TITLE

Forest Response to Stress and Damage (FORSTAD) Lysimeter Data 1993-2004

PRINCIPAL INVESTIGATORS

Gary Lovett
Charles Canham
Clive Jones
Rick Ostfeld

BEGIN DATE

1993

END DATE

2004

LOCATION

In the Cannoo Hills on the property of the Institute of Ecosystem Studies, on the Cary Arboretum, in Millbrook, New York. (41° 47′N, 73° 44′W)

LOCATION DESCRIPTION

Nutrient cycling sites are circular plots, 25.24 meters is diameter (area = 1/20 hectare). Site A is in a sheltered location on Cannoo (Tea House) Hill, elevation 180 meters, and Site B is on the western slope of North Cannoo Hill, elevation 200 meters. The canopy trees on each site are a mix of oak, maple, and pine. Nutrient cycling sites were established in 1992; ten lysimeters were installed on each site at this time. Each lysimeter is each paired with a throughfall collector, which are randomly distributed in the plots.

ACCESS

Public

DATA LOCATION

Institute of Ecosystem Studies, Millbrook, New York

LAST UPDATED

January, 2006

CONTACT PERSON

Gary Lovett
Institute of Ecosystem Studies
PO Box AB
Millbrook, NY 12545
Telephone: (845) 677-5343

CODES

Start Date = beginning of bulking period
End Date = end of bulking period
Year = calendar year
Period = approximate month of bulking period
Site = site identification (AL or BL)
# collectors = number of lysimeters that collected sample during the bulking period
pH = mean pH of samples
H = mean concentration of hydrogen ion
Ca = mean concentration of calcium ion
Mg = mean concentration of magnesium ion
K = mean concentration of potassium ion

Na = mean concentration of sodium ion
NH4 = mean concentration of ammonium ion
NO3 = mean concentration of nitrate ion
SO4 = mean concentration of sulfate ion
Cl = mean concentration of chloride ion
nd = no data available

DATA DESCRIPTION

The data presented here are ion concentrations in mg/L, averaged by site and by month. Concentrations of ammonium, nitrate, and sulfate are expressed as concentrations of the ion, not the element (N or S). All data are site-wide monthly means.

SAMPLING DESIGN

There are ten lysimeters on each of the two sites, installed in the B horizon. Sampling was conducted consistently from April 1992 – December 2004.

Lysimeters are connected to a constant tension, hanging column siphon system, which pulls a constant, low-level vacuum. Soil solution is drawn through the porous ceramic cup at the base of the lysimeter into the collection tube. As solution is pulled through the ceramic collector, particulates are filtered out and so no post-collection filtration is necessary.

Between 1992 and 1999, lysimeters were collected weekly during the months when lysimeters reliably collect soil solution (October-May). During the summer months, very little soil solution is collected. Between 2000-2004, lysimeters were collected every two weeks.

The sample is bulked monthly by collector and submitted to the IES Analytical Lab for ion analysis.

NOTES

Data is presented for those months in which the lysimeters collected soil solution. Except in very wet years, the lysimeters do not collect during the summer, between leaf-out in mid-May and leaf fall in October. Even during the wetter months, lysimeter collection can be variable and not all lysimeters will collect in any given month. In February of 1993, most of the lysimeters froze and could not be collected.

Lysimeters were installed in 1992, but ion data from 1992 is deleted from this data set. Soil disturbance caused by lysimeter installation results in changed levels of ions in soil solution; therefore a year of settling time is required before soil solution ion data can be accepted.

DATA