

This is a thorough and timely study succeeded in forecasting atmospheric concentration of Carbon Monoxide in the Pacific Northwest of the US. The great detail of satellite measurement calibration and limitation elaborated in Sections 2.2, 2.5 and 2.6 is immensely helpful to the reader. The solidly structured outline and progression of presentation are phenomenally well organized and sequenced.

The paper will greatly benefit the science community and is recommended to be published as-is.

It may be improved by considering the following two suggestions:

- (1) A discussion is included to explain AIRPACT-3's treatment of layer-collapsing from WRF's vertical structure to CMAQ's 21 variable vertical layers. It can help the reader to appreciate the stringent mass consistency accuracy of chemical transport models (e.g. Byun 1999 ; Young et al. 2009)
- (2) A stipulation of having achieved the 4 overall goals mentioned at the end of Section 1 may be more conspicuously written in the same enumerated order in the "Conclusion" section.

Byun, D. W.: Dynamically consistent formulations in meteorological and air quality models for multiscale atmospheric studies. Part II: Mass conservation issues, *J. Atmos. Sci.* 56, 3808-3820, 1999.

Young J., Pleim J., and Mathur R.: Mass consistency improvement in CMAQ advection, Preprint: 8<sup>th</sup> Annual Community Modeling and Analysis, Chapel Hill October 19-21, 2009.