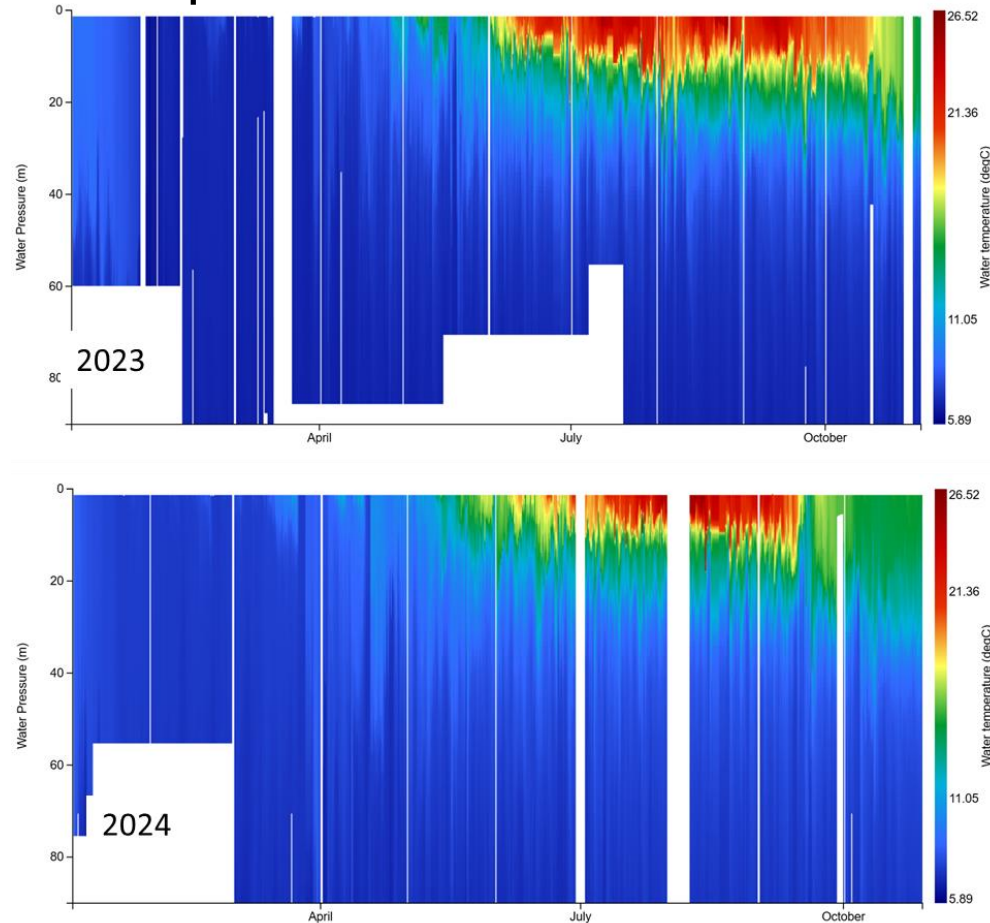


Solution to Exercise in Chemistry of natural waters II

Temperature



2023 was a bit warmer than 2024. $p\text{CO}_2$ in the lake is lower under warm conditions (e.g., summer) than under colder ones (e.g., winter). So the lake was likely more undersaturated in 2023 and therefore had a lower net emission of CO_2 compared to 2024.

Even though lakes are net emitters of CO_2 and are oversaturated during large parts of the year, they will still acidify if atmospheric $p\text{CO}_2$ increases. This is because a smaller $p\text{CO}_2$ between water and atmosphere will lead to less emission. Especially in the winter, when CO_2 lakes are oversaturated, CO_2 levels in the atmosphere are high. So the lakes cannot emit as much CO_2 anymore.