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Remote sensing of forest fire**Rosa Lasaponara**

University of Basilicata, Italy

Remote sensing can fruitfully support the operational monitoring of natural and manmade risks. This paper provides a short overview of satellite remote sensing for forest fires. Since the mid-1980s satellite remote sensing data have been used for forest fire monitoring for applications in the diverse phases of fire management as, for example, fire prevention, danger estimation, detection of active fires, estimation of fire effects (burned area mapping, fire severity estimation, smoke plumes, biomass losses, etc.), post fire recovery, fire regime characterization, etc. Fires are considered one of the most important causes of degradation being that they induce significant alterations not only on the vegetation cover but also on fauna, soil, and atmosphere producing high direct and indirect losses including economic ones. Fire affects vegetation, landscape and environment at short as well as long-term. Short term fires induce patch homogenization and create positive feedbacks in future fire susceptibility, fuel loading, fire spreading and intensity and facilitate alien plant invasion. Long term fires lead permanent changes in the composition of vegetation community, cause decrease in forests and loss of biodiversity, impact vegetation dynamics. Moreover, fires induce soil degradation, alteration of landscape patterns and ecosystem functioning, thus speeding desertification processes up. Fires are today recognized as a global social ecological problem with expected potential increasing trends also due to land abandonment and climate change. The contribution of remote sensing (RS) to forest fires may be grouped in three categories, according to the three phases of fire management: (i) risk estimation (before fire), (ii) detection (during fire) and (iii) assessment (after fire). Relating each of these phases, wide research activities have been conducted over the years. Today satellite technologies can fruitfully support both research and operational activities for investigations and monitoring of fire and fire effects at different temporal and spatial scales, with cost effective tools.

Biography

Rosa Lasaponara is Senior Researcher of IMAA-CNR (Italian Research Council, Institute for Environmental Monitoring) since 2001. She is responsible for the ARGON laboratory (Earth Observation for ARchaeoloGy and EnvirONment). She serves as Professor of Microwave at University of Basilicata, Visiting Professor at RAD1 Beijing (2015-2016) and PI of numerous projects funded by ESA, ASI in the context H2020 and operational monitoring of forest fire Protezione Civile of Basilicata region. She has authored about 350 publications among papers in international journals, books, book chapters, papers in proceedings of international conferences on: Remote sensing for environmental monitoring, risk assessment, mitigation and modelling, time series analysis, Remote sensing for archaeology and environmental studies. Her dominant scientific interest focuses on: the operative use of EO techniques mainly in the fields of: i) fire risk monitoring ii) interactions between humans and environment systems; iii) Anthropology: mainly land use practices and their effects on ecosystems and; iv) innovative active and passive remote-sensed technology for environmental and landscape monitoring.

rosa.lasaponara@imaa.cnr.it

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