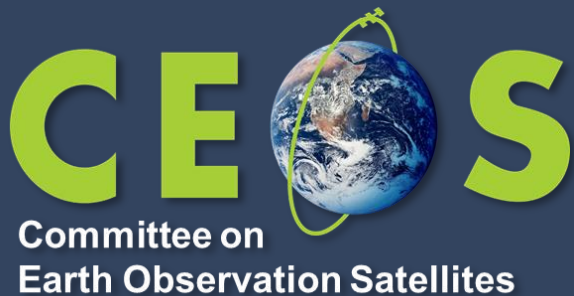


LSI-VC Wildfire Subgroup

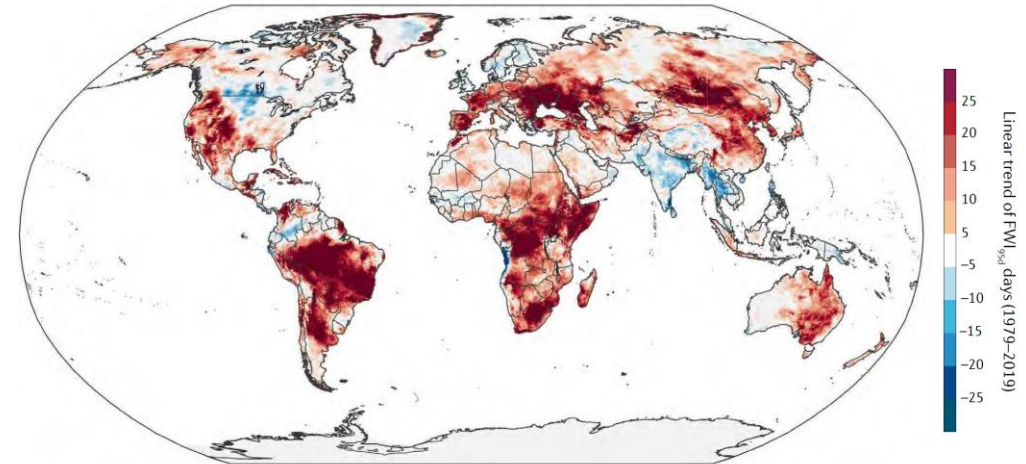


Mark de Jong
Natural Resources Canada
Fire & Smoke Session
AC-VC-22
Leiden, The Netherlands
3rd June 2026

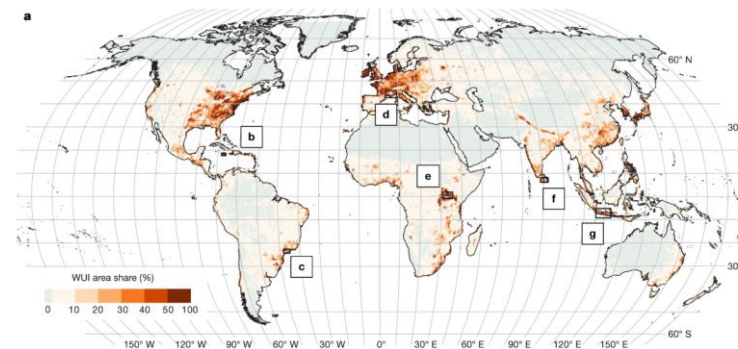
Context – Global Fire Challenges



- ❖ 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)



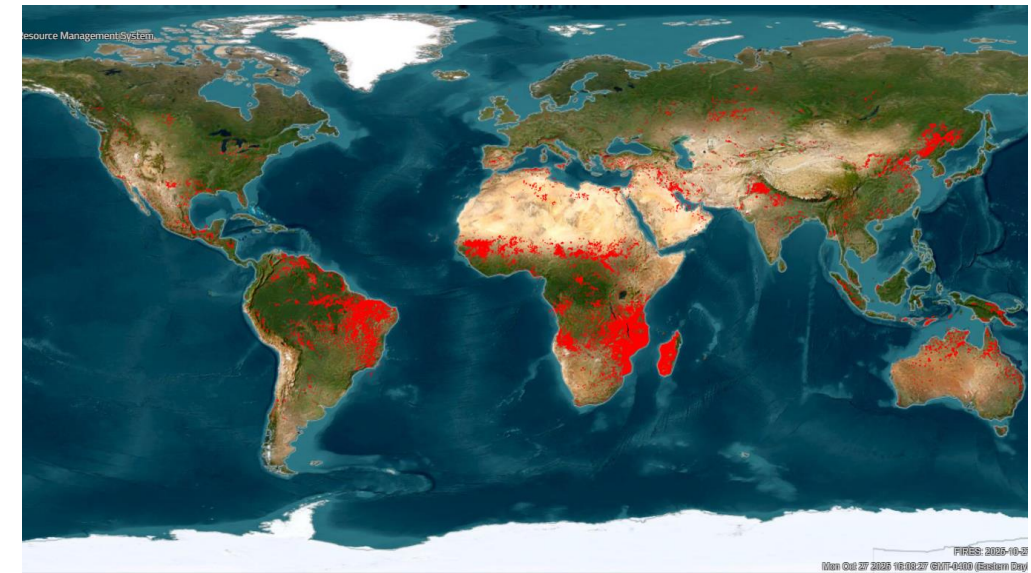
Area share (%) of the Wildland-Urban Interface, 2020
Schug et al (2023) <https://doi.org/10.1038/s41586-023-06320-0>



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**

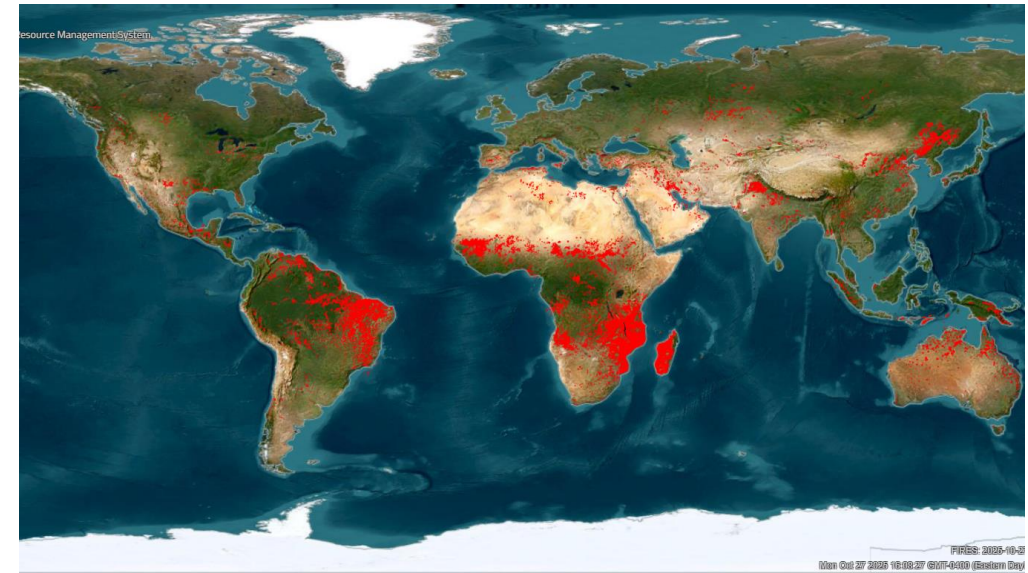


Global wildfire activity detected using satellite Earth Observation on 2025/10/27. Data from NASA FIRMS

Challenges & Opportunities



- ❖ MODIS Terra & Aqua - **end-of-life 2026**, 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

- ❖ 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?

‘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

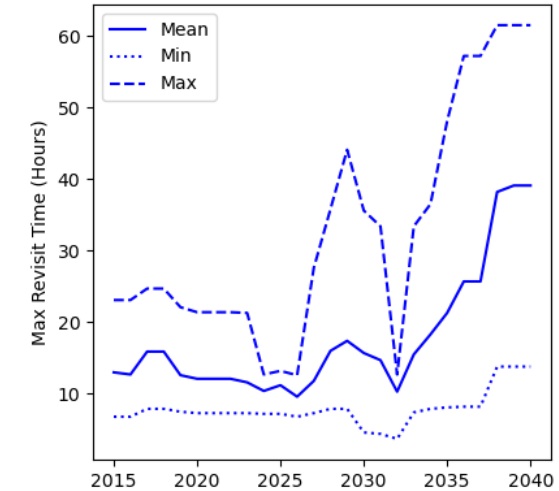


Figure 1. Maximum revisit time (global aggregation) baseline scenario for fire monitoring/detection

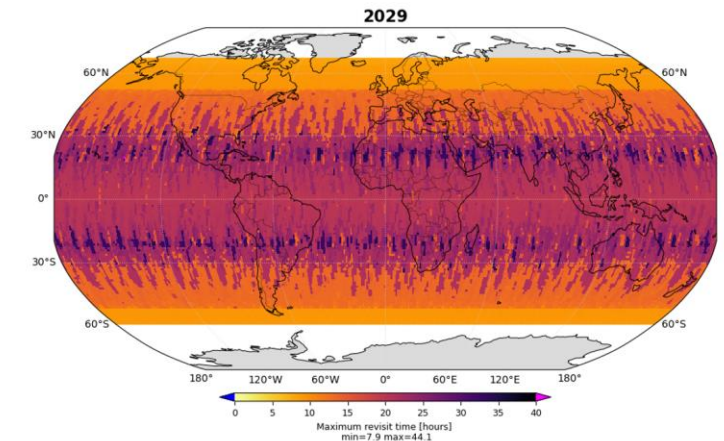


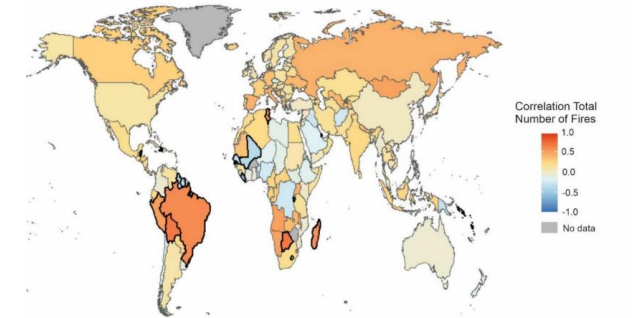
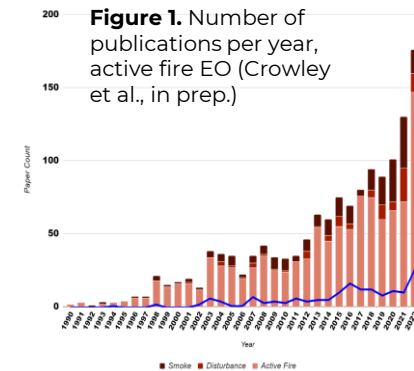
Figure 2. Maximum revisit time in 2029 baseline scenario for fire monitoring

CEOS WGD Wildfire Pilot – Findings (2)



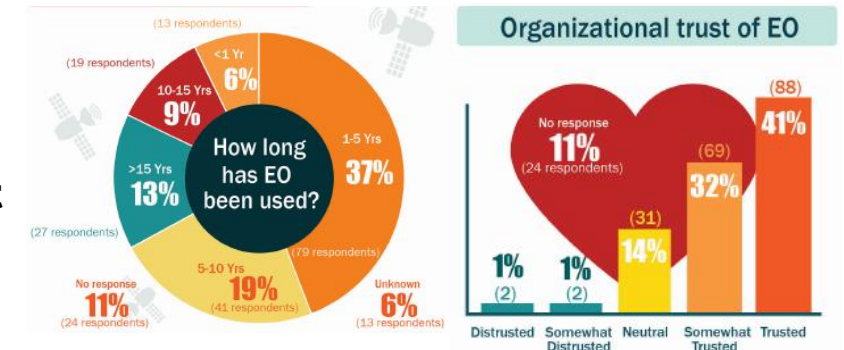
‘Demand’ side analysis

- ❖ 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



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)



Hope et al., (2024) <https://doi.org/10.1080/17538947.2024.2420821>
McFayden et al. (2024) <https://ostrnrcan-dostrnrcan.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
- ❖ Spring 2026: formed new **LSI-VC Wildfire Subgroup**

Purpose & potential activities



- ❖ **Purpose:** to provide a venue for coordination between **EO data-producing agencies** 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)

- ❖ Potential activities (to be refined):
 - 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**
 - Act as a **forum** where agencies, data producers, and users can communicate

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
Wider Community	
GOFC-GOLD FireIT	David Roy Martin Wooster
New Space organizations	TBD

- ❖ Currently working to refine priorities to inform activities and work plan
- ❖ Membership interest from other organizations is welcome