

Interactive comment on “Drifting snow statistics from multiple-year autonomous measurements in Adelie Land, eastern Antarctica” by Charles Amory

Anonymous Referee #2

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This paper presents the analysis of 8 yr field observation of drifting snow at two sites D17 and D47 on Terre Adelie Land (east Antarctica). The main tools used in this study are FlowCapt acoustic sensor and associated Automatic Weather Station. The paper contributes to knowledge concerning the measurement of negative term of surface mass balance driven by wind.

The manuscript subject is appropriate for Cryosphere Journal, well written, data and analysis are very important. The data are partially already presented and analysed in previous paper (Trouvilliez et al, 2014 and 2015) and a paper under review on the Cryosphere (Amory & Kittel, submitted) presents the same data under the aspect of the

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sublimation that is the main issue not discussed in this manuscript. The interpretations of data acquired are supported by the result and the amount of the good data, but the statistic analysis present in the manuscript are not relevant to support the publication on the high quality Journal such as “The Cryosphere” and the Surface Mass Balance condition from the previous studies are not taken adequately in account.

The previous paper on SMB survey at the two sites (D17 and D47) and model on the Adelie Coast are not adequately discussed and reported (example: Pettrè et al., 1986; Bintanja, 1998; Pourchet et al., 1997; Frezzotti et al., 2004, Genthon et al., 2007; Agosta et al., 2011, Favier et al., 2013, Barral et al., 2014 in the reference but is not taken in account in the manuscript; Goursaud et al., 2017). The manuscript does not analysed the Surface Mass Balance and in particular the extensive presence of the blue ice area in the Coastal Terra Adélie (Favier et al., 2011) and their implication on the drifting snow.

The author does not distinguish drift from blowing snow phenomena and the threshold of snow sublimation, and their implication on the mass transport/sublimation and the difference between the two sites. Blowing and drifting snow are not redistribution process, a significant part of blowing snow sublimate as pointed out by snow radar survey (see Frezzotti et al., 2007; Eisen et al., 2008) or satellite survey (Scarchilli et al., 2010, Palm et al, 2011, 2017; Scambos et al., 2012).

The AWS and FlowCapt sensor provide single measurement point for limited number of years and must be analysed in the contest of Surface Mass Balance study derived from other field measurements as stakes, firn cores, snow radar profile and satellite studies.

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