

List of Prioritized Fire Research Topics

Category	General Topic
Fire Behavior Models	Fire Behavior Models: Validation and Application
Fire Danger	CFFDRS Fire Weather Indices: Evaluation & Calibration
Climate Change	Climate Impacts on Fire Regimes: Past, Present, & Future
Fuels Treatment	Fuels Treatments: Short- & Long-term Effectiveness
Fire Effects	Post-Fire Vegetation Succession Pathways
Fire Effects	Invasive Plant Species
Weather	Fire Weather Forecasting
Climate Change	Climate Change Effects on Fire Effects
Fire Effects	Burn Severity: Detection & Trends
Fire Effects	Hydrology, Wetlands & Permafrost Features
Fire Effects	Human Subsistence Lifestyles
Fuels Treatment	Utilization of Fuels Treatment Byproducts
Tactics	Fire-line Rehabilitation Effectiveness
Weather	Fire Season Weather Forecasts
Tactics	Current Fire Management Option Application Effectiveness
Socio, Education & Information	Fire Outreach & Public Awareness Effectiveness
Fire Effects	Fish Habitat & Populations
Smoke & Carbon Emissions	Smoke Models & Human Impacts
Tactics	Fire Suppression Method Effectiveness
Fire Effects	Bird Habitat & Populations
Fire Effects	Ungulate Habitat & Populations
Smoke & Carbon Emissions	Carbon Sequestration
Fire Effects	Furbearer & Small Mammal Habitat & Populations
Fuels	Decomposition Rates of Woody Debris
Fire Effects	Wild Berry Productivity & Availability



Why is a fire research needs list needed in Alaska?

Fire is one of the most prevalent natural disturbances in Alaska. Fire activity affects vast expanses of forest and tundra ecosystems as well as human interests throughout a large portion of the state. Many Alaskan communities are effectively isolated islands surrounded by large expanses of undeveloped, and often fire-prone, habitats.

In order to make expedient, efficient, and ecologically sound decisions about fire protection and suppression measures, fire managers need the best possible background information. Therefore, the AWFCG, an interagency group of fire management personnel, sponsors the FRDAC, a committee to investigate, identify and promote current fire research needs in Alaska.

AWFCG Fire Research, Development & Application Committee

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<http://fire.ak.blm.gov/administration/>



2011–12 Prioritized Fire Research Topics for Alaska

Alaska Wildland Fire Coordinating Group (AWFCG)—Fire Research, Development & Application Committee (FRDAC)

Alaska's fire and land managers need science-based information in order to make ecologically sound and effective decisions about fire management activities, including fire suppression.

The purpose of developing the Fire Research Topic List is to encourage fire research and funding proposals that address fire and land management needs in Alaska.



Alaska Fire Research Topics List – A Collaborative Effort

A comprehensive list of fire research topics was generated by AWFCG members and other land and fire managers during the 2010 Annual Fall Fire Review meeting.

The list was then compiled by Research Committee Members and distributed to a broad range of Alaska fire, biological, and land management staff for review. The topics were ranked based on relevance to fire management needs, resulting in a prioritized list of 25 fire research topics within 9 categories (see *List of Prioritized Fire Research Topics*).

Short descriptions of the top ranked AWFCG Research Needs Topics are

provided here (see *Description of Top 5 Fire Research Topics*). The expanded list of fire research topics includes descriptions and associated research questions for each topic and may be accessed at:

http://fire.ak.blm.gov/content/admin/awfcg_committees/



Description of Top 5 Fire Research Topics

1) Fire Behavior Models: Validation and Application

Research is needed to improve knowledge of fire behavior and appropriate fuel models for several unique fuel types; wetlands, shrublands, and tundra ecosystems as well as forest ecosystems with insect and disease damage. More information on fuel models and fire behavior in early successional post-fire forest types is also needed due to observed short fire return intervals; recently burned areas are not predictably acting as fire breaks.

2) CFFDRS Fire Weather Indices: Evaluation and Calibration

There is a strong need for calibration of the CFFDRS (Canadian Forest Fire Danger Rating System) indices in order to accurately represent: 1) Alaskan boreal fuel types and 2) seasonal changes in duff moisture. Also needed is a mechanism for standardization of spring start-up values so CFFDRS fire indices reflect over-winter drought conditions, snowmelt dates, soil thaw and early-season fire danger.

3) Climate Impacts on Fire Regimes: Past, Present, and Future

Policy makers, as well as fire and land managers, seek research to elucidate: 1) climate linkages to past and present natural fire regimes and 2) current and future departures from historic conditions. A concerted effort is needed to document current and model fu-



ture fire regimes in response to climate change across all vegetation cover types in Alaska. Resulting projected scenarios will be used to inform managers on potential changes in fire intervals, fire extent, seasonality, and severity. Knowledge of expected change will allow for a planned response to possible changes in fire activity.

4) Fuels Treatments: Short- and Long-term Effectiveness

Information on fuel treatment effectiveness continues to be a top research priority. Specific needs include evaluation of the continued effectiveness of existing fuels treatments in various ecotypes and stages of recovery in reducing fire risk and smoke emissions. Monitoring of existing fuel breaks should continue past the treatment phase to track: 1) vegetation recovery effects on fuel loading and 2) seasonal variations in fire risk. Also, there is a need for better understanding of post-treatment vegetation succession to avoid promotion of undesirable species, insect infestations, and highly flammable surface fuels.



5) Post-Fire Vegetation Succession Pathways

There is a need for more information on post-fire successional pathways for tundra, shrublands, tree-line forests, and other fuel types. Managers are also interested in: 1) fire effects on the occurrence of permafrost degradation and vegetation succession, 2) potential climate change effects on successional pathways, and 3) shortened fire return intervals effects on fuels and vegetation regeneration (particularly in the recently burned early-successional areas which are not acting as predictable fuel breaks).