

# Baltimore Ecosystem Study



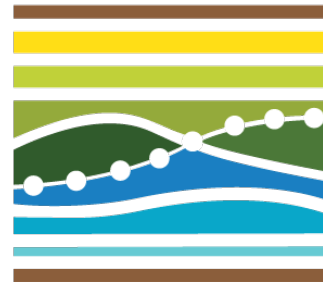
# Baltimore Ecosystem Study (BES)

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AJ Reisinger

LTER SCIENCE COUNCIL MEETING 2018

MADISON, WI



NATIONAL SCIENCE FOUNDATION

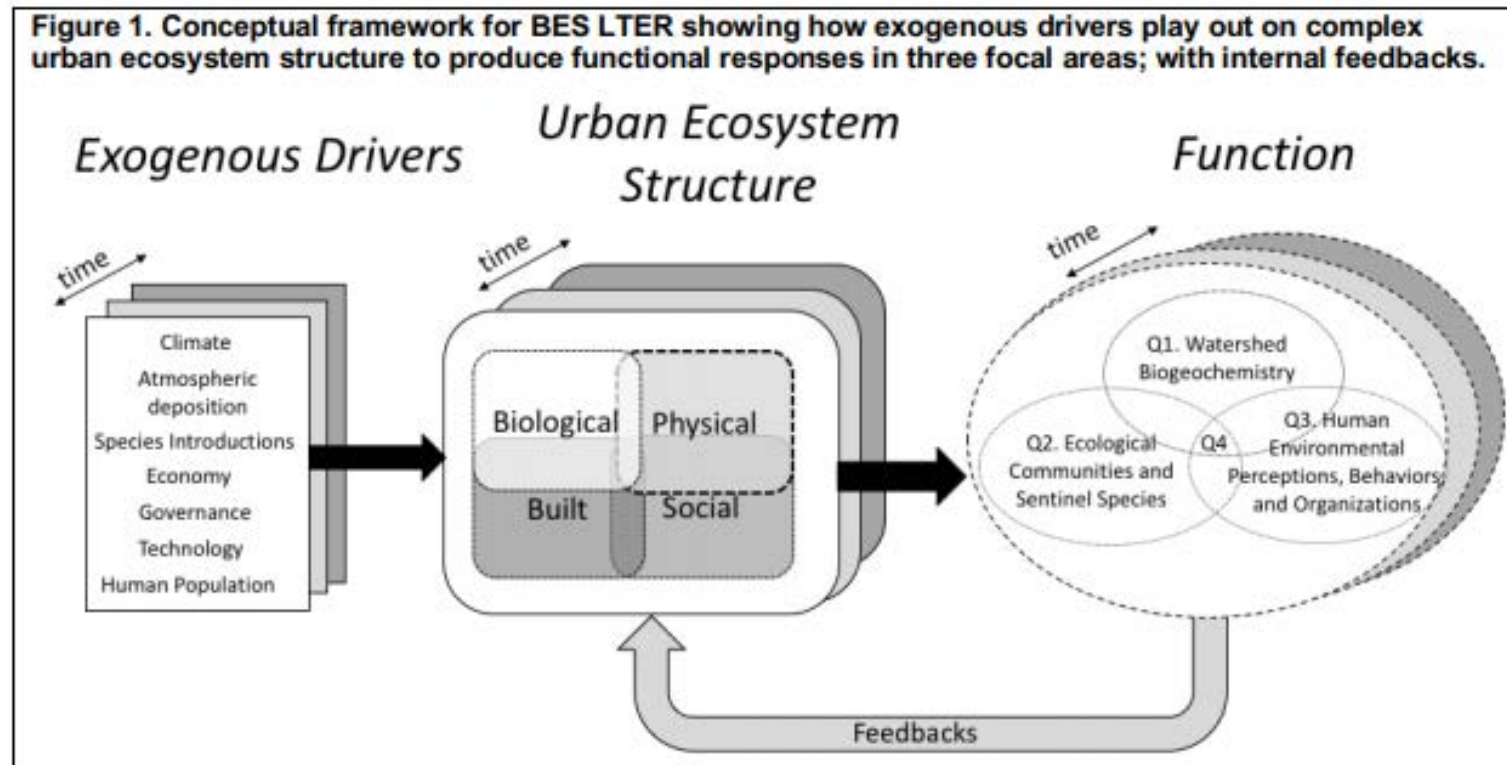
**LTER** NETWORK

LONG TERM ECOLOGICAL RESEARCH

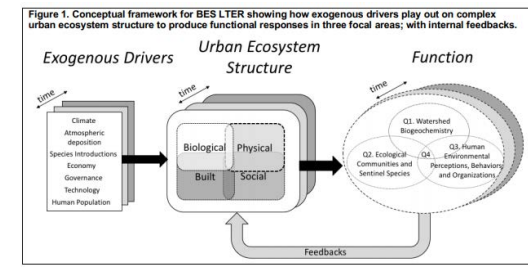
# Site News

Renewal proposal submitted and currently under review

Revised conceptual model



# Organic Matter - Who/How



- How are soil organic matter and trace gas fluxes changing in urban and forested soils?

- Permanent plots
- Urban, suburban, and exurban lawns

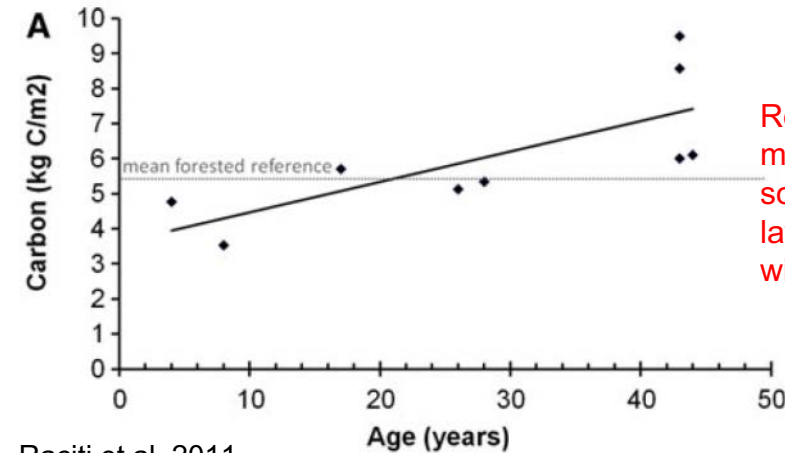
- What are the dominant sources and fates of organic matter in urban watersheds? How do human actions (i.e., restorations, infrastructure repair) alter these sources?

- DOC flux
- Stream metabolism

- How do organic contaminants (PPCPs) alter organic matter dynamics?

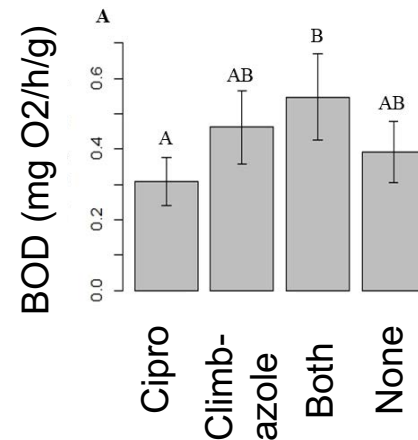
- Research gaps:

- How do exogenous (i.e., climate) and endogenous (i.e., the built environment) drivers interact to change these processes?

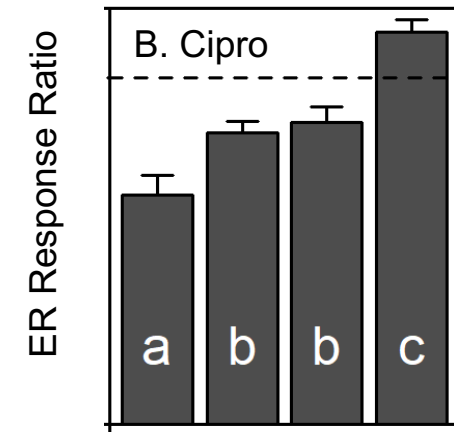


Residential lawns store more carbon than reference soils and this increases with lawn age and accumulates with depth

Raciti et al. 2011



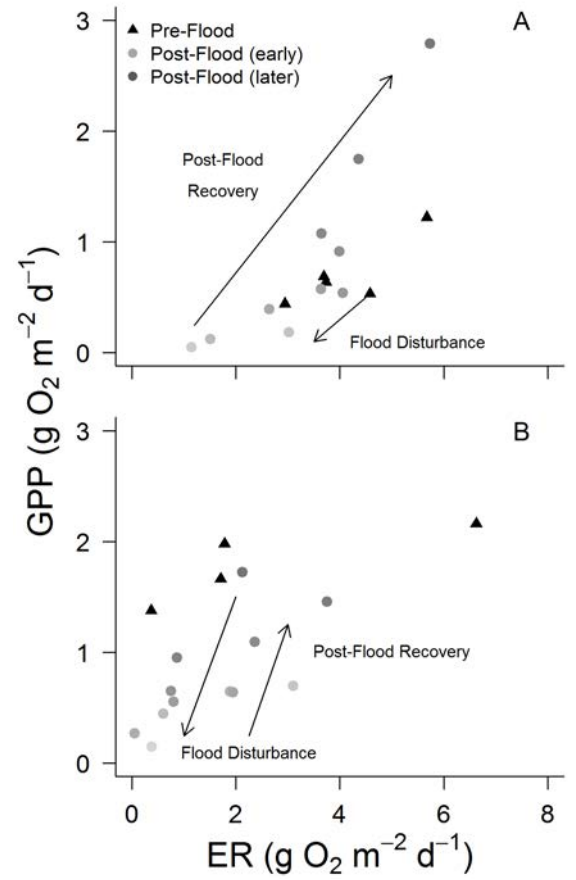
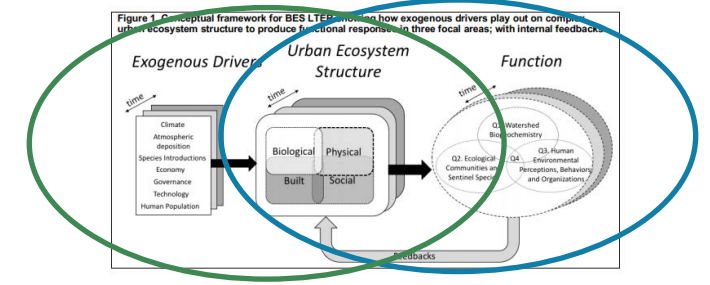
Jepsen and Swan, unpublished data



Pharmaceuticals alter organic matter dynamics within stream biofilms

Rosi et al. 2018

# Organic Matter - Results



Reisinger et al. 2017

**Urbanization = flashy hydrographs**  
**Urban stream metabolism recovers rapidly from flood events**

- Flashy urban hydrographs
- Implications for future climate scenarios

**Current and projected increases in precipitation magnitude and flashiness**

- Exogenous driver intensifying already stressed urban environment

**Implications for future:**

- OM dynamics
- Nutrient dynamics
- Stream community adaptation/evolution

