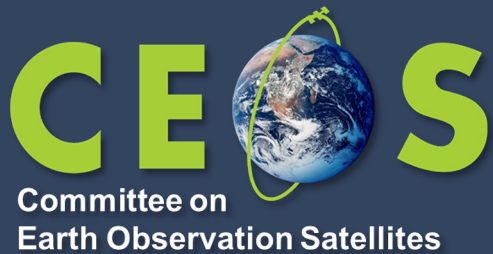


CEOS LSI-VC Wildfire Subgroup



Steffen Dransfeld
On behalf of the LSI-VC Wildfire Subgroup
European Space Agency
WGDisasters 2026
ASI, Rome, Italy
14-18 September 2026

Context – Global Fire Challenges



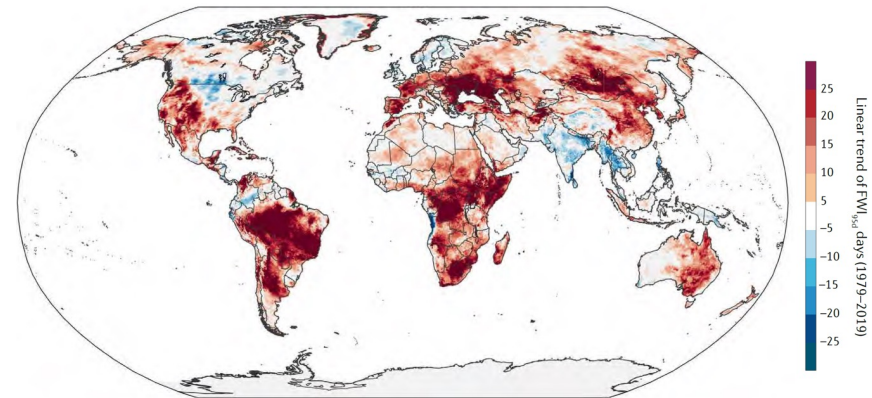
❖ Wildfire is an important **natural disturbance** agent, but poses **management challenges**

❖ Management challenges **exacerbated** by:

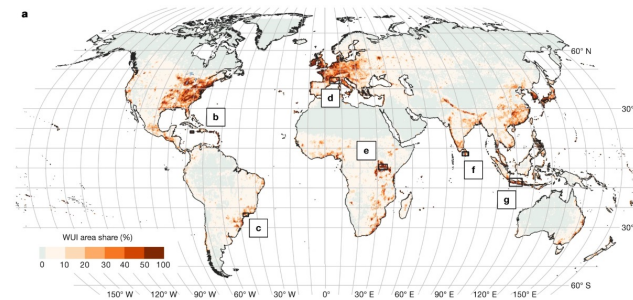
climate change: longer fire seasons, more extreme weather conditions

Land use change: e.g. increasing wildland urban interface

Human behaviour: influences ignitions and suppression



Trend in extreme fire weather conditions in recent decades (1980s-2010s) Bowman et al., (2020)



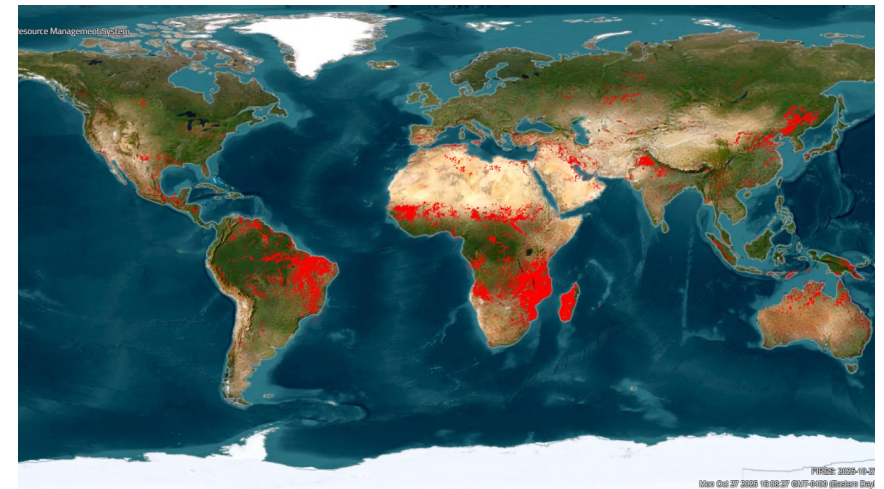
Area share (%) of the Wildland-Urban Interface, 2020
Schug et al (2023) <https://doi.org/10.1038/s41586-023-06320-0>



Context – Active Fire EO



- ❖ EO monitoring is important tool for wildfire management in all (pre, during, post) fire phases
- ❖ IR-based active fire products are widely used in **operational wildfire management** fire & **NRT smoke/AQ monitoring & modelling**
- ❖ LEO active fire products provided by a **small number of missions**



Global wildfire activity detected using satellite Earth Observation on 2025/10/27. Data from NASA FIRMS

Challenges & Opportunities

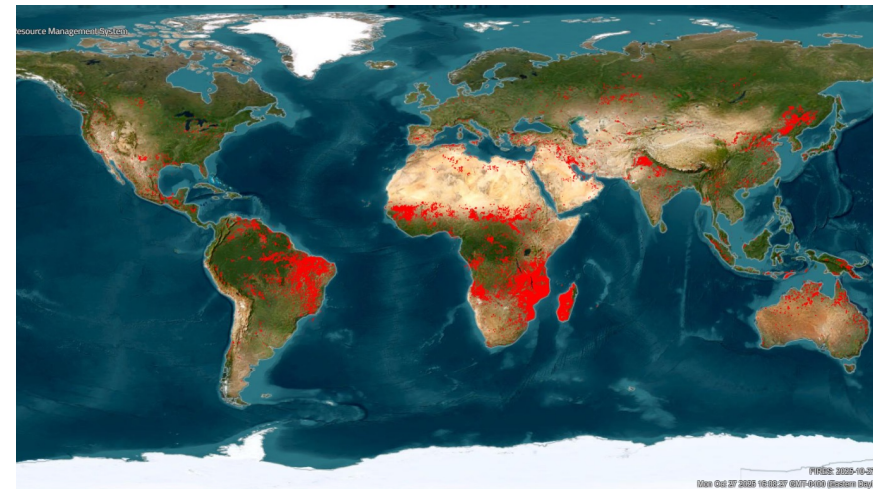


- ❖ MODIS Terra & Aqua - **end-of-life 2027**, with **no direct replacement**

many users use MODIS data as if it were an operational mission

- ❖ New opportunities from **commercial and philanthropic wildfire satellite EO data providers** – but how do we navigate this?

- ❖ Overall: **unclear future capability & continuity** to meet global science & application needs



Global wildfire activity detected using satellite Earth Observation on 2025/10/27. Data from NASA FIRMS

CEOS WG Disasters Wildfire Pilot



- ❖ Gap analysis of LEO civil space agency missions for active fire Earth observation

- ❖ Pilot co-leads:
NRCan, CSA, NASA, FAO

- ❖ Initiated 2021, finished 2025

“Supply”-side analysis

Orbital modelling of
current & future active
fire monitoring system
coverage

“Demand”-side analysis

Survey, bibliometric, &
web traffic data
analysis to understand
who is using active fire
products for
management?

CEOS WGD Wildfire Pilot – Findings (1)



‘Supply’ side analysis

- ❖ Gap analysis of existing and future active fire monitoring systems using the **CEOS Missions, Instruments & Measurements Database** and **STK modelling**

Primary findings:

- ❖ Global monitoring capabilities (in terms of revisit time) are **unstable** out to the mid-2030s, and at times **may get worse than seen in recent years**.

Coverage could be **improved** if we could better leverage **existing & committed capabilities** of CEOS member agencies

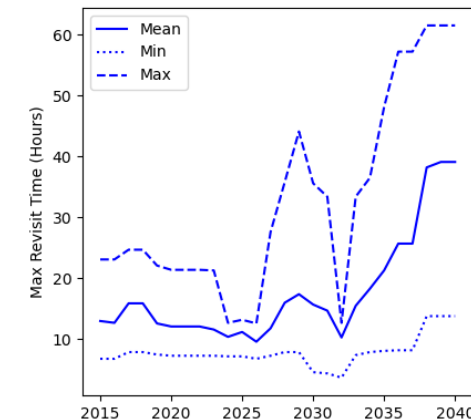


Figure 1. Maximum revisit time (global aggregation) baseline scenario for fire monitoring/detection

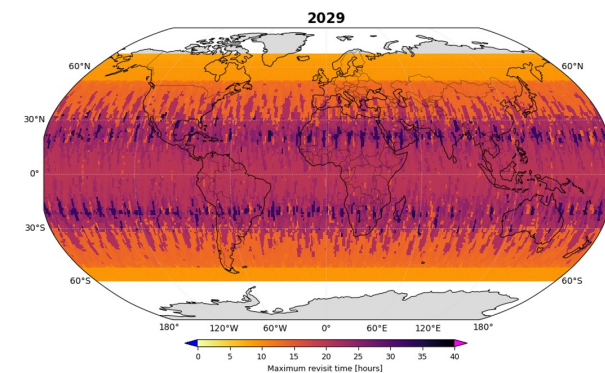


Figure 2. Maximum revisit time in 2029 baseline scenario for fire monitoring

CEOS WGD Wildfire Pilot – Findings (2)



‘Demand’ side analysis

- ❖ who is using active fire products for **fire management**?
- ❖ Mixed methods analysis:
 - Global wildfire management user survey
 - Active fire web platform user traffic analysis
 - Bibliometric analysis

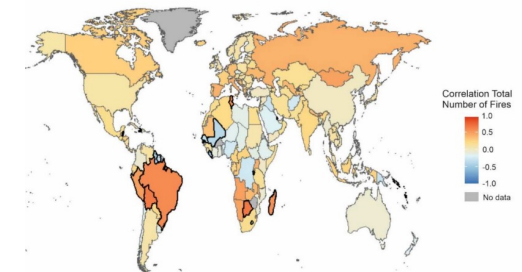
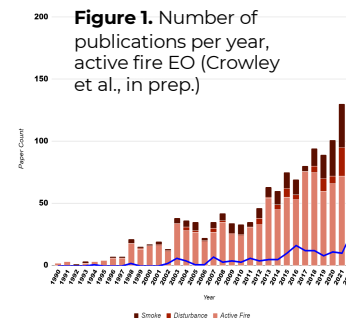


Figure 2. total weekly use counts vs. # fires. Outliers with strong or weak relationships are bolded (Hope et al., 2024)

Primary findings:

- ❖ **Recent increase** in active fire EO **usage** for **wildfire management**
- ❖ **Diverse use cases** for active fire data exist globally (Hope et al., 2024)
- ❖ Wildfire managers have a **high degree of trust** in this data (McFayden et al., 2024)

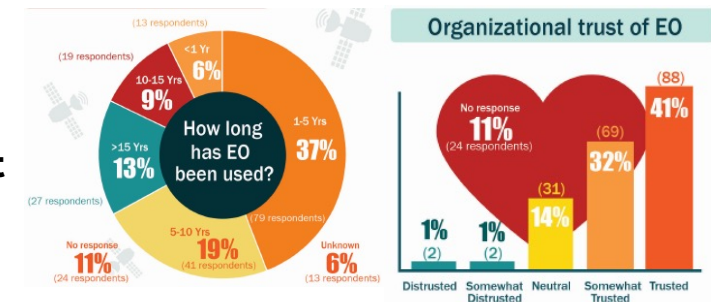


Figure 3. Global end user survey outcomes (McFayden et al., 2024)

Hope et al., (2024) <https://doi.org/10.1080/17538947.2024.2420821>

McFayden et al. (2024) <https://ostrnrcan-dostrncan.canada.ca/handle/1845/275072>



- ❖ Reduced capabilities -> less user trust -> **negative consequences for fire management**
- ❖ Clear **need for increased international coordination** and **governance** of global active fire monitoring satellites
- ❖ Proposal for a **new CEOS initiative** on the **coordination of wildfire monitoring** was supported by participants of a **CEOS Plenary 2025** side meeting
~12 CEOS Agencies in attendance
- ❖ Spring 2026: formed new **LSI-VC Wildfire Subgroup**

Purpose & potential activities



- ❖ **Purpose:** to provide a venue for coordination between **EO data-producing organizations** and the **downstream community**, improving wildfire monitoring product **reliability** and **supporting wildfire management**.

Initial scope is active fire and potentially recent burned area

In the future could expand to other areas (e.g., pre-fire)

- ❖ Broad objectives:

Act as a **forum** where agencies, data producers, and users can communicate

Assess the **existing & planned implicit virtual constellation** of fire monitoring satellites

Document the case for **sustained, refined & improved** fire EO products

Support development of harmonized **user & mission requirements** for wildfire monitoring

Support **interoperability** of fire EO data and missions for wildfire monitoring

Support development of EO fire product **best practices/endorsement process**

LSI-VC Wildfire Subgroup - Membership



Organization	Point of Contact
CEOS Agency Co-leads	
ESA	Steffen Dransfeld
SANSA	Cecilia Masemola
CSA	Yann Denis
NRCan	Mark de Jong, Catriona Armstrong
CEOS Agency Members	
EC	Fernando Sedano
HSC	Dimitris Bliziotis
INPE	Fabiano Morelli
NASA	Ian Brosnan, Doug Morton
UKSA	Gareth Roberts
USGS	Birgit Peterson

Organization	Point of Contact
Wider Community	
GOFC-GOLD FireIT	David Roy Martin Wooster
Ororatech	Dmitry Rashkovetsky
FireSat	Mike Falkowski

- ❖ Also some involvement from NOAA,
EUMETSAT, Geoscience
Australia/CSIRO



Initial priorities

- ❖ Developing best practice guidelines for fire monitoring products
- ❖ Support validation of fire products (especially active fire/FRP) through coordination & facilitation of collaborative validation activities
- ❖ Develop CEOS ARD product family specification for fire

An aerial photograph of a powerful volcanic eruption. A massive, billowing plume of white ash and steam rises from a central vent, spreading out into a large, flat-topped cloud that covers a significant portion of the sky. The surrounding landscape is a vast, dark green valley with a network of roads and small bodies of water. The sky is a clear, deep blue.

Questions?