Paper ID: 22357
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EARTH OBSERVATION SYMPOSIUM (B1)
Future Earth Observation Systems (2)

Author: Mr. Alain Carrier
Canadian Space Agency, Canada

RADARSAT CONSTELLATION MISSION

Abstract

The RADARSAT Constellation Mission (RCM) is the next mission in the evolution of the RADARSAT Program, with the objectives of ensuring Synthetic Aperture Radar (SAR) C-band data continuity, enhancing operational use of data and improving system reliability. RCM will provide all-weather day and night data in support of Canadian sovereignty and security, environmental monitoring, natural resources management and other government priorities, such as Northern development. The constellation will have the capability to provide average daily coverage of most of Canada and its surrounding waters, and the capacity to image any point on the Earth (except the South Pole) on an average daily basis. RCM involves flying three satellites in a constellation configuration, evenly spaced on the same orbit. The constellation is designed primarily as a wide area monitoring system, offering medium resolution data on a daily basis, but it also offers high resolution imaging capabilities, including a Spotlight Mode, as well as multiple polarization including Compact Polarimetry and Experimental Quad-Polarization. The constellation enables higher temporal revisit, which, combined with accurate orbital control will enable advanced interferometric applications in between satellites that will allow the generation of very accurate coherent change maps. Not only does the constellation open up new application areas, but it is also more robust by virtue of its inherent redundancy, it will increase the robustness of the system, and allow operational users to rely on satellite data in their day-to-day business. Each spacecraft hosts two payloads: a Synthetic Aperture Radar (SAR) payload and an Automatic Identification System (AIS) payload. The combination of SAR and AIS data will provide a greatly enhanced information product for maritime surveillance. The mission development has begun in 2005. The final review of the overall mission-level system detailed design (phase C) took place in 2012 and defined the detailed baseline design of the RADARSAT Constellation Mission. In January 2013, the Government of Canada awarded a contract MDA Systems Ltd. for the implementation phase (phase D) leading to a launch in 2018, and one year of operation (phase E1). Phase D is now well underway and hardware is being manufactured and tested. This presentation will give an overview of the design of RCM space and ground segments, and will provide an overall project advancement status. It will focus on the programmatic and technical challenges and realizations, and discuss activities surrounding application development and operational readiness.