Spatial variability in production and transport of sediment and nutrients to Lake Champlain

RACC Retreat, 6 February 2016

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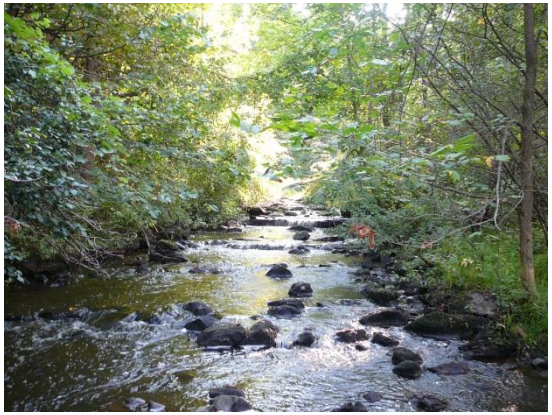
RACC
Research on Adaptation to Climate Change

Variability in Sediment Production and Transport

Confined

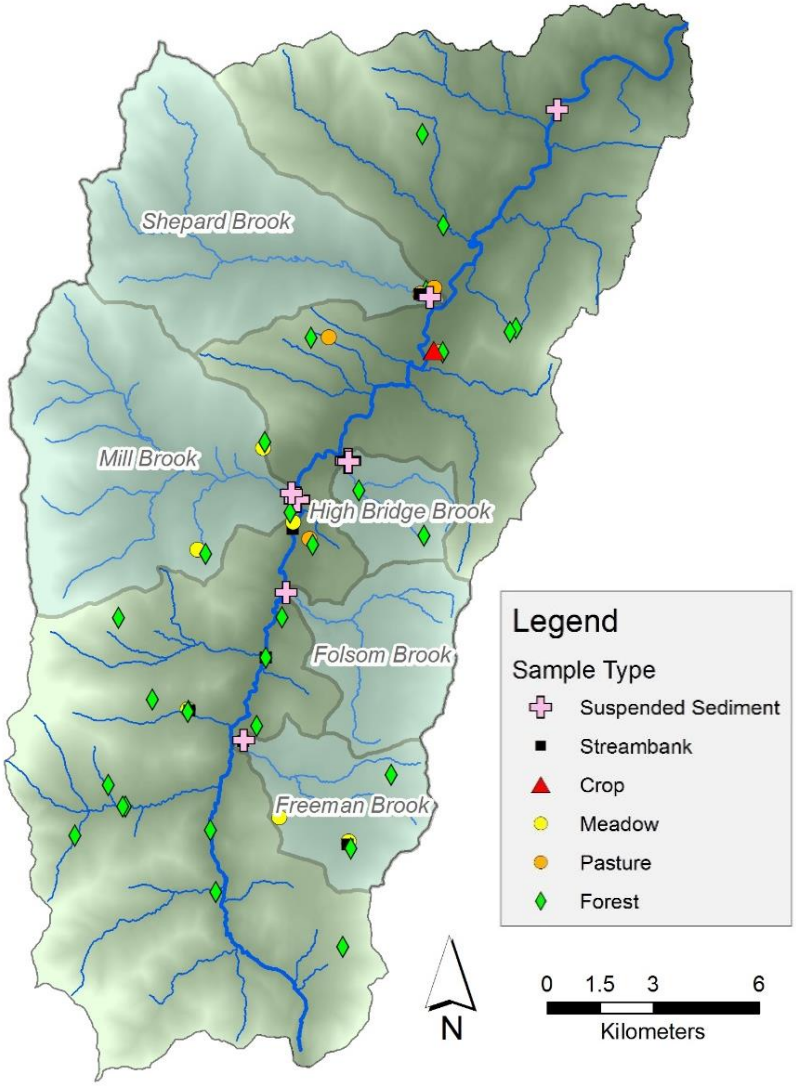




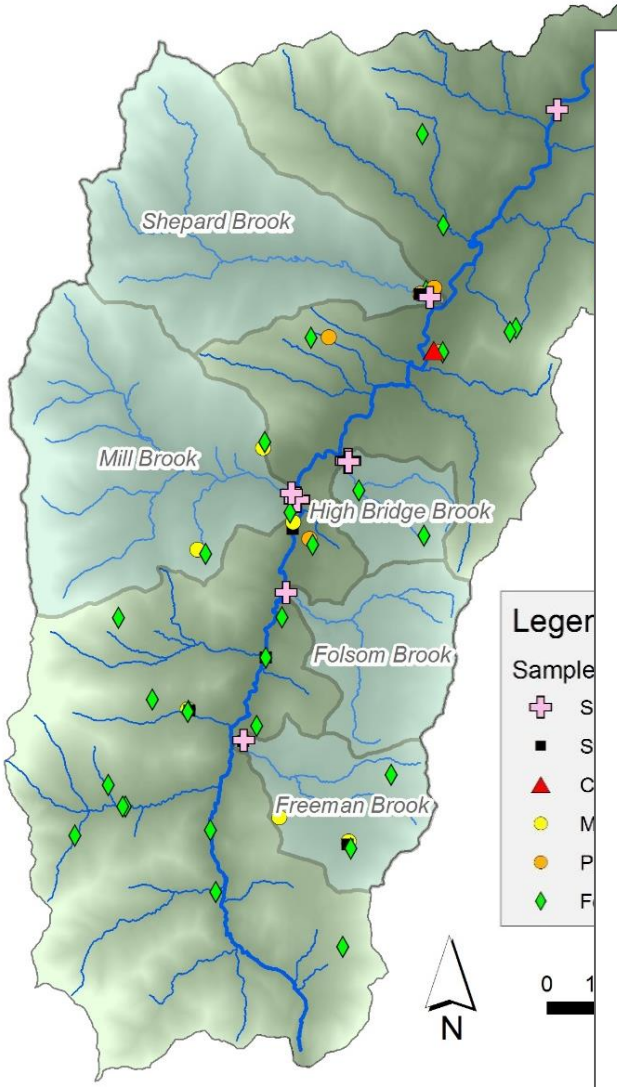
Unconfined

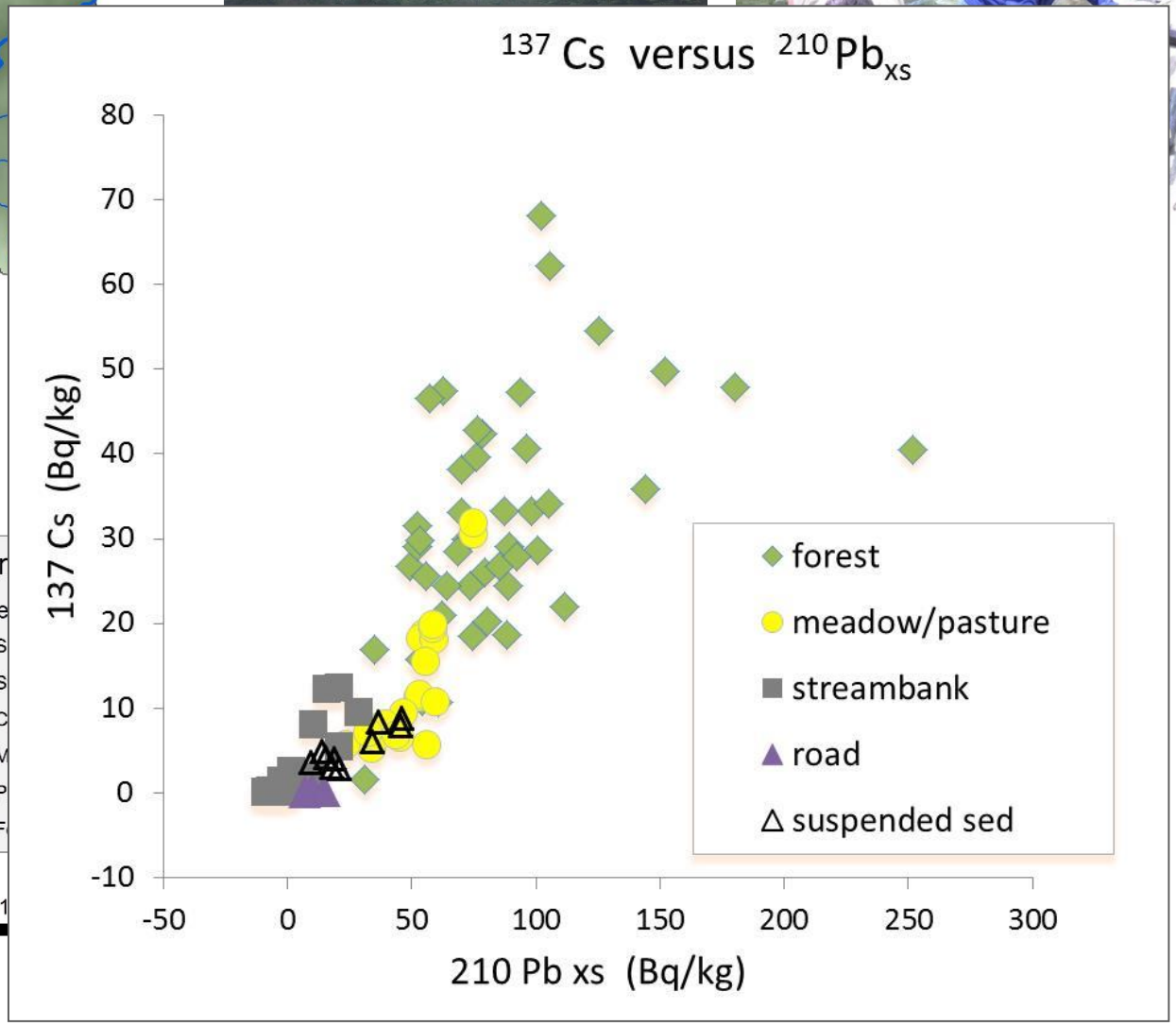


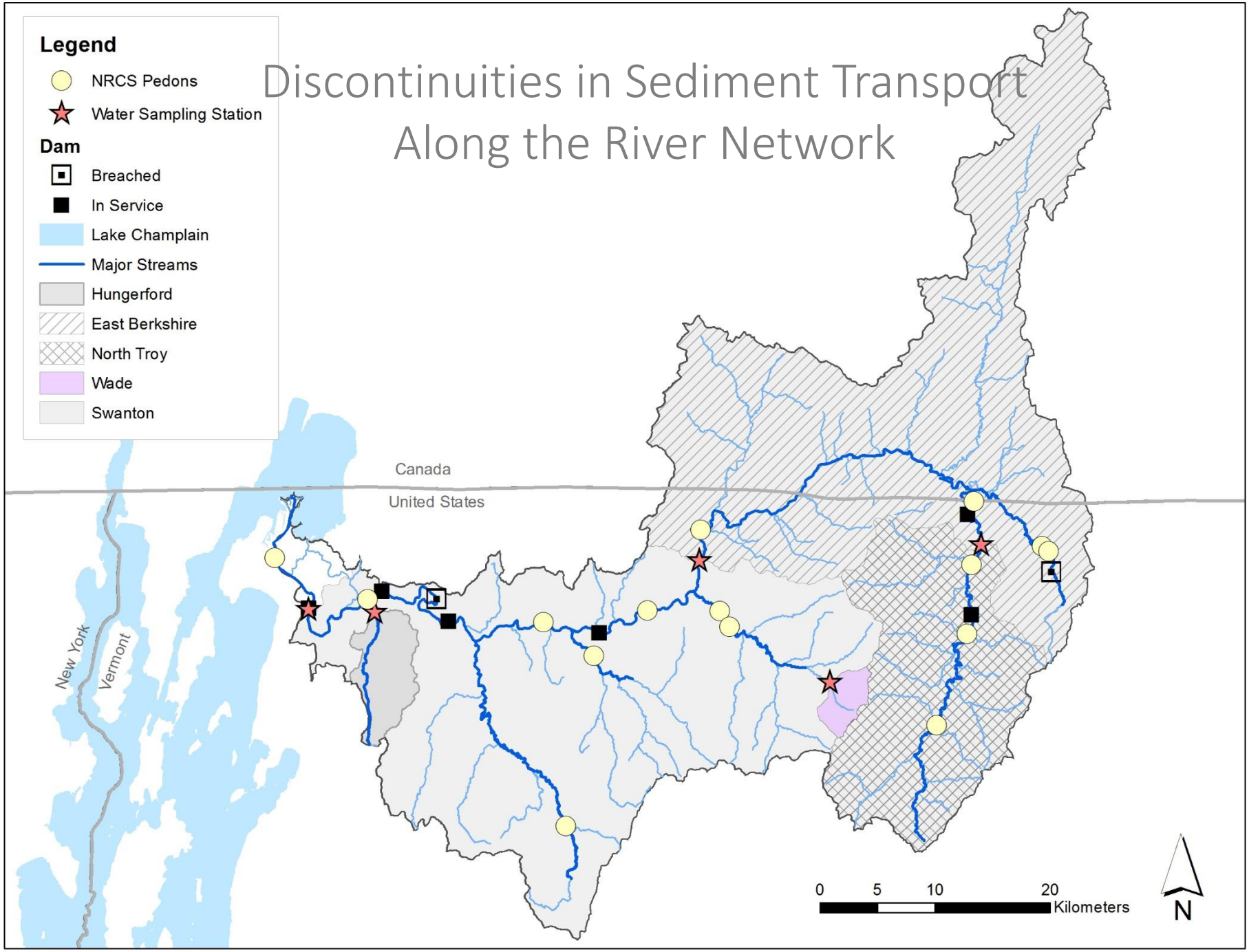

Sediment Tracer Study



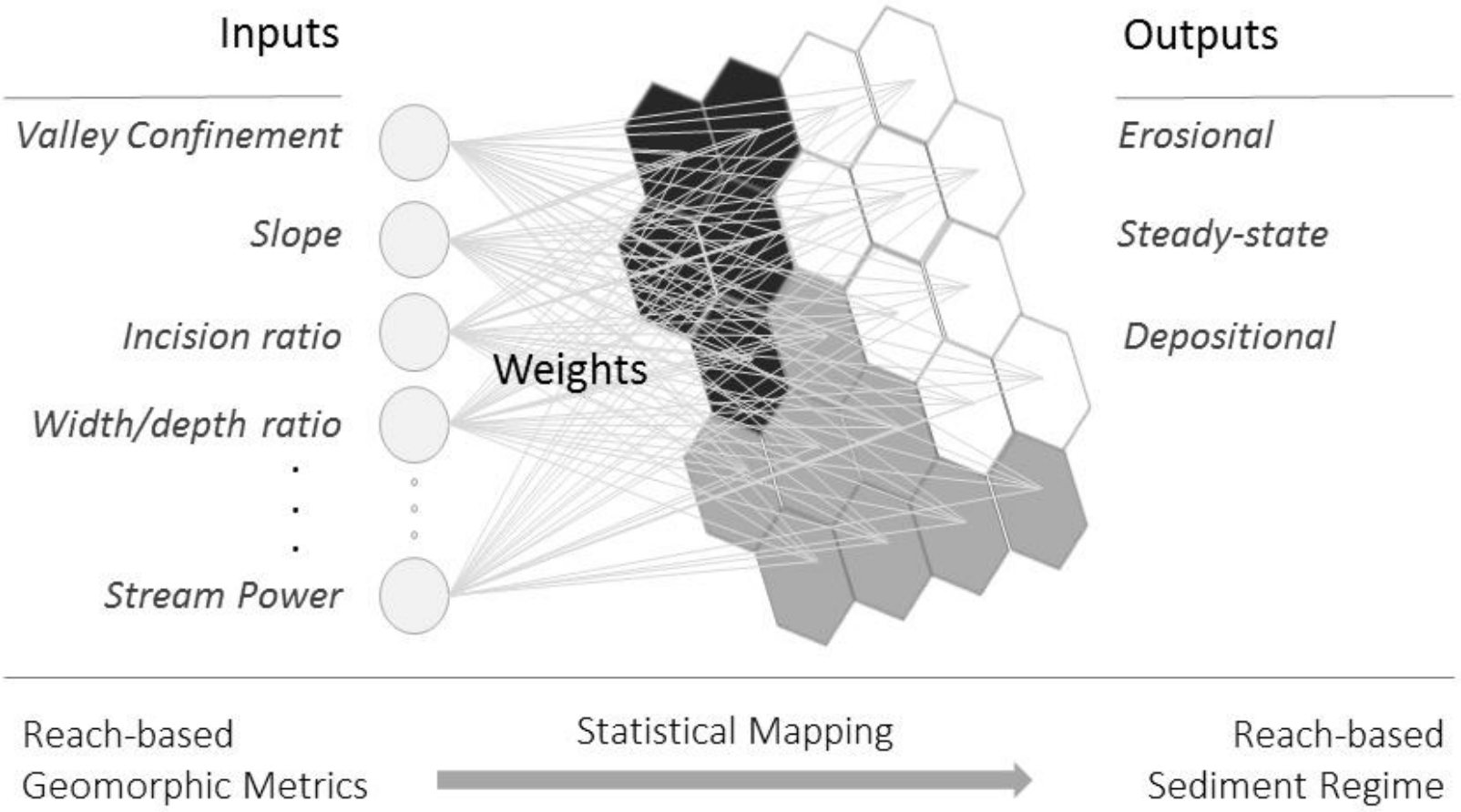
Sediment Tracer Study



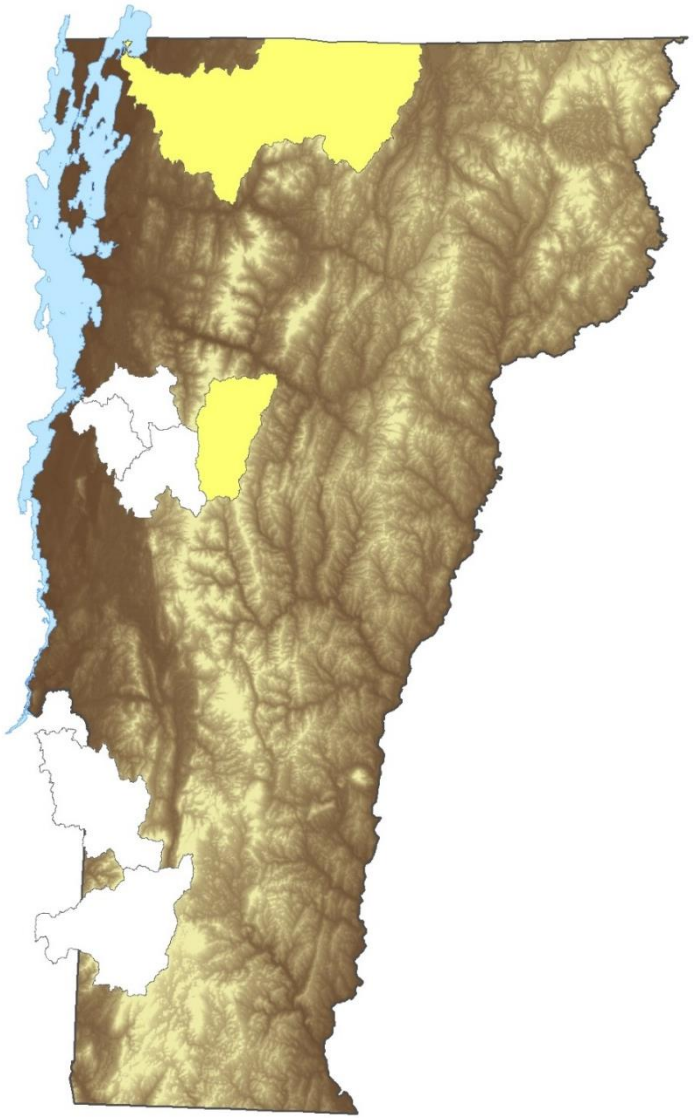



Legend
NRCS Pedons
Water Sampling Station
Dam
Breached
In Service
Lake Champlain
Major Streams
Hungerford
East Berkshire
North Troy
Wade
Swanton
Discontinuities in Sediment Transport
Along the River Network
Canada
United States
New York
Vermont
0 5 10 20
Kilometers
N

Neural Network: Self-Organizing Map



Neural Network: Self-Organizing Map



Data Sets:
Reach-based geomorphic metrics

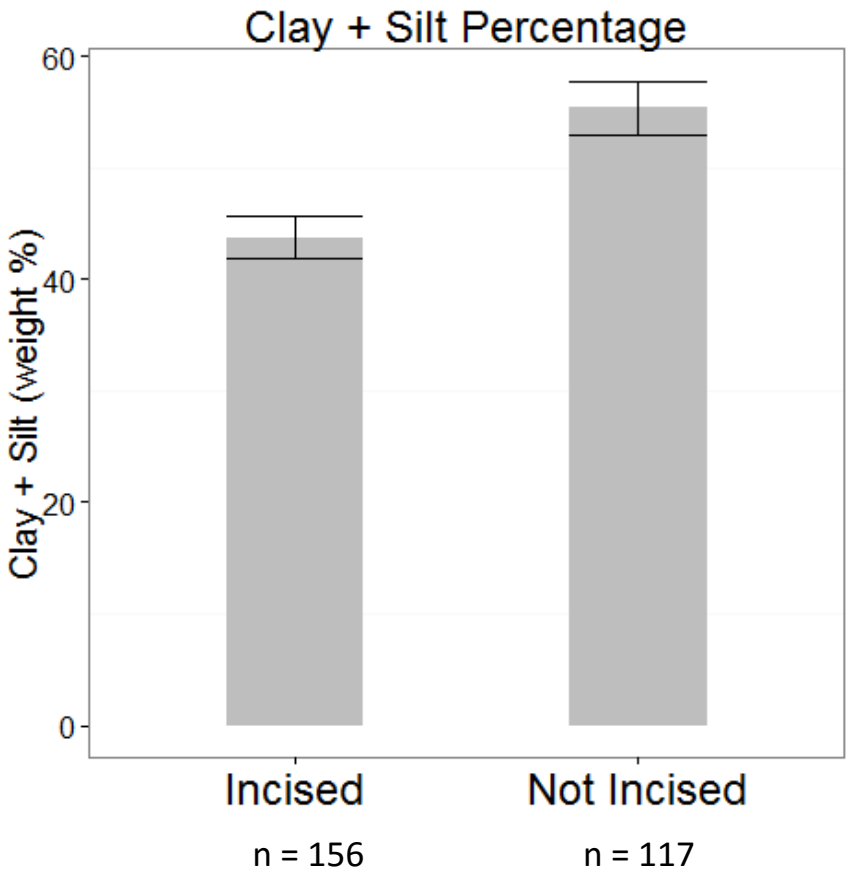
Training Data Sets (146):

- Lewis Creek (51)
- Little Otter Creek (19)
- New Haven River (23)
- Mettowee River (37)
- Battenkill River (16)

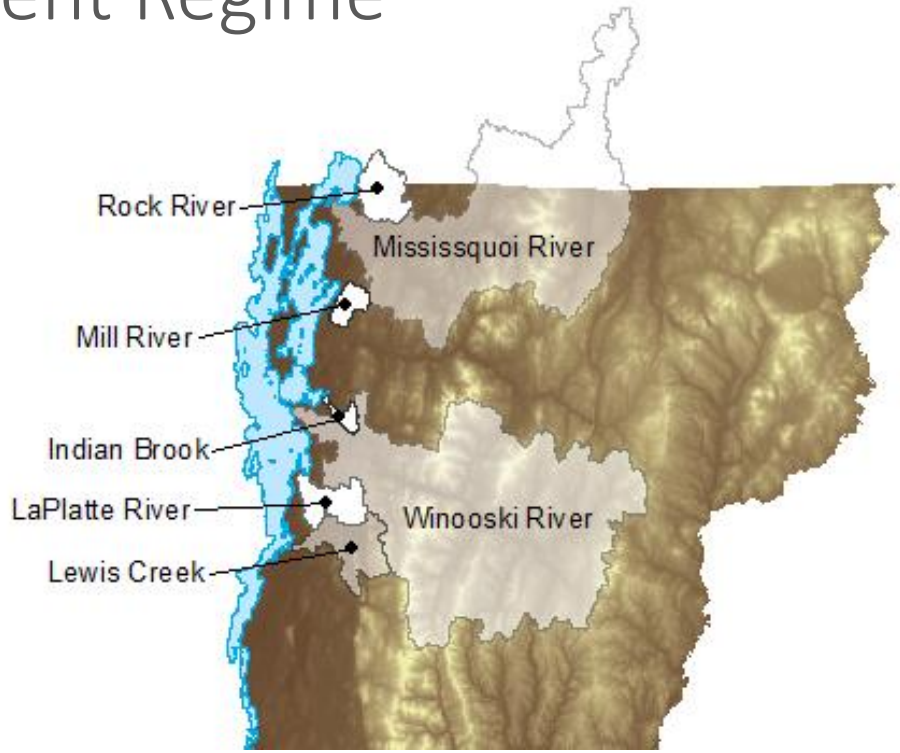
Prediction Data:

- Missisquoi River (> 100)
- Mad River (>40)

Characteristics by Sediment Regime

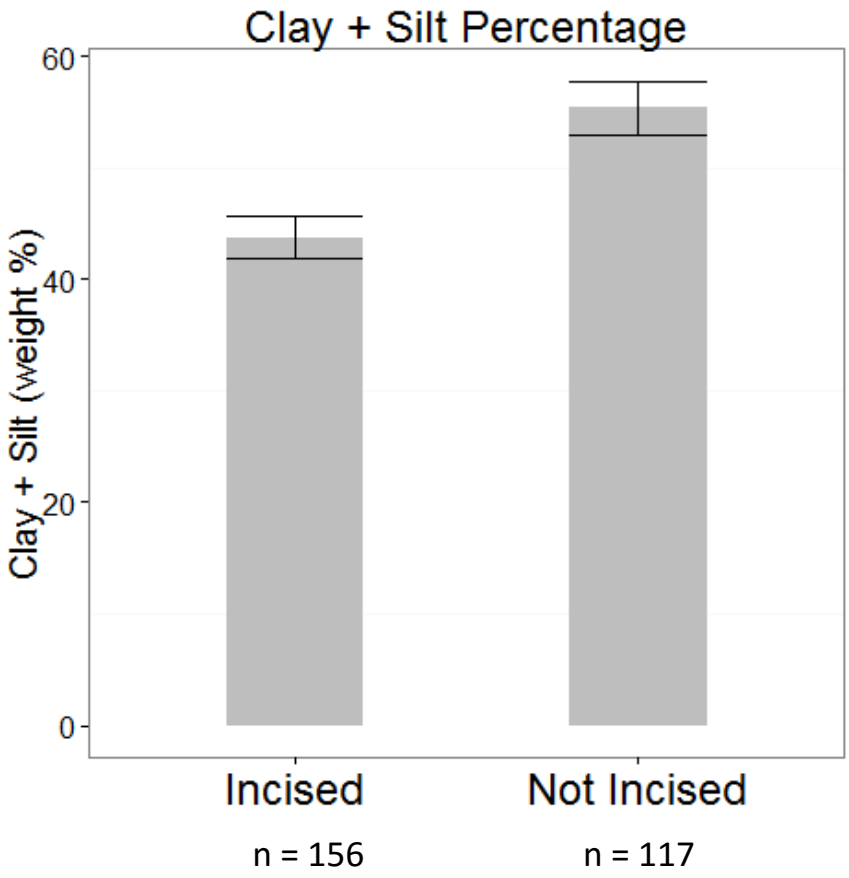


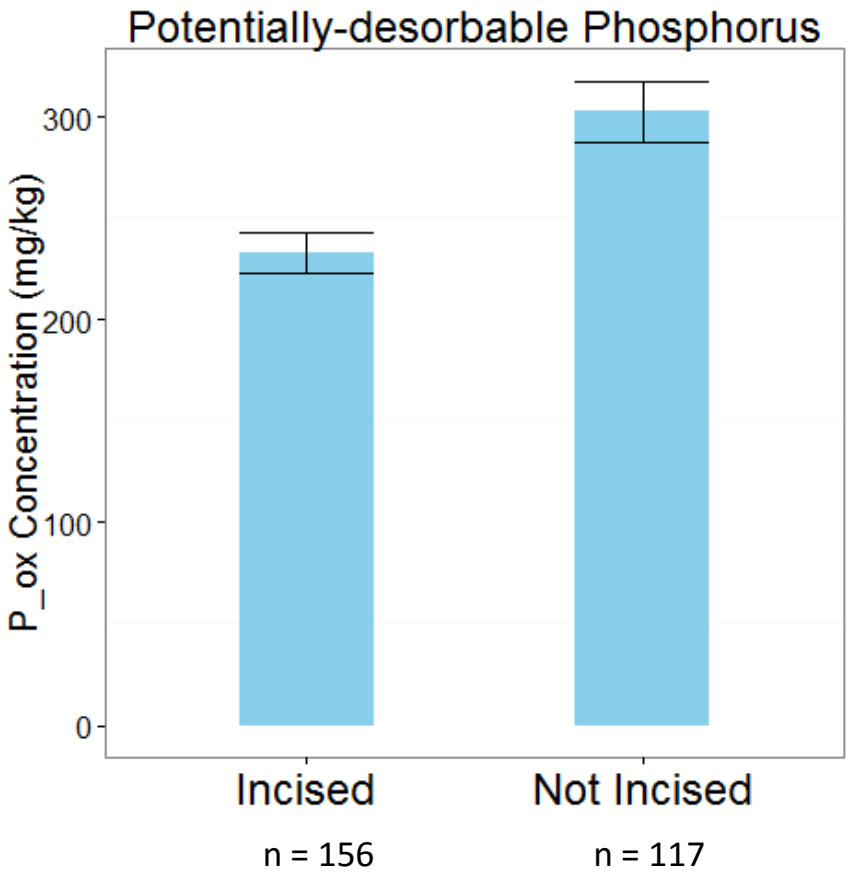
A, B, C horizons



60 streambank sites
NRCS, 2007 – 2010
7 watersheds
from 8.0 to 2,230 km^2

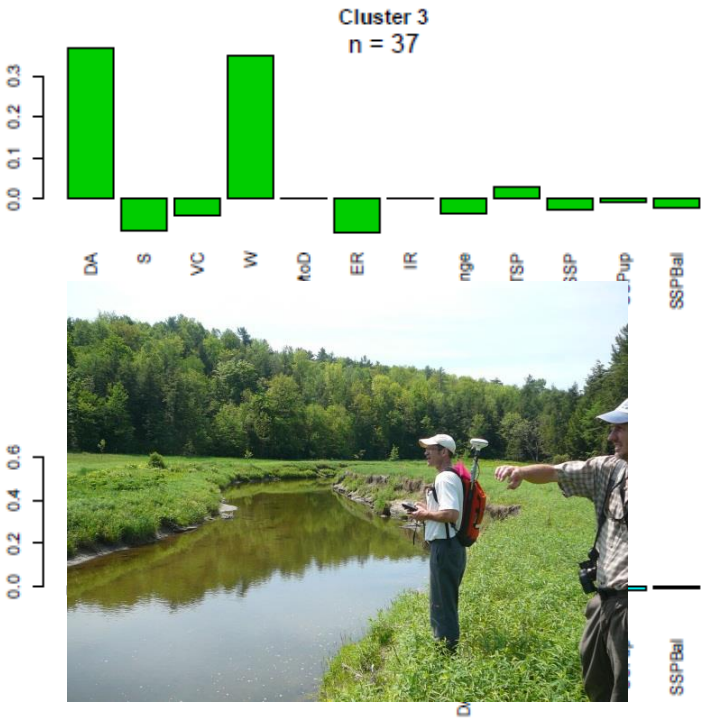
Characteristics by Sediment Regime

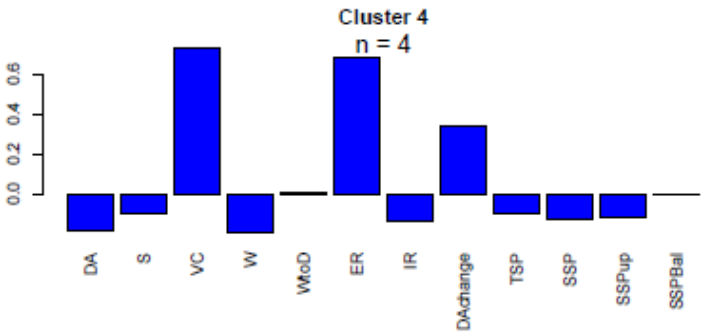


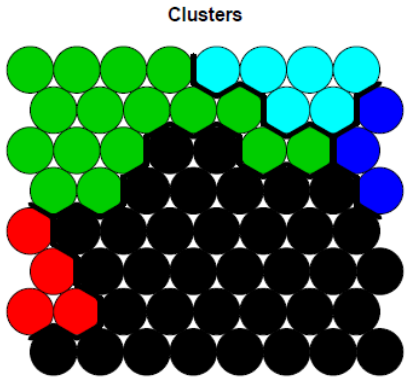


A, B, C horizons at 47 streambank sites

Neural Network: Self-Organizing Map







Expected Publications

- *Spatial Variation in Stream Power: Application of Neural Kriging to Classify Erosional and Depositional Stream Reaches in a Glacially-conditioned Vermont Headwater Catchment, (est. 2016)*

- *Comparison of data-driven models to process-based models in the estimate of fine sediment export from a glacially-conditioned catchment (est 2017)*

- *A Bayesian Network Model of Sediment Connectivity at the Catchment Scale, Mad River, Vermont (est 2017)*