**Plot Treatment Analysis**

**Plot Map**

****

**Soil Respiration**

No outliers in terms of overall average CO2 flux, but plots 6 and 8 seem to have a slightly different pattern over time from the rest. Plot 6 (orange) peaks earlier than other plots and has a more steady respiration decline, and plot 8 (black) is more erratic.

**Vegetation**

Plot area is generally a sugar maple stand, with significant populations of red maple and yellow birch, and American beech in the understory. Except for plots 4 and 7, each plot has at least 3 D/CD or large I sugar maples inside or within 1 meter of the inner plots. Each plot also has at least 1 D/CD red maple and yellow birch except for plot 6. Although some plots have more of one species than another, the rest have the required number of each species. Therefore I would conclude that plots 1, 2, 3, 5, 8, 9, and 10 are “typical”, while 4, 6 and 7 are not.

**Lysimeter Chemistry**







For water volumes: Plots2 and 6 generally have 2 lysimeters each that do not collect enough water to sample even after being reinstalled.

**Soil Profiles**

Plot 1: Soils lack E horizon, though several pits have lighter patches or speckles in the A showing spodic development. Pits on the northern or eastern side of the plot generally have cobble or gravel in the B horizons

Plot 2: Soils very rocky. Spodic with strong E development, would characterize as Bhs podzols, most pits showed thin Bh horizon as well.

Plot 3: Soils less rocky. Most have an E horizon, but one pit only had intermittent E/speckles in A. Several pits showed redox features in B horizons, indicating fluctuating water table. Several pits contained Bs horizons in addition to Bhs.

Plot 4: E horizons present but generally thin/intermittent. Pits contained a mix of all 3 major spodic B horizons. Several pits contained gravel/cobble

Plot 5: All soils spodic, though several only had lighter patches in A horizon. Most pits contained gravel/fine gravel in B horizons, and a couple pits had Bh horizons

Plot 6: Soils rocky, with much more pronounced pit/mount topography than other plots. Soils are strongly spodic following Bh-Bhs development pattern. One pit is located on side of large mound, showing disturbed bimodal development with 2 E horizons.

Plot 7: Soils mostly spodic, with some gravel or cobble in some pits. E horizons vary pit to pit, with one pit only having some very small speckling in A horizon.

Plot 8: Soils vary from east – west. The eastern side of the plot is close to a small stream and contains soils that are more saturated and no spodic, with more silty textures, grey colors and less B horizon development. Southern and western pits were drying with more typical loamy sand/sandy loam textures, though only one pit was spodic.

Plot 9: Typically spodic soils, with E horizons varying between thick – patchy. Some horizons show redox features or other mottling of colors.

Plot 10: Except for 2 pits, soils show no spodic development. Soils are more saturated and silty or loamy in texture. Area seems more swampy than rest of plots.

**Extractable NO3 and NH4**

N-flux in soil seems to be highly variable between plots and N type. Plots 3, 8 and 10 have very low NO2/NO3, while 6 and 7 are very high. While NH4 seems to be more consistent, Plot 8 has low NH4. This sampling has only been measured once however, and only on fresh cores, not the incubated cores. More data will be available later in the year.

**Soil Temperature + Moisture**





To summarize: All plots seem to follow same general pattern for both temperature and moisture. Temperatures all are fairly consistent across the plots – no real outliers

Moisture is more variable – plots are evenly split between 10cm or 30cm depth containing more moisture, probably due to soil type and location on slope. No obvious outliers, but plot 2 is generally drier than average, while plots 3 and 8 have more moisture.

**Other Comments/Concerns**

Plot 2 is rockier than most other plots

Plot 6 is much higher up/farther away from Hubbard Brook and closer to the road than the other plots, and is rocky with lots of pit/mound topography

Plot 8 has a large clearing next to its northern border and is in the riparian zone of a small stream

Plot 10 is close to a swampy area, and is generally much more saturated during storm events than other plots, with the water table actually pushing up lysimeter tubes and damaging them – although the sensors do not seem to confirm this

**Overall**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Plot** | **Soil Resp** | **Soil Profile** | **Soil Temp, Moisture** | **Vegetation** | **Extractable****N** | **Lysimeter Chem** | **Other** |
| **1** | X | X | X | X | X | X | X |
| **2** | X | X | X | X | X | X |  |
| **3** | X | X | X | X |  | X | X |
| **4** | X | X | X |  | X | X | X |
| **5** | X | X | X | X | X | X | X |
| **6** | X | X | X |  |  |  |  |
| **7** | X | X | X |  |  | X | X |
| **8** | X |  | X | X |  |  |  |
| **9** | X | X | X | X | X | X | X |
| **10** | X |  | X | X |  | X |  |

‘X’ indicates “Typical”