

RADARSAT-2 ADVANCED POLARIMETRIC APPLICATIONS

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The Canadian SAR-satellite RADARSAT-2 was developed through a public-private-partnership agreement between the Canadian Space Agency (CSA) and MacDonald Dettwiler and Associates (MDA). RADARSAT-2 is a follow-on of the highly successful RADARSAT-1 mission (1995-present), and like its predecessor was designed to meet the needs of commercial, government, and scientific end-users.

RADARSAT-2, launched in December 2007, features an advanced high-resolution C-band SAR based on active phased array antenna technology that allows imaging in several user-selected modes including Stripmap, ScanSAR, and SpotLight, with a choice of polarization, resolution, and swath width.

The focus of this presentation will be on advanced polarimetric applications that entail the use of RADARSAT-2 dual-polarized or quad-polarized data. The first part of the presentation will provide an overview of polarimetric applications with examples showing maritime surveillance, defence, mapping, agriculture, and resource exploration.

The second part of the presentation will provide the results of a study to investigate the use of RADARSAT-2 for maritime surveillance, specifically for ship detection and oil spill detection. Initial results of the ship detection study suggest that the use of co-polarized in the far-range and cross-polarized in the near-range data provides good ship detection performance. Further, the combined use of co-polarized and cross-polarized in the near-range can be used for ocean features (e.g. wind, oil) and ship detection. The use of RADARSAT-2 Fine quad-polarized data for oil spill detection in the Gulf of Mexico will also be discussed.