

Interactive comment on “Observation of a mesospheric front in a dual duct over King George Island, Antarctica” by J. V. Bageston et al.

Anonymous Referee #3

Received and published: 25 July 2011

This paper discusses a single observation of a bore over Antarctica. Although bores have been observed in the past the authors note that they have been infrequently observed over Antarctica. Furthermore, unlike many previous studies the authors use MF radar and satellite temperature to define the environment into which the bore is propagating. They find the presence of a ducted region that is formed by both the temperature and wind structure.

The authors have certainly done as much as they can with their data. But because of the limitations of their data there remains a question on the impact of this paper on this field. Perhaps though it will motivate a future study where the atmospheric conditions can be determined somewhat closer to the bore observation.

I mainly agree with Dr Picard's critique although I also agree that it should be published.

C6849

However, I wish to emphasize a few points.

Specific points.

1. While the authors do address the question of "is this a bore" I remain unconvinced. As they note their published figures are of poor quality and I certainly am not convinced that the event is a bore. It looks like a wave train to me. Perhaps they should do a cut through the image to show that there is indeed a sharp discontinuity across the "bore".

Smith et al tried to address the bore identification problem in their South American data and they did come up with a few differences from dusted waves. Perhaps the primary was maintaining a sharp front as the "bore" propagated across the field of view. As they argue maintaining such a sharp front in several airglow layers is difficult to maintain. They also discuss the increase in wavefronts with time. So the question is why is this Antarctic event a bore and not just a ducted wave packet..

2. Perhaps they could do a search to see if the presence of a duct in SABER and MF radar data is unusual or not. That would help determine the significance of the duct

Smith, S. M., J. Scheer, E. R. Reisin, J. Baumgardner, and M. Mendillo (2006), Characterization of exceptionally strong mesospheric wave events using all-sky and zenith airglow observations, *J. Geophys. Res.*, 111, A09309, doi:10.1029/2005JA011197.

Interactive comment on Atmos. Chem. Phys. Discuss., 11, 16185, 2011.