**Atmospheric
Measurement
Techniques
Discussions**

Interactive
Comment

Interactive comment on "Comparison of satellite microwave backscattering (ASCAT) and visible/near-infrared reflectances (PARASOL) for the estimation of aeolian aerodynamic roughness length in arid and semi-arid regions" *by* C. Prigent et al.

Anonymous Referee #1

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The paper compares the potential of two approaches to estimate the Aeolian aerodynamic roughness length from two different types of sensors (visible/near infrared observations and microwave backscattering measurements) and proposes to merge the two sources of information to benefit from their complementary aspects.

The use of improved estimates of aeolian roughness lengths is a need in the dust

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Interactive Discussion

Discussion Paper

modeling community. This work is a good contribution towards this end. It is concise and well written and deserves publication in AMTD.

I have a few comments:

- The final PARASOL-ASCAT Z0 map at 6 km resolution is very similar to the ASCAT map. Also, the correlation of the Z0 derived from ASCAT and the in-situ measurements is equal to the correlation of the merged product (PARASOL-ASCAT) and the in-situ measurements. My main concern is whether the higher resolution of the PARASOL is really contributing to a better product and how different would be a 6km map of ASCAT (just interpolating the 25 km grid to a 6 km grid) to the merged 6 km PARASOL-ASCAT. Is the merging of the 2 products really justified? How important is the variability at 6 km resolution within a 25 km resolution grid cell? This could be easily calculated and explored. I suggest that the authors introduce this analysis.

- Pages 2941 and 2942: correlations of 0.75 and 0.85 do not mean 75% and 85% of the variance explained. It is the square of the correlation that is interpreted as a measure of the variance explained. In this case it would be 56.25 % and 72.25 %, respectively

Minor issues:

- Page 2936, line 20: a "the" is repeated twice in the sentence. . . - Page 2941, line 10: " The winters of 2007 and 2008. . ." - Page 2944, line 5: Taklamakan

Interactive comment on Atmos. Meas. Tech. Discuss., 5, 2933, 2012.