

The Effect of Climate Change On Point Bar Formation In The Little River In Stowe, Vermont

Introduction

The Peoples Academy team collected data at The Little River in Stowe, Vermont. We noticed a drastic change in point bar size, shape, and texture between visits to the site. We quickly chose this as our research focus.

Question: Where is this sediment coming from and what's causing the drastic change?

Process

We formulated many hypotheses as to the source of this phenomenon. Each was refuted, and we moved on to the next.

Refuted Hypotheses

1. Headwater disturbance: **A)** A natural, vegetated, rocky, mid-channel bar existed for at least half a century, and caused a fork in the Little River which immediately re-converged. New home construction in the fall of 2006 purposefully filled in the river and mid-channel bar to divert the water away from the house. **B)** The Sterling Valley Road is a dirt road with nothing holding the soil from falling into the adjacent Little River.

2. The **bridges** upstream focused the water, increasing its velocity and erosion increasing sediment deposition.

3. Farm land to either side of the river lacked a sufficient riparian zone to hold back soils increasing erosion and sedimentation.

Each of these hypotheses was rejected with closer examination. Large point bars appeared upstream from a suspected source,

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Arial and ground views of our site's point bar



Point Bar: A low, curved ridge of sand and gravel along the inner bank of a meandering stream. Point bars form through the slow accumulation of sediment deposited by the stream through 3 means.

1.A



1.B



2, 3



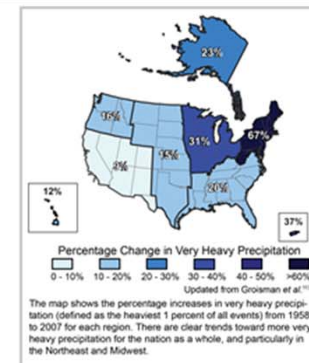
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Current Working Questions

To what extent is point bar formation caused by lateral accretion, from opposite bank, through secondary flow. To what extent is point bar formation caused by suspended sediments being deposited on the inside turn, as velocity decreases downstream.

New Hypothesis

Climate change initiates the following positive feedback loop: Increase heat energy in atmosphere → Increased evaporation over mid-western states → Increased frequency and intensity of precipitation in Vermont → Increased velocity → Increased erosion → increase lateral accretion → Increased vulnerability of cut bank → Increasing lateral accretion → increase in rapidly changing point bar dynamics = decreased habitat and biodiversity



Future Plan

- Consult with Don Ross on point bar soil origin.
- Measure precipitation, velocity, and turbidity.
- Measure point bar height, area and texture.
- Measure biodiversity of habitats in the area.