Special Session S3: Remote sensing for wildfire monitoring and management

Luigi Boschetti (University of Idaho), Daniela Stroppiana (CNR IREA), Pietro Alessandro Brivio (CNR IREA), Federico Filipponi (CNR IGAG), Giandomenico De Luca (CNR IBE), Giuseppe Modica (University of Messina), Lorenzo Arcidiaco (CNR IBE)

Wildfires are increasingly recognized as a critical driver of ecological transformation, human displacement, and economic loss across Mediterranean and global landscapes. In this session, we invite contributions that showcase the use of remote sensing to support all stages of wildfire monitoring and management: from pre-fire risk mapping and early warning systems, to active fire detection, burned area mapping, and post-fire recovery assessment.

Studies employing passive or active sensors—such as optical, thermal, microwave, SAR, and LiDAR—across a variety of Earth Observation platforms - including satellite, airborne, and UAV systems - are welcome. Particular interest is given to methods that demonstrate scalability, repeatability, and potential for operational integration. Emphasis is placed on geo-informatics and remote sensing applications that support fire severity and regime analysis, biomass loss estimation, carbon emissions quantification, landscape and habitat transformation, soil degradation, hydrological changes, and socio-economic impacts on air quality, public health, and critical infrastructure. Case studies exploring fire–climate interactions, particularly in Italy and other fire-prone regions, are strongly encouraged. We also seek contributions focused on cutting-edge algorithm development, multi-sensor data fusion, data assimilation into fire behavior models, fire simulation tools, 3D modeling approaches, and uncertainty quantification techniques.