

Testing and deployment of an EM27 FTS with new fibre optic solar tracking system in Toronto

Nicole

Jacobs

Department of Physics, University of Toronto, Toronto, Canada

Debra Wunch, Department of Physics, University of Toronto, Toronto, Canada

Shiqi Xu, Division of Engineering Science, University of Toronto, Toronto, Canada

Kapilan Bavanathan, Division of Engineering Science, University of Toronto, Toronto, Canada

Maggie Wang, Division of Engineering Science, University of Toronto, Toronto, Canada

Katherine Latosinsky, Division of Engineering Science, University of Toronto, Toronto, Canada

Nicholas Jones, Centre for Atmospheric Chemistry and Environmental Futures Research Centre, School of Physics, University of Wollongong, Wollongong, NSW, Australia

Nicholas Deutscher, Centre for Atmospheric Chemistry and Environmental Futures Research Centre, School of Earth, Atmospheric and Life Sciences, University of Wollongong, Wollongong, NSW, Australia

David Griffith, Centre for Atmospheric Chemistry and Environmental Futures Research Centre, School of Earth, Atmospheric and Life Sciences, University of Wollongong, Wollongong, NSW, Australia

Felix Vogel, Climate Research Division, Environment and Climate Change Canada, Toronto, Canada

Poster

The EM27/SUN FTS has offered an amazing opportunity to collect total column measurements of CO₂, CH₄, and CO from sites where a TCCON station has not been feasible or practical, or in regions where multiple instruments are needed to constrain local emissions. While this instrument has expanded our ability to validate satellite-based measurements and monitor urban emissions, fully automated observations and better weatherproofing could expand these capabilities even further. An EM27 with an alternative solar-tracking arrangement consisting of a fibre optic, telescope, and external solar tracking instrument (Ekotracker) has already been used with some success at Wollongong. This setup eliminates the risk of exposing sensitive optics during operations and the need for daily alignment of the solar tracker. If correctly implemented, this would allow data collection to be fully automated, thus increasing the rate of data acquisition while decreasing the demand for on-site or remote maintenance. We are working to develop and deploy EM27s with the fibre optic tracking in Toronto and the surrounding area. Results, successes, and challenges from our initial testing and deployment will be presented and discussed.

Poster PDF

[jacobs-nicole-poster.pdf](#)

Meeting homepage

[IWGGMS-20 Workshop](#)

IWGGMS-20 Category:

Calibration and validation

[Download to PDF](#)