

Interactive  
Comment

## ***Interactive comment on “Operational, regional-scale, chemical weather forecasting models in Europe” by J. Kukkonen et al.***

**O. Jorba**

oriol.jorba@bsc.es

Received and published: 3 March 2011

The authors have presented an extended review of chemical weather forecasting models in Europe. It is an important and demanding effort that provides a useful summary about the European efforts undertaken during the past decades in deploying air quality forecasting systems over Europe. The revisited models, modeling systems and processes are those compiled by the COST Action ES0602 “Chemical Weather” initially summarized in Balk et al. (2010). We would like to draw the author’s attention about an important Spanish initiative oriented to develop the CALIOPE air quality forecasting system. The Caliope project has as its main objective to establish an Air Quality forecasting system for Spain coordinated by the Spanish Ministry of the Environment. A partnership of four research institutions has composed the Caliope project:

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper



the Barcelona Supercomputing Center (BSC), the Research Centre on Energy, Environment and Technology (CIEMAT), the Earth Sciences Institute “Jaume Almera” (IJA-CSIC) and the CEAM Foundation. This consortium has dealt with both operational and scientific aspects related to air quality monitoring and forecasting. Surprisingly, the manuscript does not include any reference related with the Caliope project. In this sense, the works of Baldasano et al. (2008a, 2011) and Pay et al. (2010) describe the CALIOPE system and discuss annual modeling results over Europe and Spain. The work undertaken during the evolution of the project has been extensively disseminated in several international conferences and workshops. In previous review manuscripts, e.g. Menut and Bessagnet (2010), the system was included and compared amongst European forecasting models; it is worth mentioning that CALIOPE is also included in Balk et al. (2010) technical note, which summarizes the operational systems providing air quality forecasts over Europe.

CALIOPE is operational since 2006 and provides air quality forecasts over Europe at 12km x 12km horizontal resolution and over Spain at 4km x 4km. The CALIOPE modeling system, namely WRF/HERMES/CMAQ/BSC-DREAM, is based on a high-resolution emission inventory over Spain (Baldasano et al., 2008b) and accounts for the mineral dust transport from North Africa to Europe and Spain by means of the BSC-DREAM8b model (Nickovic et al., 2001; Pérez et al., 2006ab), and gas-phase and aerosol pollutants by means of CMAQ model. We would like to note also that BSC-DREAM8b has been providing operational forecasts since 2005 for the Mediterranean and Southern Europe domain. The CALIOPE results are provided in the model webpage ([www.bsc.es/caliope](http://www.bsc.es/caliope)). Currently, forecasts are evaluated on a near-realtime system against surface and upper air observations (Gonçalves et al., 2010; Baldasano et al., 2010) and a post-processing algorithm based in the Kalman filter is applied to improve model forecasts (Baldasano et al., 2010). For all that, we kindly ask that the authors consider the efforts undertaken within the CALIOPE project and include them within their review manuscript.

[Full Screen / Esc](#)[Printer-friendly Version](#)[Interactive Discussion](#)[Discussion Paper](#)

## References:

Baldasano J.M, P. Jiménez-Guerrero, O. Jorba, C. Pérez, E. López, P. Güereca, F. Martin, M. García-Vivanco, I. Palomino, X. Querol, M. Pandolfi, M.J. Sanz and J.J. Diéguez., 2008a. CALIOPE: An operational air quality forecasting system for the Iberian Peninsula, Balearic Islands and Canary Islands- First annual evaluation and ongoing developments. *Advances in Science and Research*, 2: 89-98.

Baldasano J.M., L. P. Güereca, E. López, S. Gassó, P. Jimenez-Guerrero, 2008b. Development of a high-resolution (1 km x 1 km, 1 h) emission model for Spain: the High-Selective Resolution Modelling Emission System (HERMES). *Atmospheric Environment*, 42 (31): 7215-7233.

Baldasano, J.M., M. T. Pay, O. Jorba, J. Ortiz, M. Gonçalves, S. Basart, S. Gassó, P. Jiménez-Guerrero, 2010. Evaluation of the Spanish operational air quality forecasting system: diagnostic and near real time. *International Workshop on Air Quality Forecasting Research*. Québec, Canada, 16-18, November 2010.

Baldasano, J.M., M.T., Pay, O. Jorba, J. Ortiz, M. Gonçalves, S. Basart, S. Gassó, P. Jiménez-Guerrero, 2011. An annual assessment of air quality with the CALIOPE modeling system over Spain. *Science of the Total Environment* (accepted).

Balk, T., Kukkonen, J., Karatzas, K., Bassoukos, T., and V. Epitropou, 2010. A European open access chemical weather forecasting portal. A Technical note, *Atmos. Environ.*, doi:10.1016/j.atmosenv.2010.09.058, 2010.

Gonçalves M., M. Piot, O. Jorba, D. Carrió, S. Gassó and J.M. Baldasano, 2010. Near Real Time Evaluation of the Spanish Air Quality Forecast System: CALIOPE. *HARMO13 Conference*, Paris (France), 1-4, June 2010.

Menut, L. and B. Bessagnet, 2010. Atmospheric composition forecasting in Europe. *Ann. Geophys.*, 28, 61-74.

Nickovic, S., A. Papadopoulos, O. Kakaliagou and G. Kallos, 2001. Model for prediction

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper



of desert dust cycle in the atmosphere. *J. Geophys. Res.*, 106, 18113-18129.

Pay, M.T., M. Piot, O. Jorba, S. Gassó, M. Gonçalves, S. Basart, D. Dabdub, P. Jiménez-Guerrero and J.M. Baldasano, 2010. A full year evaluation of the CALIOPE-EU air quality modeling system over Europe for 2004. *Atmospheric Environment*, 44 (27): 3322-3342.

Pérez, C., S. Nickovic, J. M. Baldasano, M. Sicard, F. Rocadenbosch, and V. E. Cachorro, 2006a. A long Saharan dust event over the western Mediterranean: Lidar, Sun photometer observations, and regional dust modeling, *J. Geophys. Res.*, 111, D15214, doi:10.1029/2005JD006579.

Pérez, C., S. Nickovic, G. Pejanovic, J. M. Baldasano, and E. Özsoy, 2006b. Interactive dust-radiation modeling: A step to improve weather forecasts, *J. Geophys. Res.*, 111, D16206, doi:10.1029/2005JD006717.

---

Interactive comment on *Atmos. Chem. Phys. Discuss.*, 11, 5985, 2011.

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper

