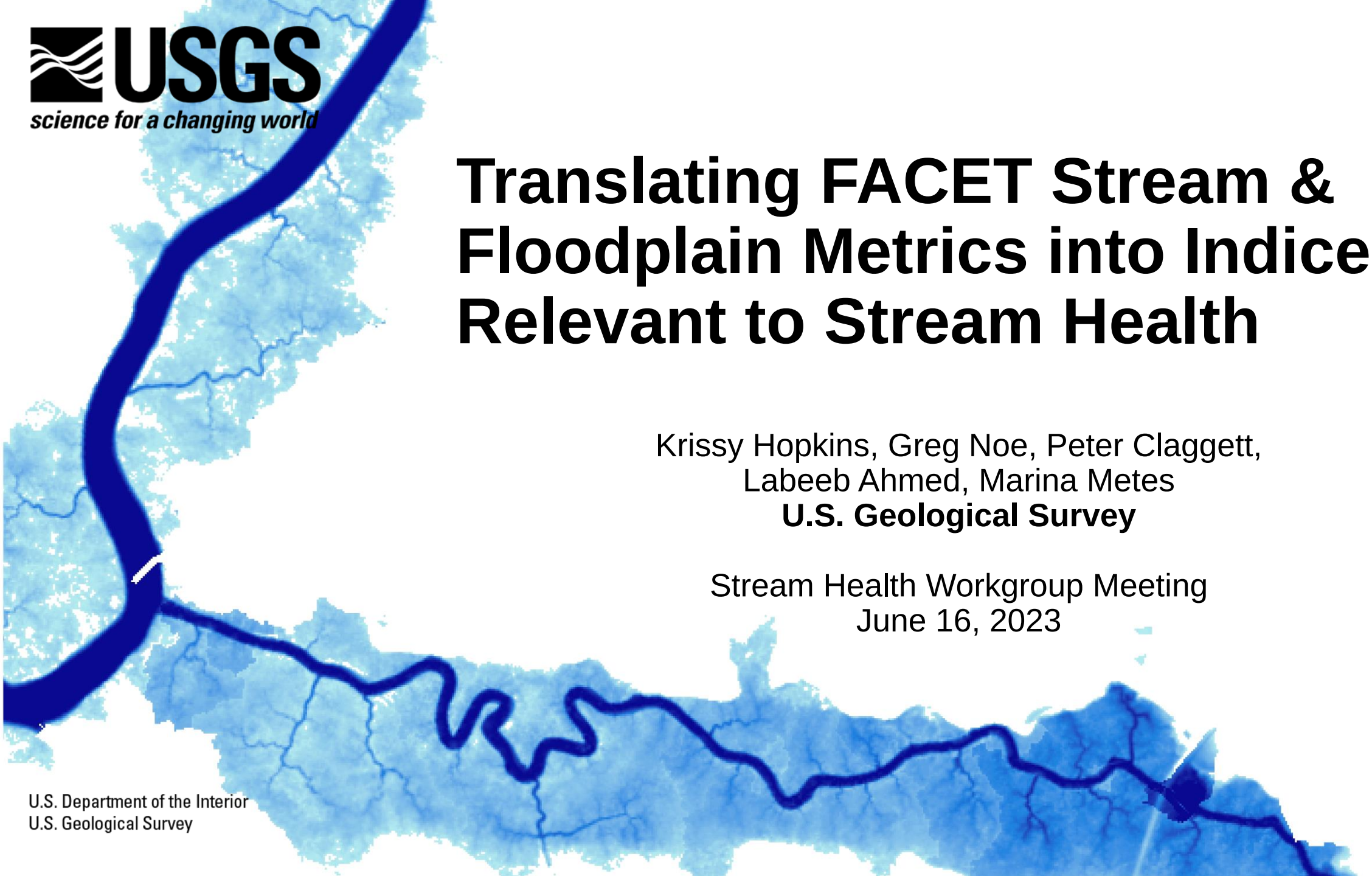


Translating FACET Stream & Floodplain Metrics into Indices Relevant to Stream Health

Krissy Hopkins, Greg Noe, Peter Claggett,
Labeeb Ahmed, Marina Metes
U.S. Geological Survey

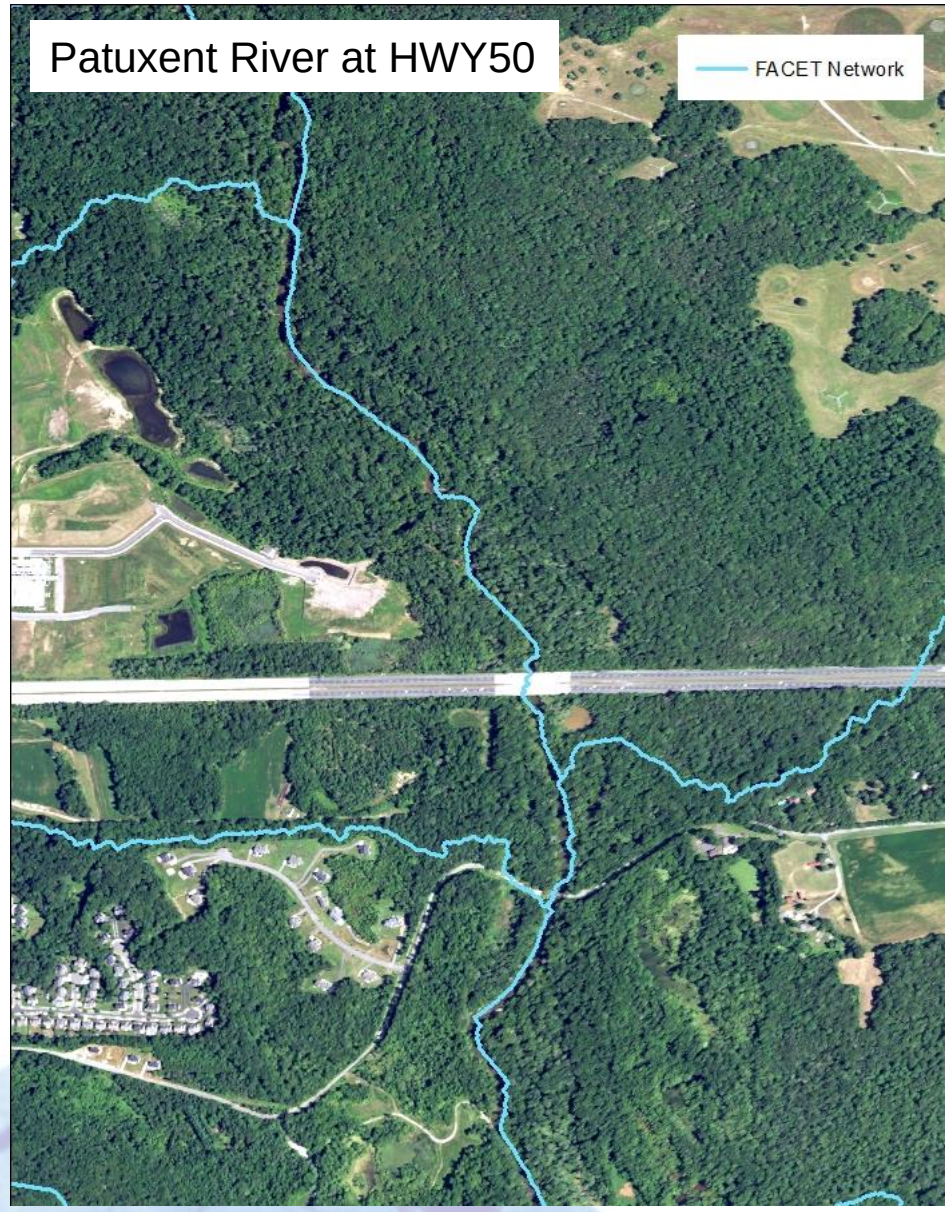
Stream Health Workgroup Meeting
June 16, 2023

U.S. Department of the Interior
U.S. Geological Survey

The Floodplain and Channel Evaluation Tool

Channel and Floodplain Dimensions

- Bank height
- Bank angle, avg
- Bank angle, max
- Channel width
- Channel length
- Bank-full area
- Floodplain width
- Floodplain elevation range
- Floodplain elevation, sd
- Sinuosity
- Stream slope



Data Release: Hopkins et al. 2020, https://doi.org/10.5066/P9RQJPT1

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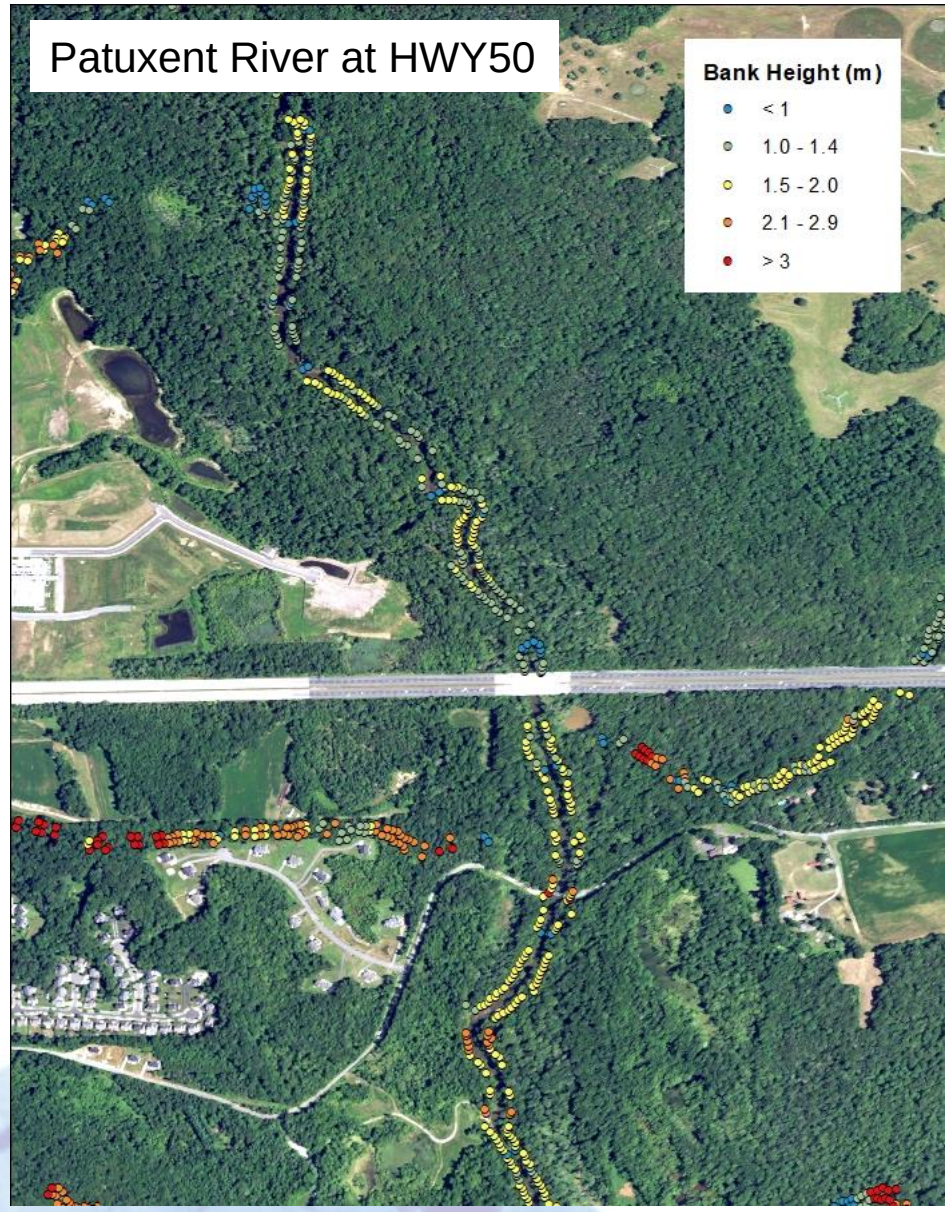

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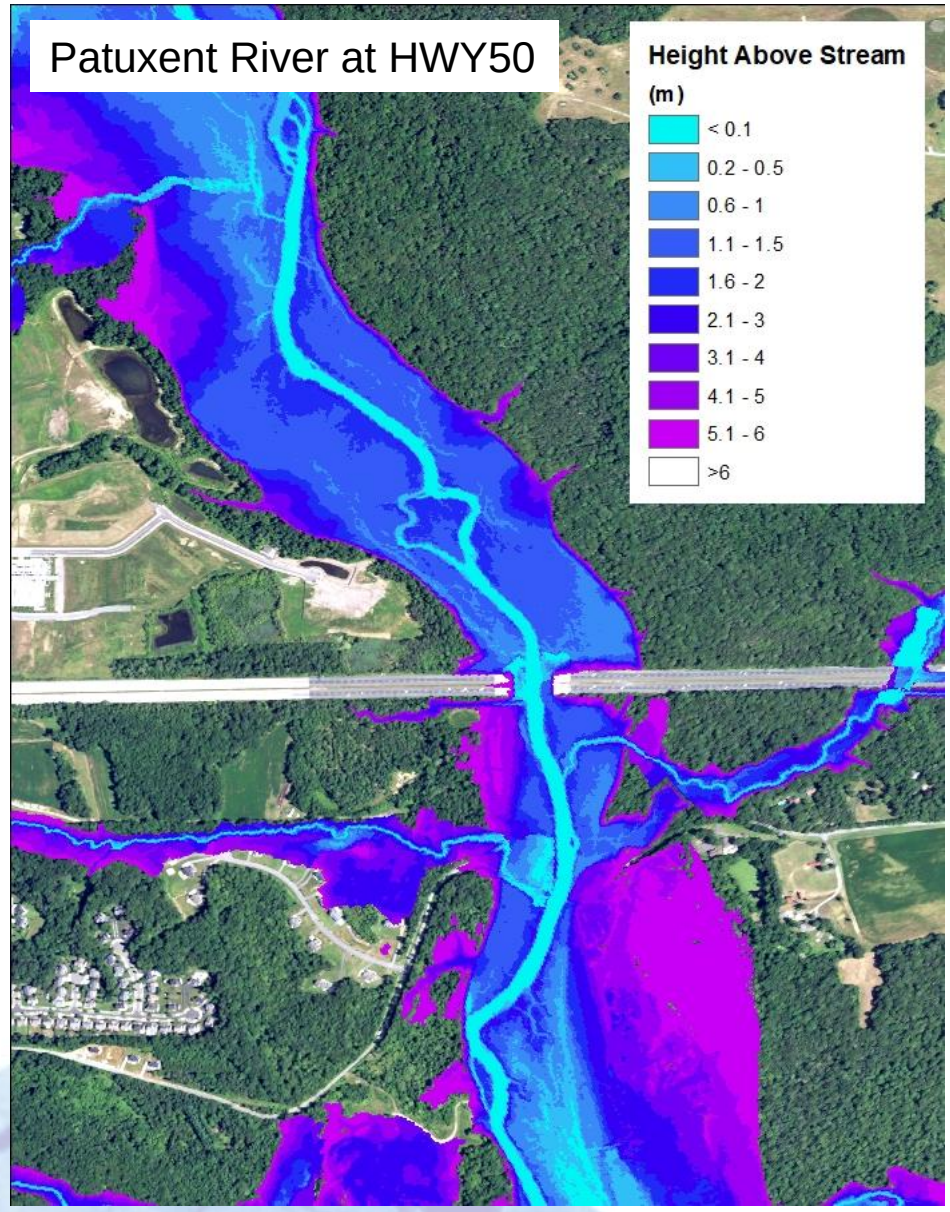
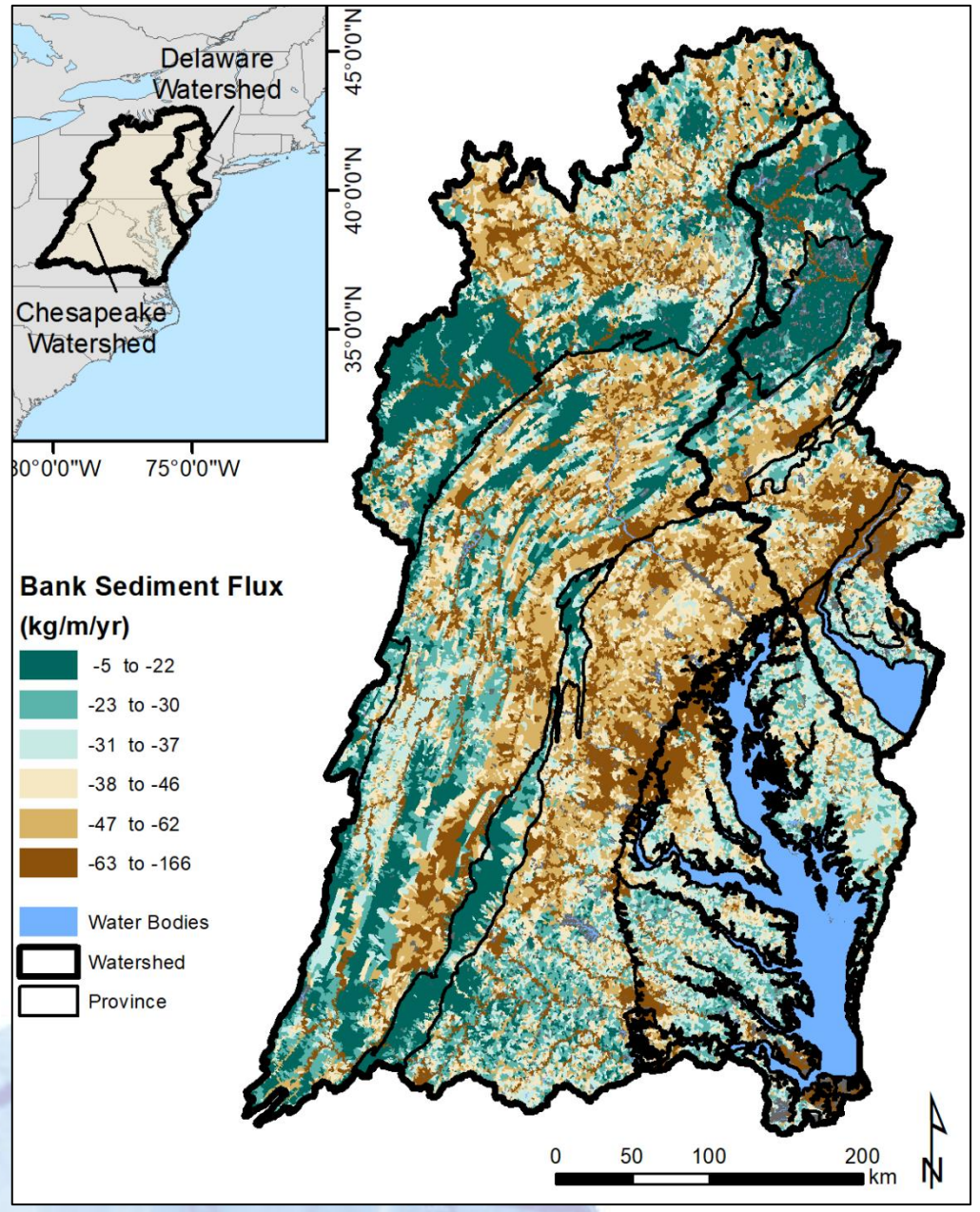


Data Release: Hopkins et al. 2020, https://doi.org/10.5066/P9RQJPT1

These dimensions selected for modeling purposes

Our team selected these metrics because we know they are important for informing predictions of nutrients and sediment



Noe et al. 2022, https://doi.org/10.1088/1748-9326/ac6e47

Opportunity to translate into other relevant metrics for stream health

Hydromorphology Indicators

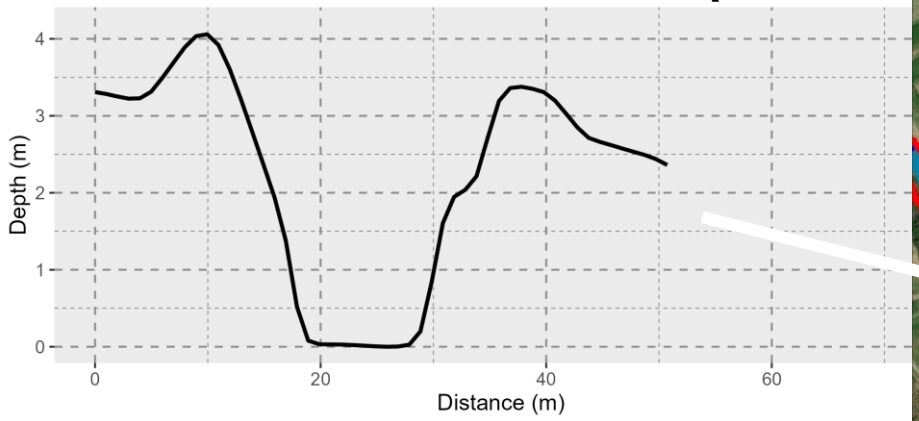
- Valley type/confinement
- **Floodplain connectivity**
- Riparian vegetation
- Bedform diversity/stability
- **Lateral stability**

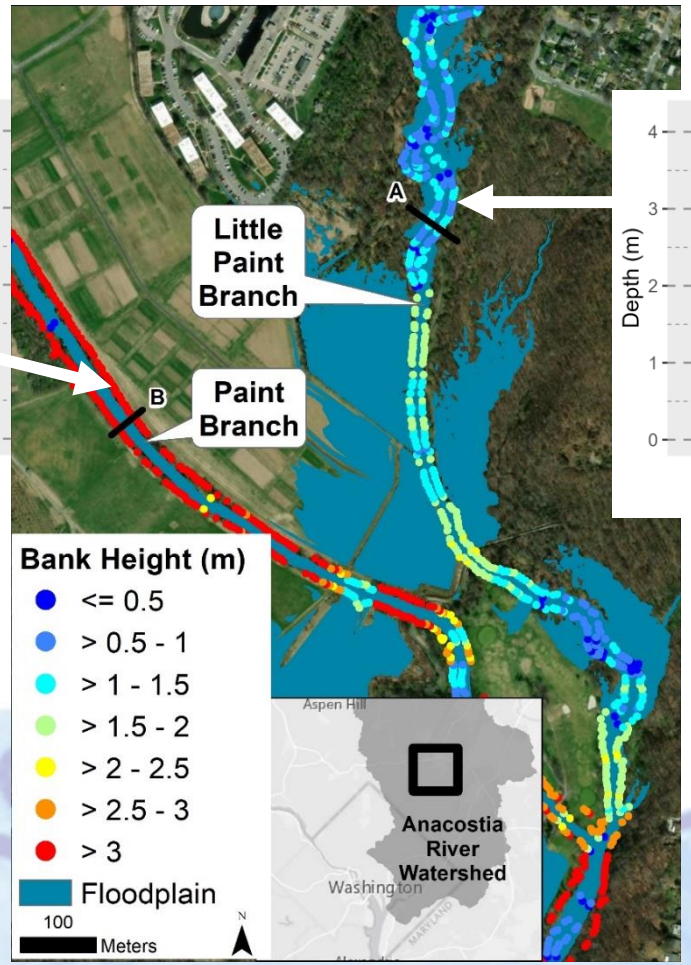
USGS

Proxy for floodplain connectivity

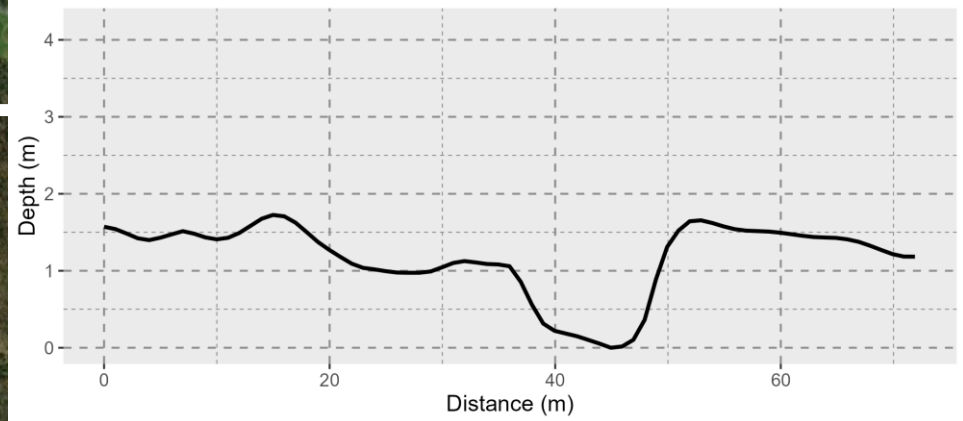
Use FACET floodplain width and channel width to develop a proxy for entrenchment ratio

Less connected to floodplain





More connected to floodplain

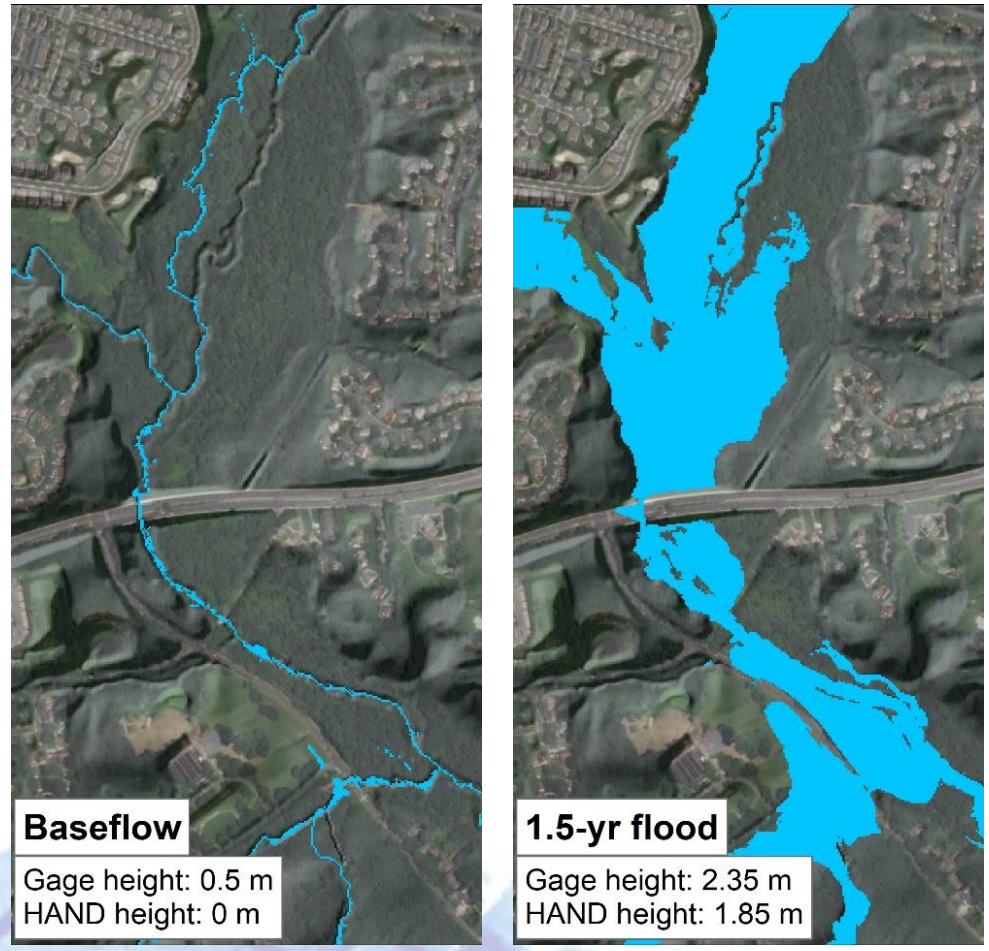


USGS

Data Release: Hopkins et al. 2020, https://doi.org/10.5066/P9RQJPT1

Informing our understanding of the frequency of floodplain inundation

Map inundation extend under different recurrence intervals

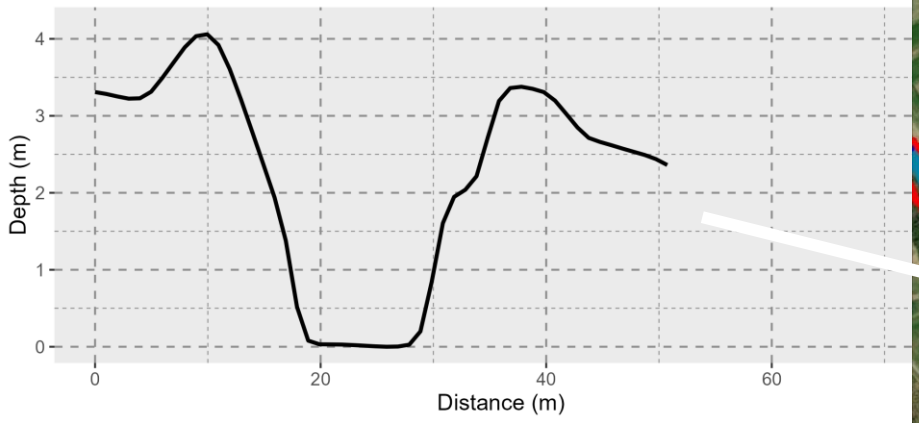


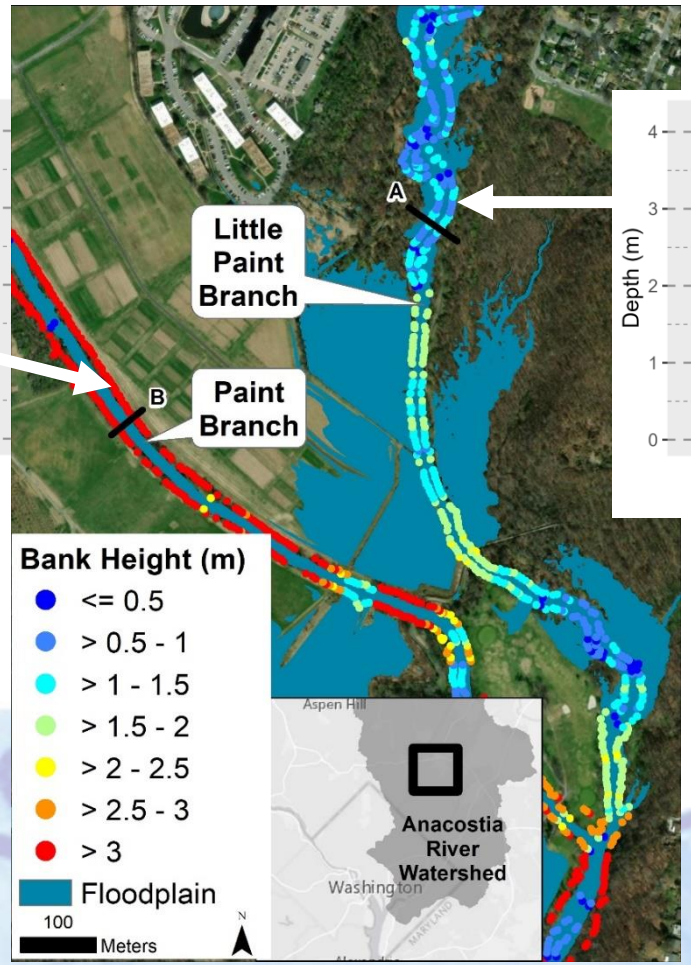
USGS

Proxy for incision

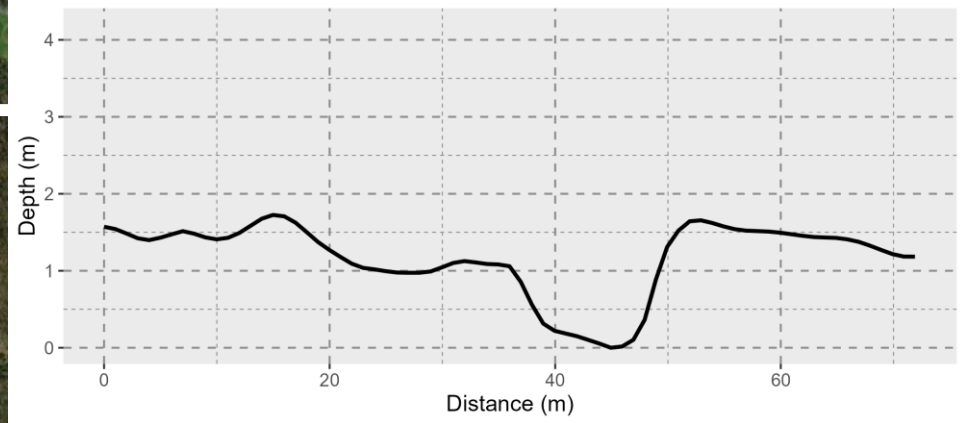
Use FACET channel width and channel depth to develop a proxy for width to depth ratio

More incised, less stable





Less incision, more stable



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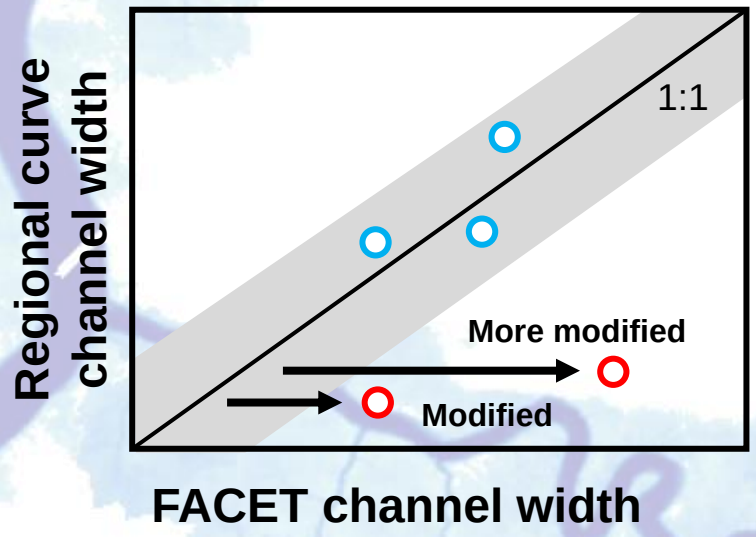
How modified is this stream channel?

Departure from expected channel width

How do channel dimensions compare to expected measurements based on regional regression curves?



Unmodified
Modified

Develop index of channel alteration based on departure from expected channel width

USGS

Input is essential to guide USGS science on how we improve our tools to serve your needs

Translating FACET metrics into indices

- What metrics are needed to inform stream health?
- What metrics are helpful for targeting stream restoration?
- What is the most useful spatial scale?

USGS

Krissy Hopkins
khopkins@usgs.gov