

**NOTICE OF INTENT**  
**USDA/USDOJ Joint Fire Science Program (JFSP)**  
**Funding Opportunity Notice (FON): September-December 2017**  
**Potential Topics**  
July 12, 2017

**Background**

The interagency Joint Fire Science Program (JFSP) intends to request proposals through one or more formal Funding Opportunity Notice (FON) announcements beginning approximately September 8, 2017 and remaining open through November 16, 2017 for FONs 1 and 2 and December 14, 2017 for FON 3. The intent of this notice is to provide an early alert to investigators interested in the topics listed below so that they can begin considering responsive ideas with potential partners and collaborators.

Investigators should recognize that final decisions regarding topic selection will not be made until September 2017 and that final topic selection may differ from that posted here. One or more topics could be dropped or added, and the specific focus of individual topics may be altered. Investigators should recognize this uncertainty and not invest substantial time or resources working on proposals until the FONs and their associated topics are formally posted.

*Investigators should not contact the JFSP Office or Governing Board members seeking further information on these topics. No further information will be released until the FONs are formally posted.*

Note that at least three separate FONs are likely.

**Cohesive Strategy**

Potential topics directly and indirectly support the three goals of the 2014 *National Cohesive Wildland Fire Management Strategy* (“Cohesive Strategy”):

- Resilient Landscapes
- Fire Adapted Communities
- Safe and Effective Wildfire Response

**FON 1 - Primary**

**A. Ecological effects of fuel treatments and wildfire management at landscape scales**

Numerous scientific studies have documented the effects of fuel treatments or wildfire on a host of ecological attributes and processes (e.g., biodiversity, wildlife habitat, nutrient cycling). Such studies, however, have been conducted almost exclusively at the project scale (i.e., area in the 10s to 100s acres) and within the footprint of a fuel treatment or wildfire. For a more complete understanding, many ecological attributes and processes (e.g., disturbance regimes, hydrologic cycle, population dynamics) also require study at a much broader spatial scale. As a result, JFSP is interested in proposals that evaluate the effects of fuel treatments and wildfires on the ecological attributes and processes that operate at landscape scales.

## **B. Fuel treatment longevity**

Because of vegetation growth and resultant fuel accumulation, fuel treatments have a limited lifespan in terms of their ability to reduce the extent, intensity, or severity of wildfire. As a result, initial fuel treatments must be maintained over time. In many cases, however, the length and rate function of the decline of an initial treatment's lifespan and its relationship to effectiveness are unknown. As a result, JFSP is interested in proposals that re-measure existing field studies to gain a deeper understanding of the rates of fuel accumulation and vegetation change following fuel treatments under different ecological conditions and how this affects fuel treatment effectiveness and maintenance requirements.

## **C. Relationships between prescribed fire and wildfire regimes**

Prescribed fire and wildfire are intertwined within the history of fire management in the United States (U.S.). Although not without exceptions, wildfires often are viewed as problematic from a human safety and asset (human and natural) protection perspective and the first reaction to their occurrence is often full suppression. Use of prescribed fire has a long history within certain regions and vegetation types in the U.S. and its use often is driven by ecological considerations. As a result, different fire cultures have arisen in the U.S. in regards to views on wildfire and prescribed fire. A key need, therefore, is to understand the underlying relationships between prescribed fire programs and wildfire occurrence, extent, intensity, and severity. As a result, JFSP is interested in proposals that improve our understanding of the impacts of prescribed fire programs on wildfire occurrence, extent, intensity, and severity across a variety of vegetation types and regions.

## **D. Effectiveness of fuel breaks and fuel break systems**

Use of fuel breaks and fuel break systems is commonplace in many forested and non-forested vegetative systems. These breaks and break systems are designed to disrupt fuel continuity, reduce fuel accumulations and volatility, or increase the proportion of plants with high moisture content. Although these tools are commonly used, scientific assessments of effectiveness are limited in number and to certain vegetation types. Metrics to assess break and break system performance, as well as to improve the use of operational fire behaviour models for performance assessment purposes, are needed. As a result, JFSP is interested in proposals that identify or develop metrics to assess fuel break and fuel break system performance and the applicability of these metrics to use in operational fire behavior models.

## **E. Sources and distribution of ignitions and their relation to wildfire impacts**

One approach to reducing the negative impacts of wildfire to social and ecological values is to reduce the occurrence of human-caused wildfire ignitions with targeted wildfire prevention strategies. Planning and implementing effective fire prevention strategies requires detailed knowledge of the temporal and spatial distribution of different wildfire ignition sources (e.g., arson, accidental, lightning) and factors that influence whether different ignition sources lead to development of large wildfires. As a result, JFSP is interested in proposals that evaluate driving factors for the spatial and temporal distribution of ignitions and the effectiveness of different fire prevention actions as they relate to different human-caused ignitions.

## **F. Socio-political factors that influence the costs associated with wildfire**

Federal and state agencies collectively spend billions of dollars annually on fire suppression and post-fire response. These costs have been steadily increasing over the last two decades, but substantial variation is present in costs by year, region, and wildfire. It is well established that fire suppression costs are correlated with fire size, fire intensity, fuel moisture, fuel type, and proximity to the wildland-urban interface. These factors, however, do not explain a great deal of the variation in fire suppression

costs. On the other hand, few studies have evaluated the role of socio-political factors in driving suppression costs. As a result, JFSP is interested in proposals that evaluate the socio-political factors that influence variability in the costs associated with wildfire suppression and post-fire response.

## **FON 2 - Graduate Research Innovation (GRIN) Award**

In partnership with the Association for Fire Ecology, the Joint Fire Science Program (JFSP) will likely continue the Graduate Research Innovation (GRIN) program for current master and doctoral students in the field of wildland fire and related physical, biological, and social sciences. The purpose of these awards is to enhance student exposure to the management and policy relevance of their research. As a result, these awards will enable graduate students to conduct research that will supplement and enhance the quality, scope, or applicability of their thesis or dissertation to develop information and products useful to managers and decision-makers.

Proposals must describe new, unfunded work that extends ongoing or planned research that is the subject of a thesis or dissertation that has been approved by the graduate student's advisory committee. Proposals must be directly related to the mission and goals of JFSP to be considered, and they must address management- or policy-related questions related to one or more of the following general topic areas: fuels management and fire behavior, emissions and air quality, fire effects and post-fire recovery, relative impacts of prescribed fire versus wildfire, or human dimensions of fire.

*Note:* the specific topics eligible for GRIN proposals identified in the FON may differ from those listed above.

## **FON 3 - Fire and Smoke Model Evaluation Experiment (FASMEE)**

The Joint Fire Science Program (JFSP), in partnership with the Department of Defense, Environmental Security Technology Certification Program (ESTCP), has completed planning for the Fire and Smoke Model Evaluation Experiment (FASMEE; Phase 1). It is anticipated that the JFSP September 2017 FON will include an open solicitation for proposals to participate in Phase 2—data collection, data archival, and initial model evaluation—of FASMEE. In brief, this experiment is being designed as a large-scale, interagency effort to (1) identify the critical measurements necessary to improve operational wildland fire and smoke prediction systems, (2) collect observations through coordinated field campaigns, and (3) use these measures and observations to advance science and modeling capabilities and utility to end users. FASMEE is aimed at modeling systems in operational use today as well as the next generation of modeling systems expected to become operationally useful in the next five to 10 years.

The FASMEE field campaigns are anticipated to be conducted as large operational prescribed fires targeting (1) heavier fuel loads and high-intensity fires, (2) large fires capable of producing significant atmospheric plume dynamics and a substantial downwind smoke plume, and (3) where possible (particularly in the West), free-running fire. Candidate sites include the Fishlake National Forest in Utah, North Kaibab Ranger District in Arizona, Fort Stewart in Georgia, and Savannah River Site in South Carolina. Research burns are planned for ignition no earlier than late summer 2019 and no later than early spring 2022. Depending on total funding availability, four or more burns are planned.

To leverage resource and scientific opportunities, the FASMEE approach and study plan have been developed in coordination with other agency efforts, in particular, the National Oceanic and Atmospheric Administration's Fire Influence on Regional and Global Environments Experiment (FIREX) campaign and National Aeronautics and Space Administration's FIREChem activity, as well as in consultation with the U.S. Environmental Protection Agency and National Science Foundation efforts in fire and smoke research. Additional background information about FASMEE, including the initial FASMEE study plan, can be found at <https://www.fasmee.net/study-plan/>.

The FASMEE FON may include multiple task statements with subtasks organized by research disciplines, potentially including:

- fuels and consumption
- fire behavior and energy
- plume dynamics and meteorology
- smoke emissions, chemistry, and transport.

Final task statement determination will not occur until the FON is posted.

For each task statement, proposers should anticipate including the following components:

- specific research questions, model validation, and model operational applications or development needs to be addressed;
- proposed data collection, including rationale, specific methods, innovations and cost efficiencies, and relevant spatial and temporal scales, and how resultant data will be used to address the preceding questions, validation, application, and development needs
- data management, reduction, and archival plans, as applicable
- cost estimates to support one or more burns by region.
- assistance with continued updating of the FASMEE study plan.

Proposers should pay close attention to the FASMEE study plan when addressing the above. Funding decisions for implementation of Phase 2 will be made based on viable candidate proposals by task statement.