Canadian Space Agency

Sylvain Laporte – President

Mandate & Objectives

Mandate

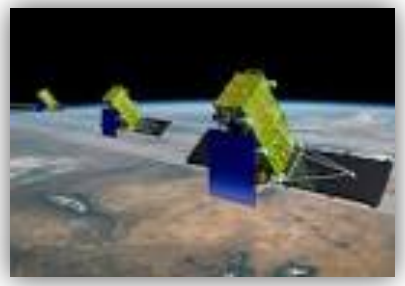
Promote the peaceful use and development of space, to advance the knowledge of space through science and to ensure that space science and technology provide social and economic benefits for Canadians

Departmental Results

Space research and development advances science and technology	Canadians engage with space	Space information and technologies improve the lives of Canadians	Canada's investments in space benefit the Canadian economy

Key Activities

Exploration **–** Leads Canada's participation in the International Space Station (ISS), planetary exploration missions and astronomy missions



Satellites **–** Leads the implementation of the earth observation/science satellites to ensure GoC needs are met for high quality space data, applications and services essential for the provision of services to Canadians

Technology Development **–** Advances science through technology development

Awareness and Inspiration **–** Engages and inspires Canadian youth to learn more about science, technology, engineering and math

Space Exploration Sciences

Planetary Sciences

How did the solar system form?
How has it evolved? What are the origins and limits of life? Is there life elsewhere in the solar system?

Space Astronomy

Where did the Universe come from?
How did it all form? How does it all work? Are we alone in the Universe?

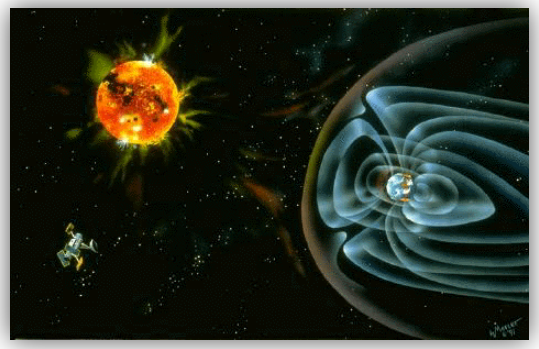
Human Exploration

What are the health risks associated with space flight? How can we mitigate or eliminate these risks?

Human Exploration

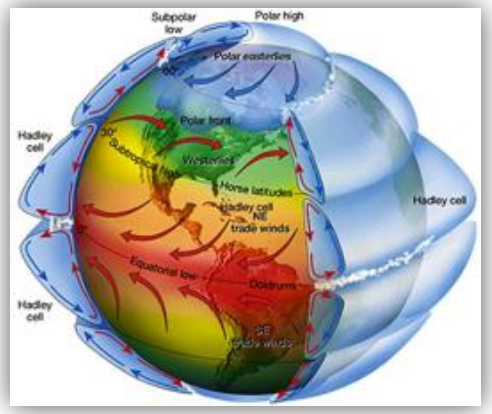
Space Astronomy and Planetary Sciences

Earth System Sciences



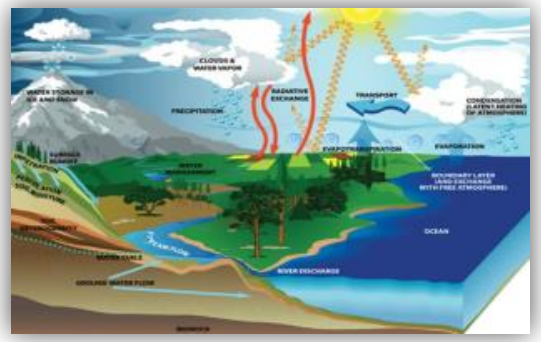
Solar-Terrestrial

Earth's magnetic shield protects life and technology from solar storms



Atmosphere

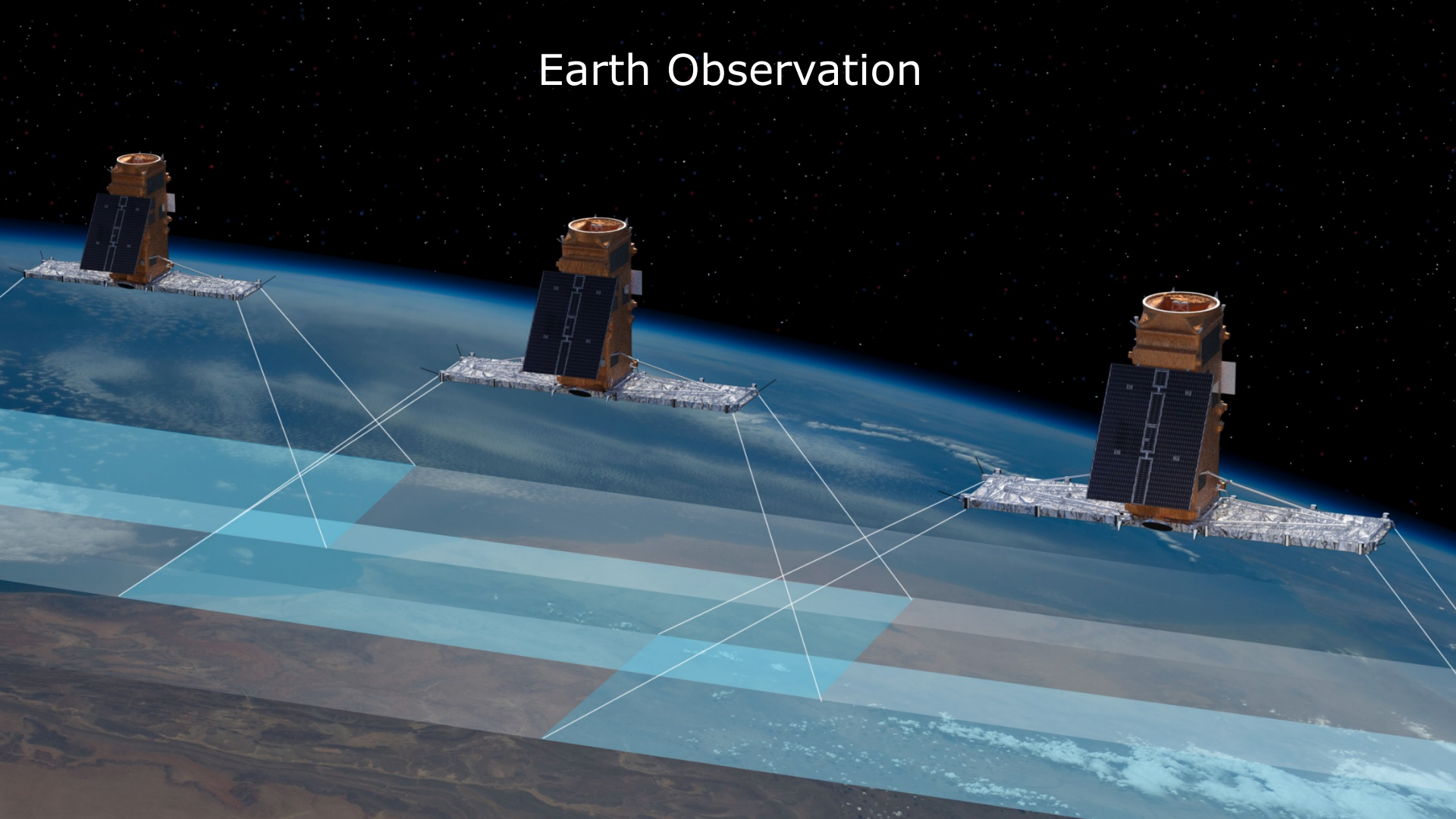
Earth's atmosphere absorbs deadly UV radiation (ozone layer), breaks down air pollution, and redistributes water and warmth.



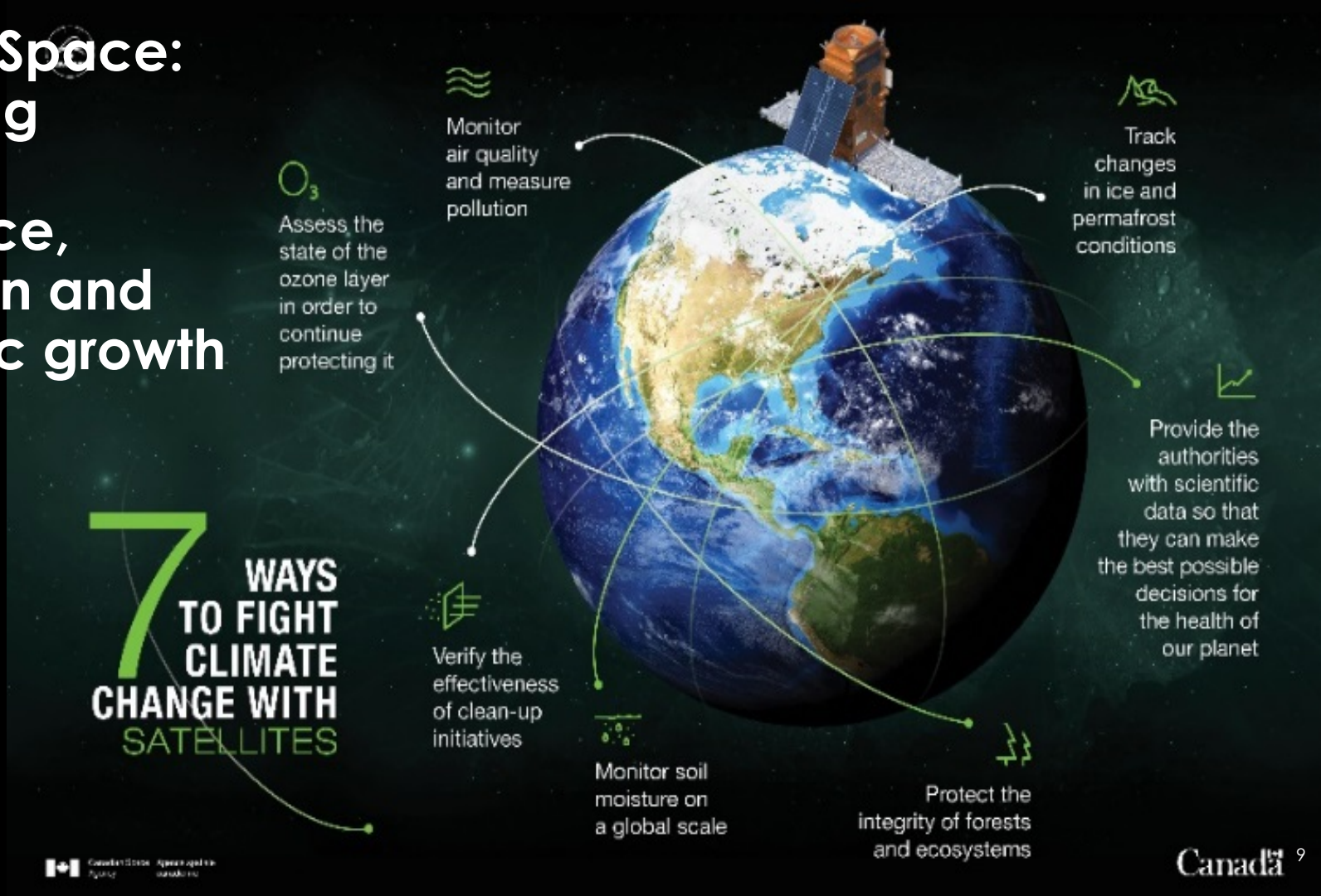
Earth (Surface) System

Interactions between the atmosphere and Earth surface (land, oceans, waters, ice & snow)

Earth Observation

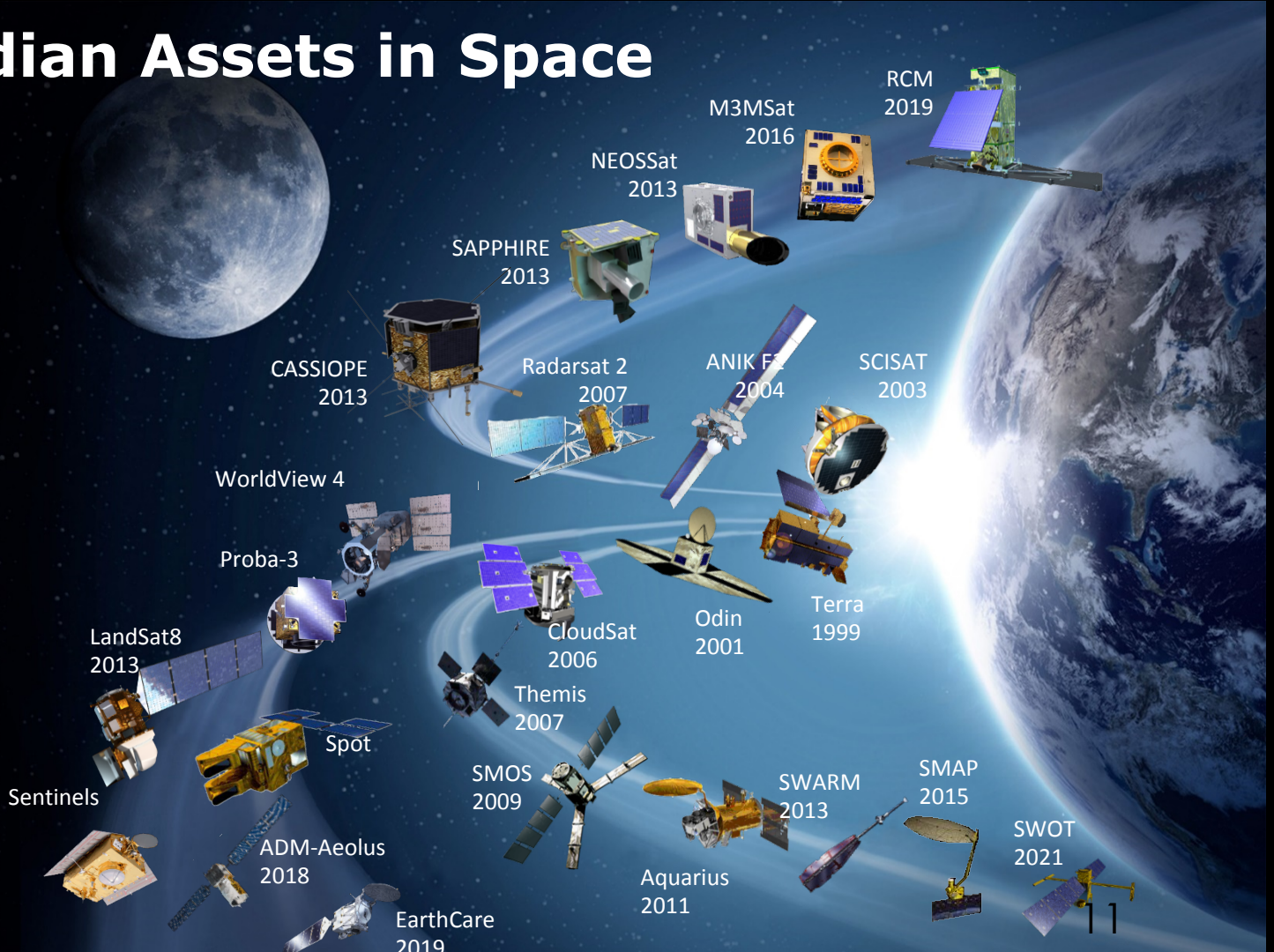


Future of Space: Supporting scientific excellence, innovation and economic growth



Supporting Key Government Operations

Canadian Assets in Space



Canadian Missions

Contributing International Missions

International Missions Canadian Participation

Canada's Space Strategy – A Snapshot

ENSURE CANADA REMAINS A LEADING SPACEFARING NATION BY JOINING THE LUNAR GATEWAY MISSION

INSPIRE THE NEXT GENERATION OF CANADIANS TO REACH FOR THE STARS

HARNESS SPACE TO SOLVE EVERYDAY CHALLENGES FOR CANADIANS

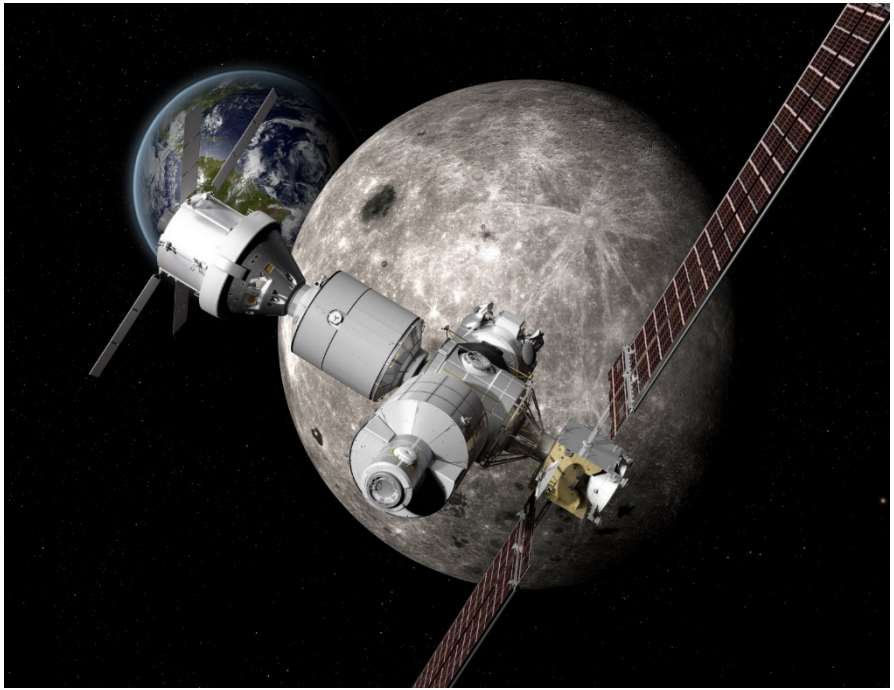
POSITION CANADA'S COMMERCIAL SPACE SECTOR TO HELP GROW THE ECONOMY AND CREATE THE JOBS OF THE FUTURE

ENSURE CANADA'S LEADERSHIP IN ACQUIRING AND USING SPACE-BASED DATA TO SUPPORT SCIENCE EXCELLENCE, INNOVATION AND ECONOMIC GROWTH

Canada's New Lunar Program

"Canada is going to the Moon" – The Rt. Hon. Justin Trudeau, Prime Minister of Canada

- Canada is joining the **NASA-led Lunar Gateway**.
- Canada will contribute a smart robotic system – **Canadarm3** – powered by AI, it will help maintain, repair, and inspect the Gateway.
- CSA is also launching the **Lunar Exploration Accelerator Program (LEAP)** to help firms develop and demonstrate space technologies



Inspiring next generation of Canadians

Getting young Canadians excited about careers in science, technology, engineering, and mathematics

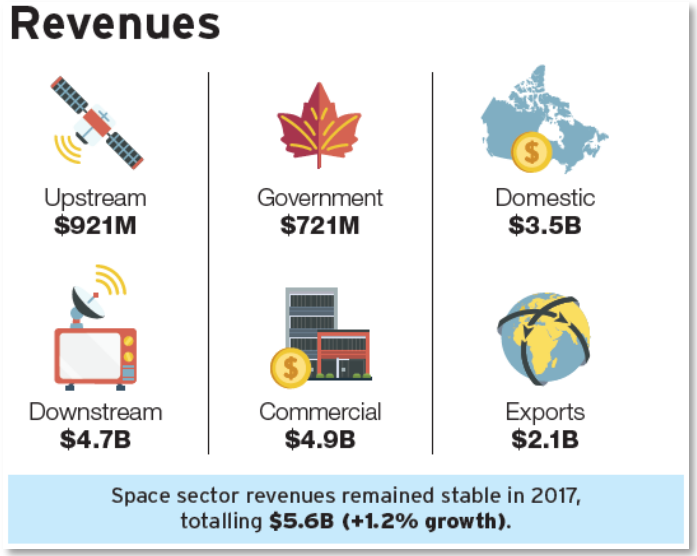
Harness space to solve everyday challenges

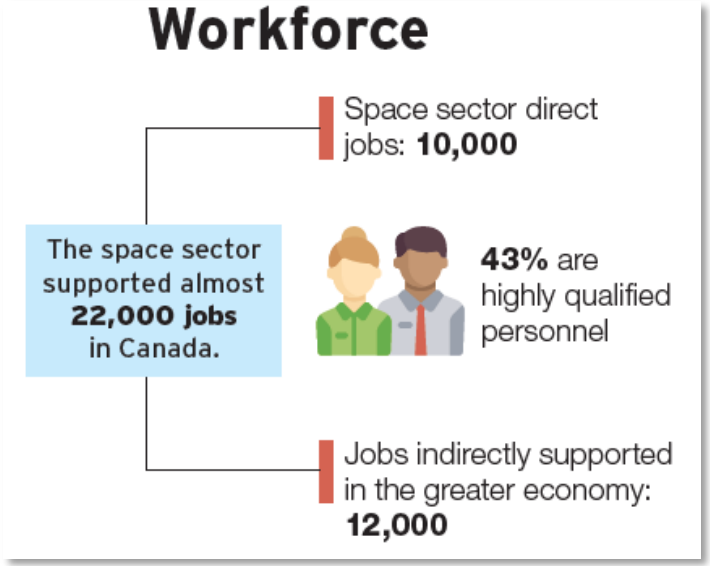
Improving remote medicine and health care by applying lessons learned from Space Medicine

- Keeping astronauts healthy in deep space has many direct applications on Earth, especially for remote communities:
  - monitoring vital signs
  - preventing illnesses
  - performing diagnostics, and
  - delivering medical care over great distances

Positioning Canadian Industry for Success

Canada will pursue regulatory reform, market access and efforts to scale up firms, and maintain a domestic industrial base that can meet Canada's future space needs





Supporting scientific excellence, innovation and economic growth

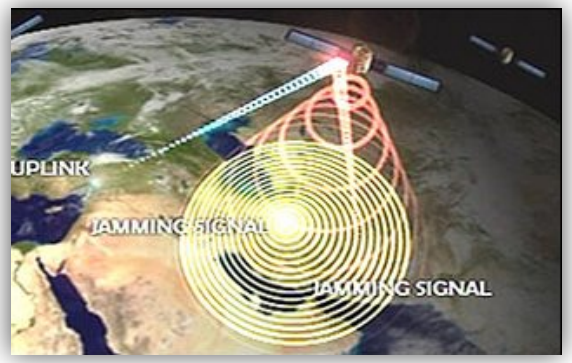
- Canada's next-generation Earth observation satellite system, the Radarsat Constellation Mission (RCM), will provide critical data continuity over Canada's territory and maritime approaches.

- Open data, Open Science:
  - Enabling scientific analysis of the data available with regards to climate change

RADARSAT Constellation Mission (RCM)
It is anticipated that GoC user departments will use approximately 250,000 RCM images annually – representing many terabytes of data – and up from the 40,000 images that RADARSAT2 currently provides annually.

The Changing Global Space Context

Congested-Contested-Competitive



CSA's Impact

- Business Expenditure on R&D (BERD) expanded to **$363M in 2017**, a **43% increase** from the previous year.
- R&D intensity for Manufacturing in the Space Sector was **10 times higher** than the average of manufacturing in Canada.
- Canadian space companies derived **$330M** in revenues through the commercialization of externally funded R&D projects, a **169% growth** from 2016.
- Space sector organizations reported a total of **203 inventions** and **118 patents.**
- In 2018, we engaged with over **2 million people** in Canada and throughout the world

Future of Performance Measurement: Beyond our World

Canadian Space Agency

Agence spatiale canadienne