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RADARSAT CONSTELLATION MISSION (RCM)

Abstract

In 1980, the Government of Canada approved a new Earth observation program entitled RADARSAT. Through this program, Canada has been providing uninterruptedly C-Band Synthetic Aperture Radar (SAR) data since the start of RADARSAT-1 operations in 1995 and then with the introduction of RADARSAT-2 in 2007. The RADARSAT Constellation Mission (RCM) is the next mission in the evolution of the RADARSAT Program, with the objectives of ensuring data continuity, enhancing operational use and improving system reliability. 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, as well as multiple polarization. Similarly to its predecessors, RCM will offer significant imaging flexibility with the various beam modes available. 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 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. RCM will provide 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, as well as daily access to 95% of the landmass. The implementation phase of RCM is now well underway. Hardware is being manufactured, assembled and tested, leading to a launch in 2018. At IAC 2014, the presentation on RCM focused on RADARSAT Program evolution and objectives, technical specifications, project status, planned use and data policy principles. The presentation being prepared for IAC 2015 will build upon information that was provided previously, and will give an update on latest project milestones and achievements. It will focus on challenges and realizations, and will discuss activities surrounding data policy, application development and operational readiness.