

A Review on the Future Canadian RADARSAT Constellation Mission and Its Capabilities

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Abstract : Spaceborne Synthetic Aperture Radar (SAR) systems are active remote sensing systems independent of weather and sun illumination, two factors which usually inhibit the use of optical satellite imagery. A SAR system could acquire single, dual, compact or fully polarized SAR imagery. Each SAR imagery type has its advantages and disadvantages. The sensitivity of SAR images is a function of the: 1) band, polarization, and incidence angle of the transmitted electromagnetic signal, and 2) geometric and dielectric properties of the radar target. The RADARSAT-1 (launched on November 4, 1995), RADARSAT-2 (launched on December 14, 2007) and RADARSAT Constellation Mission (to be launched in July 2018) are three past, current, and future Canadian SAR space missions. Canada is developing the RADARSAT Constellation Mission (RCM) using small satellites to further maximize the capability to carry out round-the-clock surveillance from space. The Canadian Space Agency, in collaboration with other government-of-Canada departments, is leading the design, development and operation of the RADARSAT Constellation Mission to help addressing key priorities. The purpose of our presentation is to give an overview of the future Canadian RCM SAR mission with its satellites. Also, the RCM SAR imaging modes along with the expected SAR products will be described. An emphasis will be given to the mission unique capabilities and characteristics, such as the new compact polarimetry SAR configuration. In this presentation, we will summarize the RCM advancement from previous RADARSAT satellite missions. Furthermore, the potential of the RCM mission for different Earth observation applications will be outlined.

Keywords : compact polarimetry, RADARSAT, SAR mission, SAR applications

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