EARTH OBSERVATION SYMPOSIUM (B1)
Earth Observation Data Management Systems (4)

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COSMO-SKYMED SECONDA GENERAZIONE: INTERFEROMETRIC AND CHANGE DETECTION CAPABILITIES ENHANCEMENT THROUGH COMMON BAND FILTERING

Abstract

COSMO-SkyMed Seconda Generazione (CSG) is an Earth Observation space program funded by the Italian Space Agency (ASI) and the Italian Ministry of Defence (ItMoD), which is composed of two satellites with a Synthetic Aperture Radar (SAR) payload and will assure the service continuity with respect to the current fully-deployed four-satellites COSMO-SkyMed (CSK) system, increasing its operational performances. One of the lessons learned coming from the first generation system is the need to deliver interferometric products minimizing the losses in interferometric coherence to fully support applications such as Coherent Change Detection (CCD), which are based on the generation of Coherence Maps. The SAR interferometric coherence value depends on the temporal delay between interferometric acquisitions, on the imaged scene typology and its decorrelation time, and on the precision of several processing steps. In order to maximize the coherence value at a processing level, a Common Band Filter (CBF) has been envisaged inside CSG processors in order to remove the non-common parts of the Doppler spectrum. The CBF has been envisaged as an option of the co-registration step, in order to let the user decide if apply or not CBF according to the required application. The aim of this paper is to describe the CBF algorithm, its pros and cons, its effect on the coherence and the interferogram, the architectural implementation of CBF inside CSG processors, and the quantitative benefit which will derive for different applications by its utilization.