

Review of L. Lopez-Lopez, F. Parmiggiani, M. Moctezuma-Flores, and L. Guerrieri “SAR image observations of the A-68 iceberg drift”.

This paper presents an approach for automated detection and delineation of a very large iceberg from Sentinel-1 SAR images. The approach was applied to a series of 12 Sentinel-1 images (July 2017 - January 2019) acquired over the A-68 iceberg calved from the Larsen C Ice Shelf in July 2017. Several physical properties of the iceberg (such as area, perimeter, rotation, drift) as functions of time were derived from SAR. Even though some value of the proposed approach was demonstrated, I believe that the paper in its current state is not suitable for publication, and much more work needs to be done before the manuscript could be considered for publication again as outlined below.

1. It appears that a very similar approach applied to the same iceberg A-68 was already published in [r1]. Three authors in [r1] are the same authors as in the present paper. I wonder why [r1] was not cited in the present paper? Another paper [r2] also uses a similar segmentation approach (although the iceberg is different). Therefore, the novelty of the presented approach is very difficult to assess.
2. In [r3] (which was cited by the authors) a similar analysis of the same A-68 iceberg from Sentinel-1 images was conducted. But in [r3] the iceberg was manually delineated from 78 Sentinel-1 images acquired between 22 July 2017 and 29 November 2018. This is almost the same time period as the time period used in this study (July 2017 - January 2019). Therefore, the time-series results for the iceberg physical properties presented in this paper are not novel.
3. In [r3], a much larger number of Sentinel-1 SAR images (72) was used compared to the present study (12). Why all these 72 SAR images available were not utilized in this study, particularly given the fact that the proposed approach is automated? Furthermore, results in [r3] seem to be more reliable compared to the present study, as the iceberg area in [r3] was manually delineated in each SAR image. The iceberg parameters (such as its area, rotation) manually derived in [r3] could serve as a good ground-truth information for the proposed approach in this study.
4. If I visually compare Figure 4 of this study against Figure 3(a) from [r3] (showing the iceberg area versus time), I can see that the iceberg areas presented in this study are considerably lower compared to the iceberg areas reported in [r3]. How the authors can explain that difference given the fact that the results in [r3] are manually derived?
5. It is not clear how well the algorithm performs in summer time (when the iceberg might look dark and similar to the background due to melt).
6. The authors used only HH channel for iceberg detection and delineation, but HV channel is also available in Sentinel-1. I strongly suggest that HV channel should be also included in the algorithm. The authors should investigate in detail if/how the additional HV channel is capable to improve the algorithm performance.

7. The algorithm performance should be compared against other approaches such as [r4] (not cited by the authors).
8. In Introduction section, it is not clear why the authors describe passive microwave remote sensing of sea ice instead of focusing on SAR and the existing SAR image processing approaches with respect to detecting large icebergs.
9. Even though I am not a native speaker, I believe that the language of the paper should be substantially improved. There is quite a few grammatical errors, confusing sentences, and inaccuracies in the paper.

Technical corrections:

There is a lot of confusing sentences, grammatical errors, and inaccuracies in the paper. However, I believe that my major comments (stated above) should be addressed first, before I start going deeper into the technical details.

References:

- [r1] Parmiggiani, F.; Moctezuma-Flores, M.; Guerrieri, L.; Battagliere, M.L. SAR analysis of the Larsen-C A-68 iceberg displacements. *Int. J. Remote Sens.* 2018, 39, 5850–5858.
- [r2] Moctezuma-Flores, M.; Parmiggiani, F. Tracking of the iceberg created by the Nansen Ice Shelf collapse. *Int. J. Remote Sens.* 2017, 38, 1224–1234.
- [r3] Han, H., Lee, S., Kim, J.-I., Kim, S. H., and Kim, H.-C.: Changes in a Giant Iceberg Created from the Collapse of the Larsen C Ice Shelf, Antarctic Peninsula, Derived from Sentinel-1 and CryoSat-2 Data, *Remote Sensing*, 11, 2019.
- [r4] Silva, T.A.M.; Bigg, G.R. Computer-based identification and tracking of Antarctic icebergs in SAR images. *Remote Sens. Environ.* 2005, 94, 287–297