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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Evaluation of stratocumulus cloud prediction in the Met Office forecast model during VOCALS-REx" *by* S. J. Abel et al.

Anonymous Referee #2

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This is a good manuscript describing well an evaluation study of the UK Met Office model performance during the VOCALS experiment regarding marine boundary layer clouds. This paper should be published after some major revisions.

Specific Issues:

a) The explanations of the physics of stratocumulus-topped boundary layers, namely in the introduction, are somewhat confusing and it would be great if the authors could improve the text in this respect.

b) The authors need to more clearly describe the parameterizations that are being evaluated. How is the liquid water calculated? What terms are in the equation? How is

the cloudy boundary layer scheme coupled to the cloud and microphysics parameterization? Please write the relevant equations.

c) Please explain in some detail how the model boundary layer height is computed. What is the impact in terms of the analysis of the results (fig.3 and 4) of using different definitions (in models an observations)?

d) The authors need to provide more physical interpretations of their results. The fact that the authors of this particular manuscript work in the same organization as the researchers that developed these parameterizations is a key advantage that the authors should be able to take advantage of.

e) Please state where the boundary layer model levels are in height (since the authors do discuss the role of vertical resolution).

f) The authors use in eq.(10) Zmbl from the model. Could this be an issue? Would it be cleaner to compare brightness temperatures from the model and the observations?

g) First lines of page 16812: is this the main mechanism by which solar radiation modulates the boundary layer structure? Please provide references.

h) Please be precise about the Aqua satellite overpass times.

i) Section 3.5: Please describe in here, if not before, and in some detail how drizzle is parameterized in the model.

Interactive comment on Atmos. Chem. Phys. Discuss., 10, 16797, 2010.