Exploring the potential of Satellite Data

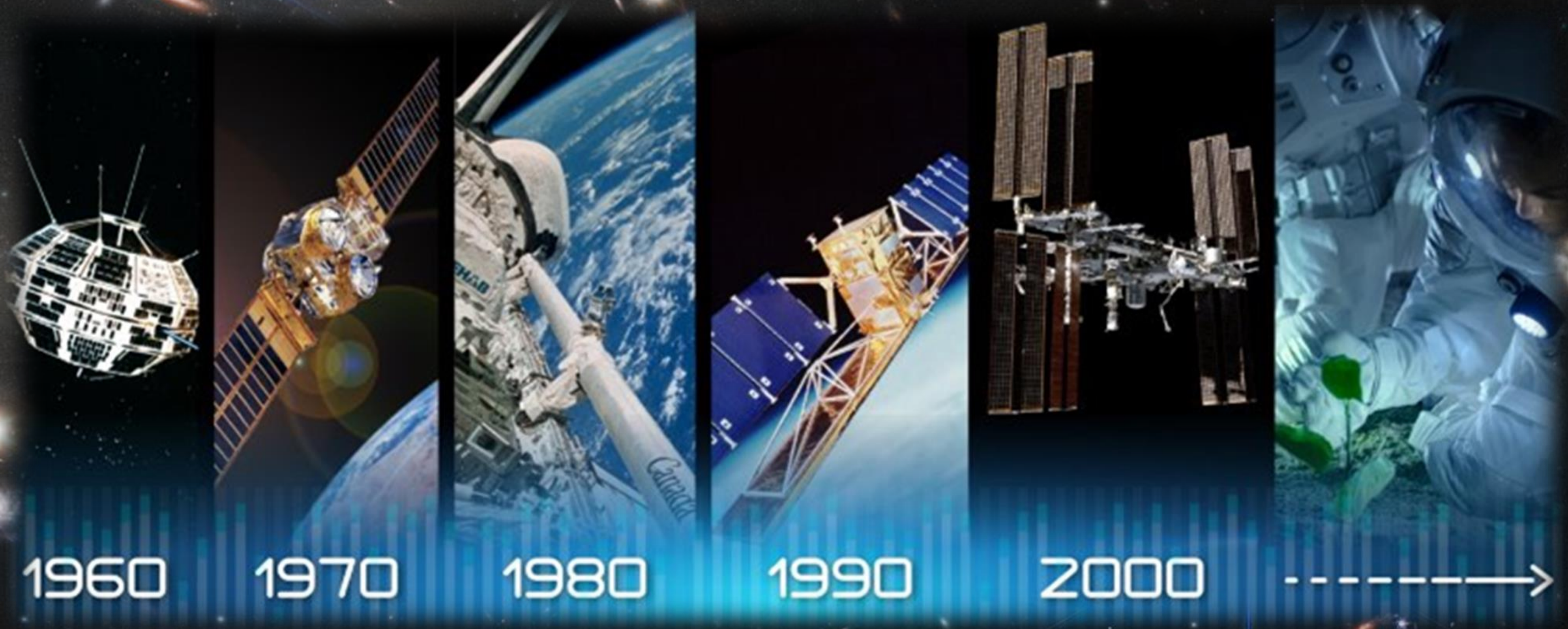
NALMA National Gathering

Halifax - October 22, 2025

Our conversation today...

- Canada in space
- What is Earth Observation?
- Current satellite initiatives of interest
- How to access satellite data
- Commercial vs. open data
- A few concrete examples

Canada in space



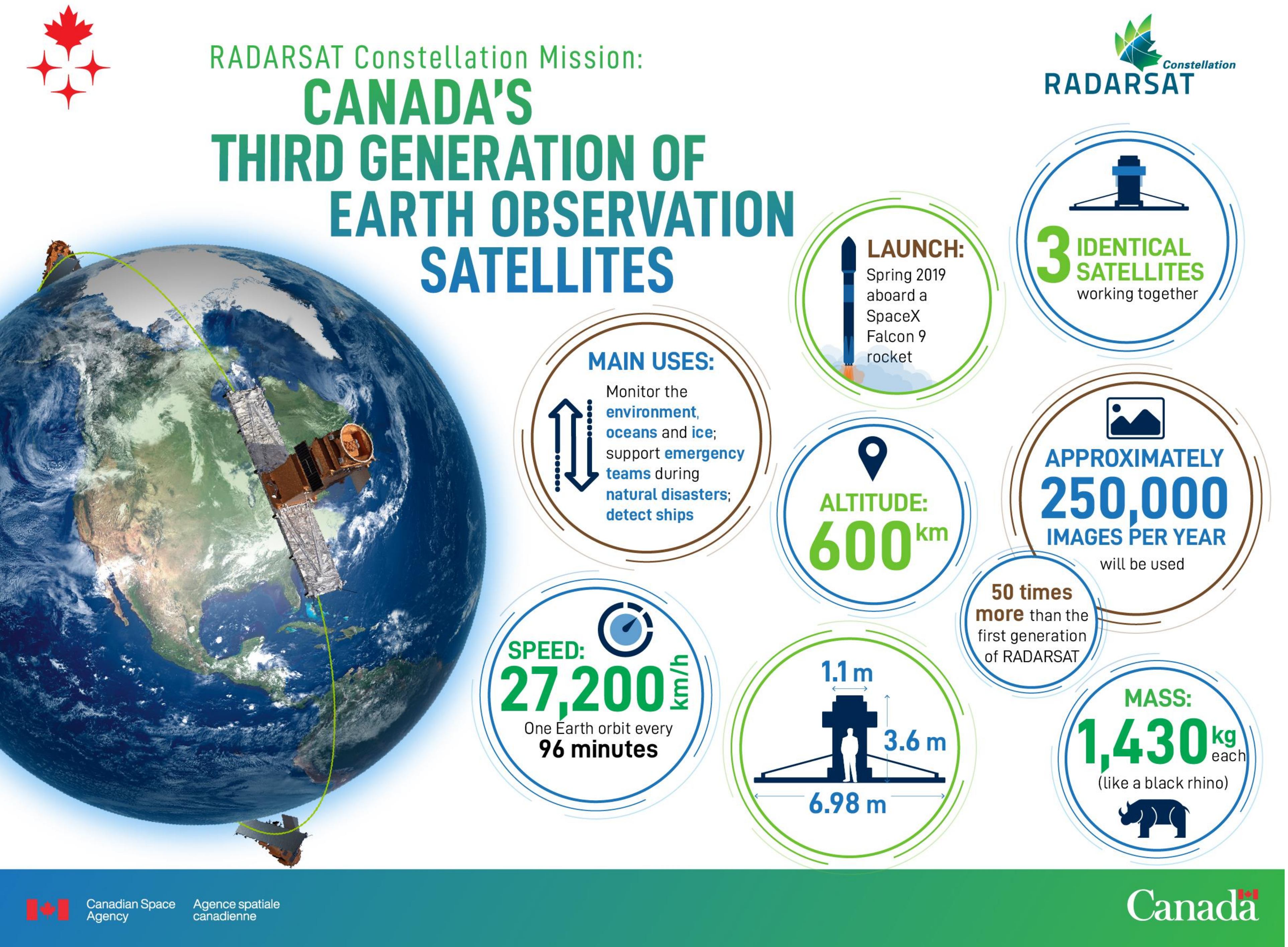
What is Earth Observation (EO)

... and what it can do...

- Mapping
- Monitoring
- Understanding
- Protecting

[Video Satellites serving Earth]


10 km

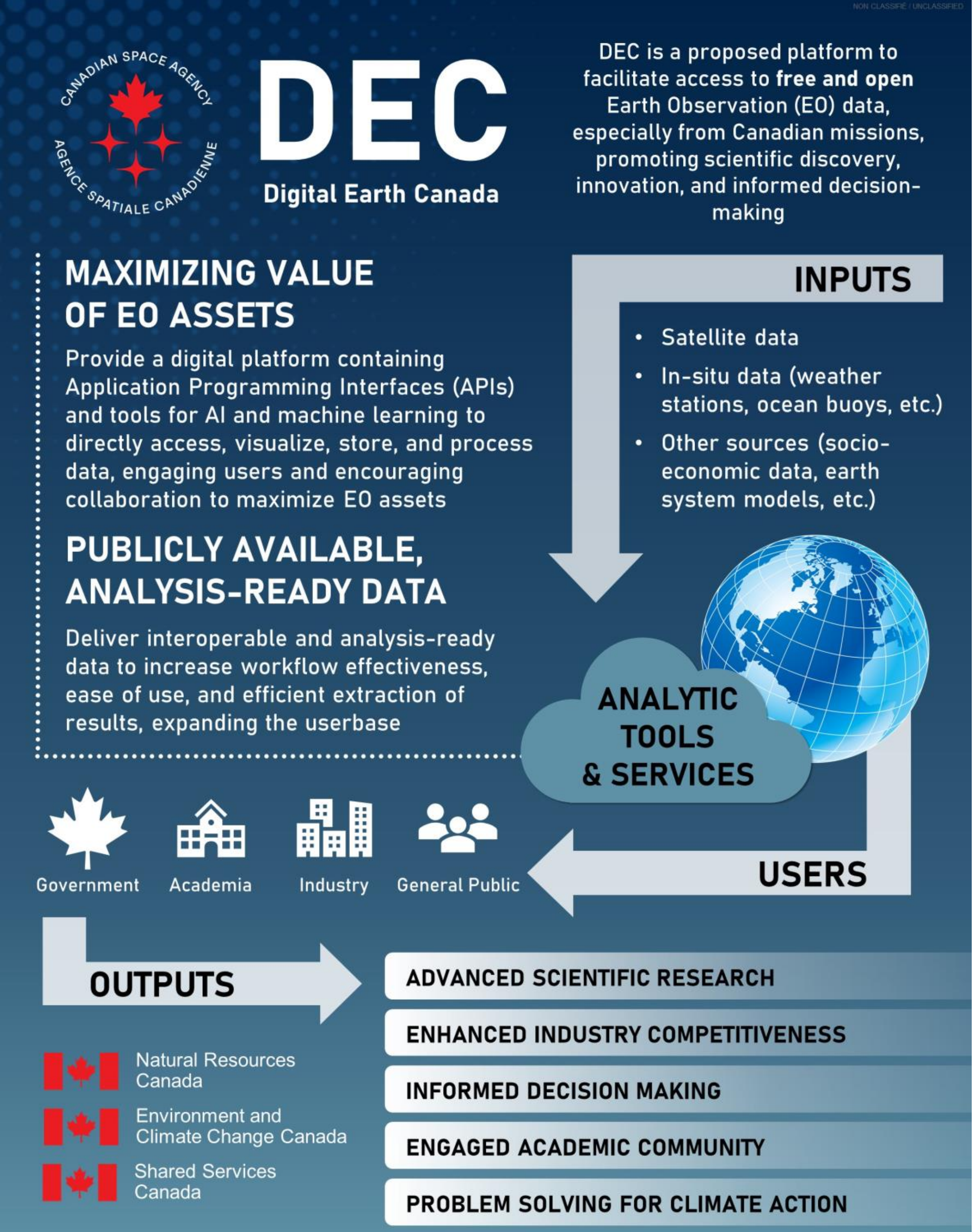


What is the RCM?

WildFireSat: monitoring wildfires in Canada

Terrestrial Snow Mass Mission

- Freshwater security
- Trans-boundary watershed management
- Mapping of the amount of water stored in snow



What is Digital Earth Canada?

An initiative that aims to enhance and strengthen the Canadian EO ecosystem

- **Seamless access to Earth Observation (EO) data and analytic capacities**
- **Advanced analytical capabilities**
- **Modern digital tools including AI/ML,**
- **High-quality EO datasets,**
- **Powerful hybrid (Cloud-HPC) based services**

Maestro-D Platform

MAESTRO-D SUMMARY

Maestro-D is an online accessible tool used to collect users' measurement needs for Earth observation (EO) by satellite in Canada.

Agile needs collection

Centralization of Canadian EO needs in a database accessible 24/7, without deadlines

Reduces consultation fatigue

Responding to stakeholders' expressed need to reduce consultations

The only EO needs data source

Only data source considered in the prioritization of GC EO needs, for the development of initiatives or future satellite missions

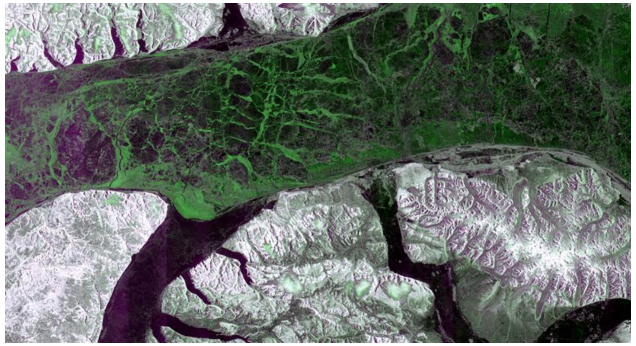
LEAD ORGANIZATION

Initiative from the SEO Office and driven by CSA.

MAESTRO-D

USER needs DATABASE for EARTH OBSERVATION

PROJECT LAUNCHED June 2025



The RADARSAT Constellation Mission's one millionth image

NEXT STEPS

Partnerships

Recommendation of potential partnerships based on the nature of the EO need

Data “matchmaking”

Recommendation of available EO data that could meet your needs

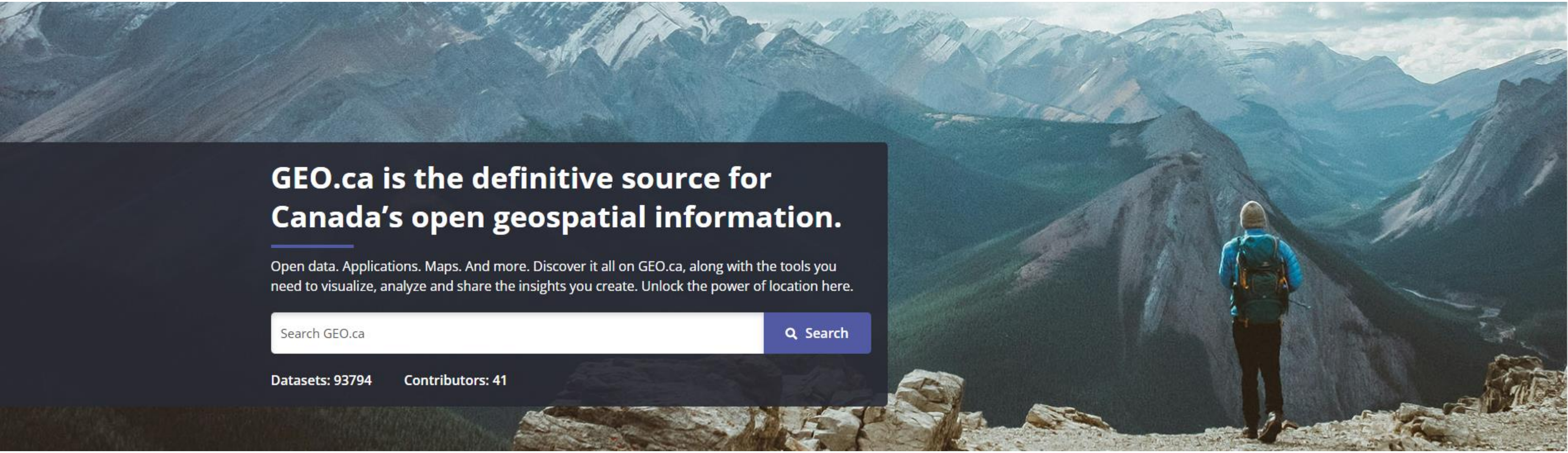
NMSO for **Indigenous Peoples**

- Indigenous Peoples are now automatic recipients for all government-purchased commercial satellite imagery
- Since March 31 2023.
- NRCan **Nòkwewashk** and *Indigenous Peoples*

Table 12. License Class Designations

LICENSE CLASS	INCLUDED ENTITIES
Class 0 [BASE]	Canadian Government Departments, Agencies, Crown Corporations and Indigenous Peoples.
Class 1	Class 0 + Canadian Provinces, Territories, Municipalities.
Class 2	Class 0 + Canadian academia e.g. university, college, institute.
Class 3	The Five Eyes (FVEY) intelligence alliance comprising Australia, New Zealand, the United Kingdom, the United States and Canada.
Class 4	Class 3 + broad Canadian allied sharing e.g., NATO Military Partners and NATO Partnership for Peace, Ukraine unrest support, etc.
Class 5	Public e.g., international crisis, citizen science initiatives, etc.

Data access



Started: EODMS ⇄ GeoBase DataCube ⇄ geo.ca interoperability using STAC and REST.

- Addition of 62 Northwest Territories records
- Flood Hazard Identification and Mapping Program (FHIMP) Community Pages
- Provinces and territories

- Canada's EO Data management System (EODMS)
- NASA Worldview (EN only)
- Vegetation Drought index
- Global Forest watch
- Copernicus Browser

STAC

Commercial VS Open data?

Free and Open data

-10m resolution and up

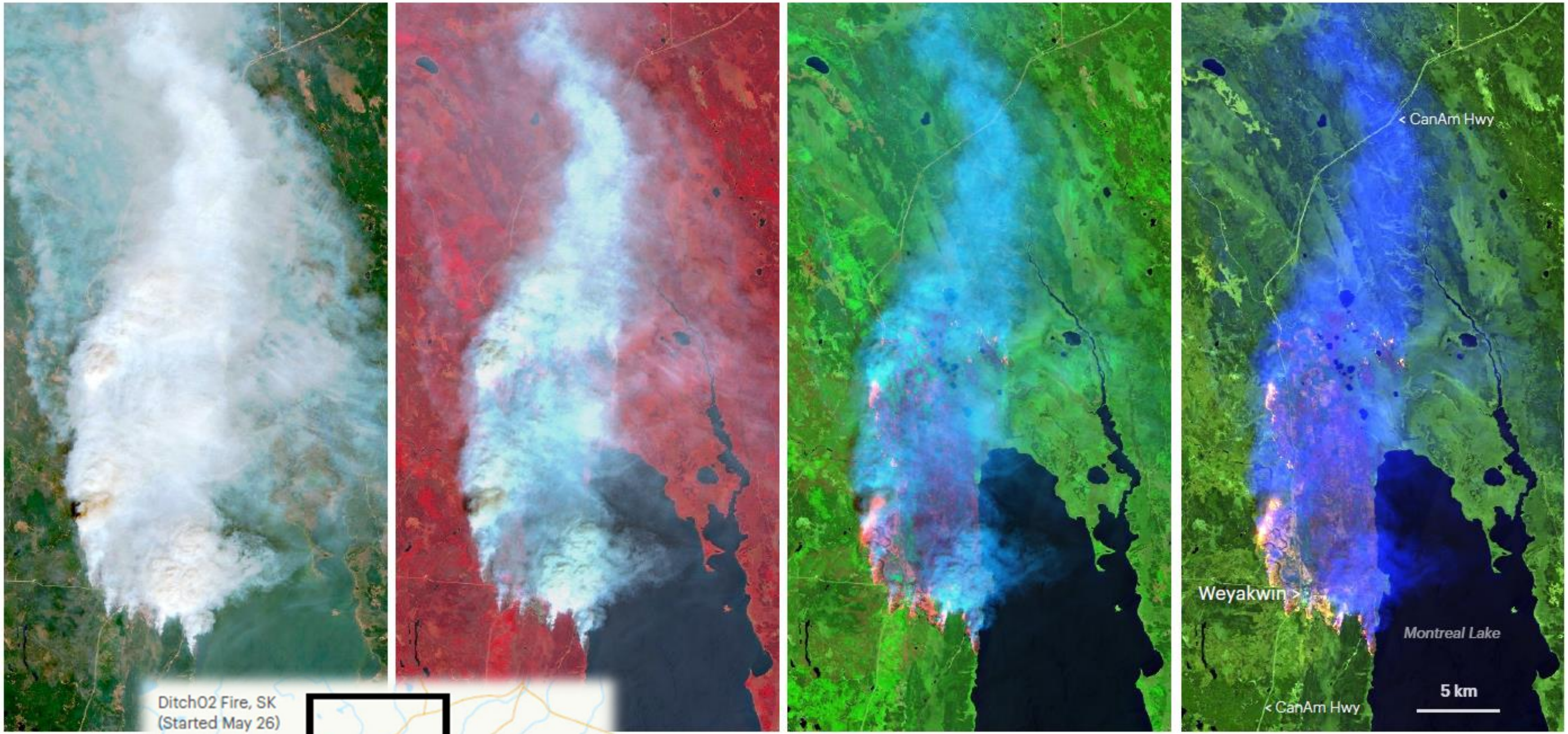
-For land monitoring – weekly repeat

Commercial

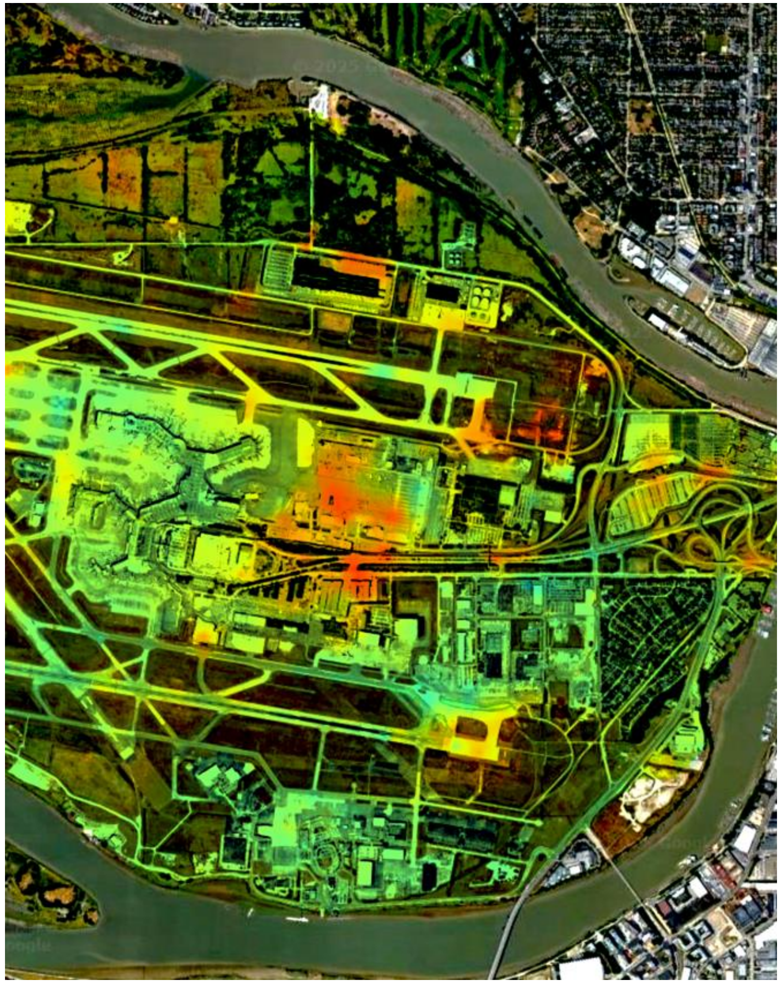
-Single-digit spatial resolution

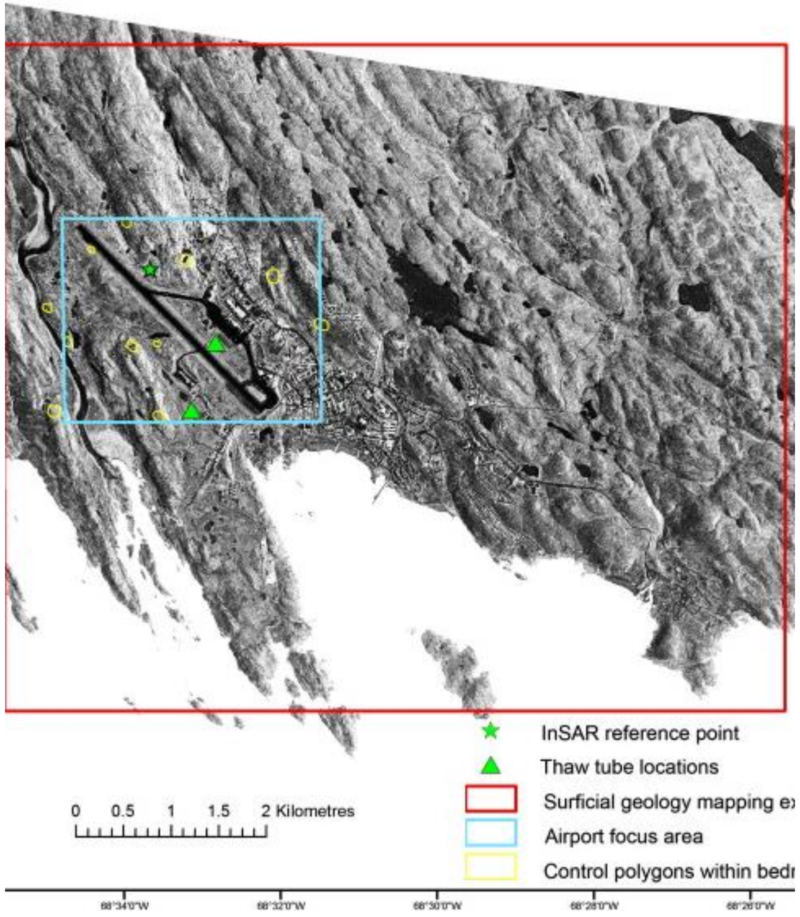
Protecting Canada’s caribou by satellite

Illegal dumping

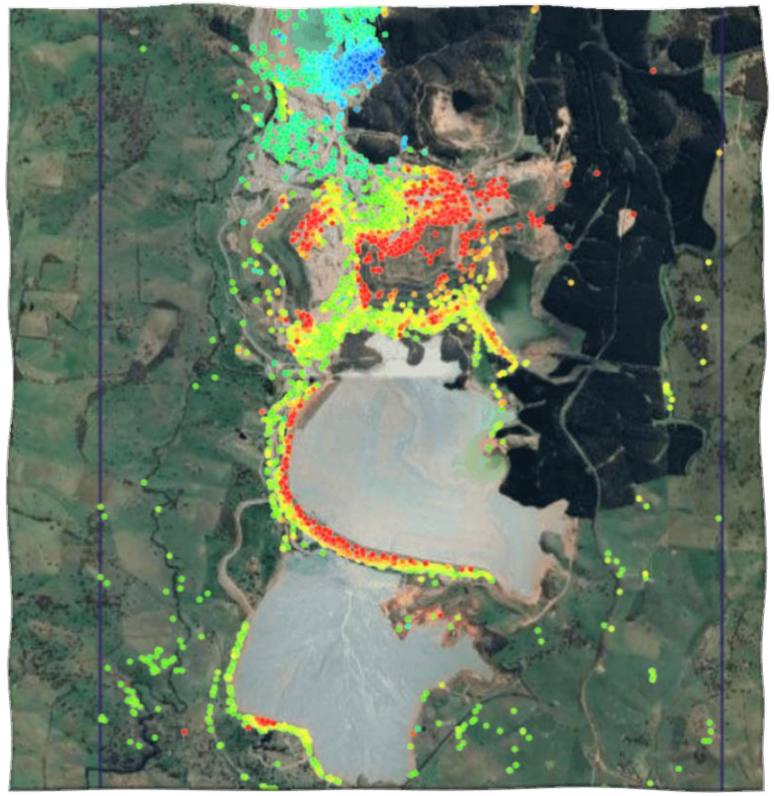


Wildfire monitoring





Ground movements



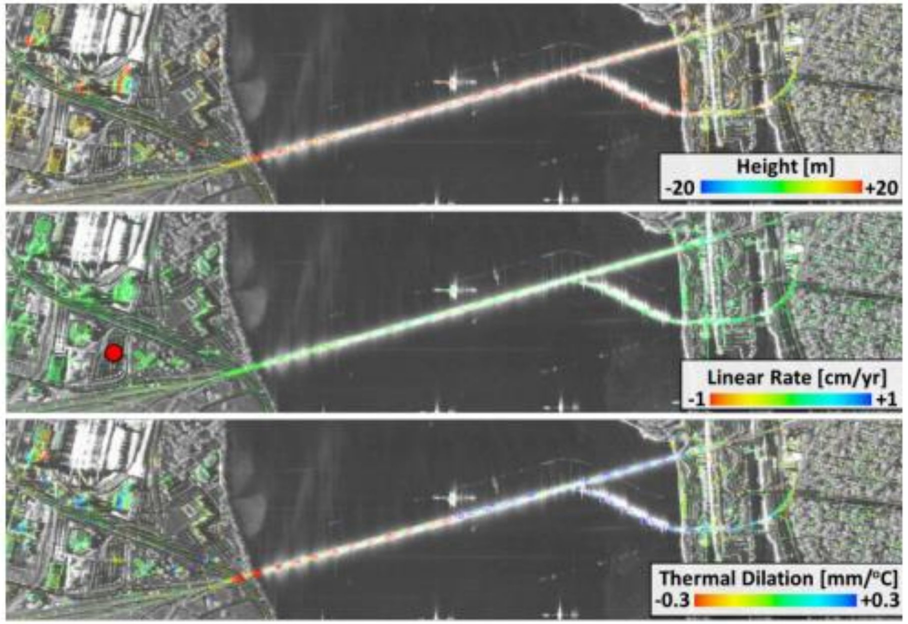
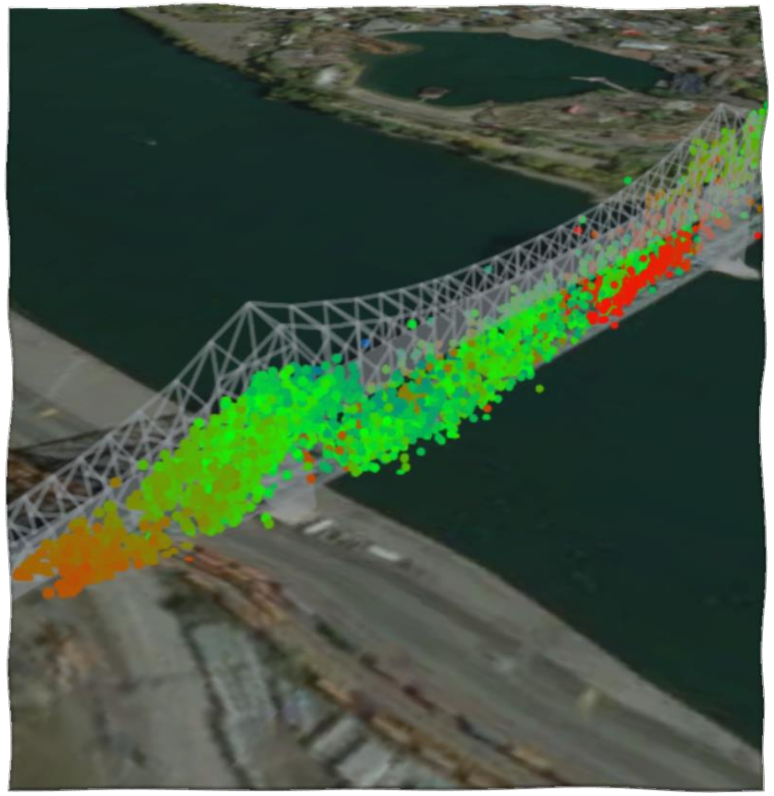


Figure 3. LOS height, linear rate and thermal sensitivity for SLA26-asc stack at Victoria Bridge from May 2016 to August 2018 (Greene Gondi *et al*. 2019).

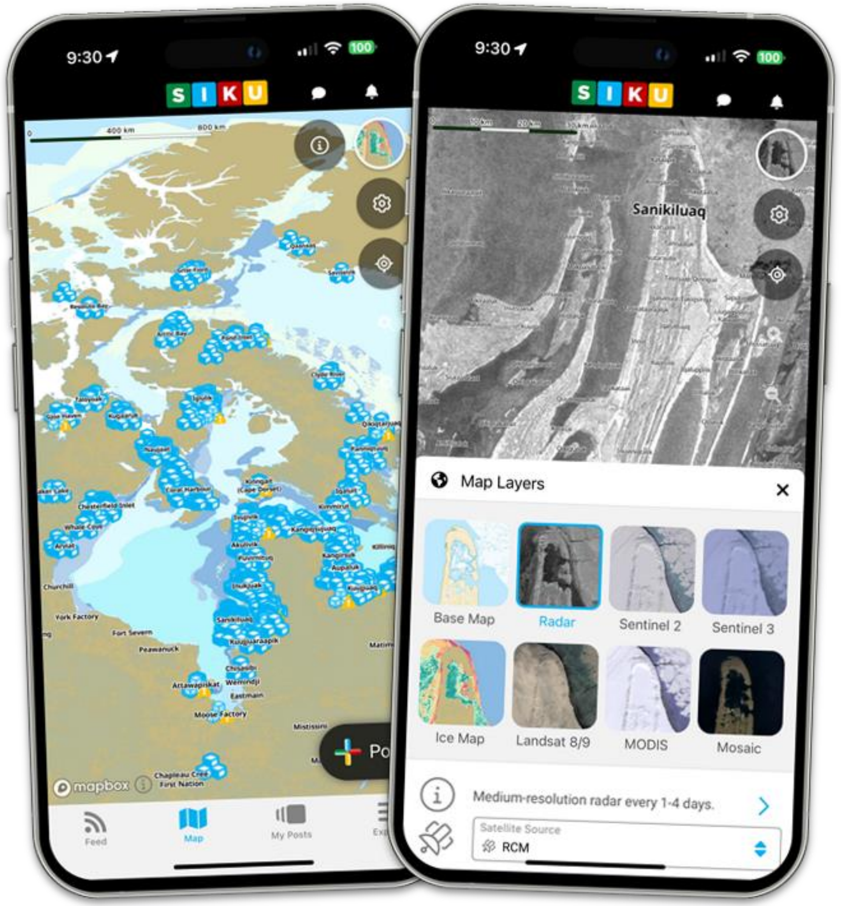


Infrastructure monitoring

Source: https://sa.catapult.org.uk/projects/brigital/

SIKU

150+ workshops
45+ communities
1700+ participants



Thank you!

CANADIAN SPACE AGENCY

AGENCE SPATIALE CANADIENNE

Merci!