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Performance assessment of a Robust Satellite Techniques (RST-FIRES) for forest fire detection and monitoring

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In this work, an advanced satellite technique for forest fire detection and monitoring named RST-FIRES, based on the well known Robust Satellite Techniques (RST) approach, is presented. Performances of this technique, both in terms of reliability and sensitivity, have been analyzed in different (winter/summer) fire regimes, after 3 years of pre-operational sperimentation in 3 Italian Regions (Lombardy, Sicily and Basilicata).
Results achieved by using Advanced Very High Resolution Radiometer (AVHRR) and MODerate resolution Imaging Spectroradiometer (MODIS) have been compared with the ones obtained by using traditional multichannels and contextuals algorithms. The potential of RST-FIRES in promptly detecting the beginning of fire events by means of sensors like Spinning Enhanced Visible and Infrared Imager (SEVIRI) flying aboard Meteosat Second Generation (MSG) geostationary satellites is also analyzed and discussed here. The achieved results demonstrates the high capabilities of RST-FIRES in indentifying even small fires with a very low (<10%) false positive rate under different observational conditions (day/night; winter/summer). In addition, they confirm the RST-FIRES potential to be used in operational contexts requiring to join reliable early warning and efficient support to decisions systems.