Atmos. Chem. Phys. Discuss., 8, S7285–S7286, 2008
www.atmos-chem-phys-discuss.net/8/S7285/2008/

Atmospheric Chemistry and Physics Discussions

Interactive comment on "Implementation of a boundary layer heat flux parameterization into the Regional Atmospheric Modeling System (RAMS)" *by* E. L. McGrath-Spangler et al.

Anonymous Referee #2

Received and published: 19 September 2008

This paper tackles an important topic–entrainment fluxes–which significantly affects the dynamics and properties of the planetary boundary layer (PBL). The paper is generally presented well and written clearly. However, I find it to be significantly lacking in that no measurements have been included and would not recommend publication unless comparisons of the model to observations have been included.

To elaborate: In the manuscript's current state I find the model's sensitivity to adding entrainment processes to be unsurprising–they are generally what would be expected from simple conceptual models of entrainment and from previous studies. Hence for the paper to be of sufficient originality to be published, I urge the authors to include

comparisons to observations.

It appears that Referee #1 has already made a similar suggestion, and I agree with the major recommendations in that review. The model domain includes the WLEF tall tower as well as many measurements in the surrounding area, and it is extremely data-rich.

I suggest that the authors attempt an "inverse analysis" that attempts to solve for Alpha (entrainment parameter) based on model-data comparisons. This would be more of a novel contribution.

Hence I disagree with the author's suggestion that all of the model-data comparisons be delayed in a second paper (in their reply to Referee #1). Some judicious decision needs to be made to include some of those comparisons in the present paper, and if some sort of inversion for Alpha could be carried out, that would tremendously increase the impact of the paper.

For all of the reasons above, my recommendation is that the paper not be published unless it incorporates comparisons to measurements.

Interactive comment on Atmos. Chem. Phys. Discuss., 8, 14311, 2008.

ACPD

8, S7285–S7286, 2008

Interactive Comment