

Author Responses are in red

Referee 1 Report

The authors have considerably improved the manuscript and have addressed most of my suggestions and comments in an appropriate way. There are, however, a few minor issues left that I would like to see changed before the final publication.

The main point is that the figure labels of figures 1 to 6 are still too small and thus hard to read! I tried to find a good balance of large axis and contour labels and frequency. This was the best balance I could manage. Most of the figures are eps files which maintain their high resolution even when zoomed in very far. Figures 3 and 8 were adjusted to make the contour labels more consistent.

RC: Line 16: sounds like only warm air is transported vertically, I suggest removing "warm" here

AR: "warm" was removed

no! It's still in the manuscript!

Warm air was replaced with momentum. My mistake, I must have edited the paragraph again after responding to that comment.

RC: Figure 1, profiles for 15:15 UTC (lower panels): I assume the lowest 200 m indicate the mixed layer of the developing CBL after sunrise. I am a bit puzzled over the super-adiabatic slope of the environmental curve over the whole BL/ML depth. I can't explain this other than by a systematic bias from your measurements, e.g due to sensor time lag!

AR: The superadiabatic layer only extends about 50 m. The remainder of the layer is dry adiabatic.

Also, a systematic sensor bias would have implications throughout the entire profile causing a linearly propagating error. Radiosonde data also supports a shallow superadiabatic layer during the day (attatch fig).

I have to apologize, I read the graphs as the potential temperature! My bad!

But it also brings up to my mind if plotting the potential temperature would be much easier, as static stability can immediately seen from the slope and not from a comparison with the dry adiabate?

Figure 1 uses temperature because that is the primary variable used to calculate buoyancy. The goal of Figure 1 is to display how buoyancy relates to the temperature profiles. In following figures potential temperature is used to relate to static stability more easily.

Referee 2 Report

Many thanks to the authors for thoroughly and thoughtfully addressing each of my major and minor comments with appropriate changes in the text.

Comments:

- 1) Just to raise awareness- Regarding the authors' reply to my comment about L 230 (version 1), it looks like the changes mentioned by the authors are approximately around L 266-267 (version 2), rather than L 241-243 as mentioned in the authors' reply. I agree with the location of the changes in version 2. There were some other mismatches between referenced changes and actual changes but I think was able to locate all of them.
My apologies, I will keep better track of lines in the future.
- 2) Figure 1: Could you add the time units (UTC) either to the title of each subplot or to the caption.
Done

