Geoscientific
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Interactive comment on "Modeling the diurnal cycle of conserved and reactive species in the convective boundary layer" *by* D. H. Lenschow et al.

Anonymous Referee #2

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Anonymous Referee 2

I consider the paper an excellent advancement in the filed of one dimensional models. Such a filed of research is still very much needed as the relevance of boundary layer processes still remains after several decades a key element of the atmospheric process description. Detailed and sophisticated but yet simple to use descriptions of the evolution of boundary layer dynamics and the fate of tracers released or entrained into it is crucial, given the continuous character of power spectrum of

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tracers in the atmosphere. The addition of chemical mechanisms and the correct description of how turbulent mixing can determine its occurrence in dependence of the time scale of the reaction is something essential. The latter is still overlooked by meso to global scale models and this paper by means of the second order closure approach is able to describe accurately thus putting it back it the center of the scene and in a way that should be manageable by larger scale models. A previous attempt to describe these processes with second order closure models, though for nigh time conditions, is Galmarini et al. (1997) that the authors may want to consider in their literature overview (http://journals.ametsoc.org/doi/pdf/10.1175/1520-0450(1997)036Having said that I consider the paper ready to be published with no further comment.

Interactive comment on Geosci. Model Dev. Discuss., 8, 9323, 2015.

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