

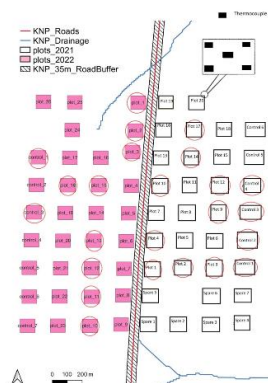
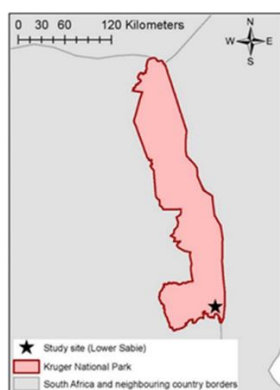
Master Thesis Announcement: Effects of fire intensity on the formation of pyrogenic organic matter in soils of South Africa's Kruger National Park

Motivation:

Climate and land-use change, jointly affect fire regimes in South Africa's lowland savannas, besides its use as a management tools in dryland systems. However, fire intensities, often differing between natural and man-made fires, can have strong implications onto the quantity and quality of soil organic matter. Yet, we have no understanding of short- to long-term consequences of the shifts in soil organic matter quantity and quality as well as the newly formed pyrogenic organic matter.

Research question:

How is organic matter quantity and quality affected by the input of fires of different intensity, as artificially induced in a fire manipulation experiment with different fire timings. Up to which depth can pyrogenic organic matter be formed depending on fire intensity.



Location of Lower Sabie in the Kruger National Park, where a randomized plot experiment with defined fire treatments was performed in 2022

Task:

Characterize basic soil organic matter properties from 10 selected plots of the above shown plot-scale fire experiment (isotopic signatures and potentially pyrolysis). Assess the formation of pyrogenic organic matter (pyOM) in soils from 0-2 cm and 3-5 cm and correlate the quality and quantity of black carbon/pyOM using the benzene polycarboxylic acid (BPCA) method. Interlink the quality of the newly formed pyOM with the respective soil temperature during the fire event (→ total of 60 samples).

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