



# Bubble Trouble: Studying Methane and Carbon Dioxide fluxes in the Lower Columbia Estuary

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## Project Partners



Columbia River Inter-Tribal Fish Commission

# Role of LCRE Wetlands in Climate Mitigation

- Wetlands in Columbia River Estuary (CRE) harbor a diverse array of plant and animal species. They also contribute to the global carbon cycle.
- There is limited understanding of the carbon dynamics and methane emissions in oligohaline and freshwater wetlands of the CRE, particularly in the context of ongoing habitat restoration efforts.
- The lack of knowledge effectively hinders the prioritization of restoration projects as natural climate solutions and for carbon registries



# CH4-C Project – studying nature's bubbles

- **Our main monitoring objective is to assess methane emission and carbon sequestration potential of emergent wetlands throughout the lower Columbia River Estuary.**
- Funded under the BIL, in partnership with researchers from OHSU, PSU, CRITFC, and Cowlitz Indian Tribe.
- Four–phased project:
  - Phase 1: Establishing methods and study design.
  - Phase 2: Analysis of Environmental Influences
  - Phase 3: Site-Level Assessment of Carbon Dynamics by Habitat Type
  - Phase 4: Estuary-Wide Mapping and Model Development



Researchers from OHSU, PSU and LCEP at Tongue Point, Astoria with one of the Eddy Covariance Flux towers



EFT Location - Tongue Point

EFT Location - Wallooskee - Youngs



## Tongue Point, Astoria, OR

- Tower installed in Partnership with CRITFC.
- Part of Phase 1 – methods testing.

## Wallooskee - Youngs, Astoria, OR

- Tower installed in partnership with the Cowlitz Indian Tribe.
- Phase 2 commenced in 2023, with monitoring of environmental conditions
- Flux Chambers installed in early 2024





# What does the future look like?

- The study will identify which habitats within undisturbed and restored wetlands emit the most methane and/or store the most carbon, and how environmental conditions correlate with methane emissions and carbon sequestration.
- In Phase 4, the researchers aim to collaborate with partners, eventually working towards a larger scale model that encompasses the entire lower Columbia River.
- Enhancing regional climate mitigation efforts through contributing to carbon registries and coastal blue carbon initiatives.

