



## **Coupling LMDZ physics in WRF model: Aqua-planet configuration tests**

Lluís Fita (1), Frédéric Hourdin (1), Laurent Fairhead (1), and Philippe Drobinski (2)

(1) Laboratoire Météorologie Dynamique, CNRS, Paris, France (lluis.fita@lmd.jussieu.fr, +33 (0)1 44 27 62 72), (2) Laboratoire Météorologie Dynamique, CNRS, Ecole Polytechnique, Palaiseau, France

Nowadays advances in climatological sciences, pose different challenges for the current global climate models (GCM). One of them is related to the resolution. In some exercises, GCMs are started to be used to that resolutions to which they were not designed for, or in advance of future uses, they have to be tested in order to know their limitations. With the mid term perspective in mind of future uses of the Laboratoire de Météorologie Dynamique Zoom (LMDZ) model, a framework has been designed in order to use the physical parameterizations of the LMDZ model coupled to the dynamical core of Weather Research and Forecasting (WRF) model. This framework will allow the analysis of different aspects such as: resolution thresholds of the LMDZ physics set, skill of LMDZ physics in comparison with cloud resolving simulations, impact of the primitive equations fully compressible dynamics from WRF in global runs among others. The design and implementation of the framework keeps almost all the original capabilities of both models. As a first step, results of an ensemble of 1-year low-resolution global aqua-planet runs performed with the original models using different physical configurations, and the new framework will be presented. These initial results show the correct performance of the new framework, and the sensitivity of the global circulation due to different dynamical atmospheric cores and physical parameterizations.