



Environmental Research and Education Foundation

Controlled Release Study 2024



FLORIDA STATE UNIVERSITY



Motivation and Purpose

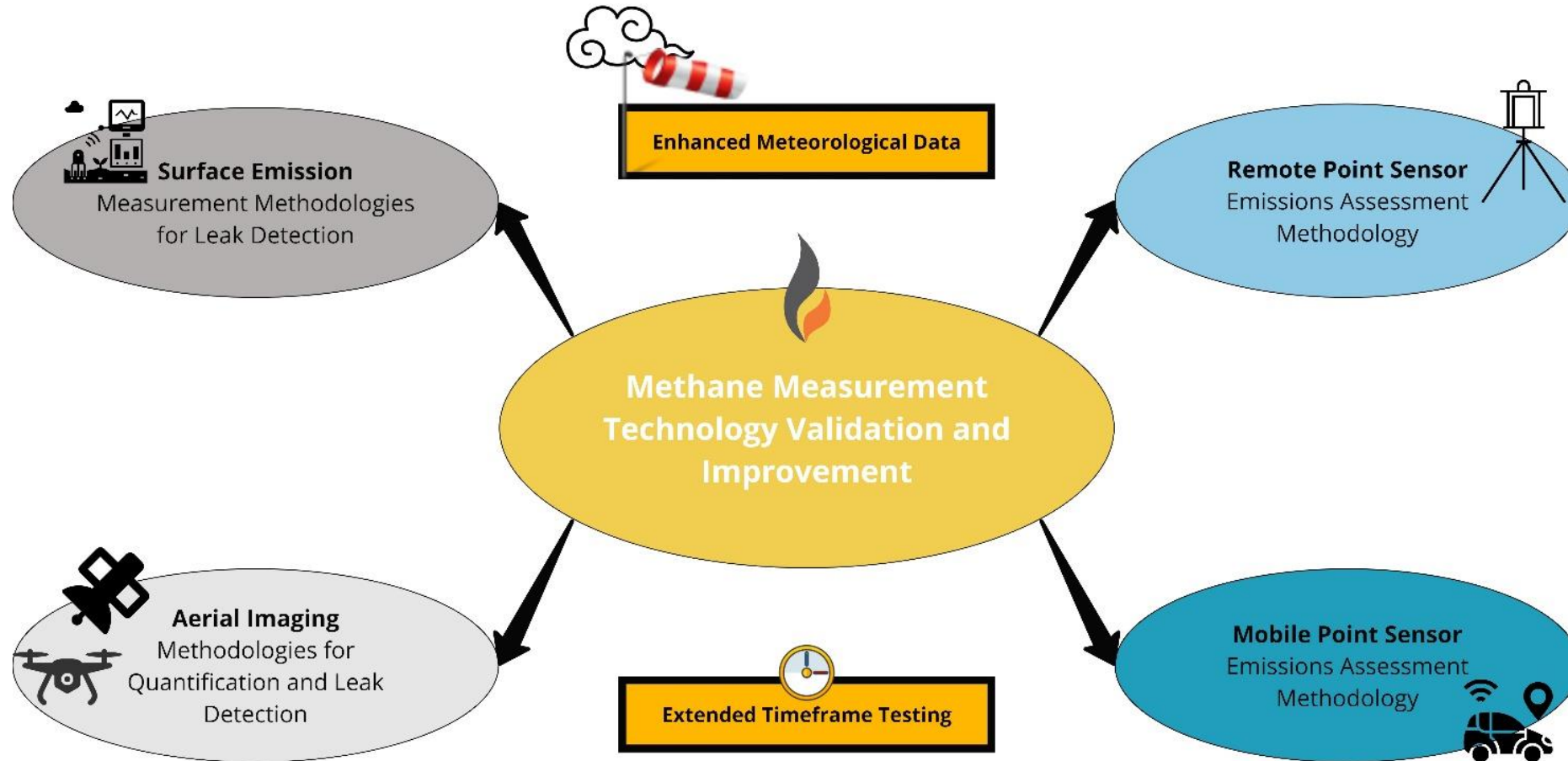
- Measurement of landfill emissions is of interest to regulators and industry
 - Quantification and Detection
 - Regulations being updated and introduced -> where does measurement fit?
- This study evaluates the accuracy and reliability of various methane measurement methodologies for leak detection and emission quantification at landfill sites
- New testing for select methodologies, in purpose-built experiments
 - Some tested previously but need work, or untested previously
 - More methodologies to be tested in another round next spring
- The study integrates enhanced meteorological data, introduces informed releases, and improves testing protocols for more diverse conditions

Previous Controlled Releases

- Final report for a previous 2023 controlled release study is going through final revisions and will be published soon
- Manuscript being prepared to be submitted for early fall
- Feedback received from the previous study being implemented for upcoming releases



Four Objectives - Upcoming Phase



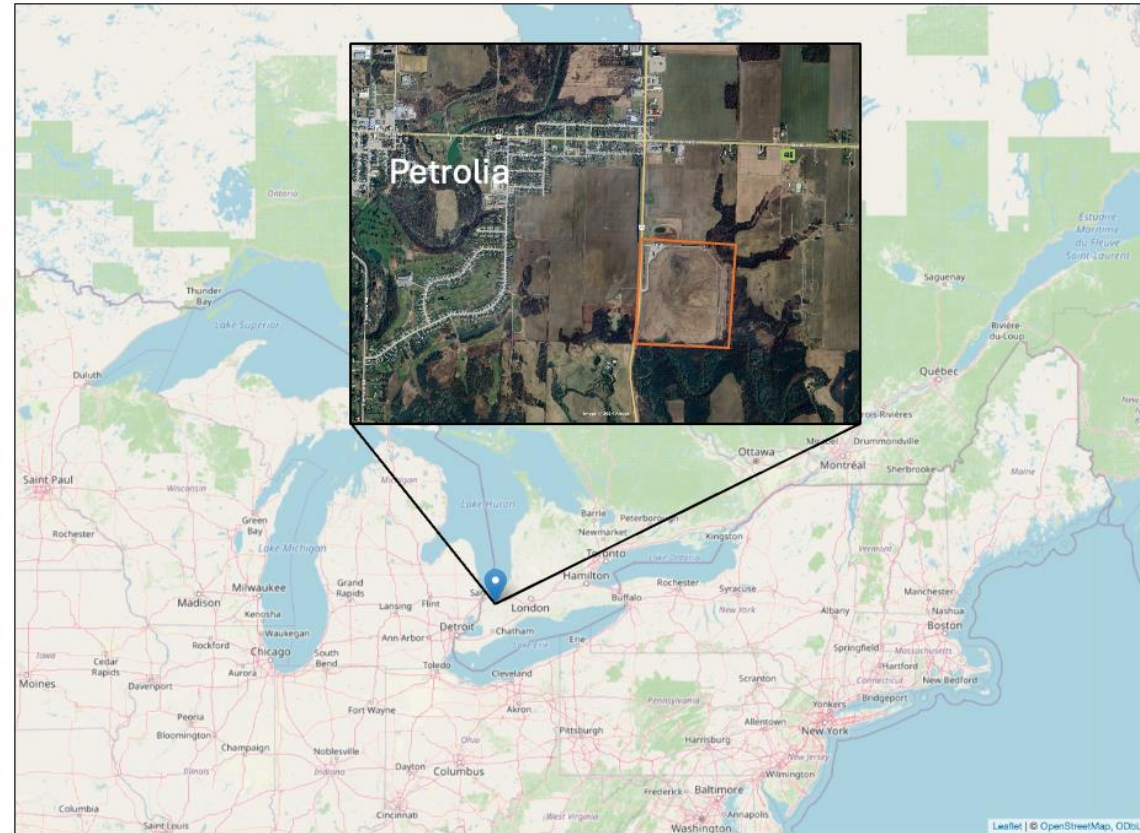
- Additional experiments covering other methodologies are being planned for spring

Timing - Upcoming Phase

- **LIKELY CASE** – Begin last week October
- **WORST CASE** – Begin early spring 2025
- Complex permitting issues involved in a permanent (subsurface pipelines) install of release array means some uncertainty on timing

Petrolia Landfill - Simulation Facility for Landfill Emission Experiments (SIMFLEX)

- Location: Petrolia, Ontario
- Owner: WM Canada
- 60-acre area
- At the US - Canadian border
- Controlled release apparatus with 10 possible emission points across ~20 acres, some dispersed
- Up to 840 kg/hr total fossil gas
 - New buried long-term pipeline system and computer flow control
- Background of ~20-30kg/hr LFG
- 5 wind stations (2 multi-height)



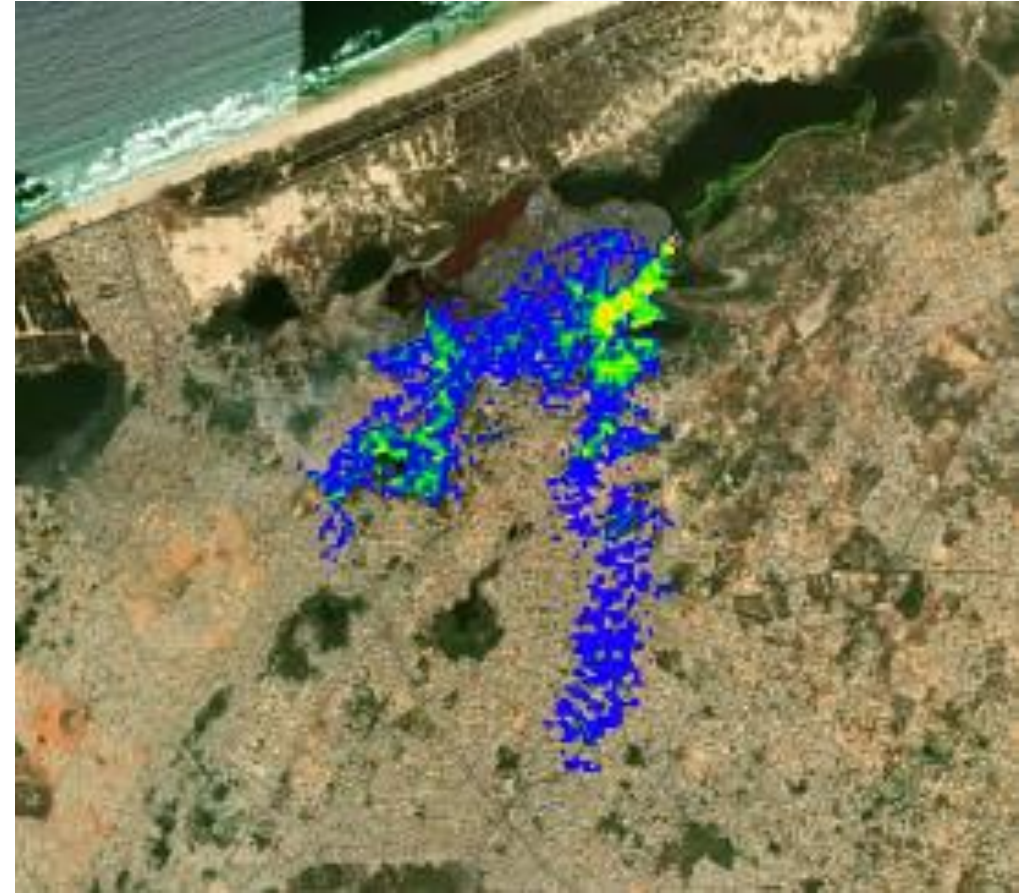
Experiment: SEM Methodologies

- **Examples:** Walking, drone column, drone OTM51
- Testing different spatial patterns and source types
- Releases lasting between 1 to 2 hours
- Various blind rates and leak points
- One set of informed releases
- Some night release measurements
- Walking SEM verification available this year



Experiment: Aerial Imaging

- **Examples:** Satellite or aircraft hyper- or multi-spectral or LiDAR
- Tests will emphasize different spatial patterns of release with rates appropriate to aerial or satellite
- Tests conducted across different days and times with varying atmospheric conditions
- Various blind rates and leak points
- One set of informed releases



Experiment: Remote Point Sensors

- **Examples:** Tripod or tower-based systems
- Experiment will consist of measuring different spatial configurations and large and small releases made for other participants
- Test “mini” spikes in methane released during startup and de-pressurization events
- Check if accuracy increases depending on frequency of reporting
- Various blind rates and leak points
- One set of informed releases



Experiment: Mobile Point Sensors

- **Examples:** Trucks
- Measure at defined points during SEM experiments and during aerial imaging experiments
- Releases for 1.5-hour blocks for better replication than in 2023
- Allow more time between releases so that sensors are not detecting plume from previous release
- Various blind rates and leak points
- One set of informed releases



Key changes to protocol

- Vendors commit to submit data for measurements they make (no picking and choosing)
- Drone vendors will be allowed to perform ground verification measurements (in most cases)



2024 Controlled Release
Experiment Program – Landfill

DRAFT Experimental Protocol

Conditions of Participation

- **Own cost**

- This year we are asking vendors to self-fund
- The experiments are wholly funded by industry, via EREF, and many of the funding members are looking to hire vendors that collaborate and perform well

- **Commit at least 3 days**

- Most experiments will take 3 days of measurement time per vendor. Additional time might be spent if your methodology requires very specific environmental conditions for which we must wait.
- We would prefer >3 day involvement. To incentivize this, every day of participation will earn some informed release “credits” since you may have some questions of your own that we can help test.

- **Will comply with safety requirements and experimental protocol**

- Topics for future webinars

- **Will make own arrangements**

- We are prepared to facilitate some aspects of your work but we can't help plan the fine details

Why Participate ?



Increased Visibility

Showcase your solution or service to an industry sponsor group

Impact Standards

Play a role in establishing approved standard methods

Deeper Insights

Gain a better understanding of your solution or service

Competitive Learning

Discover more about other technologies and services

Influence Regulations

Contribute to shaping regulatory options for measurement across North America

Resources


- **Dropbox**

- <https://t.ly/412BD>
- **Experimental Protocol**
 - Experimental Design
 - Experimental Protocol
- **Geometry Files and Maps**
 - Location and Shape Files
- **Safety Training and Documents**
 - WM and StFX
- **Vendor Participation Documents**
 - To be updated and subject of future webinar
- **Wind Data Analysis**
 - Conditions we expect for this fall


All files

EREF StFX Petrolia Site Information 2024 

 Recents

 Starred

Name ↑

 Information for Participants 2024

Key People and Contacts

Role	Name	Email
Principle Investigator	David Risk	drisk@stfx.ca
Principle Investigator	Tarek Abichou	abichou@eng.famu.fsu.edu
Agreements and Project Management	Chelsie Hall	chall@stfx.ca
PhD Student and Environmental Data Manager	Shadan Nasseridoust	snaserid@stfx.ca
Controlled Release Facility Managers	Pylyp Buntov Yurii Dudak	pbuntov@stfx.ca ydudak@stfx.ca
Communications	Elise Canning	ecanning@stfx.ca
Project Lead	Rafee Hossain	rhossain@stfx.ca

Questions and Supporting Information

Please email Elise Canning if you have any questions:

ecanning@stfx.ca

Scan the QR code to access important information for participants

