

EARTH OBSERVATION SYMPOSIUM (B1)
Enhancing Earth Observations Through Space Radar (6)

Author: Mr. Alessandro Coletta
Italian Space Agency (ASI), Italy

Mr. Fabio Covello
Agenzia Spaziale Italiana (ASI), Italy
Mr. Gemma Manoni
Agenzia Spaziale Italiana (ASI), Italy
Mr. Giovanni Valentini
Italian Space Agency (ASI), Italy

COSMO-SKYMED MISSION: FIRST RESULTS AND FUTURE OUTLOOK

Abstract

In 2007 and 2008 ASI (Agenzia Spaziale Italiana/Italian Space Agency) launched three out of four X-band SAR satellites of the COSMO-SkyMed (CONstellation of small Satellites for Mediterranean basin Observation) Mission, making available to the users a unique SAR constellation dedicated to the Earth Observation. The constellation will be completed with the launch of the forth satellites in the first half of 2010. COSMO-SkyMed is the largest Italian investment in Space Systems for Earth Observation, commissioned and funded by Italian Space Agency (ASI) and Italian Ministry of Defense (MoD). COSMO-SkyMed is a Dual-Use (Civilian and Defence) end-to-end Earth Observation System aimed to establish a global service supplying provision of data, products and services relevant to a wide range of applications, especially in the field of Risk Management for both Scientific/Commercial and Defence/Intelligence use. The system consists of a constellation of four Low Earth Orbit mid-sized satellites, each equipped with a multi-mode high-resolution Synthetic Aperture Radar (SAR) operating at X-band. The system is completed by dedicated full featured Ground infrastructures for managing the constellation and granting ad-hoc services for ordering, planning, collection, archiving and distribution of acquired remote sensing data. The first and second COSMO-SkyMed satellites are in the operational phase while the third one is completing its commissioning phase. Since the first months in the commissioning phase both COSMO-1 and COSMO-2 showed an excellent performance of the X-band SAR; moreover the first year of combined operation of the two satellite made clear the importance of the time performances that can be obtained by a constellation of satellites, yet not fully deployed. These two characteristics, high resolution imaging and time performances, make of COSMO-SkyMed a unique system that already showed all its potentiality in several application domain such as risk and emergency management (i.e.: China's earthquake, Myanmar and Haiti flood), ice monitoring (reduction of the glaciers, Wilkins Ice Shelf disintegration), multi-temporal acquisition for agriculture monitoring, ship detection, interferometry, landslides monitoring, maritime surveillance and security, rapid mapping. A further step forward will be realised when COSMO-SkyMed 3 will be operative. Indeed, since the third satellite is positioned in the so-called "one-day interferometry configuration", it will allow the constellation to perform interferometric acquisitions with a de-correlation time of one day. In order to fully exploit the constellation capability and to give a strong impulse to the research and development of new products and algorithms for the use of COSMO-SkyMed data in various application domain, ASI called the first COSMO-SkyMed Announcement of Opportunity. These studies that will be conducted for the next coming years are expected to give the chance to achieve innovative and valuable results increasing the knowledge and the use of remote sensing X-SAR data that will be fully supported by this and by the second generation of COSMO-SkyMed system.