

Coastal Rivers: The missing link

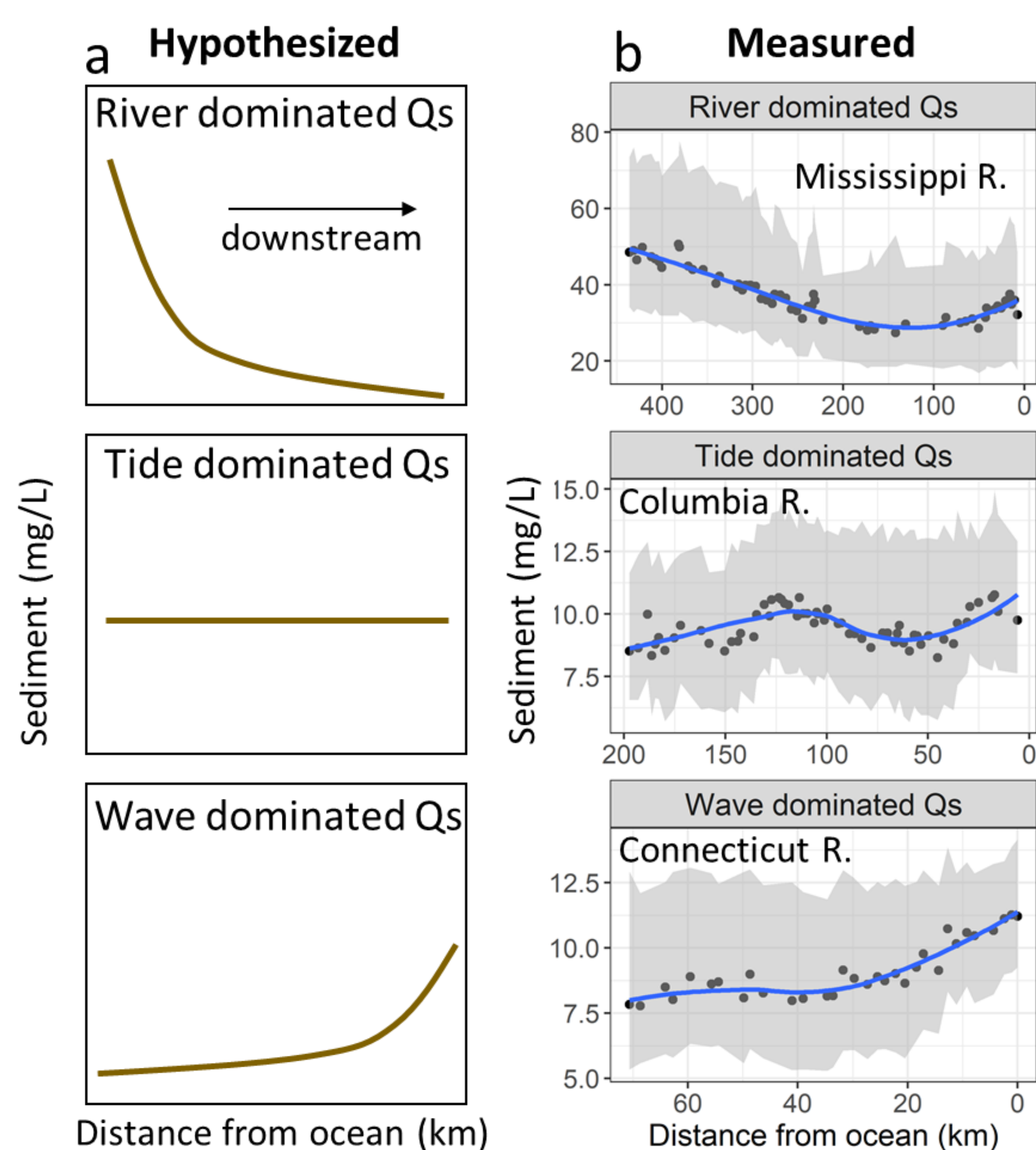
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Motivation

- Riverine sediment delivery is critical for sustaining coastal land and ecosystems
- Estimates of riverine sediment delivery to coasts is based on measurements 100 of miles upstream of coasts leaving out tidal rivers
- Coastal and tidal rivers may control how much sediment reaches coastal ecosystems and are the missing link in a source to sink understanding of sediment delivery

Project Description

- We will build a spatial database of suspended sediment concentration along coastal rivers across the U.S. using satellite remote sensing and machine learning
- We will extract spatial profiles of suspended sediment concentration along rivers from above the head of tide to the ocean
- We will examine profiles to test if spatial data can be used to identify dominant sediment source, delivery processes, and/or deposition and how it changes over time



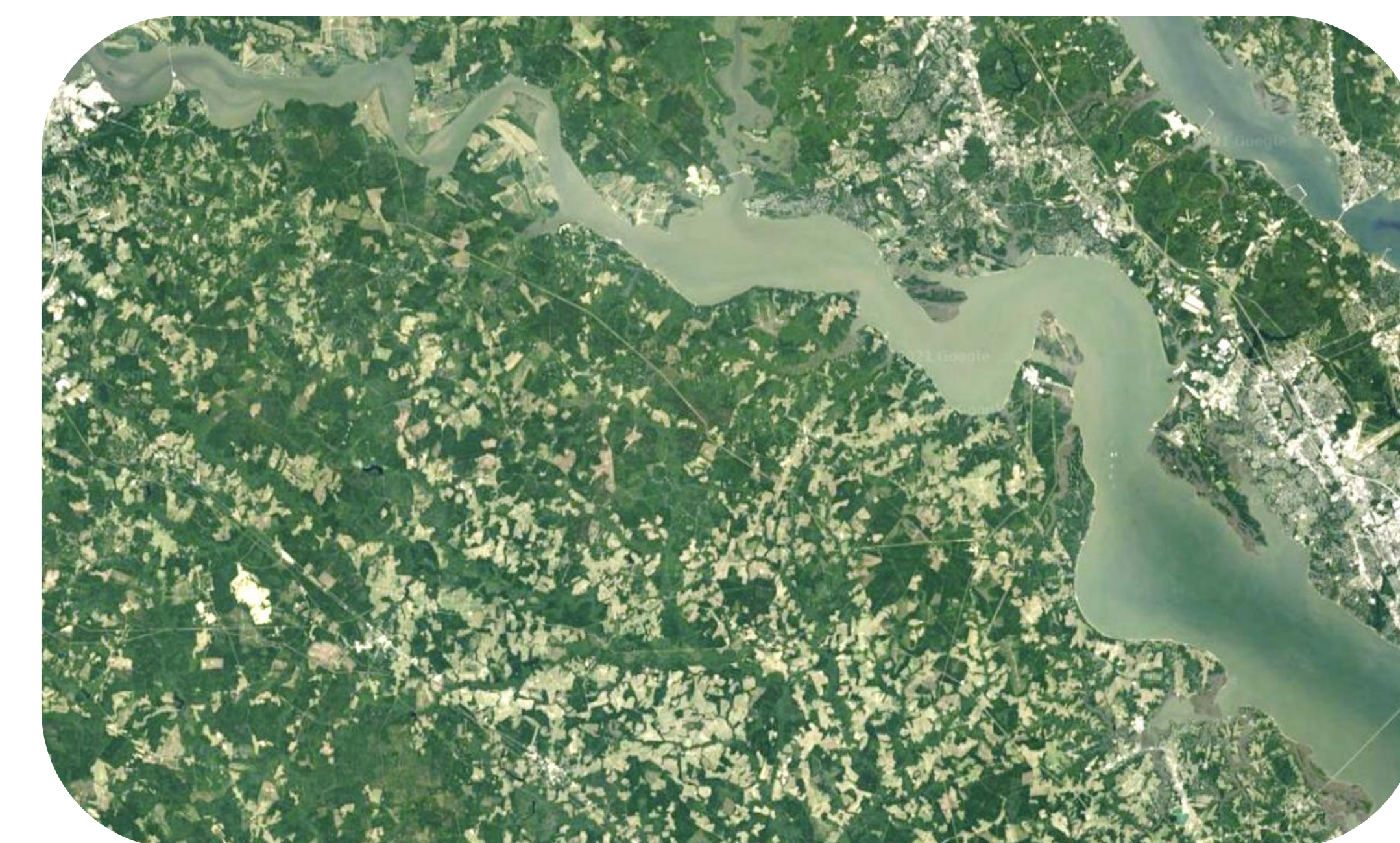
Building remote sensing capacity to understand the role of coastal rivers in supplying sediment to coasts in a changing world

Context

- Suspended sediment data challenging to obtain in the field and is therefore sparse, particularly in coastal waters
- By analyzing spatial patterns, we can likely infer processes that are not possible to observe with field data
- Coastal wetlands provide a myriad of benefits (e.g. flood protection, habitat), but depend on river sediment to survive rising seas

Project Deliverables

- A database of suspended sediment concentration along U.S. coastal rivers
- A peer-reviewed publication communicating the findings
- Results for developing large, external grants
- Mid-term results will include identification of coastal rivers and initialization of image processing
- Final results include completion of the sediment database



Potential Impact

- If spatial profiles of suspended sediment encode processes, our method can be applied globally and over a remote sensing record from 1984-current
- Using this approach, we can measure how sea level rise and changing river flows impact the how much sediment reaches coastal ecosystems, where it comes from, and how it gets there
- Identifying the role of coastal rivers in supplying sediment to coasts will advance fundamental understanding, launch new projects, and provide valuable information to managers

