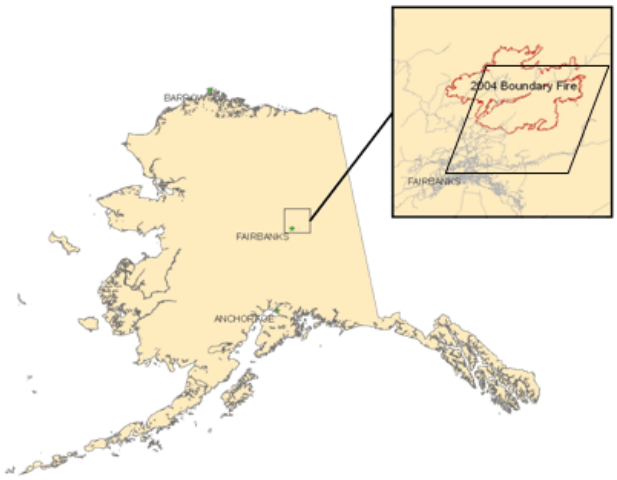
Alaska

Introduction

Alaska's forests are primarily boreal forests comprised of black spruce. When fire enters such a forest the resulting fires can reach hundreds of thousands of acres in size. Since the Alaska fire service does not actively control these fires unless they pose a threat, Alaska is an excellent place to study the effects of forest fires.

Our project sought to better estimate the amount of carbon consumed in a forest fire. The amount contributed by the above ground biomass is better understood than the contribution of the organic layer. In boreal forests biomass builds up on top of permafrost. Depending on the age of the stand this biomass layer can be quite deep or quite shallow. Depending on burn severity, a fire may burn the entire ground biomass layer or it may only scorch the top and leave the layer intact. We are combining remote sensing techniques with in situ severity measurements in order to classify the severity classes within a fire, which in turn will give us a better estimate of the amount of carbon consumed and released. Also presented here is work completed by MTRI intern Luke Spaete on the use of MODIS hot spot products for improving data on fire regime in Alaska.

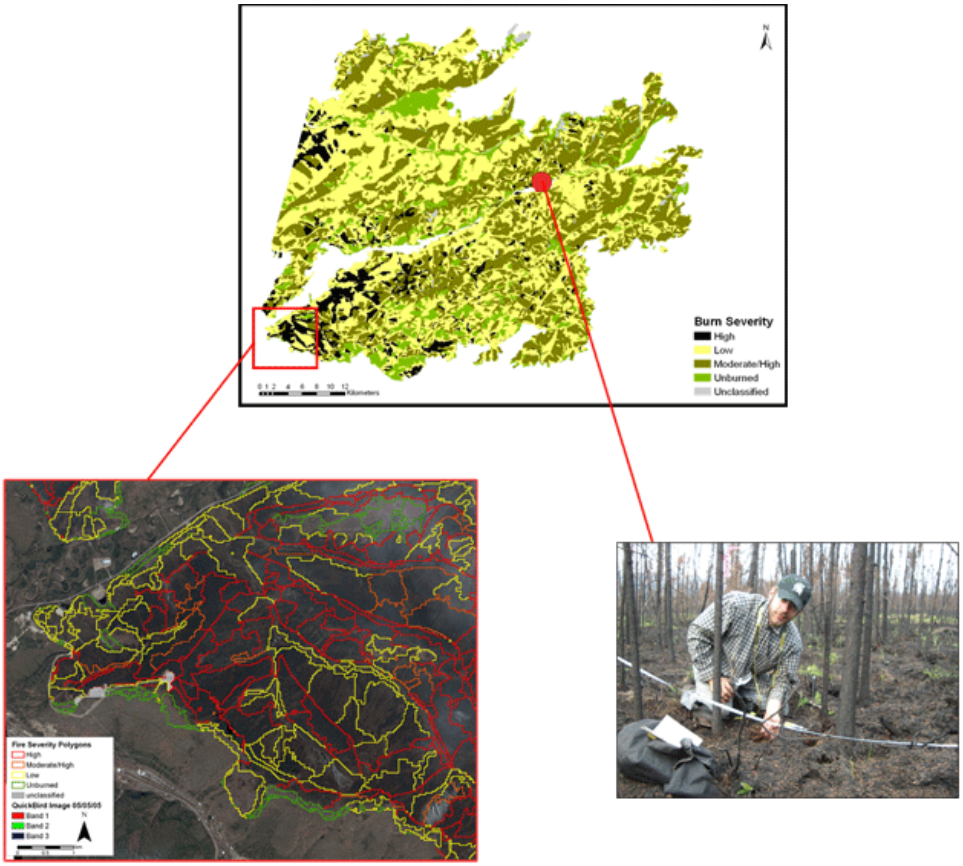
Introduction
Burn Severity Mapping
Use of MODIS for Understanding Fire Regime



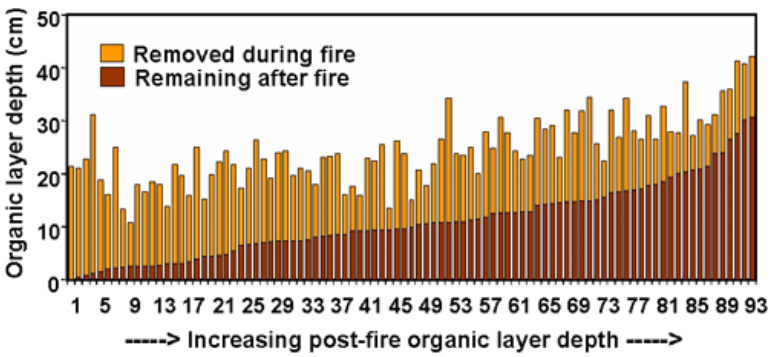
Burn Severity Mapping

Assessment of the spatial patterns of fire severity in relation to vegetation structure can help quantify fire emissions for carbon cycle studies. In a study funded by NASA, we are investigating the use object-based classification techniques to develop a method of assessing the spatial patterns of fuel consumption. The method we develop will be implemented at fire sites across Northern and Western North America to assess how fuel consumption varies.

We present the preliminary results of an object-based image analysis conducted within one fire complex from the 2004 Alaska fire season. The Boundary Complex covers a 203,703-hectare area located northwest of Fairbanks. The site includes a variety of fuel conditions and burn severity levels.



Class	Acres	Hectares	Percent
Low	217,603.10	88,060.85	45.44%
Moderate/High	172,268.89	69,714.75	35.97%
Unburned	52,732.26	21,339.99	11.01%
High	31,032.76	12,558.51	6.48%
Unclassified	5,223.50	2,113.88	1.09%
Total	478,860.51	193,787.97	100.00%



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