Linking Hyperspectral Reflectance and Soil Hydrophobicity for Laboratory Sage Brush Burns

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Remote spectral reflectance measurements are a powerful tool for understanding the flooding and runoff impacts from fire induced soil hydrophobicity. However, impacts from wildfires in the sagebrush steppe are understudied resulting in poor correlation between remote measurements and fire impacts. Previous work has failed to make the connection between fire intensity and fire induced soil hydrophobicity in a controlled environment. This study presents heavily instrumented laboratory burns of sagebrush with hyperspectral reflectance measurements to show the weaknesses of remote sensing for this application. We break down the post fire soils into several distinct categories that allow for closer analysis how the Normalized Burn Ratio remote sensing index compares to hydrophobicity. The results show that caution should be used when applying this index to the evaluation of fire impacts in the sagebrush steppe.