



Nudging algorithms for geomagnetic data assimilation in numerical dynamo models

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Data assimilation for geomagnetic prediction is one of the upcoming challenges in the field of geodynamo modelling. Here we present preliminary results from a simple data assimilation strategy called "nudging" or Newtonian relaxation, applied on self-consistent, three dimensional numerical dynamo models. The principle of nudging is to add a relaxation term in each of the simulated equations, in order to make the system relax towards the target observations. We set up twin experiments where an initial trajectory is first computed, and a second run is made, losing some or all information on the initial state. When the information loss is for instance a loss of the small scales of the system, we show that nudging and the numerical code allow to correctly recover this information, thus making nudging a promising method for geomagnetic data assimilation.