

Relationship between vegetation dynamics and methane emissions from wetlands in East Africa

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Poster

Wetlands are an important source of methane (CH<sub>4</sub>) emissions in East Africa over the last decade. We use column measurements of atmospheric methane (XCH<sub>4</sub>) from the Japanese Greenhouse gases Observing Satellite (GOSAT) and the Enhanced Vegetation Index (EVI) from the Moderate Resolution Imaging Spectroradiometer (MODIS) to infer CH<sub>4</sub> emissions in East Africa during the last decade. The results show that CH<sub>4</sub> emissions are well correlated with EVI variations, with a correlation coefficient of 0.77 in the long rains (March to May, abbreviated LR) and 0.76 in the short rains (October to December, abbreviated SR). The spatial correlation between CH<sub>4</sub> emissions and EVI is better than that of precipitation although precipitation is a driving factor. There are three seasons with abnormally high rainfall (LR 2018, SR 2019, and LR 2020), resulting in increased EVI and CH<sub>4</sub> emissions concentrated in four water basins (Juba, Tana, Rift, and Nile), corresponding to herbaceous vegetation, shrubs, and cultivated vegetation. We develop a simple linear regression model to estimate total CH<sub>4</sub> emissions in each water basin based on EVI and rainfall observations.

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