MSc thesis proposal

- ## Title of the research

Advanced Sensitivity Analysis of Models of Groundwater Contaminant Transport in Scenarios of Climate Change

- ## Objectives of the research

The physical models that quantify the contaminant release from industrial activities and its transport in groundwater are computationally expensive. Furthermore, many uncertainties affect the inputs and boundary conditions of such models. In particular, climate-related variables (temperature, CO_2, precipitation, …) play a relevant role for contaminant mobility, and the concerns for *Climate Change* (CC) demand increased attention to their characterization. To alleviate the computational burden, *Sensitivity Analysis* (SA) can be employed to identify the most relevant model inputs that drive the model output in contamination-critical situations.

In this thesis, advanced SA methods will be studied and applied to contaminant transport models, within a framework of risk assessment for radioactive waste repositories in relation to aquifer contamination under CC scenarios.

References

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- Alibrandi, Umberto, Lars V. Andersen, and Enrico Zio. "Informational probabilistic sensitivity analysis and active learning surrogate modelling." *Probabilistic Engineering Mechanics* 70 (2022): 103359.

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