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Comment

## ***Interactive comment on “Observed response of the marine atmospheric boundary layer to the Southern Ocean fronts during the IPY BGH 2008 cruise” by C. Messenger et al.***

**C. Messenger et al.**

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Authors understand general comments of this reviewer concerning the presentation of the paper. The authors then proposed a major revision as suggested:

- The paper will be reorganized to present general information as well as a selection of a case of frontal influence with eddy M, a case of diurnal cycle and inference on MABL structure and a case when the changes across fronts are masked by synoptic variability.

- The zooms of the lower MABL profiles will be provided for the specific cases discussed (consequently, new figures will be added). However, the figures 3 and 4 will still

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contain all the vertical profiles. The information about this region is rare and deserved to be communicated (as mentioned by reviewers 2 and 3) to a large community, beyond the scope of this paper. For instance, the profile aloft the MABL is interesting for global modeler (analysis) and regional circulation (around Antarctica). However, there is a readability problem with the Figures 3 and 4 as currently stated. Authors will split them to increase their sizes. Additionally the number of curves by frame will be decreased in Figures 2,5,7 (an additional frame will be added for each one)

- The sonic anemometers and the METEO France Batos station were not managed, configured and maintained by the scientific team. As a result, the METEO FRANCE Batos data had a coarse time sampling resolution and no clear information about its calibration was available. The sonic data from the main mast were intermittently (and often) not available and the one from the forward mast were continuously polluted by sprays (southern ocean!). The data from the forward sonic mast were then used only for intermittent comparison to other wind sensors. It is the reason why the surface turbulent fluxes are derived from a bulk parameterization rather than from the sonic data in order to have a continuous and coherent data series along the cruise.

- One can assume the reference about the METEO FRANCE Batos station and the sonic anemometers must mention this information or be removed.

- The stability of the MABL can be evaluated by the MABL profiles (but sure! in Figure 3 and 4, they are too small to let the reader checks). A bulk  $Ri$  was considered but as requested by the reviewer, the stability parameter will be presented.

- Consideration about data assessment will be provided but not all these considerations will be developed because it is out of the scope of the paper, and presenting the data quality control is a major subject deserving a dedicated paper.

- A review by a native English speaker will be also performed

- Moreover, the title of the paper will change in order to better fit the actual topics

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addressed.

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Interactive comment on Ocean Sci. Discuss., 9, 1387, 2012.

**OSD**

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