

EARTH OBSERVATION SYMPOSIUM (B1)  
Dual Use Earth Observation (6)

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OVERVIEW AND EXPLOITATION OF THE FULLY DEPLOYED COSMO-SKYMED  
CONSTELLATION

**Abstract**

COSMO-SkyMed is a constellation of radar satellites for Earth Observation entirely designed and developed in Italy. It is a dual-use program for both civilian and defense use resulting from an agreement between the Agenzia Spaziale Italiana, the Italian Ministry of Defense and the Italian Ministry of Research. The system is based on a constellation of four identical satellites equipped with Synthetic Aperture Radar (SAR) operating in X-Band and on a network of distributed ground stations. While the Satellite Control Centre in Fucino handles and controls the satellites courses, the User Ground Station, located in Matera, receives satellite data, processes and delivers the SAR products. A scaled version of user terminal able to acquire and process the satellite data are foreseen by the system and a number of them are currently deployed all over the world at civilian customer premises. The first satellite was launched in 2007 from Vandenberg Launch Facility in California. After the successful launch of the other three satellites the system became fully operational and complete at the end of 2010. Currently the full constellation has been deployed having the second and the third satellite in the so called “one day interferometric configuration”, whereas the first and the fourth satellite of the constellation are placed with a displacement of 90 deg in true anomaly in order to optimize the time performances of the overall constellation. Other configurations are possible in order to exploit the interferometric capabilities of the constellation. COSMO-SkyMed is able to guarantee a worldwide coverage with very short revisit time over the same area: passages over the same spot within 12 hours. Moreover, the COSMO-SkyMed constellation is able to provide high-definition SAR products in all-time (day/night) and all-weather conditions to be used for the management of environmental risks and emergencies, as well as both civilian and military surveillance and security applications. This paper provides an overview of the potentialities of the system summarizing the COSMO-SkyMed exploitation during the last two years: with the constellation composed of three satellites (2010) and with the fully deployed constellation (2011) providing a trend on the current system exploitation. In addition, it is given a general of the current institutional projects (eg. Map Italy, Pilot Projects, etc.), and of cooperation with other governments and agencies.