Willamette River “Dry Run”
July 25-29, 2022

J. Toby Minear, Taylor Rowley, US CalVal Team, French CalVal Team, Brazilian CalVal Team, Canadian CalVal Team, New Zealand CalVal Team

University of Massachusetts Amherst
THE UNIVERSITY of NORTH CAROLINA at CHAPEL HILL
University of Colorado Boulder
BROWN

Goals and objectives

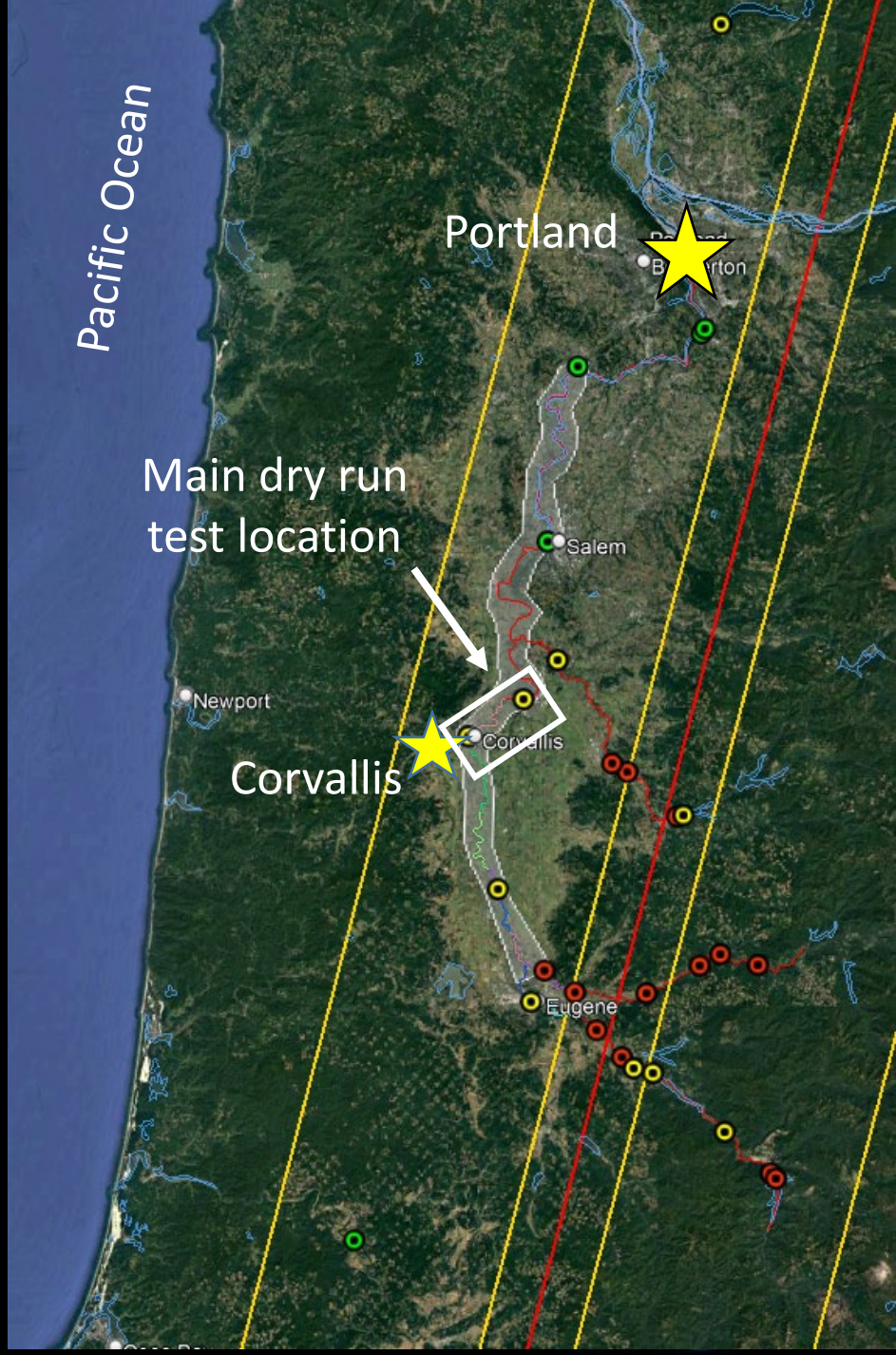
Primary science objectives:

1. Demonstrate and compare CalVal techniques with international collaborators using co-located data

2. Perform a complete Tier 1 CalVal campaign
   - Pre-trip logistics, field data collection, upload/process, comparison to simulated SWOT data, QA/QC
   - Evaluate issues, bottlenecks

Willamette River Tier 1 CalVal site, Oregon

- Under 1-day Fast Sampling orbit
- Well constrained by gages
- ‘Regulated’
- Main test location for dry run activities is near Corvallis
  - 2 SWORD reaches
  - 20 km



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Personnel

Inland Hydro CalVal Teams:

- US Team (Pavelsky, Rowley, Smith, Gleason, Minear, Wang, Munoz)
- US Collaborators: UofO (Fonstad, Cooley, Levenson)
- French Team (Berge-Nguyen, Papa, Calzas, Poisson)
- Canadian Team (Garner)
- Brazilian Team (Moreira)
- New Zealand Team (Brasington)

- JPL media team

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Cooperative Institute for Research in Environmental Sciences
UNIVERSITY OF COLORADO **BOULDER** and **NOAA**

CalVal field methods to be tested

US field CalVal methods:

- Pressure transducer installs: in water (11); baro (2)
- GNSS WSE long profiles (1-2 / day)
- ADCP bathymetry and velocity (12+ cross sections)
- Tier 2 WSE (1+)
- Shoreline walks (1-2 total)

French field CalVal methods:

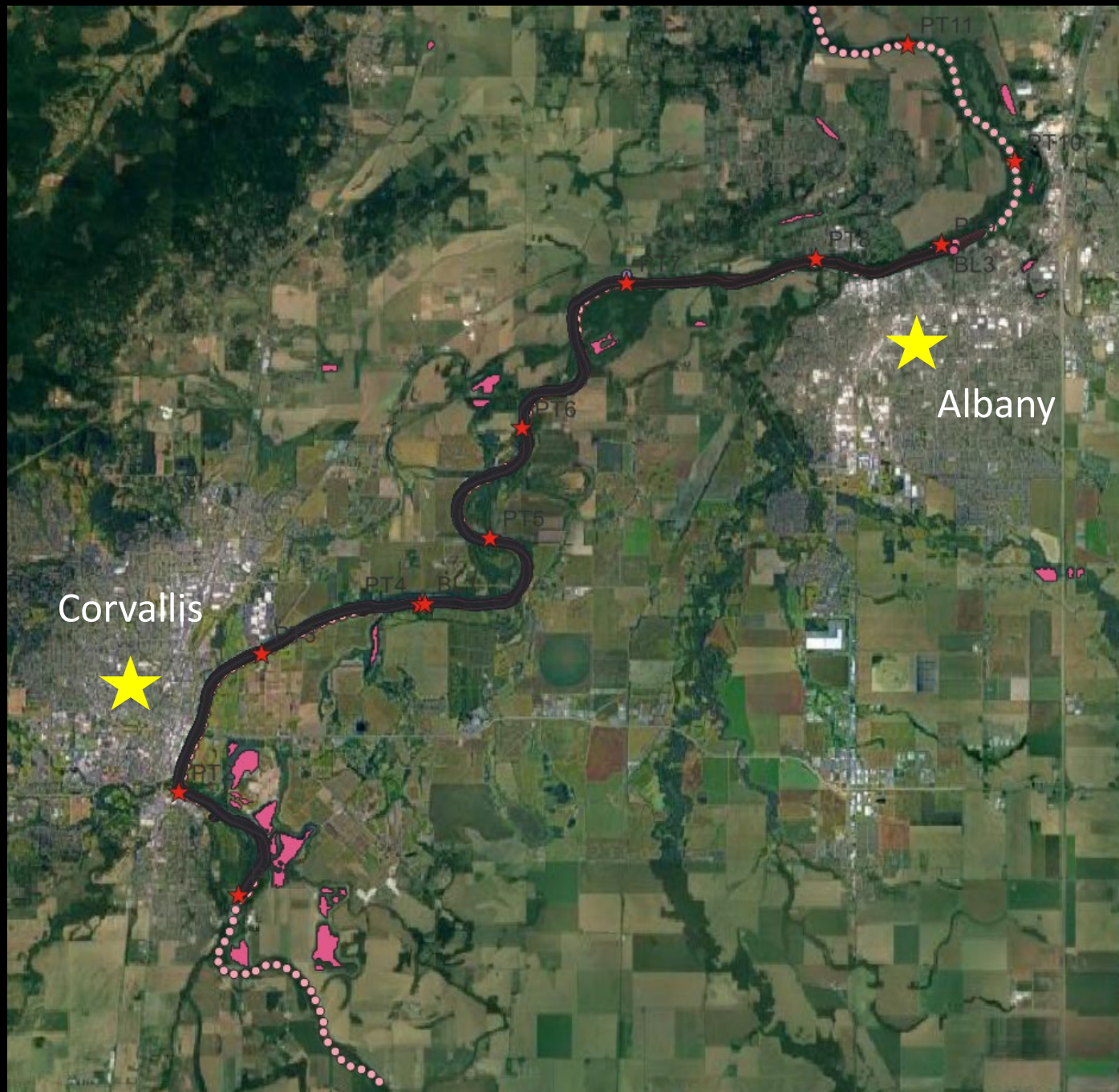
- Vortex drone-based WSE (1 profile/ day in test reach)
- Cyclopee (1 / day in test reach)
- Pleiades NIR imagery (2-3 days)

Canadian field CalVal methods:

- GNSS Drifter
- RTK GNSS


NASA

Field data



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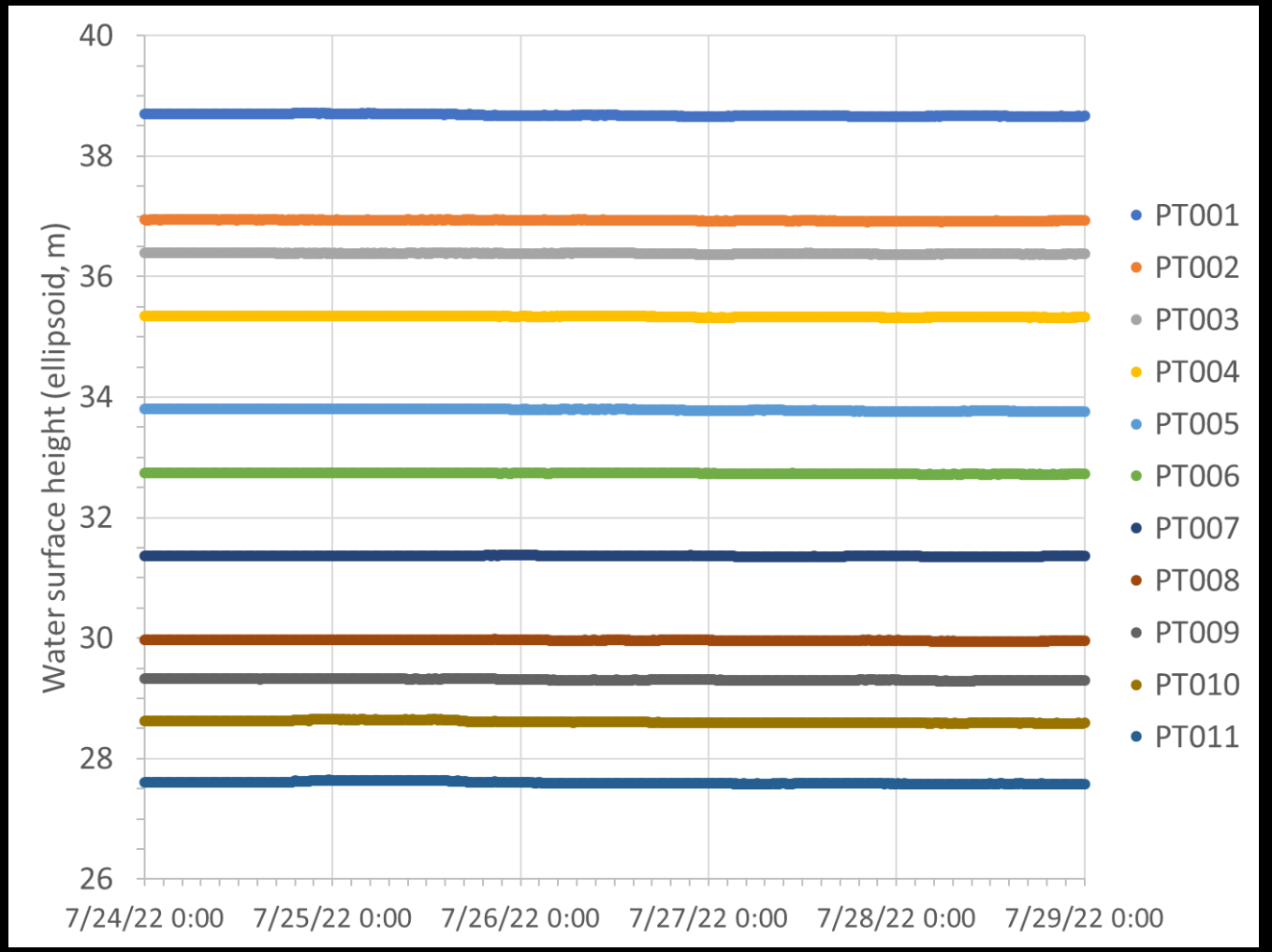
Field data

Pressure transducer data



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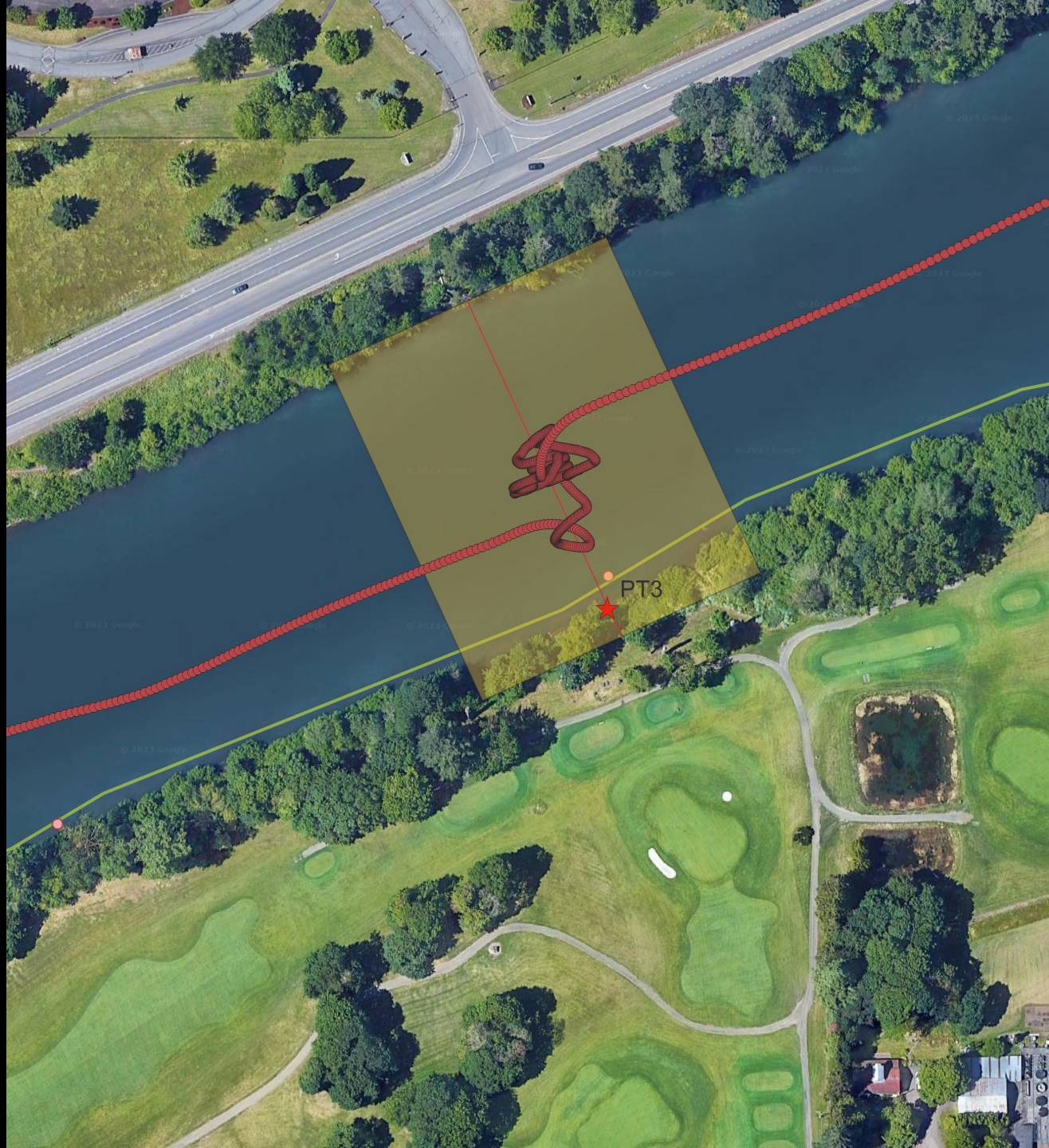

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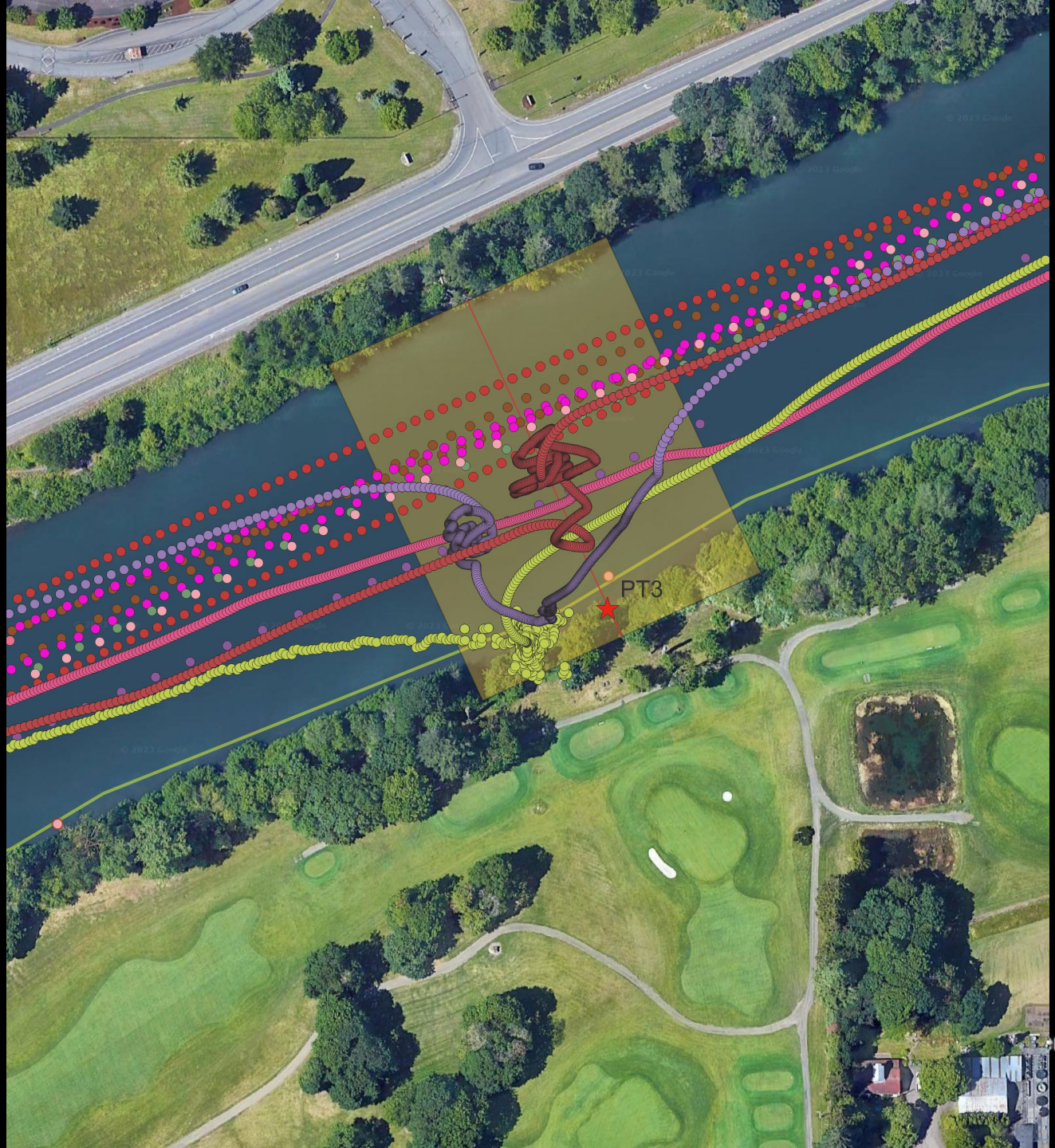

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Comparison

- Comparing the longitudinal profiles to the pressure transducers
  - Pressure transducer ellipsoid height (m) minus profile ellipsoid height (m)
  - Mean (m) (standard deviation, m)

	7/25/2022	7/26/2022	7/27/2022
US GNSS 1		0.012(0.101)	0.022(0.011)
US GNSS 2		-0.007(0.032)	
Cyclopee	0.200(0.089)	0.219(0.124)	0.214(0.091)
Vortex drone	0.042(0.076)	0.138(0.093)	0.108(0.100)

- Fairly large discrepancies between the three techniques with US - Cyclopee differences being largest (~0.2m)
- These results should be further investigated and by the other teams
  - Possibly processing others GNSS data through different pipeline

Many thanks to everyone who helped make the Willamette dry run happen