
MAMERN'07 INVITED SPEAKER

[Jean E. Roberts](#) (INRIA Rocquencourt, France)

Numerical simulation of flow and contaminant transport around an underground nuclear waste storage site.

With the energy problems in today's world the use of nuclear energy seems less and less avoidable. This means that the storage of nuclear waste is a problem that must be dealt with, and currently underground storage seems to be one of if not the most feasible solution. However the choice of the site and the design of the repository must be undertaken with great care and numerical modelling is certainly a necessary tool for such a project. In particular the possibility of leakage at some future time must be envisaged; hence the need for numerical simulation of the transport of the waste in the vicinity of the repository. There are many difficulties encountered in the numerical simulation of such a problem. The two most obvious are the long simulation time due to the long half life of some of the nuclear contaminants and the heterogeneous nature of the underground porous medium with variations in the parameters describing the medium occurring on scales much smaller than that of the size of the calculation domain. In addition the numerical simulators must be efficient as they are destined to be used for studies of sensitivity analysis, and these studies whether deterministic or stochastic require many simulations. In this presentation we will discuss some methods based on multi-domain simulation for treating these problems.
