Effects of fire on forest soils and potential remote sensing applications

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Fire has profound and obvious effects on aboveground vegetation in forested ecosystems but the effects on soil and belowground biota are subtle and often complex. Fire intensity and duration determine the nature of short-term and direct impacts on soils but are themselves correlated with vegetation/fuel types, productivity, and to a lesser extent physiography and landform. The use of prescribed burning by managers is common in fire-adapted Pinus forests, especially in the coastal plain and Piedmont regions but also in forests on xeric, sandy soils elsewhere in the eastern United States. Increasingly, managers recognize the role of fire in maintaining other forest types such as Quercus communities, along with the need to control the buildup of potentially hazardous fuels in upper-elevation mountain forests. This paper will synthesize the disparate literature on fire effects on eastern forest soils, including some of the current research of the authors, and attempt to outline how remote sensing may play a role, especially in applying our stand-level understanding to landscapes.