Use of sentinel-1 data for vessel detection in South African oceans : Early results

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Abstract:
This paper shows the utility of Synthetic Aperture Radar (SAR) data acquired from the recently launched Sentinel-1 satellite for the detection of vessels within the South African Exclusive Economic Zone (EEZ). A Sentinel-1 dual polarized (HH and HV) image acquired in Extra Wide (EW) mode over two of the busiest harbors in the country was used together with a standard Cell averaging Constant False Alarm Rate (CA-CFAR) detector to evaluate vessel detection performance for the two polarization modes taking into consideration local incident angles. Early experimental results show promising vessel detection accuracy using the Sentinel-1 data but that polarization and incidence angle are important parameters to take into consideration when working with the data.