The social costs of phosphorus:

Quantifying improvements to social welfare from reduced nutrient loading

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VERMONT EPSCoR

BREE
Basin Resilience to Extreme Events
in the Lake Champlain Basin

Private benefits of P inputs

External costs to society

Motivation & research gaps

- Estimated cost of achieving TMDL: **$1.3 billion**
- Estimated benefit of achieving TMDL: **Unknown**
- Quantifying these benefits is critical for **generating public & political support** for further investments in water quality improvements (e.g. social cost of carbon)
- Few studies **link LULC change with economic impacts** of changes in water quality

Research questions

- What are the **social costs of P**?
- How do these vary over **space & time**?
- What are the **benefits** associated with varying levels of **P reduction**?
- How does the **applied discount rate** affect the estimated benefits of water quality benefits?
- Do **benefits** of water quality improvements **outweigh costs** associated with P reductions?

Conceptual framework

Land use & land cover change → P Loading → **Water Quality** → **Property values**

- Tourism expenditures
- Recreational use & visitation
- Mood & affect
- Treatment of drinking water
- Increased risk of ALS

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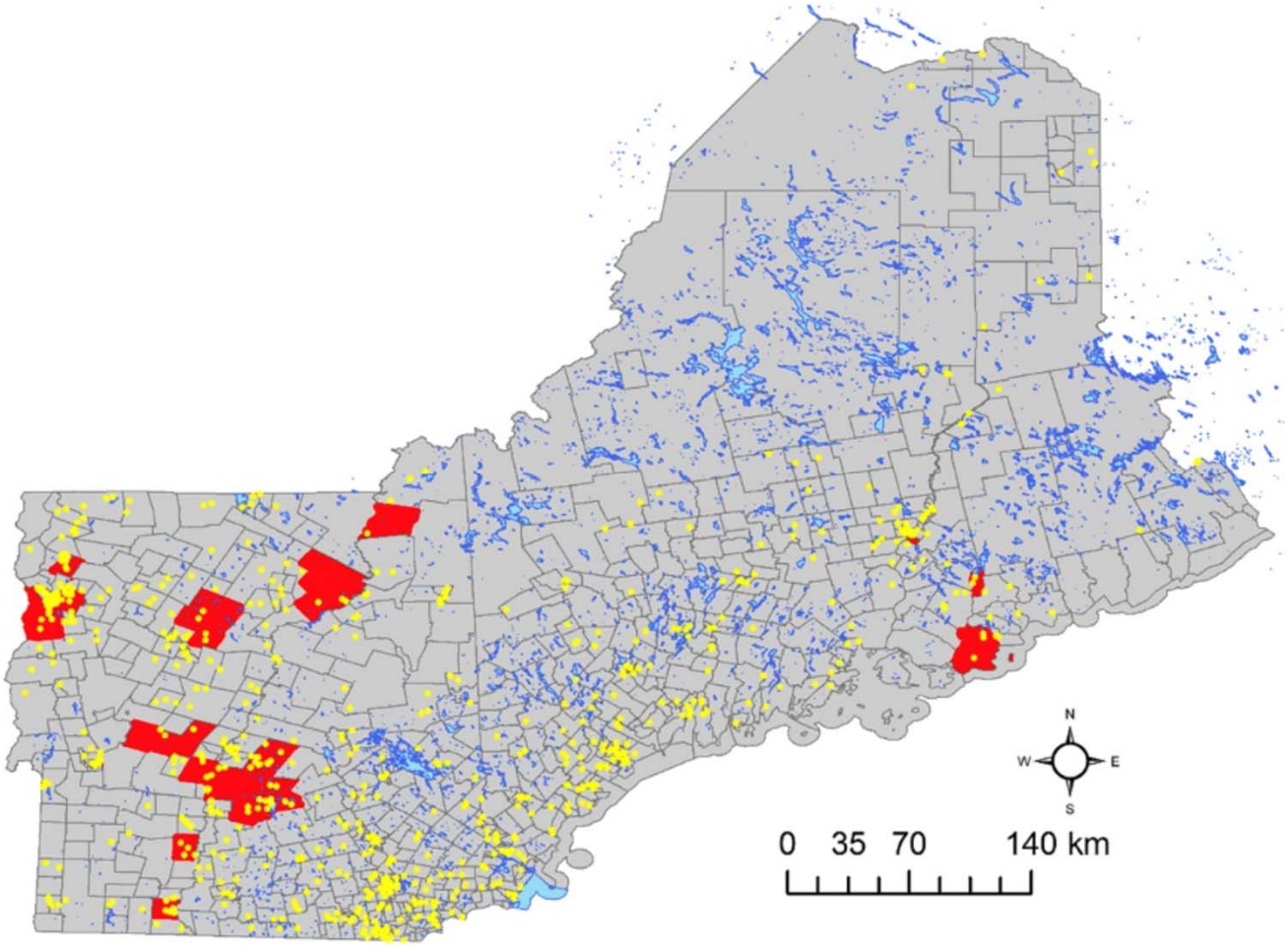
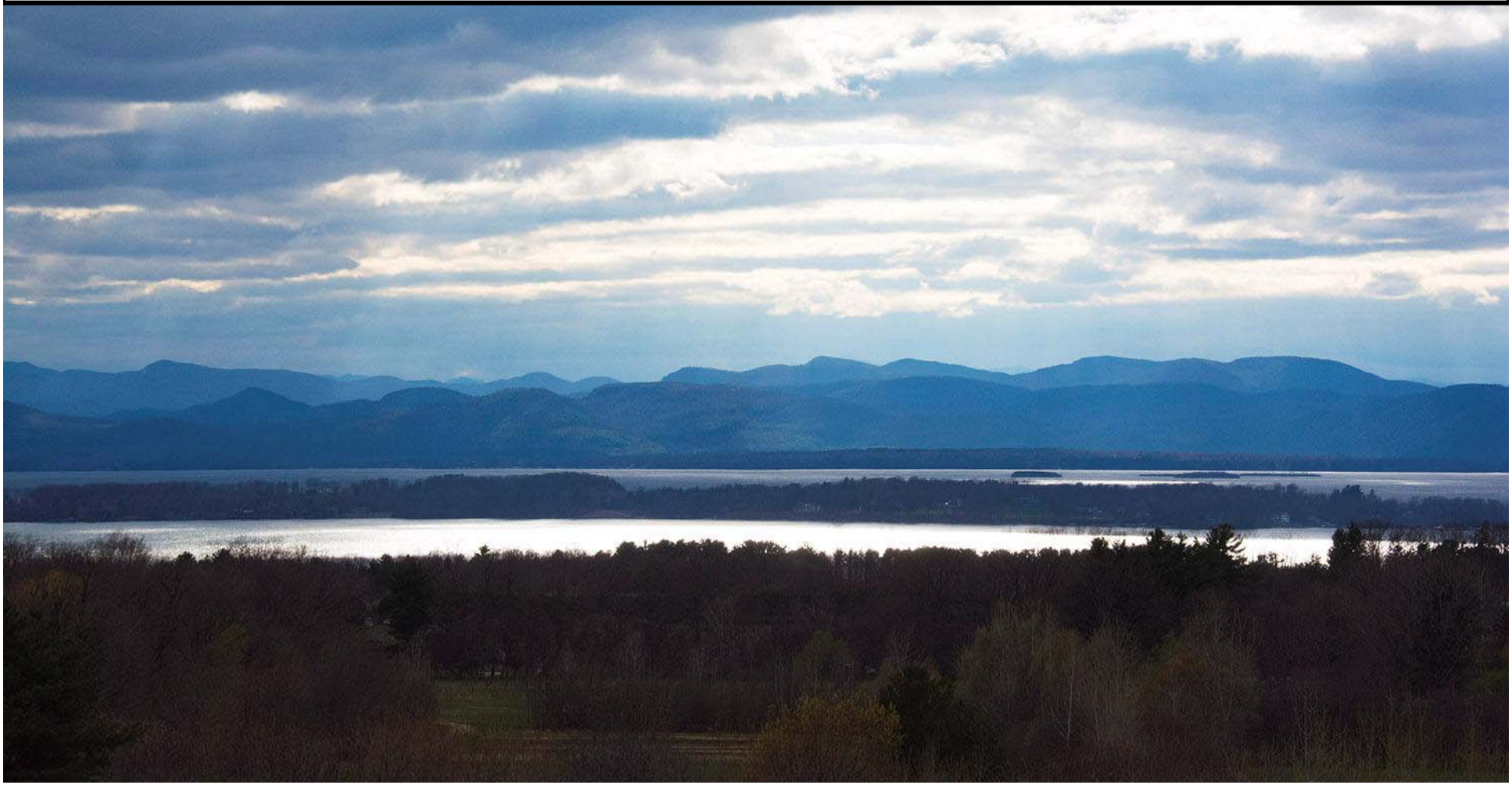


Stay tuned for results!



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