

Abstract

Wetlands play a crucial role in the carbon cycle, they release carbon emissions, but most importantly, they serve as carbon sinks. Factors that drive CO₂_flux are not well understood, and gaining a comprehensive understanding of them can prove to be beneficial. This study aims to investigate if there are mechanisms that have effects on the amount of carbon dioxide flux in the Andean freshwater wetlands. Twelve wetlands located in Ecuador's national park Cayambe Coca were used to collect measurements for the research; CO₂, wind speed and water temperature were the main mechanisms that were investigated. Statistical modeling in R was utilized to investigate these mechanisms. CO₂ and CO₂_flux contained the strongest positive correlation relationship, which revealed that the wetlands that were being examined had a consistent transfer velocity of CO₂ across the different wetlands. The relation shows that CO₂ is the primary factor affecting the CO₂_flux, and other factors like wind and water temperature may have a secondary effect. The results demonstrate air temperature played a significant role in affecting CO₂_flux as opposed to wind speed which did not have a significant relationship. The study can be utilized as a base to investigate other mechanisms that could affect CO₂_flux.