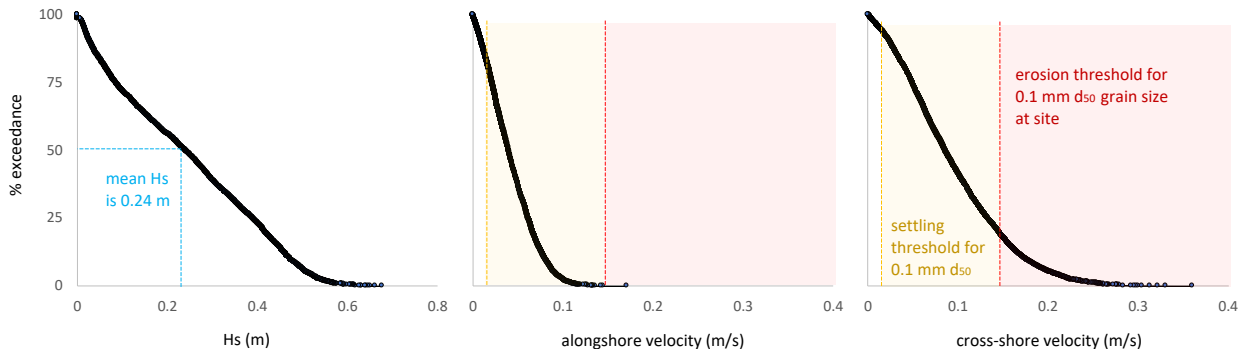
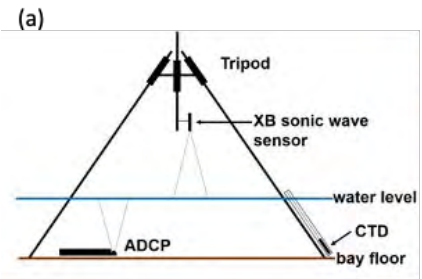


Deliverable 2 - Wave and flow velocity exceedance graphs for living shoreline design criteria

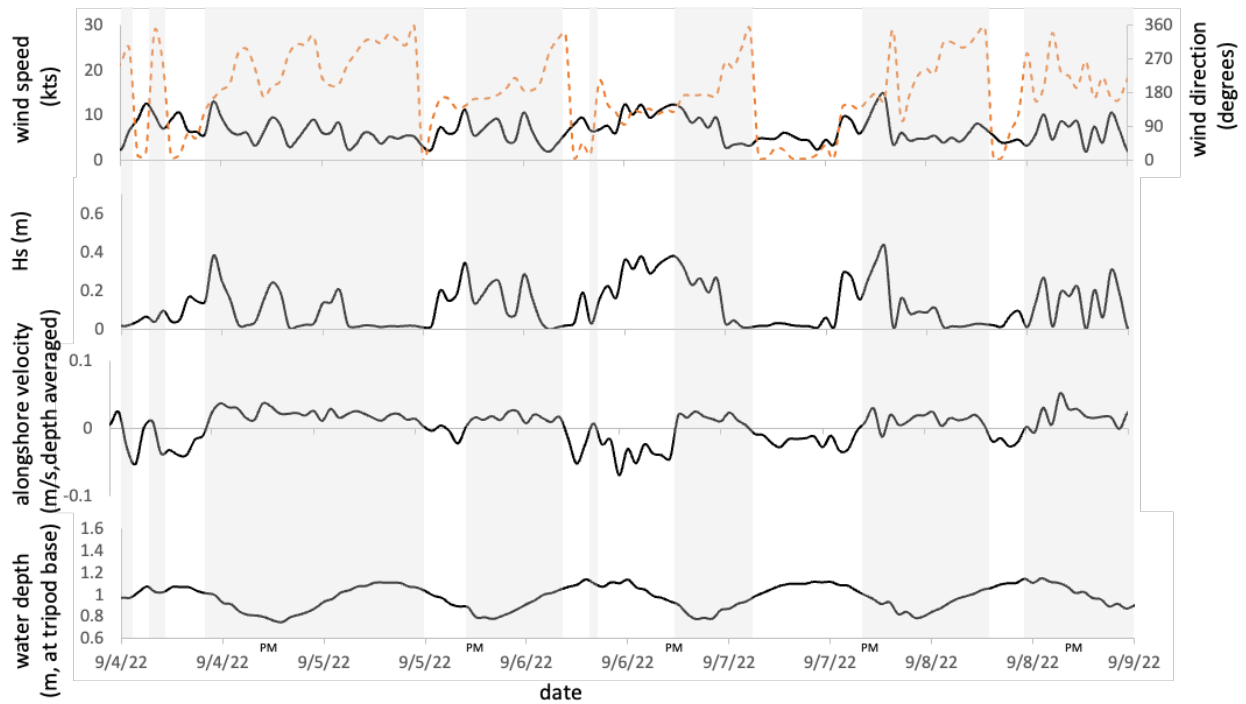
(Additional supporting figures can be found on the following pages)



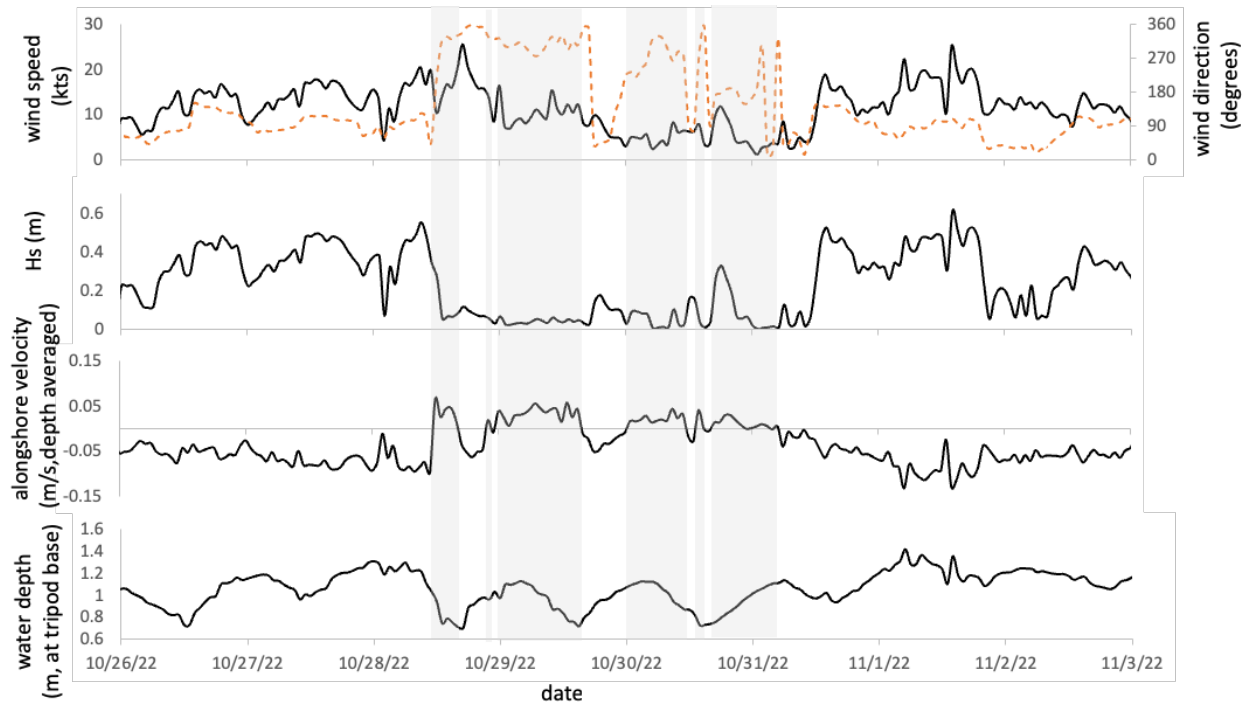
(a) Exceedance probability for (a) significant wave height (Hs), (b) alongshore water velocity, and (c) cross-shore water velocity. Data covers 8/5/2022 to 12/31/22.



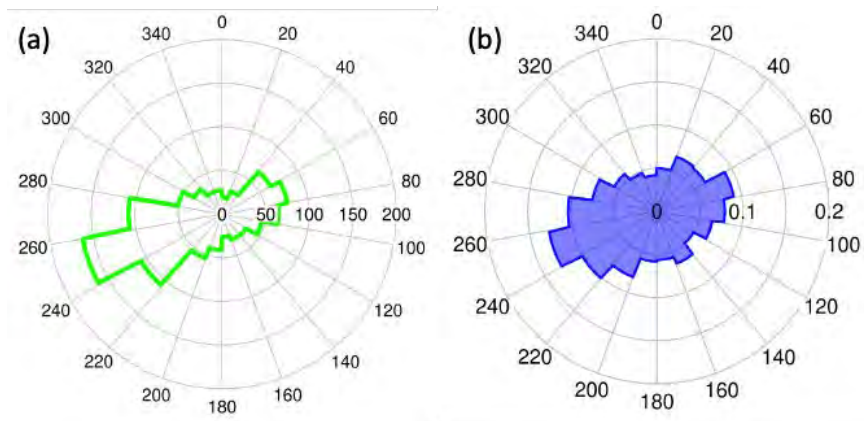
(a) Sensor set up on the tripod, (b) the tripod during deployment, (c) the tripod after deployment, (d) the ADCP velocity sensor post-deployment, (e) the computer station used to communicate with the X-bee wave sensors, and (f) the linked sonar and survey-grade GNSS system, attached to the side of the boat.



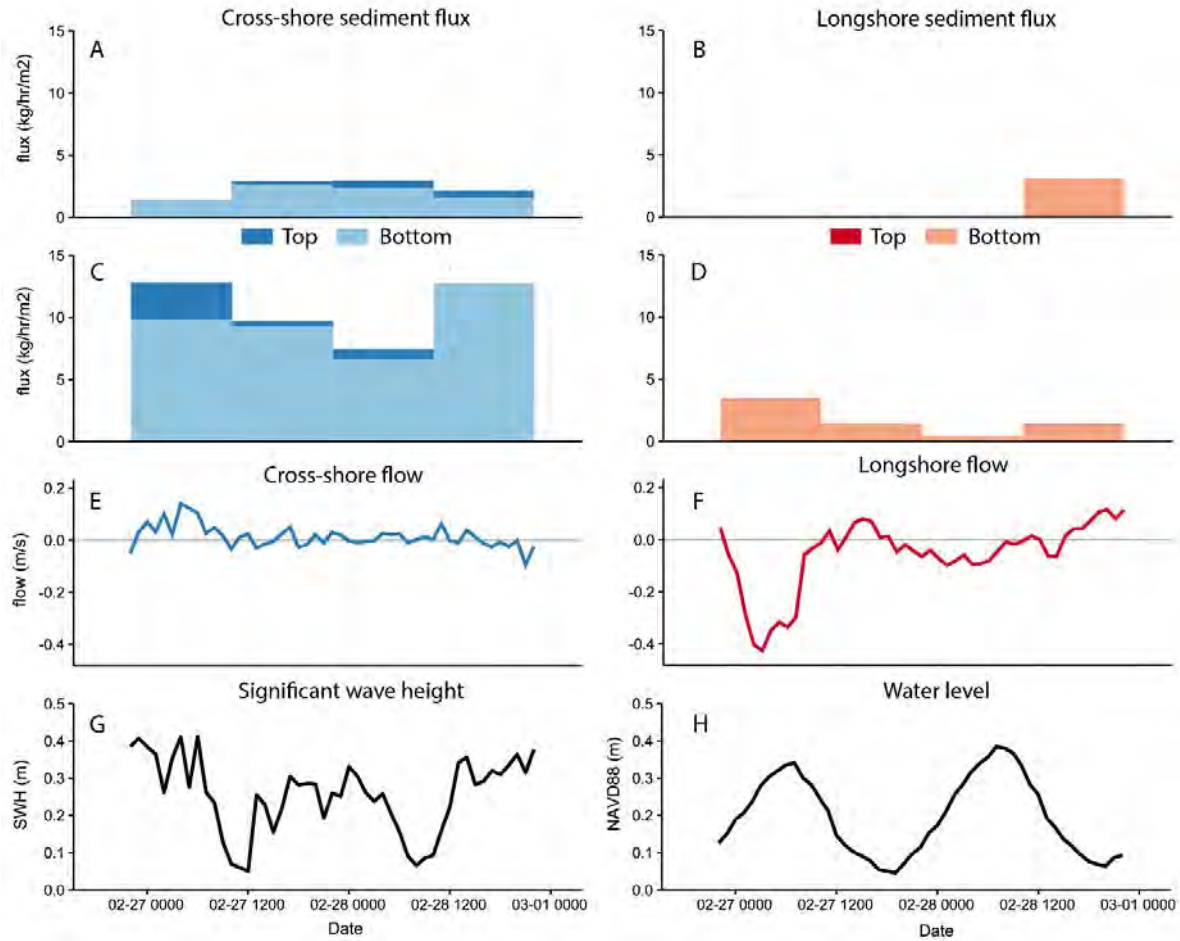
The alongshore current direction switched to the northeast when there were northerly or westerly quadrant winds (180 to 360 degrees), in the summer months. Northeasterly movement generally occurred during evenings to early nighttime in the summer, whereas southwesterly movement occurred when the winds were southerly or easterly (0 to 180 degrees) and picked up during the early daytime. Positive alongshore velocities (moving to the northeast) are shaded.



The alongshore current direction switched to the northeast when there were northerly or westerly quadrant winds (180 to 360 degrees) during winter cold fronts. The direction was to the southwest in between these fronts, when the winds were southerly or easterly (0 to 180 degrees). Positive alongshore velocities (moving to the northeast) are shaded.



(a) Accumulated hours for each current direction, during a 1000 hour period starting on 8/5/2022. (b) mean water velocity in m/s, by current direction, over the same time period.,



Across all deployments and sediment traps, the average sediment flux rate was 2.3 kg/hr/m². However, most of the sediment was captured by one sediment trap in the cross-shore direction, where the bottom bracket trap captured an average of 9.6 kg/hr/m². Sediment flux in the cross-shore direction greatly outpaced sediment flux in the longshore direction, 3.5 kg/hr./m² compared to 0.8 kg/hr/m². Of the samples selected for testing, the average bulk density was 1.17 g/cm³. Of these samples, approximately 80% of the sediment fell in the size class between 0.1255 – 0.25, indicating fine sand. The next most abundant size class was from 0.063 – 0.125, indicating very fine sand.