

IAF EARTH OBSERVATION SYMPOSIUM (B1)
Future Earth Observation Systems (2)

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COSMO-SKYMED DI SECONDA GENERAZIONE NON-STANDARD OPERATIONAL MODES

Abstract

COSMO-SkyMed di Seconda Generazione (CSG) programme has been taking place since 2010. It has been funded by the Italian Space Agency (ASI) and the Italian ministry of defence and will be carried out by a team headed by Thales Alenia Space Italia and Telespazio. CSG system is the follow-on mission of the COSMO-SkyMed (CSK) mission, currently operating with four Earth Observation SAR satellites. The two CSG follow-on satellites aim at providing operational continuity to CSK with increased performance, flexibility and ability to respond to updated civilian and defence user needs. An important part of the improvements is the possibility to increase the user requests satisfaction by means of new acquisition modes, the so-called “Non Standard” modes.

The Non-Standard Acquisition Modes are divided in 2 classes, the Operational and the Experimental ones. Non-Standard Operational Modes imply that the system will be programmed in order to meet the best results. Non-Standard Experimental Modes imply that the performance requirements are unknown and to be defined on the basis of specific experimentation results. Non-Standard Operational modes are the DI2S S2 Multi-Swath mode and Spotlight on Theatre. Both modes will allow satisfying more service requests in a defined area; the interested requests would otherwise be in direct conflict each other if acquired with standard, zero-doppler acquisitions. The DI2S technique, exploits the SAR capability to work at doubled PRF in order to simultaneously acquire two different images, which are (partially or totally) overlapped in azimuth. The Spotlight on a Theatre would be similar to standard Spotlight 2A, 2B or 2C apart from in a “squinted” (“pitched”) attitude, i.e. the images are not zero-doppler acquisitions. The satellite will be able to acquire while maneuvering around the pitch axis, allowing acquiring a greater number of images on a small area (a “theatre”).