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Using Space Technologies for a timely detection of forest fires: the experience of end-users in 3 Italian Regions

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Every year, hundreds of thousands of hectares of European forests are destroyed by fires. Due to the particular topography, landscape and demographic distribution in Europe (very different from typical scenarios of China, USA, Canada and Australia), rapidity in fire sighting is still the determining factor in limiting damages to people and goods. Moreover, the possibility of early fire detection means also potentially to reduce the size of the event to be faced, the necessary fire fighting resources and, therefore, even the reaction times.
In such a context, integration of satellite technologies (mainly high temporal resolution data) and traditional surveillance systems within the fire fighting procedures seems to positively impact on the effectiveness of active fire fighting as demonstrated by recent experiences over Italian territory jointly performed by University of Basilicata, IMAA-CNR and Local Authorities.
Real time implementation was performed since 2007, during fire seasons, over several Italian regions with different fire regimes and features, in order to assess the actual potential of different satellite-based fire detection products to support regional and local authorities in efficiently fighting fires and better mitigating their negative effects.
Real-time campaigns were carried out in strict collaboration with end-users within the framework of specific projects (i.e. the AVVISA, AVVISTA and AVVISA-Basilicata projects) funded by Civil Protection offices of Regione Lombardia, Provincia Regionale di Palermo and Regione Basilicata in charge of fire risk management and mitigation. A tailored training program was dedicated to the personnel of Regional Civil Protection offices in order to ensure the full understanding and the better integration of satellite based products and tools within the existing fire fighting protocols.
In this work, outcomes of these practices are shown and discussed, especially highlighting the impact that a real time satellite system may have in assisting and complementing traditional surveillance systems to mitigate damages due to fires. In particular, the usefulness of satellite technology in an operational context was demonstrated mainly in reference to: i) the possibility of identifying fires at an early stage (so avoiding that small hotbeds could extend and become dangerous for citizens and destructive for environmental protected areas) as well as ii) the possibility to have an effective territorial control (e.g. discovering illegal burning fires such as unauthorized cleaning fires, and permitting local authorities to rapidly intervene and catch red-handed pyromaniacs).