

This work developed a monthly global long-term satellite radar C-band backscatter data set (CScat) by fusion of ERS-1(C-band), QSCAT (Ku-band) and ASCAT(C-band) observations using a new rescaling method. Maybe the CScat data set has useful in analysis and understanding of some global surface parameters (e.g., vegetation and soil moisture). But the temporal resolution is little low. And, there are some main problems of this manuscript:

1) The signals of Ku-band (13.4GHz) and C-band (5.3GHz) microwave is different. Theoretically, comparing the Ku-band, the X-band and C-band have more similar frequency. Authors choose the Ku-band to fill up the six-year gap of the C-band scatterometer, not choose the X-band, L-band. It is no reasonable explanation here. In addition, authors did not choose data of the same C-band satellite radar data for fusion. It is better using same C-band radar data for fusion. For example, ERS-1/2, ASCAT, Sentinel-1 and GF-3 et al. The results of microwave data merging using the same microwave C-band have greater application significance compared with different microwave bands.

2) For the developed new rescaling method, the comparison analysis in Figure 3 is not enough with CDF method in only two sites. And, Is the new rescaling method developed by authors only applicable to Ku-band correction? Can X-band and L-band data also be fused with C-band using this new rescaling method?

3) I think the validation of CScat data set is not sufficient if authors only used ERS-2 data as validation data for CScat. I suggested that the authors consider using the C-band observation data of airborne or other satellite/sensor different ERS-1/2 as comparison data. And, I doubt the reliability of the validation results of CScat data set. Authors used the ERS-1 observation radar signals to correct the Ku-band signals of QSCAT, and used the ERS-2 signals to validate the corrected Ku-band data. Because the satellite parameters and sensor parameters of ERS-1 and ERS-2 are the quite same, the observation radar signals of ERS-1 and ERS-2 are very similar at the same place and time. This may be the reason for the very high correlation coefficient in Figure 9.

4) The English language of manuscript needs to be polished. The abstract of this manuscript is too long. For the introduction of this manuscript, the research background for active microwave fusion or rescaling study is not sufficient. In 110 lines, is there any other studies that show that the Ku-band QSCAT signal can be adjusted to the ERS observations except the author's own research (i.e., Tao et al.,2002b)? I suggest that the abstract and introduction of this manuscript need to be rewritten.

Above-mentioned, I am in a difficult position to reject the manuscript for publication