

### Harvard Forest - Transition Hardwood-White Pine-Hemlock Forest

The 1,200 ha forest has 5 tracts—Prospect Hill (375 ha), Tom Swamp (475 ha), Slab City (200 ha), Simes Tract (125 ha), and Schwarz Tract (15 ha) [1]. There is 1 meteorological station, 3 eddy flux towers, and 2 walk-up towers [2, 3]. All of the towers and the meteorological station are located in the Prospect Hill Tract [2, 3].

Category	Measurement Summary	Spatial Extent	Spatial Resolution	Temporal Extent	Temporal Resolution
Land cover/land use	Agricultural abandonment, compartments (i.e., tracts), cover type, elevation, forest type, historical features, land use, ownership, roads, stonewall, streams, silviculture	All 5 tracts	N/A (GIS vector data)	Multiple datasets with various date ranges within 1908-2005	Varies from one sampling to approximately every 10-20 years
Soil Properties	Bulk density, calcium, cation exchange capacity, drainage, forest floor thickness, magnesium, mass, moisture, pH, phosphorous, potassium, series, type, water content	Prospect Hill Tract (including plots in the vicinity of 2 eddy flux towers)	Multiple plots ranging from 6x6 meter to 30x50 meter plots	Multiple datasets with various date ranges within 1937-2014	Varies from 30 minutes to multiple times per year
Meteorology	Atmospheric pressure, barometric pressure, dew point, friction velocity, gust speed, heat flux, net radiant energy exchange, photosynthetically active photon flux, photosynthetically active radiation, precipitation, radiation, relative humidity, snow depth, snow water equivalent, solar irradiance (Pyranometer), solar radiation, specific humidity, temperature (air), temperature (soil), vapor pressure, water vapor concentration, water vapor flux, water vapor pressure, wind direction, wind speed	Prospect Hill Tract	At 1 meteorological station and 3 eddy flux towers	Multiple datasets with various date ranges within 1964-2015	Varies from 30 minutes to annually
Vegetation	Basal area, board feet, cords, crown class, crown width, damage (tree), diameter, diameter at breast height (dbh), height, historical presence, leaf area, leaf area index, radial growth, sky factor, species density, species list, species presence or absence, vigor (hemlock), volume per acre	Data from one or more of: Prospect Hill Tract (including plots in the vicinity of 3 eddy flux towers), Tom Swamp Tract, Slab City Tract, Simes Tract	Multiple plots ranging from 1x1 meter to 30x30 meters; also, species lists for study area	Multiple datasets with various date ranges within 1937-2013	Varies from 1 sampling to annual sampling
Species Traits	Bud openness, conductance rate (leaf), habitat, leaf color change, leaf development, leaf fallen, leaf (maximum length and width), life form, net assimilation, phenological status, photosynthetic rate, transpiration rates	Data from one or more of: Prospect Hill Tract, Tom Swamp Tract, Slab City Tract, Simes Tract	Ranges from permanently tagged individual trees in Prospect Hill Tract to multiple plots from 1x1 meters to 5x5 meters	Multiple datasets with various date ranges within 1908-2012	Varies from 1 sampling to periodic intervals during growing season (3-5 days to weekly)
Aboveground biomass	Biomass, carbon (green canopy leaf), carbon (leaf), cellulose (leaf), hydrogen (leaf), lignin (leaf), net primary production, nitrogen (green canopy leaf), nitrogen (leaf), productivity	Prospect Hill Tract (including plots in the vicinity of 1 eddy flux tower)	Multiple plots ranging from 5x5 meters to 30x30 meters	Multiple datasets with various date ranges within 1988-2013	A majority of datasets have 1 sampling and a few are sampled annually
Belowground biomass	Root diameter, root biomass, root respiration, nitrogen	Data from one or more of: Prospect Hill Tract, Slab City Tract	Multiple plots ranging from 20x20 centimeters to 30x30 meters	Multiple datasets with various date ranges within 2007-2008	Varies from 1 sampling to multiple samplings per year

Coarse woody debris	CO2 change, debris condition, decay class, diameter, diameter (wood), diameter at the top, diameter of the piece, length of the piece, log length, physical characteristics, respiration	Prospect Hill Tract (including plots in the vicinity of 1 eddy flux tower)	Multiple plots ranging from 10 meter radius to 20x20 meters	Multiple datasets with various date ranges within 1993-2013	Sampling typically once every 2-3 years
Litterfall	Acid phosphatase activity, carbon, cellobiohydrolase activity, cellulose, decay rate, leucine aminopeptidase activity, lignin, litter moisture, litterfall weight, mass, N-acetyl- $\beta$ -glucosaminidase activity, nitrogen, phenol oxidase activity, $\beta$ -glucosidase activity	Prospect Hill Tract (including plots in the vicinity of 2 flux towers)	Multiple litterfall trap locations	Multiple datasets with various date ranges within 1988-2014	Varies from an annual collection to multiple times per year
Soil organic matter	Carbon	Prospect Hill Tract	Multiple plots ranging from 5x5 meters to 30x30 meters	Multiple datasets with various date ranges within 1992-2005	Varies from sampling throughout the summer to sampling following rain event
Flux tower	Carbon fixation, carbon monoxide, carbon tetrachloride, CFC-113, CFC-12, Chloroform, CO2 concentration, CO2 flux, ecosystem exchange, ecosystem productivity, ecosystem respiration, halon 1211, hydrogen, methane, methyl chloroform, nitrous oxide, NO concentration, NO2 concentration, NOy, NOy flux, O3 concentration, ozone eddy covariance flux, perchloroethylene, peroxyacetylnitrate, SF6, trichloroethylene	Prospect Hill Tract	At 3 eddy flux towers	Multiple datasets with various date ranges within 1990-2013	Varies from 15 minutes to hourly
Soil respiration	Carbon flux, CH4 flux, CO2 concentration, CO2 efflux (soil), CO2 efflux (wetland), CO2 flux, H2O concentration, N2O flux	Data from one or more of: Prospect Hill Tract (including in the vicinity of 3 flux towers), Tom Swamp Tract, Slab City Tract	Multiple soil respiration collar/chamber locations	Multiple datasets with various date ranges within 1991-2013	Varies from 30 minutes to multiple times per year
Nitrogen	Ammonium-N (NH4-N), net mineralization (ammonium (NH4+)), net mineralization (nitrate (NO3-)), net mineralization NO3-N+NH4-N1, net nitrification, net nitrification NO3-N, NH4+ , nitrate-N (NO3-N), nitrogen (dissolved), nitrogen (soil), NO3-	Data from one or more of: Prospect Hill Tract, Slab City Tract	Multiple plots ranging from 20x20 centimeters to 6x6 meters	Multiple datasets with various date ranges within 1988-2012	Varies from monthly to throughout the growing season
Disturbance	Alien flora species, browse, fire (1957), hemlock woolly adelgid (presence or absence), hurricane damage (1938), natural disturbance (ice, tornado, wind, fire, snow), species (presence or absence)	Data from one or more of: Prospect Hill Tract, Tom Swamp Tract, Slab City Tract	Multiple plots ranging from 30x30 meters to 1000x1000 meters; also, GIS vector data	Multiple datasets with various date ranges within 1937-2009	Varies from 1 sampling to sampling every 10 to 20 years

#### Reference List

1. <http://harvardforest.fas.harvard.edu/research/HF-tract>
2. <http://harvardforest.fas.harvard.edu/research/sitemaps>
3. <http://harvardforest.fas.harvard.edu/research/towers>