



Soil heating and impact of prescribed burning

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Prescribed burning is highly uncommon in the Netherlands, where wildfire awareness is increasing but its risk management does not yet include fuel management strategies. A major exception is on two military bases, that need to burn their fields in winter and spring to prevent wildfires during summer shooting practice. Research on these very frequent burns has so far been limited to effects on biodiversity, yet site managers and policy makers have questions regarding the soil temperatures reached during these burns because of potential impact on soil properties and soil dwelling fauna. In March 2015, I therefore measured soil and litter temperatures under heath and grass vegetation during a prescribed burn on military terrain in the Netherlands. Soil and litter moisture were sampled pre- and post-fire, ash was collected, and fireline intensity was estimated from flame length. While standing vegetation was dry (0.13 g water/g biomass for grass and 0.6 g/g for heather), soil and litter were moist (0.21 cm³/cm³ and 1.6 g/g, respectively). Soil heating was therefore very limited, with maximum soil temperature at the soil-litter interface remaining being as low as 6.5 to 11.5°C, and litter temperatures reaching a maximum of 77.5°C at the top of the litter layer. As a result, any changes in physical properties like soil organic matter content and bulk density were not significant. These results are a first step towards a database of soil heating in relation to fuel load and fire intensity in this temperate country, which is not only valuable to increase understanding of the relationships between fire intensity and severity, but also instrumental in the policy debate regarding the sustainability of prescribed burns.