

## ***Interactive comment on “West Antarctic sites for subglacial drilling to test for past ice-sheet collapse” by Perry Spector et al.***

**N. A. Lifton (Referee)**

nlifton@purdue.edu

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### GENERAL COMMENTS

This manuscript presents criteria for evaluating sites for subglacial drilling to evaluate significant past ice sheet thinning beyond current conditions, specifically in West Antarctica but which would also be applicable to other locations. This is an emerging field as new drilling technologies and capabilities appear for remote, logistically challenging, and environmentally sensitive applications in Antarctica and other ice-covered regions. Spector et al. do an extremely thorough job in this respect, in my opinion, beginning with description and analysis of ice-sheet modeling results and moving on to detailed site-specific criteria for consideration. In my view this is an impressive, well-written

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manuscript – it is extremely clear and concise but with considerable detail and similarly clear figures, providing a very useful framework for those in the community considering similar projects. I only had a few minor comments, below, but easily recommend acceptance with minor revision. I'm pleased to say that is one of the best manuscripts I've read in a while.

Nat Lifton

### SPECIFIC COMMENTS

Pg 12, Ln 15: Concerning the last sentence, if the ridge is oriented subparallel to the wind direction then even the ridge crests might also be affected by wind scoops and snow aprons, so it would be safest to avoid ridges in that orientation.

Pg 12, Ln 24: Figure 7 is a clearer demonstration of the asymmetry in my opinion

Pg 13, Ln 8: How long is the core?

Pg 14, Ln 10: I would argue that the LSDn scaling model best explains global production rates overall, and should be used instead of Lal (okay to present Lal also, though). Also, the ERA-40 reanalysis gives very similar pressure results to those in Stone (2000). Muon production should be modeled following Balco (2017) Production rate calculations for cosmic-ray-muon-produced  $^{10}\text{Be}$  and  $^{26}\text{Al}$  benchmarked against geological calibration data. *Quaternary Geochronology* 39, 150–173. doi:10.1016/j.quageo.2017.02.001

Fig 4: A range of prevailing wind directions is shown in 4a, but only a single direction in 4b - seems like it should be a range as well.

Figure 6: This plot shows the ratios of  $(N \cdot \lambda) / P$  (or equivalently,  $N / (P \cdot \tau)$ ), not just  $N/P$  as stated in the caption ( $N/P$  would look similar to the more typical curved two-isotope plot but with the  $^{26}/^{10}$  axis scaled from 0-1). The text in the caption should be changed to correct this.

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