

ONE-DAY INTERFEROMETRY RESULTS WITH THE COSMO-SKYMED CONSTELLATION

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ABSTRACT

In 2007 and 2008 ASI (Agenzia Spaziale Italiana, the Italian Space Agency) launched three out of four X-band SAR satellites of the COSMO-SkyMed Mission, making available to the users a unique SAR constellation dedicated to the Earth Observation. While the almost completed constellation with three satellites is fully operational from August 2009, the launch of the fourth and last satellites is planned for the last quarter of 2010. Hence the entire constellation shall be fully operational in the first half of 2011. 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, mainly focusing on Risk Management for both scientific/commercial and defence use.

The first years of COSMO-SkyMed operative phase pointed out the importance of high resolution imaging and time performances of the Italian constellation; these unique characteristics showed the COSMO-SkyMed potential in several application domains such as risk and emergency management (i.e.: the earthquakes of Sichuan-China in 2008 and L'Aquila-Italy in 2009; the floods of Myanmar and Haiti in 2008 and Bangladesh in 2009), ice monitoring (reduction of the glaciers such as Perito Moreno and Drygalski, continuous monitoring of ice shelves disintegration such as the Wilkins Ice Shelf), multi-temporal acquisition for agriculture monitoring, ship detection, interferometry, landslides monitoring, maritime surveillance and security, rapid mapping.

A further step forward has been realised positioning the 3rd COSMO-SkyMed satellite in the so-called “one-day interferometry configuration”, allowing interferometric acquisitions with a one day de-correlation. In order to fully exploit the constellation capability and to give the opportunity to generate new products and algorithms using COSMO-SkyMed data in various application domains, ASI is going to start around 170 scientific projects selected in the framework of the COSMOSkyMed Announcement of Opportunity. These studies will be conducted by international scientists for the two next coming years and are expected to give the chance of achieving innovative and valuable results, strongly increasing the knowledge and the use of remote sensing X-band SAR data.

ASI is conceiving the second generation of COSMO-SkyMed system to provide the users with a continuity of the first generation. COSMO-SkyMed Second Generation is planned to be operational in 2014-2015.

After a brief introduction to the current COSMO-SkyMed mission configuration, this paper will describe mission status and its results with a specific focus on the preliminary results obtained using the one day interferometry configuration.

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