

Review: “Extremes of surface snow grains change in East Antarctica and their relationship with meteorological conditions”

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1 General

This paper reviews the conditions causing extreme changes in surface grain size in east Antarctica. I like how this paper uses case studies over different geographic area to expand upon previous research, and the choice of location seems very logical. I think this paper could use a little more clarity regarding the link of “large scale mean conditions”, as although the link to precipitation, wind speed, and temperature is very well established the link to larger scale climatology in section 5.2 needs more work. Links to figures/tables are strong and this paper overall establishes a solid connection of common features to increase in grain size in this region.

1.1 Major Comments

- **Antarctic Oscillation Index** The link to antarctic oscillation index is not well explained: was there any expected link to AAO? Why look into this parameter?
- **Atmospheric Rivers:** The link to AR’s and grain growth needs to be more clear in the abstract that it is due to precipitation variability that there is thus grain growth. Although it specifies this later in the paper, the occurrence of warm moist air can lead to precipitation which can lead to grain growth, not just warm moist air can lead to grain growth (or else this would not a dry metamorphism in the snow pack.)
- **title** This paper is about the extreme large grain sizes, not both extremes and this might be good to represent in the title.

2 Line Comments

- Line 6: pressure blocking/ridge situation could probably just say pressure blocking and explain ridge situation in AR section.
- Line 112: What causes missing data? what causes dates to not be identifiable? Only being able to identify dates in 62.5% of cases, please comment on what bias this might potentially have.
- Figure 2: instead of saying 0.23 threshold maybe include “extreme growth threshold”
- Line 199: “this events” to “these events”
- Line 216: “Very few snowfall”, wording, “very little snowfall”

- Line 332: “andcould” to “and could”