Geoscientific
Model Development
Discussions

Interactive comment on "Air quality forecasts at kilometer scale grid over Spanish complex terrains" *by* M. T. Pay et al.

Anonymous Referee #3

Received and published: 5 May 2014

General comments: The paper combines two important issues, e.g air quality forecasting which is of economic and health importance and which becomes scientifically/computationally possible, and on the other hand the scale issue, e.g. what is the optimal horizontal resolution in air quality modeling systems. As mentioned in the manuscript, the potential benefits of higher-resolution modelling should be weighed against the increased complexity on the inputs, CPU time, and disk space requirements. In theory, higher resolution modelling is expected to yield better forecasts because of better resolved model input fields (topography, land cover and emissions), and better mathematical characterization of physical and chemical processes. However, when going to higher resolutions, the input data (essentially emission data and meteorology) should be of higher accuracy as well. I am of the opinion that the paper represents a substantial contribution to the air quality modelling science, the applied

methodology (including the computational tools) is scientifically sound and appropriate, the scientific results and conclusions are clear and presented in a well structured way.

Therefore, I support the acceptance of the paper for publication subject to the following minor revisions.

Specific comments - I would prefer to add a short paragraph on the impact of the (resolution of the) meteorology on the model results. From the paper it is not quit clear at what resolution the meteorological input is used. If in particular the resolution goes down to 1 km, the local meteorological phenomenae become important. - Related to the first point, and also mentioned by referee 1, is the issue of the spatial representativeness of the observations. Some clarification is needed in the paper - For typographical errors I refer to the other referees.

Interactive comment on Geosci. Model Dev. Discuss., 7, 2293, 2014.