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On the impact of varying the value of a set of COSMO model parameters for short-range predictions.

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In the framework of the COSMO-SREPS Priority Project, an important research issue is to find out a sensible way of describing the COSMO model error. A simple way of representing uncertainty sources in the model formulation is to apply parameter perturbations: the values of a number of parameters of the sub-grid process parametrisation schemes are randomly changed (within their range of variability) in the different ensemble members.

In order to carry on an objective assessment of which parameters should be considered for perturbations, a 16 member ensemble has been run every day over a 3 month period (SON 2007). Initial and boundary conditions for the integrations were provided by the IFS operational deterministic run, for every member. The 16 members are then differentiated by different values of a set of physics parameters. The suite was implemented aiming at defining a suitable set of model perturbation to be implemented on the COSMO-SREPS system, but results can also be regarded as an assessment of COSMO model performances when varying the value of some selected physics parameters. Results are presented in terms of a number of surface variables (t2m, td2m, precipitation). The forecasts have been objectively compared against observations over a network of stations covering Northern Italy.