# Bold and daring decisions: how to let everyone in on subsurface obscurities

GeoConnect³d is funded under the GeoEnergy theme of GeoERA. This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 731166.

# Mountains of ambition

- Absorb data and results
- Give them context
- Relate them
- Cross theme boundaries (be generic)
- Cross communication barriers

# How do you like your steak?

- Understanding pan EU scale

- Serving local parameters:
  - Raw seismic data (seismic geomanifestations)
  - Geological information
  - Fluid related geomanifestations

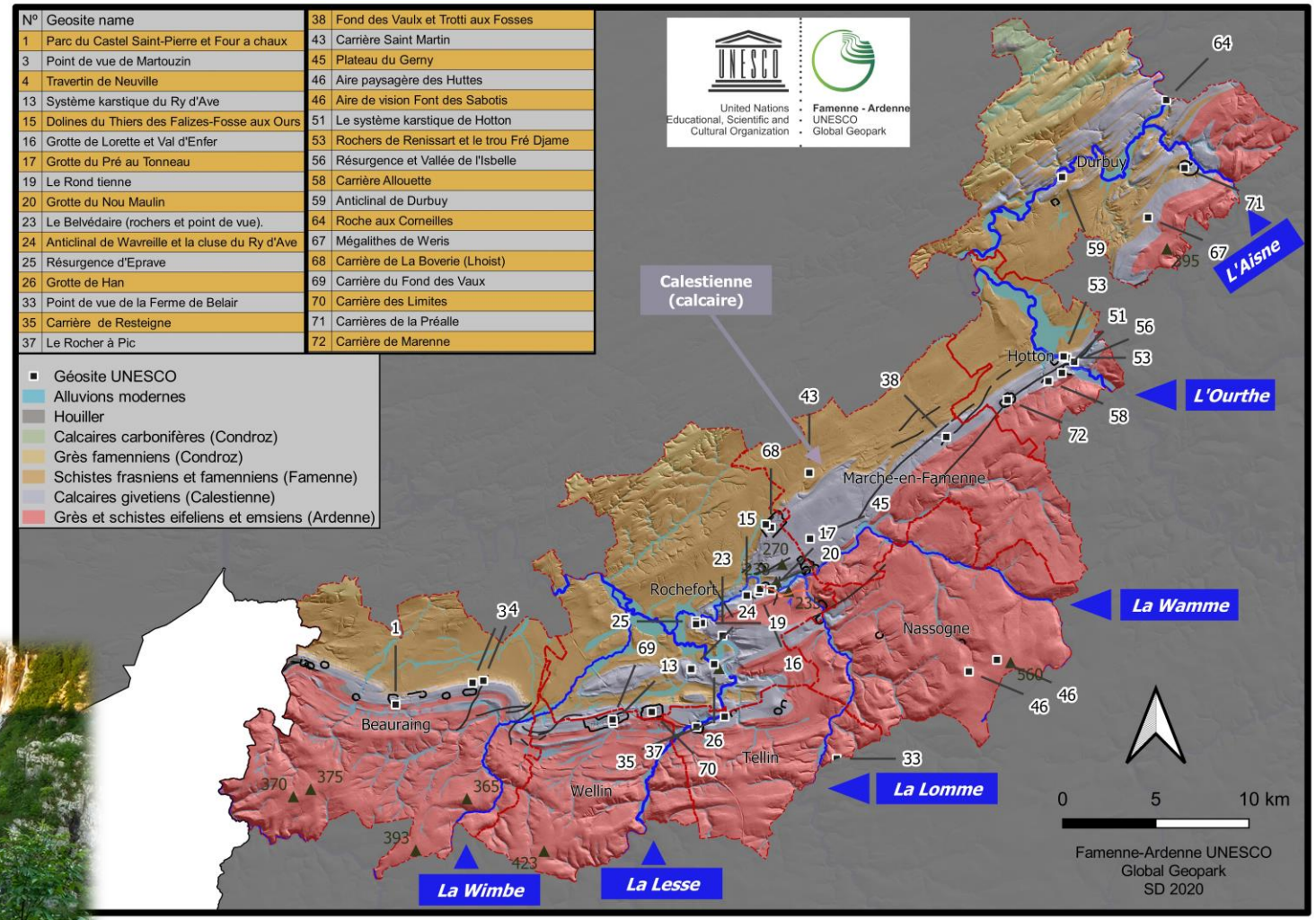
# Which rocks serve water?

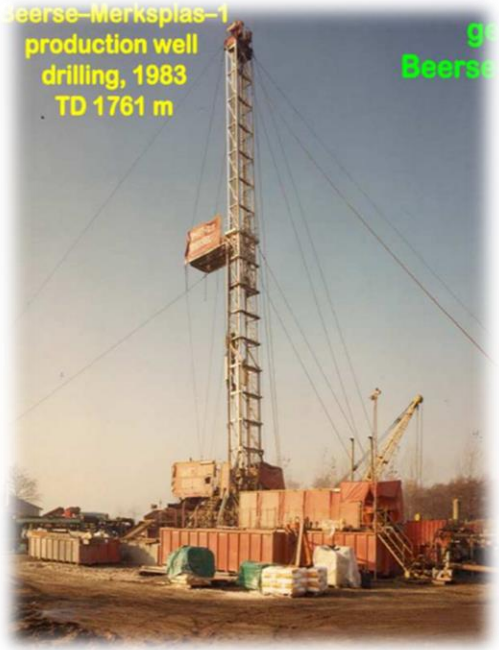
**Siliciclastic rocks**

**Carbonates**

# Reservoirs for cold and warm water

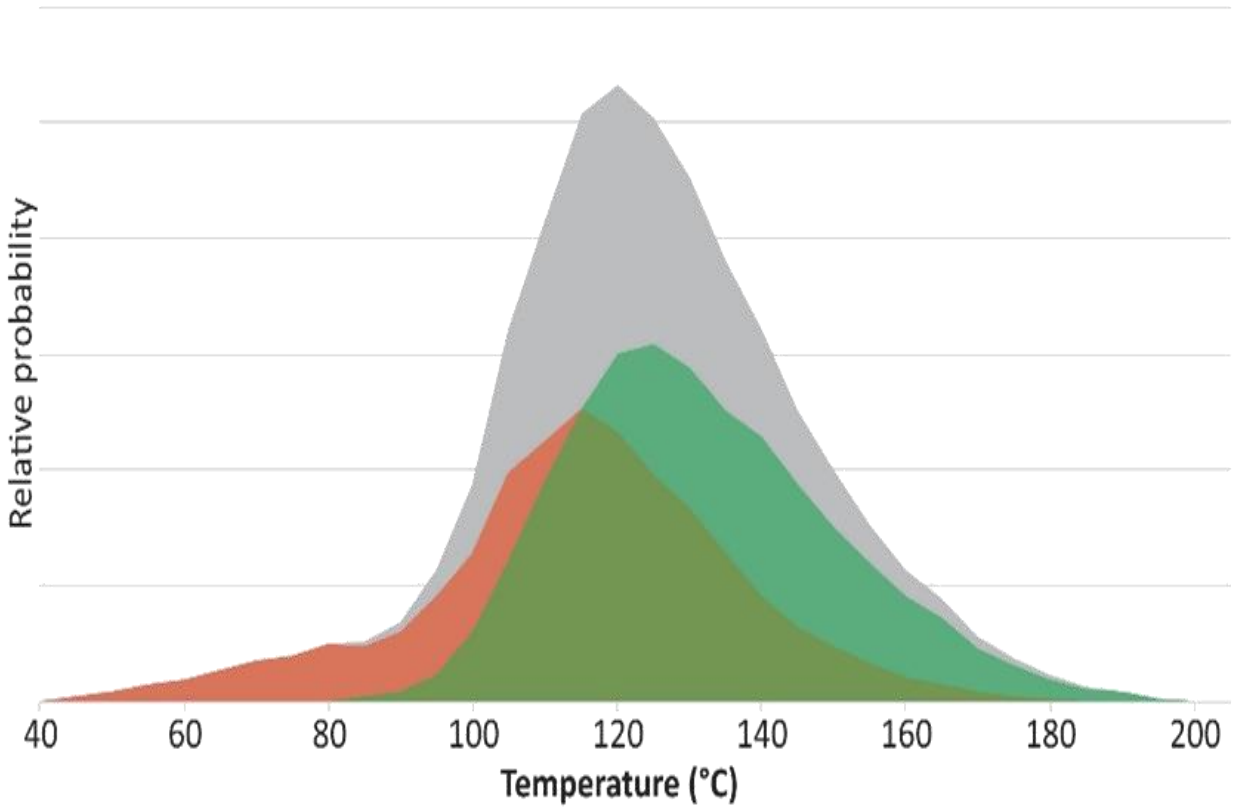
| N° | Geosite name | | |
|---|---|---|---|
| 1 | Parc du Castel Saint-Pierre et Four a chaux | 38 | Fond des Vaulx et Trotti aux Fosses |
| 3 | Point de vue de Martouzin | 43 | Carrière Saint Martin |
| 4 | Travertin de Neuville | 45 | Plateau du Gerny |
| 13 | Système karstique du Ry d'Ave | 46 | Aire paysagère des Huttes |
| 15 | Dolines du Thiers des Falizes-Fosse aux Ours | 46 | Aire de vision Font des Sabotis |
| 16 | Grotte de Lorette et Val d'Enfer | 51 | Le système karstique de Hotton |
| 17 | Grotte du Pré au Tonneau | 53 | Rochers de Renissart et le trou Fré Djame |
| 19 | Le Rond tienne | 56 | Résurgence et Vallée de l'Isbelle |
| 20 | Grotte du Nou Maulin | 58 | Carrière Allouette |
| 23 | Le Belvédaire (rochers et point de vue). | 59 | Anticlinal de Durbuy |
| 24 | Anticlinal de Wavreille et la cluse du Ry d'Ave | 64 | Roche aux Corneilles |
| 25 | Résurgence d'Eprave | 67 | Mégalithes de Weris |
| 26 | Grotte de Han | 68 | Carrière de La Boverie (Lhoist) |
| 33 | Point de vue de la Ferme de Belair | 69 | Carrière du Fond des Vaux |
| 35 | Carrière de Resteigne | 70 | Carrière des Limites |
| 37 | Le Rocher à Pic | 71 | Carrières de la Préalle |
| | | 72 | Carrière de Marenne |

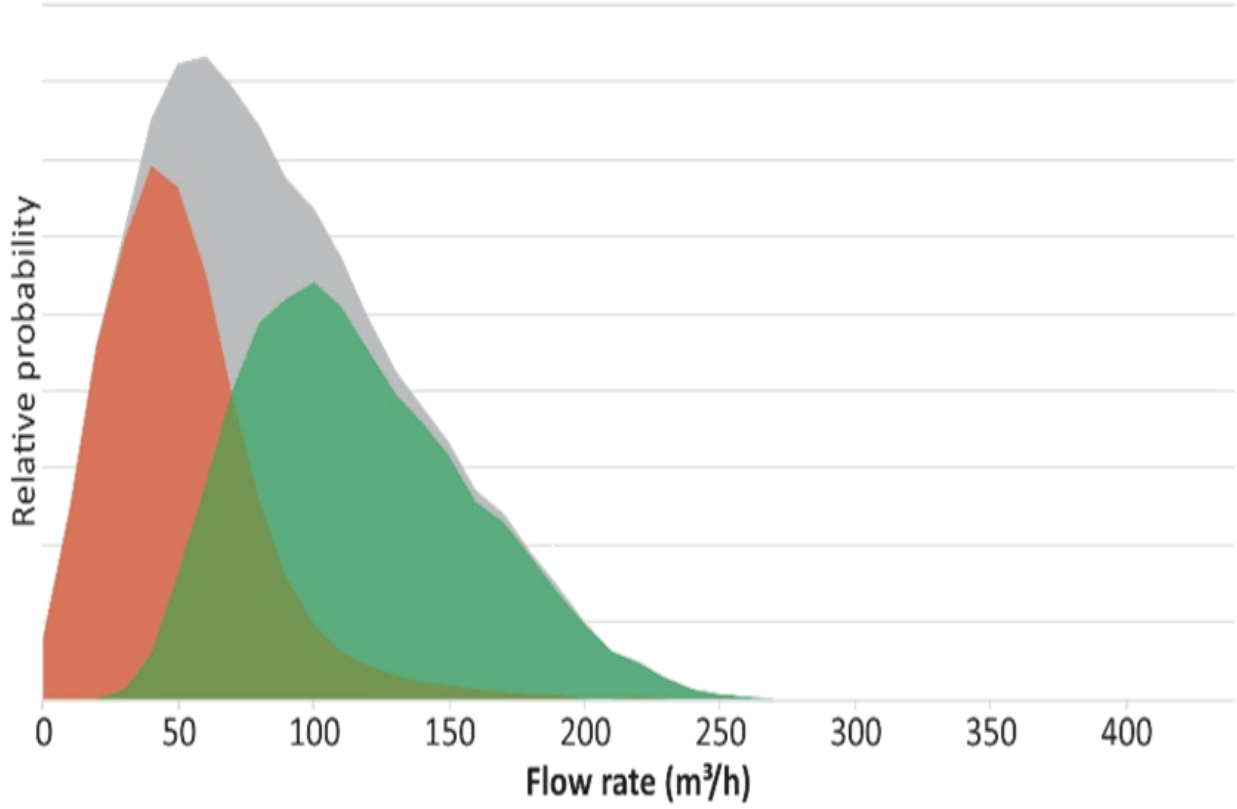



Service public de Wallonie » http://geoportail.wallonie.be and Geopark Famenne-Ardenne

# Geothermal (carbonate) challenge



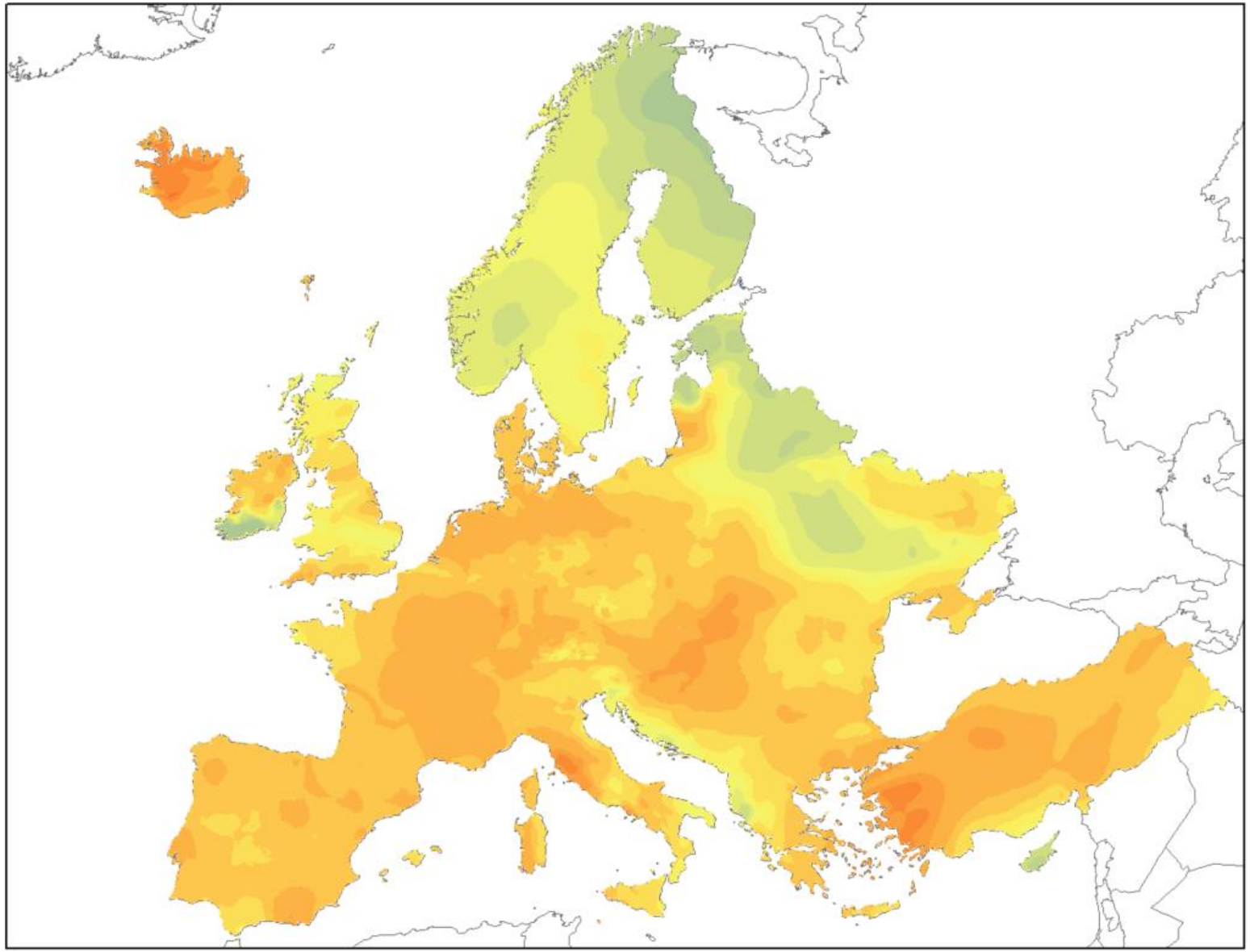

Temperature equates depth
and is
quite predictable

Flow rate is crucial
and
poorly predictable

Compernolle et al., 2019: https://doi.org/10.1016/j.eneco.2019.104524

# Geothermal potential (temperature)

T 5000m



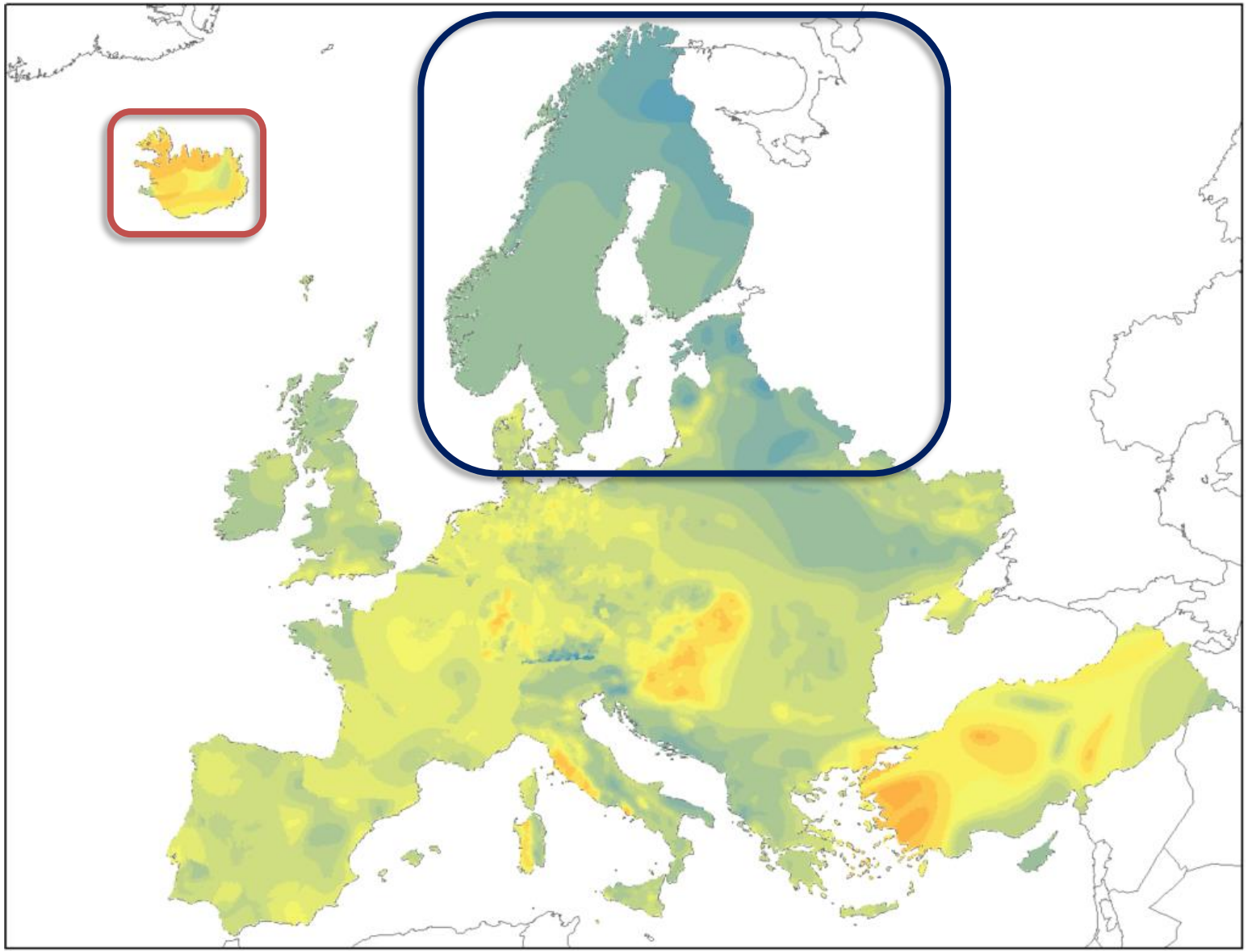
Thanks to
hans.veldkamp@tno.nl

GEO-ELEC

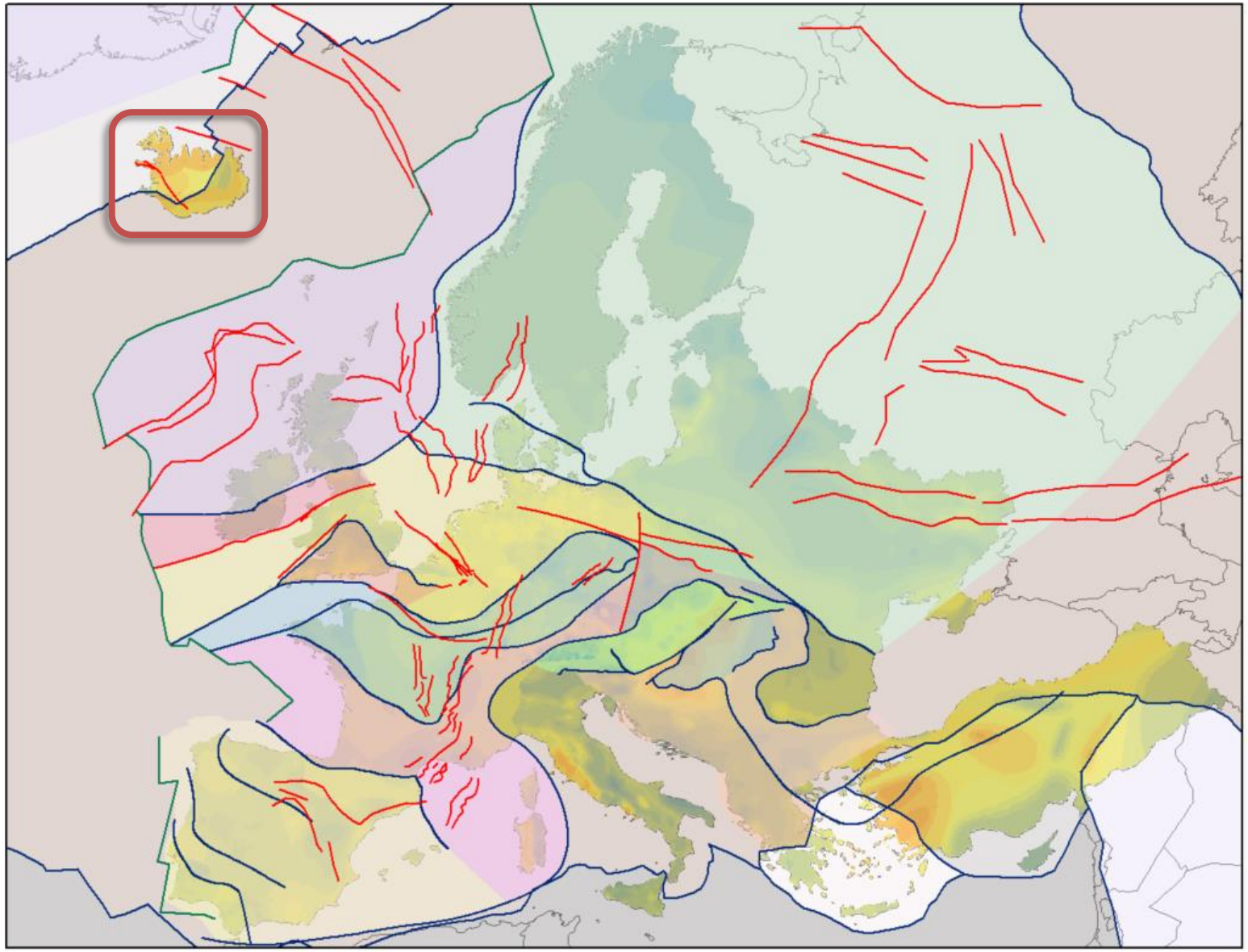
GeoConnect3d

# Framing the geothermal potential

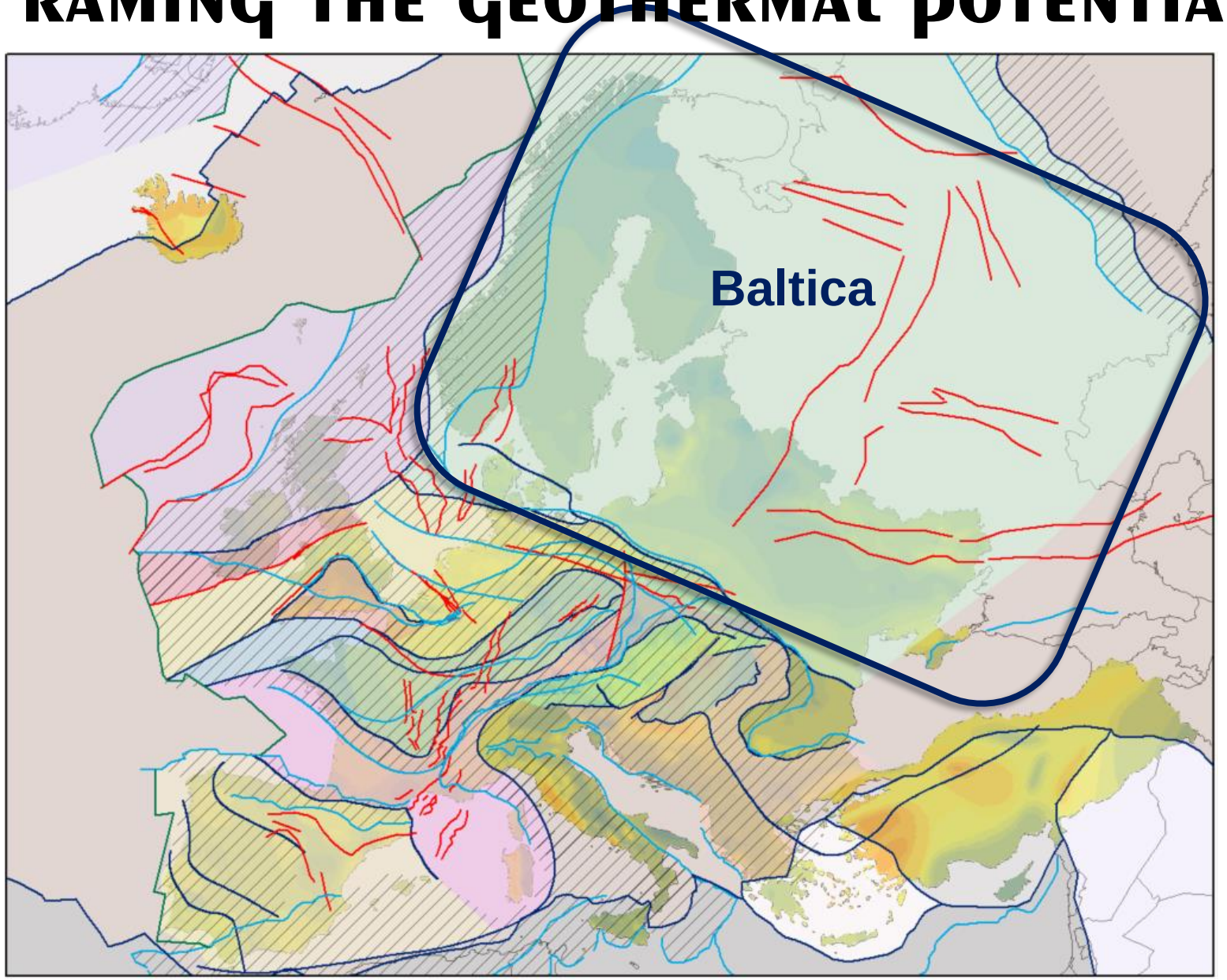
T 2000m



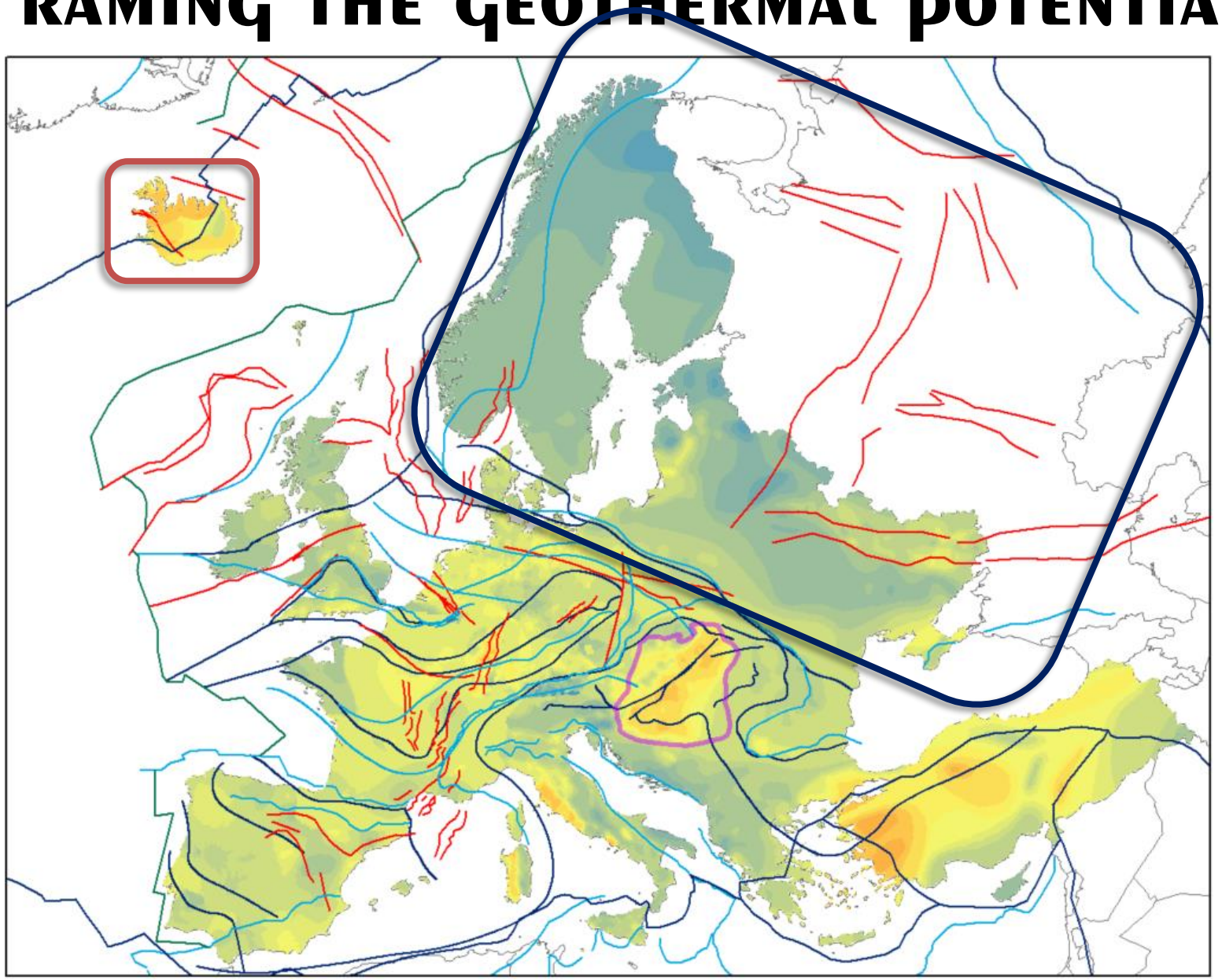
# Framing the geothermal potential



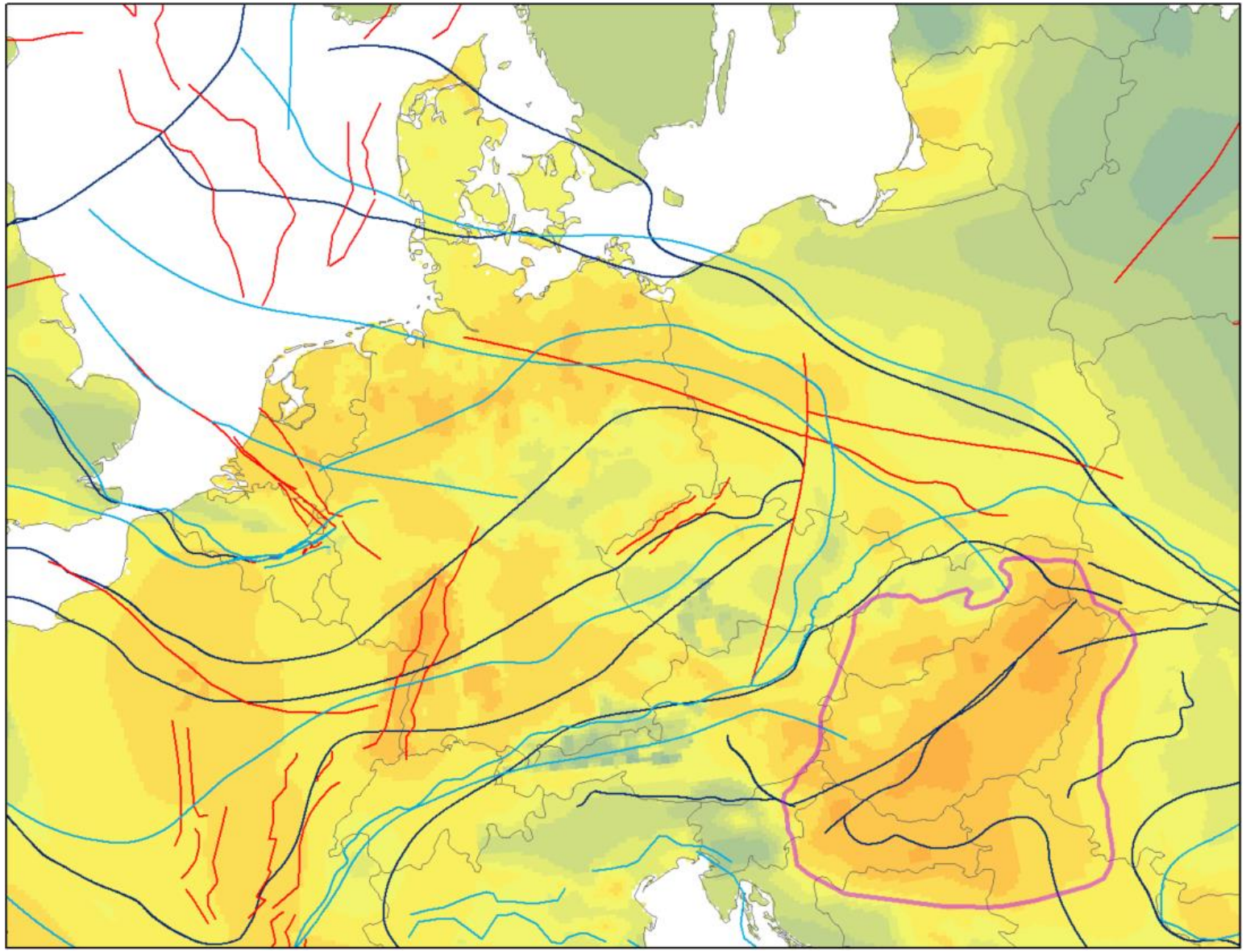
# Framing the geothermal potential



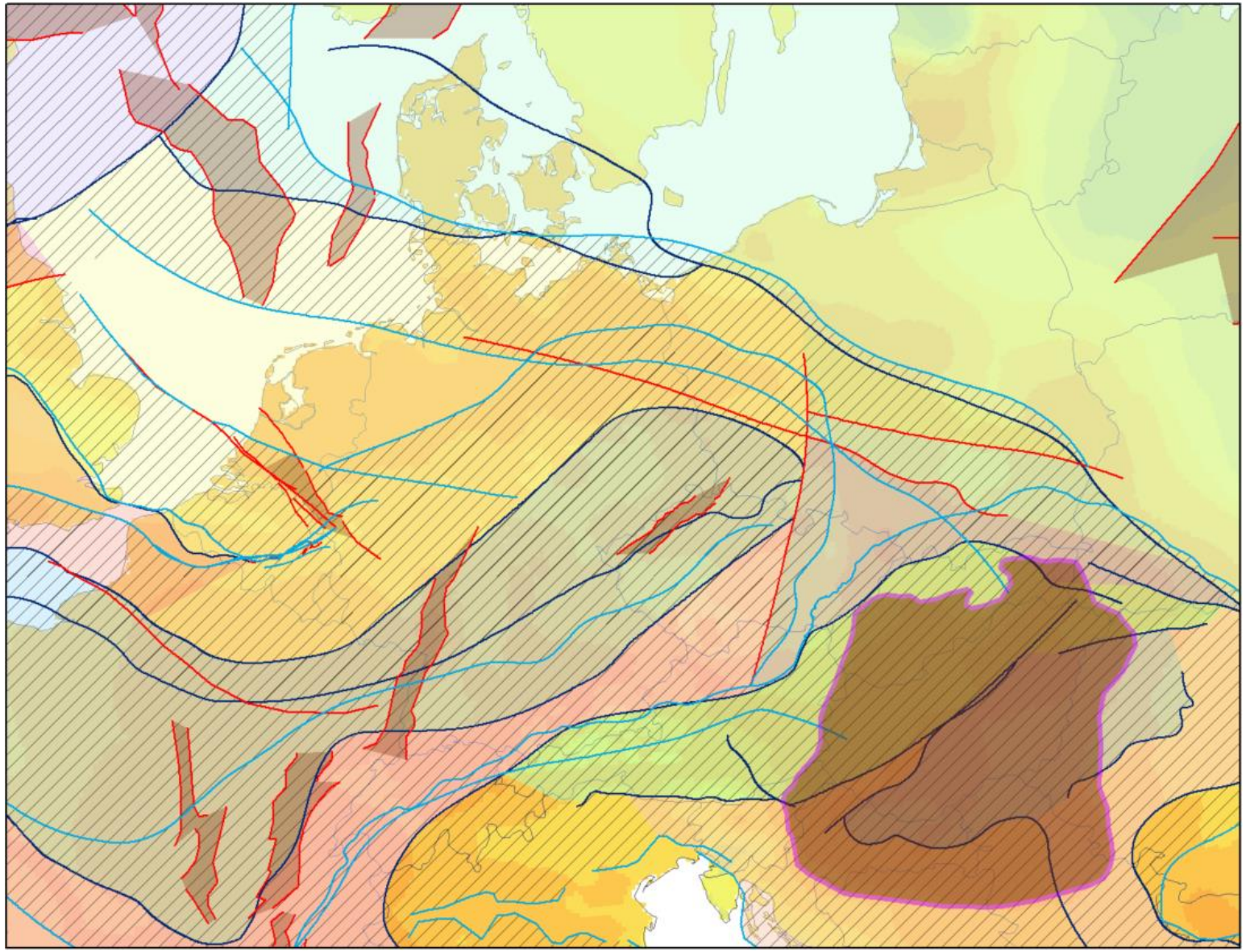
# Framing the geothermal potential



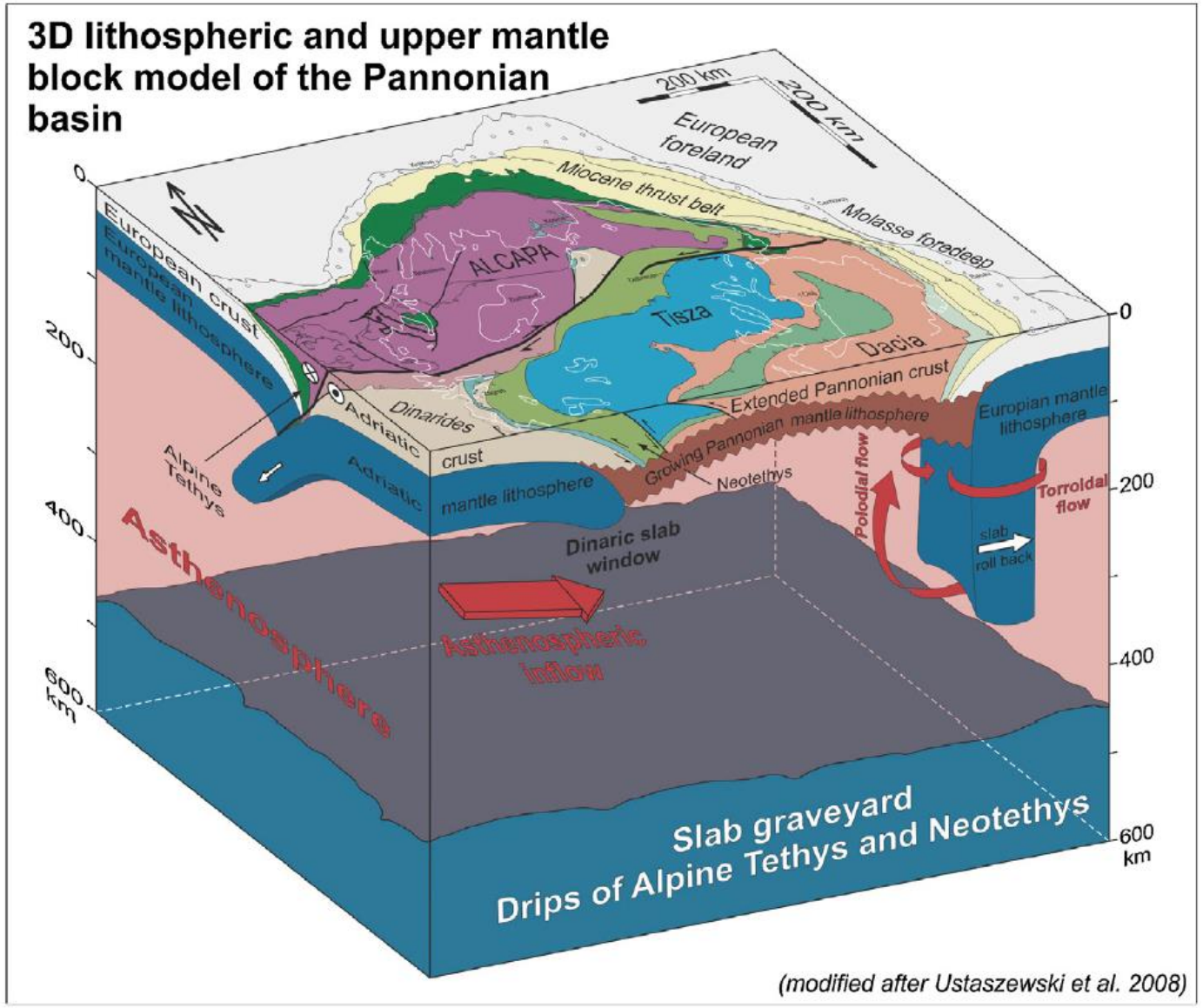
# Framing the geothermal potential



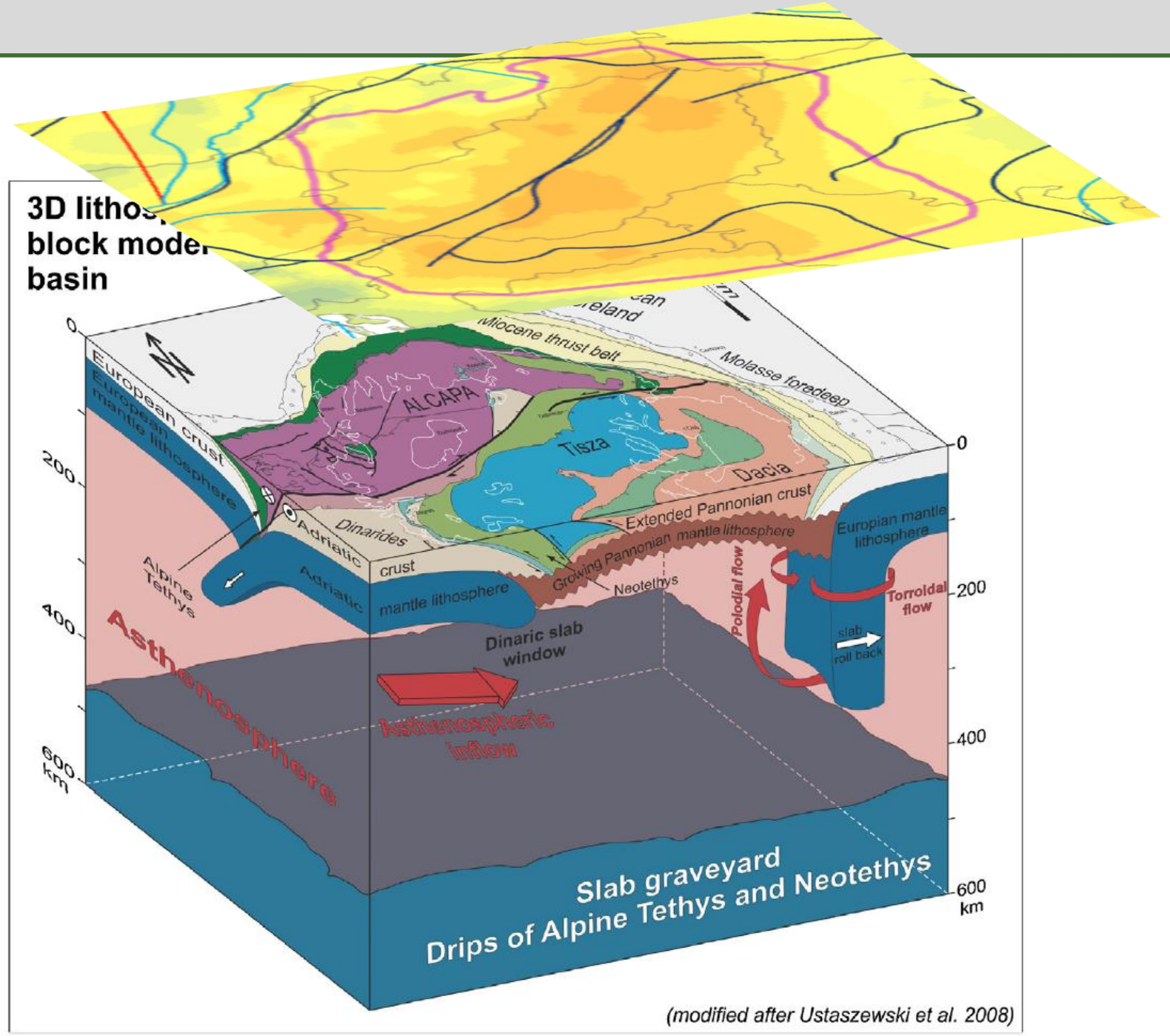
# Framing the geothermal potential



# Framing the geothermal potential

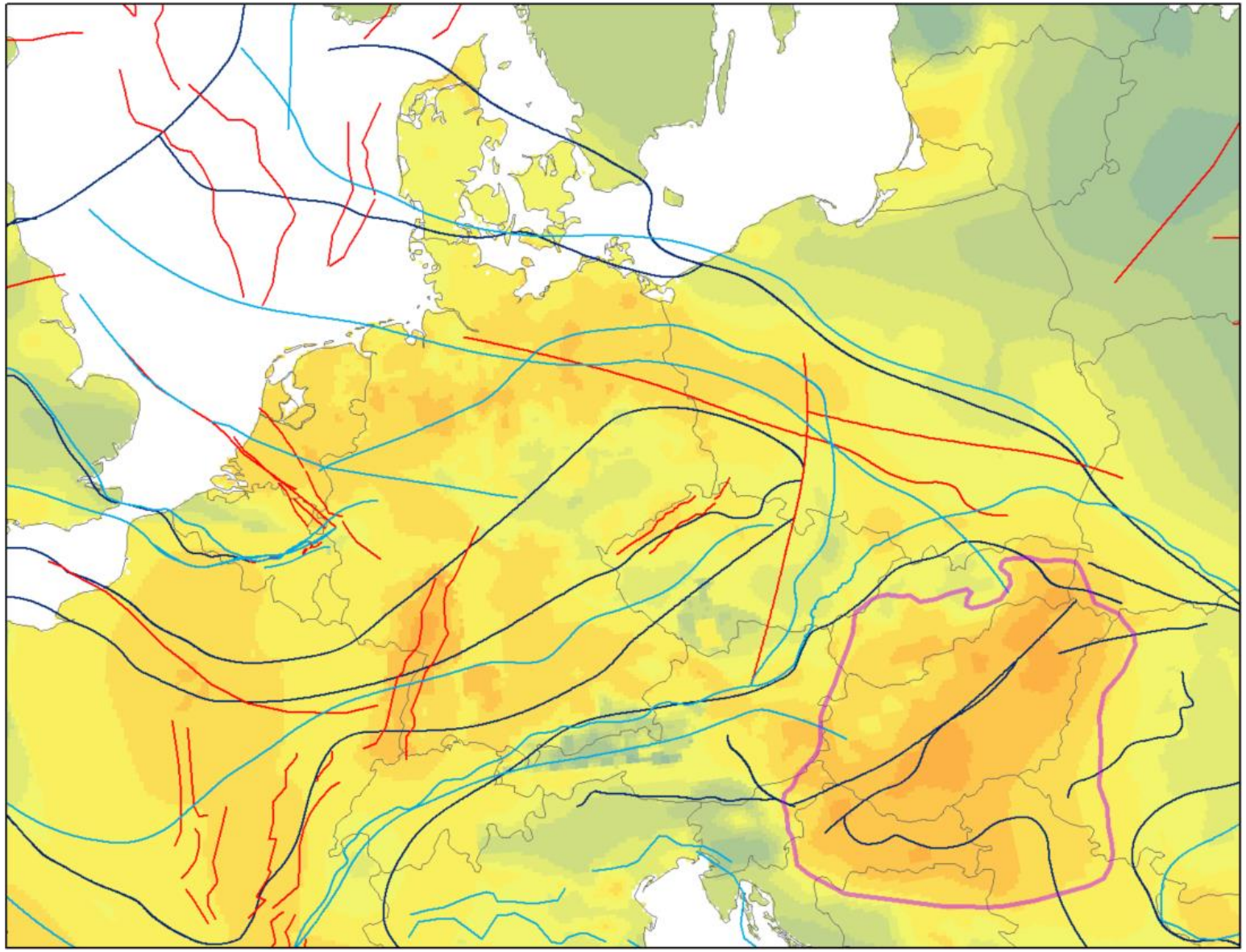



Hovarth et al. (2015), Evolution of the Pannonian basin and its geothermal resources

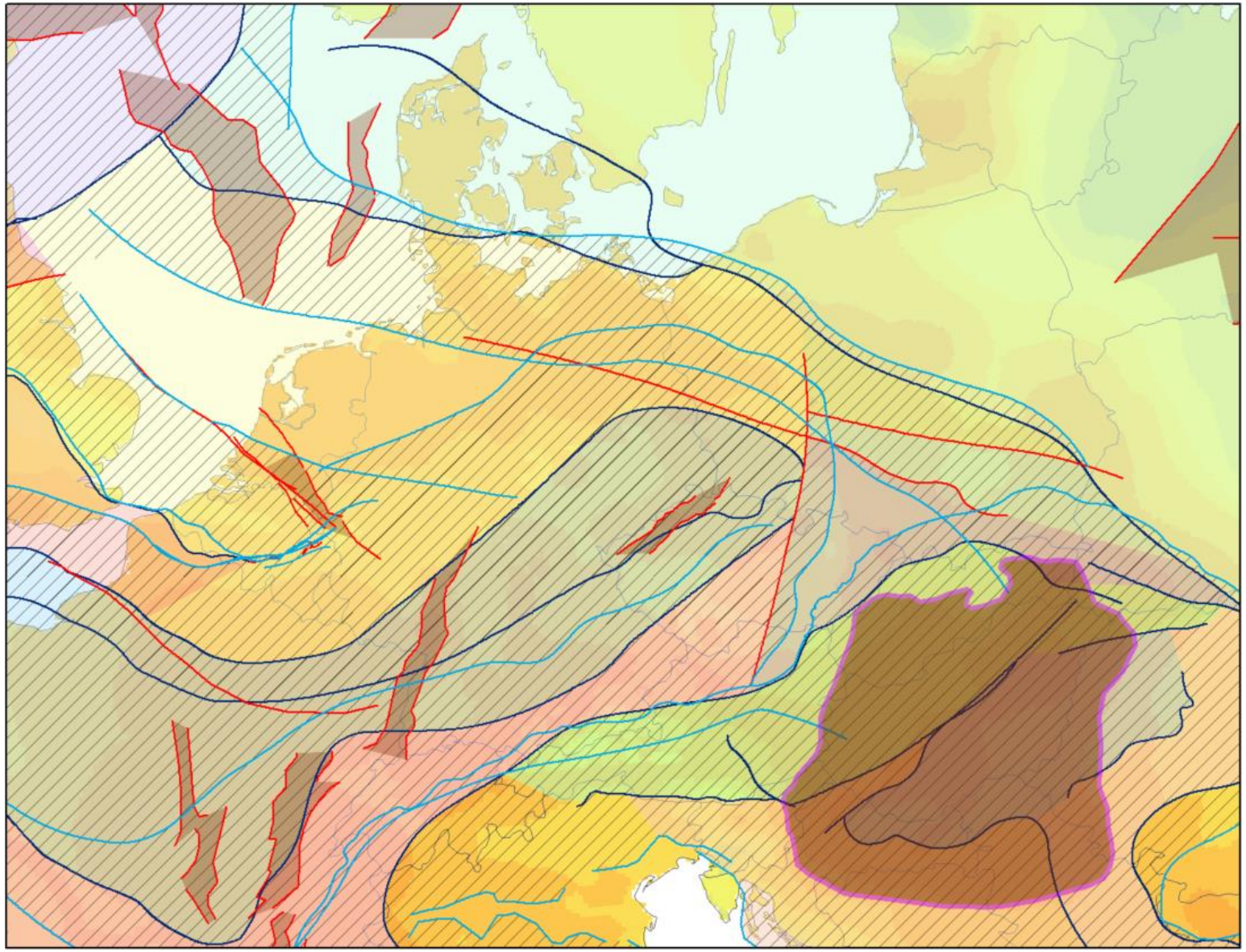



Hovarth et al. (2015), Evolution of the Pannonian basin and its geothermal resources

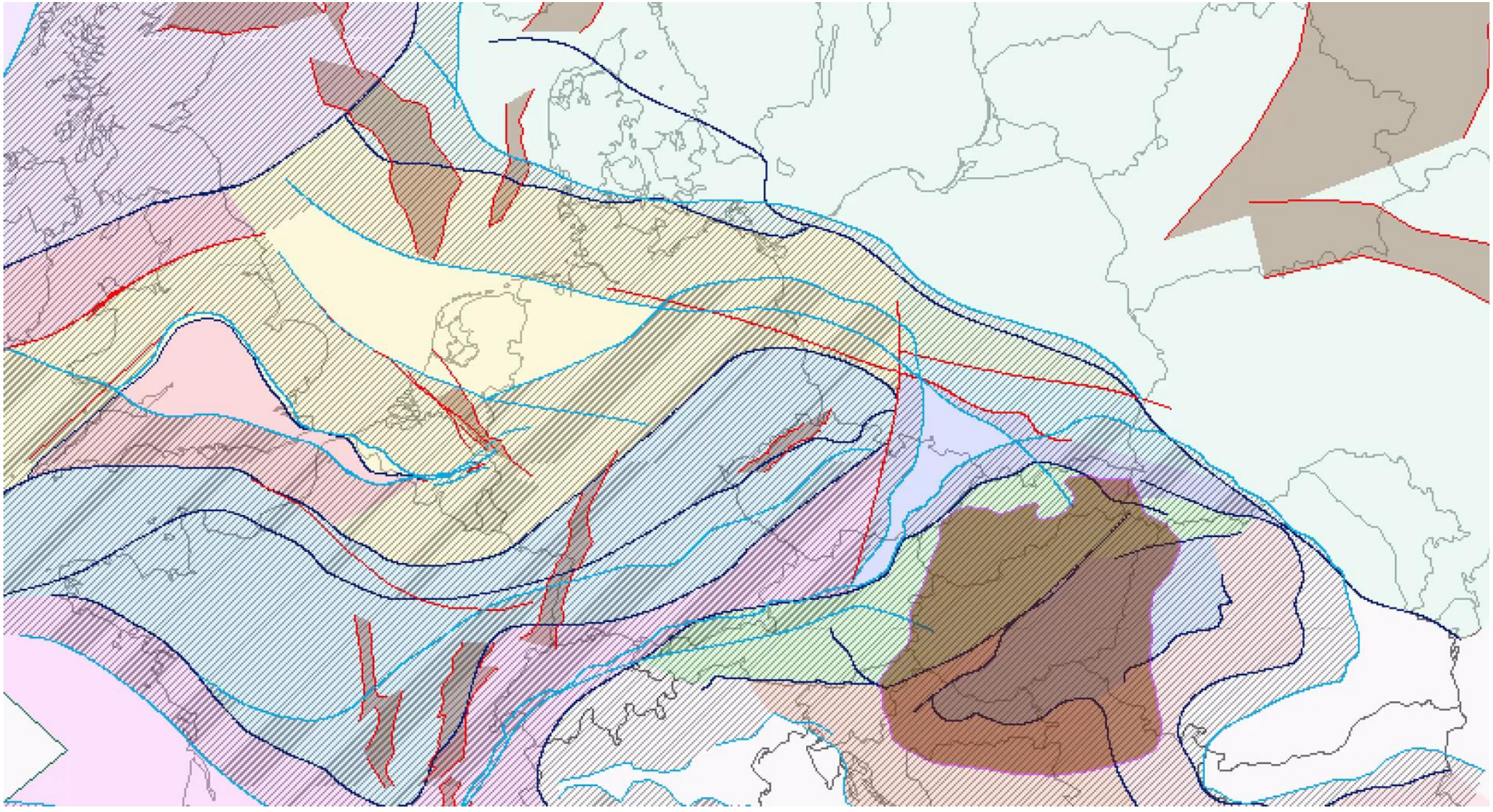
# Framing the geothermal potential



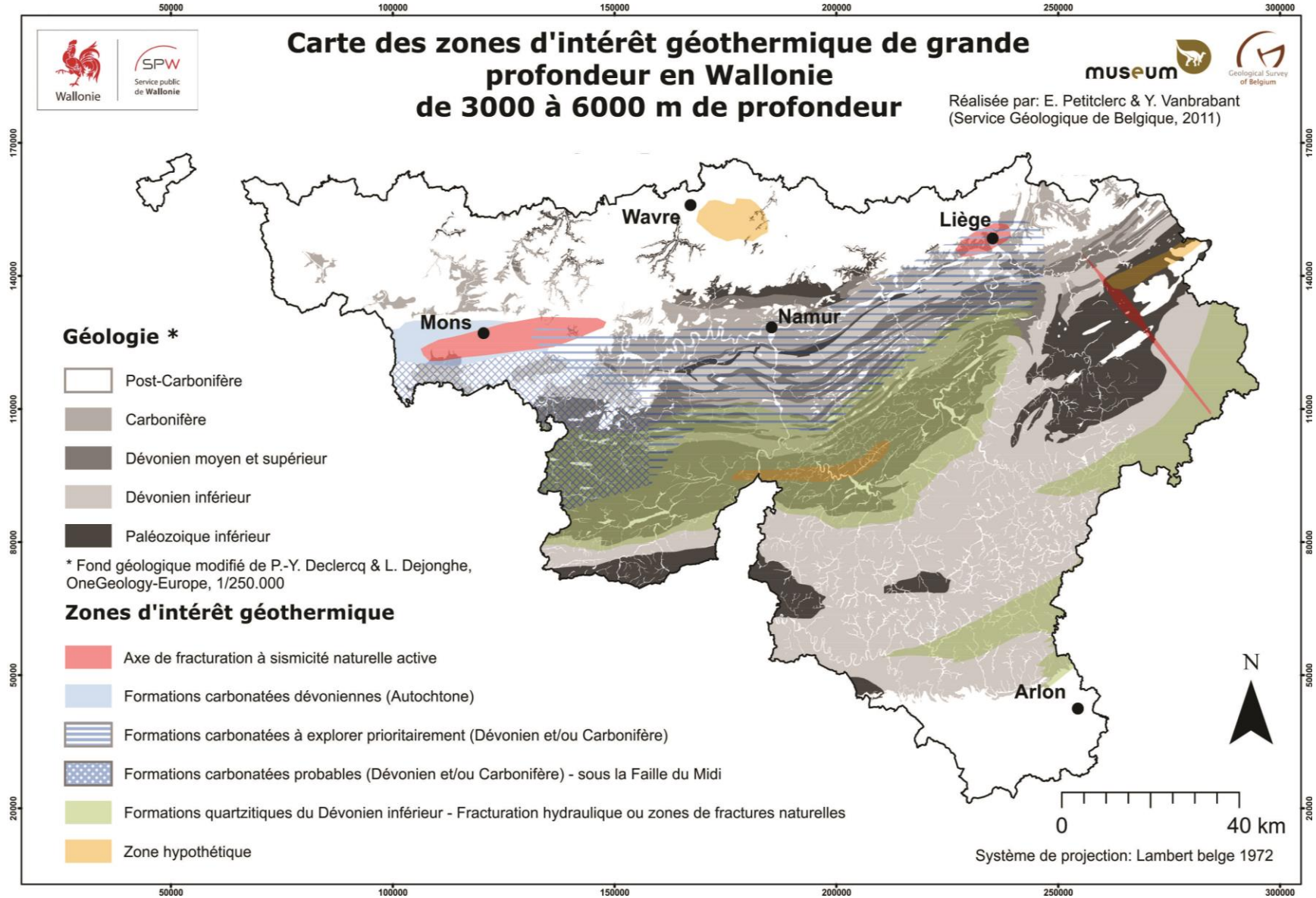
# Framing the geothermal potential



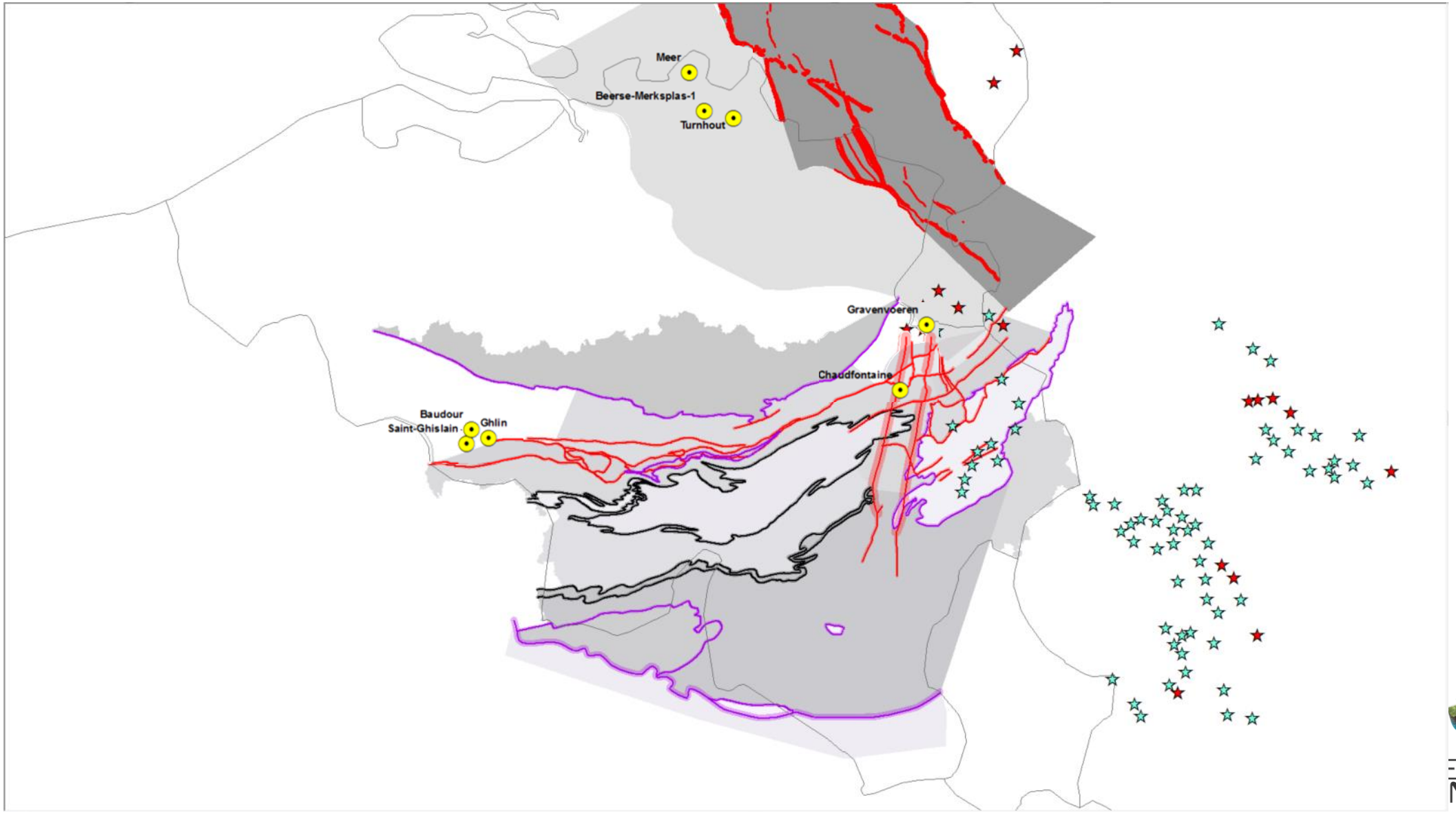
# Framing the geothermal potential



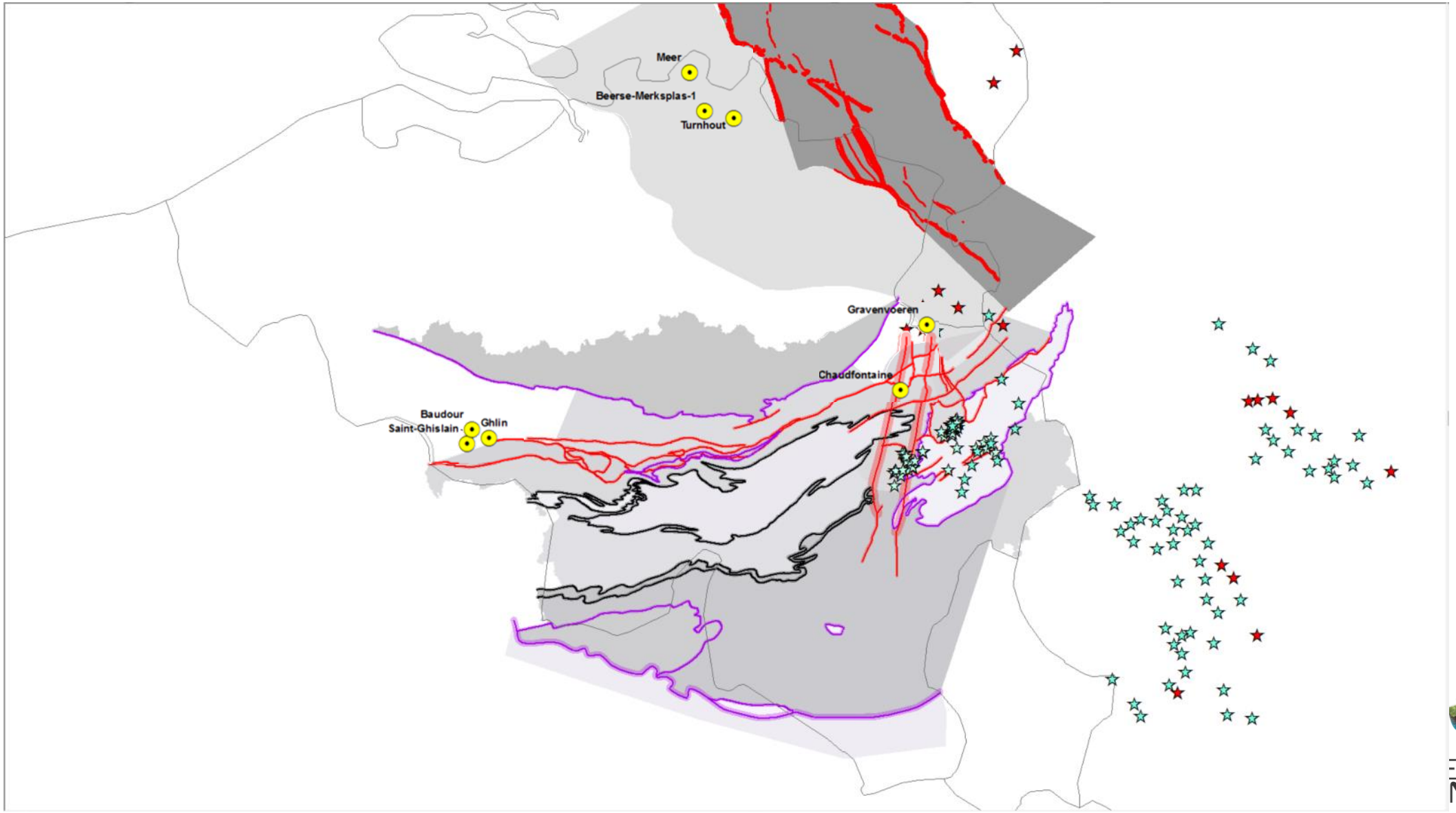
# Giving context to results



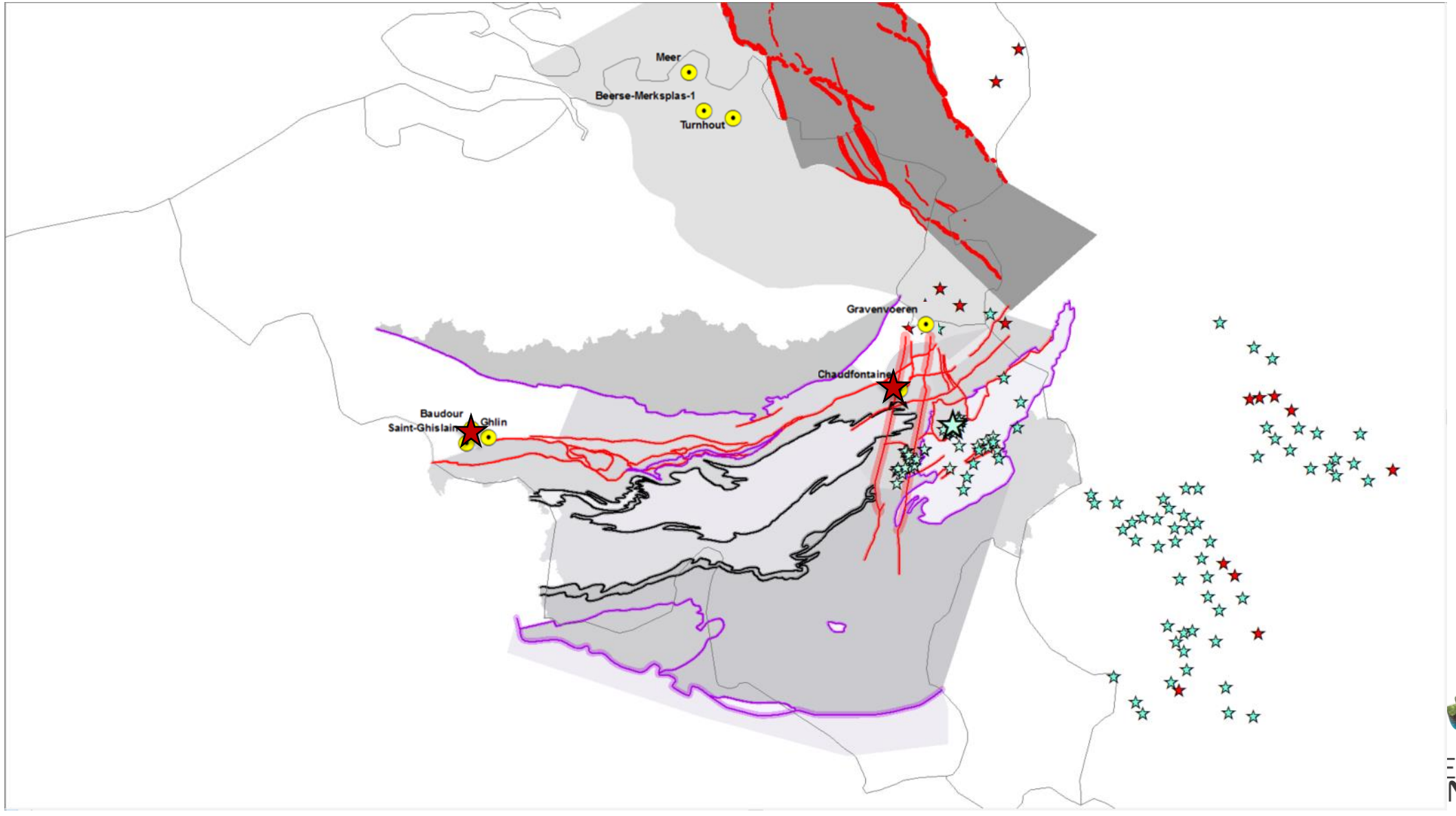
# Geomanifestations



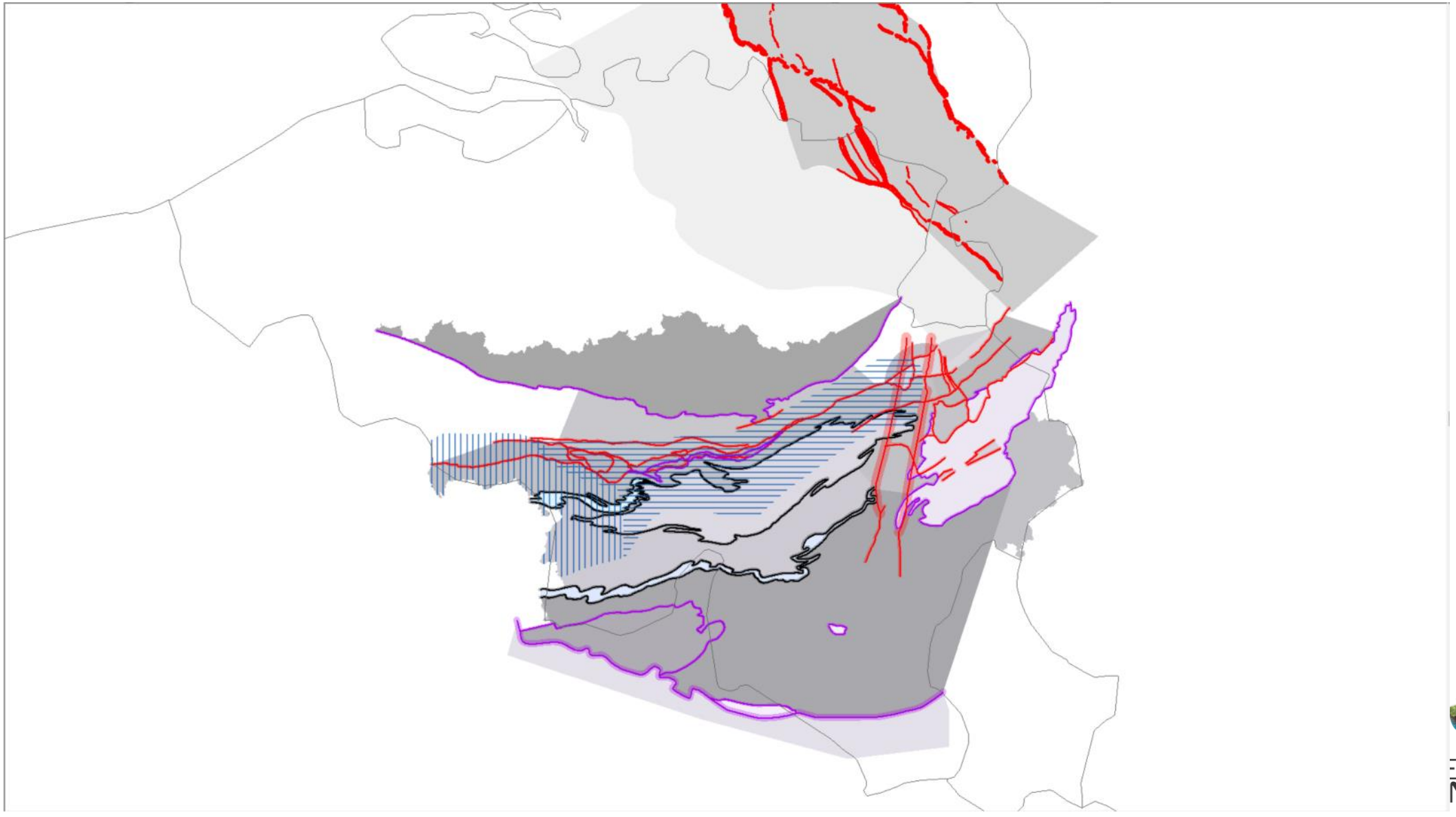
# Geomanifestations



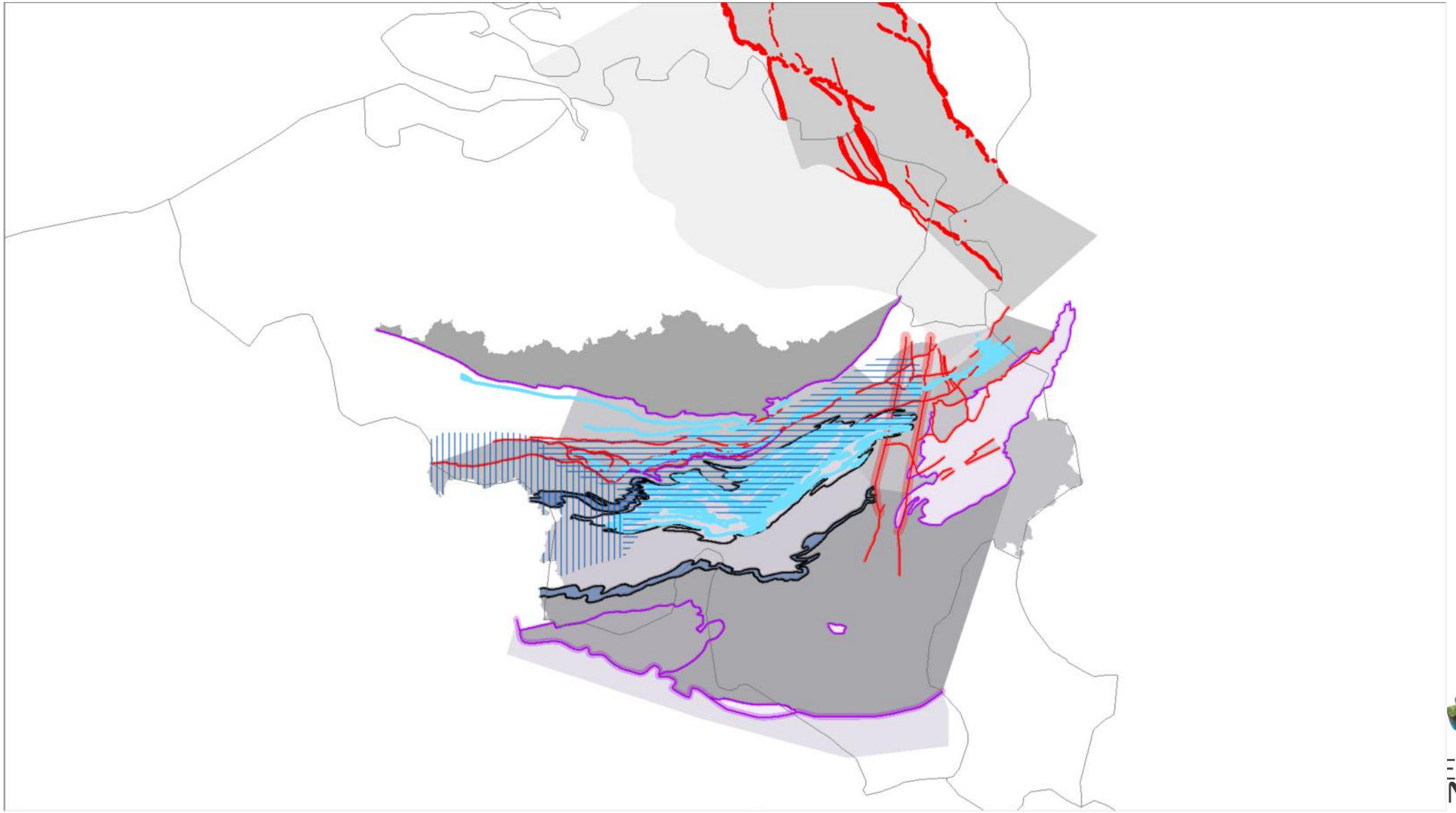
# Geomanifestations



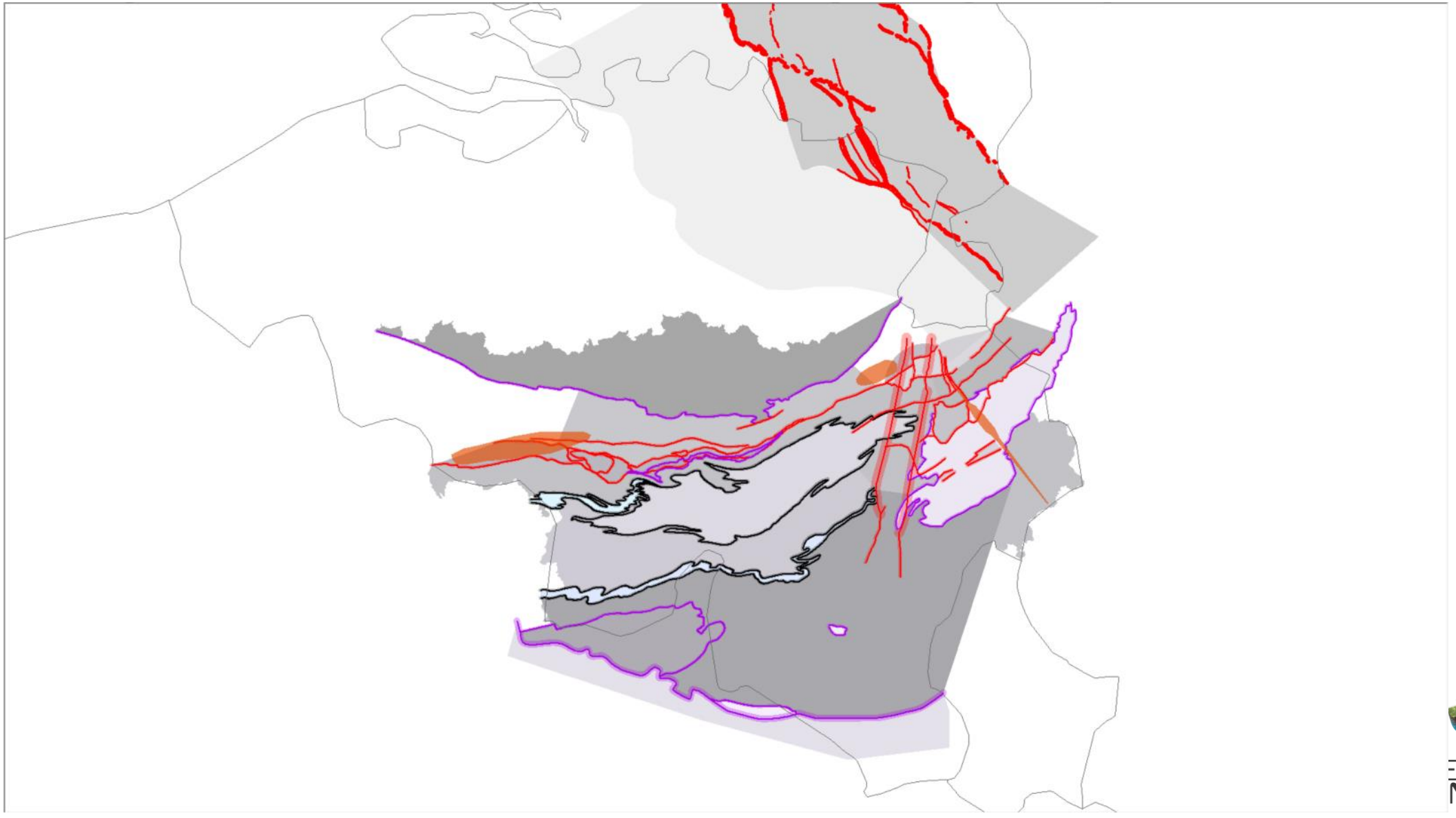
# Geology



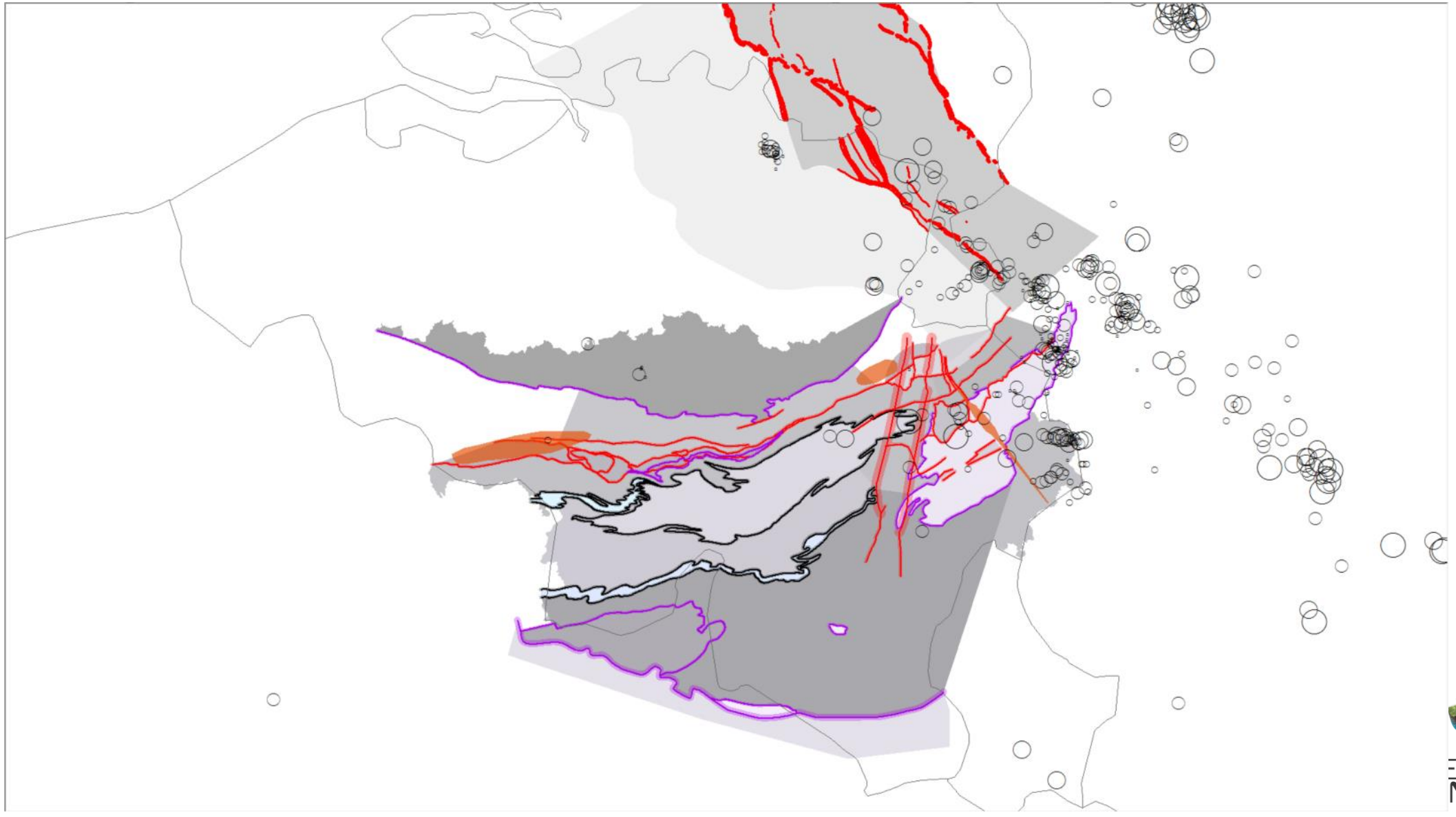
# Geology



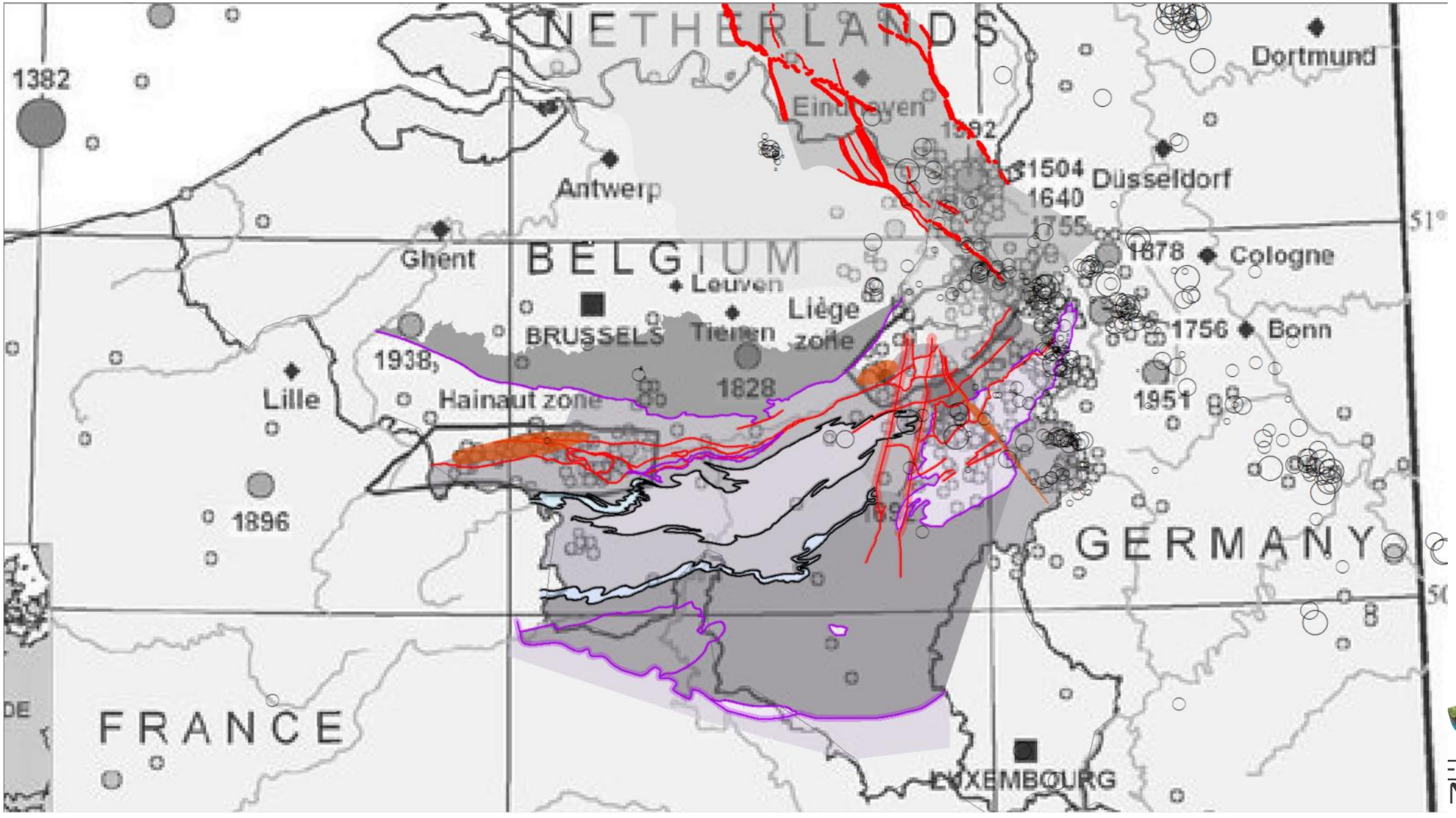
# Fractured zones



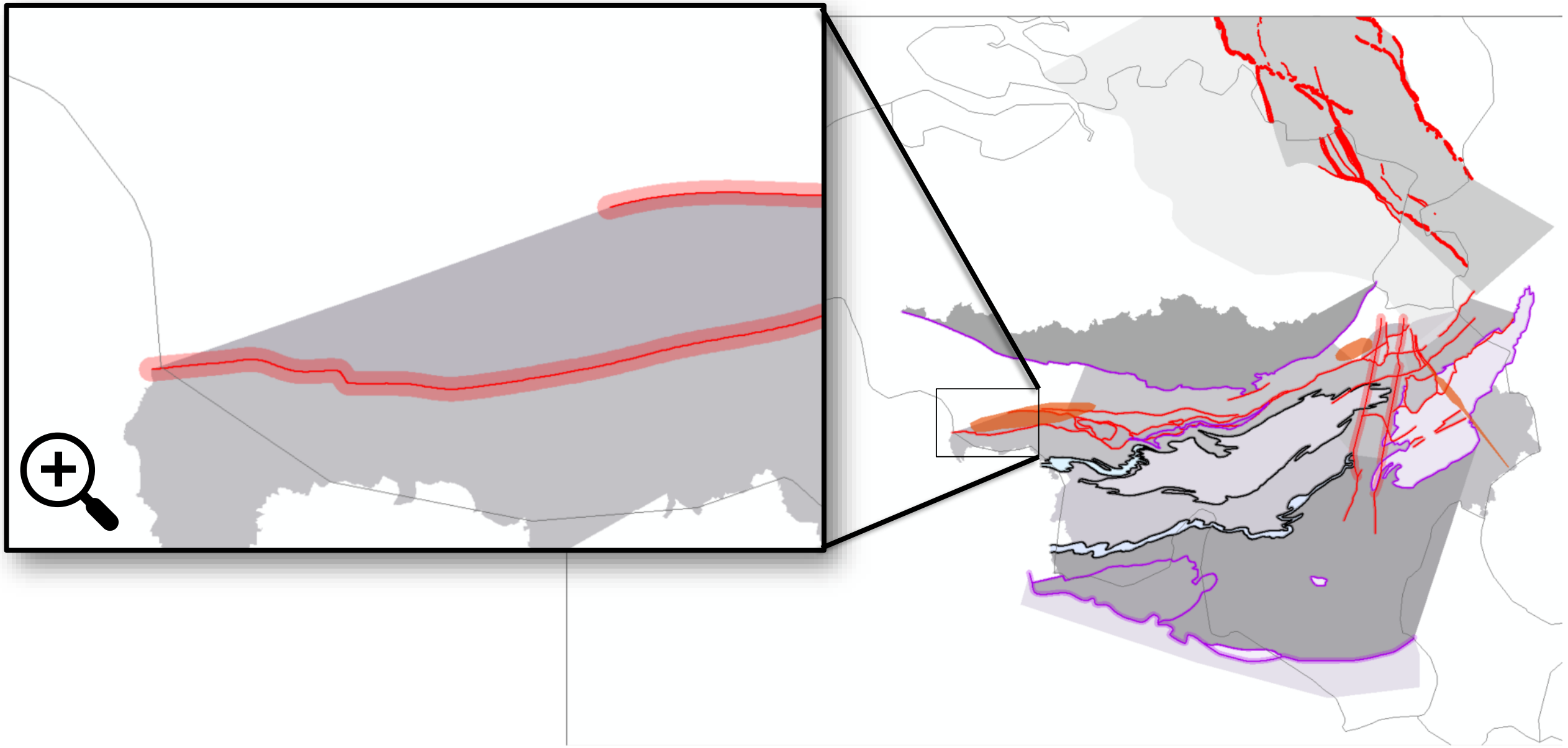
# Fractured zones



# Fractured zones



# Fractured zones



# Agility in Serving Geological Info

## On track

- Structural framework:
  'Framing' results from other studies
- Geomanifestations:
  Exploiting the atypical and remarkable
- Faults with embedded uncertainty

## Not there yet

- For the deep:
  We need 3D visualisation
- Find the right 'cow-steak' balance (raw versus interpreted data)