The Cryosphere Discussions

The Cryosphere Discuss., referee comment RC2
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Comment on tc-2022-59

Anonymous Referee #2

Referee comment on "Ice Sheet and Sea Ice Ultrawideband Microwave radiometric Airborne eXperiment (ISSIUMAX) in Antarctica: first results from Terra Nova Bay" by Marco Brogioni et al., The Cryosphere Discuss., https://doi.org/10.5194/tc-2022-59-RC2, 2022

Review of tc-2022-59 (Brogioni et al., 2022):

General Comments:

This papers reviews results of Ultrawide band radiometry in Terra Nova Bay, Antarctica. This is a fascinating set of results, both on the ground truthing it allows for of orbiting L-band radiometers and as a tool for clarifying processes combining thermal and dielectric gradients (both of which are discussed in this paper), but also the planetary analogs these observations may enable (notably the Juno spacecraft is current engaged in a series of flybys of icy moons near Jupiter, and has a similar instrument, the Multi Wavelength Radiometer, covering a similar frequency band).

I think my major critique would be on the data itself - I am very familiar with the approach of making the data publicly available on acceptance; however what this means is that usability of the data cannot be peer reviewed. I would suggest that the paper should include an explicit pointer to at least an example of these sort of data which is in a format that is identical to the data in this paper, if not the data itself, to allow reviewers to determine if it meets expectations for findability, accessibility, interoperability and reusability.

Specific Comments:

Section 5: some illustrative cartoons showing the expected relationship between frequency and temperature for different environments might be helpful.

Appendix B: What is the significance of this? Is there a central repository where someone could download these curated datasets? I would suggest a detailed table in supplementary materials with the granule names themselves to make this more useful.

Technical corrections:

Title: Should be Title case.

Line 30: “mew” should be “new”

Line 139: Young et al., 2017 is probably a better reference than Lilien 2021 for the little Dome C bed rock topography

Lines 250-270: should be broken up into several paragraphs

Figures 5 and 9: the longitude and latitude text is too small to be resolved when printed.

All figures showing brightness temperature as a function of distance: using a linear color map for the different frequencies would better show the gradients in the spectra.

Figure 6 b: is it possible to show the measurement uncertainties in brightness temperature on this plot (as was done for Figure 15)?

Young, D. A., Roberts, J. L., Ritz, C., Frezzotti, M., Quartini, E., Cavitte, M. G. P., Tozer, C. R., Steinhage, D., Urbini, S., Corr, H. F. J., Van Ommen, T., and Blankenship, D. D., **2017,** High resolution boundary conditions of an old ice target near Dome C, Antarctica, *The Cryosphere,* 11, 1--15, https://doi.org/10.5194/tc-11-1897-2017