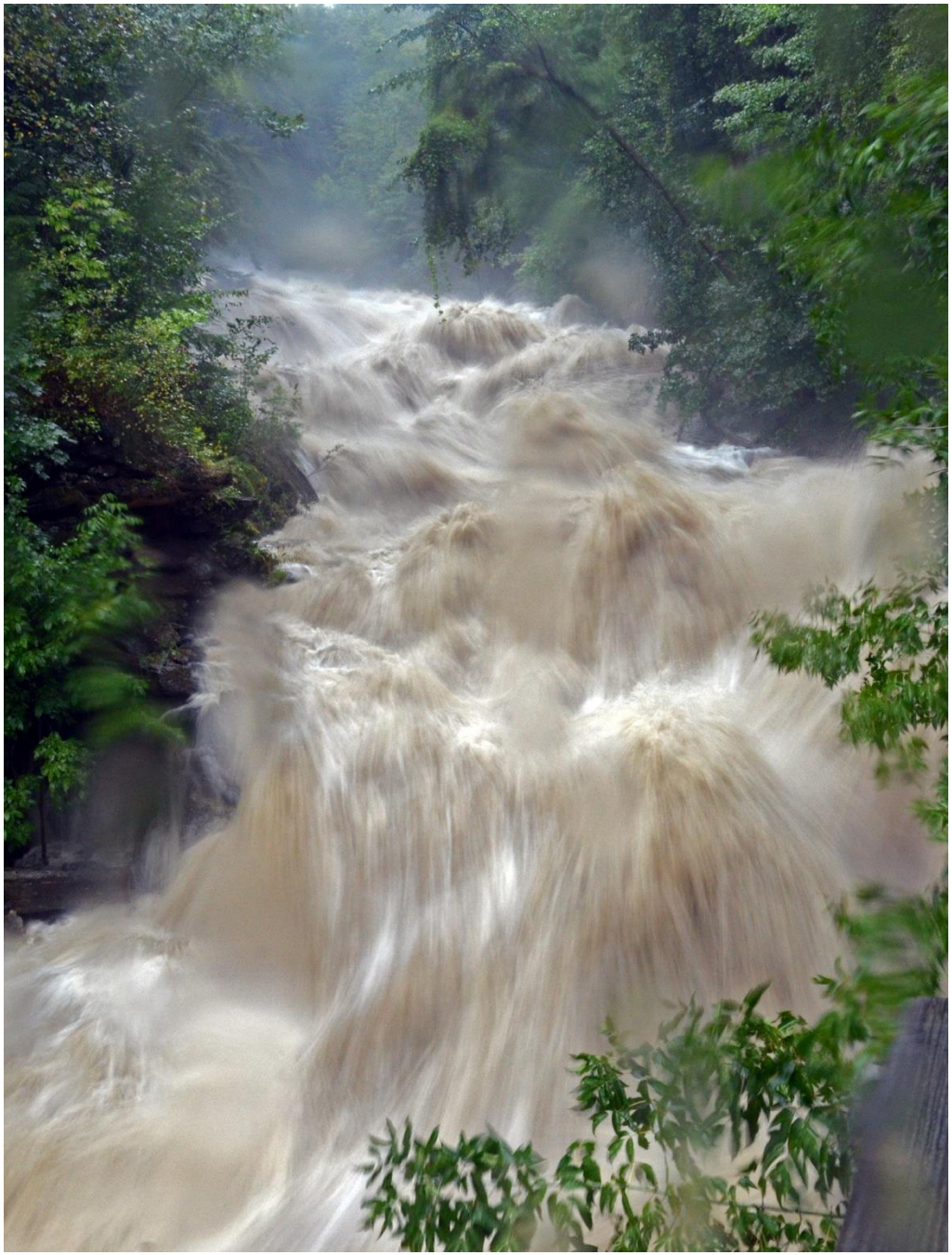
Vermont EPSCoR

Experimental Program to Stimulate Competitive Research

BREE 2018 Algal Bloom Updates Missisquoi and St. Albans Bays

Andrew Schroth and Wilton Burns

Entire BREE Ecological Team



BREE
Basin Resilience to Extreme Events
in the Lake Champlain Basin

Focus on Extreme Events and Resilience

What makes some watershed soils, streams, lakes resilient?

What are the properties and processes critical to maintaining water quality resilience?

Tropical Storm Irene, Aug. 27, 2011
(Gordon Miller)

Resilience to Extreme Events Across Soil-River-Lake Continuum

Cutting edge
sensor network

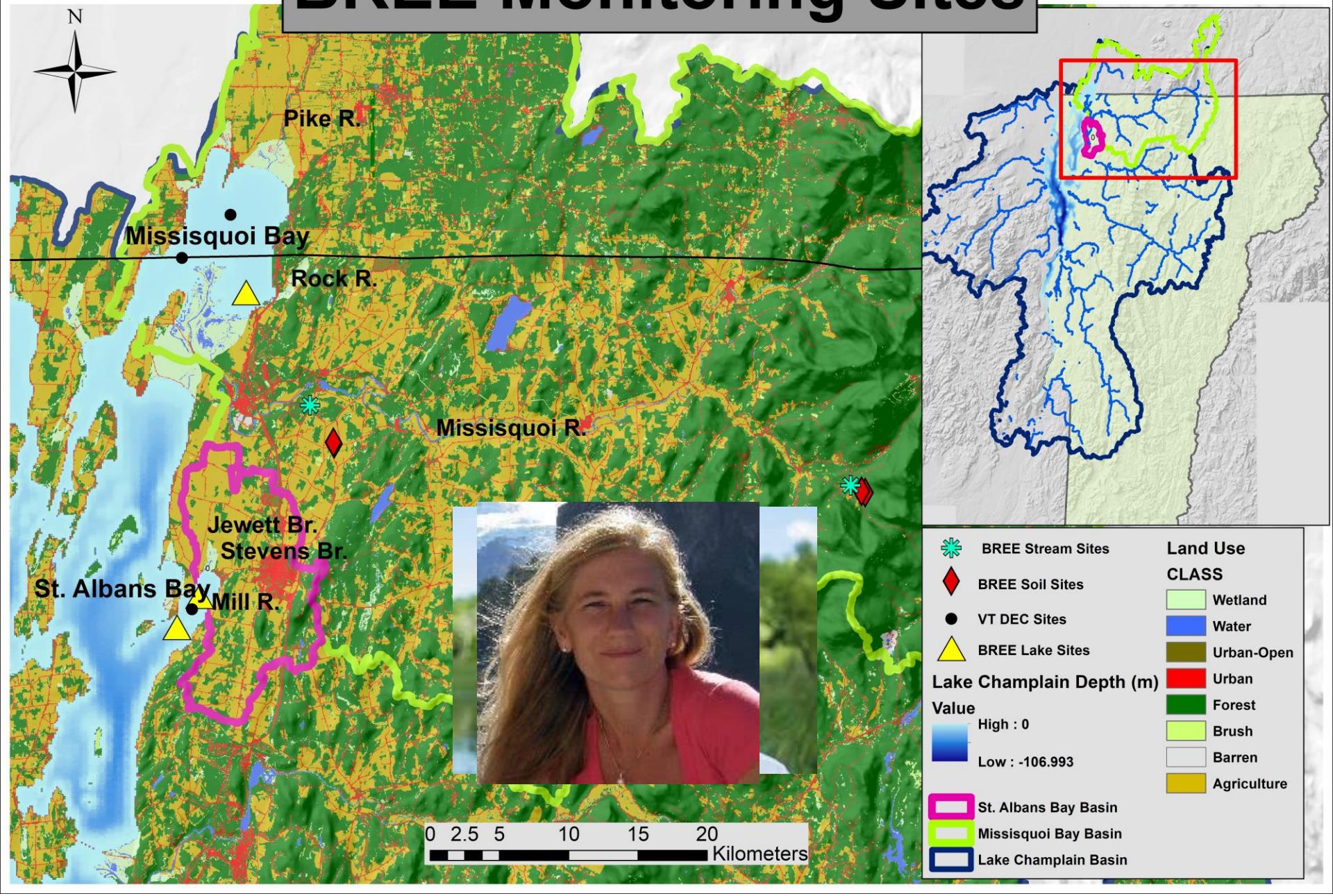
Thrust 1: Ecological Systems

Resilience to Extreme Events Across Soil-River-Lake Continuum

Cutting edge sensor network

Thrust 1: Ecological Systems

BREE Monitoring Sites

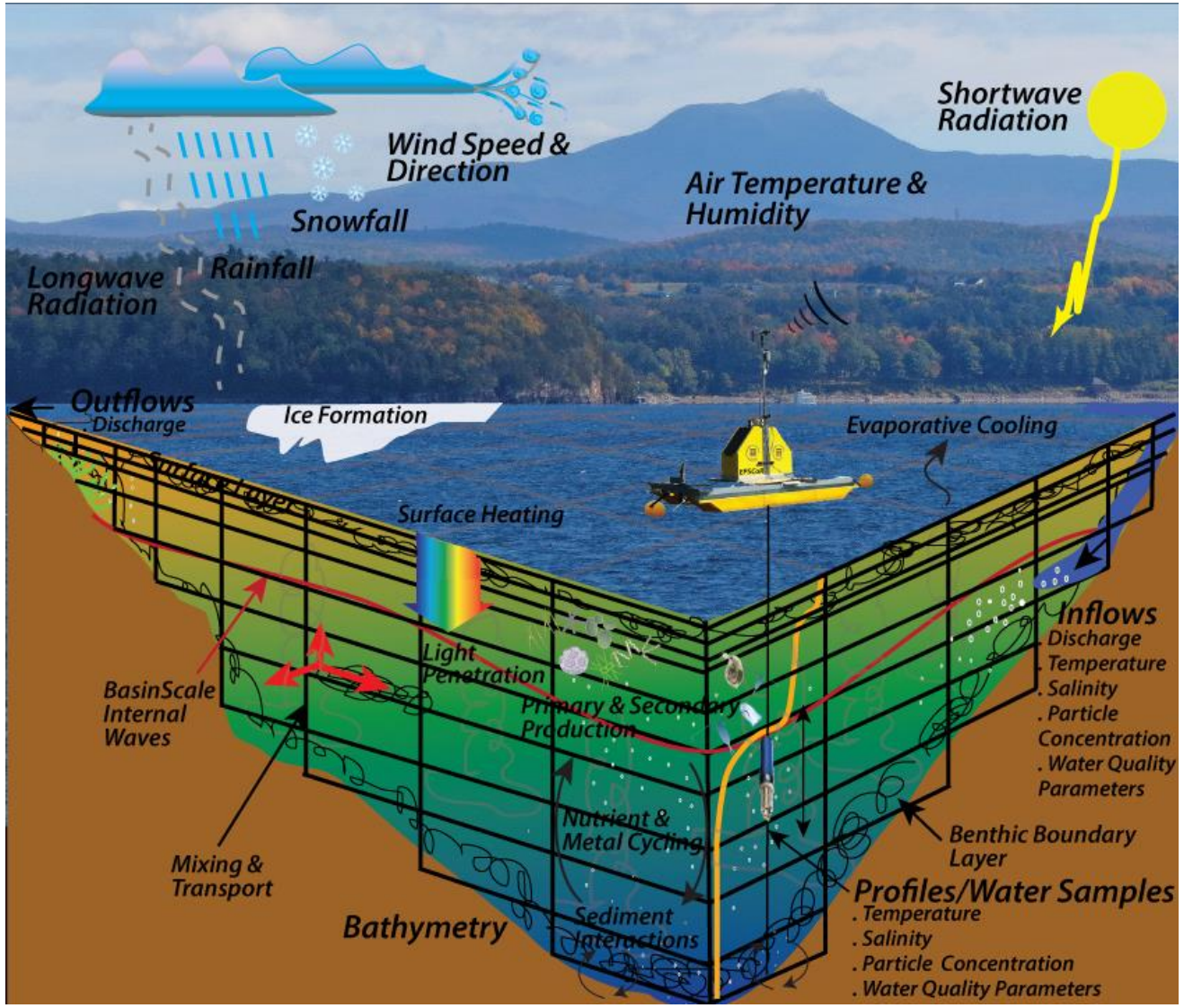


Lake Model (AEM3D; ELCOM-CAEDYM)
3D coupled Hydrodynamic-Aquatic Ecosystem Model

Processes Simulated

Hydrodynamics: Motions of the water body and the transport and mixing of all simulated constituents due to these motions.

Biogeochemical processes: Primary and secondary production, nutrient and metal cycling and sediment interactions.



Numerical Models - Philosophy

- Process-based models.
- Models are under active and continuous developments, i.e., science and run time.
- The science in the models must be able to capture processes in the water column at the scale of interest according to the objective.
- Models must be open source so the science in the models can be peer reviewed.
- Accessing the best possible forcing data.
- Validation data must be collected in regions where signal to noise is the highest and in an adaptive way.