



Apr 27th, 4:00 PM - 4:30 PM

2021 Particle Grain-Size and Total Organic Content Analyses of Surface Sediments from Puget Sound and Elliot Bay near Seattle, WA

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2021 Particle Grain-Size and Total Organic Content Analyses of Surface Sediments from Puget Sound and Elliott Bay near Seattle, WA



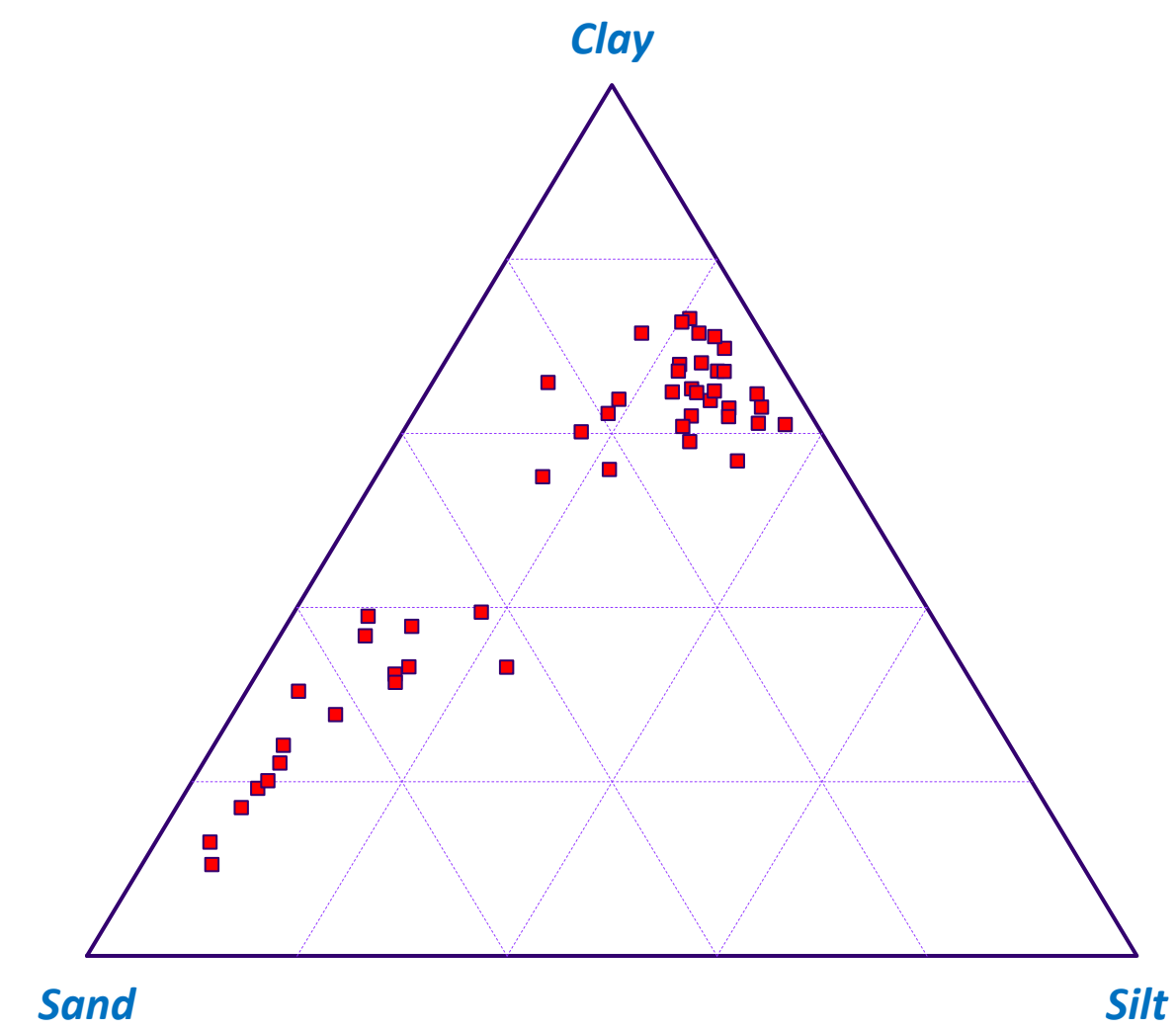
Julie Masura, Ethan Hoang, Jessica Wolford, and Cheryl Greengrove – University of Washington Tacoma

SEDIMENTS & ENVIRONMENT

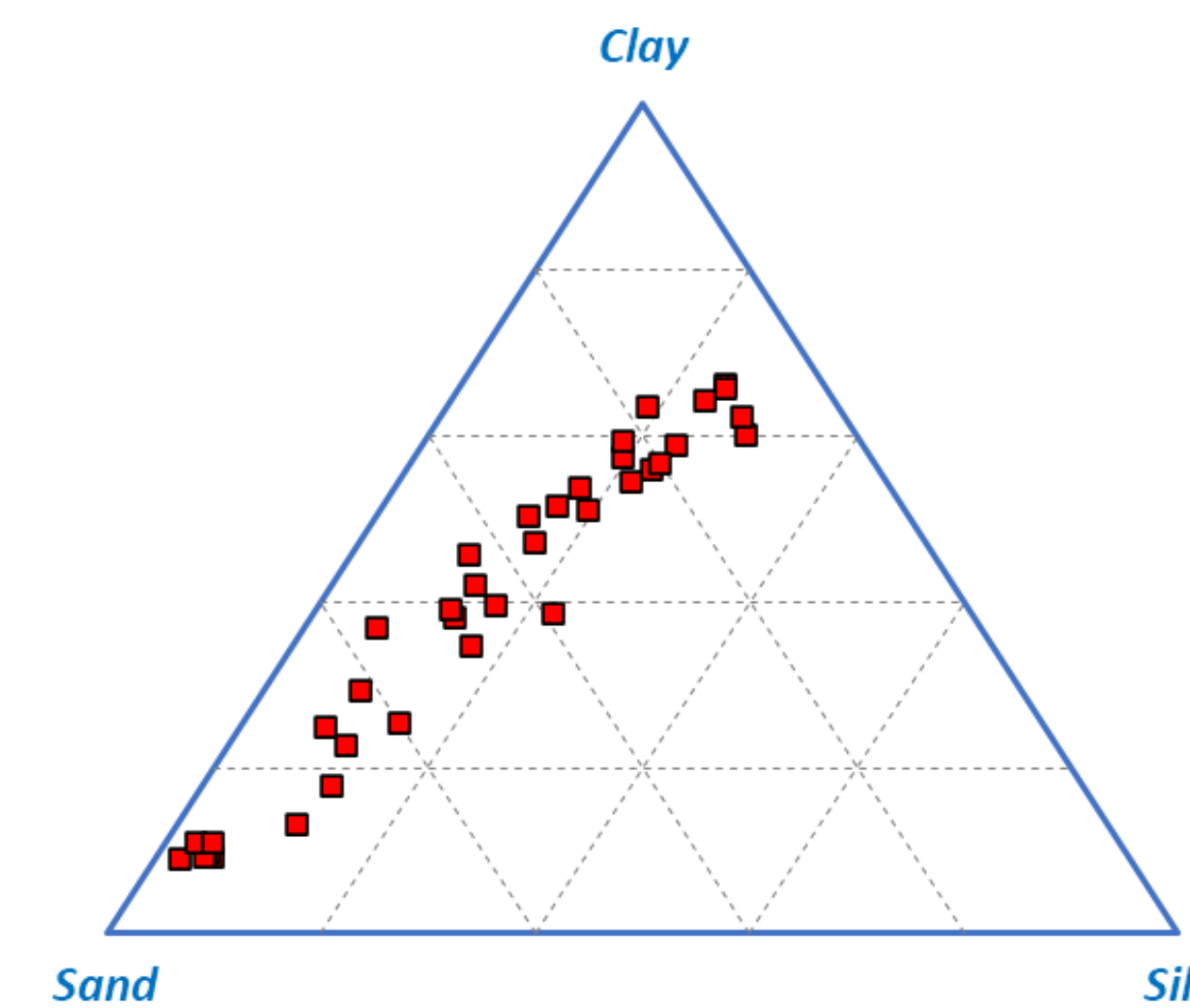
Sediment characteristics are important to connect environmental conditions to the sea floor and features of interest (i.e., benthic communities). Total organic carbon can represent oxygenated or reduced environments and/or biological vitality depending on water depth. Grain-size can represent high or low energy if sandy or silty, and the variability of grain-sizes (sorting) can indicate stormy conditions, landslides, or dumping. This study provides a foundation for scientists to understand and maintain environmental health.

RESEARCH PARTNERSHIP

This project explores characteristics of sediments collected throughout the Puget Sound and Elliott Bay in spring 2021 to correlate with other measurements (i.e., harmful algae or plastic pollution). Washington State Department of Ecology's Marine Sediment Monitoring Group has provided sediment samples to analyze since 2013. For 2021, 50 long-term stations from Puget Sound along with 30 additional stations from Elliott Bay have been sampled using a 0.1 m² stainless steel van Veen grab sampler to recover 2-3 cm of the top sediment from the seabed.



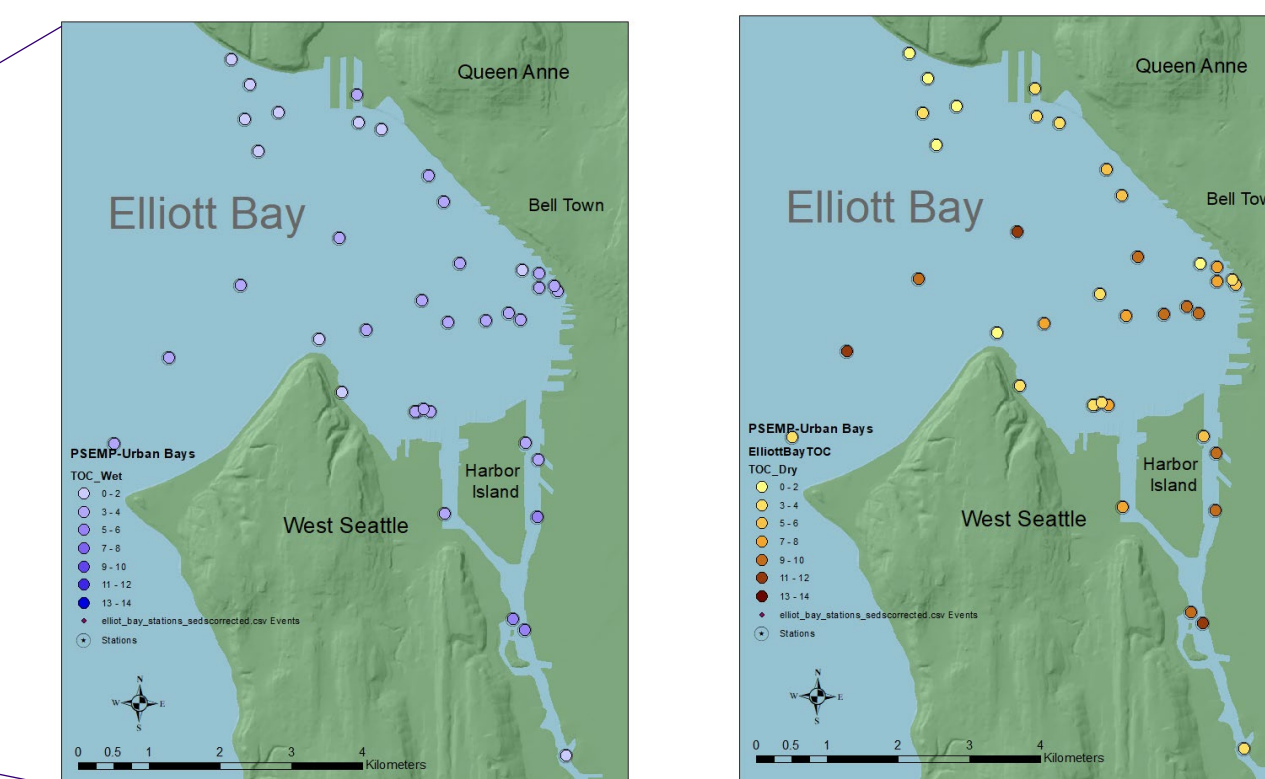
2021 particle-size distribution (sand:silt:clay) of Puget Sound Long Term Stations.



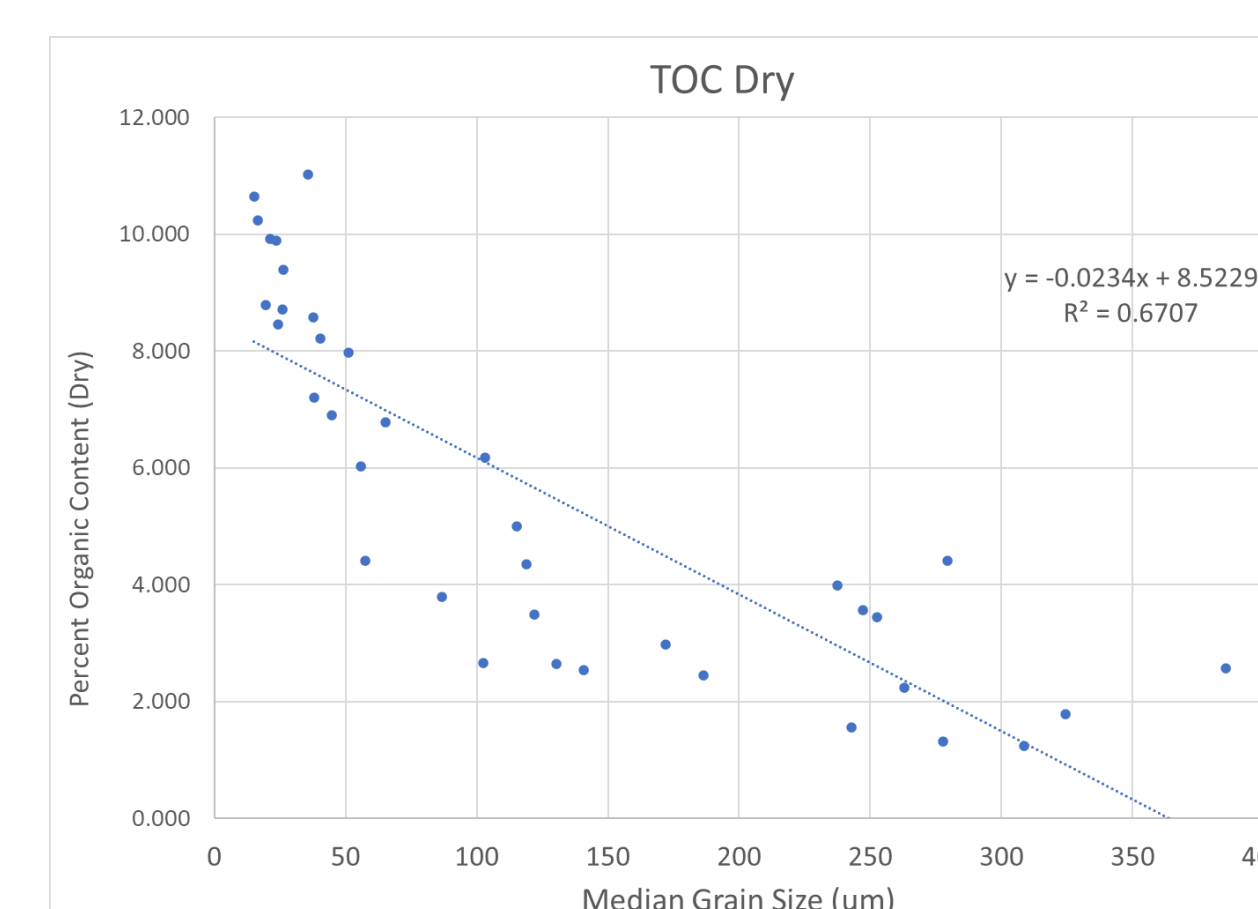
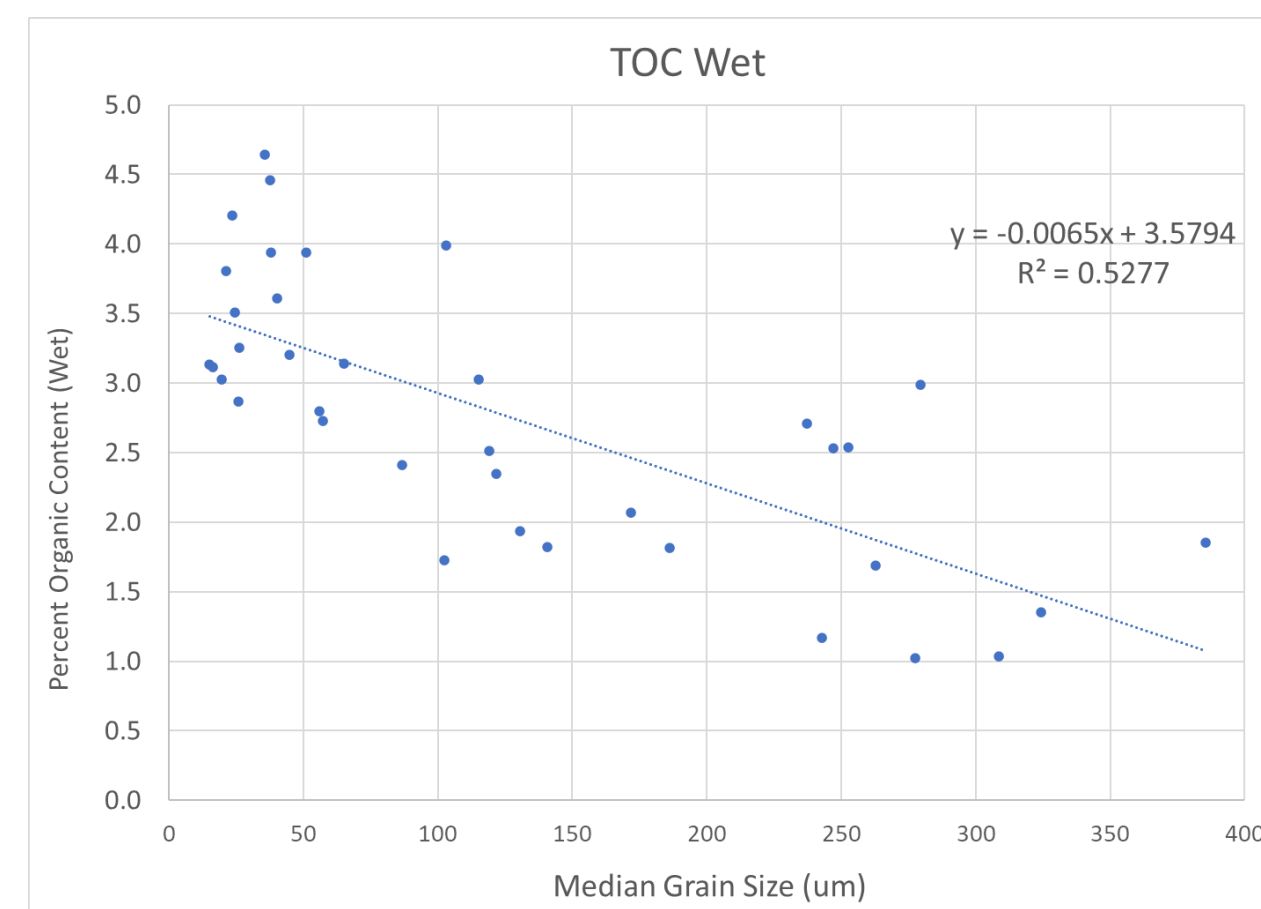
2021 particle-size distribution (sand:silt:clay) of Elliott Bay Urban Stations.



2021 Puget Sound Long Term station locations.



2021 total organic content wet (left) and dry (right) of Elliott Bay Urban Stations.



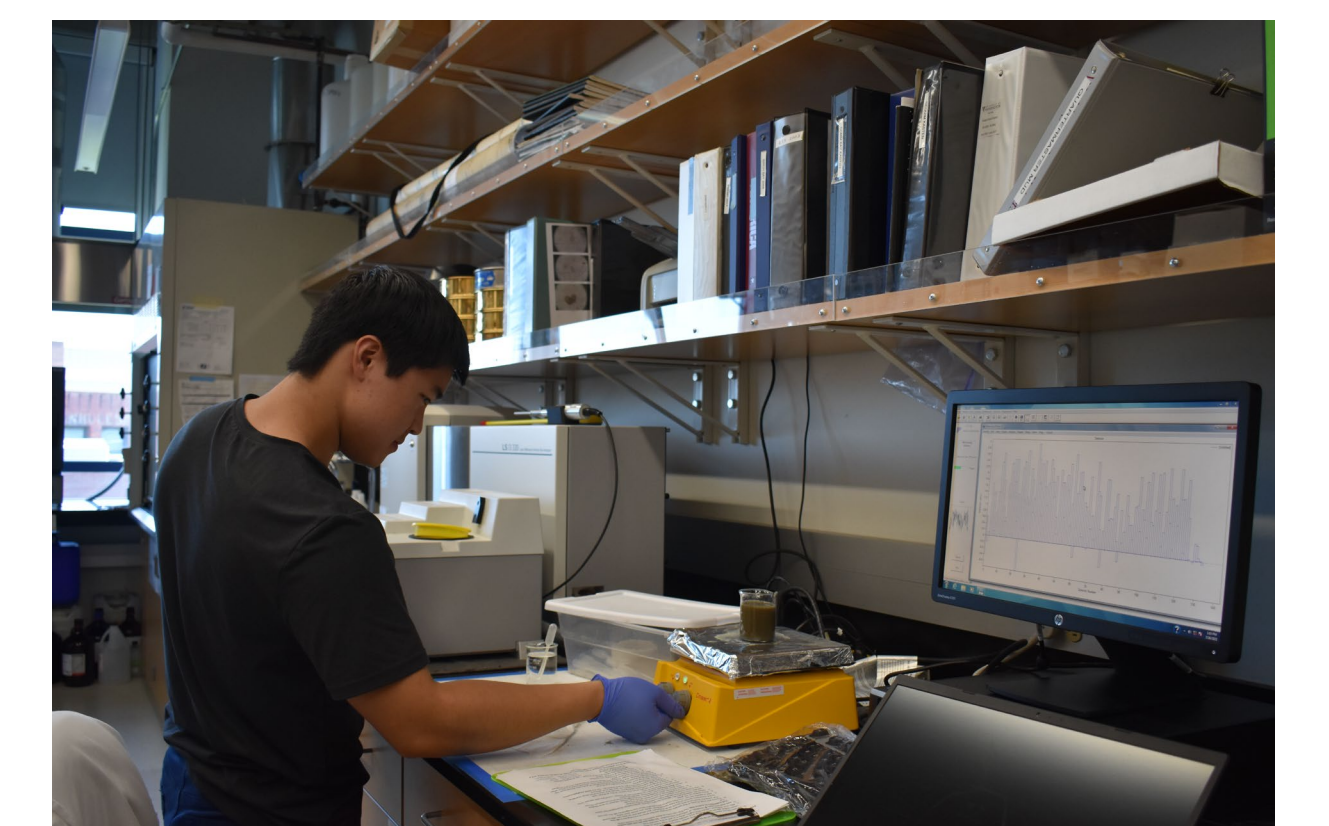
2021 total organic content wet (left) and dry (right) vs. median grain-size of Elliott Bay Urban Bay Stations.

UWT SEDIMENT QUICK FACTS

- Both Puget Sound and Elliott Bay particle sand:silt:clay ratios ranged from sand to silty-clay
- TOC_{wet} (spatial) ranged 1-5% and vs TOC_{dry} (solids) ranged 1-14% for Elliott Bay
- TOC_{wet} (spatial) vs TOC_{dry} (solids) was higher spatially for Elliott Bay
- TOC & median grain-size correlated linearly for both wet and dry sediments for Elliott Bay

UNDERGRADUATE RESEARCH

Each year the sediment samples are analyzed by undergraduate researchers for grain-size distribution, total organic content percentage, harmful algae abundance, and microplastic concentration as part of a summer research experience. Samples were analyzed in the lab with a Beckman-Coulter Particle Size Analyzer for sediment grain-size. The loss-on-ignition technique was used to determine the total organic content.



Ethan Hoang running PSA analysis with Beckman-Coulter Laser Diffractometer.



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