



**UN-GGIM:Americas**  
REGIONAL COMMITTEE OF UNITED NATIONS  
ON GLOBAL GEOSPATIAL INFORMATION  
MANAGEMENT FOR THE AMERICAS

# 9° SESSION

## UN-GGIM: Americas

**From building spatial infrastructures to addressing policy priorities for decision-making... Canadian perspective**

**Canada Centre for Mapping and Earth Observation, Natural Resources Canada**

Session 8: Strategic Framework for Geospatial Information and Services for Disasters



**Natural Resources  
Canada**

**Ressources naturelles  
Canada**

November 28, 29 and 30  
Santiago de Chile, ECLAC

# Context

- Canada has been at the leading edge of innovation and use of geospatial technologies
- Vast geography and resource potential: location-based information becoming increasingly important in national discourse
- Increasing need and value of robust geospatial information: Geopolitical conditions, climate change, COVID-19
- Government priorities: emergency management, climate change adaptation, sustainable development
- New technologies, business models, rise of citizen data providers, and social media changed how we create and share geospatial information

The slide features a white background with decorative elements. In the top right corner, there are overlapping geometric shapes in blue and green. In the bottom left corner, there is a red shape. The main text is centered on the page.

# What are Canada's priorities

GOVERNMENT MANDATES | GEOSPATIAL WORK

# Protect homes and communities from the impacts of climate change by



Completing work with provinces and territories to develop flood maps for **higher-risk** areas



Advancing work to complete flood mapping **nation-wide**



Supporting the development of a portal to provide **centralized access to information** on flood risks



Flood Hazard Identification and Mapping Program (FHIMP)

# Make our communities safe and increase forest resilience to wildfire



Invest in measures to reduce risks from wildfire and supporting fire management by Indigenous communities



Deliver and operate a new wildfire monitoring satellite system

Canadian Wildland Fire Strategy



# Build on the foundation of the Disaster Mitigation and Adaptation Fund ...emphasis on communities most at risk

## Canada's National Adaptation Strategy

Disaster resilience

Economy

Health & Wellbeing

Natural environment

Infrastructure



Enabling disaster response and emergency management by bringing together geospatial data from across Canadian jurisdictions so that it can be leveraged quickly to support policy decisions and fast response

# Create a future where Canada's Northern and Arctic residents, especially Indigenous Peoples, are thriving, strong and safe

**Canada's Arctic and Northern Policy Framework:** Shared vision and roadmap, guiding investments and activities through 2030.

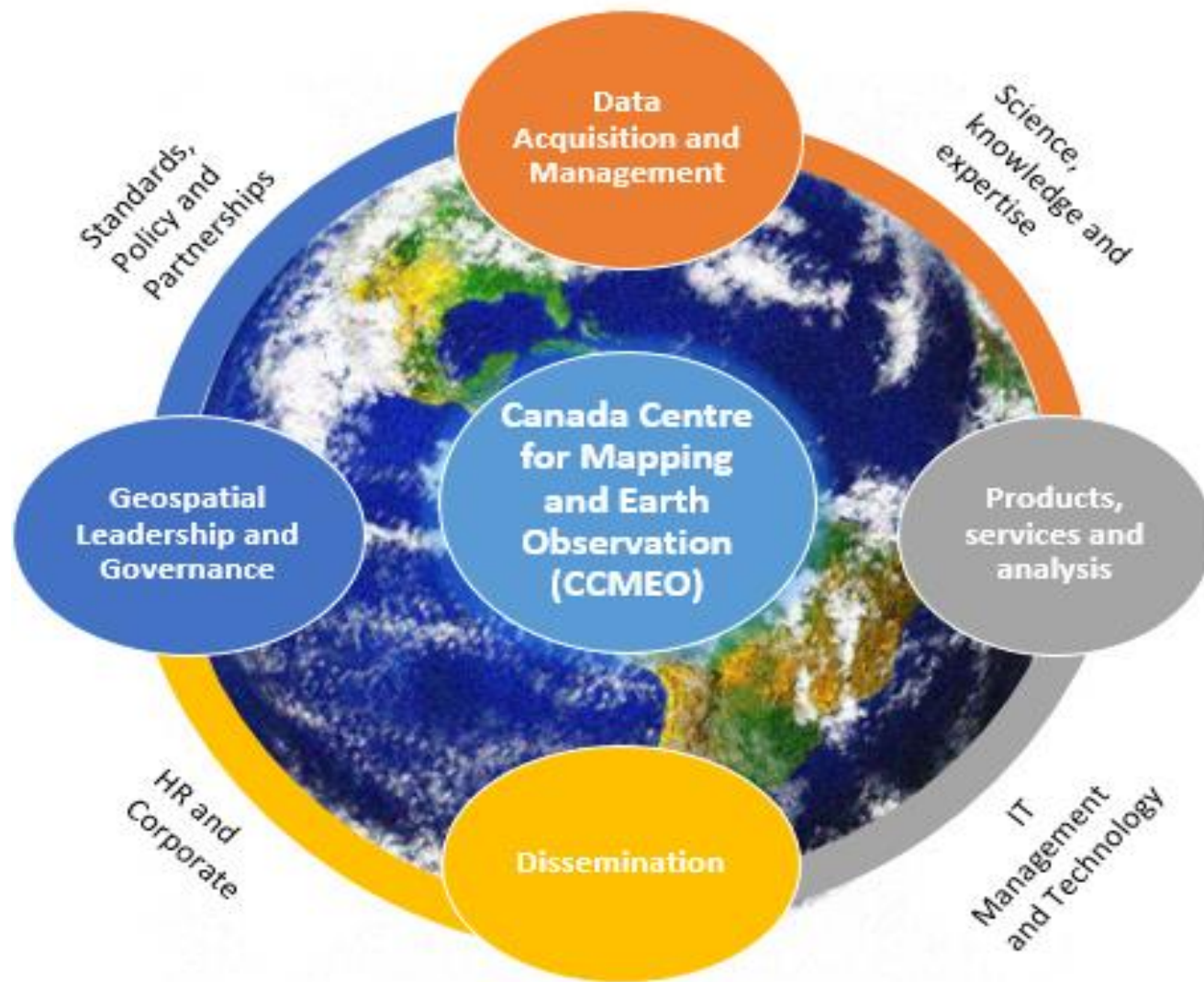


**Blue Economy Strategy:** Build Ocean spatial frameworks similar to land (e.g. cadastre, 3D interoperability, service driven architecture). Connect the land and marine domains.

**Arctic Spatial Data Infrastructure:** Operational sharing and integration of Arctic data between nations and organisations. Broker land and marine data, three million circumpolar place names, maps, geoportal supporting Arctic Council's and stakeholders' decision making.



**GeoConnections Program** advancing the Canadian Geospatial Data Infrastructure towards supporting the development of geospatial standards to help meet the government's policy priorities such as climate change, marine sovereignty and the Arctic.



**Workflow:** Data acquisition and management, Products services and analysis, Dissemination, Geospatial leadership and governance

**Enabling functions:** Science, knowledge and expertise, IT management and technology, HR and corporate, Standards, policy and partnerships





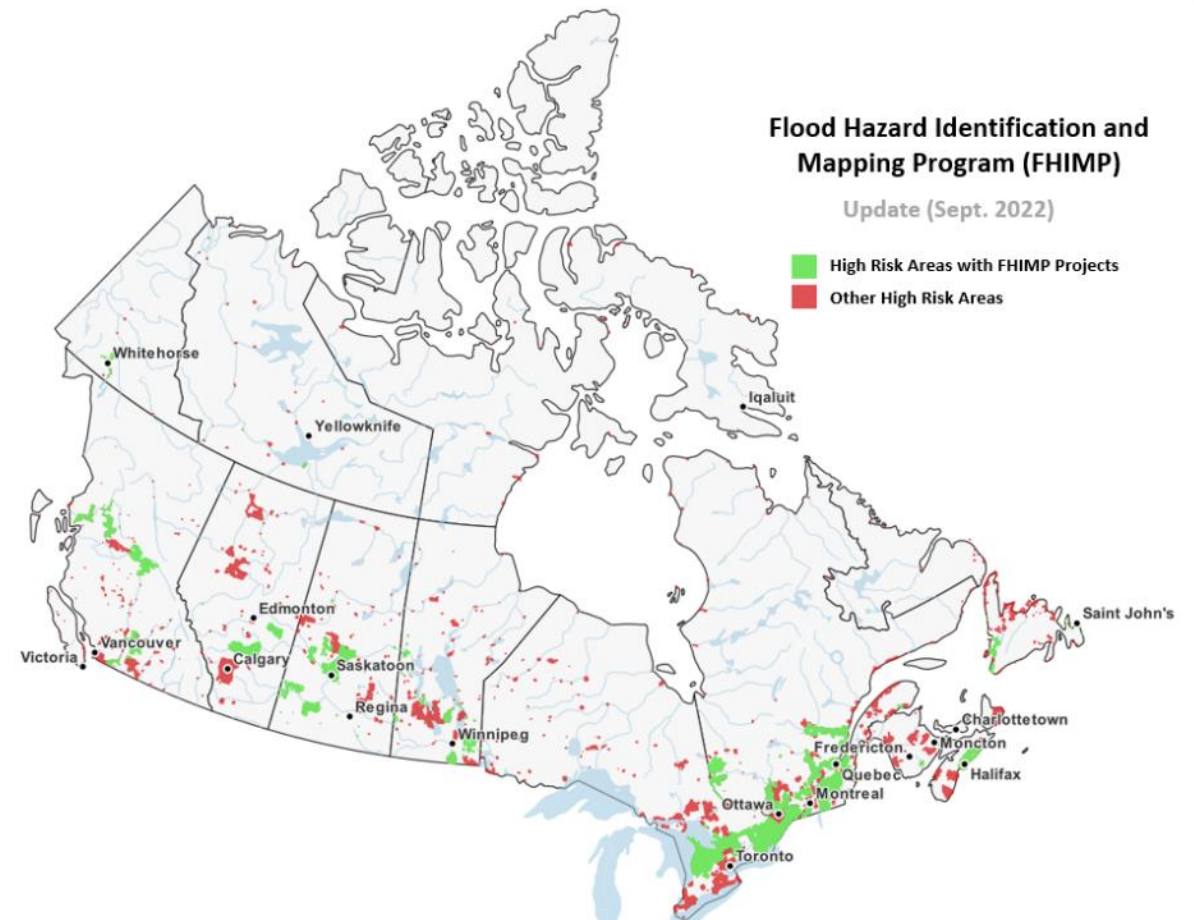
# How are we meeting the priorities

KEY PROJECTS | PROGRAMS



# Flood Hazard Identification and Mapping Program

- \$63.8M (2021-22 – 2023-24) for mapping higher risk areas nationally, and disseminating this information publicly / Expansion announced last week (additional 138.4M / 5 years)
- Identified highest risk areas and engaged with Provinces and Territories
- Funded R&D to advance science and integrate climate-change scenarios in flood mapping practices
- Developed the Federal Flood Mapping Guideline Series and furthered the creation of national flood mapping standards



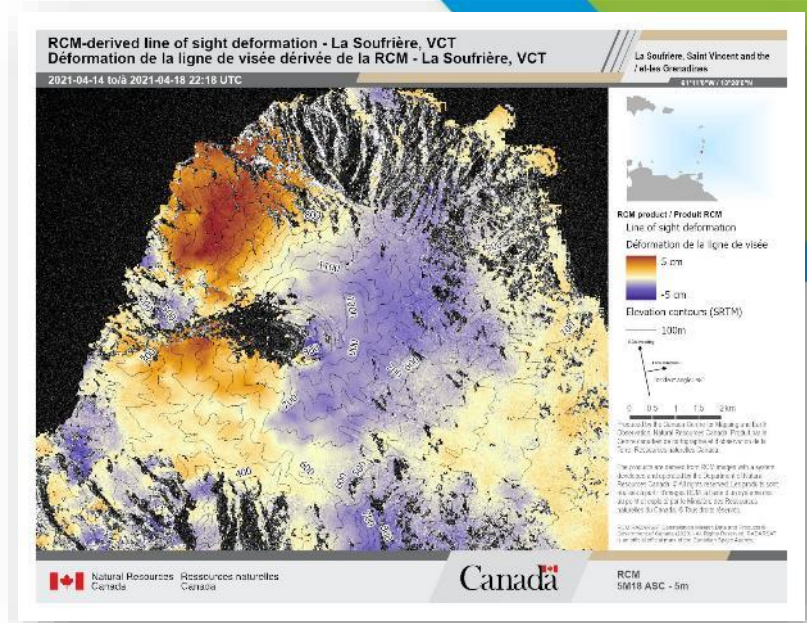
# Wildfire Satellite System

- The Government of Canada has approved funding for an operational wildfire satellite monitoring service. This service will provide end-users with:
  - Near real-time information in support of wildfire management for the whole of Canada on a daily basis and for research purposes;
  - Smoke and air quality forecasts, and emissions estimates, in support of international requirements for carbon reporting.
- Natural Resources Canada's:
  - CCMEQ – through its satellite ground segment – will be responsible for data acquisition, transmission and access.
  - Canadian Forest Service will be responsible for fire management products, science and user systems.
- Mission launch is planned for 2027-28. Full operations are planned for 2028.

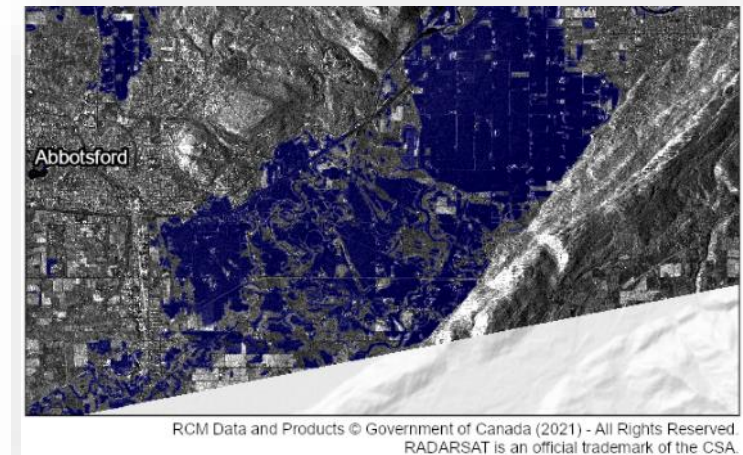


# Disaster Charter

- Radarsat Constellation Mission and Canada's Earth Observation Data Management System
  - In 2021-22, NRCan successfully responded to all of the 48 International Charter: Space and Major Disasters activation requests. For each activation Canada tasked, downlinked using its ground segment infrastructure and disseminated over a hundred RCM and RADARSAT-2 data products.
- Emergency Geomatics Service (EGS)
  - Through the International Disaster Charter the EGS provides operational planning centres and responders with map products delineating flood extents and ground deformation analysis services.



*In 2021, support was provided to Saint Vincent and the Grenadines by monitoring ground deformation over an active volcano.*



*Flood extent maps were generated for the atmospheric river events that hit Canada's and USA's west coasts a year ago.*

# Standards Innovation: GeoConnections Program



Open  
Geospatial  
Consortium



W3C®



ARCTIC  
SDI  
Arctic Spatial  
Data Infrastructure



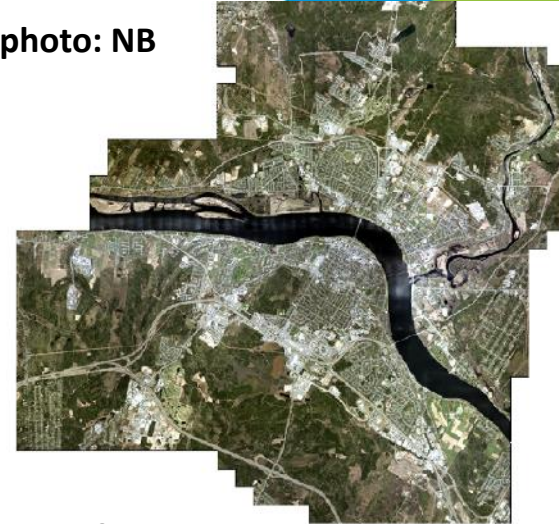
- Spatially-enable W3C HTML and Web browser engines with MapML
  - Accessibility of spatial / location information
  - Global standard with broad relevance beyond "spatial": lower barriers, costs
- Interoperability to drive decision making for climate change, disasters, and marine applications
  - Demonstrating standards-based innovation through Open Geospatial Consortium projects
  - Leveraging international collaboration – more is welcome!
- Arctic SDI, building on international standards and existing spatial data infrastructures, aligning its actions with the work of international organizations like the UN-GGIM, ISO, OGC, IHO, GEOSS, INSPIRE.
  - The approach is to accelerate the implementation of open standards and technologies!

# A transformational paradigm shift: GEO AI

- AI-based feature extraction: incredibly efficient, high quality, automated data creation from imagery, air photo, paper maps
- Once GeoAI models are trained, generating extractions on new data is rapid and low-effort: truly on-demand
- Under-utilized data rapidly transforms to usable feature data, while also improving training models
- Rapid iterations provide exceptional support for change analysis, emergency response and predictive analysis / scenario modeling

GeoAI Pipeline pilot project with province of New Brunswick (NB)

Aerial photo: NB



Transformed in minutes...



Feature data – on demand!

# Integration of geospatial layer and statistical insights

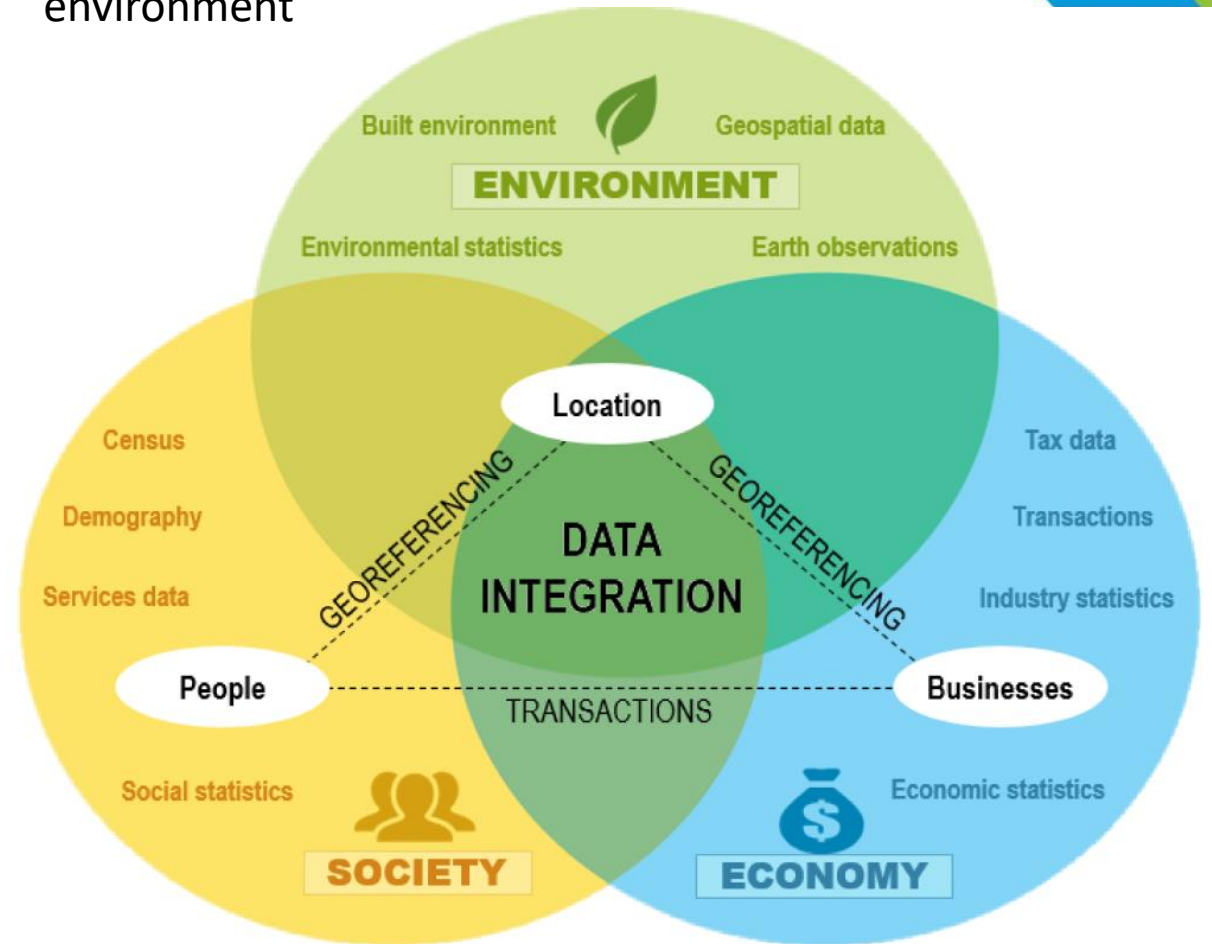
## Canadian perspective

- Collaboration between the producers of geospatial layers and statistical offices is key.
- The integration of geospatially enabled statistics and geospatial information to
  - Enhance knowledge and understanding of social, economic, and environmental issues
  - Supports the data and analytical demands of national and global developmental priorities
  - Strengthen the national statistical system.
- Current barriers to efficient data integration: lack of interoperable solutions, lack of a legal and regulatory framework that enables data sharing among organizations.
- Statistics Canada, the Treasury Board Secretariat and the Privy Council Office working towards renewal of the Data Strategy Roadmap for Federal Public Service, originally published in 2018. Opportunity to improve how the federal government uses data as an asset to deliver services and make decisions, while building trust in the government as a data steward.

# Role of Statistics Canada

Location as a link between society, the economy and the environment

- Statistics Canada produces data and information on the **environment**, the **society**, and the **economy**
- Statistics Canada has a long history of releasing geolocated statistics and insights for numerous geographic levels



Source <https://www150.statcan.gc.ca/n1/pub/75-662-x/2016001/article/14861-eng.htm>



# Evolving Role

## Past

- Basic geospatial infrastructure
- Data custodianship
- Standards

## Present

- Innovation in data, science and processes
- Meet Government priorities

## Future

- Horizontal integration across sectors
- Digital Transformation
- Holistic geospatial System of Systems

# Contact

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