Hazlett		
Project		
Province		
Site Name		
Region		
District		
Township		
GPS Coord. UTM NAD83		
Plot		
Station		
Horizon		
Collection Date		
Lab ID		
Analysis Date		
CaCl2	pH	
H2O	pH	
cmolckg	K	Exchangeable
cmolckg	Ca	Exchangeable
cmolckg	Mg	Exchangeable
cmolckg	Fe	Exchangeable
cmolckg	Cu	Exchangeable
cmolckg	Mn	Exchangeable
cmolckg	Zn	Exchangeable
cmolckg	Al	Exchangeable
cmolckg	Na	Exchangeable
cmolckg	CEC	
%	Base Saturation	
g/kg	P	Total
g/kg	K	Total
g/kg	Ca	Total
g/kg	Mg	Total
g/kg	Fe	Total
g/kg	Cu	Total
g/kg	Mn	Total
g/kg	Zn	Total
g/kg	Al	Total
g/kg	Na	Total
g/kg	S	Total
g/kg	N	
g/kg	C LOI	
g/kg	C Combustion	
ppm	P	Extractable

Lawrence
Project
Site Name
Original Site Abrev.
Additional Site Abrev.
State
Collection Date
Field Code
Orig Analysis Lab/Supervisor
Orig Analysis date
Orig Lab Code
Reanalysis Lab/Supervisor
Reanalysis Date
Reanalysis Lab Code
Watershed Name
Latitude (degreeminsec NAD83)
Longitude (degreeminsec NAD83)
Distance from reference point
Bearing from reference point
Plot or Transect Code
Pit #
Horizon
Sampling Depth
SITE ID
Ca (cmolesc/kg)
Mg (cmolesc/kg)
Na (cmolesc/kg)
K (cmolesc/kg)
% WT LOSS ON IGNITION
% NITROGEN
% CARBON
pH 0.01 CaCl2
Al (cmolesc/kg)
H (cmolesc/kg)

Pontius	
State	
Plot	
Lat	
Long	
Horizon Designation	
Soil Al	NH4OAc
Soil Ca	NH4OAc
Soil K	NH4OAc
Soil Mg	NH4OAc
Soil Mn	NH4OAc
Soil P	NH4OAc
Organic Matter	LOI
Soil C	CHN
Soil N	CHN
pH	CaCO2

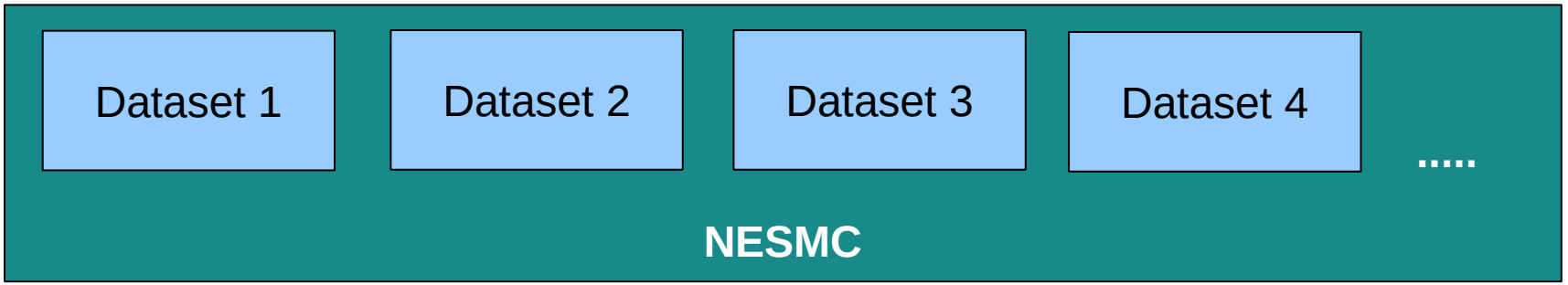
Ouimet	
project	
nolab	
year	
parc	
rep	
rep2	
horizon	
Carbon	g/kg
pH	
pHCacl2	
K	ppm
Ca	ppm
Mg	ppm
Mn	ppm
Al	ppm
Fe	ppm
Na	ppm
S	ppm
Nt	g/kg
Pt	g/kg
Kt	g/kg
Cat	g/kg
Mgt	g/kg
Mnt	g/kg
Alt	g/kg
Fet	g/kg
Znt	g/kg
Nat	g/kg
Humidity	%
CNratio	
Kexch	cmol/kg dry
Caexch	cmol/kg dry
Mgexch	cmol/kg dry
Alexch	cmol/kg dry
H_Alexch	cmol/kg dry
CEC	cmol/kg dry
Weight	g dry
FFStock	kg/m2

Bailey	
site	Table=PedDesc
state	Table=PedDesc
pedon	Table=PedDesc
ddate	Table=PedDesc
lat	Table=PedDesc
long	Table=PedDesc
elev	Table=PedDesc
pmat	Table=PedDesc
fmn	Table=PedDesc
lith	Table=PedDesc
stony	Table=PedDesc
phys	Table=PedDesc
slope	Table=PedDesc
aspect	Table=PedDesc
veg	Table=PedDesc
dclass	Table=PedDesc
code	Table=ElemCont
Al	Table=ElemCont
Ca	Table=ElemCont
Fe	Table=ElemCont
K	Table=ElemCont
Mg	Table=ElemCont
Mn	Table=ElemCont
Na	Table=ElemCont
P	Table=ElemCont
Sr	Table=ElemCont
Ti	Table=ElemCont
Code	Table=Chem
pH-water	Table=Chem
pH-CaCl2	Table=Chem
OM	Table=Chem
NH4Cl Ca	Table=Chem
NH4Cl Mg	Table=Chem
NH4Cl Na	Table=Chem
NH4Cl K	Table=Chem
NH4Cl Al	Table=Chem
NH4Cl Mn	Table=Chem
KCl acid	Table=Chem
KCl Al	Table=Chem
NH4OAc Ca	Table=Chem
NH4OAc Mg	Table=Chem
NH4OAc Na	Table=Chem
NH4OAc K	Table=Chem
NH4OAc Al	Table=Chem
NH4OAc Mn	Table=Chem
NH4OAc P	Table=Chem

Finding common data in NESMC datasets.....

Pontius	Bailey	Hazlett	Lawrence	Ouimet
A	A	Oe	Oa Entire or mid10cm	Forest Floor
AE	Ab	A	Oe Entire or mid10cm	B1
B	AE	B	B Entire or mid10cm	B2
B/C	B			
BC	BC			
BE	BE			
Bg	Bg			
Bh	Bgx			
Bh1	Bh			
Bh2	Bhs			
Bhs	Bs			
Bs	Bsb			
Bs1	Bt			
Bs2	Btx			
Bs3	Bw			
Bsm	Bwb			
Bw	Bx			
Bw1	C			
Bw2	Cd			
Bw3	Cr			
C	E			
Cd	Eb			
Cr	L			
E	Oa			
E1	Oe			
E2	Oi			
Ebhs	OI			
Oa				
Oa1				
Oa2				
Oe				

Differences in soil horizon characterization. Is there additional detail on sample depth for these datasets? Bailey is the only dataset with depth in the current set of files.



Two approaches to combining data...

1. **Find a common database format that captures all of the information in the different studies.**

- Everyone has a different set of information that they track about their samples.
- A common one-size-fits-all database could miss some of the information, or become so large and all-encompassing that it might get a bit out of control.
- Scott pared down his database to what we thought might be a set of common variables, but once we started merging data together, it was obvious that there were additional bits of information that were important to the different studies.
- We can do this, but it will require more work on the part of contributors to agree on common variables, and to conform to a fixed format .

2. Develop a filter for each dataset that captures the variables of interest for data synthesis efforts

- Result would be a common format csv file extracted from each dataset.
- Reasonable approach for a limited number of datasets.
- All critical information is not captured in this common format.

Regardless of the approach taken to combine these data, we should discuss Metadata.....

What format do contributors use for metadata?

- Plain text documentation?
- xml/eml based metadata (FGDC or other?)
- If xml, how do you generate your content?

US vs Canadian standards?

LTER has developed some spreadsheet metadata entry forms that can then be converted to standard xml.

The advantage of using xml-based metadata is that the metadata can be contributed to a centralized clearinghouse to aid in data discover. No actual data would be included, but the metadata allow someone searching for soil data in this geographic region (or matching some other query term), to become aware of the existence of these data, and would provide them with dataset contact information.

Nested Database Design

Site
Site Name
Site Abreviation
Town
County
State
Owner

Pedon
Site Name
Pedon Number
Slope
Aspect
Elevation
Latitude
Longitude
Drainage Class
Depth to Bedrock
Thickness of Solum
Taxonomy
Sampling Date
….

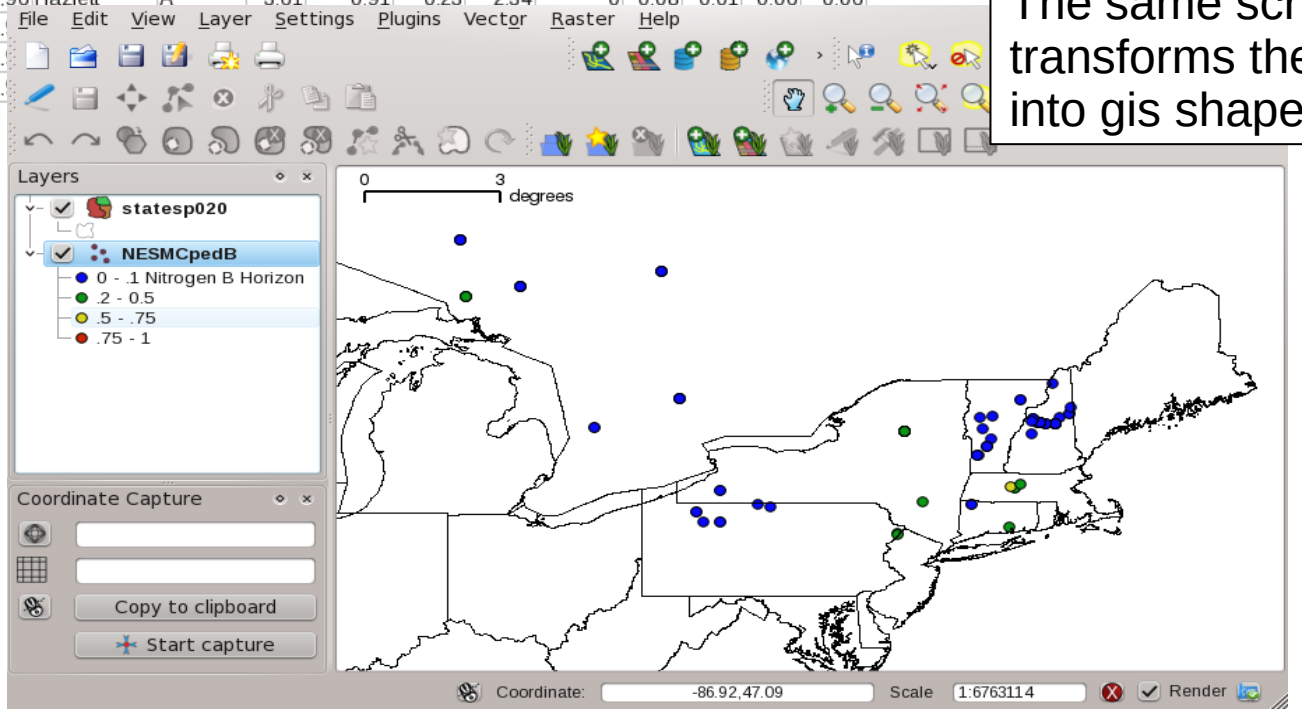
Sample
Site Name
Pedon Number
Horizon
Top Depth
Bottom Depth
pH
Exchangeable calcium
Total calcium
…

Dataset 1 | Dataset 2 | Dataset 3 | Dataset 4 | .....

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	Pedon	Lon	Lat	Investigator	Horizon	pH	OrgMat	Ca	Al	Carbon	Mg	Mn	K	N
1	Pedon	Lon	Lat	Investigator	Horizon	pH	OrgMat	Ca	Al	Carbon	Mg	Mn	K	N
300	EQ03VT	-73.1	43.15	Bailey	C	5.96	1.26	0	0	0	0	0	0	0
301	EQ03VT	-73.1	43.15	Bailey	C	7.35	0.95	0	0	0	0	0	0	0
302	EQ03VT	-73.1	43.15	Bailey	C	7.45	1.08	0	0	0	0	0	0	0
303	EQ03VT	-73.1	43.15	Bailey	C	7.56	0.99	0	0	0	0	0	0	0
304	GL-BC-01-01	-74.71	43.75	Lawrence	B	2.94	8.67	0.36	4.53	5.31	0.11	0	0.11	0.53
305	GL-BC-01-01	-74.71	43.75	Lawrence	Oa	2.76	87.92	10.99	15.19	45.33	1.38	0	0.66	1.92
306	GL-BC-01-01	-74.71	43.75	Lawrence	Oe	3.06	94.68	14.24	4.72	46.85	2.29	0	1.65	2.09
307	GL-BC-01-02	-74.71	43.75	Lawrence	B	3.25	15.74	0.33	7.08	7.84	0.19	0	0.07	0.66
308	GL-BC-01-02	-74.71	43.75	Lawrence	Oa	2.5	93.17	3.35	9.92	50.39	3.83	0	0.19	1.6
561	JP-CTDH-02-01	-72.34	41.48	Pontius	Bw2	4.16	4	0.04	3.25	1.4	0.02	0.01	0.08	0.08
562	JP-CTDH-02-01	-72.34	41.48	Pontius	Bw3	4.23	1.54	0.06	1.56	0.44	0.03	0.02	0.07	0.05
563	JP-CTDH-02-01	-72.34	41.48	Pontius	A	3.25	25.24	1.87	3.7	12.6	0.5	0.04	0.4	0.59
564	JP-CTDH-02-01	-72.34	41.48	Pontius	Bw1	3.69	8.63	0.02	1.3	4.4	0.03	0	0.07	0.2
1331	PH-DR-522-2	-93.1	49.96	Hazlett	Oe	3.65	44.99	16.17	0.64	0	3.25	1.14	1.7	1.53
1332	PH-DR-522-3	-93.1	49.96	Hazlett	A	3.61	0.91	0.23	2.34	0	0.08	0.01	0.06	0.06
1333	PH-DR-522-3	-93.1	49.											
1334	PH-DR-522-3	-93.1	49.											
1335	PH-DR-522-4	-93.1	49.											

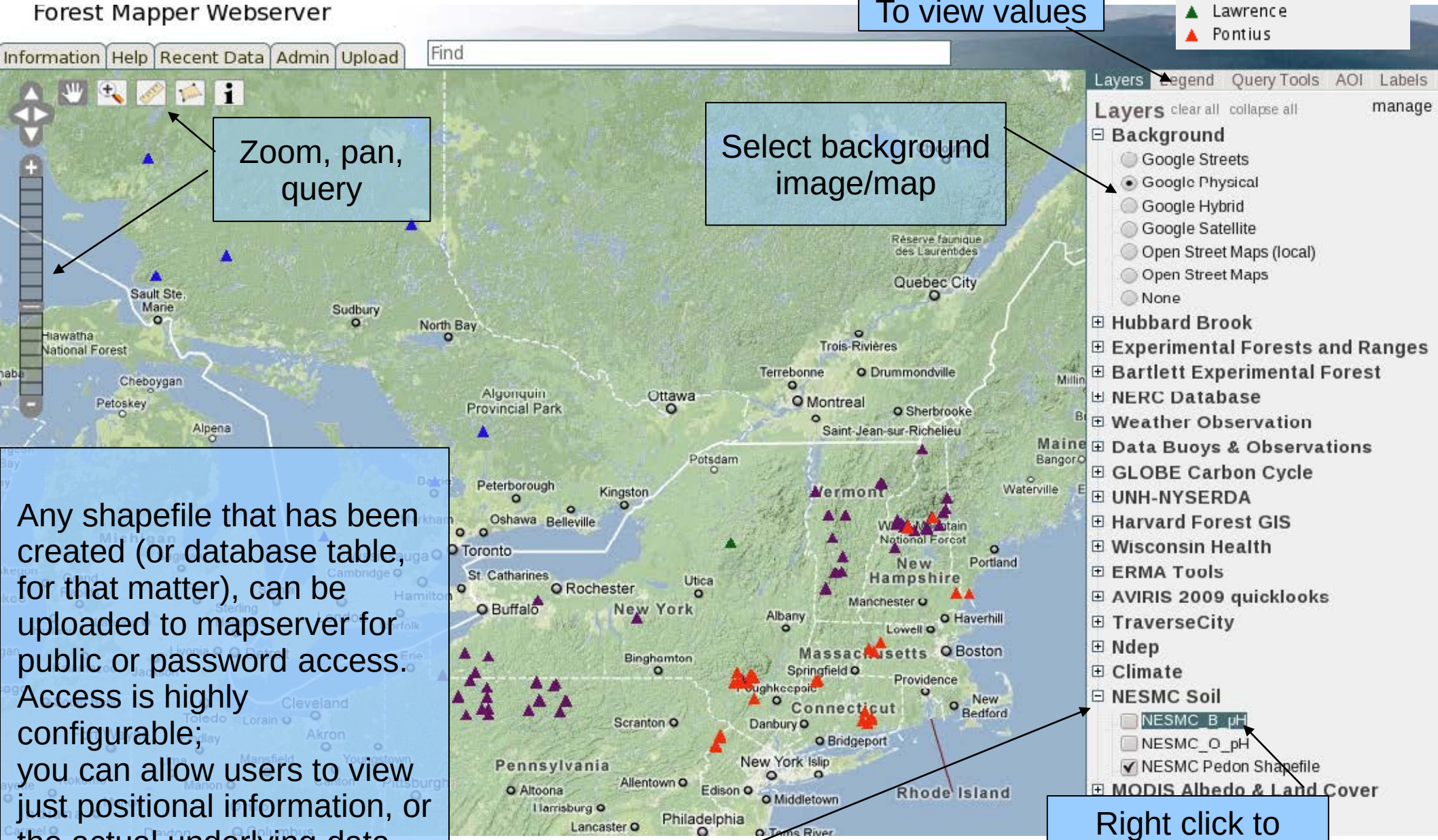
Selected variables extracted from the datasets and combined into a common format

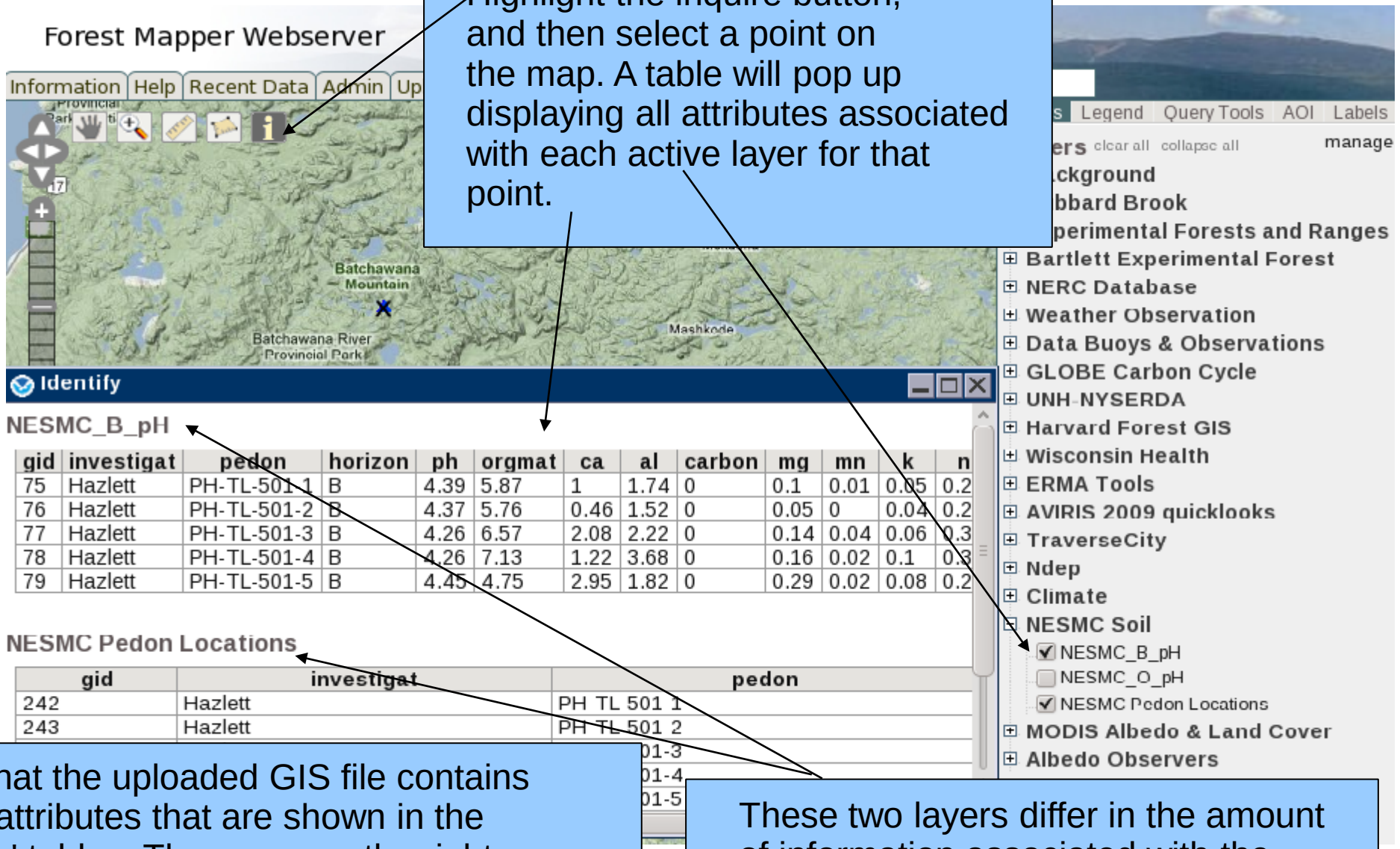
The same script transforms these data into gis shapefiles



http://forest-mapper.sr.unh.edu

Forest Mapper Webserver





Highlight the inquire button, and then select a point on the map. A table will pop up displaying all attributes associated with each active layer for that point.

Note that the uploaded GIS file contains many attributes that are shown in the 'inquire' tables. The menu on the right is configured to display these points color-coded by one of the attributes. pH is used in these examples, but as we finalize the merging of the data, we can add Ca,Al,etc....

These two layers differ in the amount of information associated with the points. You might want to use the pedon location layer as a public layer, and require registration for users to access the analysis data contained in the second layer.