

Learning from In-Situ experiments

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Underground Research Facilities (URF's) are an integral part of national radioactive waste disposal programmes as they provide important technical experience, knowledge and confidence for the strategic elements on which the safety case of a final repository is to be based. In general, in-situ investigations provide understanding and parameters of the geologic, hydraulic, chemical, structural and geotechnical properties of the potential host formation and the response of the formation to imposed changes. This presentation will focus on a part of this topic, namely in-situ experiments concerning the THM behaviour of clays around underground excavations with application to radioactive waste disposal.

The presentation will briefly discuss the general research strategy applied when designing and performing in-situ experiments in this research field. In line with the work programme of the EC TIMODAZ project, several running and future in-situ experiments designed to study the THM behaviour of clays around future waste repositories will be discussed in detail. The design of such an in-situ experiment, its boundary conditions and its monitoring lay-out are of key-importance in getting reliable and useful results which can be used later on for THM modelling and the performance assessment of a disposal site. These and other aspects will be dealt with and some experimental outcomes and lessons learnt will be presented.

Examples of experiments performed in three URF's will be included: *Mont Terri* (CH, Opalinus Clay), *Bure* (F, Callovo-Oxfordian Argillite) and *HADES* (B, Boom Clay).