



The MUSTANG site characterisation programme

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The overall objective of the site characterisation component of the EU FP7 project MUSTANG is to gather and combine available data from the different test sites included in the project, the South Scania (Sweden), Horstberg (Germany), Valcele (Romania), Heletz (Israel) and Hontomín (Spain) sites, in terms of the modeling needs of the site-specific simulation models. The subsequent modeling will address the characteristics of these sites for their suitability for CO₂ geological storage with a two-fold objective: Firstly, to get an understanding of the behaviour of these particular sites and second, to get an overview of what type of data and characteristics can be encountered in general. Each site has its own specific geological setting, and the quantity and character of the data available is greatly varying. When analyzed parallel and in a systematic way, the sites provide a broad understanding of the characteristics and possible problems and challenges involved in the geological characterisation of potential CO₂ sites.

It is therefore important to establish a common standard and framework on what type of information and data is needed to model these sites - as well as any site - in terms of geological storage of CO₂. For this, a generic framework has been developed which comprehensively describes the essential information needed for the conceptual, geometrical/structural, and hydrogeological, hydrogeochemical and hydromechanical simulation models of the sites. This has been structured to a set of templates that provide a framework for (i) compiling the data as well as (ii) interpreting them into model parameter values with an objective to present the 'data-to-parameter-estimation' process in a transparent and comparable way.

The framework presents in a structured way (i) data sources and the essential information needed to define the structural/geological model (e.g. borehole information, stratigraphy, geophysical measurements, geological maps), (ii) data sources and the essential information needed for the parameter values of the hydrogeological, hydrogeochemical and hydrogeomechanical simulation models that are built on the structural/geological models (e.g. baseline conditions on temperatures, pressures, data and derived values for parameters like permeability, relative permeability, porosity, capillary threshold pressure, composition of formation fluids and gases, petrology, physical properties and chemical composition of the rocks, thermal properties, rock stresses, hydraulic boundaries and boundary conditions, to mention some) as well as (iii) a structure for documenting the model parameter estimation procedure i.e. the procedure from going from point values to values for a reservoir/cap-rock layer in a transparent way (e.g. deterministic or stochastic estimation).

The framework is exemplified, in terms of the data sources, their conversion to parameters and furthermore into model parameters with one of the test sites, the south Scania site.