

# Ship Detection Using Polarimetric Radarsat 2 Data And

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### Ship Detection Using Polarimetric Radarsat

Ship detection using Synthetic Aperture Radar (SAR) has been a topic of considerable interest in the recent years, and the increased availability of multi-polarimetric high resolution SAR data has favored the emergence of new techniques for this application. Among many polarimet-ric detectors proposed in the literature [1] [2], Constant False Alarm Rate (CFAR) detection schemes have been broadly developed and applied .

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## **SHIP DETECTION USING POLARIMETRIC RADARSAT-2 DATA AND ...**

Ship detection using polarimetric RadarSat-2 data and multi-dimensional coherent Time-Frequency analysis Canbin Hu 1, Laurent Ferro-Famil , Camilla Brekke2, Stian Normann Anfinen 2 1 University of Rennes 1, IETR, SAPHIR team, France 2 University of Tromsø, Department of Physics and Technology, Norway Jan. 2013

## **Ship detection using polarimetric RadarSat-2 data and ...**

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Abstract: In this paper, we proposed a complete polarimetric covariance difference matrix [CP]-based algorithm for ship detection in polarimetric synthetic aperture radar (PolSAR) imagery. To calculate [C P], we first developed a scheme to reflect the polarimetric scattering differences between ship pixel (SP) and its neighboring pixels (ISPs) and, then, dividedly accumulated the amplitude and phase differences between SP and ISPs.

## **Ship Detection From PolSAR Imagery Using the Complete ...**

system can be used to detect smaller ships than dual polarization or single polarization systems. The RADARSAT Constellation Mission (RCM) will provide CP as an operational mode, which could be beneficial to ship detection activities. It is recommended that the CP mode be considered for wide area surveillance, in particular, for ship detection.

## **Ship detection using RADARSAT-2 Fine Quad Mode and ...**

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Polarimetric information is investigated for ship detection and characterization at operational satellite synthetic aperture radar (SAR) incidence angles ( $20^{\circ}$ - $60^{\circ}$ ). It is shown that among the conventional single-channel polarizations (HH, VV, or HV), HV provides the best ship-sea contrast at incidence angles smaller than  $50^{\circ}$ .

### **Ship detection and characterization using polarimetric SAR**

Preliminary results for ship characterization using polarimetric information are also presented. This research is motivated by airborne/spaceborne surveillance applications such as land and coastal surveillance missions using SAR/PoSAR imagery.

### **Ship Detection and Characterization Using Polarimetric SAR ...**

For the former, many factors affect the imaging of wakes on SAR images, such as the state of the sea, stationary ships and radar imaging parameters; 37% of ships could not be detected using only their wake with ERS-1 and Seasat SAR data, and the figure is expected to be larger with RadarSAT-1 because of its lower HH-polarization signal-to-noise ratio (SNR). The latter is effective to detect ship's signatures whose intensity is larger than the threshold.

### **Improving Ship Detection with Polarimetric SAR based on ...**

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### **Ship Detection Using Polarimetric Radarsat 2 Data And**

Optimization of the Degree of Polarization for Enhanced Ship Detection Using Polarimetric RADARSAT-2. Abstract: The scattered wave is represented in terms of two independent and rotation invariant parameters: the degree of polarization (DoP) and the total scattered intensity  $R_0$ . The

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scattered wave polarization signature is introduced as a convenient graphical representation of the variations of the two scattered wave observable parameters as a function of the transmitting antenna polarization.

### **Optimization of the Degree of Polarization for Enhanced ...**

Ship Detection It has been demonstrated that RADARSAT-1 data in combination with an automated target detection system can provide operational detection reliability (up to 95%) using those beams that are best suited to ship detection. Ship detection using SAR relies either on the detection of the ship itself or detection of the ship wake.

### **Ship Detection | Natural Resources Canada**

The added value of polarimetric RS2 information for ship detection is demonstrated using wide swath (50 km) polarimetric RADARSAT-2 data collected at 29° and 40° incidence angle over vessels...

### **Optimization of the Degree of Polarization for Enhanced ...**

The polarimetric data analysis from Convair-580 and RADARSAT- 2 have resulted many successful studies in fields ranging from ship-detection, land-use pattern, crop classification.

### **Supervised Classification of RADARSAT-2 Polarimetric Data ...**

Ship detection is a key topic for the surveillance of maritime areas largely due to the capability to acquire valuable images independent of solar illumination and (to some extent) weather conditions. The studies on POLSAR target detection mainly exploit the polarimetric statistical and scattering information.

### **SHIP DETECTION WITH RADARSAT-2 QUAD-POL SAR DATA USING A ...**

## Read Free Ship Detection Using Polarimetric Radarsat 2 Data And

This study demonstrates that the algorithms developed for improving ship detection and classification using airborne PolSAR data will also be applicable to RADARSAT-2 polarimetric data. The results demonstrate the significant improvement in ship detection performance that is expected from using polarimetric data.

### **Evaluation of Simulated RADARSAT-2 Polarimetry Products**

A SAR system with a compact polarimetric (CP) SAR architecture constitutes a significant new advancement in the field of Earth observation using radar remote sensing. A CP SAR architecture transmits circular polarization and receives two orthogonal, mutually-coherent linear polarizations.

### **Remote Sensing | Special Issue : Compact Polarimetric SAR**

By taking into account the imaging mode, incidence angle, and polarization mode of SAR imagery, it implements the adaptive ship candidate detection in spaceborne SAR imagery. Experimental results show that the adaptive ship candidate detection is able to detect ship targets in a fast, efficient and robust way.

### **An Adaptive Ship Detection Scheme for Spaceborne SAR Imagery**

It is an 8-beam ScanSAR mode with approximately 50 m resolution in range and azimuth, NESZ of  $> -22$  dB, 4 looks, and a 350 km imaging swath. It is comparable to the RADARSAT-1/2 ScanSAR narrow modes. - Ship detection mode: To optimize ship detection performance, the fundamental need is to maximize the ship signal to “background noise” ratio.