

12th EARSeL Forest Fires SIG Workshop



Remote sensing of forest fire:
Data, science and
operational applications

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Book of
Abstracts

<https://cnrfire2019.eu/#organizers>

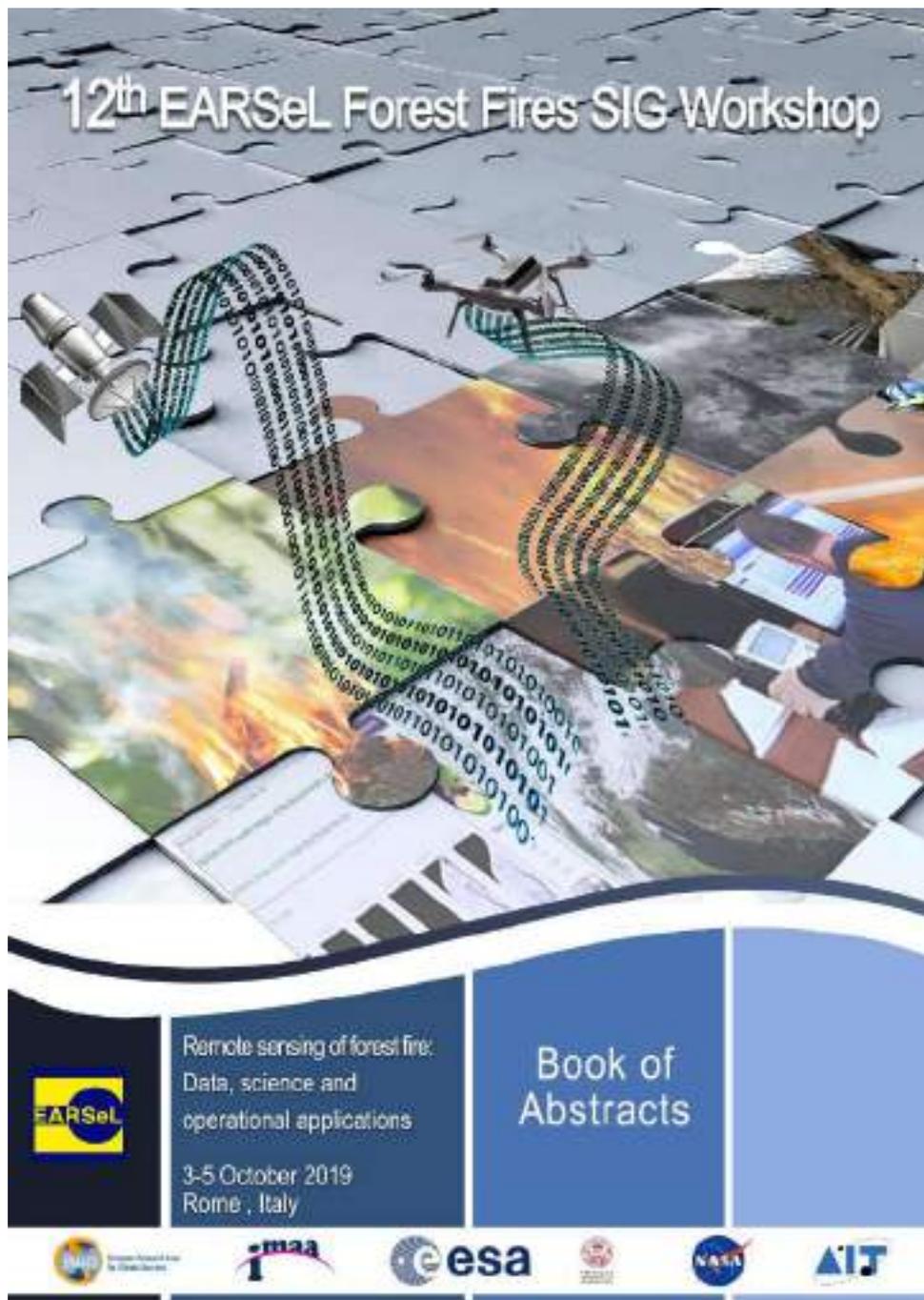


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EARSEL

REMOTE SENSING OF FOREST FIRE DATA, SCIENCE
AND OPERATIONAL APPLICATIONS

SESSION: FIRE DETECTION AND MONITORING ON MULTIPLE SCALES



Current improvements at INPE's Fire System for Brazil and Latin America

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Abstract

Wildland fires relate to fields of interest such as the suppression, management and prevention of fire use, and to impacts on human health, vegetation, wildlife, properties and transportation; on a regional and global scale the resulting gases and aerosols emitted interfere in atmospheric chemistry and with the Earth's radiation balance. The involvement of scientific, administrative and technical communities regarding vegetation fires, as well as of the public in general, increased significantly since the mid-1980s; at that time satellite images and airborne experiments showed how emissions from deforestation fires in the Amazon affected millions of km² and the CO₂ produced could interfere in the Planet's climate balance.

In this context of assorted interests and with the current availability of near real-time data from a dozen sensors/satellites and unlimited instantaneous capability of processing, modeling and distribution of information, a "Fire System" becomes a highly complex task.

This paper briefly describes the evolution of INPE's Fire System for Brazil and Latin America since the late 1980s when only the early NOAA-series satellites were used to detect fires and the information was relayed with Telex machines, to the current configuration (www.inpe.br/queimadas) based on ten different satellites and operational web application tools.

Specific systems now monitor Active Fires, estimate Burned Area at 01 km and 30 m, calculate and predict Weather Fire Risk, map and spatially analyze Air Pollution, maintain a wildfire National Coordination website, supply users with a Regional Fire System identical to INPE's, support Brazil's national power grid lines Terrain Maintenance etc. The system's web portal also distributes individually tailored instantaneous alerts and bulletins updated daily with data summaries, time-series, maps etc produced by the Fire System. About 3,000 users are registered and the web visitors to the portal since the new 2018 version amounts to some 410,000. Two main articles per day appear in the digital media and hundreds of technical and scientific publications have used the system's data. Validation experiments made with drones to verify and calibrate algorithms of fire detection and burned area mapping are conducted regularly and in different ecosystems. Examples of the many fire-related products and activities are included in the text.

The paper also discusses applications under development to answer requests from the users that are now feasible using new remote sensing products and information technology developments. Among them, automatic location and even fining of unauthorized use of fire in croplands and areas



of protected vegetation, integrated with CAR (the national geo-referenced database of rural properties in Brazil).

