Surface Water Detection Using RADARSAT-2 Data

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ABSTRACT

A combination of radiometric thresholding and image segmentation (using simple linear iterative clustering – SLIC – superpixel method) is used for semi-automated mapping of surface water extent using RADARSAT-2 data. Threshold values are selected semi-automatically by assessing the statistical distribution of backscatter values and bimodality of the probability density functions (or histograms) in a statistically consistent fashion. The selected thresholds are then applied to the mean value of each superpixel generated from SLIC segmentation algorithm. Additionally, higher order texture measures (such as variance) have been used to improve accuracy via a cleanup procedure that also applies thresholding of the distribution of texture values in order to identify features with boundaries. The threshold value for the variance texture measures can be approximated using a constant value for different scenes, resulting in a fully automated cleanup procedure. Results suggest that this approach produces fewer errors of commission and omission compared to similar semi-automated methods such as Bolonos et al. 2015 and White et al. 2014.