



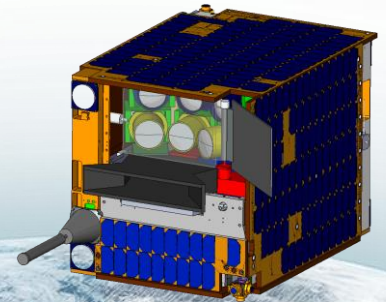
WildFireSat

Unlocking the Potential for a Global Wildfire Monitoring Constellation

Canadian Space Agency

Natural Resources Canada – Canadian Forest Service

Environment and Climate Change Canada



*Early microsat concept
(Phase 0)*



Government
of Canada

Gouvernement
du Canada

EARSeL, Rome, 4 Oct 2019

The Case for WildFireSat

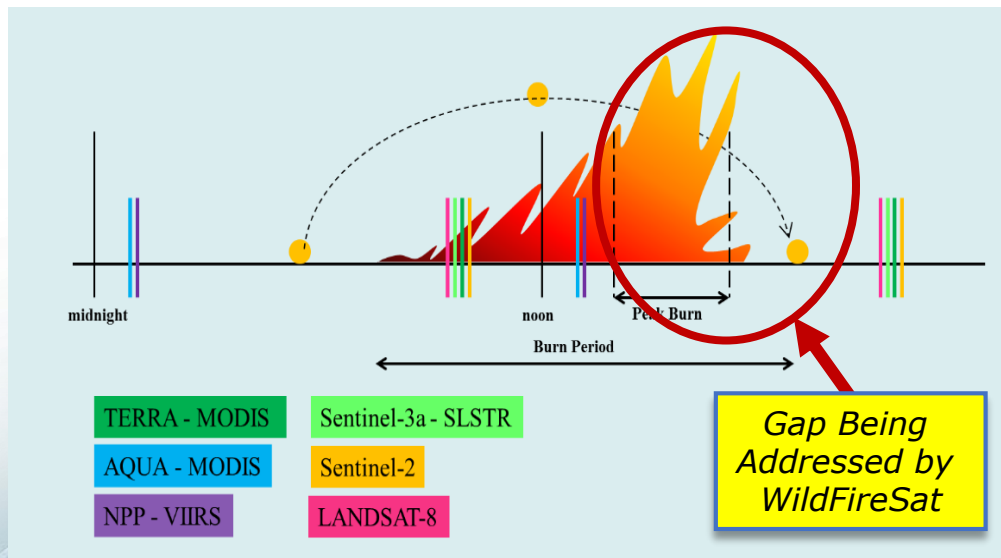
- Better detection and monitoring of wildland fires and their plumes in Canada to improve:
 - Fire Management
 - Smoke and Air Quality Forecasting
 - Wildfire Carbon Emissions Reporting

Benefits:

- Science/innovation in space, data & wildfire domains;
- Reduction of evacuations, health problems, properties & resources destruction, carbon emissions;
- Reduced economic losses for industrial sectors affected by wildfire: timber, energy, transportation, farming, tourism and insurance industries.

- Fast data delivery (now: 3+ hrs, needed: < 30 min)
- Measurements of Fire Radiative Power (FRP)
- Measurements in late afternoon

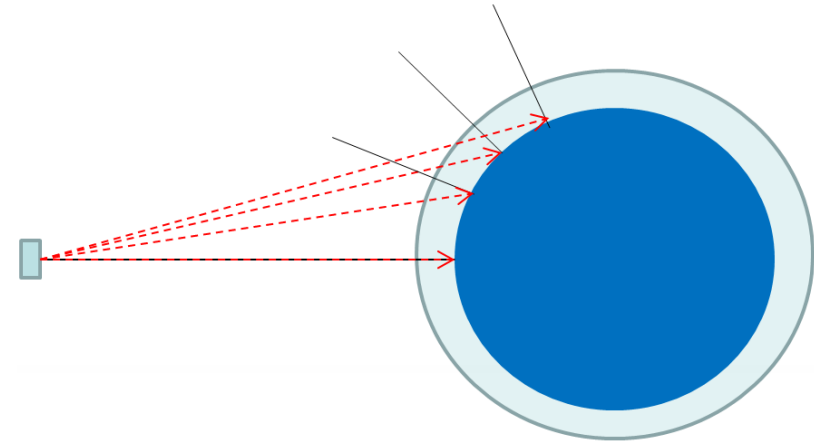
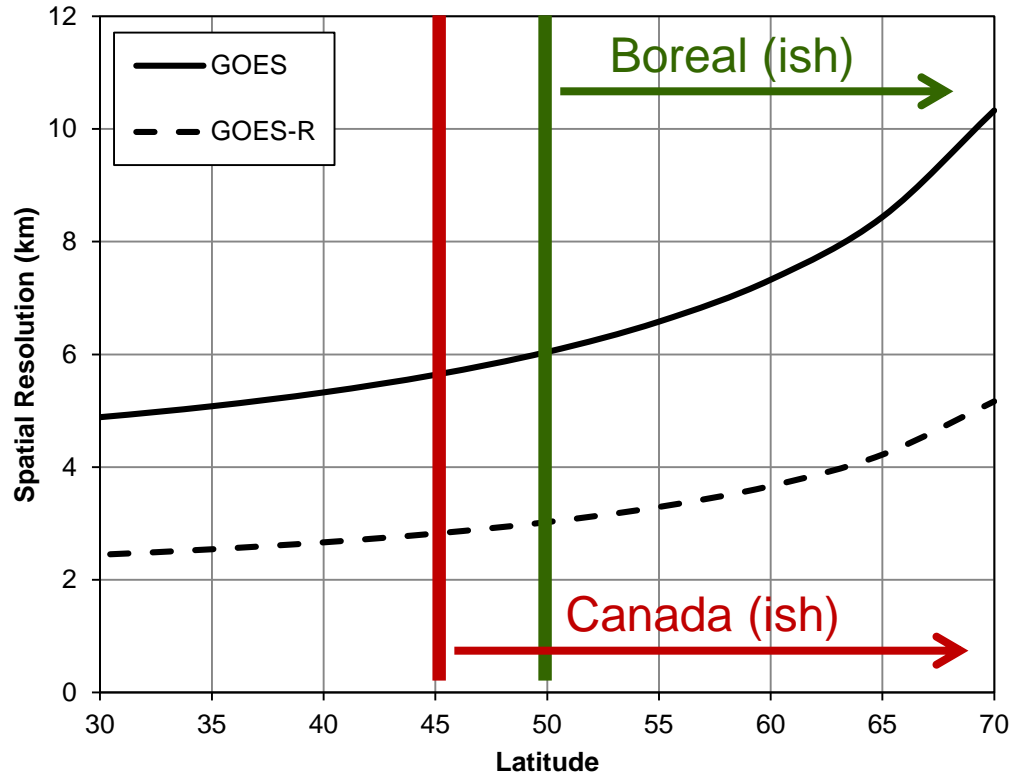
Whole of Canada, daily, available within 30 min



WildFireSat Team at CSA

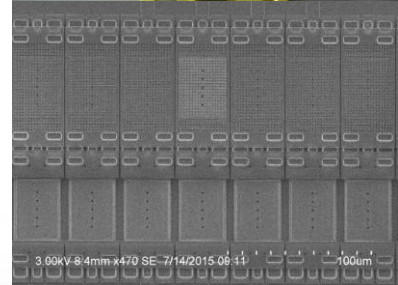
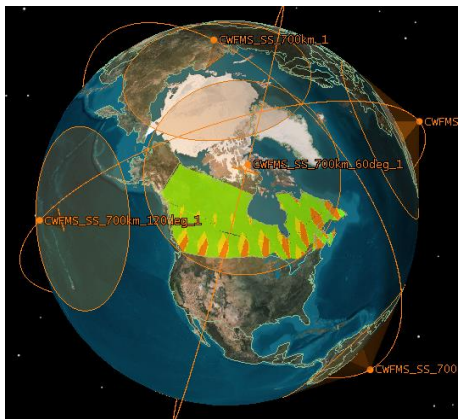


Limits of Geostationary Satellites



Enabling Instrument Technology

- Canadian **uncooled** infrared detector technology based on **microbolometer**;
- Less prone to saturation issues;
- Low accommodation resources (power, volume, mass);
- Enables the use in future constellations;
- Making frequent observations a possibility.

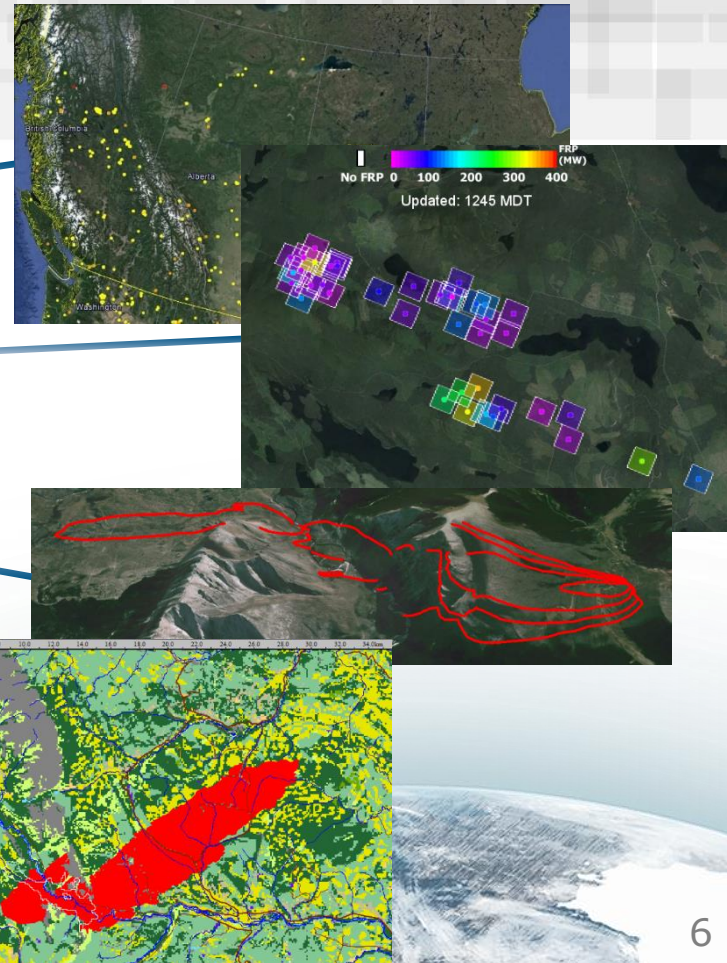


Capabilities on WildFireSat:

- VIS/NIR (200 m spatial resolution)
- MWIR/LWIR (400 m spatial resolution)
- Unsaturated imagery
- Detection capacity at 15 x 15 m fire

Products of actionable intelligence

- Hotspot Locations
- Fire Radiative Power (FRP)
- Rate of Spread (ROS)
- Burned Area Mapping
- Carbon emission data
- Air Quality data



WildFireSat will provide an: “Initial Operational Capability”



WildFireSat Schedule

Two parallel Phase A contracts awarded:

- Honeywell
- [MDA](#)

Present time

Approval
Process

Phase
A
Infrastructure Development

Space & Ground
Infrastructure Development

Operations & Applications
Development



2019
Start

Airborne Campaign

2024
Launch

2029
Termination

Call for Ideas
(maximizing the
science return for
WildFireSat)

EARSeL, Rome, 4 Oct 2019



Phase A activities

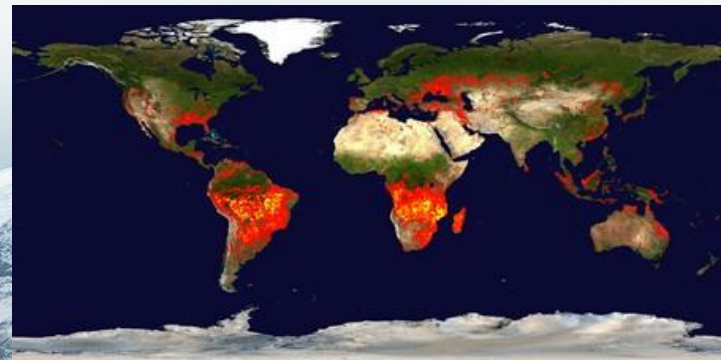
- Concept design
- System requirements definition
- Concept of Operations
- Science plan development
- Assess feasibility of ideas received through 'Call for Ideas'
- Baseline Area of Interest: Canada
- Assessment of resources required to expand to a global monitoring system
- **Exploration of potential collaborations**
 - Letters of Interest received from:
NASA, NOAA, USFS, South-Africa, FAO (UN)

MDA Industrial Team:

- MDA
- INO
- ABB
- Neptec
- SFL
- Euroconsult

Honeywell Industrial Team:

- Honeywell
- INO
- ABB
- NGC
- ITRES
- Urthecast
- SkyWatch



Contact Information

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An aerial photograph showing a large fire burning in a forest. Thick black smoke billows from the fire, filling the upper half of the frame. A helicopter is visible in the middle of the fire, likely dropping water or retardant. The foreground shows a dense forest of evergreen trees, with a body of water visible in the bottom left corner.

Thank you
Questions?