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Levels of Dissolved Oxygen and Chlorophyll in Possession Sound in 2021

Daniela Torres
Everett Community College

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Levels of Dissolved Oxygen in Possession Sound in 2021

Daniela Torres
Ocean Research College Academy,
Everett Community College

Introduction

The Possession Sound has a rich biodiversity in part due to its freshwater input from the Snohomish River, and it is important to monitor all its parameters. The dissolved oxygen, being one of the parameters, affects marine life in the water. At specific levels of dissolved oxygen the marine life can be at risk. These communities of marine life, can be of exposure to low population growth or increase of mortality levels (Keister, Winans, & Herrmann, 2020). For low levels, or more commonly known as hypoxia, the species at risk include fish, crustacea, and benthic invertebrate communities (Spietz, Williams, Rocap, & Horner-Devine, 2015).



Study Site

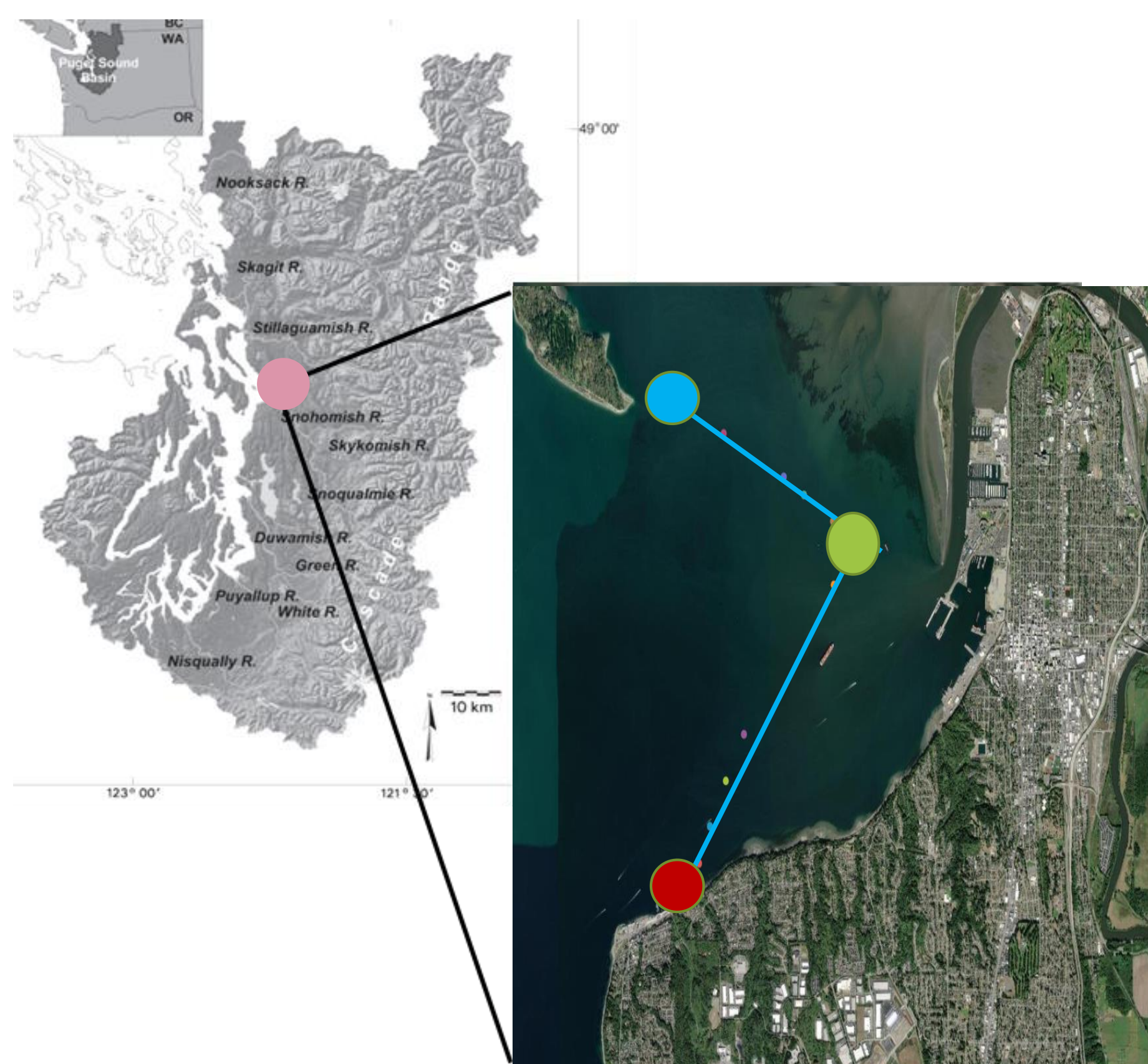


Fig. 1 Map showing Puget Sound (left) with Possession Sound marked by pink circle. The close up of the Snohomish River Estuary system in Possession Sound (right) shows the study site of the horizontal longitudinal line (shown by the blue line). The start of the line at red (AM), end of track 1 and start of the second track (PM) in green, and the end data of track 2 (shown in blue). This dot also marks data of a different day, used to compare in figure 3.

Methods

This study utilized EXO data collected on July 20th of 2021 and November 18th of 2021. The July data followed a horizontal longitudinal transect line along the area of the Possession Sound. The data from November also follows a transect line, but only one dataset of the line is used in this study for comparisons.

ORCA

The Ocean Research College Academy is a dual enrollment program where high school juniors and seniors experience innovative, interdisciplinary and student-centered learning. A longitudinal study of the local estuary forms the backbone of the first-year experience, and leads students to conduct independent research in their second year of the program. ORCA has received grants for a research lab, research vessel, and summer research funded by the National Science Foundation.

Results

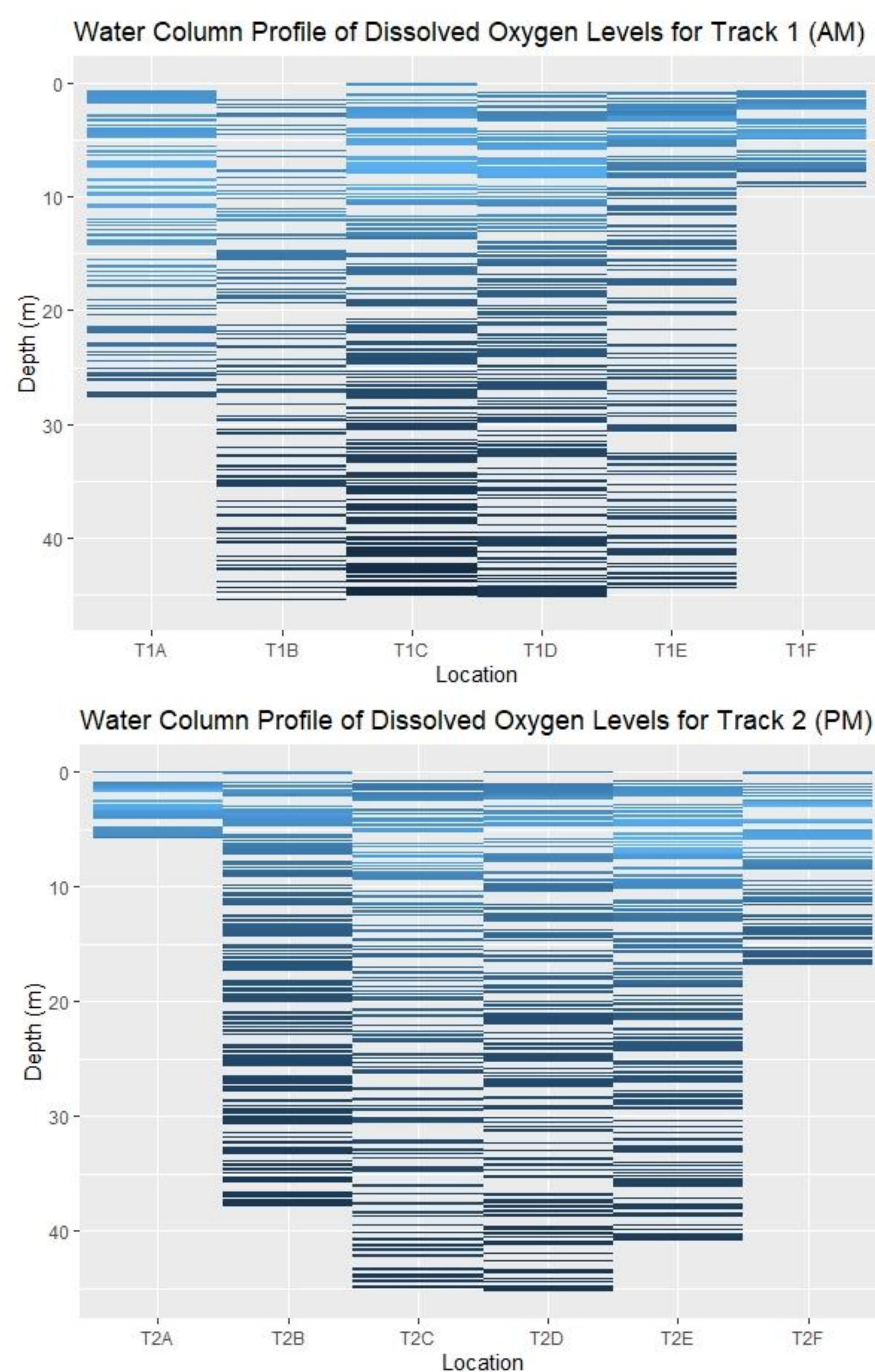


Fig. 2 Data from the transect line of 07/20/21 is shown above by the heatmaps. The top graph represents track 1, done in the AM, and the bottom represents the PM data, track 2.

Results

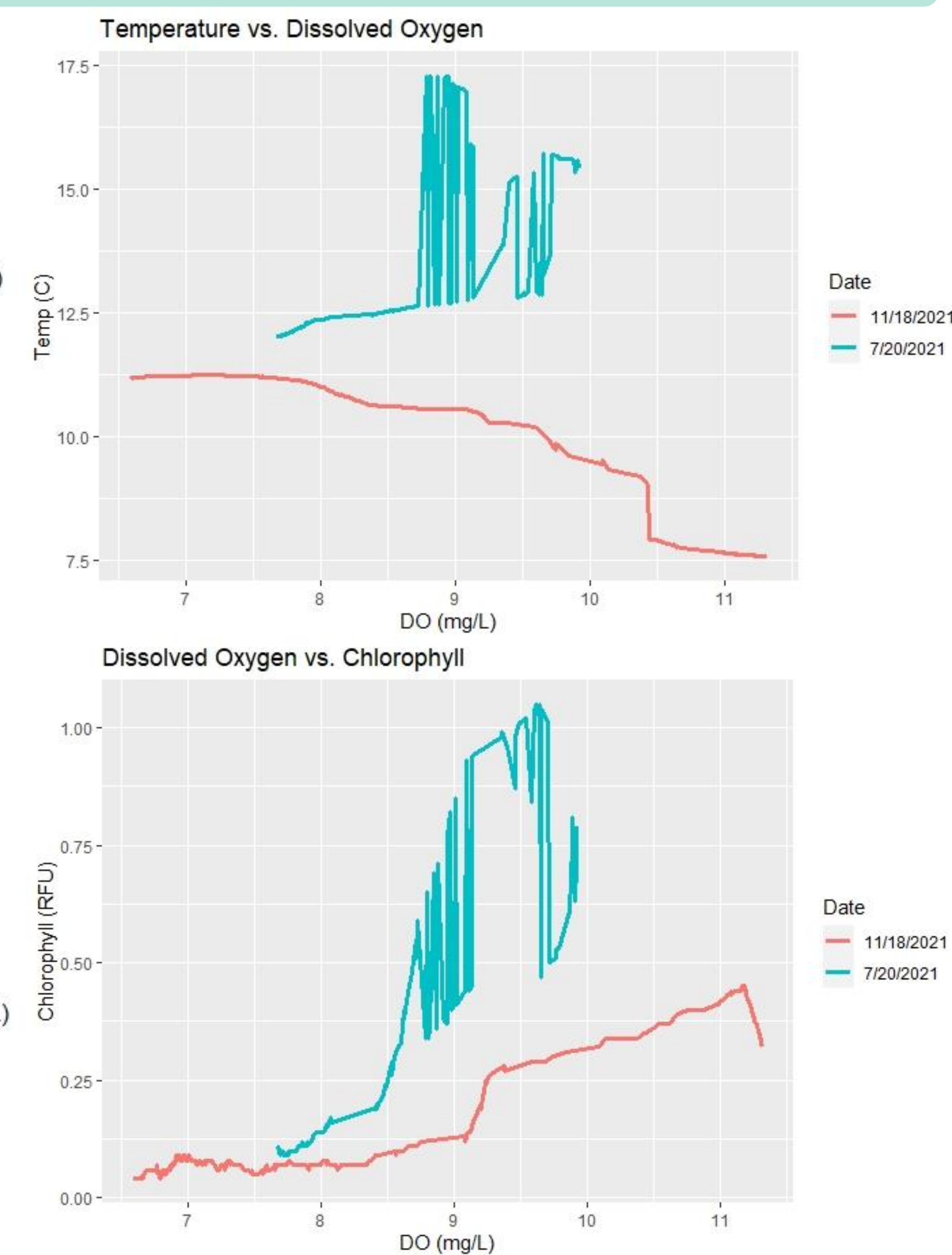


Fig.3 The final stops of the transect lines for the days of 07/20/21 and 11/18/21 are shown above. Top graph shows temperature versus dissolved oxygen, and the bottom graph has dissolved oxygen and chlorophyll.

Conclusions

Overall, this study was able to represent data along a transect line, specifically looking at dissolved oxygen levels changing along the line. With Figure 2, data is represented to show levels of DO going down the water column at each stop of the track. For the data of 07/20/21 we can notice a range of dissolved oxygen levels between 7 and 9 mg/L. While data for 07/20/21 and 11/18/21 show satisfactory levels and of not nearing the hypoxic area of DO. The data for the two different dates show to have a correlation with chlorophyll and DO, at around 9 mg/L we are able to notice an increase in the chlorophyll, representing the productivity available in the area. This study contains the data for a short period of time, looking at other months and data to see if there are any other trends in the dissolved oxygen for further spatial and seasonal comparisons.

