

1106-80-1150

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Due to the climate change, the forest fire risk is increasing. This is the reason why, we have to take a closer look at the interacting ingredients which influence forest fires. In particular, we have to deal with the modeling of the chemical and physical processes as combustion as well as heat and mass transfer mechanisms to describe forest fire spreading. Altogether, modeling leads to a convection-diffusion-reaction-problem describing the temperature and the mass fraction of the fuel.

In order to solve the problem numerically, we choose radial basis functions as ansatz functions for a collocation method for space discretization and apply a time step scheme. We introduce a particular stabilization technique using flux corrected transport tools, which is helpful in the numerical treatment of the underlying equations and more concretely, for the convection-dominated case. Finally, we present some simulations of forest fire spreading for different parameter configurations based on data provided by the Rhineland-Palatinate Centre of Excellence for Climate Change Impacts. (Received September 11, 2014)