

Review

A subgrid parameterization scheme for precipitation. S. Turner, J.-L. Brenguier, and C. Lac

The paper presents an approach to representing the effects of sub-grid distribution of cloud water on cloud and precipitation processes. The approach is simple enough that it can be used in numerical weather prediction and climate models. The method is evaluated against large-eddy simulation, which explicitly models the parameterized distribution. The comparison shows convincingly that the proposed method improves upon use of grid-box means in microphysical calculations.

Publication is recommended, with the minor revisions requested in the following.

Minor Revisions

1. p. 1654, ll. 6-10: Text states that Figs. 3a and b show good agreement between modeled and observed \tilde{q}_r and observations. In fact, SM values are very small relative to observed means, and DM-50 values are high, especially around 500m and toward the end of the integration.
2. p. 1658, l. 2: Provide a brief description of how TESTB93 differs from the other SM parameterizations.
3. p. 1658, ll. 11-13: Text states that significant values of \tilde{q}_r are generated in both the standard and subgrid schemes (Figs. 8c,d). However, no \tilde{q}_r is evident on Fig. 8c for SM-CTRL.