SORS: The multiscale NMMB/BSC Chemical Transport Model: developments of inlined aerosol and gas chemistry processes

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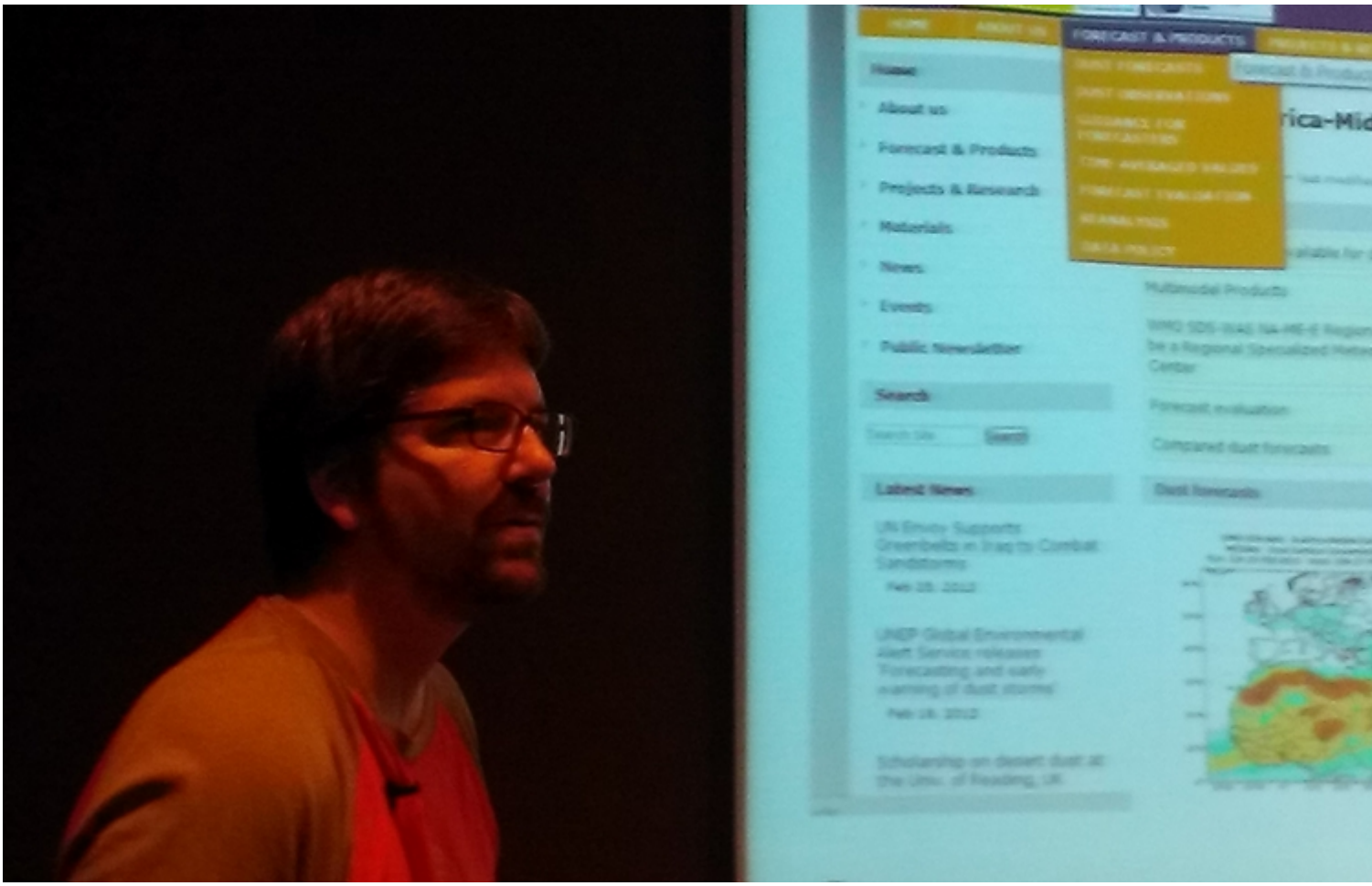

Abstract:

The Earth Sciences Department of the Barcelona Supercomputing Center (BSC) is working on the development of a chemical weather forecasting system based on the NCEP/NMMB multiscale meteorological model. In collaboration with the National Centers for Environmental Prediction (NOAA/NCEP/EMC), the NASA Goddard Institute for Space Studies (NASA/GISS), and the University of California Irvine (UCI), the group is implementing aerosol and gas chemistry inlined within the NMMB model. In the framework of the Severo-Ochoa research program, the group is extending the range of applicability of the NMMB/BSC-CTM from high-resolution regional to global scales, and for short-term to long-term modeling scenarios.

This talk will overview the status of development of the system, the efforts done on the evaluation of the different modules, and its application as a research forecast tool. NMMB/BSC-CTM is providing mineral dust forecasts with its regional configuration for the Northern Africa-Middle East-Europe (NA-ME-E) Node of the Sand and Dust Strom Warning Advisory and Assessment System (SDS-WAS) of the World Meteorological Organization (WMO). Complementing the mineral dust processes, a multi-component aerosol module is under development. Results on the evaluation of different sea-salt emission schemes will be shown. Furthermore, gas and aerosol chemistry is under evaluation at both global and regional scales. In this sense, the NMMB/BSC-CTM is contributing to the AQMEII-Phase2 initiative on on-line air quality model intercomparison.

The Presentation can be viewed here.

Bio:

Born in 1975 in Barcelona (Spain), Industrial Engineer (Technical University of Catalonia -UPC-, Barcelona, Spain, 1999); Diploma of Advanced Studies in Environmental Engineering(Technical University of Catalonia -UPC-, Barcelona, Spain, 2002); Ph.D. in Environmental Engineering (Technical University of Catalonia -UPC-, Barcelona, Spain, 2005). His research activities and interests have included high resolution mesoscale meteorology and air quality, development of online meteorology-chemistry models, boundary layer studies, chemical mechanisms and environmental impact assessment. In 2005, he was enrolled as researcher at the Earth Sciences Department of the Barcelona Supercomputing Center, and in 2008 moved to the Atmospheric Modelling Group Manager position at BSC. He held a research position at the University of California Irvine (USA) in 2011, and at the NASA Goddard Institute for Space Studies (USA) in 2013. He has co-authored 30 papers in international scientific journals and over 80 communications to international conferences. He has participated in several Spanish and European projects of the FP5 and FP7 Framework Programme (e.g., EARLINET, ACCENT, IS-ENES, FIELD-AC, IS-ENES2). He has been the principal investigator of the Spanish research project CGL2008-02818, and coordinates the development of the multiscale chemical weather forecasting system NMMB/BSC-CTM. He is member of the management committee of 2 European COST Actions (ES1002, ES1004) as a Spanish representative, and of the Scientific Committee of the International Technical Meeting on Air Pollution Modelling and its Application. He has acted as reviewer of several international journals (Atmospheric Environment, Atmospheric Research; Geoscientific Model Development; Tethys; Water, Air and Soil Pollution).

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