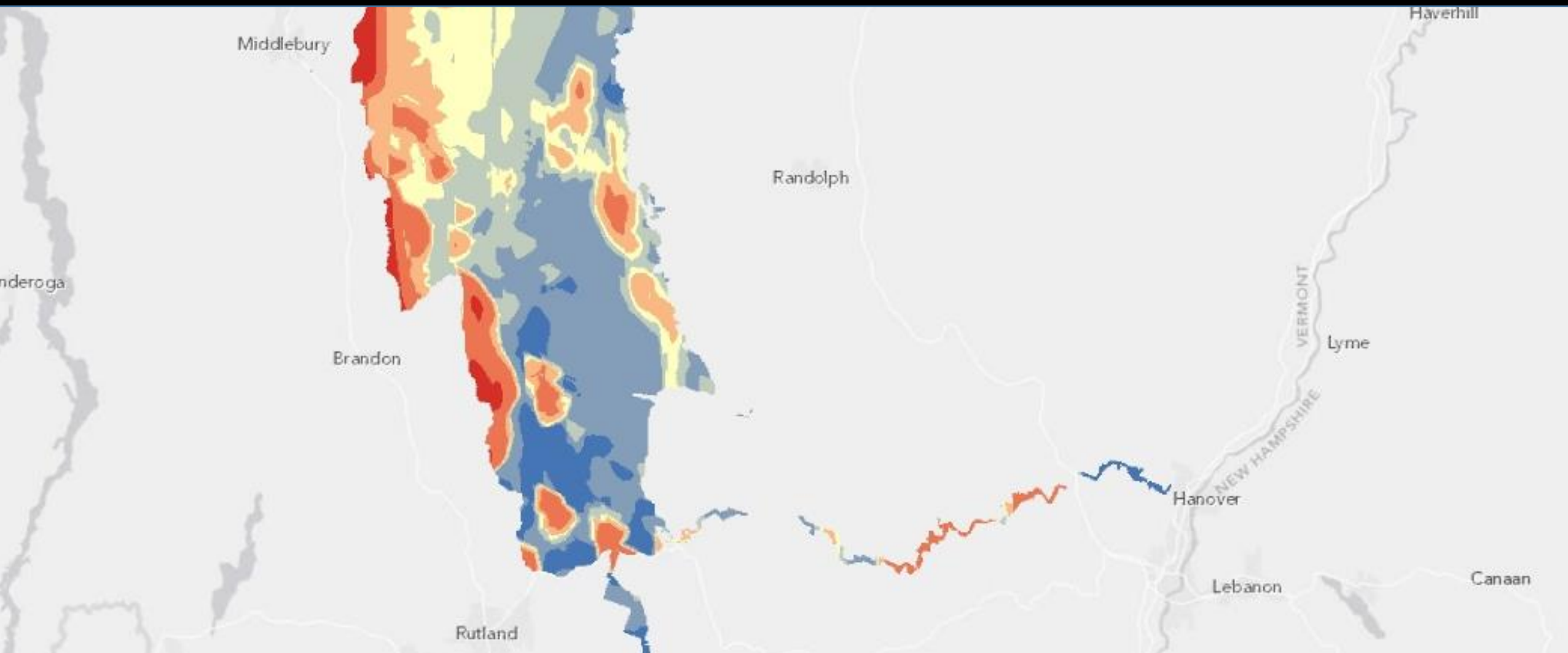


Developing a Till-Source Model in the Green Mountain National Forest, VT

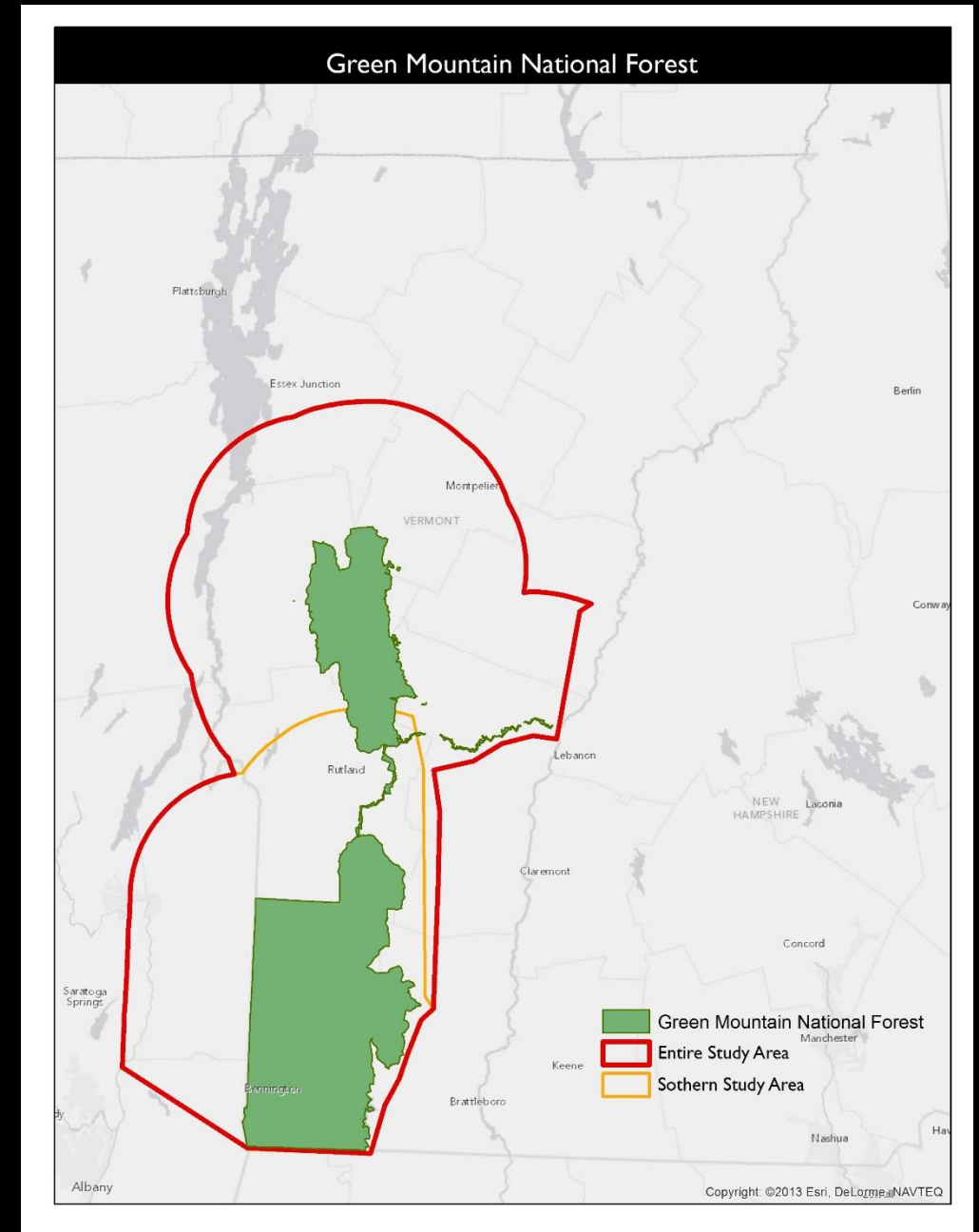


Presentation for the Vermont Monitoring Cooperative

Gus Goodwin 12.12.2013

Project Goals

- GMNF: Understand spatial variability in glacial till composition
 - Incorporate this information in management
- Me: Build and test a model that predicts calcium content in till
 - Lay the groundwork for future research

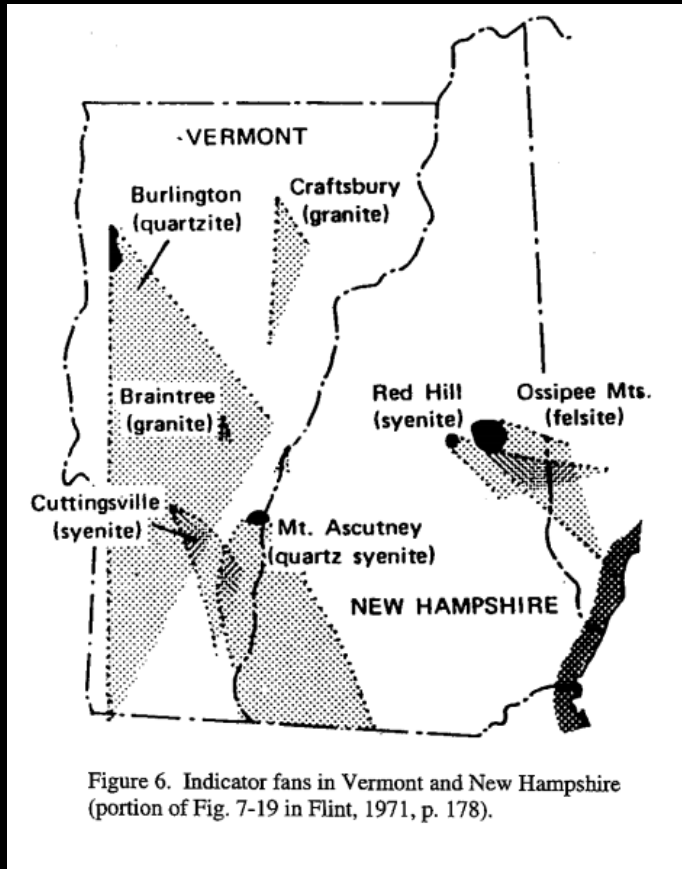


Acknowledgments

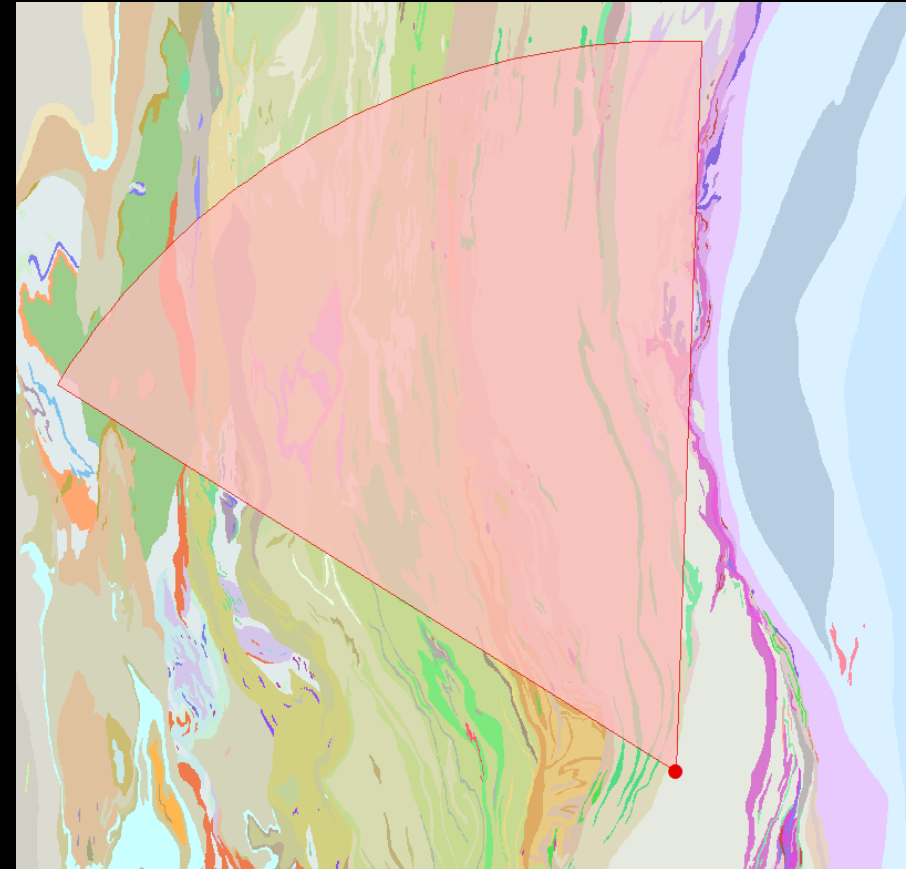
- Sponsor
 - Diane Burbank, Ecologist, GM&FL NF
- Project Advisor
 - Scott Bailey, Geoecologist, USFS, Hubbard Brook
- Committee
 - Jeffrey Hughes, Jen Pontius, and Don Ross
- Vermont Geological Survey
 - Marjorie Gale
- Stephen Wright, Geologist, UVM
- George Springston, Geologist, Norwich University

Method

- Source-Envelope Approach



- Larsen, Wright, Springston, and Dunn. 2003



- Basemap: Rattcliffe et al. 2011.

Products

SubGroup	Sub Group Description	Estimated CaO%
11	limestone, dolomite and carbonate-rich clastic sediments	60.5
12	marble, dolomitic marble, includes calc-silicate rocks	57.8
13	calcareous clastic and metamorphosed clastic rocks (includes calcareous slates)	10.4
14	Carbonate Rich Ultramafic	0.0
21	slate, graywacke and conglomerate	3.4
22	graphitic, sulphidic slate, graywacke and conglomerate	1.1
23	pelitic schist and phyllite; granofels, gneiss, mixed schist, interlayered granitic schist, gneiss, and mafic gneiss	2.0
24	quartzose metasandstone, siltstones, quartzite, quartz granofels and quartzose gneiss; calcareous/ calcareous pelitic schist and phyllite; may include granofels	11.2
25	sulphide-bearing, locally graphitic, schistose granofels, phyllite, and mixed schist and gneiss	1.9
26	quartzose metasandstone, quartzite, quartz granofels and quartzose gneiss	0.7
31	amphibolite, greenstone, greenschist-facies metavolcanics, schistose mafic rock; minor dispersed carbonate	10.2
32	mafic gneiss and mafic lithologies mixed with felsic volcanics	10.0
33	mafic plutonic rocks, including gabbro, diorite, monzodiorite, and diabase and basic dikes	8.9
41	Ultramafic rocks: including serpentinites, dunites, peridotites and talc schist; carbonate present	0.2
51	granitoid plutonic rocks, including granite, quartz monzonite, granodiorite, tonalite, trondhjemite and equivalent gneiss	2.6
52	fine-grained felsic rocks of volcanic and subvolcanic origin; includes feldspathic hypabyssal dikes and flows	
53	quartz-poor plutonic rocks, including syenite, nepheline syenite, quartz syenite, monzonite, and anorthosite	0.9

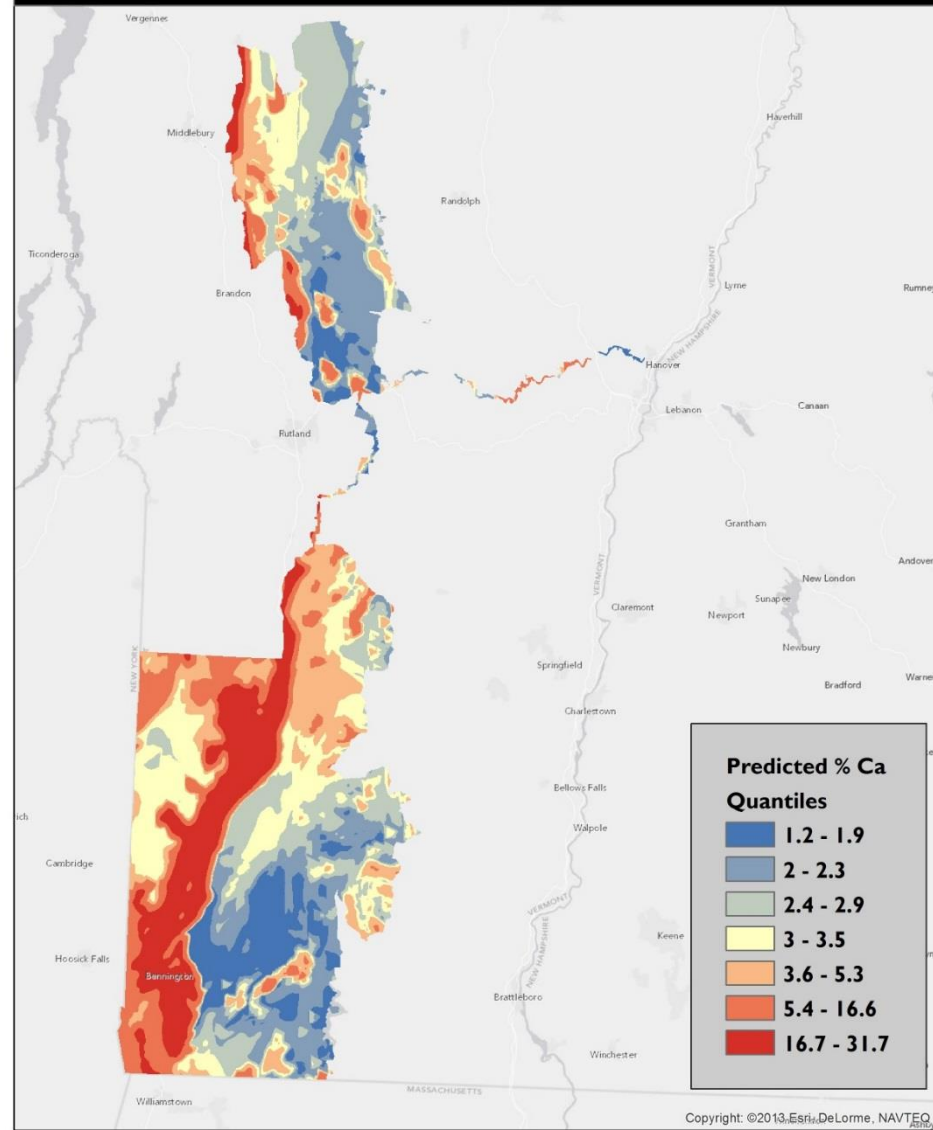
% Calcium in Bedrock Ecounits (8/20/2013)



% Calcium in Bedrock
 High : 57.7%
 Low : 0%

Products

Predicted Calcium Content in Unweathered Glacial Till
in the Green Mountain National Forest



Products

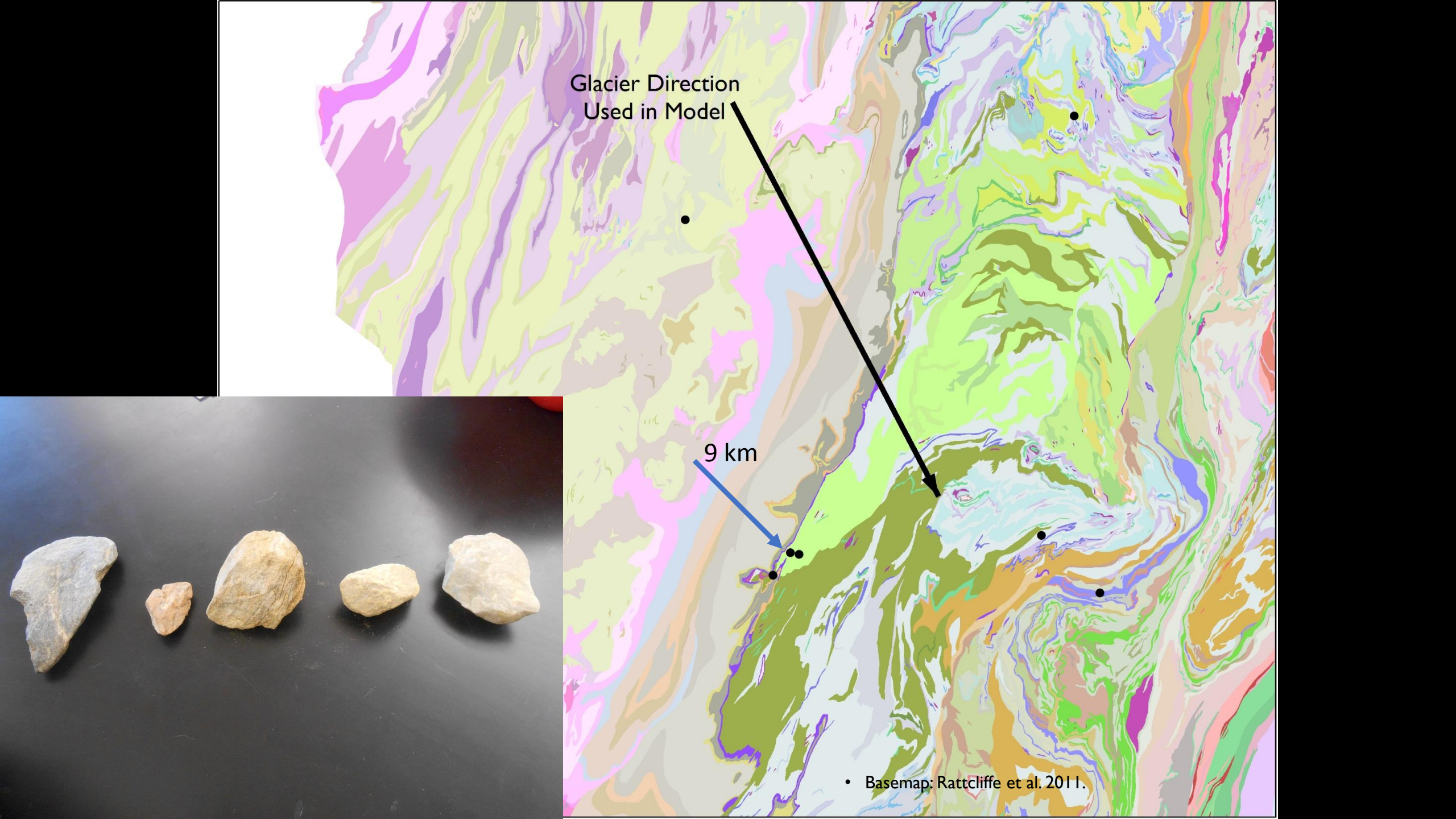
- 10 validation sites
 - Fine Sediments (<2mm)
 - Bulk chemistry analysis with ICP
 - Pebble Count (3"-3/4")
 - 100 per site



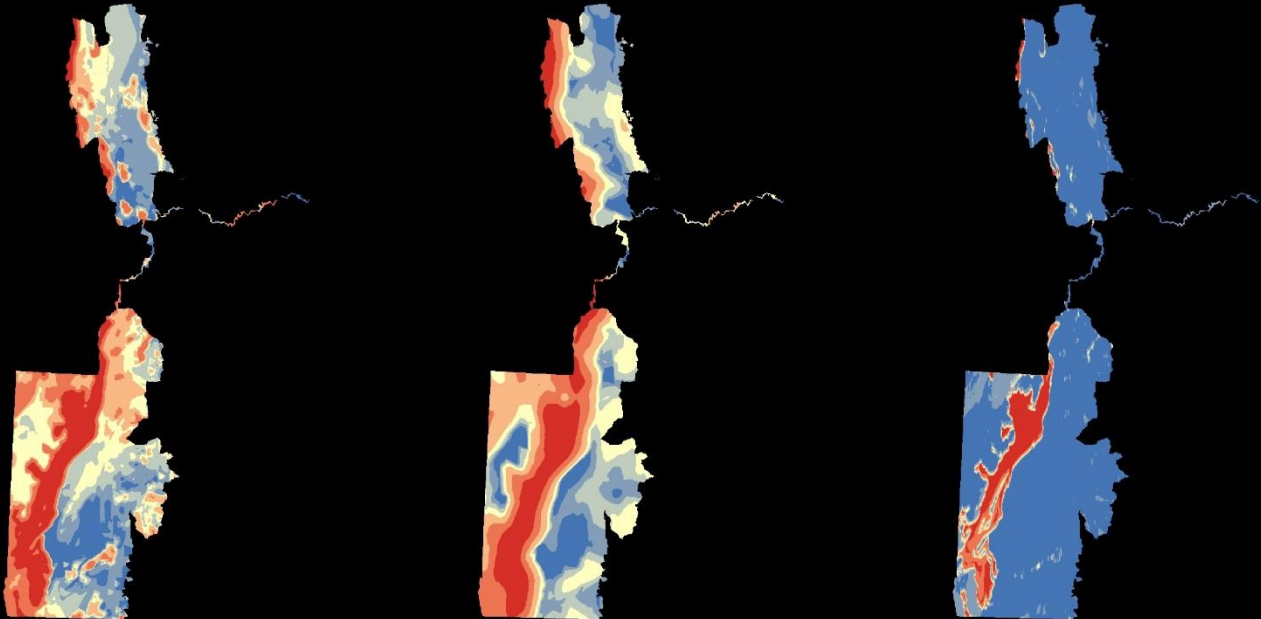
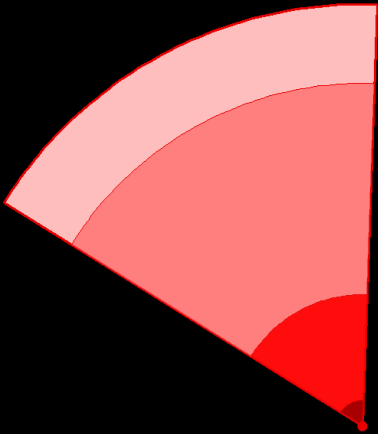
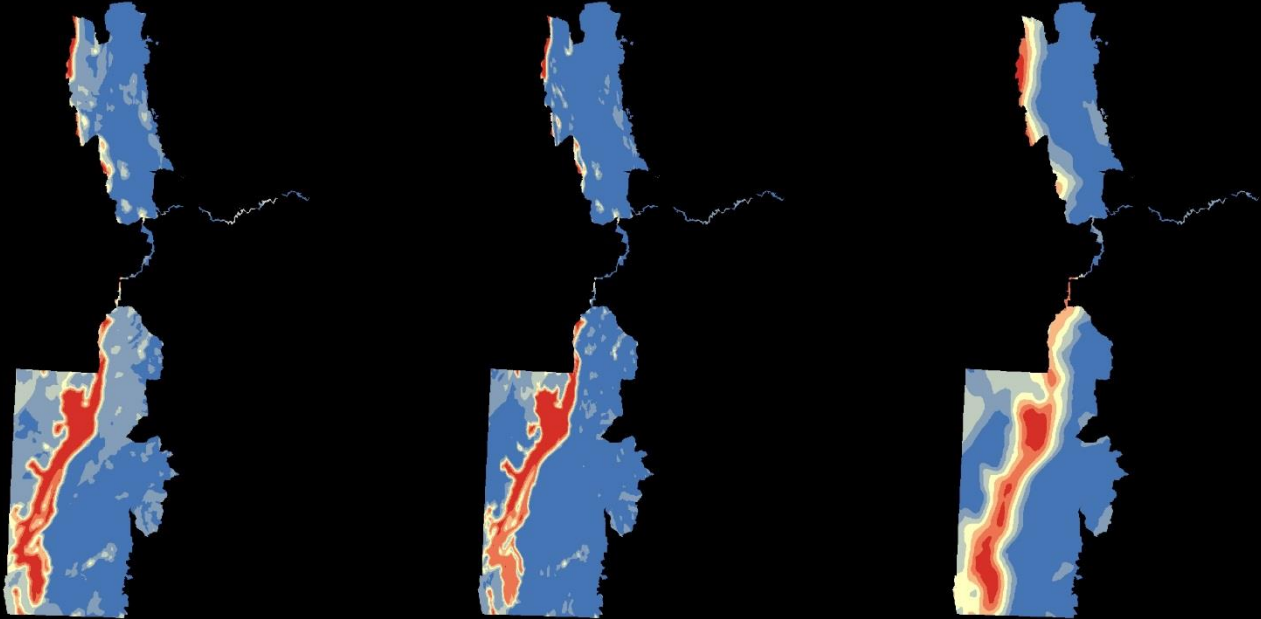
Products

- Data will guide choice of model variables
- Still waiting...





Which one?



Works Cited

- Larsen, F., Wright, S. Springston, G., and R. Dunn. 2003. Glacial, late-glacial and postglacial history of Central Vermont. Guidebook for the 66th Annual Meeting of the Northeast Friends of the Pleistocene. Montpelier, VT. May 23-25.
- Ratcliffe, N.M., Stanley, R.S, Gale, M.H., Thompson, P.J., and Walsh, G.J., 2011, Bedrock Geologic Map of Vermont: [U.S. Geological Survey Scientific Investigations Map 3184](#), 3 sheets, scale 1:100,000.