A Segmentation-Based CFAR Method for Iceberg Detection Using Sentinel-1SAR Images

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Abstract: A method for iceberg detection using backscattering (dB) of SAR data is presented in this paper. The amplitude image of SAR data is segmented into regions, which are instead of pixels for follow-up processing. The probability density function of clutter pixels is approximate to Gaussian distribution; therefore the threshold for iceberg detection can be estimated by mean and variance of clutter rather than by a constant probability of false alarm. The CFAR are performed region by region to find backscattering more than threshold. The method was validated in two Sentinel-1 EW images acquired in East Coast of Greenland. The iceberg detection rate is about 0.82 and the identified icebergs preserve more edge detail than result by CFAR based on pixels.

Keywords: Icebergs, CFAR, Sentinel-1SAR, Segmentation.