Satellites Hosted at the Inuvik Satellite Station Facility (ISSF)

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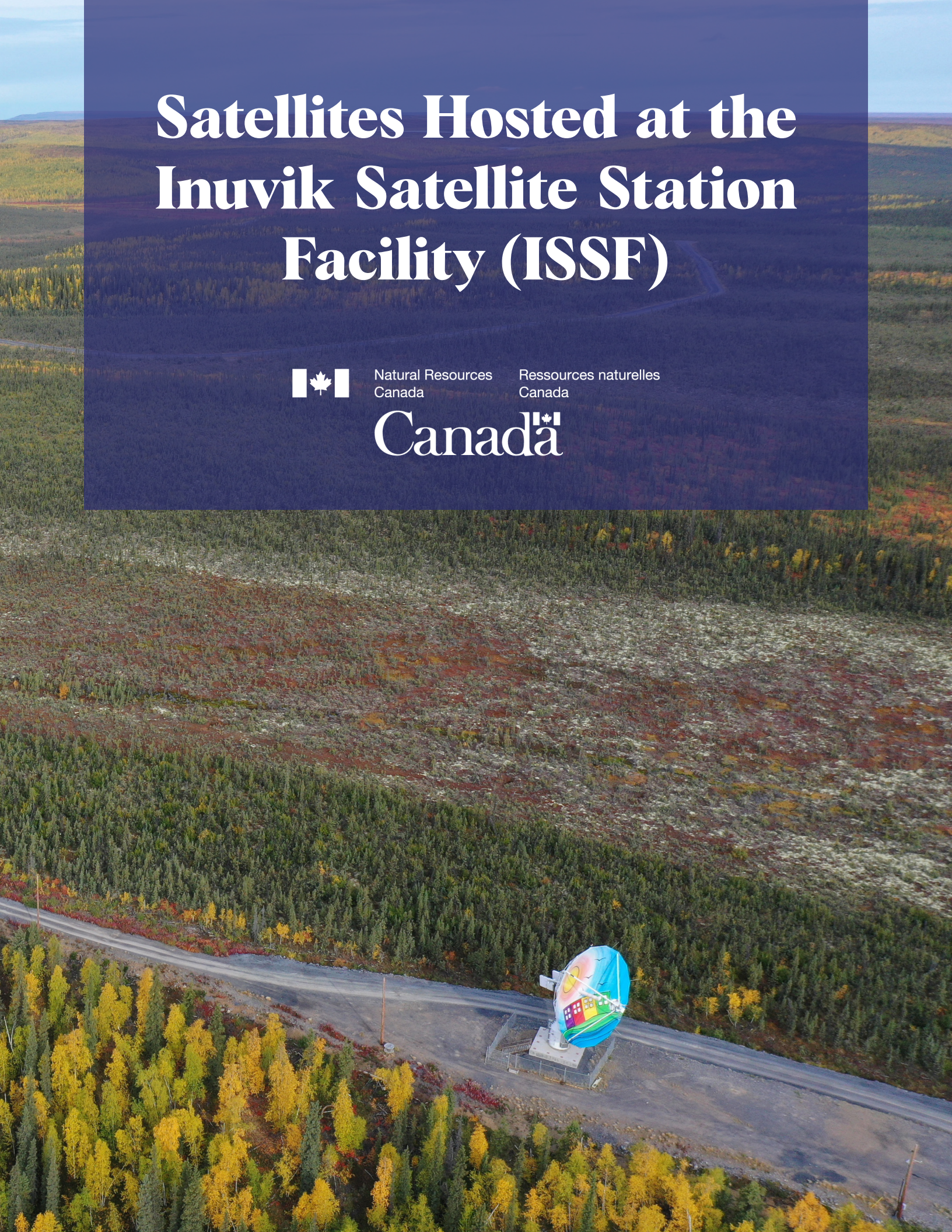

Inuvik Satellite Station Facility

Station-relais pour satellites d'Inuvik

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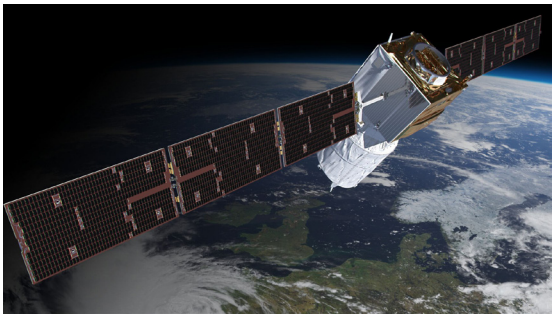

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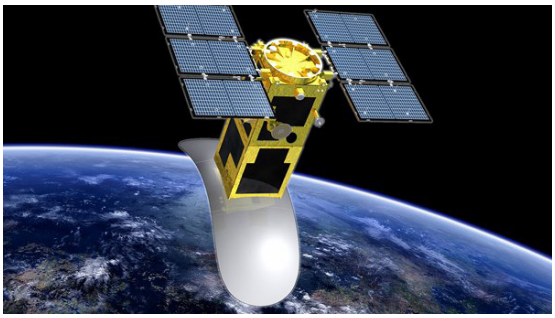
AEOLUS

The first satellite mission to acquire profiles of Earth's wind on a global scale. Near-real-time observations will improve accuracy of numerical weather and climate prediction.
The Aeolus satellite carries just one large instrument – a Doppler wind Lidar called Aladin that will probe the lowermost 30 km of the atmosphere to measure the winds sweeping around our planet.



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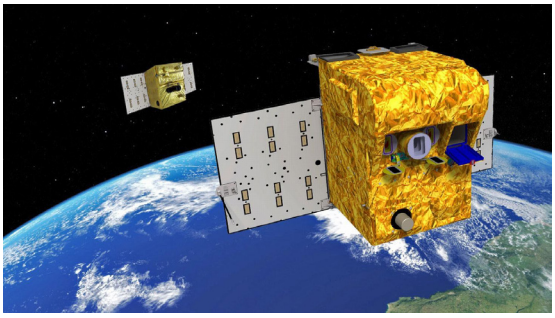
ASNARO

A Japanese satellite project with overall aim to develop a next-generation small-satellite bus with high-performance characteristics and flexibility to be able to support a number of payloads.

- ASNARO-1: high-resolution optical imaging delivering resolution of under 0.5 metres
- ASNARO-2: X-Band radar payload
- ASNARO-3: hyperspectral sensor



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BIROS

The BIROS satellite (Bispectral Infrared Optical System) is the second of the FireBIRD satellites, featuring cold gas propulsion for maneuvers in orbit, laser communication system (1 GB/s), and High Torque Wheels to allow the IR camera to be quickly repositioned, enhancing fire detection.
Onboard pico-satellite launcher – BEESAT-4 launched into formation flight, communicating with BIROS via inter-satellite link.

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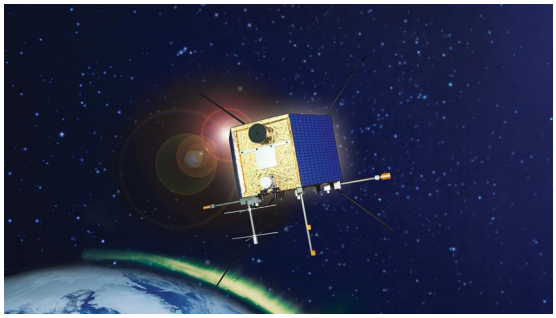
CALIPSO

This minisatellite (Cloud Aerosol Lidar and Infrared Pathfinder Satellite Observations) has been analysing clouds and aerosols since 2006 to better understand their role in shaping climate.

- Equipped with Lidar and telescope (Lidar is an instrument able to locate and analyse objects by bouncing a laser beam off them), a camera, and an infrared imager



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CASSIOPE

A three-part mission:

- Courier in the sky service – world's first space-based digital courier service
- Enhanced Polar Outflow Probe – eight instruments to measure interaction of Earth's upper atmosphere with the solar wind
- Testbed for a Canadian spacecraft bus and subsystem

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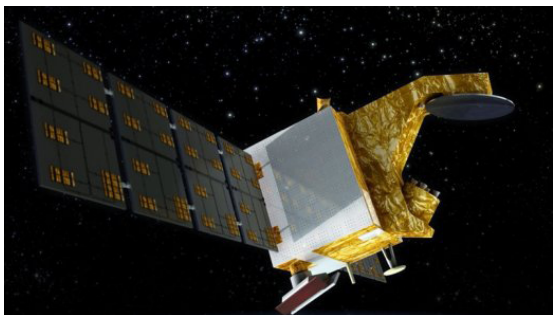
CERES

CapacitÉ de Renseignement Électromagnétique Spatiale, will gather signals intelligence from areas that surface sensors cannot reach, free from airspace overflight constraints, in all weather, providing an in-depth situational picture to support conception and execution of military operations.

Three identical satellites were launched in 2021.



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CFOSAT

CFOSAT (China-France Oceanography SATellite) studies ocean surface winds and waves to enable more reliable sea-state forecasts and yield new insights into ocean-atmosphere interactions. This satellite carries two radar instruments:

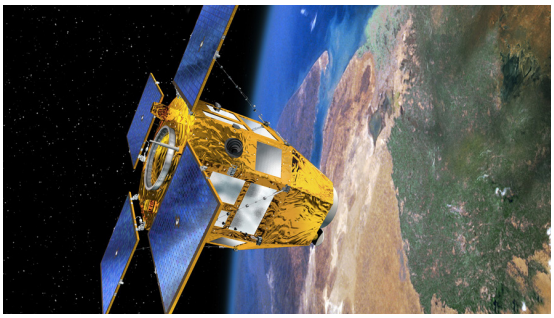
- A wave scatterometer, enabling measurement of wave properties (direction, wavelength, etc.)
- A wind-field scatterometer, measuring wind intensity and direction

© European Space Agency

CRYOSAT-2

CryoSat-2 is equipped with highly accurate radar used to measure the thickness of ice. It's twin radar system with two onboard radar receivers allows a 3D view of the ice to be built up.

CryoSat sends short radar pulses to the Earth. By combining the amount of time it takes the signal to bounce back and the satellite's exact position, the height and thickness of the ice can be determined to the nearest centimetre.



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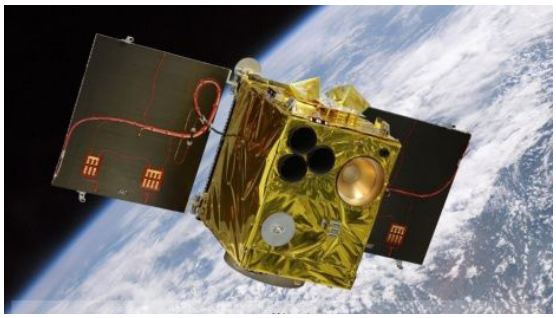
CSO MUSES

The multinational Space-based Imaging System are reconnaissance sensors for the French military forces and their partners.
Comprising of three optical polar-orbiting satellites at different altitudes to fulfil a dual mission:

- A reconnaissance mission at 800 km
- An identification mission at 480 km



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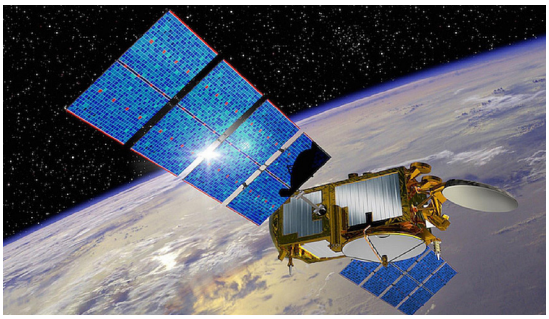
FLYING LAPTOP

The primary mission objective is to demonstrate and qualify new small-satellite technologies for follow-up missions. Hosting OSIRISv1, a laser communications experiment, Flying Laptop has been able to achieve a 200Mbit/s downlink. The satellite also carries the DOM2500, a de-orbit mechanism consisting of a sail to increase drag and induce de-orbit when the mission is complete.



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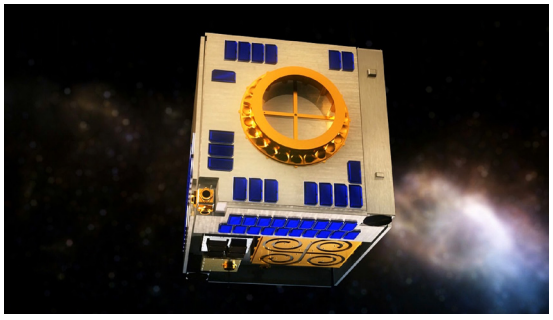
JASON 1, 2, 3

The chief objective of the Jason mission initiated by CNES and NASA is to measure sea-surface height and surface wind speed in real-time, in order to monitor and forecast ocean variations. Launched in 2001, 2008, and 2016.

- Used to monitor the oceans in real-time, generate marine meteorology bulletins and compile navigation charts for shipping
- Helps climatologists learn more about climate mechanisms, in which the oceans are known to play a major role



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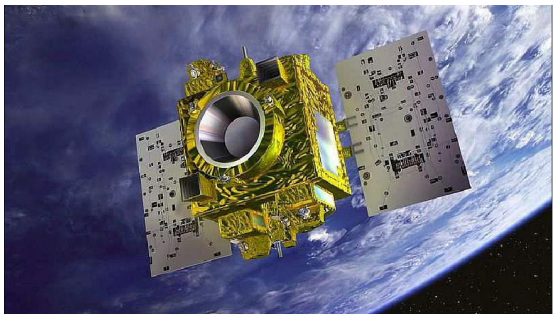
M3 MSAT

Maritime Monitoring and Messaging Microsatellite tests innovative technologies in space before they're deployed on full-scale missions. M3 MSAT is improving Canada's space-based capabilities to detect ships and manage marine traffic, in anticipation for deployment on the Radarsat Constellation Mission.



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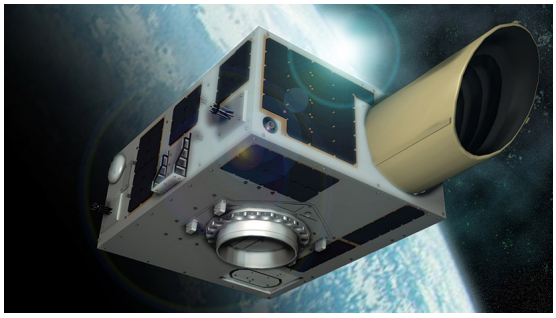
MICROSCOPE

This microsatellite tests the universality of free fall for the first time in space using an experiment 100 times more precise than anything on Earth.

- In space, it is possible to study the relative motion of two bodies in almost perfect and permanent free fall on an orbiting satellite, shielded from perturbations encountered on Earth (notably seismic perturbations), over the course of several months



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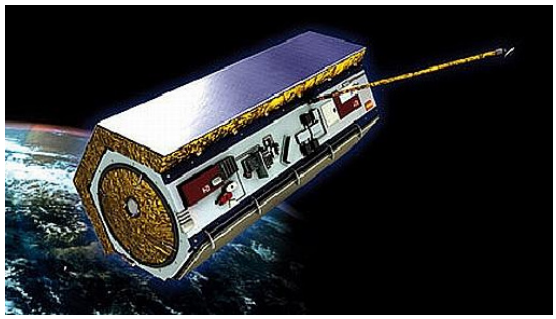
NEOSSAT

This satellite searches for near-Earth asteroids that are difficult to spot using ground-based telescopes, as in orbit it is not limited to the day/night cycle.
NEOSSAT also monitors orbiting space objects to help minimize collisions between them by keeping track of the positions of both satellite and “space junk” as part of the High Earth Orbit Surveillance System.



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PAZ

PAZ (“peace” in Spanish) is an X-band SAR (Synthetic Aperture Radar) dual-use mission (civil/defense) of Spain based on the TerraSAR-X platform, to serve security and defense needs.

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PLEIADES

Pleiades 1A and 1B have been observing and mapping Earth’s surface at a resolution of just 70 cm every day since December 2011.
This satellite’s key asset is an instrument that reduces the exposure time needed for each image, giving each satellite the ability to acquire up to 500 images a day.

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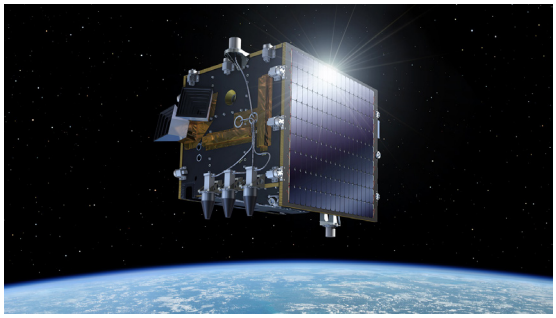

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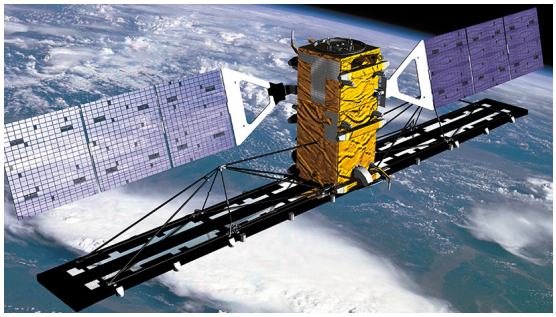
PROBA V

V for Vegetation – PROBA V provides almost daily global observations of continental surfaces at a resolution of 1.15 km on a swath of ~2200 km.

- General land use/vegetation cover and its changes
- Vegetation behavior to strong meteorological events/ climate changes
- Disaster management (detection of fires and surface water bodies – floods)
- Biophysical parameters for model input devoted to water budgets and primary productivity



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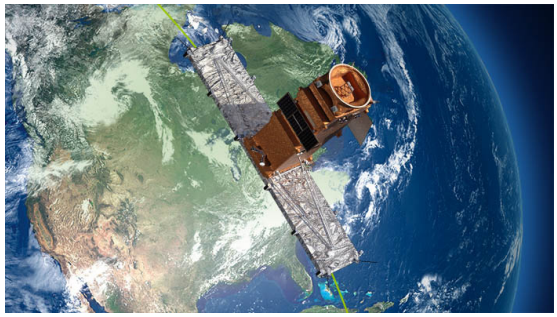
RADARSAT-2

For managing natural resources and monitoring the environment, RADARSAT-2 is an indispensable tool. Used worldwide by scientific and commercial users in agriculture, cartography, hydrology, forestry, oceanography, and ice studies. RADARSAT products also provide valuable information for major application areas in costal and marine surveillance, and security and foreign policy.



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RCM

The Radarsat Constellation Mission features three identical spacecraft designed for three main uses:

- Maritime surveillance (ice, surface wind, oil pollution, and ship monitoring) through AIS
- Disaster management (mitigation, warning, response, and recovery
- Ecosystem monitoring (agriculture, wetlands, forestry, and costal change monitoring)

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SARAL ALTIKA

A joint French Indian project that carries two independent instruments – Argos-3 and AltiKa

- Argos-3 collects environmental data from any “platform” equipped with an Argos transmitter, from drifting buoys to turtles or birds
- AltiKa measures ocean surface topography using a very high electromagnetic wave frequency – the Ka band. It penetrates less deeply into snow and ice, thereby enabling collection of information about their surface levels

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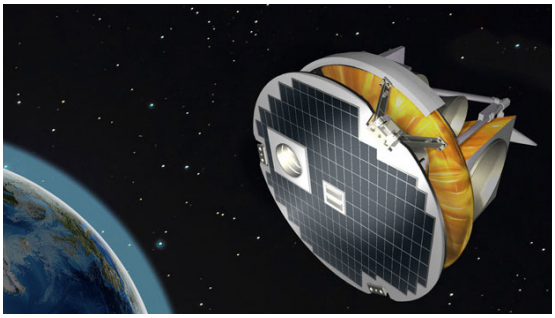

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SCISAT

SCISAT helps a team of Canadian and international scientists improve their understanding of the depletion of the ozone layer, with a special emphasis in the changes occurring over Canada and in the Arctic.

Originally intended to last two years, 20 years later the satellite is still operational, and its mission has been extended through 2024.

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SENTINEL 1, 2, 3

Sentinel satellites serve the European Commission's Copernicus program (which responds to the requirements for operational and near-real-time monitoring of ocean, land, and ice surfaces over a period of 20 years). Sentinel-3 mission is designed as a constellation of two identical polar orbiting satellites, separated by 180°, for provision of long-term operational marine and land monitoring services.

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SENTINEL-5P

A precursor satellite mission, Sentinel-5P aims to fill in the data gap and provide data continuity between the retirement of the Envisat satellite and NASA's Aura mission and the launch of Sentinel-5. The mission will perform atmospheric monitoring and was launched in October 2017.

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SMOS

Designed to map soil moisture and ocean salinity through the measurement of microwave radiation emitted from Earth's surface at a frequency that is highly sensitive to water content. This data provides precious insight for meteorologists, hydrologists, and climatologists.

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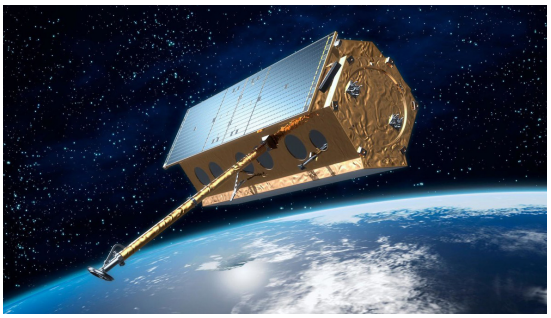
TanDEM-X

Its two SAR antennas make TanDEM-X the first ever system capable of generating a three-dimensional elevation model of the entire Earth's surface. Together with the TerraSAR-X, the two satellites are equipped with devices to synchronize the two radar instruments. As the two satellites fly in formation, the second radar sensor will permit generation of a global digital elevation model with a vertical resolution of two metres.



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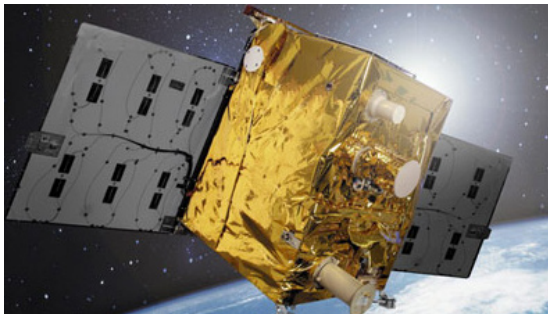
TerraSAR-X

This satellite deploys a multi-mode and high-resolution X-band Synthetic Aperture Radar for a wide spectrum of scientific applications in such fields as: hydrology, geology, climatology, oceanography, environmental and disaster monitoring, and cartography (Digital Elevation Model generation), making use of interferometry and stereometry.



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TET-1

Two missions:

- Carry out 11 experiments as part of the OOV programme (On-Orbit Verification of new techniques and technologies)
- Deploy FireBIRD: TET-1's main payload – a high-performance infrared camera system known as the Hot Spot Recognition System, successfully used prior to the launch of BIROS as a forest fire detector

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