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Modelling the impacts of reoccurring fires in tropical savannahs using Biome-BGC.

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Fires are a dominant feature of tropical savannahs and have occurred throughout history by natural as well as human-induced means. These fires have a profound influence on the landscape in terms of flux dynamics and vegetative species composition. This study attempts to understand the impacts of fire regimes on flux dynamics and vegetation composition in savannahs using the Biome-BGC model. The Batéké Plateau, Gabon - an area of savannah grasslands in the Congo basin, serves as a case-study.

To achieve model validation for savannahs, data sets from stands with differing levels of past burning are used. It is hypothesised that the field measurements from those stands with lower-levels of past burning will correlate with the Biome-BGC model output, meaning that the model is validated for the savannah excluding fire regimes. However, in reality, fire is frequent in the savannah. Data on past fire events are available from the Moderate Resolution Imaging Spectroradiometer (MODIS) to provide the fire regimes of the model. As the field data-driven measurements of the burnt stands are influenced by fire in the savannah, this will therefore result in a Biome-BGC model validated for the impacts of fire on savannah ecology.

The validated model can then be used to predict the savannah's flux dynamics under the fire scenarios expected with climate and/or human impact change.