

Impacts of a change in deep convection scheme on the ARPEGE data assimilation system

Antoine Hubans, Yves Bouteloup, Cécile Loo, Pascal Marquet

In this work, we focus on the evaluation of the physical parametrization of deep convection in the French model ARPEGE. We evaluate the direct impact of this parametrization in a forecast only study as well as the indirect impact with a 4D-Var and the study of the analysis. We have replaced the previous parametrization by the one used in the Integrated Forecast System (IFS) developed at the ECMWF. We seize the opportunity of using an other model parametrization to rearrange physical tendencies in the same way as in the IFS. This diagnostic is new for the ARPEGE environment and it leads to an intecomparison between the two model physics. To evaluate the coupling, we use several ARPEGE 4D-Var to compare the change in analysis with an estimate of the analysis error. Those studies show a significant impact of the new scheme both in the tendencies and in the analysis.