

HABILITATION THESIS REVIEWER'S REPORT

Masaryk University

Applicant

Tomas Kuchovsky, PhD, Assistant Professor

Habilitation thesis

Anthropogenic impact on the groundwaters between Bohemian Massif and Western Carpathians

Reviewer

Josep Poblet, PhD, Full Professor

Reviewer's home unit, institution

Department of Geology, University of Oviedo, Spain

Although my research field is not Hydrogeology but Structural Geology, I believe the Habilitation Thesis entitled “Anthropogenic impact on the groundwaters between Bohemian Massif and Western Carpathians” by Tomas Kuchovsky represents a solid contribution to the field of hydrogeology, focusing on the analysis of anthropogenic impacts on groundwater systems through a combination of case studies and numerical modelling.

One of the main strengths of this work is its scientific and practical relevance. The topics addressed—mining impact, groundwater contamination by anthropogenic compounds, and geothermal resource utilization—are highly pertinent in the current context of sustainable water resource management. The thesis clearly connects regional case studies with broader global challenges, which enhances its significance.

From a methodological perspective, the work stands out for its rigorous use of 3D hydrogeological modelling, as well as the integration of field data, hydrochemical analyses, isotopic studies, etc. This multidisciplinary approach enables robust and well-supported results. In particular, the ability to quantify changes in water balance and hydraulic conditions represents a significant added value.

The thesis also exhibits a clear and coherent structure, organized into three well-defined thematic sections (mining impacts, groundwater contamination, and thermal water exploitation). This structure facilitates understanding and provides a logical progression from background to results and conclusions.

Furthermore, the work demonstrates a high level of expertise of the author, reflected in the appropriate use of scientific literature, correct technical terminology, and the inclusion of relevant published papers forming the basis of the thesis.

The conclusions are well supported by the results obtained, and they provide meaningful implications for groundwater management and the assessment of anthropogenic impacts.

The manuscript contains occasional typographical errors and minor inconsistencies in the way figures are referenced in the text (for instance, use of “Fig.” and “Figure”). However, overall, the thesis demonstrates a high scientific and technical standard, with relevant contributions to the field of applied hydrogeology. The work reflects strong research competence, solid methodological skills, and the ability to address complex problems in a rigorous manner.

Reviewer's questions for the habilitation thesis defence (number of questions up to the reviewer)

- How do the combined effects of data limitations, data gaps, main sources of uncertainty in the modelling approach and spatial heterogeneity of the aquifer systems influence the reliability of your results, and to what extent could they affect the robustness of your conclusions?

- What are the practical implications of your findings for groundwater management, i.e., how could your conclusions be integrated into public policy or environmental regulations in order to avoid or mitigate some of the negative effects described in your thesis?

- To what extent are your results, modelling approach, and type of datasets used transferable to other geological settings with different hydrogeological conditions, what are the key limitations that could hinder such extrapolation and how do factors such as scale and boundary conditions could constrain the applicability?

Conclusion

The habilitation thesis entitled “Anthropogenic impact on the groundwaters between Bohemian Massif and Western Carpathians” by Tomas Kuchovsky **fulfils** requirements expected of a habilitation thesis in the field of Geology.

Date: 24th March 2026

Signature: Josep Poblet