Amar Hjartarson, Mannvit Engineering
Mr. Ian McDonald, Nexen Inc.
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Dr. Daniel Yang, Borealis Geopower Inc.



USA

- **The Future of Geothermal Energy, MIT, 2006**
- **GOOGLE.ORG:
U.S. Geothermal Resource
(3-10 km depth) on
Google Earth**



Australia

The Geothermal reporting code, 2008, AGEA-AGEG



Australian Code for Reporting of Exploration Results,
Geothermal Resources and Geothermal Reserves

The Geothermal Reporting Code
2008 Edition



Regional compilation of prospective areas and resource assessment

Geoelec Geothermal resource assessment protocol

Expected results:

- Compilation of geological and geophysical data inside Geological surveys, accessible to interested developers as open and easily as possible
- European Geothermal Reporting Code (discussion already started within TP Geoelec)

Thank You!

Visit www.geoelec.eu



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