US inland hydro cal/val updates: Connecticut and Willamette

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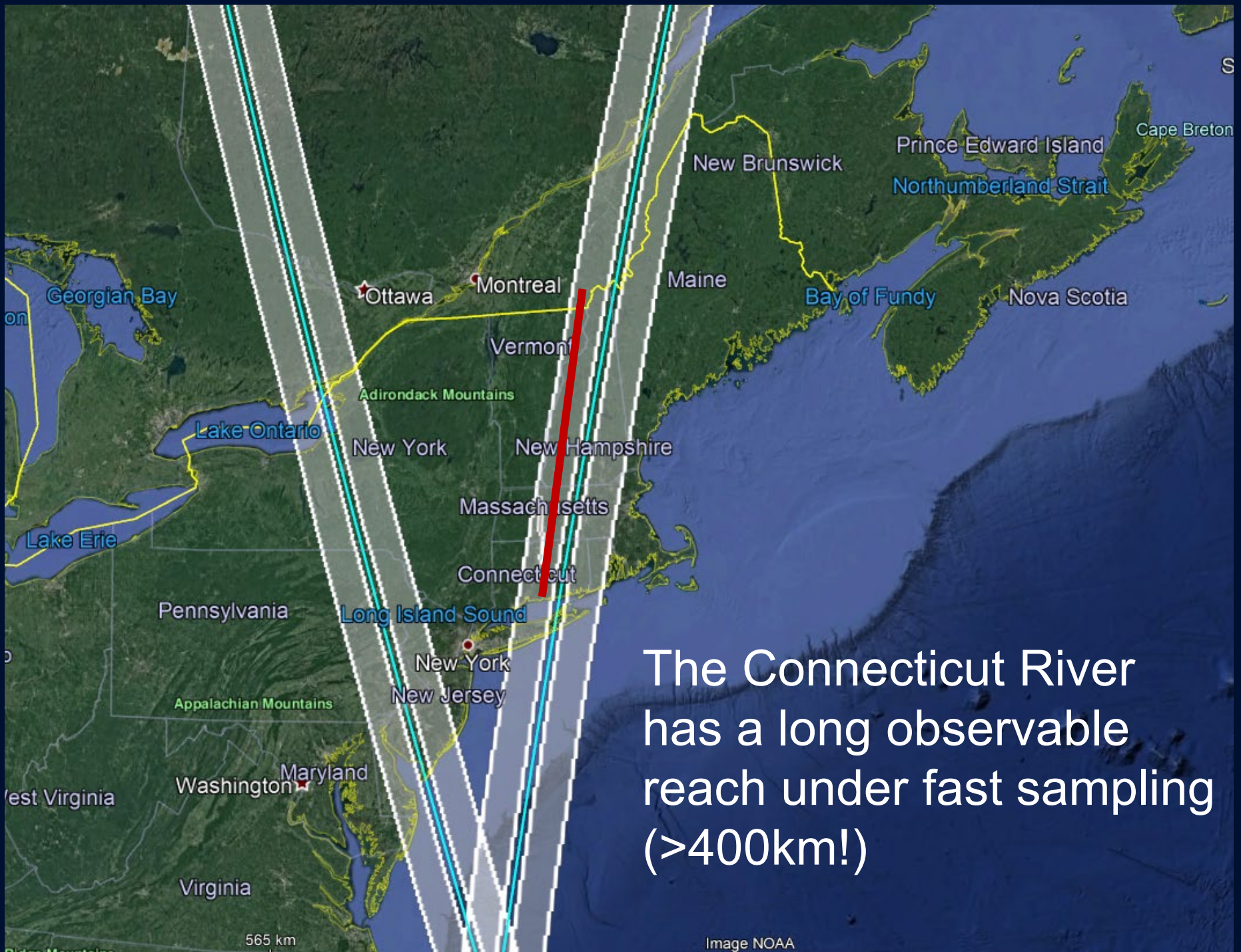
Connecticut River
August 30-September 3rd, 2021

US calval goals for the campaign

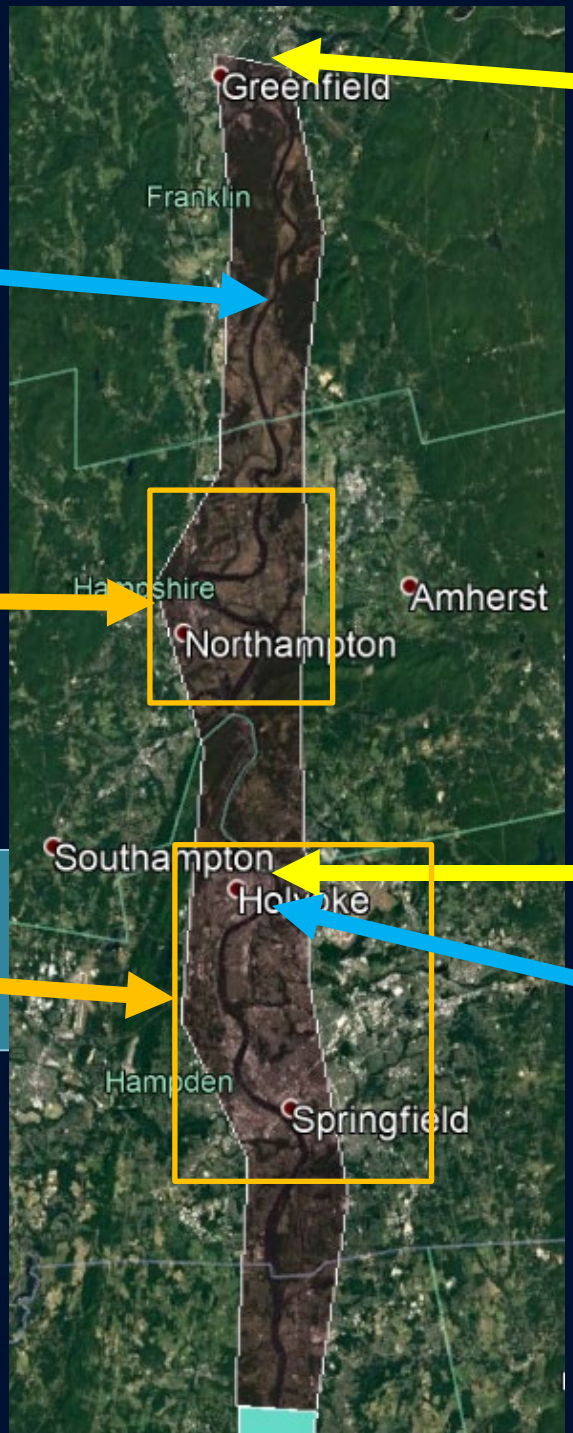
- Lidar surface water return experiments
- Team training and familiarization
- PT configuration tests
- GNSS configuration test
- GNSS processing chain verification
- Introduction to new lead tech Dr. Taylor Rowley
- *French connection*

Experiment originally planned for summer 2020



The Connecticut River has a long observable reach under fast sampling (>400km!)


Lowell
Leominster
Massachusetts
Pittsfield
Boston
Framingham
Northampton
Worcester
US calval plans include two reaches that cover ~120km
Springfield
Providence
Hartford
New Bedfor
Rhode Island
Connecticut
Norwich
63 km
New Haven
Fishers Island
Data SIO, NOAA, U.S. Navy, NGA, GEBCO



Dam

USGS Gauge

>50,000 people live in this box

>200,000 people live in this box

Dam

USGS Gauge

70km

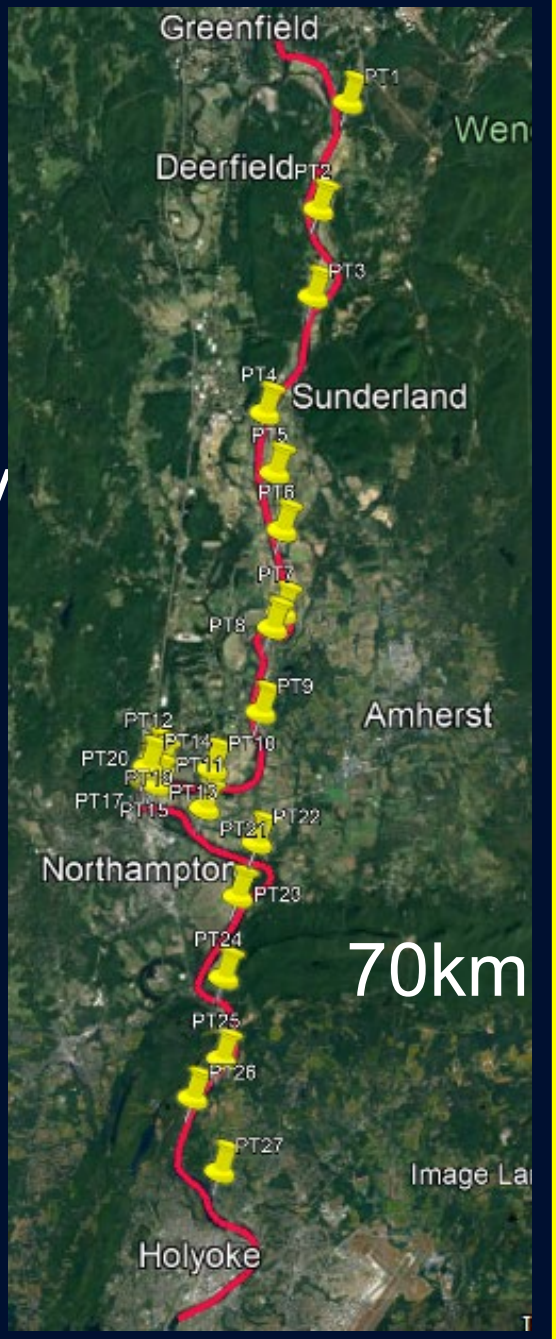
Lidar surface water return experiments

Lidar flight on August 31, 2021 and September 2, 2021

Helicopter mounted lidar pod- find Toby Minear for details

27 Pressure Transducers underneath the lidar

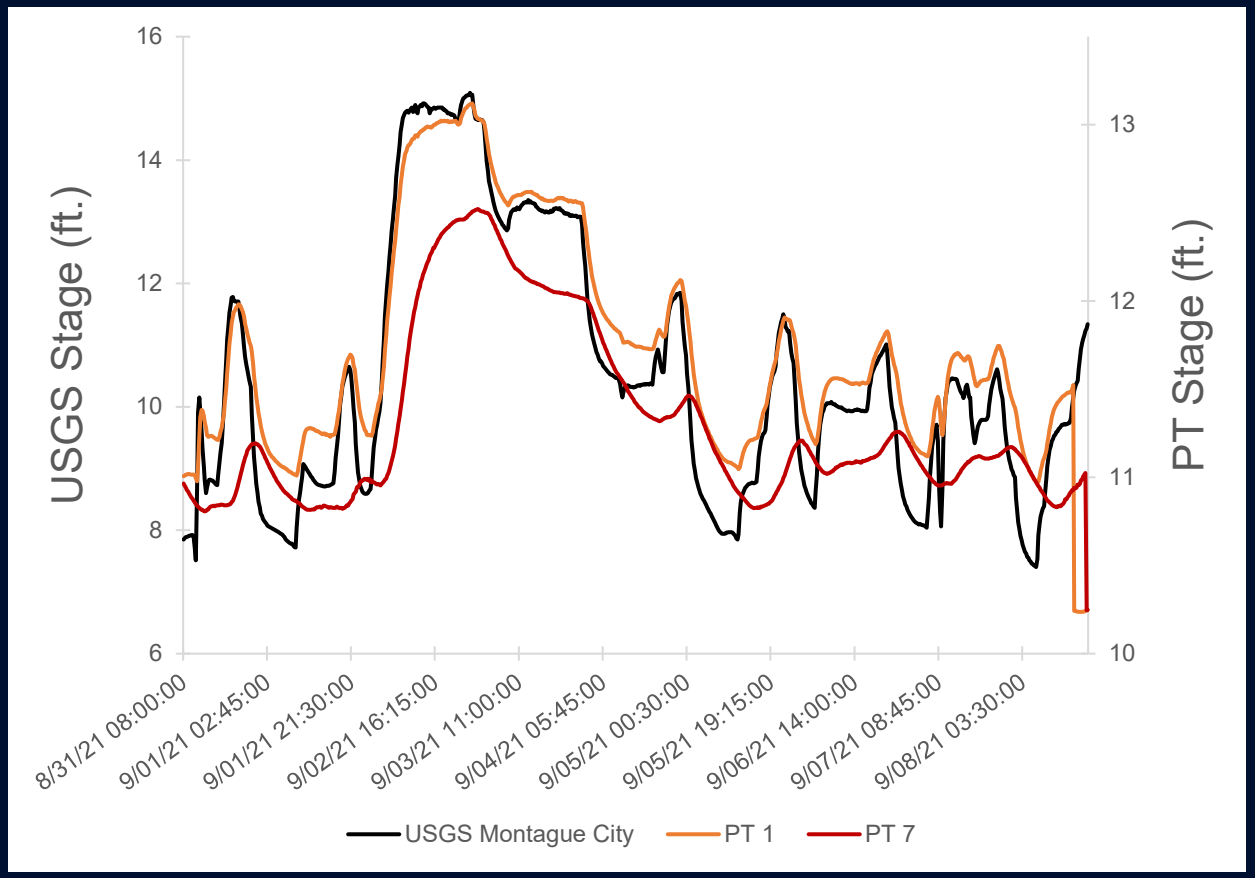
2x GNSS instruments floating downstream underneath the lidar

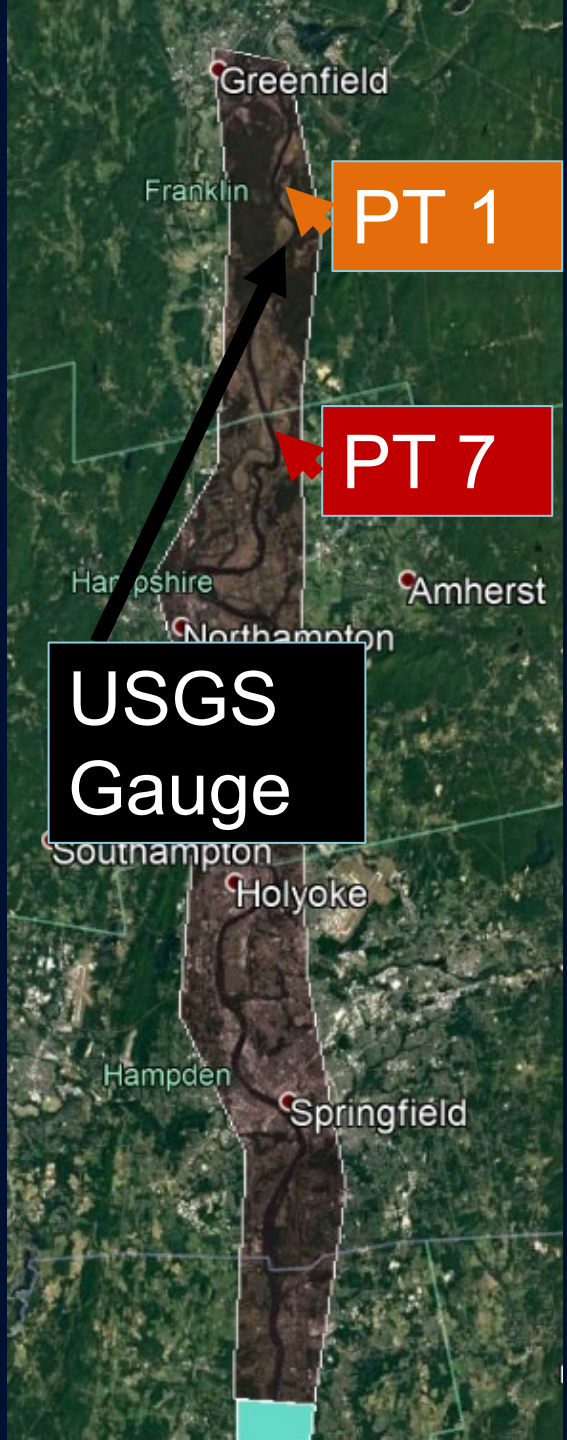


Lidar surface water return experiments

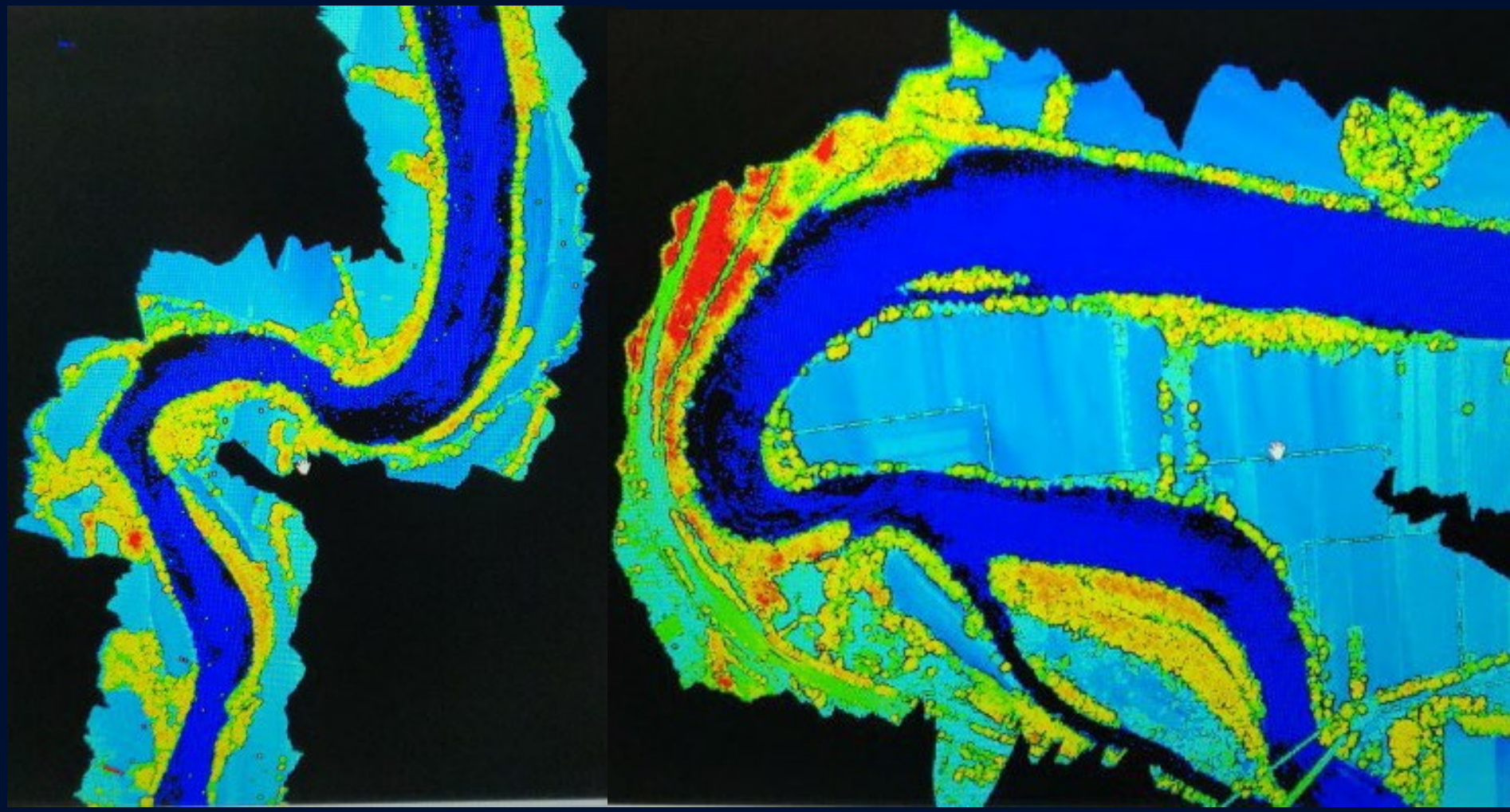
Comparing PTs to USGS gauge

- Not fully processed (datum)
- Dynamics as expected
- Note the hydraulic dynamism!

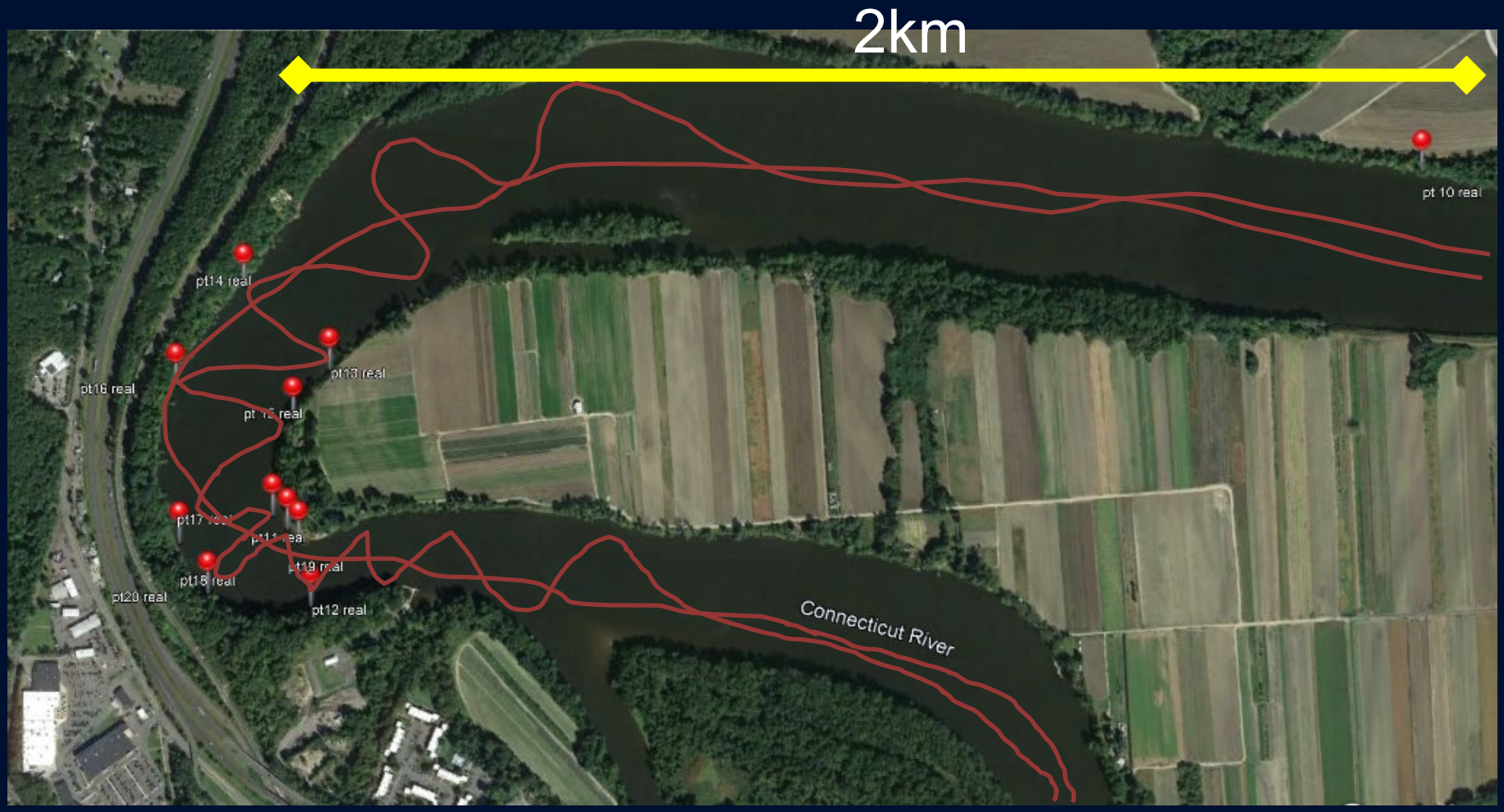




Lidar surface water return experiments

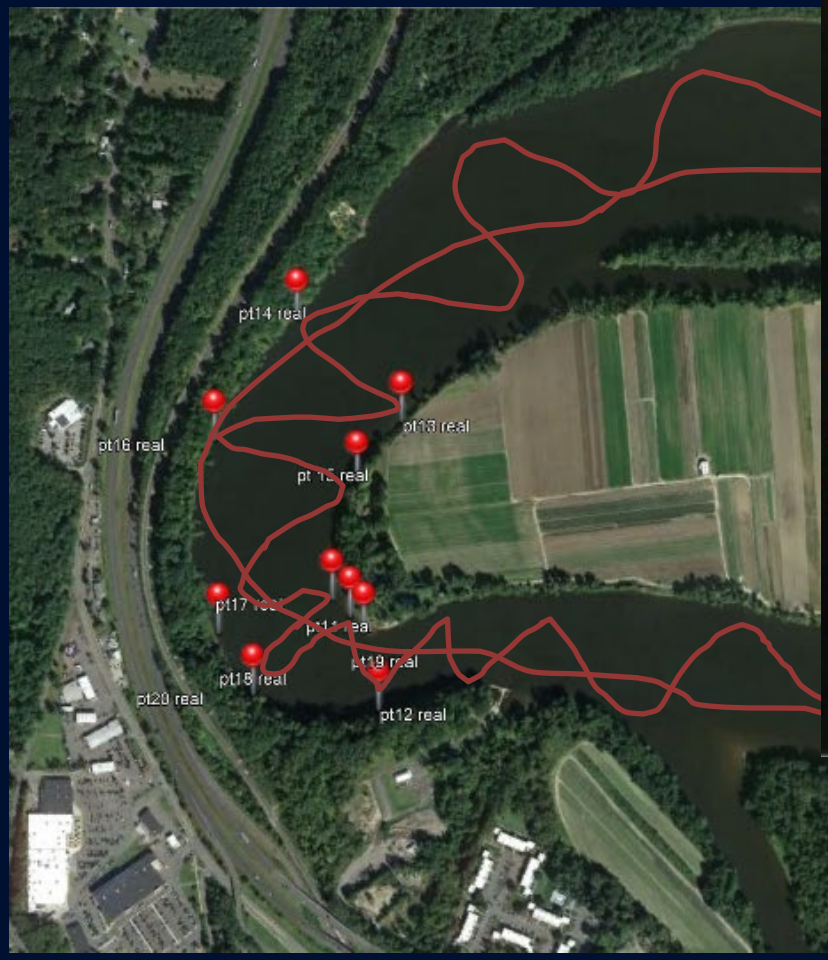


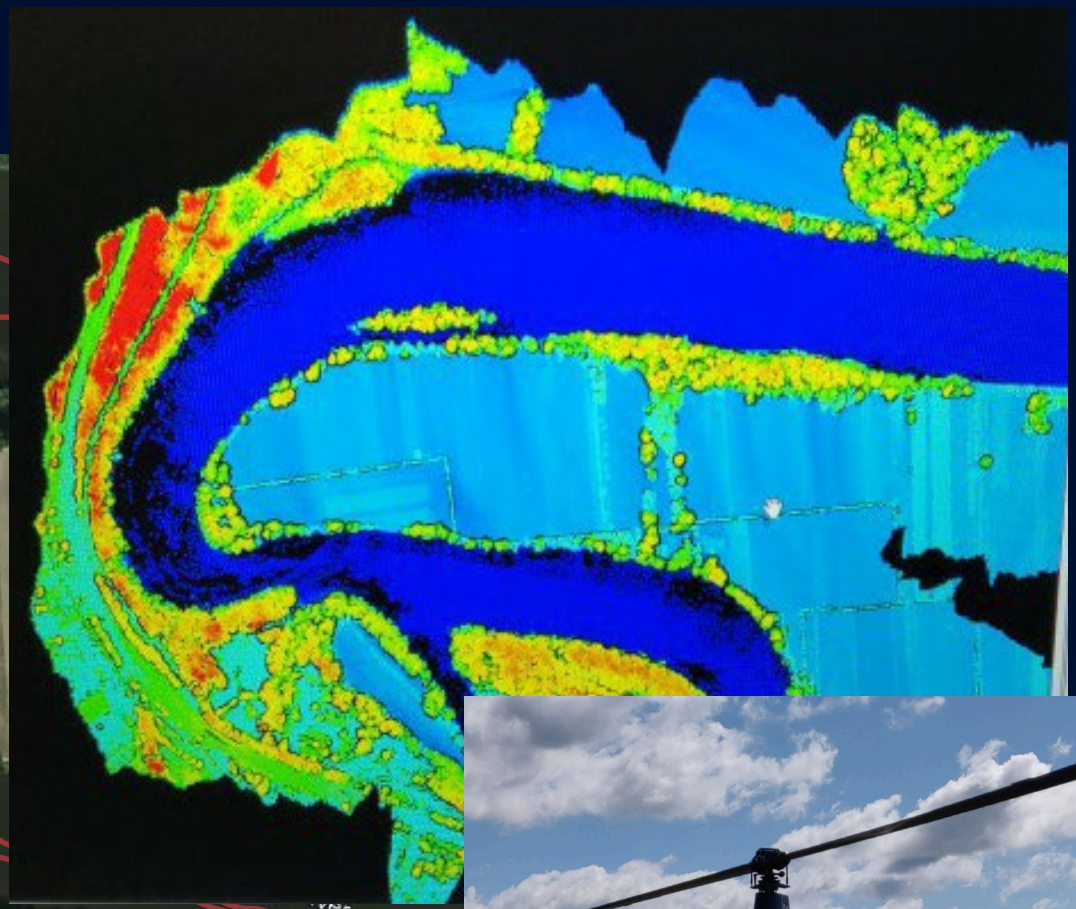
2D vs 1D experiments

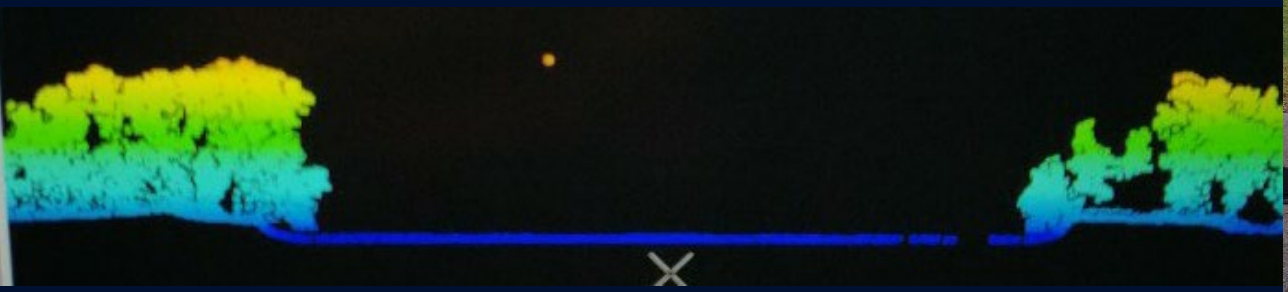


- SWOT is 2D+
- Cal/val measurements are point based (PTs) or linear (GNSS drifts)
- Can we characterize the translation?

2D vs 1D experiments







GNSS processing chain verification

JPL plans on processing all US hydrology inland cal/val GNSS data

Includes:

- Processing PT location points
- Processing water surface profiles at Tier 1 sites
- Processing ADCP locations within Tier 1 sites
- Processing Tier 2 tie-ins

- Data from last week!

Willamette River summer 2022

Last chance for a dry (wet?) run

A complete mock cal/val deployment from start to finish: preparation, execution, data processing and delivery

Will involve all US inland hydro cal/val personnel

Leads: Toby Minear and Taylor Rowley