

TITLE

Forest Response to Stress and Damage (FORSTAD) Throughfall Data 1992-1999

PRINCIPAL INVESTIGATORS

Gary Lovett  
Charles Canham  
Clive Jones  
Rick Ostfeld

BEGIN DATE

1992

END DATE

1999

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 throughfall collectors were constructed on each site at this time. The collectors 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 (A or B)  
# collectors = number of throughfall collectors sampled during the bulking period  
cm T-fall = amount of throughfall in cm  
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  
NH<sub>4</sub> = mean concentration of ammonium ion  
NO<sub>3</sub> = mean concentration of nitrate ion  
SO<sub>4</sub> = 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 by month. Concentrations of ammonium, nitrate, and sulfate are expressed as concentrations of the ion, not the element (N or S). Centimeters of throughfall is calculated by dividing the volume of sample collected by the area of the collector. All data are site-wide monthly means.

#### SAMPLING DESIGN

There are ten collectors on each of the two sites, except during the winters of 1994 - 1996, when five collectors were used per site. Sampling was conducted consistently from April 1992 – December 1999.

Throughfall collectors consist of a one-gallon plastic jug with a plastic funnel (area = 314.159cm<sup>2</sup>) set in the mouth of the jug. The jug/funnel setup is placed in a plastic milk crate supported by fiberglass T-posts approximately one meter above ground level. A fitted sleeve of opaque tarp material is placed around each jug to prevent sunlight from reaching the sample in the jug. A plug of polyester fiber is placed in the neck of each funnel to filter out debris as the sample is collected, and prevent contamination.

In the winter, several sampling methods have been used to collect snowfall. In 1993, plastic bags were set in the crates in place of the jug/funnel apparatus. In 1994-1996, five-gallon buckets (area = 660.5 cm<sup>2</sup>) were used to collect snow, and in 1997-1999, a PVC pipe (area = 314.159cm<sup>2</sup>) was tied to the milk crate/T-post structure and a heavy-duty plastic bag fitted inside for snow collection. When a snow sample is collected, it is brought inside, thawed, and filtered, and then the volume of the sample is measured.

Samples are collected on an event basis, at least eight hours after the end of a precipitation event. Each event is weighed to determine volume of each collector. The sample is bulked monthly by collector and submitted to the IES Analytical Lab for ion analysis.

#### NOTES

Prior to April of 1997, one of the collectors on Site B was observed to have statistically different volume and chemistry data. The collector was positioned in such a way that it was collecting stemflow from an overhanging limb. In April of 1997, this collector was moved slightly, and after this time the volume and chemistry data of this collector ceased to be statistically different from the other nine collectors on the site. For this reason, this collector was omitted when calculating means for Site B prior to April 1997.

#### DATA