Geosci. Model Dev. Discuss., 4, C1357–C1358, 2012
www.geosci-model-dev-discuss.net/4/C1357/2012/

Geoscientific
Model Development
Discussions

Interactive comment on "Simulations over South Asia using the Weather Research and Forecasting model with Chemistry (WRF-Chem): set-up and meteorological evaluation" *by* R. Kumar et al.

Anonymous Referee #2

Received and published: 18 January 2012

This is a nice peace of work providing a standard method of presenting validation of meteorological component of regional CTM against observational data. The paper is worth publishing after some revisions, but preferably back-to-back with the associated one with subtitle, "chemistry evaluation and initial results," if the latter would be accepted for publication in reasonable time span. It is much more convenient for readers. My comments are as follows.

1. Most of regional CTM papers have mainly concerned with the validation of the model by comparing calculated mixing ratios of chemical species (e.g. O3 and its precursors) with observational data, and the validation of meteorological components

has not been fully done with much efforts. However, particularly for the application of CTM in tropical/sub-tropical regions, meteorological elements (precipitation, water vapor, convection, etc.) would affect mix ratios and deposition fluxes of chemical species more sensitively than in the mid-/high latitude regions. Not many studies have been reported for the application of CTM in tropical/sub-tropical regions yet, this paper is a pioneering one showing meteorological characteristics of WRF and validating it with observation utilizing satellite data in South Asia.

2. Difference of modeled precipitation between this study and Rakesh's, both using WRF, is interesting and worthwhile to discuss more in detail on the causes.

3. Fig. 12 is not clear in several aspects. Dotted lines representing individual sites may not be necessary since they are not discernible and not discussed in the text. More scale readings between 100 and 1000 hPa are necessary. As for the dots in the figure, "Low Altitude"/"Moderate Altitude" is one category and "Coastal Sites"/"Inland Sites" are another. One site is classified for example, to both "Low Altitude" and "Coastal Sites"? But it does not seem to be the case since for example, in the <r2> plot for temperature,

Interactive comment on Geosci. Model Dev. Discuss., 4, 3067, 2011.