Global Monitoring of Greenhouse Gas Emissions

* Stephane GERMAIN¹, Berke DURAK¹, Jason MCKEEVER¹, James J. SLOAN²

1. GHGSat Inc, 500-3981 St-Laurent, Montreal, Canada H2W 1Y5; stephane.germain@ghgsat.com
2. S&A Research, Im Bungert 10, Wettingen 5430, Switzerland; sloanj@uwaterloo.ca

* Corresponding Author

ABSTRACT

In June 2016, GHGSat launched the world’s first satellite capable of measuring greenhouse gas emissions from targeted industrial facilities around the world. The high-level objective of this mission is to demonstrate that a single solution can measure emission rates of carbon dioxide and methane from selected industrial sources with greater precision and lower cost than ground-based alternatives, across a wide range of industries. This solution will provide industrial site operators and government regulators with the information they need to reduce their greenhouse gas emissions more economically. GHGSat derives the emission rates of these sources from 12 x 12 km² maps of the atmospheric column densities of carbon dioxide and methane produced using its patented sensor. The sensor is a wide-angle Fabry-Perot imaging spectrometer with a spatial resolution better than 50 m. Costs are minimized by performing over a thousand measurements per year from a satellite with a 3-5 year life and a mass of less than 15 kg. GHGSat will provide operational results from the satellite to support its cost projections, and demonstrate column density retrievals for methane from a typical industrial source to support its measurement performance. GHGSat will also demonstrate through a case study how this solution can help industrial site operators better understand, manage and ultimately reduce their greenhouse gas emissions.