

Written Submission for the Pre-Budget Consultations in Advance of the Upcoming 2022 Federal Budget

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GHGSATTM

List of Recommendations

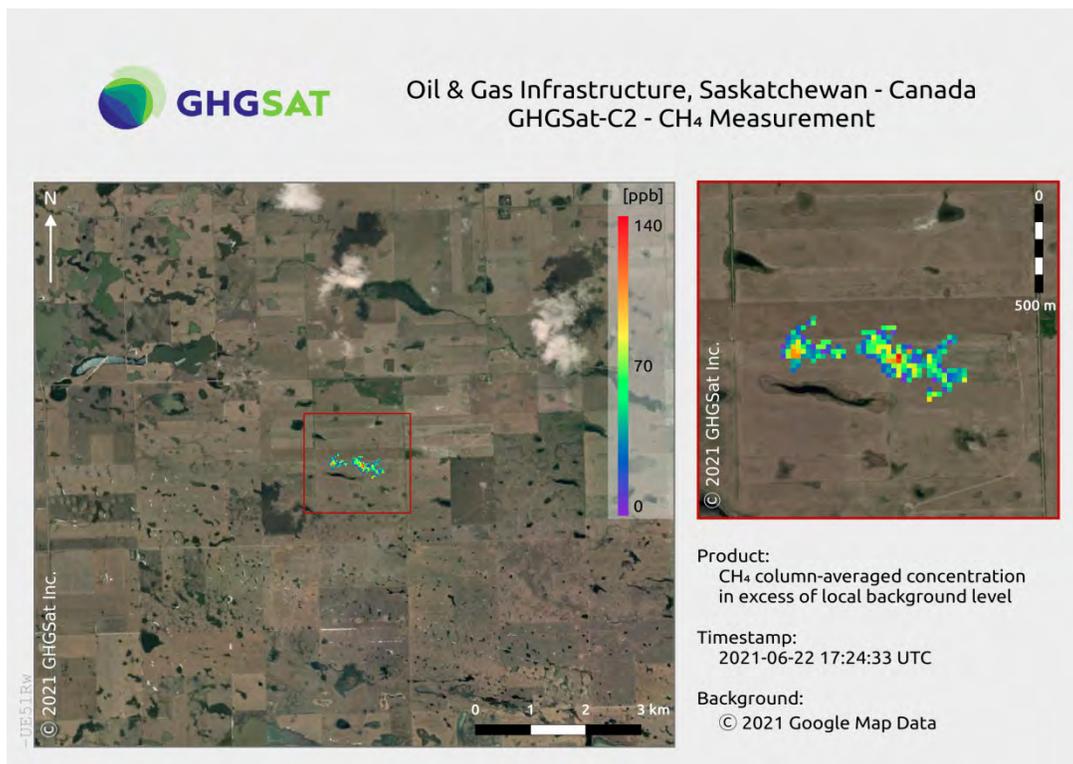


- **Recommendation 1:** That the Government of Canada commit to ongoing bulk procurements of Earth observation data and analytics from Canadian commercial satellite remote sensing companies as an anchor customer.
- **Recommendation 2:** That Canadian commercial Earth observation data and analytics procured per Recommendation 1 be made available free of charge to Canadian scientific researchers and non-commercial application developers as well as relevant Government of Canada departments to support their mandates (e.g. Environment and Climate Change Canada, Natural Resources Canada, etc.).
- **Recommendation 3:** That starting in Federal Budget 2022 the Government of Canada provides funding in the amount of \$10-million per year over three years for a Canadian Earth Observation Data Acquisition (CEODA) pilot program, to be followed by an ongoing permanent data acquisition program that incorporates lessons learned from the pilot in order to implement Recommendation 1 and Recommendation 2.



[GHGSat](#) is a Canadian SME established in 2011 as a private sector solution to climate change. The company is headquartered in Montréal with offices in Ottawa and Calgary, and international offices in Houston and London. GHGSat's vision is to use satellites to become the global reference for the remote sensing of greenhouse gas emissions from any source in the world, enabling stakeholders in the energy, resource, power generation, agricultural, waste management, and sustainability sectors to make informed environmental decisions.

While there are other satellites that measure greenhouse gases, for example, satellites from NASA and the European Space Agency, it is a remarkable fact that GHGSat – a Canadian SME – is the only private sector or government entity in the world with satellites specifically designed for high-resolution greenhouse gas measurement, down to a resolution of less than 30 metres. GHGSat's first satellite called Claire was launched in 2016, followed by a second satellite called Iris launched last September, and most recently a third satellite called Hugo launched this January. These satellites are named for the children of GHGSat employees, as a reminder of the importance of their mission for future generations. By finding emission sources worldwide, GHGSat has already directly contributed to greenhouse gas reductions equivalent to planting more than 50-million trees. Below is an image of a methane leak from an oil and gas facility in Saskatchewan taken by the Hugo satellite on June 22, 2021.





Space technology plays an important role in Canada's post-COVID transition to greener and more sustainable practices and building back better. Out of the fifty essential climate variables identified by the World Meteorological Organization (WMO) as needed to monitor climate change, twenty-six of them can only be effectively observed from space. [Canada's Space Strategy](#) calls for collecting climate change data under the pillar of ensuring our nation's leadership in acquiring and using space-based data to support science excellence, innovation, and economic growth. Environmental satellites such as those of GHGSat are also directly aligned with the goals of [Canada's 2030 Agenda for Sustainable Development](#), specifically, taking urgent action to combat climate change and its impacts (Goal 13) and promoting inclusive and sustainable industrialization and fostering innovation (Goal 9).

The Canadian Space Agency (CSA) has a number of instruments and satellites that provide crucial environmental data. An instrument called MOPITT monitors carbon monoxide in the lower atmosphere, while another instrument called OSIRIS measures ozone in the stratosphere. A satellite called SCISAT-1 records the vertical distribution of ozone, nitrogen dioxide, water vapour and aerosols in the atmosphere, and three generations of RADARSAT satellites have been monitoring the surface of the Earth since 1995.

In the last decade, there has been a revolution in the space industry. Hundreds of satellites, each the size of a milk carton, image the entire surface of the Earth every day. Million-dollar satellites the size of a microwave oven can now do much of the work of billion-dollar satellites the size of a school bus. Much of this is being done by commercial companies like GHGSat rather than space agencies. For example, a Canadian company called Wyvern is developing a trio of nanosatellites with hyperspectral sensors that will capture images of the Earth in wavelengths beyond the perception of the human eye. Another Canadian company called 4pi Lab is planning a satellite constellation that will provide early warning of wildfires. Commercial Earth observation systems do not replace CSA's flagship missions but are instead complementary, enabling cost-effective and novel capabilities that would otherwise not be possible with either a private or public sector solution alone.

Canada's commercial satellite remote sensing companies stand ready to support our national climate change obligations under the Paris Agreement and the [Canadian Net-Zero Emissions Accountability Act](#). For this to happen, the Government of Canada must do its part by **committing to ongoing bulk procurements of Earth observation data and analytics from Canadian commercial satellite remote sensing companies as an anchor customer**. Canadian Earth observation data and analytics procured under such a mechanism should be **made available free of charge to Canadian scientific researchers and non-commercial application developers as well as relevant Government of Canada departments to support their mandates** (e.g. Environment



and Climate Change Canada, Natural Resources Canada, etc.).

The anchor customer approach for satellite data is a common practice amongst Canada's international partners through initiatives such as the NASA Commercial Small Satellite Data Acquisition (CSDA) program and the Earthnet program of the European Space Agency (GHGSat is under assessment as an [ESA Earthnet Third-Party Mission](#)). Implementing a notional **Canadian Earth Observation Data Acquisition (CEODA)** program would not only support the satellite data requirements of Federal departments but would also strengthen the global competitiveness of Canada's commercial satellite remote sensing companies. One of the first things a prospective international customer asks is whether a new product or service has been adopted by the domestic market. Having the Government of Canada as an anchor customer would also level the playing field with foreign commercial peers. For example, it is estimated that more than 40% of the revenues of [one American commercial Earth observation company](#) are generated from sales to the U.S. Government.

Immediate investment is needed to strengthen Canada's commercial remote sensing industry and ensure its competitiveness in the post-COVID green economy. **Starting in Federal Budget 2022 the Government of Canada should provide funding in the amount of \$10-million per year over three years in order to implement a Canadian Earth Observation Data Acquisition (CEODA) pilot program**, to be followed by an ongoing permanent program that incorporates lessons learned from the pilot. Eleven companies including GHGSat already have in place through Public Services and Procurement Canada (PSPC) a National Master Standing Order (NMSO) for Commercial Satellite Data Processing and Related Services (E60SQ-120001) that enables the Government of Canada to routinely acquire satellite data on an "as and when requested" basis with established preferential pricing and licensing terms. A CEODA pilot program could therefore be implemented quickly by leveraging the existing NMSO procurement mechanism. All that is needed is the budget to make it happen.

More than half a century ago, the challenges of the Cold War resulted in a mission to the Moon. Today, the challenges of post-COVID recovery and the industrial transition to greener and more sustainable practices are driving a revolutionary mission to planet Earth. Let's bring the revolution in space to the service of humanity. Canadian space technology can play a vital role in fighting climate change and building back better.