General comments

Again, I confirmed that this is an excellent paper. A clear weak point of this paper is its length, far too long, containing wide range of topics in terms of snow science and remote sensing. Readers need a strong motivation/decision to read through this paper. It is like a thesis. Nevertheless, the paper provide us wide range of very important knowledge. I was impressed by wide range of knowledge that the authors compiled in the paper.

I list minor criticisms/concerns. Please consider these points. Points of "must" are a few. For many of them, please just consider to change or not.

Specific comments

#1) Introduction, 3rd line
Please consider to mention "mechanical forcing by wind" in addition to the thermodynamic forcing. Depending on papers on snow, some clearly mentions this mechanical forcing.

#2) Last 5 lines on the "1Introduction"
The authors wrote,
For snow, radar remote sensing methods measurement of snow properties averaged over the microwave penetration depth.
This sentence has no verb. It seems that "methods" is not a verb.

#3) Lines 8 - 9 in Page 2 left
It seems better to add "e.g.," for these citations because they are not only group who did cited types of works.

#4) Line 31 in Page 2 left
Recently, a paper below appeared, with huge amount of the dielectric anisotropy data for the Antarctic firn. In case the authors think mentioning this paper is for readers of the present paper, please just consider.
Fujita, S., Goto-Azuma, K., Hirabayashi, M., Hori, A., Iizuka, Y., Motizuki, Y., Motoyama, H., and Takahashi, K.: Densification of layered firn in the ice sheet at Dome Fuji, Antarctica, J. Glaciol., 1-21, doi:10.1017/jog.2016.16, 2016.

#5) Lines 37 - 38 in Page 2 left
I think parentheses are necessary for these citations. If the authors do not agree, please consult the editor. (Matrosov et al. (2005); Garrett et al. (2012)).

#6) First paragraph of the subsection 1.2
If the authors explicitly inform readers of the thermal conductivity contrast between ice and air as "~100", meaning of "~3" for dielectric permittivity seems to become clearer.

#7) Line 2 in Page 2 right
"Evan" should be corrected as "Evans". Also please repair your reference list in page 25 left.

#8) Line 9 in Page 2 right
The authors cited a paper "Saito and Kurokawa (1956)". This paper is for a method of the cavity resonator method and not for a method of open resonator. This paper must be removed from the

citation; Citing this paper here will mislead readers in terms of methods. I noticed that this paper was once cited in Matsuoka et al. (1996) paper; probably the authors got information from it. Matsuoka et al. (1996) indeed used cavity resonator methods for their measurement. However, data from this cavity resonator method cannot be used for detection of dielectric anisotropy. Anisotropy can be detected only with the open resonator method. Therefore citation of only "Jones (1976)" is proper here. "Saito and Kurokawa (1956)" should be deleted.

#9) Lines 16 - 19 in Page 2 right
The authors wrote,
Lytle and Jezek (1994) also detected a larger vertical permittivity in multi-year firn on the Greenland ice sheet and Sugiyama et al. (2010) found similar results in Antarctica.

The sentence seems a bit vague, considering what really were done by these authors. For example, Lytle and Jezek (1994) measured both vertical and horizontal components. I suggest to change the expression something like below.

Lytle and Jezek (1994) also detected that vertical permittivity values were larger than horizontal permittivity values in multi-year firn on the Greenland ice sheet. Sugiyama et al. (2010) found similar results in Antarctica; horizontal permittivity values were often smaller than permittivity values expected from empirical relations between permittivity and density.

#10) Title of the subsection 1.3
I suggest "*radar remote sensing*" instead of "*microwave remote sensing*" because the authors mention not only microwave but VHF radars as well in this subsection.

#11) In the last paragraph in the subsection 1.3, the authors termed "horizontal anisotropy" and "vertical anisotropy" several times. In both cases, the axis of the symmetry is the vertical. Therefore, these terms seem vague. It seems that I have not seen any example of such use of terms. Please find better expressions. Alternatively, please define conditions of these terms clearly.
I imagine that the vertical anisotropy means the condition of $(\varepsilon_v > \varepsilon_h)$ and that the vertical anisotropy means the condition of $(\varepsilon_h > \varepsilon_v)$. I think that the authors need to find nice expressions for conditions of these.

#12) In the bottom 5 lines in page 3, the authors wrote,
If the anisotropy is defined as in Eq. (1), the magnitude |A| for grains with given ratio between longest and shortest length is independent of whether the longest length is vertically or horizontally oriented.
This sentence seems a bit strange, because if we ignore sign of the equation (1), of course, the number is independent of the axis. Simply the difference between the expression (1) and (2) is to express the anisotropy either as the normalized difference or as ratio. If it is so please write more simply.

#13) Line 17 in Page 20 forth -> fourth ?

#14) Line 3 in Page 21 in principal -> in principle ?

#15) The top 5 lines in the Appendix A
Please tell to readers that this anisotropy is at VHF, UHF and microwave range and in the temperature range of ~-10 degrees C.

#16) Appendix A
Though just using a term "fabric" or "ice fabric" is still OK, "crystal orientation fabric" seems kind to readers and better.

#17) Please check if the upper equation in B1 is correct.
It has a bit strange form of ($1 + 1.5995\rho + 1.861\ \rho^3$) without the second order term. I could not find derivation of this empirical formula in the cited papers. I saw only given results.