Alaska NSF EPSCoR’s five-year Fire and Ice (F&I) project will contribute to improved wildfire forecasting and response. F&I researchers are generating new knowledge about prefire conditions, fire behavior, and impacts of fires on homeowners and communities.

Aerial Data: Using hyperspectral remote sensing, F&I will gather precise data about the trees, shrubs, and organic materials that fires use as fuel.

Fuel Load: Field data will be used to test the accuracy of hyperspectral sensing and stock a “spectral library” to improve the ability of satellites to characterize fire fuels.

Weather Patterns: F&I will determine which large-scale climate drivers increase the likelihood of lightning storms, which are the primary cause of remote Alaskan wildfires.

Ecosystem Services: Scientists will work with rural Interior communities, the Municipality of Anchorage and the Kenai National Wildlife Refuge to catalog ecosystem services, such as subsistence foods or transport routes, that may be vulnerable to disruption by fire.

Early-season Snowmelt: F&I will study how snow cover and snowmelt timing impact the moisture content of fire fuels, a key factor in their flammability.

Fire and Fuel Management: Researchers will gather data from agency records, homeowner surveys, and choice experiments to model effects of different fire mitigation and suppression policies in Southcentral Alaska.

Aerial Data: F&I will gather hyperspectral data over active fires, including temperature, intensity, and locations of burned and unburned areas within a fire perimeter. These findings will be used to improve the accuracy of satellite data and to refine models of fire spread.

Weather Patterns: Scientists will improve seasonal fire outlooks by incorporating seasonal climate forecasts as well as new data on large-scale climate drivers of fire weather, on the likelihood of lightning ignitions, and on fuel conditions. Then they’ll test the outlooks in real time.

Fuel Load: F&I will verify hyperspectral data on fire severity by measuring vegetation consumed, depth of remaining surface layer, and amount of soil exposed. Researchers will examine pre- and postfire vegetation and soil moisture to predict plant succession.

Ecosystem Services: Researchers will partner with 2-3 rural Interior communities impacted by wildfire to assess local perceptions of fire's impacts, and to quantify changes to ecosystem services cataloged prior to the fire. Researchers are also assessing ecosystem impacts of fires in Southcentral Alaska. They’ll pinpoint potential local strategies to enhance positive impacts of wildfires and minimize negative ones.

For more information, please visit the Alaska NSF EPSCoR website at: www.alaska.edu/epscor