Soil Erosion in Mesic Forests

Soil erosion is generally assumend to be low in forest ecosystems

Important soil losses occur if forest layers get disturbed
→ e.g. treefall, skid trails, deforestation

Biocrusts quickly colonize gaps in higher vegetation layers & can protect soil surface

Erosion rate under forests in Europe:

0.1 - 0.7 t ha^{-1} a^{-1}
(MAETENS et al. 2012)

Erosion rate in forest disturbances:

0.6 - 2.1 t ha^{-1} a^{-1}
(own measurements)

Skid trail in the Research Area

Biocrusts in skid trails

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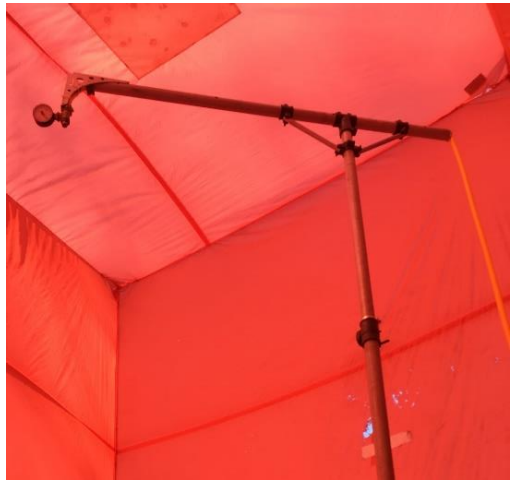
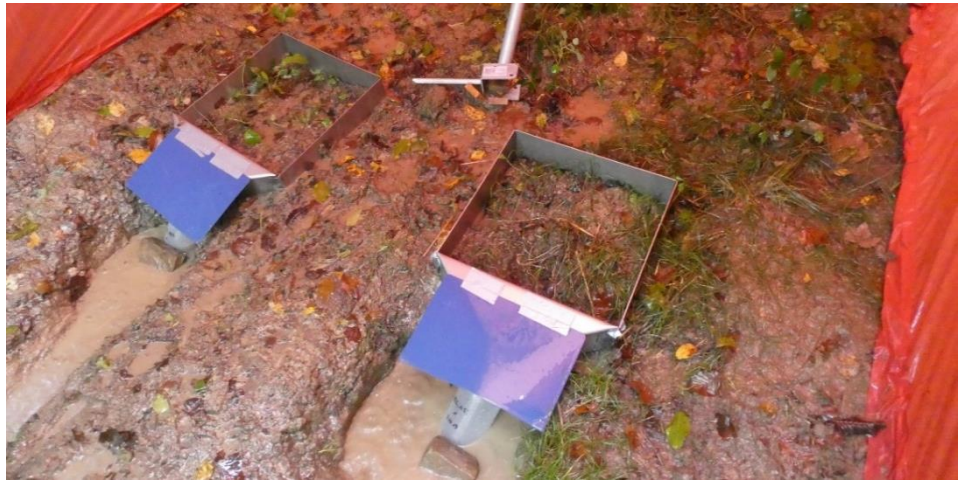
Protective Tent



Tübingen Rainfall Simulator



Installed Runoff Plots (left: wheel track, right: center track)

Rainfall Simulation

Drop fall height 3.5 m

I = 45 mm in 30 min

Portable protective tent

Micro-scale Runoff Plots
→ 40 x40 cm

Fieldwork

Surface runoff, Sediment discharge & Nutrient relocation in wheel track, center track & undisturbed forest soil

4 Time steps, 4 Replicates per track

Parallel vegetation survey and DNA-sampling

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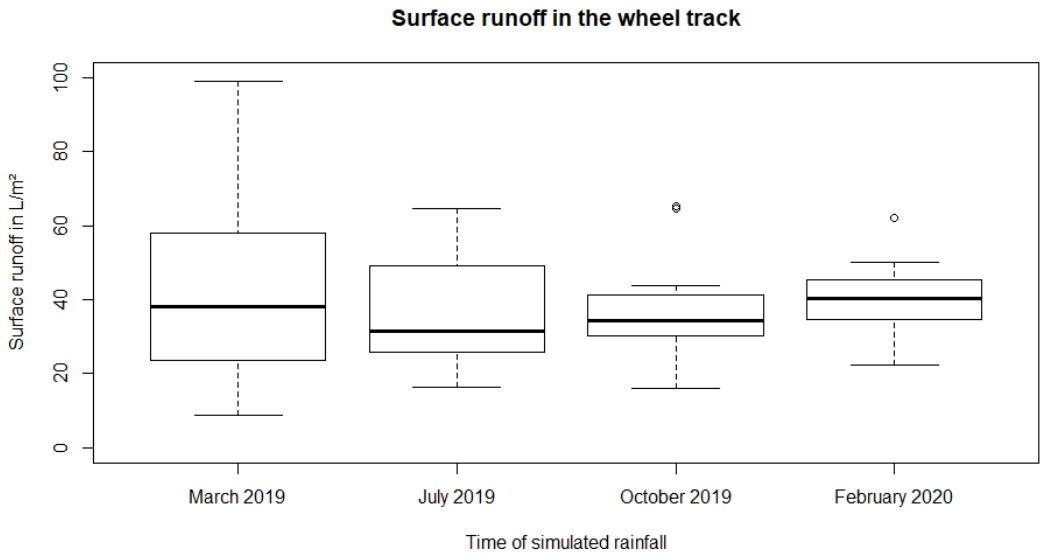
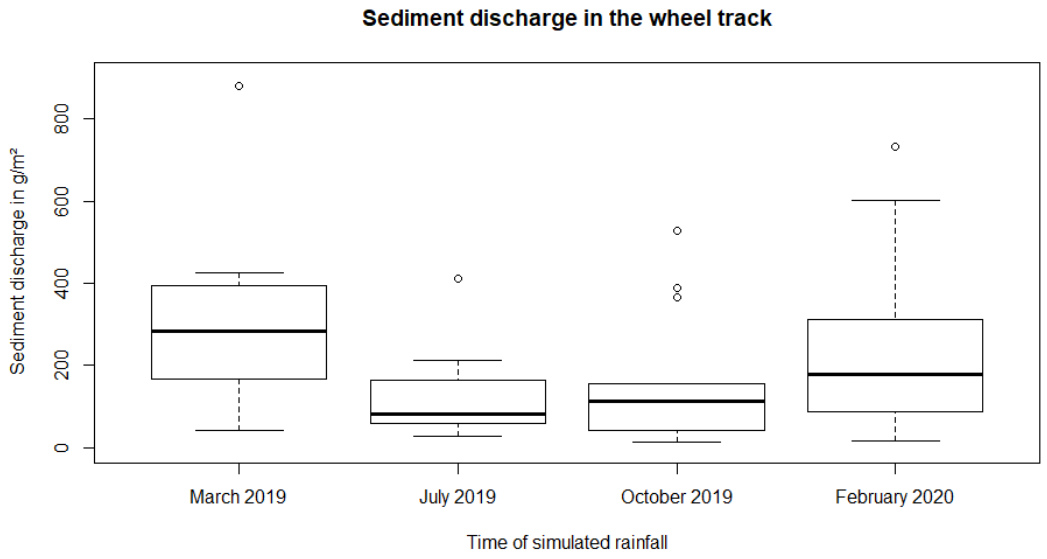


→ **3 times** higher than in undisturbed forest soil



→ **13 times** higher than in undisturbed forest soil