Establishing Standard Protocols for Tower-based Nitrous Oxide Flux Measurements. (A03-pattey133940-Oral)

Authors:

- E.Pattey - *Agriculture and Agri-Food Canada*
- I.B.Strachan - *McGill University*
- S.Kaharabata - *Agriculture and Agri-Food Canada*
- C.Wagner-Riddle - *Guelph University*
- R.L.Desjardins - *Agriculture and Agri-Food Canada*

Abstract:

Knowing the flux densities between agricultural fields and the atmosphere is essential for studying agroecosystem contribution to the greenhouse gas (GHG) balance. Tower-based flux measurements permit the quantification, in the time domain, of GHG exchange in response to environmental conditions and to mitigation practices, over an area representative of the agricultural basic production unit, which is the field. The measurements provided by instrumented flux towers are extremely useful to calibrate and verify process-based models. However, standard protocols and methods for measuring GHG fluxes are required for selecting a site, setting up and operating the flux tower in order to collect reliable datasets of high quality. Steps to setup a flux tower over agricultural fields equipped with an ultrasonic anemometer, infrared gas analyzer and tunable diode laser will be reviewed, as well as in situ diagnosis and post-processing data quality checks. Establishing standard protocols and methods is part of a Canadian initiative on developing a National Carbon and Greenhouse gas Accounting and Verification System, which aims at building an agricultural land-based accounting system for all sinks and sources of GHG and the documentation of the system.

Corresponding Author Information:

Elizabeth Pattey
Agriculture and Agri-Food Canada
960 Carling ave
Ottawa, ON K1A 0C6
Canada

phone: 613-759 1523
fax: 613-759 1515
e-mail: patteye@agr.gc.ca

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