NOTICE OF INTENT
DOA/DOI Joint Fire Science Program (JFSP)
Funding Opportunity Notice (FON): September-November, 2015
Potential Topics
July 17, 2015

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 15, 2015 and remaining open through November 13, 2015. The intent of this notice is to provide an early alert to investigators interested in the topics listed below so that investigators 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, 2015, and that final topic selection is likely to 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 are formally posted.

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

Note that there will likely be at least four separate FONs.

Cohesive Strategy
Potential topics directly and indirectly support the three goals of the National Cohesive Wildland Fire Management Strategy ("Cohesive Strategy"):

- Restore and maintain resilient landscapes
- Create fire-adapted communities.
- Safe and effective wildfire response

FON 1 - Primary
A. Implications of changing ecosystems – selected regions
Evidence is abundant that ecosystems are shifting due to climate change, invasive species, and changing disturbance regimes and land use. The JFSP Governing Board is interested in proposals that broadly describe potential future fire regimes and their implications for fire and fuels management. This task will focus on interdisciplinary proposals that evaluate alternative future scenarios of ecosystem change and estimate indicators of fuel, fire regime, and fire effects on a regional basis.

This task will consist of two related components. The first component is a science assessment, which could include either research aimed at producing new knowledge, or a synthesis of existing knowledge. The second component is an integration and interpretation of this information in some form of operational scenario analysis depicting possible management options and their implications. Proposals must include both components. Investigators are highly encouraged to include fire, fuels, land, or resource managers on their team.

Note: the regions tentatively identified for proposals are the Pacific Northwest, Alaska, Northern Rockies, and Southeast US. There has not yet been a final determination, however.

B. Social, organizational and institutional barriers to implementing prescribed fire
It is widely recognized that the number of acres subject to prescribed fire has not kept pace with the demand of burning needed to meet resource management objectives. JFSP is interested in research that identifies the significant barriers (e.g. social, organizational, and regulatory) that limit successful implementation of planned prescribed fire treatments;, how barriers vary by factors such as region and agency; and successful strategies for overcoming identified barriers.

C. Restoration of sagebrush habitat in the Great Basin - operational applications
JFSP is interested in research about the effectiveness of vegetation treatments intended to protect or restore the diversity and productivity of sagebrush ecosystems in the Great Basin. This work will be in direct support to Department of Interior Secretarial Order # 3336.

Research questions will likely focus on two topics:

- Treatment options that increase the resilience and resistance of sagebrush stands prone to invasion of annual grasses, or with an existing understory of invasive annuals
- Treatment options to improve post-fire re-establishment of sagebrush and other desirable plants

D. Fire effects on tree mortality
Empirical models that predict mortality of trees from prescribed fire and wildfire are widely used for many purposes, but existing models were developed using data from a small number of tree species and a narrow range of conditions. JFSP intends to seek research on fire-induced tree mortality that will lead to predictive models that apply to a wider range of tree species, sizes, and fire conditions common in the United States.

E. Implications of managed-perimeter and burn-out wildfire response strategies
Anecdotally, it appears that wildfire response strategies employing some form of managed perimeters with interior burn-outs ("box and burn") are being used with increasing frequency. Multiple contributing factors may be at play, including actions taken to implement the 2009 wildfire policy guidance, air quality concerns over long-duration events, and firefighter safety. JFSP is interested in research investigating the effectiveness and effects of wildfire response strategies using managed perimeters with interior burn-outs. Research of interest includes a better understanding of the conditions favoring or dis-favoring the use of these strategies; the effects of these strategies on fire extent and severity; the effects on smoke concentration and duration; and the factors influencing the success of these strategies.

F. Post-fire landscape management
Observations suggest that some re-burns in recent (<20 year) burn areas may be exhibiting uncharacteristic patch sizes, fire severity, or occur in novel fuel arrangements. JFSP is interested in research on the changing characteristics of post-fire landscapes, and the influence of management activities on the pattern of fire effects. Research outcomes are intended to provide guidance to help managers prepare post-fire landscapes for the next fire.

G. Regional needs
JFSP intends to solicit proposals to address regional management needs identified by three members of the Fire Science Exchange Network. Studies must be conducted within the defined boundaries of each

participating Fire Science Exchange (see http://www.firescience.gov/JFSP_exchanges.cfm). Investigators will be expected to work with the participating Fire Science Exchange to assure research meets manager needs and has robust science exchange activities.

Proposals will be limited to a maximum of $200,000. JFSP expects to fund no more than two proposals per region.

Regional needs – Oak Woodlands & Forest Fire Consortium
Forest management practices that include prescribed burning have been increasingly used in recent decades throughout the Oak Woodlands & Forests Fire Consortium region to accomplish multiple objectives. Yet, little research has been conducted on the effects of prescribed fire on timber products (e.g., lumber grades, volumes) and subsequent economic value of forest stands. The Joint Fire Science Program intends to solicit proposals for field-based studies on the effects of prescribed fire on timber products in the region of the Oak Woodlands and Forest Fire Consortium.

Regional needs – Consortium of Appalachian Fire Managers and Scientists
Research over the past 15 years has revealed the critical role of fire in most Appalachian ecosystems, yet many challenges remain in implementing prescribed fire. Most fires are conducted in mid- to late winter, yet research has shown that few objectives can be met with a single winter fire. The Joint Fire Science Program intends to solicit proposals for field-based studies that examine the effects of prescribed fires in different seasons on short-term management objectives related to fuels and vegetation in the region of the Consortium of Appalachian Fire Managers and Scientists.

Regional needs – Southern Fire Exchange
Despite an extensive research and modeling base for understanding and predicting air quality impacts of prescribed burning in the South, many questions still surround the actual contributions of prescribed fire to smoke emissions. The Joint Fire Science Program intends to solicit proposals to use existing data from a network of air quality monitors throughout the South to determine the effects of prescribed fire and wildfire on particulate matter and ozone levels and how this compares to modeled smoke emissions.

FON 2 - Fire and Smoke Model Evaluation Experiment (FASMEE)

The Joint Fire Science Program (JFSP), in partnership with the DOD Environmental Security Technology Certification Program (ESTCP), has initiated planning for the Fire and Smoke Model Evaluation Experiment (FASMEE). This experiment is being designed as a large-scale field campaign to develop novel measurement techniques and provide critical observational data necessary to evaluate and advance operationally used fire and smoke modelling systems and their underlying scientific models.

Because the intended scope and scale of this effort is beyond the capability of JFSP to effectively implement independently, a collaborative multi-agency approach is planned. Additional partnerships are being formed with NOAA, NASA, Forest Service, and EPA, including formation of an inter-agency FASMEE Coordination Committee

The JFSP fall 2015 FON will include an open solicitation for proposals to participate in FASMEE. The FON will have multiple task statements organized by research disciplines (e.g. meteorology, fuel, fire

dynamics, emissions, plume dynamics, transport, and photochemistry). Final determination of these tasks will not occur until the FON are posted.

The proposals will contain two major components:

- A proposal to combine observational experimental techniques with model sensitivity simulations to develop a rigorous experimental design for the field measurements
- A pre-proposal to conduct field measurements and model evaluation analyses as part of the field experiment in 2018-2020

Requirements for both components will be detailed in a draft measurement and analysis specifications document currently in preparation.

Review, selection, and funding of selected proposals will be on an expedited schedule to ensure the necessary model sensitivity analyses can occur in 2016.

Investigators included in selected pre-proposals will be invited to work with the FASMEE leadership team to develop a detailed study plan to be completed by March 31, 2017. Final funding decisions for implementation of FASMEE will be made based on the final study plan.

The FASMEE field campaign will likely be conducted on four to eight large operational prescribed fires targeting heavier fuel loads and high intensity fire in forested sites in the western United States and lesser fuel loads and lower intensity fires in the southeastern United States. Agencies to host the project and candidate sites in the United States and Canada are currently under review. Treatments are planned for ignition in 2018-2020.

Individuals potentially interested in being investigators are invited to submit their name, research interests, and contact information via a template available at the FASMEE website (http://FASMEE.net). This information will be used by the FASMEE Leadership Team to gauge the scientific community's interest in participation in the FASMEE project, guide the scientific goals of the project, and determine areas of potential collaboration. Completed templates should be sent to *rottmar@fs.fed.us*. Completed templates received prior to August 15, 2015 may help inform the final task statements to be posted in September.

Descriptive materials will be placed on the FASMEE website as they are completed.

FON 3 - New Science Initiative – Ecological and social dimensions of resilient landscapes

The Joint Fire Science Program (JFSP) is interested in sponsoring projects that explore and better define the concept of resilient landscapes. Proposals can include a wide variety of approaches to stimulate new and creative thinking regarding the concept, definition, management, and measurement of resilient landscapes. Investigators are encouraged to work in collaborative cross-disciplinary teams, including both ecological and social scientists. Proposals should directly involve fire and fuels managers in the proposed research, and demonstrate how the proposed activities will advance innovative thinking that enhances fire, fuels and resource managers' abilities to achieve more resilient landscapes.

FON 4 - 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 MS and PhD. students in the fields of wildland fire and related disciplines. JFSP recognizes that graduate students of today are the managers, scientists, and leaders of tomorrow. These awards allow graduate students to conduct research that will supplement and enhance the quality, scope, or applicability of their thesis or dissertation, and to build skills needed for independent inquiry.

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 must address management questions related to climate change, fire behavior, fire effects, fuel treatments, smoke or emissions, fire weather, or social issues and fire.

Note: the specific topics eligible for GRIN proposals may change.