

# Possession Sound Oceanography

Jessie Lacy and Andrew Stevens

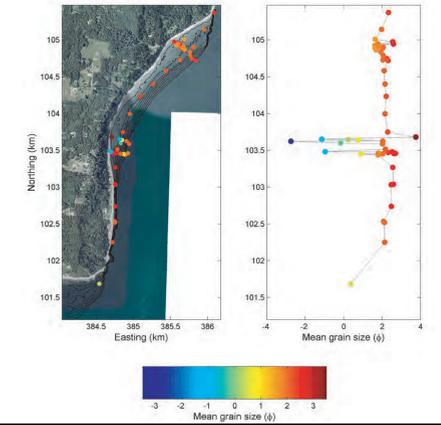
## Objectives:

- 1) Quantify gradients in wave energy and tidal currents in the study area.
- 2) Investigate the relative importance of waves and tidal currents to sediment resuspension and transport on the low tide terrace.
- 3) Investigate the influence of the fringing eelgrass meadows on currents, wave velocities, and sediment resuspension and transport by comparing conditions at a vegetated and unvegetated site.
- 4) Evaluate the distribution of sediment grain sizes at the site, and relate to eelgrass distribution and sediment mobility.

## Grain size



Grain size at Possession Point ranges from fine sand to cobbles and boulders. Land slides from the steep bluffs contribute fresh sediment to the nearshore. The coarser grain sizes in the middle of the study area appear to prevent eelgrass colonization.



## 2007 Deployment: Feb 27 - March 22

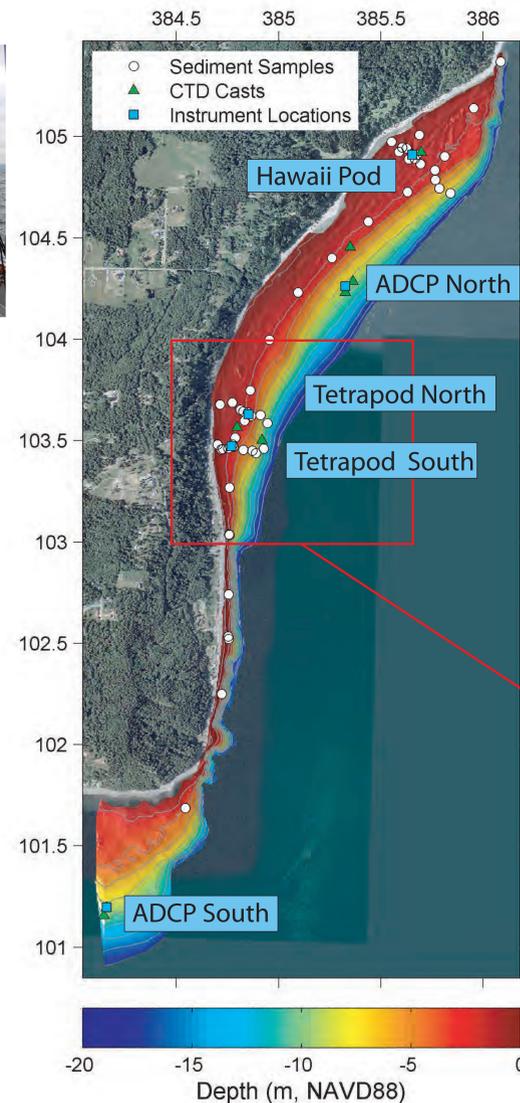
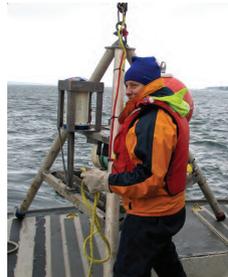
### Hawaii Pod (HP)



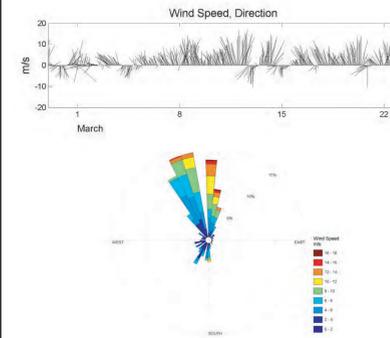
### Tetrapod (Tet)



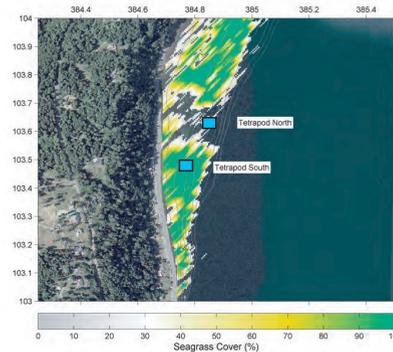
### ADCP



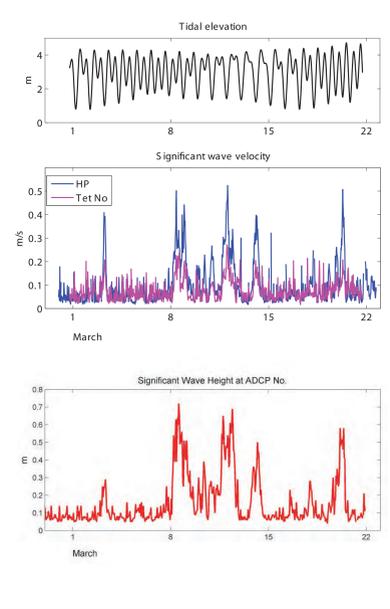
## Wind and Waves



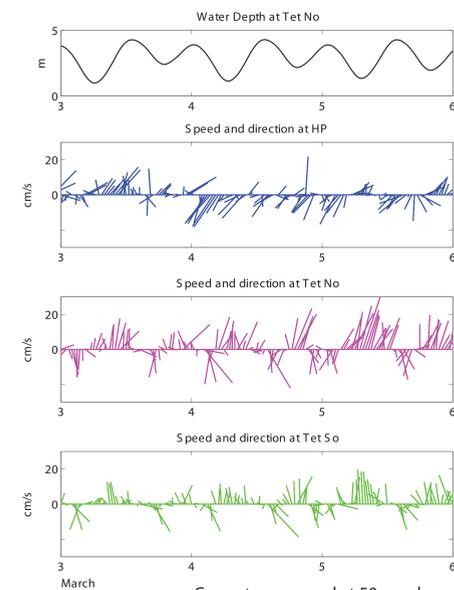
Northerly winds during storms generate waves with significant wave heights up to 0.75 m at the ADCP north site. Waves at the shallow water sites were directed to the NE (50 deg).



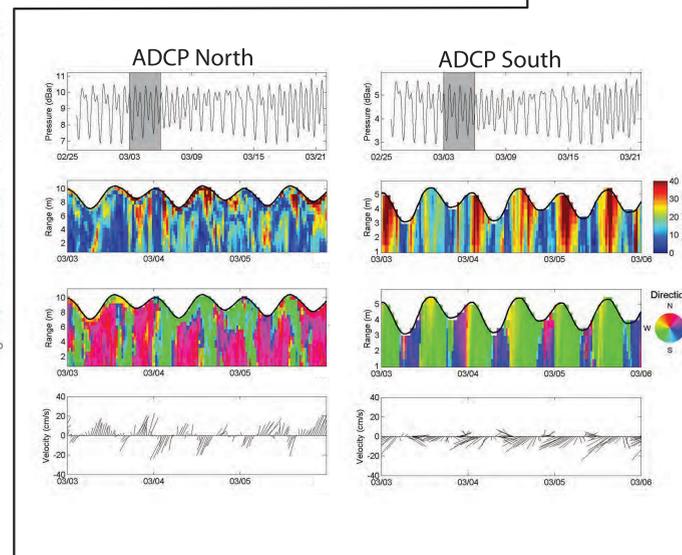
Results from acoustic mapping were used to site instruments inside and outside seagrass meadows.



## Tidal Currents



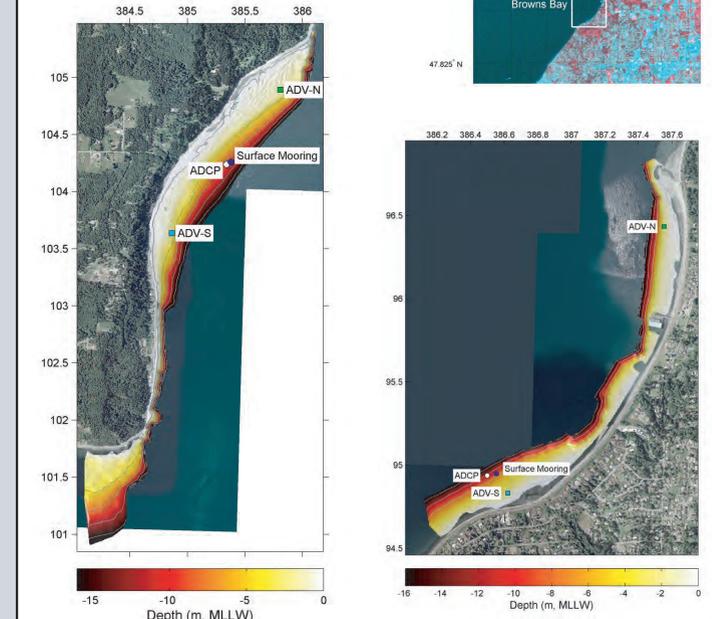
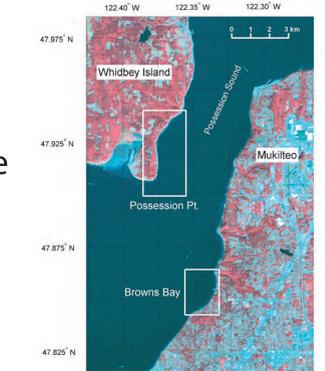
Currents measured at 50 cm above bed at three sites on the low-tide terrace.



The direction of tidal currents is influenced by the local bathymetry: at each site the strongest currents are shore-parallel. Current speed lower within the eelgrass meadow (Tetrapod So.) than outside it (Tetrapod No.), due to attenuation by the vegetation.

## Deployment 2: Nov. 2007 - Feb. 2008

Purpose: Characterize and compare tidal currents and wave energy in the nearshore of Browns Bay and Possession Point.



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