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Atmospheric Measurement Techniques Discussions

Interactive comment on "Improved mixing height monitoring through a combination of lidar and radon measurements" *by* A. D. Griffiths et al.

A. D. Griffiths et al.

alan.griffiths@ansto.gov.au

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We appreciate the reviewer's helpful comments and shall carefully revise the manuscript to improve the clarity of presentation. Below is our response to the reviewer's specific comments.

1. We will explicitly mention the season in the revised version.
2. We agree that flux chamber measurements from the surrounding area would be interesting to compare with our flux estimates. On this occasion, a flux chamber was unavailable, but it could be included in any future work.

3. We shall clear up the presentation of Fig. 3 and expand the caption. The top panel shows measured radon concentration vs local time and the bottom panel shows both the mixing height derived from the radon concentration and the box model state at each time step. Shading indicates the radon concentration within each box.
   The drop in radon concentration between 2200 and 0200 local time is evidence of a top-down mixing event. This is where something triggers turbulent mixing of low-radon air from above the strongly stable boundary layer. The phenomenon is discussed in Section 3.2.2 and, in the revised manuscript, an explanation will also be added to the figure.

4. The scale will be fixed in the revision.

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