Geophysical Research Abstracts,
Vol. 11, EGU2009-12655, 2009
EGU General Assembly 2009

A Multiple Space and Time Scale Approach for the Quantification of Deep Saline Formations for CO2 storage

A. Niemi (1), J. Bensabat (2), J. Bear (3), J. Carrera (4), P. Gouze (5), R.S. Hazeldine (6), C. Juhlin (1), M. Sauter (7), C.-F. Tsang (1,8)

(1) Uppsala University, Department of Earth Sciences, Uppsala, Sweden (auli.niemi@geo.uu.se), (2) EWRE, Haifa, Israel, (3) Israel Institute of Technology, Haifa, Israel, (4) National Research Council (CSIC), Barcelona, Spain, (5) Centre National de la Recherche Scientifique (CNRS), Montpellier, France, (6) University of Edinburgh, Edinburgh, Scotland, (7) University of Göttingen, Göttingen, Germany, (8) Imperial College, London, England

We present a large-scale integrating project (MUSTANG), to be launched within European FP7. The project aims to develop guidelines and methods for the geological, geohydrological and geophysical characterization of deep saline aquifers for long term storage of CO2, based on a solid scientific understanding of the underlying critical processes. Field investigation technologies specifically suited to CO2 storage will be improved and developed. These aim to improve determination of the relevant physical and chemical properties of the site, and enabling short response times in the detection and monitoring of CO2 plumes in the reservoir and overburden during both the injection and containment phases. An improved understanding of the relevant processes of CO2 spreading is aimed at by means of theoretical investigations, laboratory experiments, natural analogue studies as well as a dedicated field scale injection test. These focus on processes relevant to the 1) seal integrity; 2) possible seepage via pre-existing or reactivated conductive fault zones; 3) effect of formation heterogeneities; 4) CO2 trapping mechanisms; and 5) effective simulation of the wide span of spatial and temporal scales of the coupled thermo-hydro-mechanical-chemical processes. Based on the improved process models, conceptual and numerical models will be developed for analyzing CO2 injection and storage and then applied at a number of test sites representing different geological settings and geographical locations in Europe and worldwide.