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COSMO-SkyMed and GIS applications

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Geographic Information Systems (GIS) and Remote Sensing have become key technology tools for the collection, storage and analysis of spatially referenced data. Industries that utilise these spatial technologies include agriculture, forestry, mining, market research as well as the environmental analysis .
Synthetic Aperture Radar (SAR) is a coherent active sensor operating in the microwave band which exploits relative motion between antenna and target in order to obtain a finer spatial resolution in the flight direction exploiting the Doppler effect.
SAR have wide applications in Remote Sensing such as cartography, surface deformation detection, forest cover mapping, urban planning, disasters monitoring , surveillance etc… The utilization of satellite remote sensing and GIS technology for this applications has proven to be a powerful and effective tool for environmental monitoring. Remote sensing techniques are often less costly and time-consuming for large geographic areas compared to conventional methods, moreover GIS technology provides a flexible environment for, analyzing and displaying digital data from various sources necessary for classification, change detection and database development.
The aim of this work si to illustrate the potential of COSMO-SkyMed data and SAR applications in a GIS environment, in particular a demostration of the operational use of COSMO-SkyMed SAR data and GIS in real cases will be provided for what concern DEM validation, river basin estimation, flood mapping and landslide monitoring.