Geophysical Research Abstracts
Vol. 15, EGU2013-8641, 2013
EGU General Assembly 2013

Cloudiness forecast with WRF mesoscale model: Validation from BLLAST 2011 field campaign

Ángel González-Zamora, Carlos Yagüe, Carlos Román-Cascon, and Mariano Sastre
Dpto. Geofísica y Meteorología, Universidad Complutense de Madrid, Madrid, Spain (carlos@fis.ucm.es)

Cloud cover is one of the most difficult meteorological variables to predict by weather forecasting meteorological models. However it is a very important element to determine because it has multiple applications, not only in weather forecasting but also in other issues as those related to renewable energy, and particularly to those related to solar radiation, as can be solar thermal or photovoltaic power, where the passage of a cloud across the fields of solar panels can reduced energy production. Cloudiness forecasting is clearly a challenge for this field, where we can achieve a significant reduction in production costs of this energy if an accurate cloud cover forecasting is available.
The processes involved in the formation and organization of clouds and precipitation extend from physical and chemical processes involved in small-scale nucleation and growth of cloud particles to the large-scale dynamic processes that are associated with synoptic weather systems. It is important to consider an appropriate scale, not only in determining the effects of a particular phenomenon but also in planning experimental campaigns.
The objective of this work is to analyze the ability of the a mesoscale prediction model (WRF) to simulate cloud cover for three different days of the BLLAST 2011 field campaign, recently performed at the south of France, near the Pyrenees: a day with clear skies, an overcast day, and finally a day with clouds of evolution including some scattered showers. Sensitivity experiments using different PBL, Microphysics and Cumulus parameterizations have been carried out, and the simulations have been analyzed in order to establish the best configuration to accurate forecast the cloudiness and meteorological variables associated to it (T2m, longwave and shortwave incoming radiation at surface).