Spatio-temporal variation of water soluble organic carbon in an intermittent catchment (Hesse, Germany)

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Objectives of the study

- How much SOM (Soil organic matter) is stored in the intermittent catchment and where?
- How much SOC (Soil organic carbon, in soil) will be released and when?

→ Highlight terrestrial-aquatic carbon transport from the slope to riparian to stream in an intermittent catchment

Study area

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Top slope

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Middle slope

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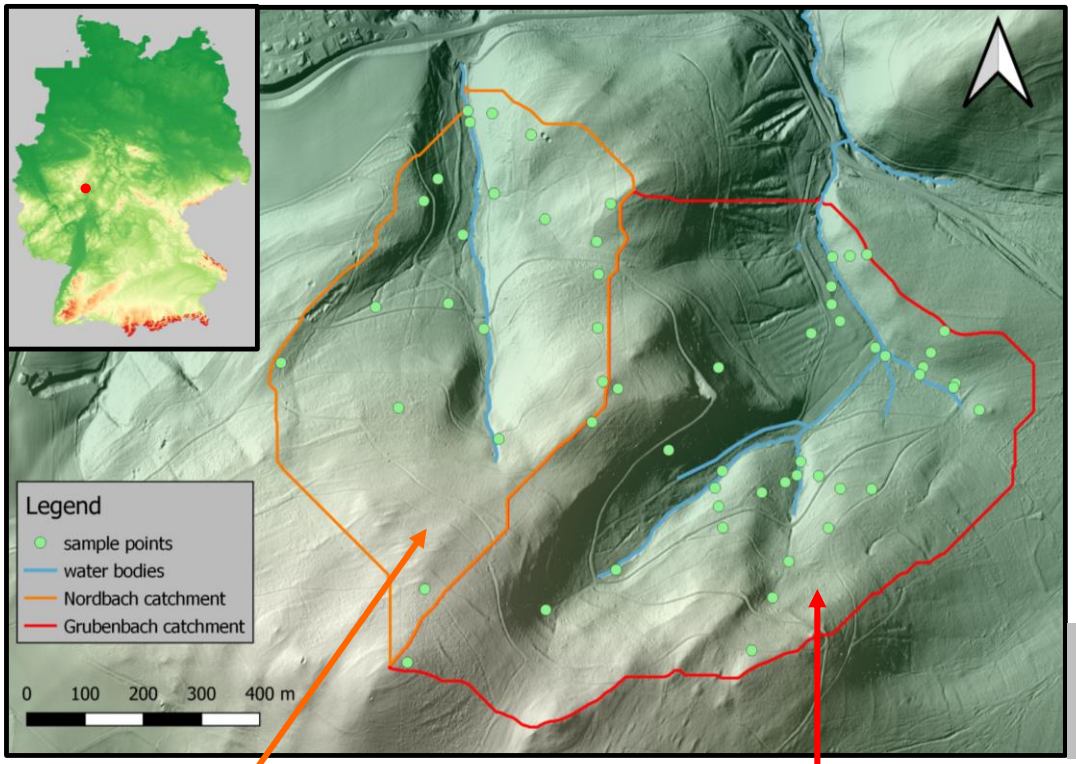
Foot slope / riparian zone



© Alexander Santowski, data basis: overview map DGM 1 HLNUG, map of germany DGM 200, BKG.

Control area – perennial (Nordbach)

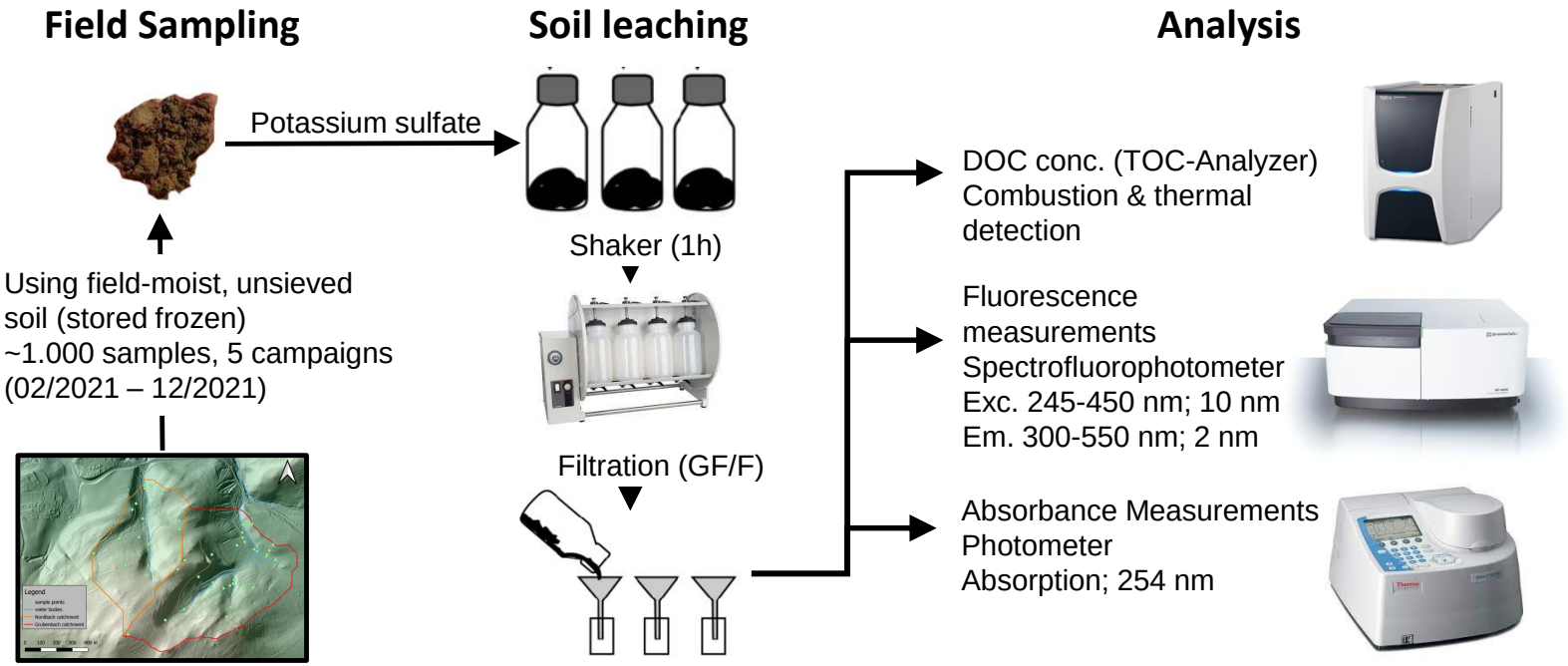
- 21 sample points
- Up to 4 depth levels
- 4 sampling campaigns

Main area – intermittent (Grubenbach)

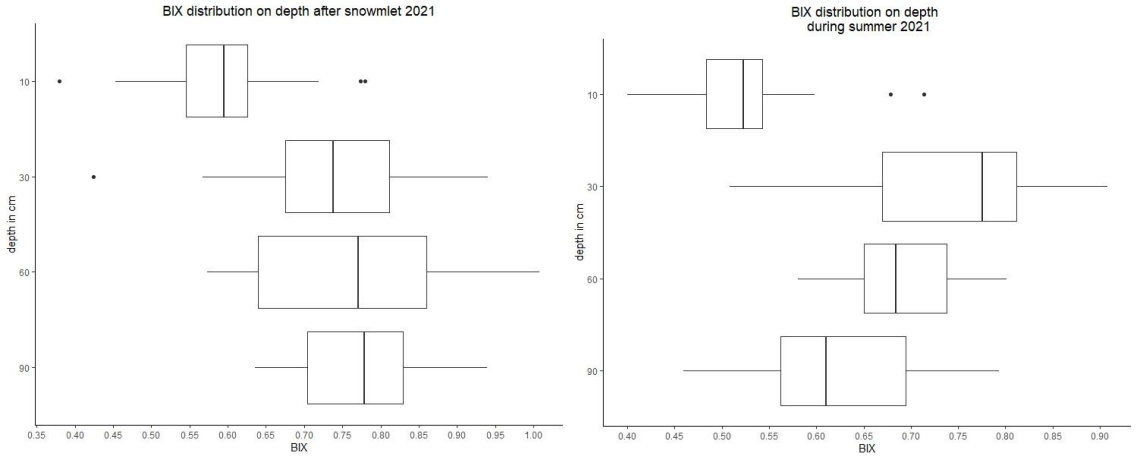
- 39 sample points
- Up to 4 depth levels
- 5 sampling campaigns

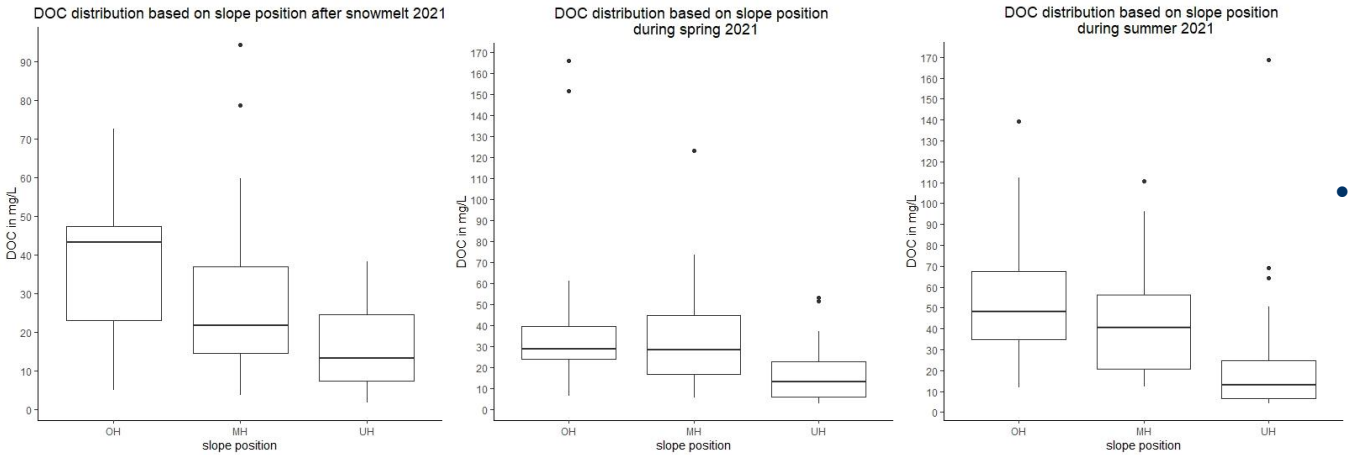
Methodology

- Sampling campaigns will correspond to seasons and two snow melt events



Preliminary results





- A shift in freshness index and BIX is evident, suggesting differential biotic activity between the dry summer soil and the wet winter soil
- DOC exhibits seasonal variation and correlates with slope exposure

OH = Upper Slope
MH = Middle Slope
UH = Foot Slope

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Snowmelt n_{total} = 88, OH = 22, MH = 33 UH = 33
Spring n_{total} = 83, OH = 20, MH = 32 UH = 31
Summer n_{total} = 77, OH = 15, MH = 29 UH = 33

Outlook

- Further Steps:
  - Analyse the latest data and complete the data series
  - Establish complete annual variability plot for the SOM values and interpolate them to area
  - Correlate the WSOC data with measured stream discharge values and their DOC contents

Interested in this research?

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