Fire and Fire Surrogates in a Montana Pine Ecosystem: Spatial Heterogeneity of Nitrogen and Vegetation Diversity. (S07-gundale153937-Poster)

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Abstract:

As part of a nationwide fire surrogates study, we measured the response of soil N following thinning, prescribed fire, and thinning plus prescribed fire in a Montana ponderosa pine forest. This study confirmed that NH4+ availability increases following fire. While increased N availability after fire is well documented, very little research has focused on its spatial distribution, and whether changes in N spatial heterogeneity influences vegetation diversity. In this study, spatial heterogeneity was measured in all treatment units by collecting 20x50m grids of 3m spaced sample points. Moran's I and Greary's C values were computed as indices of heterogeneity for each variable. One-factor ANOVA's revealed that both fire treatments increased heterogeneity of NH4+ and PMN, compared to unburned treatments. Regression analysis revealed that vegetation diversity had no correlation with N heterogeneity during the first year, however we hypothesize that this correlation will become positive in the second and third year, when annuals begin to colonize burned patches.

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