

Interactive comment on “Analysed and observed moisture transport as a proxy for snow accumulation in East Antarctica” by Ambroise Dufour et al.

Anonymous Referee #2

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This is a very high quality and comprehensive piece of work. It demonstrates the continuing challenges of determining Antarctic snow accumulation variability and change from radiosonde observations and global reanalyses via the moisture flux and its convergence. And continental-scale accumulation cannot be reconstructed from surface observations like snow stakes, nor from space for long time scales. Because reanalyses are a central aspect of this work, "reanalysis" should appear in the title to facilitate discovery of this important effort. The Cryosphere may not be the best journal for this effort that has a strong atmospheric component.

Some smaller items:

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Make reference to Antarctic snow accumulation estimates from extrapolation of ice core time series, like:

Thomas, E. R., van Wessem, J. M., Roberts, J., Isaksson, E., Schlosser, E., Fudge, T. J., Vallenga, P., Medley, B., Lenaerts, J., Bertler, N., van den Broeke, M. R., Dixon, D. A., Frezzotti, M., Stenni, B., Curran, M., and Ekaykin, A. A.: Regional Antarctic snow accumulation over the past 1000 years, *Clim. Past*, 13, 1491-1513, <https://doi.org/10.5194/cp-13-1491-2017>, 2017.

I didn't see explicit mention of the two tables in the text.

In Fig. 7(b), why is the specific humidity equal to zero for JRA 55 and MERRA 2 at 1000 hPa? Is this also the case for IGRA? What do you do for that part of the periphery between McMurdo and Halley where 1000 hPa is far below the ice surface?

Because there is no significant time trend in P-E/C values, include in Table 2 an estimate of the time averaged snow accumulation from the best available observational synthesis.

Interactive comment on The Cryosphere Discuss., <https://doi.org/10.5194/tc-2018-156>, 2018.

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