

RADARSAT-2: Program Overview and Applications

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RADARSAT-2, planned for a 2005 launch, incorporates a suite of advanced features including polarimetric modes, a high resolution 3 m mode, and an enhanced ground system providing rapid satellite tasking and near-real time data processing. RADARSAT-2 offers three polarimetric modes: (1) selective polarization (dual pol) providing one co-pol channel (HH or VV) and the corresponding cross-pol channel (HV); (2) high resolution (3 m) single pol channel (HH or VV or HV); and (3) a fully polarimetric mode (quad pol) providing both amplitude and phase. The fully polarimetric mode is significant since RADARSAT-2 is the first commercial satellite to offer this mode. In conjunction with the Canada Centre for Remote Sensing and MacDonald Dettwiler, RADARSAT International initiated application development projects to understand the potential and limitations of the RADARSAT-2 polarimetric modes. An overview of this development work is presented, including applications for maritime surveillance, defence, agriculture, ice, and mapping. Results based on CV-580 airborne SAR data and SIR-C are used. Polarimetry, while intrinsically challenging from a scientific perspective, is daunting to the end user. The commercial focus of the RADARSAT-2 mission dictates the development of operational applications, and ultimately the extraction of information from the SAR data. An assessment of operational practicality of the RADARSAT-2 polarimetric modes is outlined