# OUR PLANET FROM SPACE

## CHARACTERIZATION OF **ACTIVE FIRES** AND THEIR IMPACT ON VEGETATION FROM **SPACE**

Satellites provide a golobal-scale data that are of great value to understand, monitor and respond to wildfires which are increasingly affecting and are affected by climate change.
INGV specialists use a number of algorithms adapted to a range of data deployed by a variety of space sensors such as multispectral, hyperspectral and thermal, to characterize active fires and their impact on vegetation and soil erosion.
A procedure to detect and identify fire front data have been developed by using hyperspectral PRISMA data.
"Precursore IperSpettrale della Missione Applicativa" (Hyperspectral Precursor of the Application Mission, PRISMA) is the hyperspectral mission by ASI (Agenzia Spaziale Italiana, Italian Space Agency) launched in 2019 providing images with a spectral range of 0.4–2.5 µm and an average spectral resolution less than 10 nm.
The results have been tested on diverse ecosystems and latitudes.

graphic design Laboratorio Grafica e Immagini | INGV

COS CENTRO OSSERVAZIONI SPAZIALI DELLA TERRA

ISTITUTO NAZIONALE DI GEOFISICA E VULCANOLOGIA

# **Characterization of active fires** and their impact on vegetation

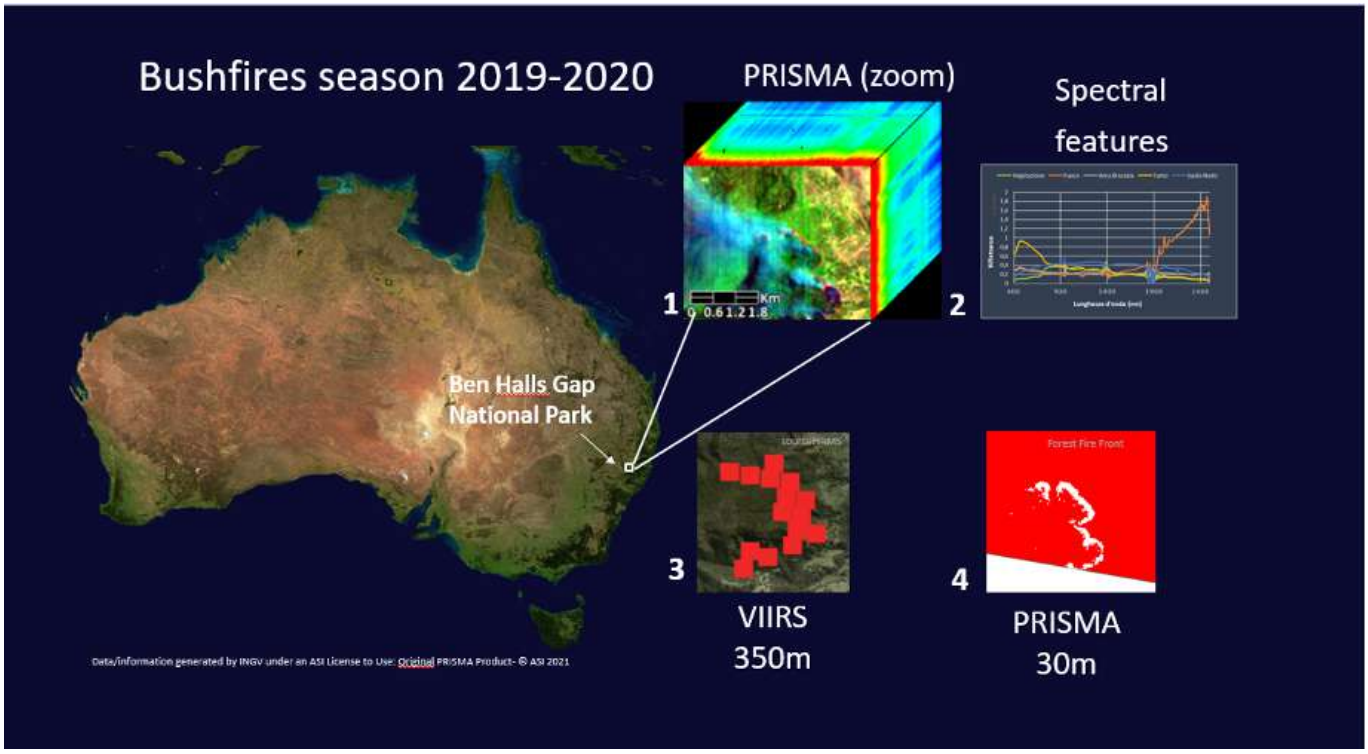
## Helping decision makers to understand, monitor and respond to wildfires

**Main benefits** of wildfire mapping from space are: a prompt localization of fire location optimize the resource displacement, evaluate social and health impact, on hand recovery strategies, post fire geo-hazards risk mitigation and save money.

**Hyperspectral technology** from sensors like PRISMA offers the opportunity to better delineate the burning line with finer level of detail compared with the existing systems offered by services like EFFIS.

An example of prompt analysis was performed by using **PRISMA** data acquired over Ben Halls Gap Ndata acquired over Ben Halls Gap National park , New South Wales, Australia during the bush fire season 2019. Prolonged drought in conjunction with high maximum temperatures and strong winds and geomorphic characteristics created the optimal conditions for the bushfires of 2019–2020 to ignite and spread.

The adopted **algorithms** are able to retrieve the burning areas in terms of hyperspectral fire detection. The obtained the **Fire Front** product allows to localize and delineate the fire front with increased level of details compared to the actual fire operational sensors as shown in the figure.




**RGB false colour composition PRISMA cube spatially cropped around the area of interest (1); spectral features (2); VIIRS fire front (3) at close to PRISMA passage; PRISMA fire front (4) derived by using its unique features.**

**Value added product: in house processing, quality check of the data image analysis, actionable maps.**

All the space-related INGV flyers are here!

Our remote sensing specialists are experience with the up to date remote sensing (RS) technology and can help you.

Are you interested in products and services related to the impact of wildfire on ecosystems, infrastructure, health and climate challenges?

SCAN ME FOR FIRES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