



Summer methane sediment profiles at a tidal wetland



COLLEGE PARK
SCHOLARS

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Introduction

Methane (CH_4) is a greenhouse gas that holds a 27 times greater global warming affect compared to CO_2 (Vroom, 2022). Wetlands are one of the largest producers of high concentrations of methane emissions due to ideal conditions for methanogenesis (Zhang, 2017).

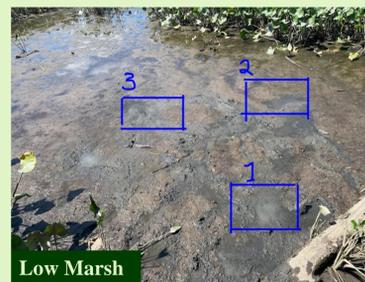
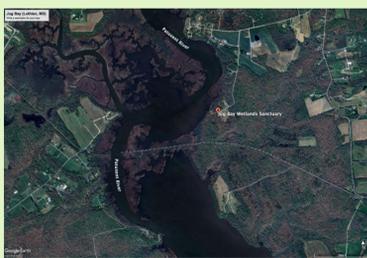
Additionally, the plants in wetlands serve as an additional factor in transporting methane from the soil to the atmosphere (Vroom, 2022).

Methods

- Taking sediment cores by inserting plastic tubes into each of the soils
- Remove samples from the core and place in 10 mL vials with 3 mL 1 M KOH
- Samples were shaken, then measured with gas chromatography



Figure 1: Me and Shravya taking a soil sample in the High marsh



Site Information

Name of Site: **Jug Bay**

Address: 1361 Wrighton Road, Lothian, MD 20711

Your supervisor: Dr. Danielle Niu

The site mission: To increase awareness, understanding and appreciation of estuaries and natural ecosystems and conservation.

The particular goals of the site you were at: To collect soil samples at low and high marshes with areas with high vegetation concentration and low vegetation concentration.

Results

Low Marsh → CH_4 concentration *increased* from June to July

High Marsh → CH_4 concentration *decreased*.

Discussion

This did not follow our initial hypothesis, so we concluded there must be other factors like *temperature* and *water level* impacting the CH_4 profile.

Some possible future work may include observing CH_4 concentration throughout other seasons, seeing day-night methane flux from plants using a methane sensor, and more research on how water concentration increases CH_4 concentration.

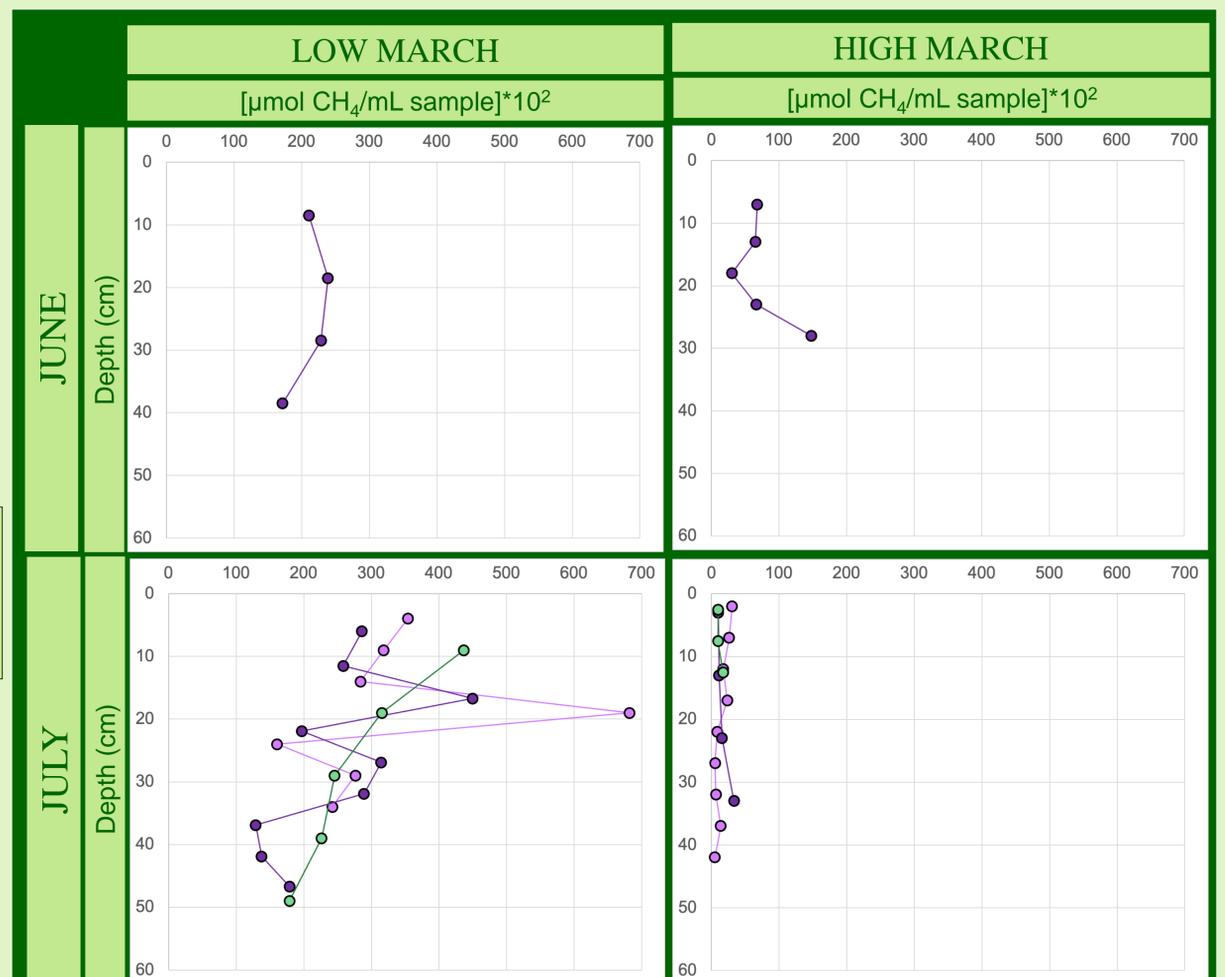


Figure 2: (Left) Low marsh CH_4 concentration from June to July. (Right) High marsh CH_4 concentration from June to July.



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