

SFIDE and the EOSIAL Viewer

Multi-Source Near-Real-Time Fire Detection from MTG-FCI and other Satellite Platforms for Disaster Risk Management

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Detecting Wildfires in Near-Real-Time from the Geostationary Orbit: The SFIDE Algorithm

Timely detection of **active fires** is a critical component of disaster risk management, directly affecting response times and resource allocation during emergencies. This contribution presents **SFIDE (Satellite Fire DEtection)**, a thermal anomaly detection algorithm developed by the **EOSIAL laboratory** and recently adapted to exploit the Flexible Combined Imager (FCI) onboard the new-generation geostationary satellite **Meteosat Third Generation (MTG)**.

The 1 km sub-satellite resolution of the FCI thermal channel is the finest ever achieved from geostationary orbit, and combined with a 10-minute repeat cycle, it enables continuous, low-latency fire monitoring at national and continental scale with unprecedented sensitivity compared to previous geostationary systems.

Making Near-Real-Time Detections Accessible to the User Community: The EOSIAL Viewer

To make these detections accessible and to support their operational evaluation, the laboratory has developed the **EOSIAL Viewer**, a web-based geospatial platform that displays near-real-time wildfire detections over the Italian territory and provides a series of analysis tools (timeseries search, spatial selection tool, animation tool, timeseries graph...). **Note:** the website is updated every 30 minutes. Live updates (5-10-15 mins) are reserved for institutions which economically support the project.

Currently, the website aggregates the following EOSIAL in-house fire detection products obtained through the SFIDE algorithm:

Platform	Sensor	Product	Spatial Resolution*	Temporal Resolution
MSG-10	SEVIRI	SFIDE/MSG	3.0 km	15 min
MSG-11	SEVIRI	SFIDE/MSG	3.0 km	5 min
MTG-1	FCI	SFIDE/MTG	1.0 km	10 min

In addition, the EOSIAL **Viewer collects NRT fire detection products from external** sources from polar-orbiting and geostationary satellites:

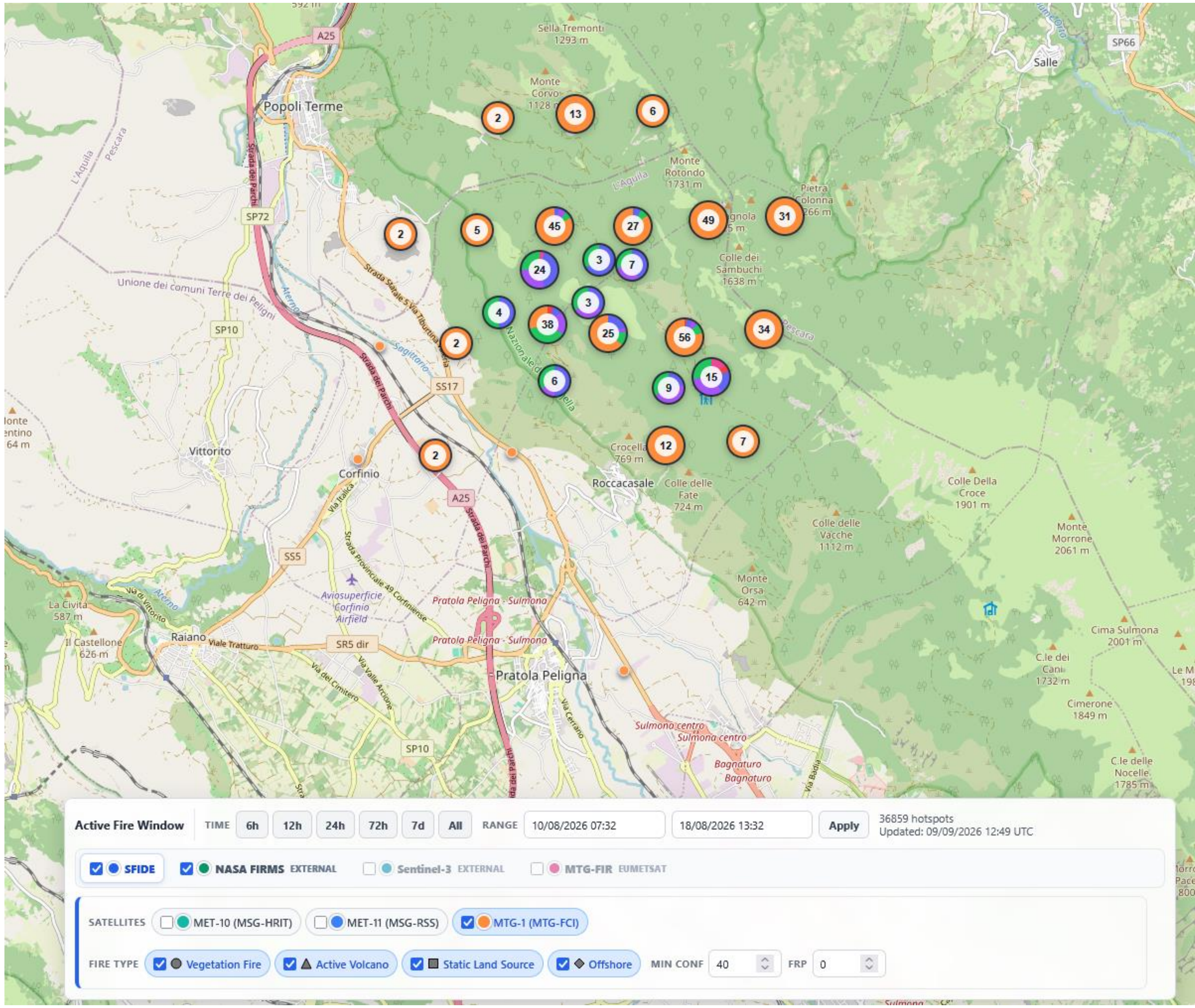
Platform	Sensor	Service	Spatial Resolution*	Combined Daily Overpasses**
Terra Aqua	MODIS	NASA FIRMS	1.0 km	4
NPP NOAA20 NOAA21	VIIRS	NASA FIRMS	750 m	3/4
Sentinel-3A Sentinel-3B	SLSTR	EFFIS	1.0 km	1

*For the GEO satellites, the spatial resolution is the sub-satellite spatial sampling distance. Resolution degrades away from the sub-satellite point.

**These values refer to the combined constellation at mid-latitudes.

The Monte Morrone (Abruzzo) Fire as seen by SFIDE/MTG and the FIRMS satellites, as shown by the EOSIAL Viewer.

Datetimes: 10/08/26 07:32 – 18/08/26 13:32.



Case Study: The Pineta Sacchetti (Rome) Fire

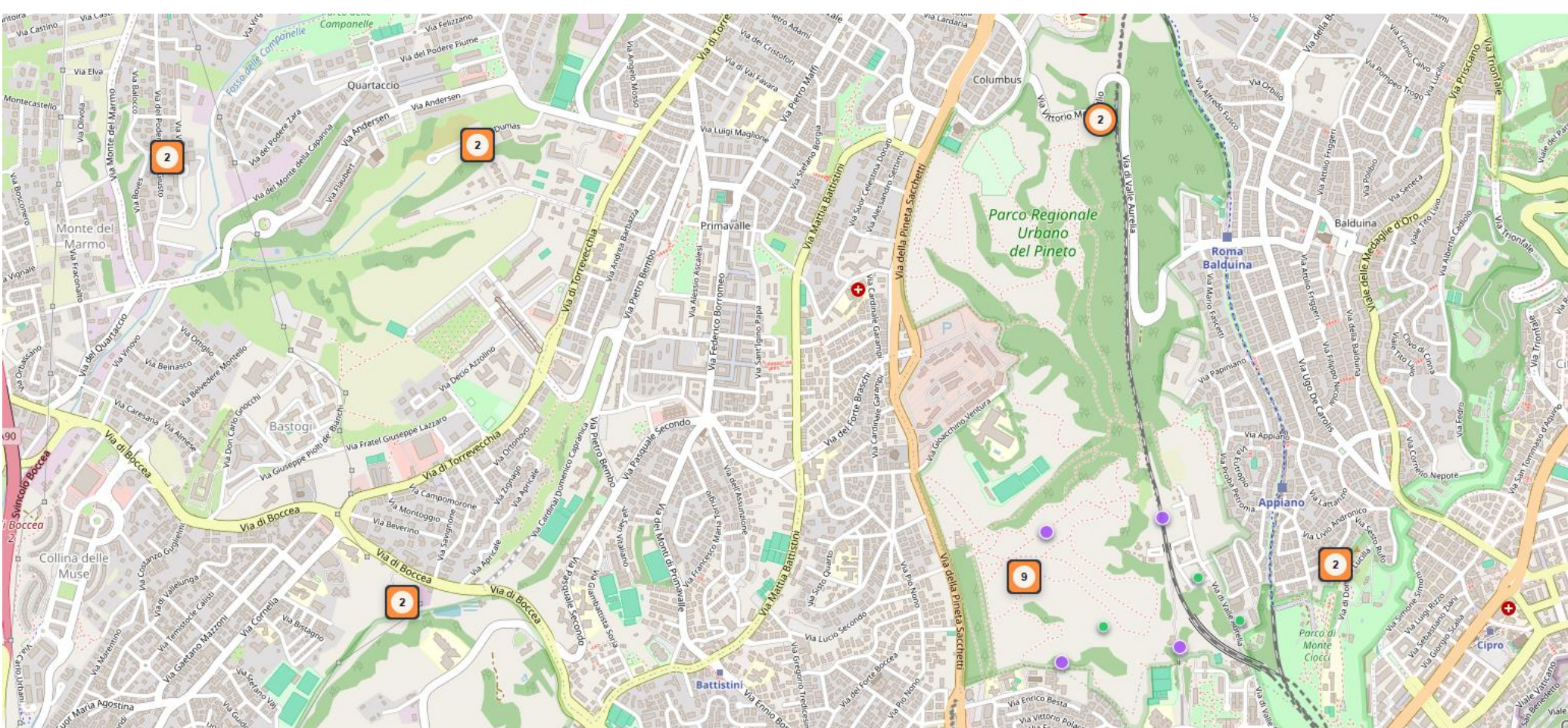
Date: 04/07/2026 | **Area of Interest:** Rome, Italy

- SFIDE/MTG Detected a fire in the Pineta Sacchetti Area at 10:38 UTC (12:38 local time) and keeps tracking it using the subsequent MTG acquisitions.
- As reported by the local newspaper "[il Messaggero](#)", local authorities report the fire at 14:35 local time, asking for the intervention of the firefighters, almost two hours from the first SFIDE detection. The fire required significant suppression effort.
- FIRMS satellite detections for this event were recorded at 12:32 and 13:08 UTC.

Conclusions

- Polar-orbiting satellites** such as MODIS, VIIRS, and Sentinel-3 provide high-resolution thermal imagery, but cannot guarantee continuous coverage due to their relatively long revisit times. **Geostationary satellites** offer frequent observations suitable for near-real-time monitoring, though typically with coarser spatial resolution. The MTG mission partially bridges this gap by providing unprecedented thermal infrared resolution from the geostationary orbit.
- The **SFIDE (Satellite Fire DEtection)** algorithm applied to MTG's **Flexible Combined Imager (FCI)** Level 1c data demonstrate the potential added value of MTG-based fire detection system to support early warning, real-time monitoring and operational decision-making for protecting critical infrastructure and human lives.

The Pineta Sacchetti (Rome) Fire as seen by SFIDE/MTG, NOAA21 and NPP shown by the EOSIAL Viewer. Datetimes: 04/07/26 10:00 – 04/07/26 15:00.



Scan to visit the EOSIAL Viewer!