



**GeoE.171.007**

# **Atlas of Carbonate Rock Geothermal Reservoirs Across Europe**

**A hyperlinked synopsis of the results of play and prospect evaluation  
in HotLime's 11 case study areas and the knowledge base.**

**Gerold W. Diepolder & HotLime Team  
2021-08-31**



This document is part of a project that has received funding by the European Union's Horizon 2020 research and innovation programme, grant agreement number 731166.

## Imprint

Collator, editor and layout: Gerold W. Diepolder (LfU), HotLime Coordinator & Lead

GIS and map production: Stephan Sieblitz & Johannes Großmann (LfU), Clemens Porpaczy (GBA)

## Recommended citing

Diepolder, G.W. & HotLime Team (2021): Atlas of Carbonate Rock Geothermal Reservoirs Across Europe.

Results summary of play and prospect evaluation in HotLime's 11 case study areas and the knowledge base.

36 pp., [https://repository.europe-geology.eu/egdidocs/hotlime/hotlime\\_geothermal\\_atlas.pdf](https://repository.europe-geology.eu/egdidocs/hotlime/hotlime_geothermal_atlas.pdf)

## The HotLime Team:

Parties in charge of scientific information of the maps compiled in this report (in order of case studies):

1. Upper Jurassic carbonates in the central part of the North Alpine Molasse Basin (DE/AT)  
GBA: Clemens Porpaczy; LGRB: Isabel Rupf & Alica de Witt; LfU: Gerold W. Diepolder, Johannes Großmann, Stephan Sieblitz & Thomas Fritzer
2. Upper Jurassic carbonates in the Molasse Basin-Carpathian Foredeep transition zone (AT/CZ)  
GBA: Clemens Porpaczy; CGS: Juraj Franců (*no data provision*)
3. Carboniferous carbonates in (a) Lough Allen Basin and (b) Dublin Basin (IE)  
GSI: Beatriz Mozo, Russell Rogers & Brian McConnell
4. Dinantian carbonates at the flanks of the London-Brabant Massif (NL/BE)  
TNO: Hans Veldkamp
5. Upper Triassic to Middle Eocene carbonates of the Po Basin (IT)  
ISPRA: Chiara D'Ambrogi; RER-SGSS: Fabio Carlo Molinari
6. Triassic carbonates of the Krško-Brežice sub-basin (SI)  
GeoZS: Dejan Šram, Jure Atanackov, Dušan Rajver, Nina Rman, Andrej Lapanje & Miloš Markič
7. Miocene and Triassic carbonates of Zagreb Geothermal Field (HR)  
HGI-CGS: Staša Borović, Marco Pola, Ivica Pavčić, Ivana Dergez & Katarina Mišić
8. Triassic carbonates of the Pantelleria-Linosa-Malta rift complex (MT)  
MFE-CSD: Charles Galea
9. Eocene carbonates of the Empordà Basin (ES)  
ICGC: Montse Colomer & Ignasi Herms
10. Triassic carbonates of Tuscan, Umbria and Marche nappes in the Umbria Trough (IT)  
Regione Umbria: Andrea Motti, Norman Natali, Marco Ognà & Sonia Mariuccini



This **Atlas of Carbonate Rock Geothermal Reservoirs Across Europe** is designed modularly: Starting from the overview map, on clicking the area, you are redirected to the map series of the area of your interest. The maps are hyperlinked to elucidating additional information like cross-sections, reports, factsheets, and the LOD concepts vocabulary.

For comparison, the thematic maps of all HotLime Case Study Areas are depicted applying the same colour coding, with the spatial information assessed and displayed in 500 by 500 m raster cells. The respective georeferenced information (incl. ISO 19115 metadata) is available for examination and download from the **GIS viewer for Hotlime results** under <https://geoera.eu/projects/hotlime6/>.

Colours for highlighting the carbonate geothermal reservoir in the cross-sections refer to the International Chronostratigraphic Chart <https://stratigraphy.org/ICSchart/ChronostratChart2021-07.pdf>

Please note: The map series are optimized for viewing in Chrome or Firefox. Other web browsers might display not all features specifically of clickable elements.



### Disclaimer

Responsible parties for the scientific information reported, including verification of the data disclosed are the GSOs as listed under “the HotLime Team” (see previous page).

All information provided in this report and via the EGDI dissemination platform serves as a link between the geosciences community and policymakers, authorities and the interested public. It is made available to inform about HotLime’s results for the convenience of interested persons and organizations. Albeit the HotLime consortium believes the information to be reliable, mechanical or human errors remain possible. The HotLime consortium, thus, cannot guarantee the accuracy or completeness of the information provided. Neither the HotLime consortium nor any of the sources of information shall be liable for errors or omissions, or for the use of this information, including any liability or expense incurred, claimed to have resulted from the use of the HotLime reports. The information in this report and as provided via EGDI web services is subject to the usual uncertainties of research and shall not be relied on as the basis for doing or failing to do something.

### Service Layer Credits of the maps:

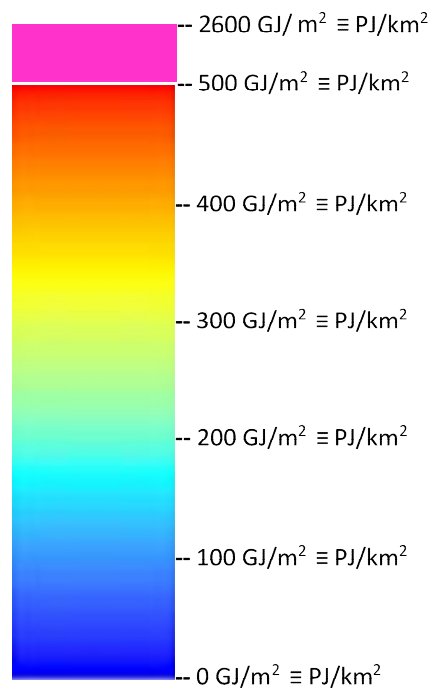
CGIAR, Esri, FAO, Garmin, Geoland, HERE, Intermap, Instituto Geográfico Nacional, METI/NASA, NGA, NOAA, Ordnance Survey, Rijks-waterstraat, USGS



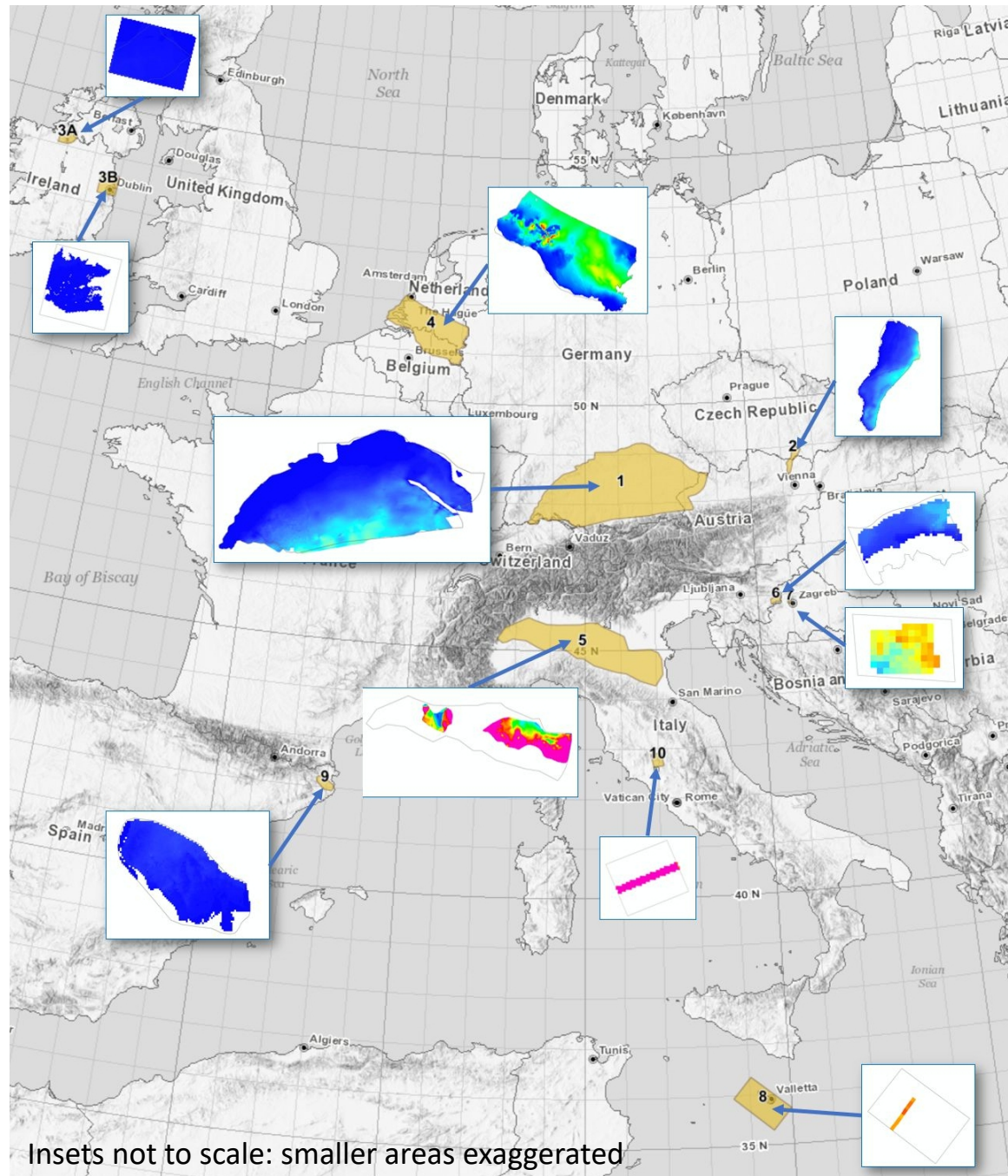
## Geothermal base assessment at a glance: *Heat in Place* in HotLime's 11 case study areas

The assessment of the quantity of stored heat, i.e. the maximum theoretically extractable heat energy in the reservoir, is one of the principal outcomes of HotLime's mapping and characterization of carbonate reservoirs at depths. For its direct comparison, this map shows the volumetric Heat in Place expressed in  $\text{GJ}/\text{m}^2$  ( $10^9 \text{ J}/\text{m}^2$ ) calculated for  $500\text{m} \times 500\text{m}$  reservoir gross-thickness [m] volumes and the reference temperature  $T_{\text{ref}} = 18^\circ\text{C}$ .

→ For more details on the Heat in Place calculation refer to the [factsheet](#) and the corresponding [report 3.1](#).



→ Select an case study area by clicking it.



Insets not to scale: smaller areas exaggerated



- 1: Upper Jurassic carbonates in the central part of the North Alpine Molasse Basin (DE/AT)
- 2: Upper Jurassic carbonates in the Molasse Basin-Carpathian Fore-deep transition zone (AT/CZ)
- 3: Carboniferous carbonates in (A) Lough Allen Basin and (B) Dublin Basin (IE)
- 4: Dinantian carbonates at the flanks of the London-Brabant Massif (NL/BE)
- 5: Upper Triassic to Middle Eocene carbonates of the Po Basin (IT)
- 6: Triassic carbonates of the Krško-Brežice sub-basin (SI)
- 7: Miocene and Triassic carbonates of Zagreb Geothermal Field (HR)
- 8: Triassic carbonates of the Pantelleria-Linosa-Malta rift complex (MT)
- 9: Eocene carbonates of the Empordà Basin (ES)
- 10: Triassic carbonates of Tuscan, Umbria and Marche nappes in the Umbria Trough (IT)