

INVESTIGATING GEOLOGICAL PROCESSES AND THEIR LINKS WITH GEOLOGICAL STRUCTURES THROUGH GEOMANIFESTATIONS



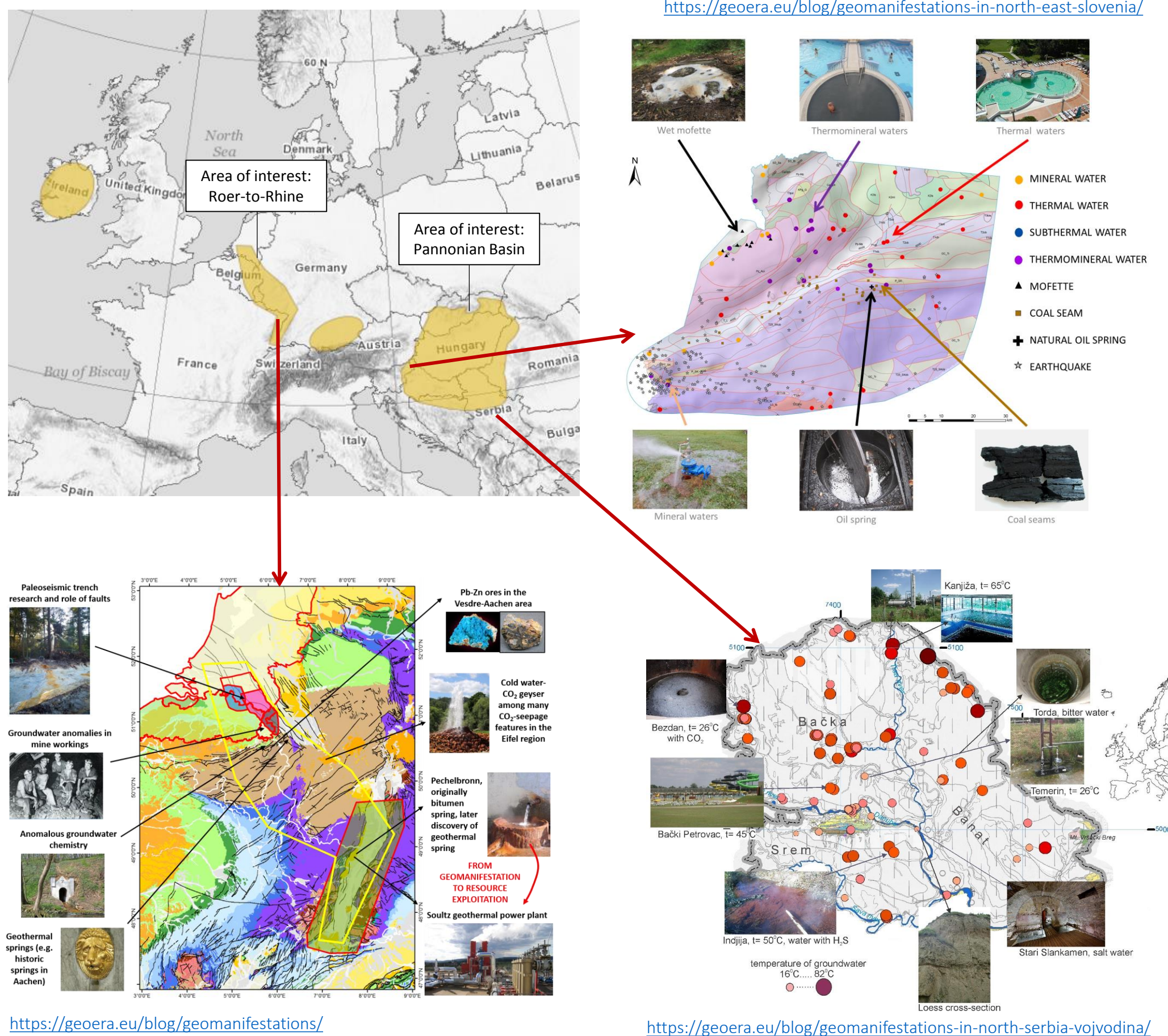
Renata Barros¹, Kris Piessens¹, Helga Ferket², Nina Rman³, Éva Kun⁴

¹RBINS-GSB – Geological Survey of Belgium; ²VPO – Bureau for Environment and Spatial Development, Belgium; ³GeoZS – Geological Survey of Slovenia; ⁴MBFSZ – Mining and Geological Survey of Hungary

What exactly are geomanifestations?

A concept introduced by GeoConnect^{3d}, geomanifestations define any distinct local expression of ongoing or past geological processes. These manifestations, or anomalies, often point to specific geologic conditions and, therefore, can be important sources of information to improve geological understanding of an area.

Examples in the studied areas

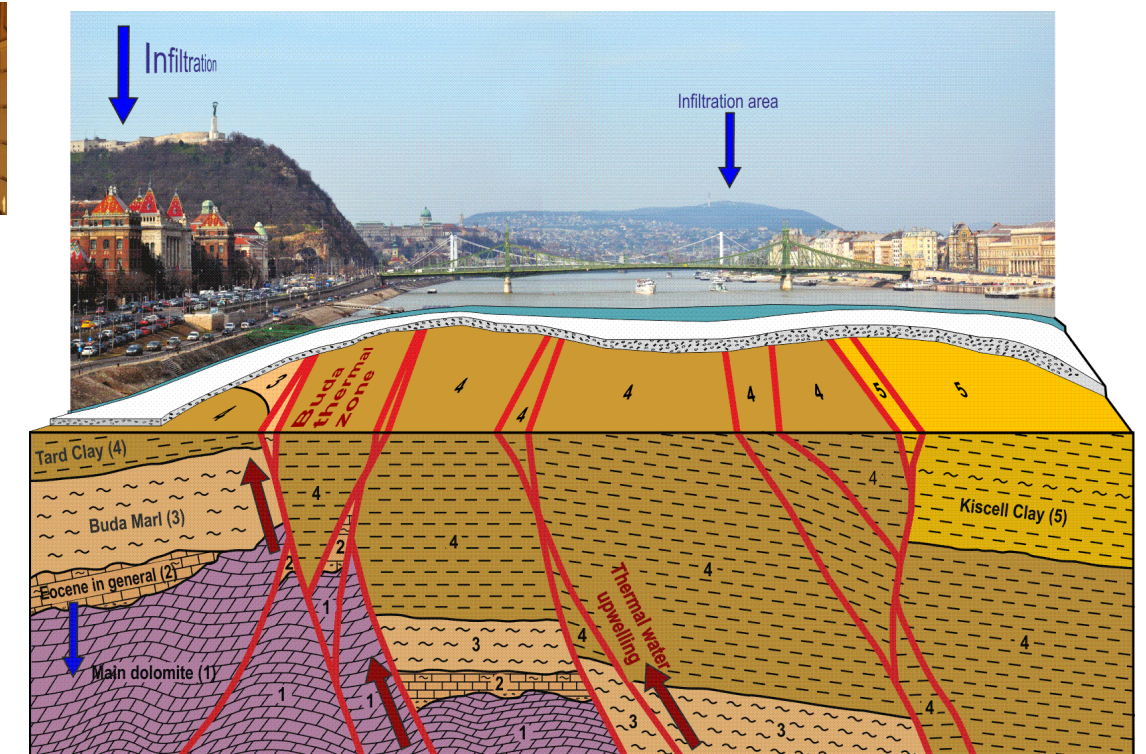


Hints on what goes on in the subsurface

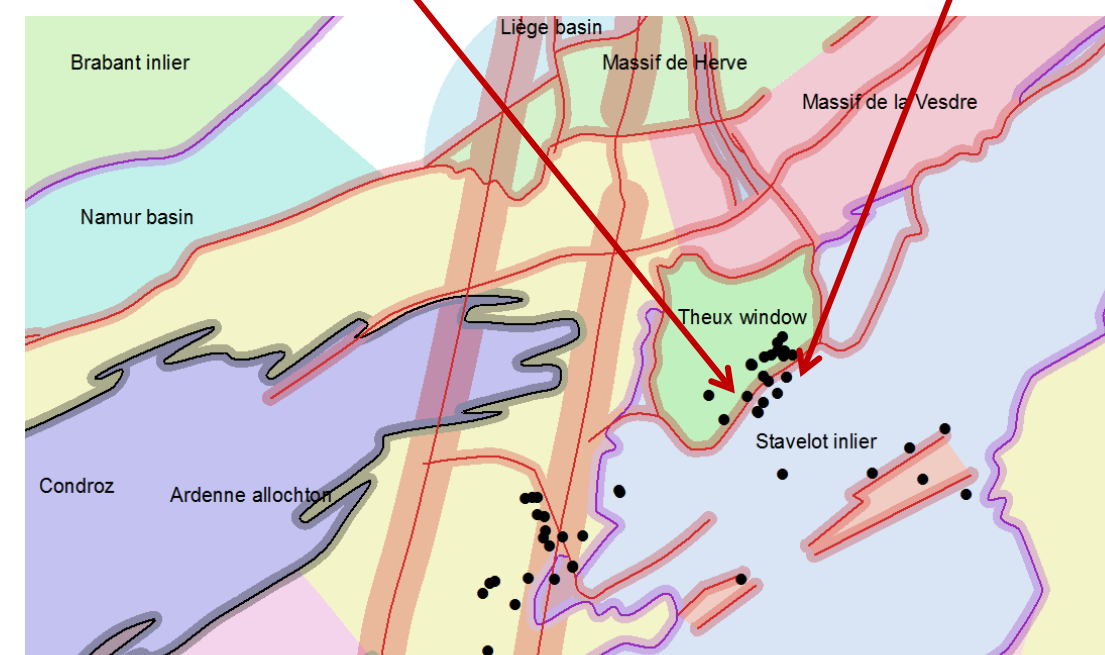
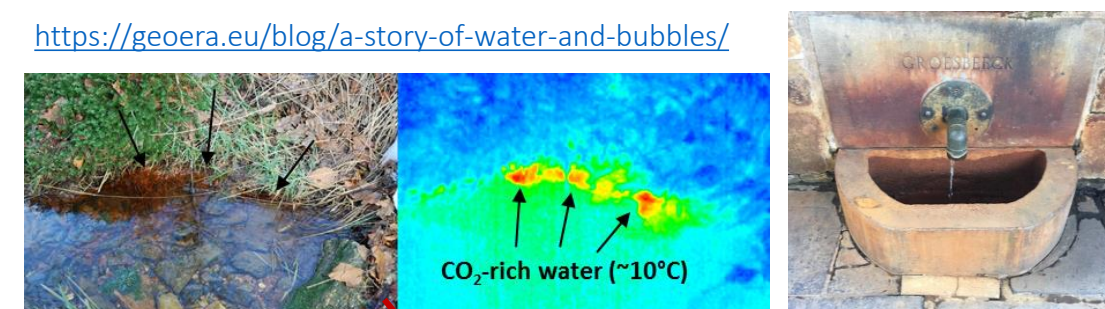
Linking geomanifestations with the [structural framework](#) can provide valuable information about processes in the subsurface and point to potential subsurface uses.



Thermal waters: In Budapest (Hungary), carbonate and dolomite mountains host a significant karstic water system. At some end points of this flowing system in Budapest we can find springs, baths and spas, both indoors and outdoors. Most thermal springs ascend along the Danube, which approximately follows the Buda thermal tectonic zone, an anastomosing fault system dropping the karstic rocks ca. one thousand metres downward under the Pest side. This Buda zone serves as the structural framework for this geomanifestation system consisting of springs, caves, mineralisations, and baths.



<https://geoera.eu/blog/geomanifestation-or-spa-city-both/>



Structural framework of the Belgian Ardennes and location of pouhons (black dots)

CO₂-rich rich waters: In Belgium, numerous naturally ferruginous and CO₂-rich (up to 4g/L) springs, locally known as *pouhons*, occur in the Ardennes. These waters have attracted economic and touristic interest for centuries, being exploited since the 14th century and bottled and exported since the 16th century. On the plateau of the Hautes Fagnes, rain infiltrates the soil and is purified by peat, sand and gravel layers. While traveling deeper through shales and fractured quartzitic rocks, CO₂ is assimilated from a still largely unknown source. The CO₂ is thought to come from yet-to-be-discovered carbonate rocks, dissolved by the low-pH water to produce CO₂, or possibly from the volcanism of the Eifel region in Germany. → For more details, access the [display about the pouhons](#).

And find out more about geomanifestations throughout Europe in our [project's blog](#)!