



Development of a linkage between the Advanced Research WRF model with the CHIMERE chemistry transport model

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Air quality models are highly dependent on the quality of the meteorological inputs, and any improvement in meteorological fields should be maintained in chemistry models. Development of air quality models requires a meteorological core coupled with a chemical transport model. In this sense, several air quality models are designed with an off-line coupling of meteorological fields with the resolving equations of chemistry (e.g., CHIMERE).

In this contribution, we present the results of coupling the Advanced Research Weather Research and Forecasting (WRF-ARW) model (Michalakes et al., 2005) with the Chemistry transport model CHIMERE (Schmidt et al., 2001; Bessagnet et al., 2004). The coupling of Chemical Transport Models with last generation meteorological cores is demanded to advance in the study of air pollution. WRF represents the effort of developing a next generation mesoscale meteorological model for operational and research applications, and has the objective to replace some of the current mesoscale models (e.g., Dudhia, 1993). Previous versions of CHIMERE model were coupled with the 5th generation of the Pennsylvania State University/National Center for Atmospheric Research mesoscale model (Dudhia, 1993), which is currently being replaced by WRF.

Preliminary results show a good performance of the new system. A European domain

simulation has been performed with WRF-CHIMERE and MM5-CHIMERE. Several differences in the final results are observed in ozone maximum concentration and ozone precursors. The ability to couple WRF model with CHIMERE allows the actual and future users of CHIMERE to make use of the last developments in mesoscale meteorology through the developments experimented within the WRF project.

The source code of the linkage developed at BSC-CNS (Jorba et al., 2008) is available through the web site http://www.bsc.es/plantillaH.php?cat_id=445. The package has been tested with WRFv2 outputs and CHIMERE V200511B-1, V200603par-rc1, V200606B and V200709A.

References

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