

University of New Hampshire

University of New Hampshire Scholars' Repository

Earth Sciences Scholarship

Earth Sciences

Spring 2003

Multiyear modeling and measuring of carbon dioxide and methane exchange at a poor fen

Steve Frolking

University of New Hampshire - Main Campus, steve.frolking@unh.edu

P Crill

Stockholm University

Jill L. Bubier

Mount Holyoke College

Follow this and additional works at: https://scholars.unh.edu/earthsci_facpub

Recommended Citation

Frolking S, Crill PM, Bubier JL. 2003. Multiyear modeling and measuring of carbon dioxide and methane exchange at a poor fen. Spring 2003 AGU poster, Nice France.

This Conference Proceeding is brought to you for free and open access by the Earth Sciences at University of New Hampshire Scholars' Repository. It has been accepted for inclusion in Earth Sciences Scholarship by an authorized administrator of University of New Hampshire Scholars' Repository. For more information, please contact Scholarly.Communication@unh.edu.



MULTIYEAR MODELING AND MEASURING OF CARBON DIOXIDE AND METHANE EXCHANGE AT A POOR FEN

Steve Frolking (1), Patrick Crill (1), Jill Bubier (2)

(1) Institute for the Study of Earth, Oceans, and Space, University of New Hampshire, (2)
Dept. of Earth and Environment, Mt. Holyoke College

We have made CO₂ and CH₄ flux measurements with manual chambers at Sallie's Fen, NH, USA at weekly to monthly intervals over the past decade. We have also made quasi-continuous CO₂ flux measurements with an automated chamber flux system for the past three years. Additional ancillary data (temperature, water table depth, incoming radiation, and precipitation) have also been regularly recorded for the past decade. We also ran the PCARS peatland ecosystem model to simulate daily CO₂ and CH₄ exchange for 1997 through 2001. We compare model results to observations, and evaluate interannual variability in CO₂ and CH₄ budgets. Preliminary simulations show annual methane flux varied by about 20% around a 5-year mean of 75 g CH₄-C m⁻² yr⁻¹. Net C uptake by the fen varied from 50-150 g C m⁻² yr⁻¹. Using a 100-year global warming potential (GWP) of 1 for CO₂ and 23 for CH₄, the simulated annual GWP of the fen is -650 g CO₂-equiv m⁻² yr⁻¹ for CO₂, +2300 g CO₂-equiv m⁻² yr⁻¹ for CH₄, and a net value of +1650 g CO₂-equiv m⁻² yr⁻¹.