The Effects of Pressure Gradients on Measurement of Gas Flux with a Dynamic Chamber. (S11-reichman074541-Poster)

Authors:

- R.Reichman* - *IIBR, Ness-Ziona, Israel*
- D.E.Rolston - *UCD, Davis, CA*

Abstract:

Chambers are commonly used to measure the emission of many trace gases and chemicals from soil. One major disadvantage associated with dynamic chambers is that the air flowing through the chamber may change the pressure gradient between the soil-gas phase and the chamber interior. This pressure difference may create advective mass flow of the target gas that will result in an under-or overestimate of emissions depending on various reasons such as chamber design, soil air permeability and source strength.In this paper we present an experimental study that tests the effect of pressure gradients on flux measurements for different scenarios of chamber operation mode, soil air permeability and source strength. Sensitive measurements of the pressure deficit across the soil layer in conjunction with measured fluxes in the source box and chamber outlet show that the outflow rate must be controlled carefully to minimize errors in the flux measurements. Both over and under estimation were observed. The pressure deficit effect is sensitive to both soil air permeability and source strength.

Corresponding Author Information:

Rivka Reichman
Israel Institute for Biological Research (IIBR)
P.O.Box 19
Ness-Ziona 74100
Israel

phone: +972-8-9381651
fax: +972-8-9401404
e-mail: raichman@iibr.gov.il

Presentation Information:

Presentation Date: Tuesday, November 12, 2002

Presentation Time: 9:00-11:00 am
Poster Board Number: 2131

Keywords:
dynamic flux chamber, pressure gradients, soil permeability, experimental setup