

Second review of “Observation and modelling of high- ^7Be ”

BY E. BRATTICH ET AL.

General remarks

In my first review I stated that the case study of high ^7Be events observed in Northern Europe in early 2003 combined with a model simulation constitutes a good scientific study of interest to the readership of ACP. This is still true. The authors have invested considerable work in improving their manuscript in response to the comments by both reviewers.

In summary, I think this is an interesting paper the revisions have certainly improved it. I have a few remaining comments (see below) that I recommend considering when providing a final version of the paper. I suggest that the paper should now be accepted subject to technical corrections.

Remaining detailed comments

- Title: the title was changed in response to my comment, but I think “surface high- ^7Be ” is still not good. Perhaps “high surface ^7Be ...” or “high- ^7Be events at the surface” or similar.
- l 55: “followed by gradual movement into the ground-level” is not really clear; do you mean the boundary layer here?
- l 86: “temporal variability of the Arctic vortex includes the SSW”: includes is not the best word: perhaps ‘SSW, a major mode of the temporal variability of the Arctic vortex’, or similar.
- l 233: The paper states “Computation used the vertical velocity field contained in the meteorological input file” – it is still not clear which vertical velocity field you are using. I guess $\omega = \dot{p}$, or are you using a vertical velocity field in units of length over time? Please clarify.

- l 241-243: These lines do not provide a lot of discussion on downward transport and the use of backward trajectories. I still think that consideration (e.g. plotting) of time/altitude cross sections for the backward trajectories could be helpful to the arguments put forward in the paper.
- l. 441-446: These lines in the new manuscript do not really talk about PV; regarding your comment; note that for adiabatic conditions not only PV is conserved (neglecting friction) but also potential temperature (which might have implications for downward transport). You do not have to change your paper necessarily based on this comment.
- line 445: this line does not contain a discussion of omega in contrast to what is stated in the reply.
- l. 631: check authors list – does not seem to be correct.
- l. 777: check the year of the reference; 2006?
- Figure 12: The caption is extended but the meaning of the black lines in the panels of Fig. 12 is still not explained in the caption.
- Fig. 13: the omega values in the boundary are perhaps not most relevant for the downward transport from the stratosphere. Have you considered other levels as well? For example, there is a large ‘red’ area over Greenland (but not over the ocean surrounding Greenland); would you expect to find strong ^7Be enhancements in Greenland but not so much over the ocean?