

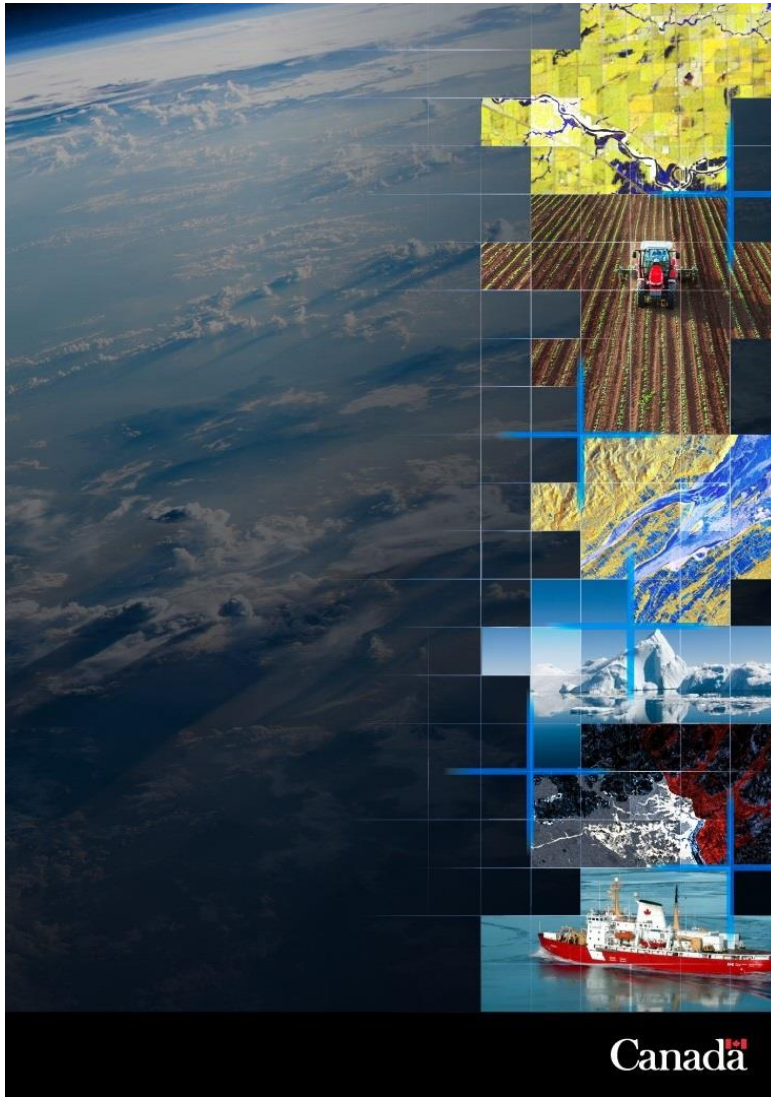
Status report on the current and future satellite systems by ECCCC/CSA

Presented to CGMS-53 plenary session, agenda item 3
Plenary Day 3



Executive summary

- With leadership from Environment and Climate Change Canada (ECCC), the Canadian Space Agency (CSA) and Natural Resources Canada (NRCan), Canada has continued to advance initiatives to address gaps in the up-, mid- and downstream sectors of the Satellite Earth Observation (SEO) value chain
- This presentation provides an update on plans and considerations related to five SEO missions in various stages of development: RADARSAT, WildFireSAT, High-altitude Aerosols Water vapour and Clouds (HAWC), the Arctic Observing Mission (AOM) and the Terrestrial Snow Mass Mission (TSMM)
- These five new and proposed missions are intended to address observation gaps for many geophysical variables, including sea ice, ocean winds, snow, fire, weather, greenhouse gasses, and air quality
- Development has begun on RADARSAT+, WildFireSAT, and HAWC, while TSMM and AOM are continuing preparations for resourcing



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RADARSAT

- The Government of Canada (GC) recently allocated \$1.012 billion to the Canadian Space Agency to support immediate and future satellite Earth observation (EO) data needs. This funding will be used to:
 - Design and develop a replenishment satellite for the RADARSAT Constellation Mission (RCM)
 - Design a next-generation satellite system to succeed the RCM;
- As part of this next generation of work, the GC is exploring multiple avenues to ensure continuity of services.
- Recent advancements:
 - On-going collaboration with other Canadian government departments to assess their needs.



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WildFireSat (WFS)



- The objectives of the WFS mission are to provide:
 - Reliable fire products with the required accuracy **within 30 min.** of data acquisition in support of wildland fire management and research
 - Smoke and air quality forecasts, and emissions estimates, in support of international requirements for carbon reporting
 - Data integration with existing and new tools for wildfire management, carbon reporting, smoke and air quality reporting
- Recent advancements include:
 - Contract for the design of the WFS awarded in early 2025;
 - Continued close collaboration with other government departments.

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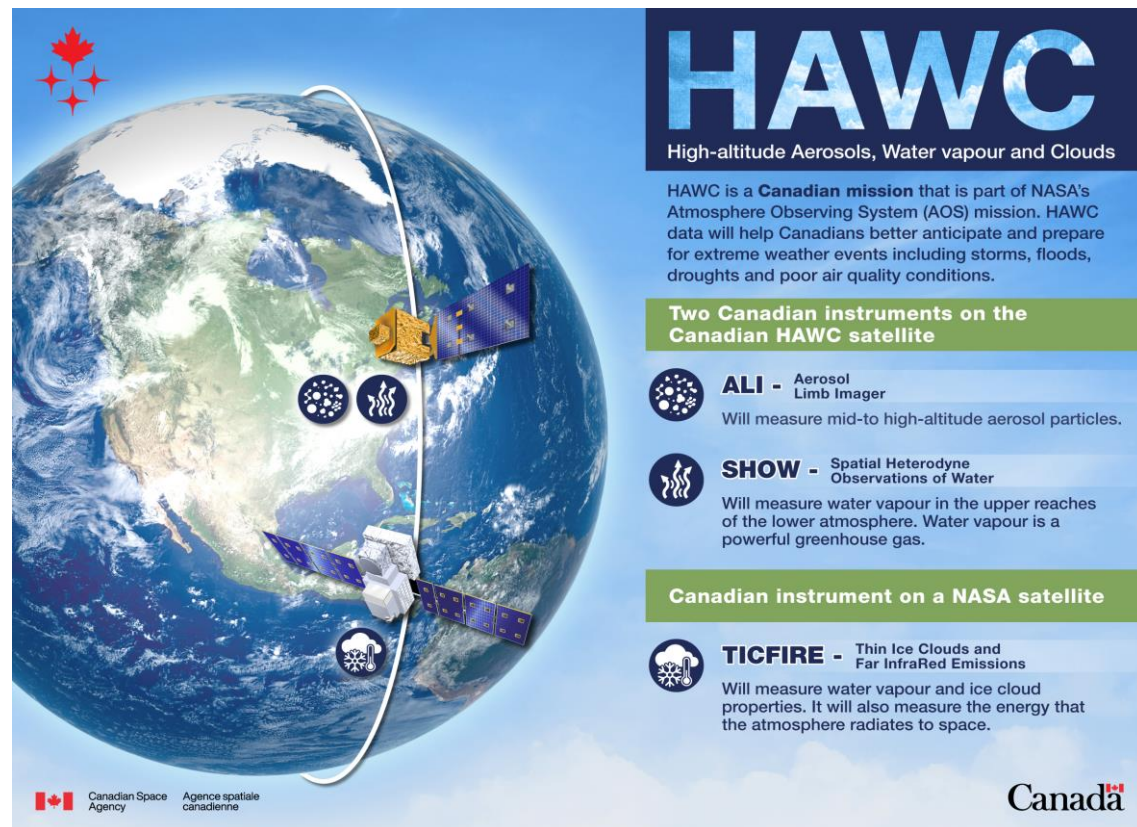
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High-Altitude Aerosols, Water Vapour and Clouds (HAWC)



- HAWC will help Canada improve its:
 - Climate modelling in a changing atmosphere;
 - Extreme weather event prediction;
 - Air quality modeling;
 - Resilience in adapting to climate change.
- HAWC consists of three components:
 - TICFIRE instrument -> hosted on a NASA satellite;
 - Canadian satellite (HAWCSat) hosting two unique Canadian instruments (ALI and SHOW);
 - Science & Applications (14 Universities/ECCC/NRC)
- Recent advancements include:
 - Request for proposals issued in March 2025 for the TICFIRE instrument Phase A studies. Contract award expected July at the earliest;
 - Contract awarded in February 2025 for the development of concept designs for the Canadian satellite and the ALI instrument;
 - Announcement of research opportunities related to HAWC communicated in May 2025.

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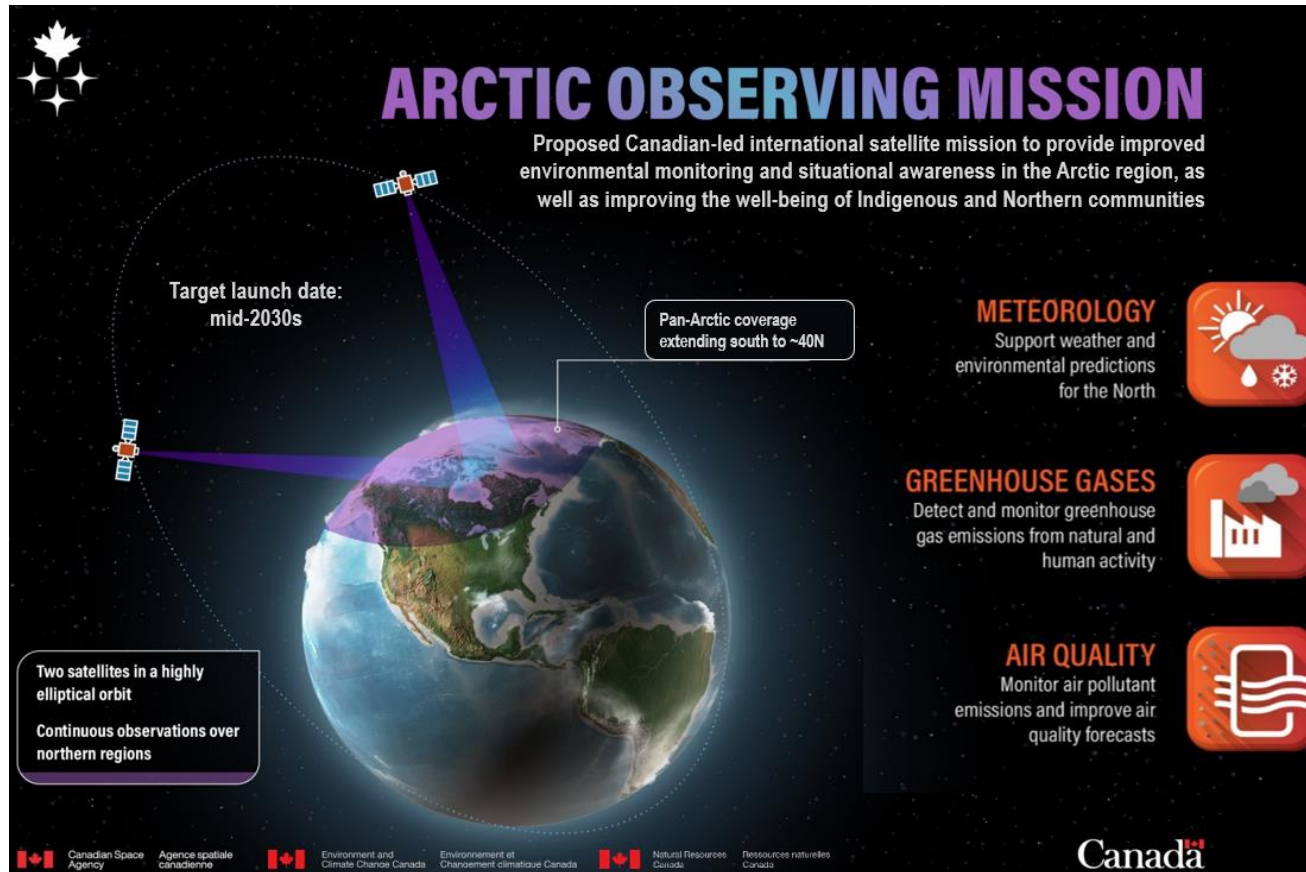
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Arctic Observing Mission (AOM)

Envisioned as a Canadian-led international partnership, AOM's International Expert Team includes members from NOAA, NASA, and EUMETSAT

Recent advancements include:

- Pre-formulation study, concluding with a detailed, fully-costed Business Case in 2025;
- Socio-Economic Benefit Study completed in 2023;
- Mission Design Contract completed March 2025;
- S&T development studies ongoing



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Terrestrial SNOW MASS Mission

Would be the first and only satellite EO mission to *continuously* monitor snow nationally and globally ... because water availability and security matters to Canadians everywhere

- If fully funded, benefits would include:
 - Positioning Canada to address freshwater security, trans-boundary watershed management, and meeting clean energy regulations;
 - Being the first space-based mapping of the amount of water stored in solid form by snow at 500 m resolution, across all of Canada (updated daily) and Northern Europe and Eurasia
- Recent advancements include:
 - Field campaign in Alberta, Canada completed
 - AO for ideas on science and applications opportunities completed
 - Mission technical concept defined by industry



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Key issues of relevance to CGMS:

- Canada is continuing to work to address key observation gaps of the Earth system, especially over Northern regions, and to contribute to the international pool of satellite data which enables the world-class science and operations needed to protect populations from the impacts of climate change
- Development on the, RADARSAT, WildFireSAT, and HAWC missions has begun and progressing on schedule
- ECCC has identified the proposed TSMM and AOM projects as high-priority SEO initiatives and continues to work with the CSA and other partners to advance these mission concepts
- Canada thanks its current and prospective partners for their inputs to the development of these missions to date and will continue to strengthen those relationships to maximize the value of our missions for the global community