



High resolution simulation of the meteorology and lightnings during Pedrogão Grande Fire.

Rui Salgado (1), Maksim Iakunin (1), Flavio Couto (1), and Jean-Pierre Pinty (2)

(1) Universidade de Évora, Portugal; Instituto de Ciências da Terra, Pólo de Évora, Portugal, (2) Laboratoire d'Aérodynamique, University of Toulouse/CNRS, Toulouse, France

The evolution of the meteorological situation during the beginning and the development of the terrible fire of Pedrogão Grande, Portugal, on June 17, 2017, was studied based on numeric simulations with the Meso-NH atmospheric model at 1x1 km horizontal resolution. In the version used, the Meso-NH includes the cloud electrification and lightning scheme (CELLS), a completely explicit 3-D electrical scheme, which allow the simulation of lightning flashes.

The simulations indicates the occurrence of a significant number of cloud-to-ground discharges namely on grid points where precipitation do not reach the surface, originating the occurrence of dry thunderstorms and creating favourable conditions to forest fires ignitions. However, according to the model, these discharges did not occur at the time and at the ignition point of the fire. These results are in agreement with data obtained by the system of detection of electric discharges installed and operated by the Portuguese Institute for Sea and Atmosphere (IPMA). The simulations well document the meteorological evolution that favour the rapid development of the fire including the occurrence of a strong downburst.