Polar maps of C-band backscatter parameters from the Advanced Scatterometer

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Response to Anonymous Referee #2

The authors would like to thank anonymous referee #2 for their comments on the submitted manuscript and believe that by addressing them as below, the study has been improved and is now suitable for publication in Earth System Science Data.

This paper presents a new data set with the backscatter anisotropy parameter mapped with fine resolution for cryospheric studies. The uniqueness of the set relies on the use of multiple sources. The paper is technically sound and well written. I only have a couple of minor comments

1) Include a table summarizing relevant instrument parameters for the data sources.

The authors will add the below table to the paper to detail the instrument and satellite specifications.

Table 1: Instrument and platform specifications

	ASCAT		Metop-A	Metop-B	Metop-C
Frequency	*C-band (5.255 GHz)*	*Period*	*101.3 mins*	*101.3 mins*	*101 mins*
Beam configuration	*3 antennas at 45, 90 and 135 degrees of azimuth on each side*	*Inclination*	*98.7°*	*98.7°*	*98.7°*
Footprint	*30 km x 10 km*	*Altitude*	*827 km*	*827 km*	*817 km*
Swath Width	*550 km*	*Mass*	*4085 kg*	*4087 kg*	*3950 kg*
Sub-satellite gap	*700 km*	*Power*	*1810 W*	*2210 W*	*2100 W*

2) Further discussion on Figure 6 and implications of increasing number of invalid pixels as samples move toward -40 deg would be welcomed.

Thank you, this has been added in as below:

Addition – line 214: These can be seen to increase with movement away from the poles due to the orbital geometry. As each satellite has a 5-day repeat time over the polar areas, the three combined require more than a day to ensure full coverage of the polar extremities. A compromise has been reached here, with the 1-day product covering the majority of the polar area and enabling a much product over many of the areas of interest. Recent drifting of Metop-A (in order to extend its lifetime) will lead to larger gaps in the 1-day product as the orbits become more similar between the satellites.