

HOW WELL DO ROADSIDE DITCH LINE BEST MANAGEMENT PRACTICES REDUCE EROSION?

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Project Team

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ROADMAP

Mile 1:

Project motivation and objectives

Mile 2:

Parameterization experiment

Mile 3:

Field study

Study area

Experiment setup

Mile 4:

Results

Inferences from field observations

BMP effectiveness in context of climate



ROADMAP

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MOTIVATION

High-traffic, near-stream (HTNS) **gravel forest roads** associated with timber production are some of the **largest sources** of excess, human-caused **fine sediment** in nearby streams.

TURBIDITY



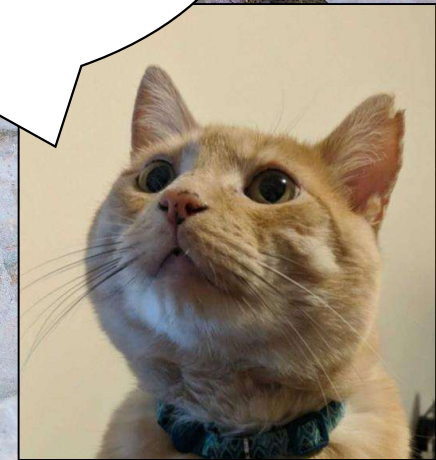
SALMON



Please save the salmon—I love them so much!



I just want a little taste...



OBJECTIVES

Road Prescription-Scale Effectiveness Monitoring Project

Project aims to reduce the uncertainty regarding the efficacy of road best management practices (BMP), particularly on HTNS roads.



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Major Experiment

78 field sites

Sediment and flow data

Traffic and rainfall data

Parameterization Experiments

Modeling



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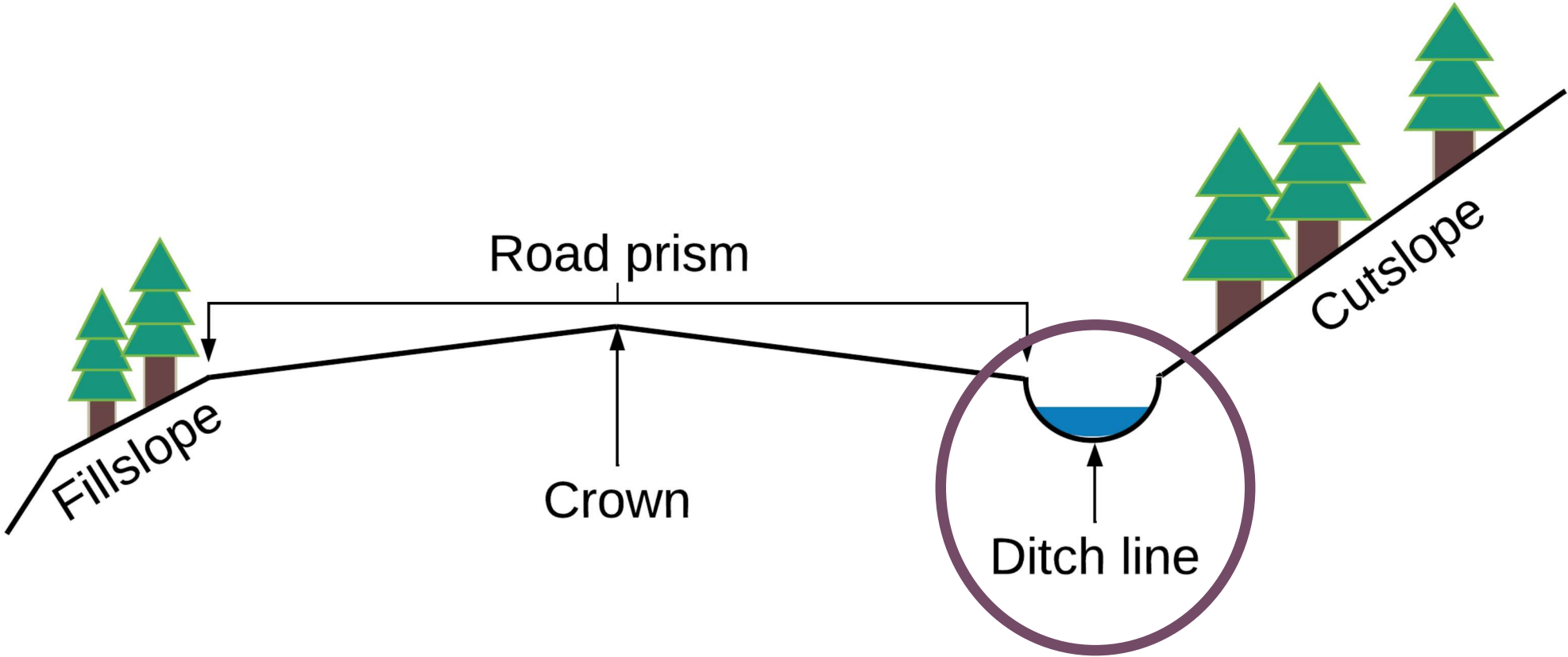
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DITCH LINE HYDRAULICS



OBJECTIVES

Ditch Line Hydraulics Parameterization Experiment

Experiment aims to reduce the uncertainty regarding the efficacy and efficiency of ditch line BMPs and serves to validate the project model.





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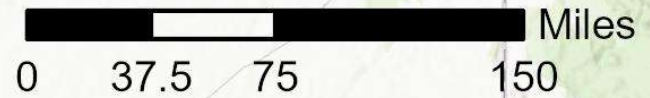
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STUDY AREA



SILTSTONE

VOLCANIC

EXPERIMENT SETUP

Bare subsoil: freshly ditched and no treatment



EXPERIMENT SETUP

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Armored/eroded: not recently ditched with minimal grass



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Wattles, initial installation: sparse and dense



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Rocked: 3-inch-minus covering bottom of ditch

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EXPERIMENT SETUP

Three flow rates

Salt tracer

Physical measurements of ditch

EFFICIENCY





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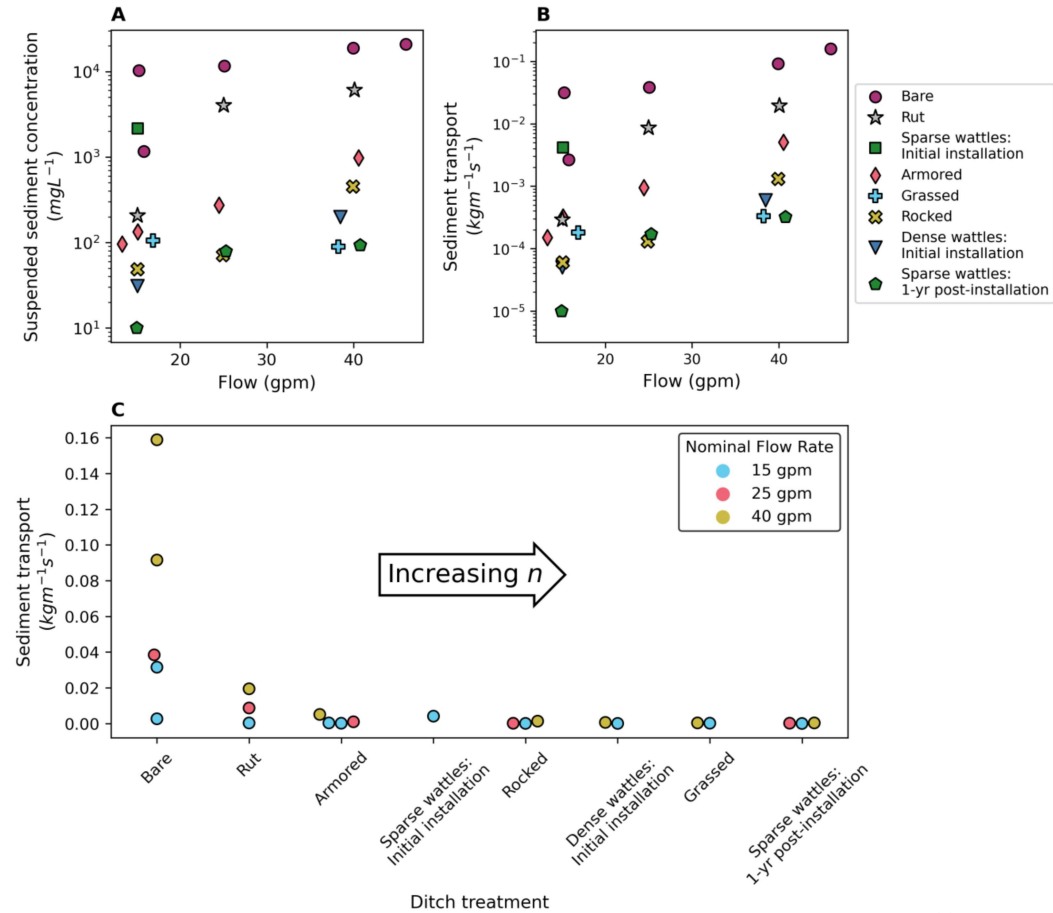
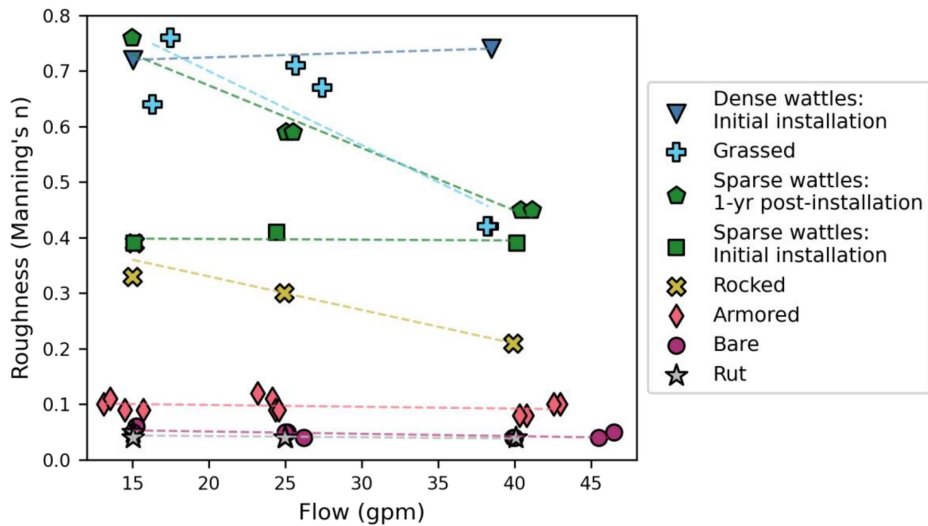
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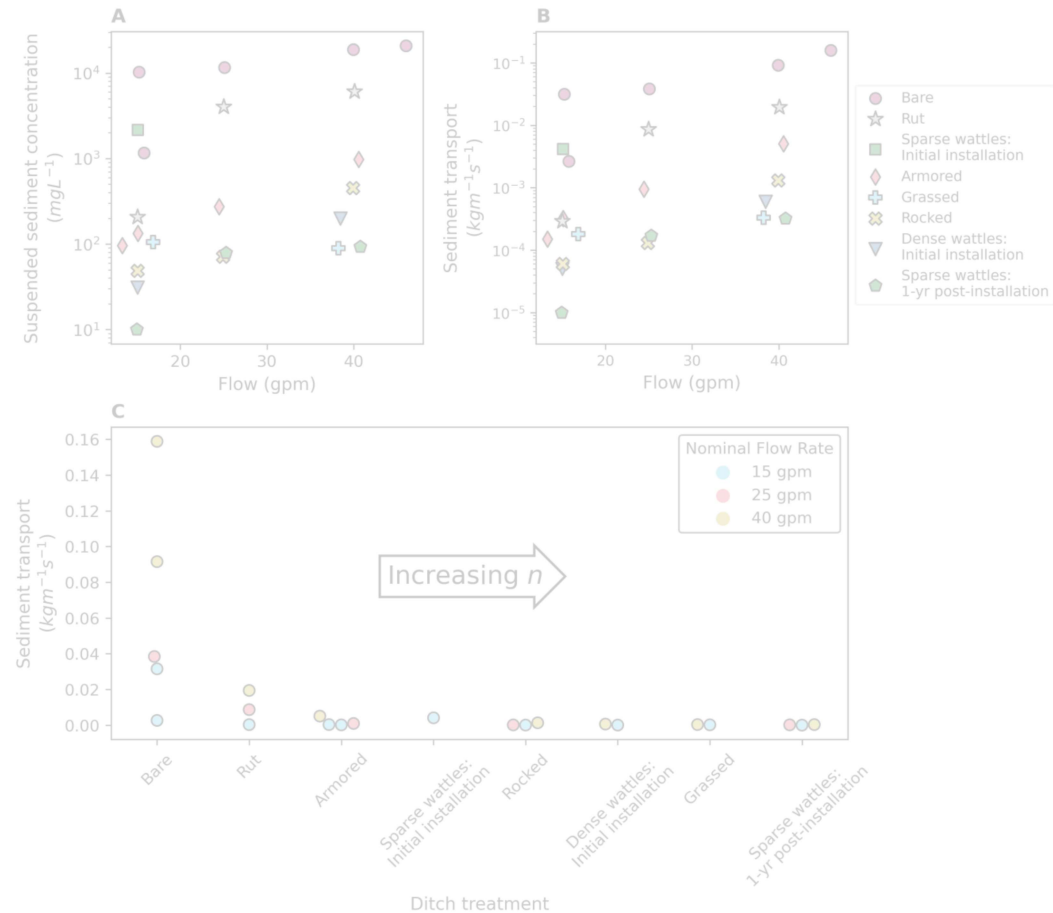
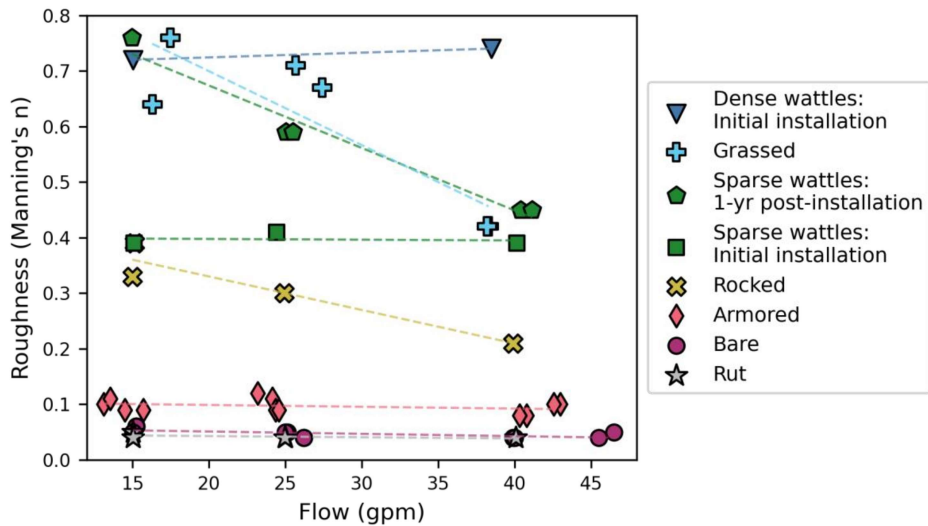
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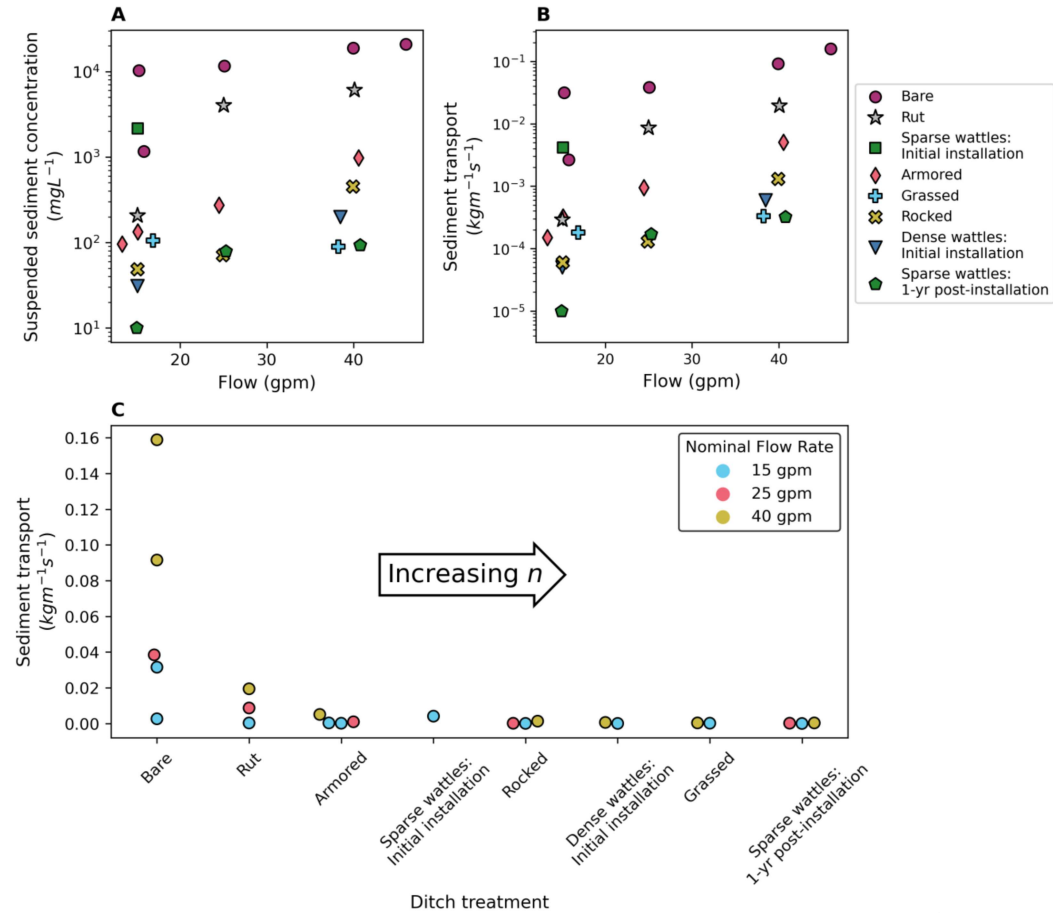
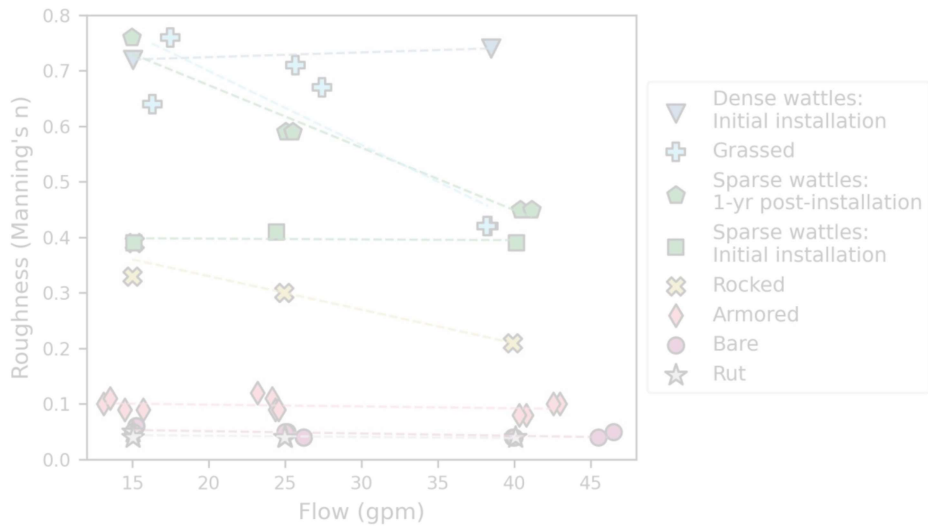
INFERENCES FROM FIELD OBSERVATIONS



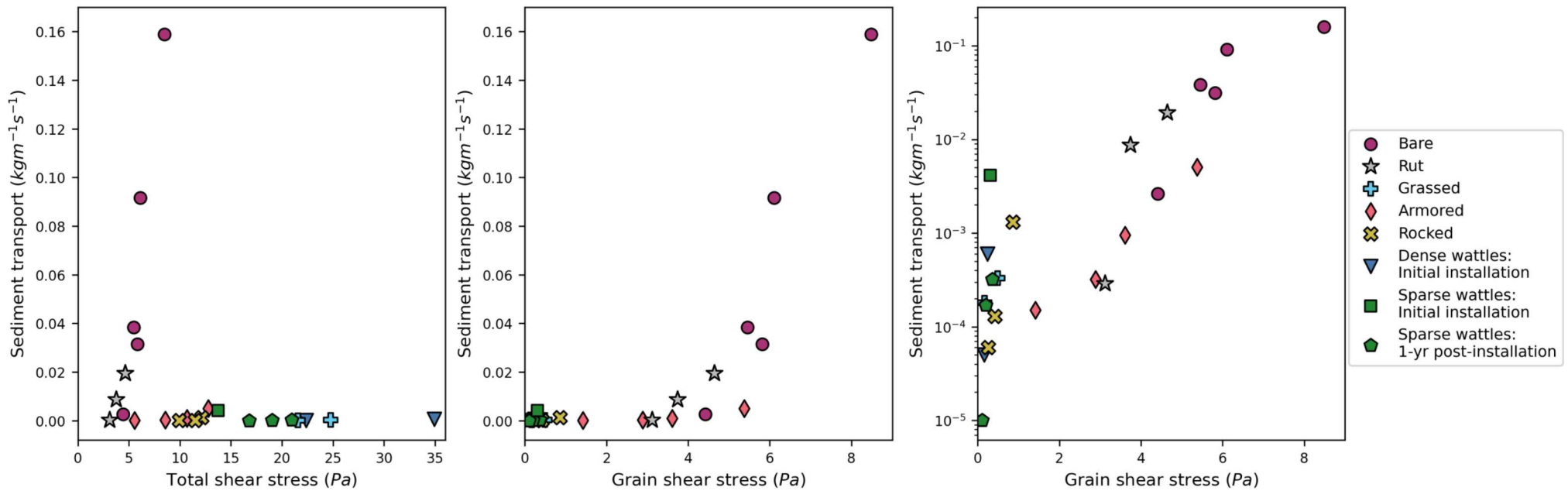
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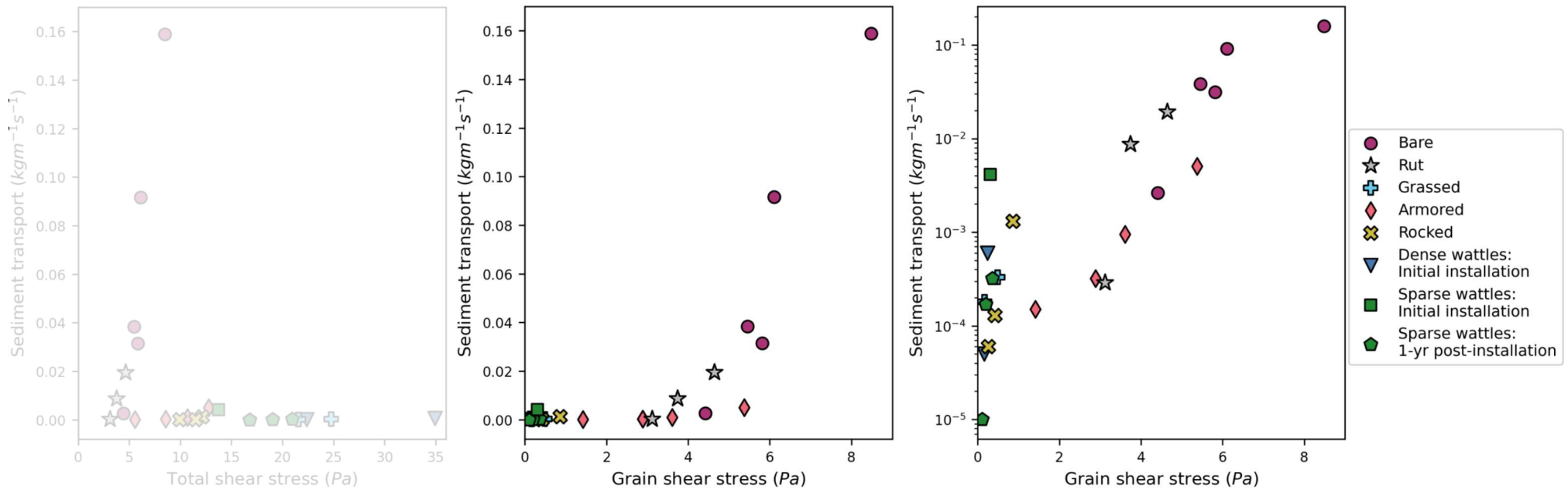
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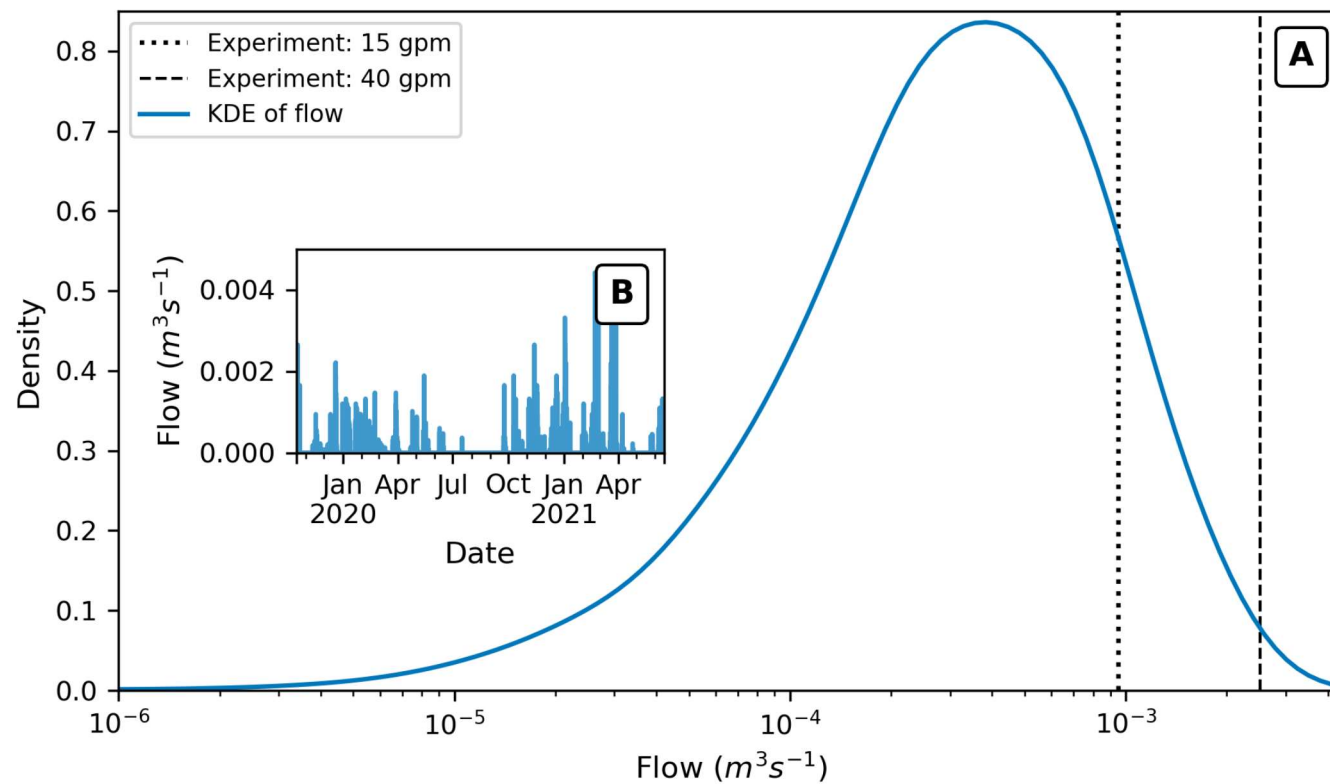
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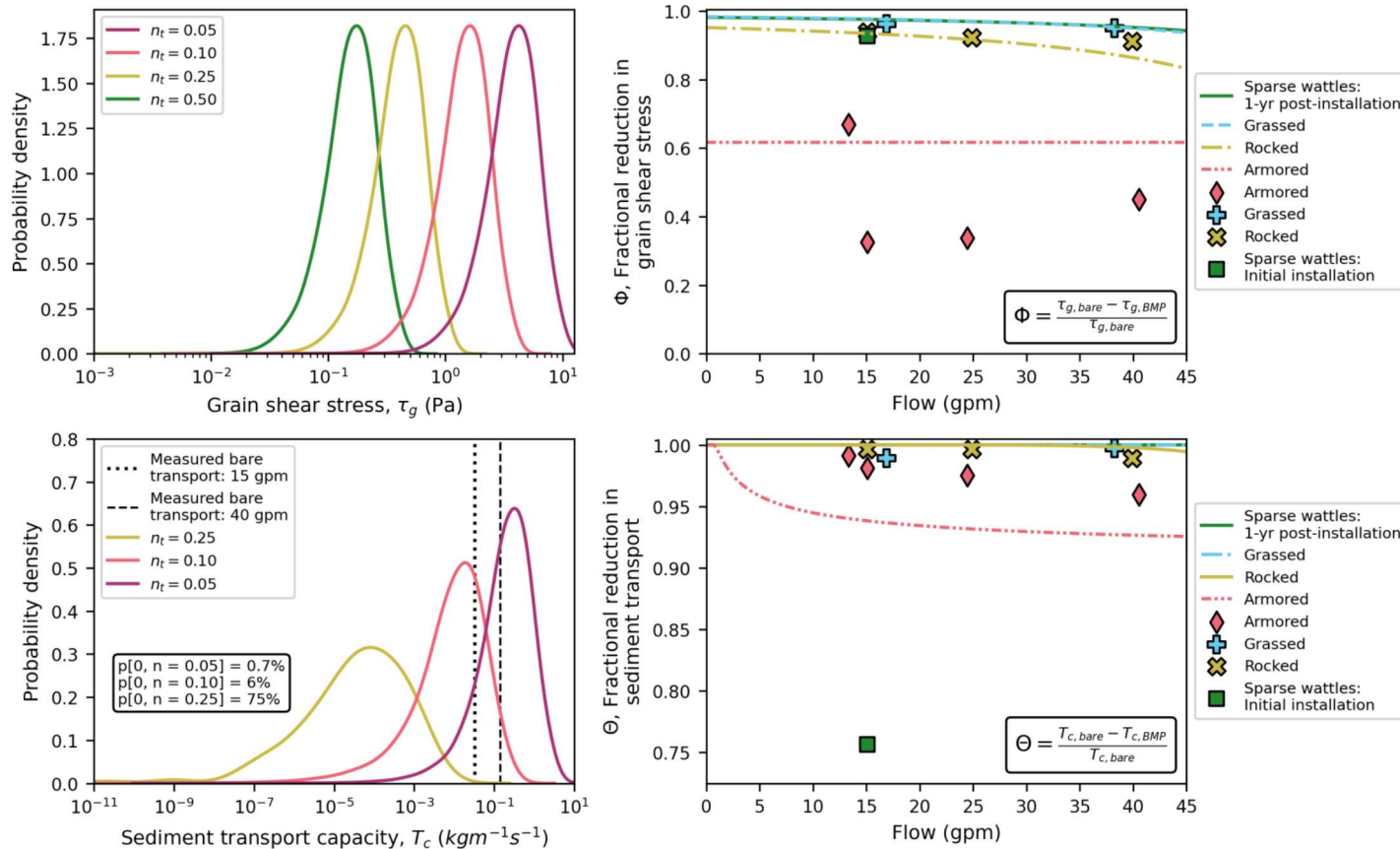
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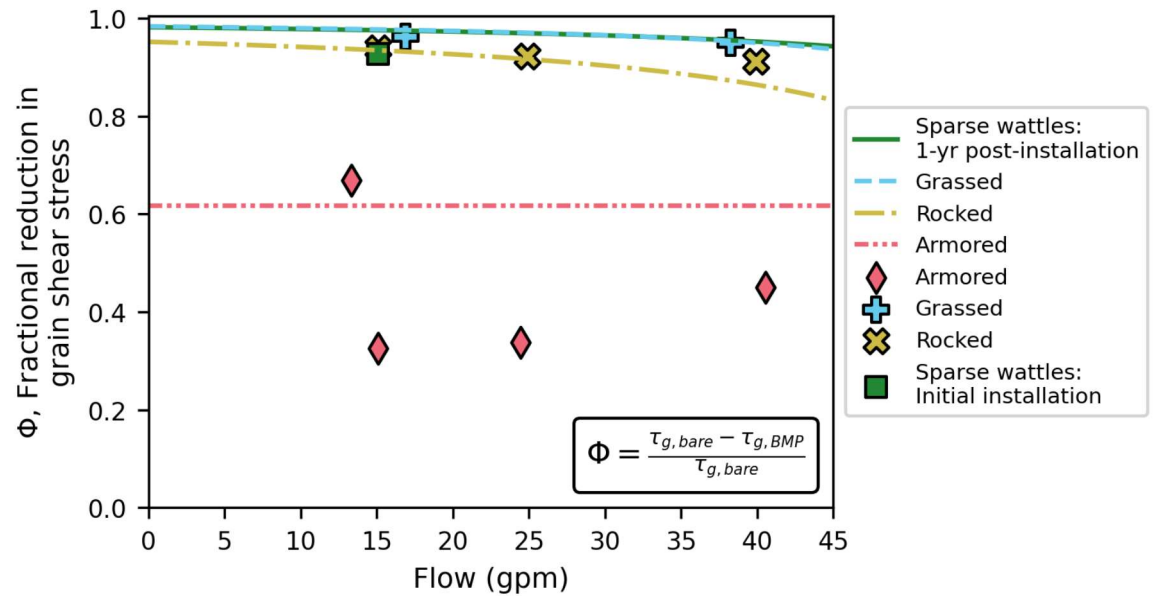
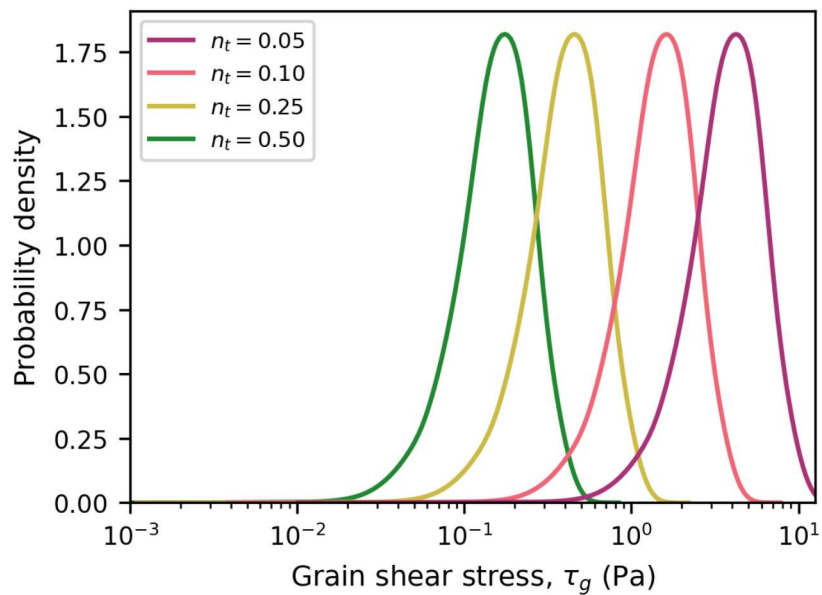
BMP EFFECTIVENESS IN CLIMATE CONTEXT



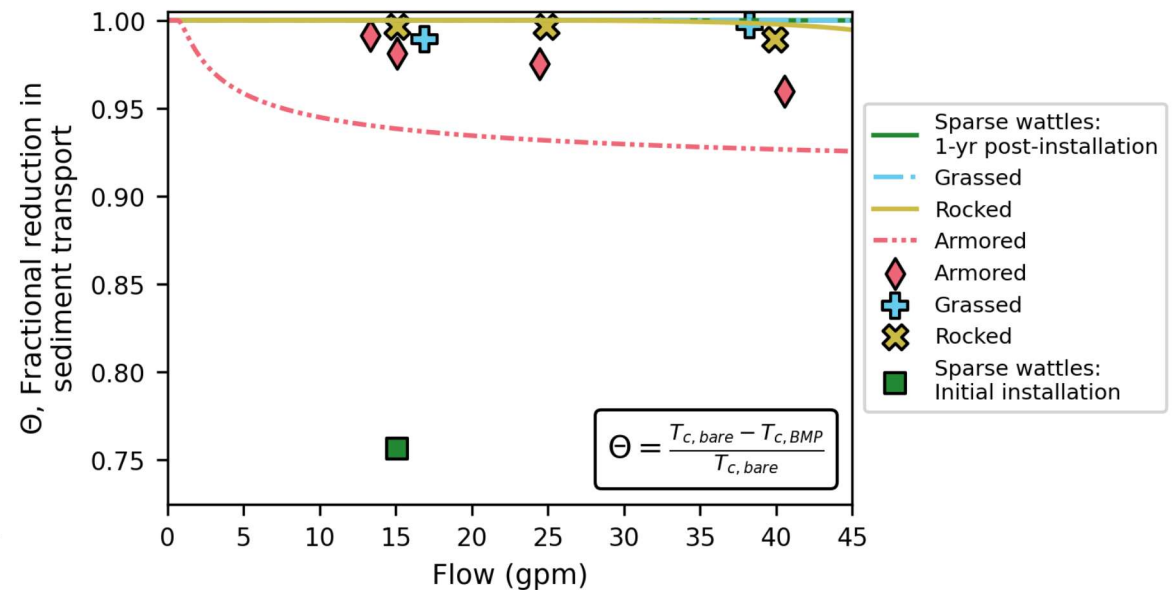
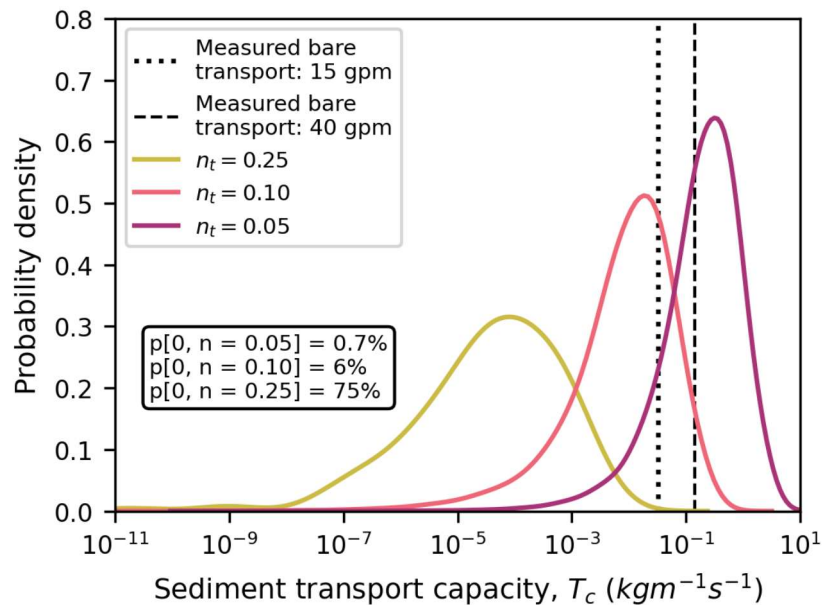
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BMP EFFECTIVENESS IN CLIMATE CONTEXT





END OF THE ROAD

Objectives:

Reduce uncertainty regarding the efficacy and efficiency of ditch line BMPs; use results to validate project model

Experiment:

Flow, salt tracers, and physical measurements to give roughness, shear stress partitioning, and ultimately efficiency

Results:

Natural ditch armoring and BMP installation increase roughness as compared to a bare ditch, yielding high efficiencies; wheel ruts and bare ditches have similar roughness values