

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

Author: Dr. Maria Libera Battagliere  
Italian Space Agency (ASI), Italy, assegnista2.sky@est.asi.it

Mr. Fabio Covello  
Agenzia Spaziale Italiana (ASI), Italy, fabio.covello@asi.it  
Mr. Alessandro Coletta  
Italian Space Agency (ASI), Italy, alessandro.coletta@asi.it

COSMO-SKYMED BACKGROUND MISSION: OVERVIEW, OBJECTIVES AND RESULTS

**Abstract**

After the launch of the fourth satellite at the end of 2010 from Vandenberg Launch Facility in California, the COSMO-SkyMed constellation became fully operational. The first satellite was launched in 2007, three years before, from the same launch base. COSMO-SkyMed is a dual-use system based on a constellation of four RADAR satellites for Earth Observation, entirely designed and developed in Italy. The system is able to guarantee a worldwide coverage within 12 hours providing high-definition products in all-time (day/night) and all-weather conditions. Since the launch of the first satellite it has been evident the huge importance of getting a comprehensive and updated catalogue of images acquired all over the world. This experience is supported by the lessons learnt from some previous RADAR missions, such as ERS, ENVISAT and RADARSAT-1, which widely demonstrated the importance to collect data with the objective of building an useful archive, considering the overall user community interest and anticipating their future requirements. Such archive can be helpful for both developing new applications and providing products in a very short time to satisfy user requests, with the aim of shortening technical times needed for new data acquisitions. A low priority background acquisition strategy needs to be systematic and to guarantee a global coverage, allowing to minimize conflicts with existing user requests. A systematic background mission allows to obtain regular, repetitive and comparable acquisitions: an essential aspect to build data historical series and provide for continuity of the observations. The global coverage allows to satisfy a wide user community for both scientific and commercial needs, to guarantee a more effective monitoring of the Earth's resources. On the basis of these considerations and taking into account the high degree of a dual system complexity, COSMO-SkyMed Background Mission has been revised during the last years in order to exploit the full system capabilities. A new COSMO-SkyMed Background Mission has been implemented starting in 2011. Data are only acquired and made available in the catalogue, in order to avoid critical loads on the processing chain. Further processing is based upon user requests. This paper provides a detailed description of the COSMO-SkyMed background mission, showing its main guidelines, general acquisition requirements, its objectives and results. The lessons learned are also briefly summarized.