liminary data of the mercury and green house green emission from soil samples as affected by increasing moisture will be presented. Analysis of mercury flux using the Licor flux chamber and the O'Driscoll et al. (2005) Hg flux chamber was found to be above the method detection limits and reproducible (mean RSD of triplicates <5–10%) for a series of soil samples with varying carbon and total mercury contents. Short term mercury flux from these soils, determined by both the Li-Cor and O'Driscoll et al. (2005) Hg flux chambers was significantly and linearly related as tested by principle axis slope. The green house gas degassing was found to be increasing with increasing (up to 60%) water-filled pore space moisture contents.

A laboratory method for the quantification of mercury and GHG volatilization from soils

R. Pannu[1], N.O' Driscoll[2], S. Siciliano[1], J. Dalziel[3], and A. Rencz[4]

1. Department of Soil Science, University of Saskatchewan, Saskatoon, Saskatchewan S7N 5A8, Canada <r.pannu@usask.ca> ❡ 2. Department of Earth and Environmental Science, Acadia University, Wolfville, Nova Scotia B4P 2R6, Canada ❡ 3. Environment Canada, Dartmouth, Nova Scotia B2Y 2N6, Canada ❡ 4. Natural Resources Canada, 601 Booth Street, Ottawa, Ontario K1A 0E8, Canada

Elemental mercury is a volatile metal at standard temperatures which can be transformed into several species in ecosystems some of which are persistent, bio-accumulative and highly toxic. Mercury emitted from natural sources is eventually deposited to ecosystems, thus re-entering terrestrial and aquatic systems. Natural emissions and re-emissions of mercury from soils have been identified as a major contributor to the global mercury budget and conservative estimates of global mercury fluxes suggest a total of 700 to 1000 ta^{-1} volatilized from soils. The growth of research in soil Hg emissions has brought attention to a large number of uncertainties associated with the estimation of the overall contribution of soil Hg emissions to the atmospheric Hg pool and the effects on global Hg cycling. An accurate assessment of mercury emissions from soils is crucial in order to quantify and predict the movements of natural and re-emitted mercury from anthropogenic sources. Soils can store and release large quantities of carbon through natural processes including litter deposition, decomposition, and root respiration. The main processes producing CO_2, N_2O, and CH_4 are microbial related and are strongly influenced by soil moisture content. The exchange of green house gases (CO_2, CH_4, and N_2O) between soils and the atmosphere is an important contributing factor to global climate change.

Two simple, accurate and reproducible laboratory methodologies for simultaneous quantification of mercury and green house gas volatilization from different soils were compared using two types of flux chambers: the Li-Cor flux chamber and the O'Driscoll et al. (2005) Hg flux chamber design. The Li-Cor chamber is an automated unit while the O'Driscoll et al. (2005) Hg flux chamber is a simple quartz chamber. Pre-

Atlantic Geology, 2011, Volume 47, Number 1