

EARTH OBSERVATION SYMPOSIUM (B1)
Earth Observation Applications and Economic Benefits (5)

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COSMO-SKYMED CONSTELLATION FULLY DEPLOYED: OVERVIEW AND EXPLOITATION

Abstract

COSMO-SkyMed is a constellation of radar satellites for Earth Observation entirely developed and produced in Italy. This is a dual-use program employing technology that is among the most advanced in the world to provide data to institutions, defense organizations and private companies. The COSMO-SkyMed program was the result of an agreement between the Agenzia Spaziale Italiana, the Italian Ministry of Defense and the Italian Ministry for Education, Universities and Research with financing, technical and operational co-ordination provided by the Agenzia Spaziale Italiana and co-financing from the Italian Ministry of Defense. The system is based on a network of four identical satellites equipped with Synthetic Aperture Radar (SAR) operating in X-Band and ground stations. The ground control stations are located at Fucino and Matera Space Centers, respectively in Middle and South Italy. Fucino handles and controls the satellites courses after launch, Matera captures, processes and delivers the satellite data. The first satellite was launched in 2007 from Vandenberg Launch Facility in California. After three years, the constellation is now fully operational and complete with the arrival of the fourth satellite in its final orbit position. COSMO-SkyMed 4 was launched on 5th November from the Vandenberg base and came fully on-stream with the transmission of the first images to the ground stations. Currently the full constellation has been deployed having only a single couple of satellites in one day interferometric configuration through the second and the third satellite, 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 time of revisiting the same area: passages over the same spot within 12 hours. Moreover, the COSMO-SkyMed constellation is able to provide high-definition pictures 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 year with the constellation composed of three satellites and describing the first achievements of the fully deployed constellation. Moreover, a special focus is given in the frame of the cooperation with other governments and agencies.