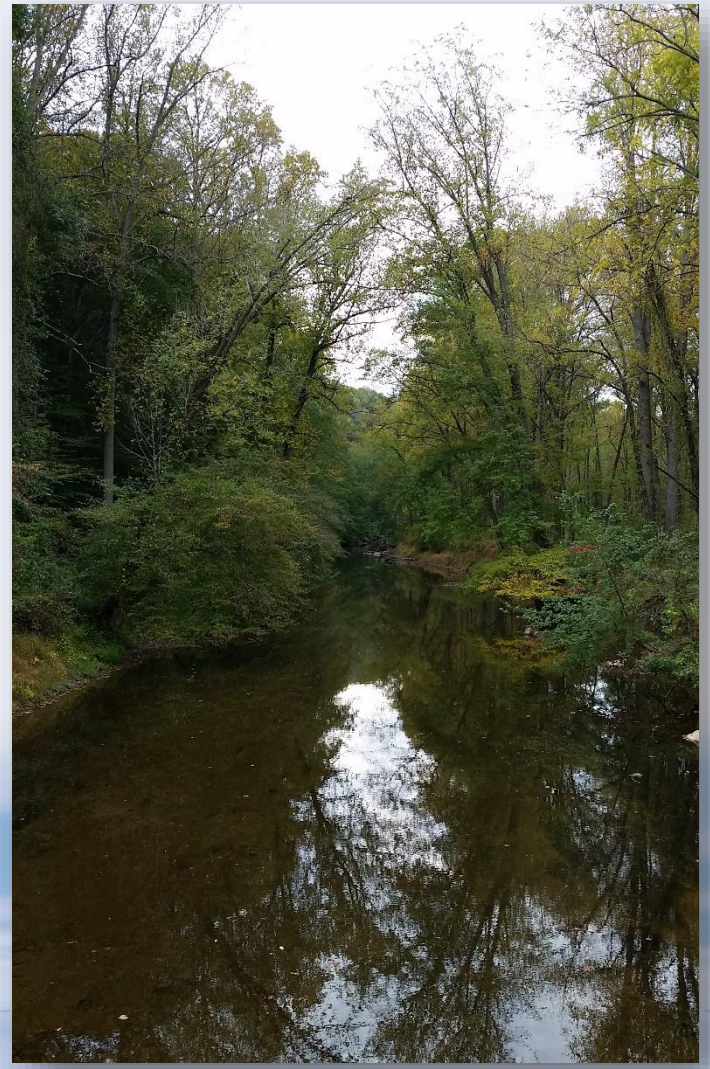
# NEWRnet Annual Meeting,



*April 15, 2016*
*URI*

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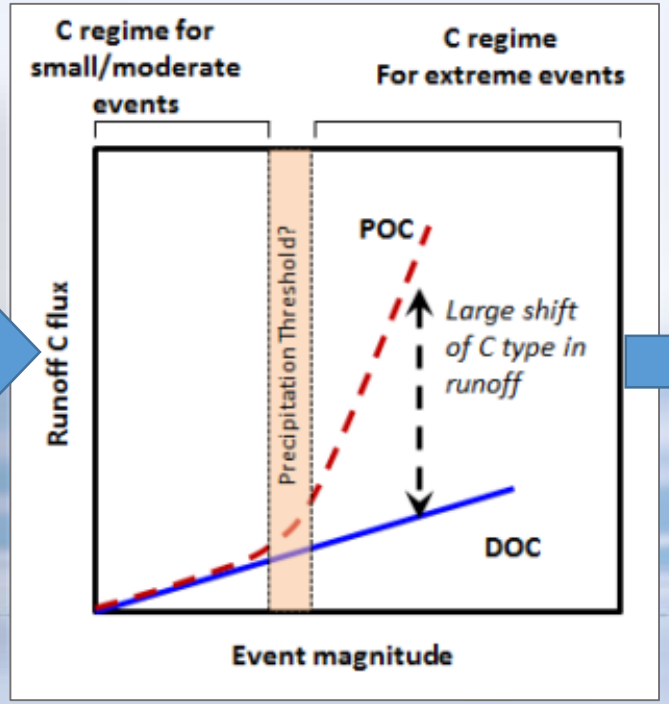
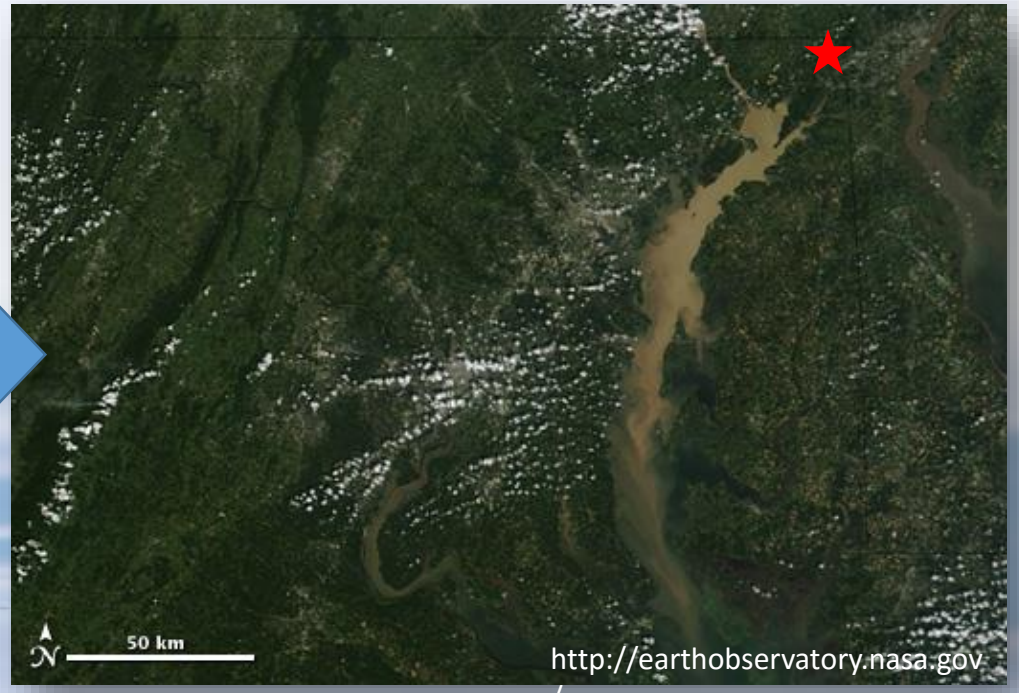
*University of Delaware Water Science & Policy*

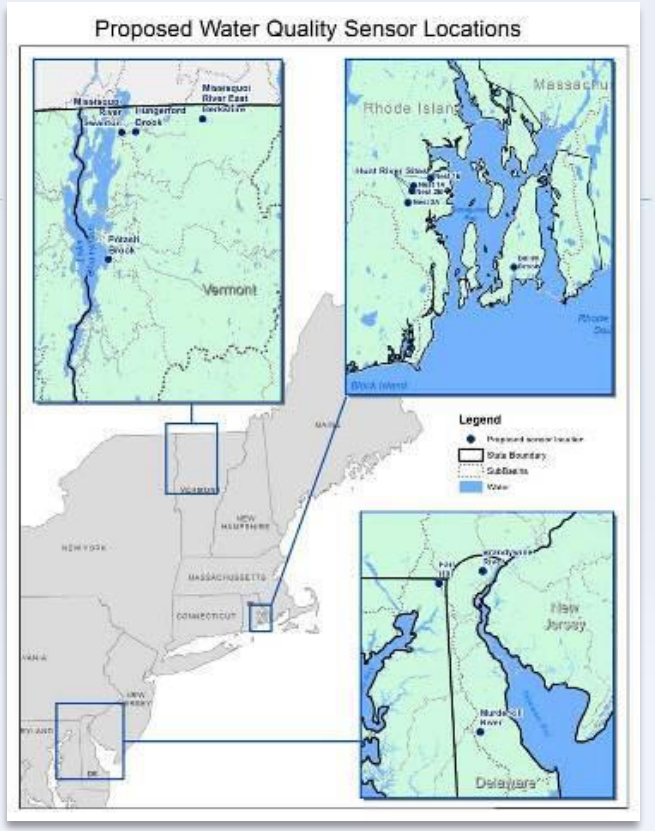
# Particulate Organic Matter: What is it and why do we care?

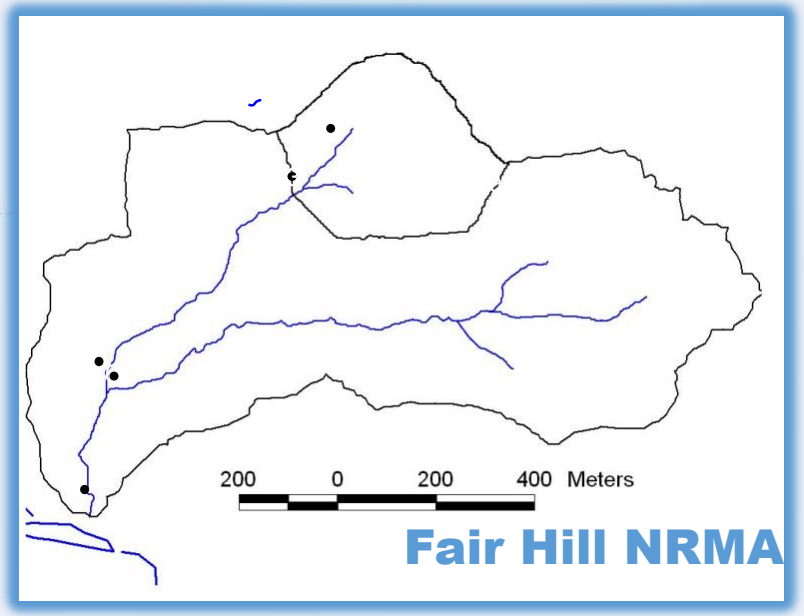
- POM fraction of aquatic organic material > 0.7 µm
- Comprises large portion of the aquatic C, N, and contaminant pools and fluxes. Strongly influences aquatic ecosystems and receiving waters.
- Soil and nutrient loss from terrestrial systems, especially headwaters
- Variability in sediment and POM mobility especially sensitive to stormflow and will likely increase due to regional climate change projections!



# My studies



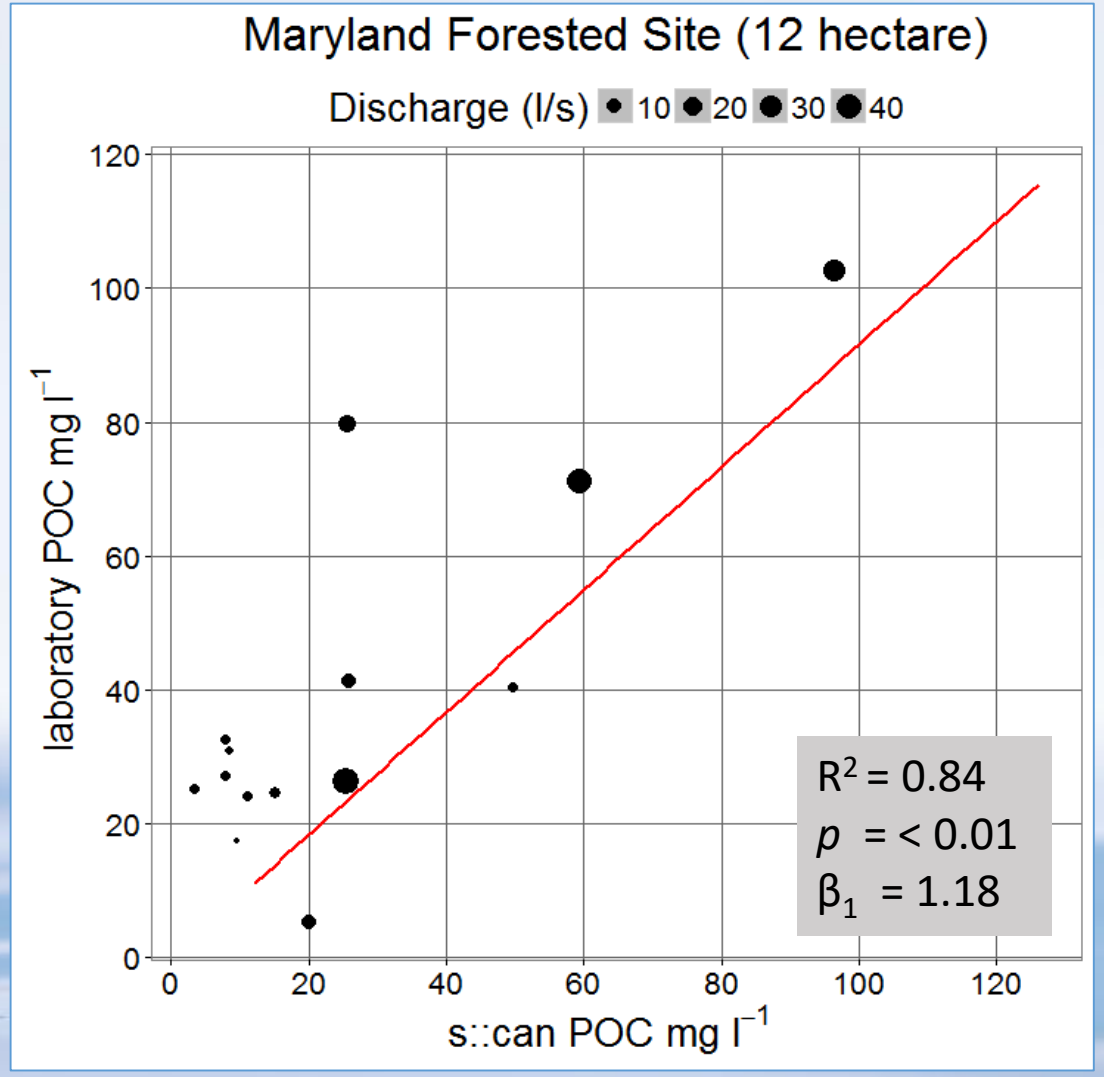

1. *High resolution temporal insights into event-driven POC fluxes using calibrated sensors: regional patterns*

2. *Evolution of POM source and quality along the drainage network*

3. *Intensive exploration of POM biogeochemical quality between particle size classes in 1st and 2nd order systems*

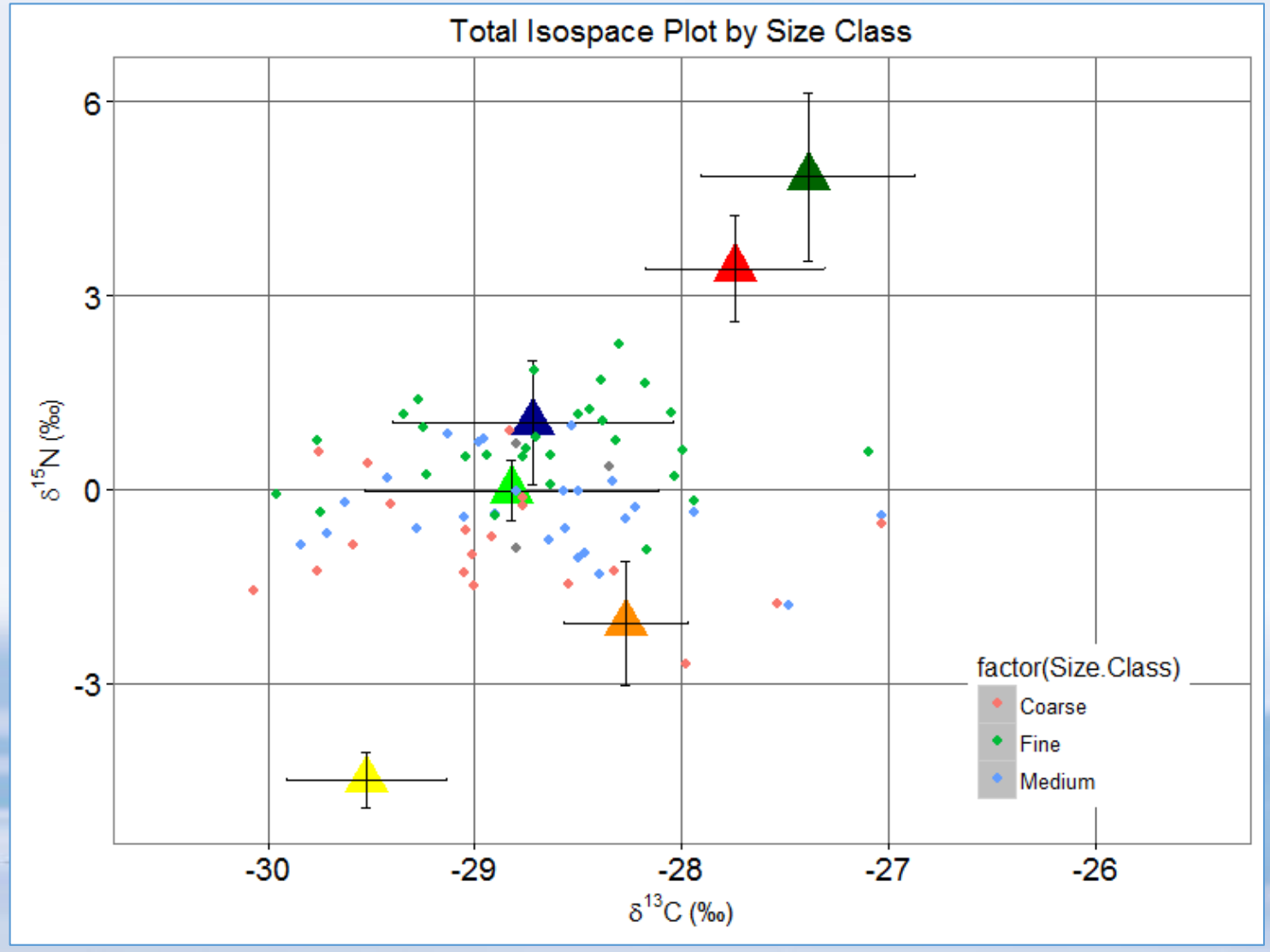
# Results: *High-res. POC using sensors*

- Significant regressions at smaller catchment, but not downstream where higher flows and sandier particles dominate!
- Still need to tease out hydrologic and/or particle characteristics that affect this relationship
- Generally, a stronger fit for higher vs. lower flows, likely driven by visible spectrum



# Results: *POM Source & Quality*

- Isotope mixing space encloses stream samples
- Carbon controlled by drainage area
- Nitrogen controlled by particle size class
- Implications in processing, quality
- Numerical mixing model in progress



# Looking forward: *Collaborations for Process and Methodological Insights across Regional LULC Gradients*


- Positive results in such a challenging, headwater system with high loads of coarse sediment, we are optimistic about other sites
  - ➢Collaborations on POC sampling during large regional storm events!
- Use of more advanced statistics to improve fit with UV-vis data?

# Implications

- Changes in POM source and isotopic quality suggest in-stream degradation and microbial processing occurs over small reaches in headwater streams.

- Sensors can generate high-resolution estimates of POM fluxes, and will be used to interpret the processes driving variability in timing, magnitude, and seasonality across systems with differing land uses.

- Such intensive characterizations of POM will provide valuable insights into changing ecosystem drivers as NE experiences more precipitation and subsequent erosion under changing climate.


Thanks!