

The Cryosphere Discuss., community comment CC1
<https://doi.org/10.5194/tc-2021-131-CC1>, 2021
© Author(s) 2021. This work is distributed under
the Creative Commons Attribution 4.0 License.

Comment on tc-2021-131

David G. Long

Community comment on "Semi-automated tracking of iceberg B43 using Sentinel-1 SAR images via Google Earth Engine" by YoungHyun Koo et al., The Cryosphere Discuss., <https://doi.org/10.5194/tc-2021-131-CC1>, 2021

This paper describes an approach to detect, locate, and measure Antarctic tabular icebergs. With its finer spatial resolution, the data can supplement optical tracking by the U.S. National Ice Center and scatterometer tracking by the Scatterometer Climate Record Pathfinder (www.scp.byu.edu). The latter maintains an extensive database of daily iceberg positions going back to the late 1970's (www.scp.byu.edu/iceberg; Budge and Long, 2017; Stuart and Long, 2011; Long et al. 2002).

The authors should be sure to note in the second sentence of the introduction that the paper exclusively considers (large) Antarctic tabular icebergs to avoid confusion with smaller icebergs that occur in both polar regions. While the paper mainly consider SAR observations, radar scatterometers have also been extensively used for detecting and tracking icebergs. Though the scatterometers observations have much lower resolution and less precision in measuring iceberg area, the wide swath of the scatterometers facilitate daily position observations (Budge and Long, 2011; Stuart and Long, 2011). This fine temporal resolution is helpful during period of rapid iceberg motion, for example when icebergs such as A68 move from the Weddell Sea into the South Atlantic. The rapid motion and spinning of this icebeg and others such as B10A can be revealed in animations of the daily scatterometer images, e.g., www.scp.byu.edu/iceberg/A68tracking.html The authors are encouraged to include references to scatterometry as another tool for iceberg tracking.

It has been previously noted (Budge and Long, 2017; Stuart and Long, 2011), that the disintegration of icebergs is slowed when the iceberg is encapsulated with sea ice, suggesting that the encapsulating sea ice may protects the iceberg from exposure to wave stress. This scatterometer-derived resul supports the authors' postulation.

References

J.S. Budge and D.G. Long, "A Comprehensive Database for Antarctic Iceberg Tracking Using Scatterometer Data," IEEE Journal of Selected Topics in Applied Earth Observations, Vol. 11, No. 2, pp. 434-442, doi:10.1109/JSTARS.2017.2784186, 2017.

K.M. Stuart and D.G. Long, "Iceberg Size and Orientation Estimation using SeaWinds",

Cold Regions Science and Technology, doi:10.1016/j.coldregions.2011.07.006, Vol. 69, pp. 39-51, 2011.

K.M. Stuart and D.G. Long, "Tracking large tabular icebergs using the SeaWinds Ku-band microwave scatterometer", Deep-Sea Research Part II, doi:10.1016/j.dsr2.2010.11.004, Vol. 58, pp. 1285-1300, 2011.

D.G. Long, J. Ballantyne, and C. Bertioia, "Is the Number of Icebergs Really Increasing?" EOS, Transactions of the American Geophysical Union, Vol. 83, No. 42, pp 469 & 474, 15 Oct. 2002.