

Announcement for Proposals, 2003-1
Joint Fire Science Program

U.S. Department of the Interior

Bureau of Indian Affairs
Bureau of Land Management
National Park Service
U.S. Fish and Wildlife Service
U.S. Geological Survey

U.S. Department of Agriculture

Forest Service

Opens October 15, 2002

Closes January 6, 2003

This Announcement for Proposals includes four Task Statements on interactions between climate and fire regimes; effectiveness of collaborative planning efforts; community health and ecosystem impacts from smoke; and emergency stabilization, rehabilitation, and restoration.

Announcement for Proposals

by the
Joint Fire Science Program

(Note: The Joint Fire Science Program previously posted Requests for Proposals (RFPs). These are now called Announcements for Proposals (AFPs).

A. Program Description

The Joint Fire Science Program (JFSP) is a partnership of six federal wildland management and research agencies with a need to address problems associated with managing accumulating wildland fuels (combustible material, generally living and dead plant materials), fire regimes, and fire-impacted ecosystems on lands administered by the partner agencies. The partner agencies include the USDA Forest Service and five bureaus in the Department of the Interior (Bureau of Indian Affairs, Bureau of Land Management, National Park Service, U.S. Fish and Wildlife Service, and the U.S. Geological Survey). For the purposes of this Announcement for Proposals (AFP), "wildlands" are considered to be forests and woodlands, shrublands, grasslands, and associated wetlands and riparian areas.

Wildland fuels have been accumulating during at least the past half-century due to wildland fire management policies, wildland management practices, and other factors. As demonstrated in the wildland fires of 2002, the additional fuels contribute to intense fire behavior and increase the resistance of fires to control. Consequently, property and natural resources have been destroyed, costs of fire management have escalated, fire dependent ecosystems have deteriorated, and the risks to human life continue to escalate.

The Congress, agency administrators, JFSP partners, and others have recognized that the accumulation of wildland fuels must be reduced in order to reduce the human threat from fire and maintain natural resource values. Congress directed the Department of the Interior and the USDA Forest Service to develop a Joint Fire Science Plan to provide science-based support to land management agencies as they address this need. The JFSP was established with the 1998 Appropriation for Interior and Related Agencies to help ensure that cooperating Federal land management agencies expedite scientifically sound, efficient, systematic, and effective solutions and monitoring programs that cross agency jurisdictions and fuel types.

The 1998 Joint Fire Science Plan addressed four issues (Principal Purposes) critical to the success of the fuels management and fire use programs. These included wildland fuels inventory and mapping, evaluation of fuels treatments, scheduling of fuels treatments, and monitoring and evaluation. The Congress included additional direction in the 2001 Appropriation for Interior and Related Agencies. In addition to the four original Principal Purposes, the JFSP was directed to focus attention on such issues as protocols for evaluating post fire stabilization and rehabilitation projects, aircraft based remote sensing, and regional/local issues.

For further background on the goals of the JFSP, those considering submitting proposals and other interested parties are encouraged to review the Joint Fire Science Plan which is available via the Internet at: http://www.nifc.gov/joint_fire_sci/jointfiresci.html. In addition, the JFSP issued AFPs in June 1998, February 1999, February 2000, and February 2001 and subsequently selected and funded

over 160 projects. Previous AFPs and lists of funded projects can also be found on the web site.

This AFP contains four Task Statements for which proposals are sought. The JFSP encourages proposals from all interested parties. However, because the focus of the JFSP is on wildland fire and fuels issues on Federal wildlands, evidence of direct involvement by Federal scientists or land managers in the development of proposals must be included in all proposals. **Proposals that do not have direct federal agency involvement will not be considered for funding.** Where appropriate, preference will be given to proposals where interest and involvement of land managers are documented. In addition, a Federal manager or cooperator will also be the direct recipient of funding; therefore, the name, mail address, and phone number of the Federal administrative or contracting officer must be included.

Proposals and all associated materials, including signatures, submitted in response to this AFP must be received by the close of business on January 6, 2003 to be considered. Materials received after the closing date, including proposal revisions, will not be considered. Questions and proposals should be directed to:

Dr. Bob Clark
Program Manager
Joint Fire Science Program
National Interagency Fire Center
3833 S. Development Ave.
Boise ID 83705
phone (208) 387-5349
facsimile (208) 387-5960
email: Bob_Clark@nifc.blm.gov

Electronic submissions are acceptable provided they are followed by a hard copy of the title/signature page with original signature(s) by January 6, 2003. If hard copy is submitted, please include a digital version on a disk. Also, please include the name, mail address, and phone number of the Federal administrative contact that would be used for administrative matters if the proposal is selected and funded. Finally, letters of support and similar materials that are sent separately from the proposal should include the title of the proposal and other relevant information so that the letter(s) can be matched with the proper proposal. **All materials associated with the proposal, including the completed signature page, must be received by January 6, 2003 to be considered. Revisions and other materials will not be accepted after the closing date.** Please email electronic proposals, in Microsoft Word or a compatible processor, to Bob_Clark@nifc.blm.gov.

Finally, the JFSP conducts annual workshops for Principal Investigators (PIs) from each active project. Proposal budgets submitted in response to this AFP should include travel and related funding needed for one PI to participate in the annual workshop.

B. Areas of Interest for Proposals

This AFP contains four separate tasks, and proposals are solicited on each of the tasks. In some cases it may be appropriate for proposals to respond to more than one task statement. The JFSP also encourages all proposals to include attention to wildland/urban interface (WUI) issues as appropriate.

Task 1: Interactions between climate, fire regimes, and fire management

Proposals are sought that develop methods, models, or experimental/empirical approaches to characterize past, present and future fuel and fire regimes, fire hazard potential, and vegetation conditions related to fire under changing climate and altered climate variability. Of interest are observations and models that relate changes in fire severity or intensity, burned area(s), or vegetation complexes affected. This includes a better understanding and interpretation of the role fire plays in carbon storage and release from landscape to continental scales. Also of interest is the characterization of current and future contribution to aerosol formation and the influence on regional climatology. Lastly, investigators may address applications for tactical and strategic fire preparedness, seasonal to long-range fire management planning, or development of guidelines for post-fire rehabilitation and restoration.

Potential climate change implies vastly changed fire risk patterns, which may require new approaches to vegetation management. Research is needed to address complex issues caused by these processes. For present climate, understanding of the relation of fire regimes, drought and wet cycles and fuels has improved forecasting capabilities, but the skill of these forecasts is still generally poor. Furthermore, existing General Circulation Models (GCMs) project increased drought potential in some regions, and altered dry-wet cycles that would lead to shifts in potential vegetation. Since the 1980's, many areas of the country have experienced dramatic changes in weather patterns, which may have both cyclical and synoptic (long-term) components. These patterns are likely one of the key factors in changing fire behavior and size. For a changing and variable climate, research is needed to project fuel dynamics and fire regimes, and to link potential responses in terrestrial vegetation and fire characteristics to regional models and GCM outputs. This includes interannual, decadal or longer-term fluctuations where wet-dry cycles may allow fuels build-up followed by dry periods and high fire risk, and partitioning of climate-induced changes from those driven by land use or land cover change and changing management practices. These should then permit linkage to hazard evaluation.

Where can we anticipate the higher likelihood of catastrophic wildfire? How might vegetation shifts under a drying and warming regime increase fire frequency and intensity? Can we help resource and fire managers, as well as give policy makers and the public a better understanding of changed future resource demands and new allocation algorithms for fire suppression resources for future fire seasons? Closely related are the needs for improved understanding of vegetation management for the new or altered climate regimes. How do we approach thinning, prescribed burning, and fuels management given the significant uncertainties in regional to local climate change predictions? Can we develop risk-based management scenarios for vegetation management needs where large confidence intervals are the norm? Future vegetation management will also need to consider impacts on carbon sequestration in forested lands and rangelands. Understanding the relationships between carbon storage and release, fire risk, fire severity, fuel management treatments, and other human and natural factors leading to altered fire regimes will help develop strategies for achieving optimum sequestration with low risk of catastrophic fire. This has

implications for the resource manager at scales from the stand level to large regional areas.

Anticipated products may be of the form of improved fuel dynamics models that reflect periodic fluctuations such as El Nino-Southern Oscillation, Pacific Decadal Oscillation, and other cycles, maps that are the product of dynamic vegetation models and describe vegetation shifts, changes in structure, density and composition of forested ecosystems, and fuel hazard assessments under changed future climate.

Task 2: Comparison of Collaborative Planning Efforts

Proposals are sought that characterize and compare different collaborative planning efforts for community protection and ecosystem restoration, and determine key elements of success. Results should be presented so that managers can readily use the information to design future or adjust in-progress collaborative planning efforts.

As agencies increasingly work with partners to assess risks and design mitigation measures, a variety of approaches is likely to evolve. Collaborative planning efforts provide rich opportunities for research directed toward understanding how people interact and achieve outcomes in these planning processes.

The USDA Forest Service and Department of the Interior land management agencies are emphasizing a collaborative planning approach to address the issues of hazardous fuel conditions in and around communities and in ecosystems at large. Partners in planning include federal, state, and local governmental agencies, Tribes, non-governmental organizations, and other groups and individuals. Agencies are pursuing this approach for a variety of reasons including mixed ownerships, increasing community protection effectiveness by coordinating efforts across ownership boundaries, and promoting the inclusion of all interested parties in plan development.

There are indications that trust and cooperation among parties are increased through an inclusive planning process, even when some participants deem the results unfavorable. However, there is little scientific basis for answering such questions as:

- 1) How is success of collaboration defined and measured (trust among parties, appeals, litigation, ability to implement treatments, community protection and risk reduction, etc.)?
- 2) To what extent is trust built among parties and what factors lead to building trust?
- 3) How does a collaborative approach affect landscape level planning and treatment implementation across multiple ownerships and years?
- 4) What time and resources are necessary for a collaborative approach versus for a more traditional planning model?
- 5) How does treatment prioritization balance the goals of community protection and ecosystem maintenance and restoration?

Task 3: Community Health and Ecosystem Impacts from Smoke

Proposals are sought that:

- *Address methods and technologies for low cost, near real-time monitoring to determine the duration and intensity (concentration) of wildland fire emissions and public exposure during smoke episodes within communities, in the wildland-urban interface, and in other smoke sensitive areas. Comparability with federal reference methods should be addressed.*
- *Evaluate the interactions between fire behavior, fire weather and fuel loading and distribution, and resultant fire emissions, including potential hazardous air pollutants, and the factors controlling their injection atmosphere (plume rise). Results should be linked to fuel consumption, fire duration, or other fire variables.*
- *Explore the use of existing monitoring networks such as the National Atmospheric Deposition Network (NADP), Mercury Dry Deposition Network, (MDDN), CASTNet (EPA), AeroNet (NOAA), USDA UV-B program and others, to determine how fire emissions influence the chemistry of the atmosphere, and regional and national air quality.*

The increasing use of prescribed fire to reduce the accumulation of wildland fuels presents additional concerns about the impact and effects of fire emissions on public health and welfare, particularly in communities in the WUI. In addition, recent large scale and long duration fires have also raised concerns about the long-range transport of smoke, visibility impairment and the potential influence on ozone in distant urban areas.

Compliance with Federal and state ambient air quality standards and visibility regulations to protect public health and welfare is an inherent concern of fire management agencies and drives the need for continued improvement of methods and technology to manage fire emissions. The need to improve the capability to control emissions and model the emissions and transport of smoke from prescribed fire and wildland fire is essential to the management and mitigation of air quality and public health impacts. Preliminary studies indicate that wildland fires can also cause significant release of volatile elements such as mercury and other elements and organic compounds which are known to have adverse effects on humans and wildlife.

Results from this task are intended to build on previous and ongoing research and interagency collaboration in order to provide fire and resource managers and planners with practical information and tools that will (1) substantially improve the capability to safely and effectively use prescribed fire near and within the WUI without adverse impacts to the community, or (2) improve capability to predict the long-range transport and impact of wildland fire emissions. Proposals must describe how the proposed work will complement or add essential information to existing information or projects.

Task 4: Emergency Stabilization, Rehabilitation, and Restoration

Proposals are sought that:

- *Evaluate post-fire stabilization and rehabilitation treatments. Proposals must describe how the proposed work will complement or add essential information to existing information or projects.*
- *Evaluate alternative treatments for restoring ecosystems altered by changing fire regimes, or where alterations have affected fire regimes.*
- *Evaluate the impacts of changing fire suppression and fire use policies, and the interaction of fire and other factors (such as grazing, invasive species, etc.) on ecosystem structure and health.*

Fire causes many ecosystem changes, including increases in erosion, runoff, downstream flooding and sedimentation, landslides, debris flows, and impacts on water quality. Fire impacts vary greatly from site to site as a function of interactions between site characteristics, fire behavior and severity, and post-fire weather patterns. While millions of dollars are spent annually on post-fire stabilization, rehabilitation and restoration treatments (such as on-slope and in-channel sediment control, salvage logging, planting of native species), effectiveness and ecosystem impacts of many of these treatments have not been adequately evaluated. Furthermore, fire, post-fire treatments, or changes in fire regime may be factors in ecosystem degradation, including changes in species composition, loss of biodiversity, impacts on threatened and endangered species habitat, and increased dominance of invasive species. In many cases, such impacts have not been well documented. Where impacts have been documented, methods need to be developed for restoring ecosystems to desired condition.

C. Format for Proposals

Overview of the Proposal Format

The full proposal should specify rationale, objectives, methodologies, and deliverables in sufficient detail to allow an informed peer to assess the proposal's validity in addressing one or more task statements in the AFP. The proposal should also identify criteria by which success of the project can be determined. The proposal text and accompanying tables and figures, exclusive of curricula vitae or other appended information, should be limited to 12 pages. Please use at least 11-point font. Complete annual and total budgets and a firm timeline for deliverables must be included, as well as a mechanism for technology transfer to appropriate end users. The proposal also provides a record of management responsibility and accountability for various aspects of the project.

Title Page

The following format should be used for the title page (not to exceed 1 page):

Project Title:

Principal Investigator(s):

Affiliation:

Address:

Telephone/Facsimile Number(s):

E-mail:

Duration of Project:

Annual Funding Requested from the Joint Fire Science Program: \$ _____

Total Funding Requested from the Joint Fire Science Program: \$ _____

Total Value of In-Kind and Financial Contributions: \$ _____

Abstract: Summarize the proposed project in a brief abstract not to exceed ½ page. The abstract should include the justification for the proposed project in relation to one or more task statements in the AFP, objectives, appropriate methodology, and applicability of results.

E-mail or facsimile proposals are acceptable provided that the e-mail or facsimile transmission is followed by a hard copy of the title page with original signature(s) by January 6, 2003. If hard copy is submitted, please include a digital version on disk or CD in Word or a compatible word processing system.

Introduction

An introductory section should include:

- 1) Project Justification. A summary of the issue(s), why the project needs to be done (relevance to task statements in the AFP), and benefits derived.
- 2) Project Objectives. A statement of the project objective(s) must be clearly stated and measurable. This should include a brief statement of the hypothesis to be tested (if applicable), what information or product(s) will be provided at the end of the project, and how the information or product can be used to resolve the issue(s) stated in the task statement(s).
- 3) Background. This section includes a concise review and synthesis of existing knowledge and previous research or other pertinent background information in the project task area, a description of

how the proposed project adds to or improves existing knowledge or tools, and a description of coordination with other relevant ongoing or completed products to ensure cross-compatibility and eliminate redundancy.

The introductory section is intended to provide peer reviewers and the Governing Board with evidence that the proposed work compliments previous and on-going work and that the work is applicable to task statements in the AFP. Although the literature may be extensive, the synthesis should generally include reference to no more than about 15-20 of the most important and/or most relevant sources.

Materials and Methods

This section should describe procedures proposed for conducting the project in sufficient detail that a knowledgeable reviewer could understand the process and that a peer could replicate the project. A brief description of the study sites (as applicable) should be included.

Project Duration

Proposals will generally not be funded for longer than three years, although requests for extensions or additional work may be considered.

Budget

The proposed budget should be provided in sufficient detail to identify direct and indirect costs and related surcharges, to separate labor costs from operational costs, and to identify salaries associated with funded scientists. Annual and total costs should be provided. Separate line items for "capitalized" equipment should be included. Outyear projections should be included for multi-year proposals. Proposed budgets should include travel expenses for at least one Principal Investigator (PI) to participate in an annual 3-day PI workshop. JFSP standard overhead is 15 % for institutions conducting the work, and 10% on funds passed through to collaborators. See section on Indirect Costs below.

Deliverables

Provide specific details on the information or product(s) that would be provided by the proposed project, and realistic timetables for delivery dates. It is expected that all final products will include an electronic version suitable for distribution, posting, etc. Descriptions in English units, with metric equivalents in parenthesis, are required. Annual progress reports are required.

Technology Transfer

It is imperative that information or products reach field managers in a useful form. Therefore, each proposal should include a description of how the "technology" would be transferred to the field. Also, funded projects are required to use Internet websites to post current and relevant information concerning each project.

Qualifications of Investigators

Include Curriculum Vitae for principal investigator(s) and at least one Federal agency collaborator. These should reflect recent, relevant experience and publication(s) and should not exceed 2 pages.

Checklist for Proposal Submissions

Does the proposal:

- * include an introduction or background section that includes the specific objectives of the project and describes how the proposed work is relevant to one the task statement in the AFP?
- * include a list of cooperators and their proposed contribution, including the original signature of the PI and an authorized signature from a cooperating federal unit (See Proposal Format, Title Page)?
- * include a relevant Curriculum Vitae or other description of credentials of the PI and co-investigator(s) that are signatories which demonstrates ability to complete the proposed work?
- * include a brief review and synthesis of related past and current literature and work?
- * Describe plans to integrate or collaborate with related ongoing or past efforts or products?
- * include an adequate description of the specific location of the proposed work?
- * include a description of the materials and methods of the proposed work including (as appropriate) experimental design and statistical analysis(es)?
- * include a detailed annual and total budget, including identification of salaries and indirect costs?
- * include a “Justification of Need for Salary Support,” approved by appropriate authority, if needed? (See Salary Policy Section)
- * include a description and cost of equipment, which needs to be purchased to support the work?
- * include a list of deliverables with proposed dates of delivery?
- * include a technology transfer mechanism?
- * include signature as participant, letters, or other indications of support and commitment to collaborate from involved federal agency participants and other potential beneficiaries?

D. Review and Evaluation of Proposals

The following factors will be considered in reviews and evaluations of proposals to the Joint Fire Science Program:

1. How well does the proposal address one or more specific task statements identified in the AFP?
2. How well does the proposed work build on or interface with past or ongoing studies or products on related topics.
2. Does the proposal follow the requested format and include all the requested information?
3. Will the proposed work provide information or products that are useful across agency jurisdictions, fuel types, and geographic areas?
4. Does the proposal provide for adequate transfer of information or products, consider

- general availability and usefulness of proposed technology, and, as appropriate, provide for a feedback mechanism to the study team for product testing and improvement?
5. Does the proposal provide for adequate collaboration among agencies, between fire and land management personnel and research scientists or other collaborators, and between disciplines to ensure broad integration of existing knowledge and approaches as well as applicability of results and recommendations?
 6. Are study approaches or design and statistical analysis(es) appropriate and adequate to meet stated objectives?
 7. What are the qualifications of the team to do the proposed work? Are adequate institutional resources and support available?
 8. Are proposed timeframes and budget reasonable and adequately justified, including budgets for proposed sub-agreements?
 9. If formal cooperative arrangements are proposed (e.g., with universities or other non-federal organizations), is there documentation that these will be feasible and agreeable to the cooperators?
 10. If the project will require compliance with the National Environmental Policy Act, Threatened/Endangered Species Act, or similar statutes, does the proposal contain evidence that these requirements are or will be possible within the proposed project timeframes?

E. Indirect Costs and Salary Policy

Indirect Costs

The Program recognizes the need of participating organizations to recover reasonable indirect costs. Indirect costs up to 15 percent (for the unit performing the work) may be included in proposals without detailed justification, however, any indirect costs exceeding 15 percent must be justified and elaborated. Similarly, indirect costs in excess of 10 percent on pass-through arrangements from federal units to cooperating federal or non-federal units must be justified. The Governing Board of the Joint Fire Science Program reserves the right to negotiate budget amounts and deliverables (including indirect costs over 15 percent) with proposing organizations.

Salary Policy

Normally, salaries of permanent full-time federal employees are expected to be provided by their agencies. This is also true of university faculty on 12-month tenure-track appointments. These employees are already fully funded by their institutions. However, the Governing Board recognizes that there can be mitigating circumstances arising from the need to fill in behind these employees when they are reassigned to Joint Fire Science Program funded activities, or due to policies of individual organizations. In such cases, the Governing Board may agree to fund salaries of permanent employees. A brief justification must be included in the proposal, and the justification must be certified by an appropriate institutional authority, other than the Principal Investigator or other cooperator on the proposal, at the employee's organization or institution. The format provided below should be used for the certification. In addition, permanent employee salary costs must be explicitly identified in the project budget. The Governing Board requires no special justification (other than a brief description of the need for the position in the budget justification section of the

proposal) for funding temporary or term employees, post-doctoral employees, or graduate or undergraduate students.

**Certification to the Joint Fire Science Program
Justification of Need for Salary Support**

I hereby certify the attached Justification of Need to provide temporary salaries for full-time permanent employee (s) _____ (*list name of employee(s)*) is necessary and appropriate to enable him/her (them) to fully and directly participate in the proposed project.

I understand that salary funding for this/these employee(s) directly involved in the proposed project is temporary and will not be provided beyond the duration of the proposed project.

Signature _____

Date _____

Title _____