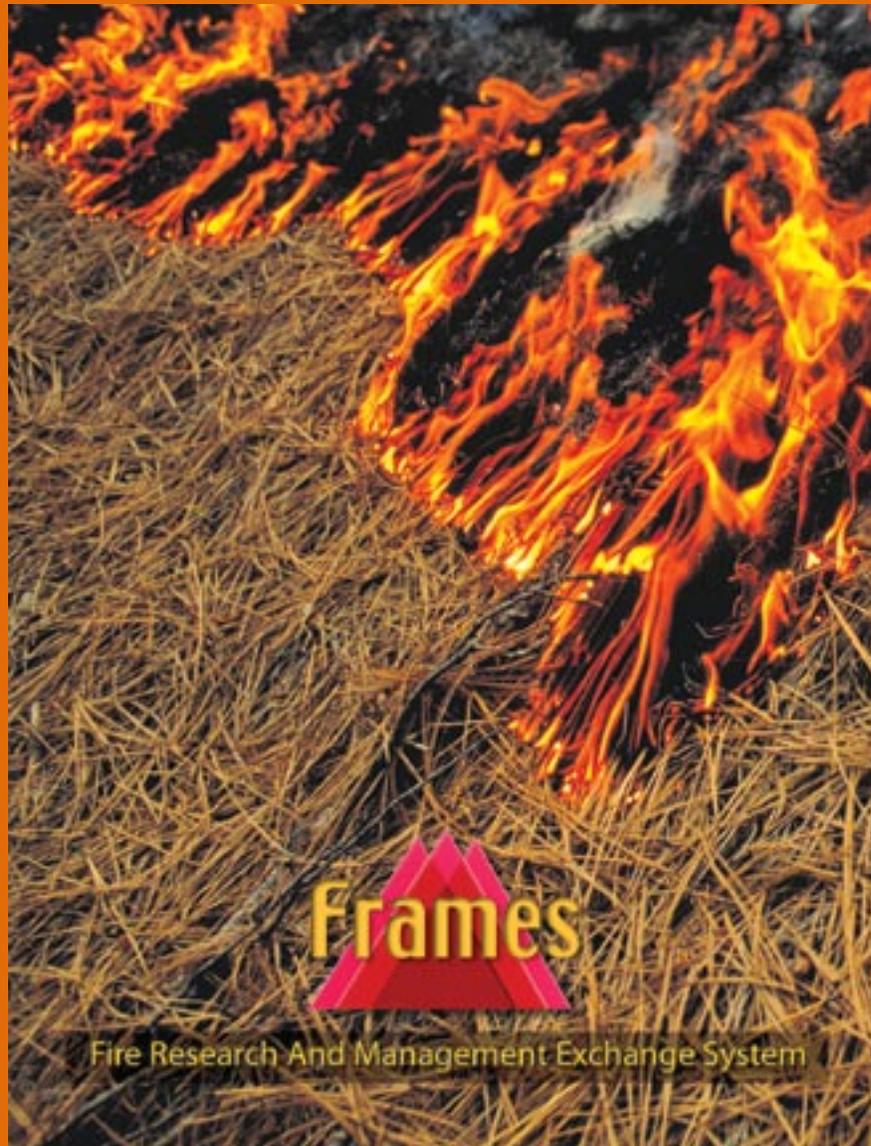


2008 Annual Report



It's No Longer Survival of the Fittest; It's Survival of the Best Informed

<http://frames.nbii.gov>

**2008 Annual Report
Fire Research And Management Exchange System
(FRAMES)**

March, 2009

Photography by Karen Wattenmaker

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Introduction

“Half the battle of providing the best science is accumulating it under one roof.”

- Tim Swedberg, JFSP Communications Director,

The Fire Research And Management Exchange System (FRAMES) project began in 2002 at the University of Idaho with funding support from the US Forest Service's Missoula Fire Science Lab in response to the need for cataloging and organizing wildland fire tools, data, and documents into a single system. FRAMES was proposed to be a mechanism for ongoing information exchange and technology transfer between the wildland fire management and research communities. In 2004, a partnership with the US Geological Survey's National Biological Information Infrastructure (NBII) provided the technical foundation for FRAMES continued development and implementation. This continued collaboration has advanced the mission of the NBII program in its capacity to deliver natural resources and wildland fire data and information to a broad user community.



Photography by Karen Wattenmaker

The mission of FRAMES supports wildland fire and natural resource professionals and policymakers by promoting and facilitating information and technology sharing, exchange, collaboration, and development through a state-of-the-art clearinghouse and web portal. The use of FRAMES portal informatics¹ technologies can help eliminate redundancy, reduce costs, and promote increased productivity and efficiency for the professionals responsible for wildland fire and fire-related research and management. The vision of FRAMES is to be a national wildland fire informatics system and clearinghouse that organizes, synthesizes, evaluates, distributes, tracks use, and measures the efficacy of wildland fire and fire-related information and technological resources².

In 2008 a new partnership, the Wildland Fire Science Partnership (WFSP), was formed between the US Forest Service's Rocky Mountain Research Station (RMRS), the University of Idaho (UI), and the University of Montana (UM). The WFSP also brings together programs established at each of the three partner institutions including FRAMES and Wildland Fire Science Program (UI); the National Center for Landscape Fire Analysis (UM); and the Missoula Fire Sciences Lab's Fire, Fuels & Smoke Science Program, the Wildland Fire Management Research, Development, & Application Program, and the LANDFIRE Program (RMRS). In addition to providing exciting new opportunities for collaboration among the partners, the WFSP represents the new administrative home for FRAMES.

Previously, an Interim Steering Committee guided FRAMES development. However, with changing job assignments, retirements, and in part due to the formation of the WFSP, the FRAMES Interim Steering Committee has been less involved with guiding the development of FRAMES. A substitute for the interim steering committee has not been found. However, a possible guiding structure for FRAMES may be the RMRS's Research, Development, & Applications Program, a key partner in the WFSP. As FRAMES moves forward through 2009 and 2010 this option will be explored further. FRAMES development and management continues to be guided by the FRAMES Strategic Plan (2007-2012). The Plan identifies programmatic and organizational goals that emphasize six principal areas of effort including

¹ "Informatics" is the collection, classification, storage, retrieval, and dissemination of recorded knowledge from the Center for Biological Informatics at <http://biology.usgs.gov/cbi/informatics/>.

² Text is from the FRAMES Strategic Plan 2007-2012.

Goals

Programmatic Goals

1. **Provide Content and Increase Content Utility.** Develop a rich and usable base of content that is useful to wildland fire and natural resource professionals and policymakers.
2. **Expand Services and Increase User Base.** Identify opportunities to work with wildland fire and natural resource professionals (i.e., managers, practitioners, and researchers) to develop customized services that are complimentary with the FRAMES informatics architecture and that target their common technology transfer and science delivery needs.
3. **Increase Name Recognition and Program Awareness.** Develop marketing materials for outreach and cultivate relationships with agencies and potential FRAMES users and contributors.
4. **Maintain and Upgrade the Infrastructure.** Build a technological infrastructure that can support wildland fire and fire-related informatics.

Organizational Goals

1. **Ensure Financial Support.** Determine staffing requirements and develop a sustainable system of financial support to ensure that FRAMES remains viable.
2. **Provide Responsive Governance and Management.** Establish a long-term plan for governance and accountability for the management and implementation of FRAMES.

This report summarizes activities and accomplishments from October 2007 through December of 2008. Additional details about FRAMES, its strategic plan, and projects can be found at <http://frames.nbii.gov>.



Figure 1 The newly redesigned FRAMES Home Page

2008 Accomplishments: CONTENT

Overview/Resource Cataloging System (RCS)

A guiding principle for FRAMES development has been to provide quality content to managers that is easy to find, access, distribute, and use. In order to do this, FRAMES has pursued the development of a comprehensive system of cataloging called the FRAMES Resource Cataloging System (RCS). In 2008, FRAMES spent considerable effort on implementing the RCS. The process included technical development of the Resource Catalog Database (RCD) and on-line catalog tool. In addition, content migration and reconciliation were major initiatives in the scope of the 2008 year's work. Specifically, two Joint Fire Science Program (JFSP) funded projects (FIREHouse) and the existing collection of FRAMES records were added to the database. Additional FRAMES content outside the RCS continued to be added by partners through their contributions and their websites.

CONTENT: Resource Cataloging System (RCS)

System Overview

The idea of establishing a near comprehensive clearinghouse and inventory of research deliverables has been part of the vision of FRAMES since its inception. FRAMES utilizes existing information standards including Dublin Core (web metadata standard), Federal Geographic Data Committee (FGDC, spatial metadata standard), and Machine-Readable Cataloging (MARC, a bibliographic standard) and brings them together to create a holistic information management system. The FRAMES approach integrates information for six groups of resources.

Data are information resources in a numerical form that can be digitally transmitted or processed. Data may or may not have a spatial (two or three dimensional) component to it.

Documents are narrative text-based sources of information.

Tools are any product that modifies input to produce an output.

Projects are temporary endeavors to achieve specific goals. Projects produce products, which may include data, documents, or tools.

Programs sponsor and facilitate projects to achieve a broad goal. Programs are typically sponsored or administered by existing organizations and government agencies.

Web Pages may contain text, graphics, or sound files that are accessible through the World Wide Web (WWW).

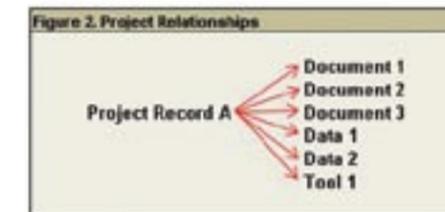
System Architecture and Functions

Each Resource Group can be related to one another to create a nested set of resources. For example, a record can be created for a research project. Let's call it Project Record A. Over time, as the project produces deliverables, records can be created for them and linked back to the project record. In our example, deliverables such as Documents 1, 2, 3; Data 1 and 2; plus Tool 1 become part of the historic record of the project (see Figure 2). The ability to relate and nest records together benefits potential users of resources.

Managers and others have indicated that they do not have time to do extensive research to find the resources they need to do their job. When fully implemented, the RCS provides a systemic approach to manage three valuable resources that managers and other natural resource professionals need to do their job: data, tools, and supporting documentation. Scientists and managers can also use the RCS to maintain project records for their activities

Resource Cataloging System (RCS)

and track their progress. Likewise, they can bundle documents and other resources they use throughout the course of their project and keep a historical record of their work.



In addition to relationships between projects and research deliverables (or manager resources), resource groups (i.e., data, documents, tools, web pages) can be related to one another.

The benefits for relating records include 1) an expert-based synthesis of products targeted to meet specific user needs, 2) easy access to resources through nesting, 3) search and browse returns deliverables "prepackaged" for easy use, 4) one search access to all resources, i.e., data, documents, and tools, and 5) this system is the foundation for comprehensive management of data and tool resources. It is the precursor for plug and play online web-based predictive, planning, and analytical tools. For a complete relations map of resources see Figure 3.

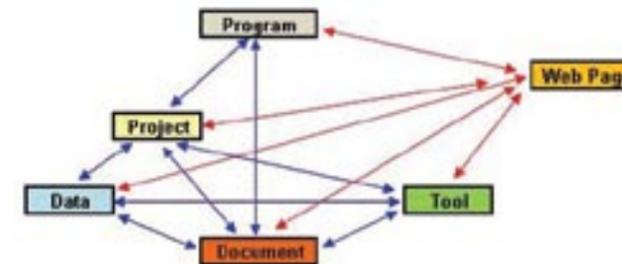


Figure 3. Resource Group Relations Map

Resource Groups are further divided into Resource Types and in some instances Sub-types in order to more accurately categorize the resource. The Resource Types are listed below in Figure 4.



Figure 4. Resource Groups, Types, Subtypes

2008 Accomplishments: CONTENT

Resource Cataloging System (RCS)

“FRAMES is a virtual shopping mall for wildland fire and other natural resource professionals.”

- David Brownlie, Fire Ecologist, Southeast Region, USFWS,.

For the Resource Groups Data, Documents, and Tools there generally exists a tangible representation, a real world physical product, for the cataloged record. Examples include:

an ASCII File (data), a PDF (document), and an executable software program (tool). Each of these can 1) be uploaded to FRAMES and then linked back to the cataloged record or 2) stored on a secure server offsite from FRAMES and the URL linked to the cataloged record.

As records are cataloged into the six different types of FRAMES records they may also be categorized by Subject Area, Geographic Area, or Partner Site. Often a record will be categorized in more than one area. For example, fire history data can fall under the Fire History subject area, but it may also be specific to a particular Geographic Area and cataloged there as well. All cataloged records are also available through the FRAMES home page.

In summary, there are 6 Resource Groups that are subdivided into Resource Types and in some instances Subtypes. When cataloging, a record is created following this pathway: Resource Group / Resource Type / Resource Subtype. By relating records they can be “prepackaged” for targeted consumption. Searching is improved because one search will yield all resources that are relevant.

Development History and Plans for 2009

There are five components to the Resource Cataloging System (RCS), including the Resource Catalog Database (RCD), On-line Cataloging Tool, Search Capabilities, Browse Capabilities, and Visualization³. The original development of the RCS began as a cooperative project among FRAMES, the University of Idaho, and the USGS / NBII. The NBII maintains cataloged records that are not in a relational database while FRAMES needed a relational database to house FRAMES records. Scoping for the RCD was done in conjunction with NBII and a requirements document was developed in 2005. Construction of the RCD began in 2006, but staffing changes led to the NBII pulling out of the database project in 2007. In 2006, Oregon State University’s Northwest Alliance for Computational Science & Engineering (NACSE) had begun work on the on-line cataloging tool, and in 2007 was brought in to finish the RCD.

In the fall of 2008, more than 1100 existing records currently available live on the FRAMES homepage were moved into the RCD. Upon completion of that move, the migration of records from two JFSP funded projects, FIREHouse Northwest and Alaska, began (approx. 5000-6000 records). Concurrent with these efforts, the implementation and testing of the On-line Cataloging Tool proceeded. The primary objective driving the development of the cataloging tool is to produce an interface that is as intuitive and as simple to use as possible so that researchers, managers, and others can create and edit records for their resources. Online help and tutorials will also be provided as part of the tool package and FRAMES staff will also be available for additional help as needed.

A list of requirements is being compiled for version 3.0 of the cataloging tool. Version 3.0 is targeted to be the release of the tool for general use and should be ready late 2010. Prior to that release FRAMES staff will use version 2.0 to edit existing records and create new ones.

Plans for 2009 include implementation of Version 2.0 of record visualization. A first version of the search and browse capabilities will also be available. By the end of 2009, approximately 8,000 records will be available from the public FRAMES website.

³ For details about any component please contact Greg Gollberg, FRAMES Program Manager at gollberg@uidaho.edu.

Content: Statistics

2008 and 2007 Comparison

An analytics package available in the portal is used to track trends in FRAMES. FRAMES staff noted several changes in searching patterns from 2007 to 2008. Most notable, the total number of searches more than doubled in 2008. Looking at the top 10 searches for each year in 2007 the most accessed record, “Fire Effects Monitoring and Inventory Database and Data Analysis Software ver. 2.1.0 (FIREMON)” had 587 hits. In 2008 it was not among the top 10 records accessed. The top record accessed in 2008, “An Integrated Assessment of the Historical Role and Contemporary Uses of Prescribed Fire in Southern Appalachian Ecosystems” had 910 hits. Six of the same records were in the top 10 for both years. For 2007, of the top 10 records accessed there were 7 project records, 2 tools, and 1 document. In 2008 there were 7 project records and 3 documents (See Tables 1 and 2).

Table 1. Top 10 Accessed Records in 2007

Rank	Document	Hits
1	Fire Effects Monitoring and Inventory Database and Data Analysis Software ver. 2.1.0 (FIREMON)	587
2	FRAMES - Integrated Learning Strategy Guide	343
3	Guidance: Evaluation and Selection of Fuel Consumption Models for Wildland Fire in the SW, NW, Rockies, Midwest, SE, and NE	306
4	An Integrated Assessment of the Historical Role and Contemporary Uses of Prescribed Fire in Southern Appalachian Ecosystems	293
5	Geographic and Ecological Research: Understanding Fuel Consumption of Fire Management in the Wildland Urban Interface	287
6	Assessment of Regional Liability from Wildland Fire: Does it Influence Fuel Load, Reduce Lateral Fire Spread, and Reduce the Danger?	282
7	Fire Effects Monitoring and Inventory Database System (FIREMON)	263
8	Understanding Wildland Fire: Understanding Fuel Availability in South-Central Vegetation Communities	262
9	Changes in the Regime and the Ecological Status of Tall-Rainier Woodland Fuel Accumulation in the Southern Appalachians	253
10	An Integrated Model for Fire Science and Management in the Southern Region	249

Table 2. Top 10 Accessed Records in 2008

Rank	Document	Hits
1	An Integrated Assessment of the Historical Role and Contemporary Uses of Prescribed Fire in Southern Appalachian Ecosystems	910
2	Assessing the Benefits of Reducing the Risk in the Wildland Urban Interface: a multi-stakeholder approach	476
3	An Inventory of FIREMON	376
4	Guidance: Evaluation and Selection of Fuel Consumption Models for Wildland Fire in the SW, NW, Rockies, Midwest, SE, and NE	300
5	An Integrated Model for Fire Science and Management in the Southern Region	299
6	Understanding Wildland Fire: Understanding Fuel Availability in South-Central Vegetation Communities	293
7	Assessing the Potential for Prescribed Burning, Mechanical Thinning, and Herbicide Use for Fuel Reduction Subregion	285
8	Wildland Fire and Southern Fire Resiliability (2)	250
9	Geographic and Ecological Research: Understanding Fuel Consumption of Fire Management in the Wildland Urban Interface	245
10	Assessment of Regional Liability from Wildland Fire: Does it Influence Fuel Load, Reduce Lateral Fire Spread, and Reduce the Danger?	240

More Metrics – Traffic, Communities, and Logins

The FRAMES taxonomy has 26 subject areas, 3 geographic areas, 9 partner sites (2 more partner sites are currently under construction), and the FRAMES home page. Each of these areas has a community associated with it. It is through this community structure that metrics are accumulated. Communities are discrete units of organization within the portal architecture and can be tracked as such. Other discrete units that can be tracked include searches, portlets⁴, and projects. It is important to remember that FRAMES has a public face through the domain <http://frames.nbii.gov> and a secure space for collaboration and content management where users login with their user names and passwords. As mentioned above, the entire FRAMES Home Page is a community, but there are also many other public communities and there are many communities available only to logged in users. Metrics are gathered for all of these communities individually. One of the most basic measures of a website’s use is by hits. This metric gives you an idea of the traffic to the site. Figure 5 indicates the traffic to the FRAMES site in 2008 for each month.

⁴ Portals aggregate different content into a single interface; portlets connect the user to specific content within that interface. Portlets can contain static content such as text and graphics, or the content can be dynamic such as news, business updates, weather, etc.

2008 Accomplishments: CONTENT

Content: Statistics

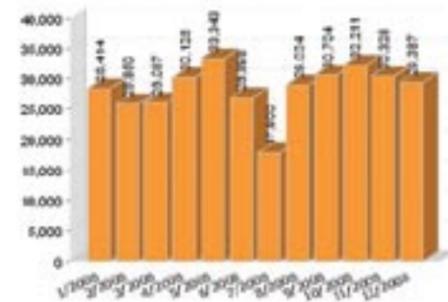


Figure 5. Portal Traffic 2008

Average traffic for the year was 28,356 hits per month. It helps to put 2008 in context. Figure 6 below shows portal traffic from January 2007 through January 2009. Note the upward trend for the past 25 months.

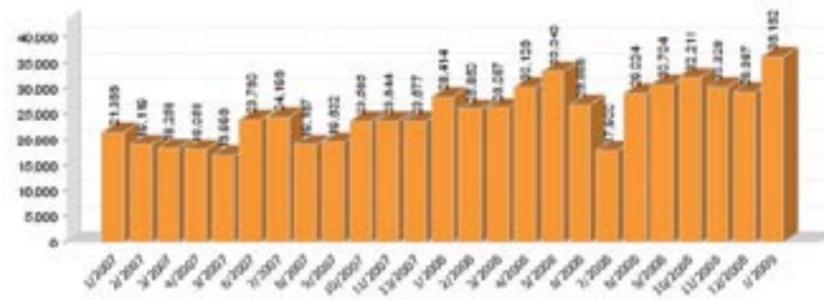


Figure 6. Portal Traffic January 2007 through January 2009

Figures 7 and 8 take a closer look at where people are going in the FRAMES portal in 2007 and 2008 by looking at the top 10 communities. It is worth noting changes over time. Figure 7 is for the top 10 communities in 2007 and Figure 8 is for 2008.

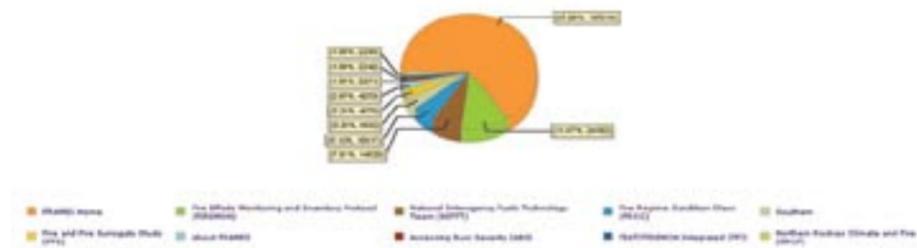


Figure 7. Top 10 FRAMES Communities 2007

What is most noticeable between 2007 and 2008 is the growth in access to areas other than the FRAMES Home Page. In both years we see that most people are going to the FRAMES public website, but where in 2007 the home page saw 65% of the total access, in 2008 it was down to a little less than 52%.

Content: Statistics

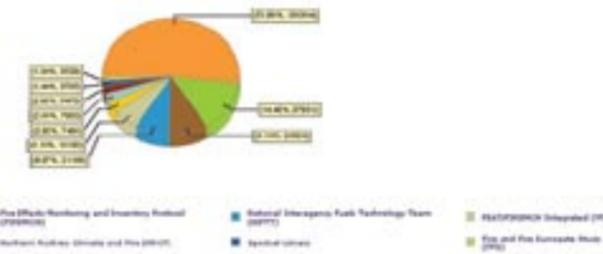


Figure 8. Top 10 FRAMES Communities 2008

Areas that grew were the Fire Effects Monitoring and Inventory Protocol (FIREMON), National Interagency Fuels Technology Team (NIFFT), and Fire Regime Condition Class (FRCC) partner sites, plus the Southern Fire Portal (geographic area).

FRAMES partners and staff have login accounts that are used to 1) manage partner website content, 2) manage the FRAMES home page, 3) manage projects, 4) communicate, collaborate, and share information, and 5) beta test tools. By the end of 2008 there had been 468 new accounts created on FRAMES for a total of 881 active accounts, more than double the number in 2007 (See Figures 9 and 10). However, many of these accounts were created towards the end of the year for a project that will not be coming online until late in 2009. This is evident as overall logins for 2008 were down from 2007.

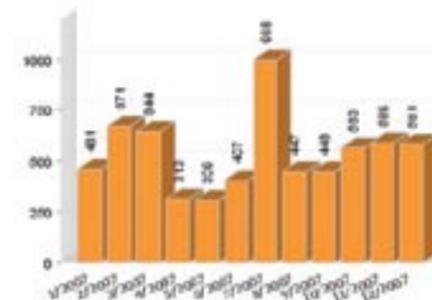


Figure 9. User Logins 2007

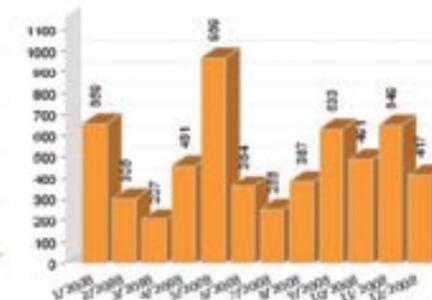


Figure 10. User Logins 2008

Figure 11 shows the average time that individuals with accounts spend in the portal per user session has not changed appreciably in the past two years either. Average time per session is approximately 12 minutes.

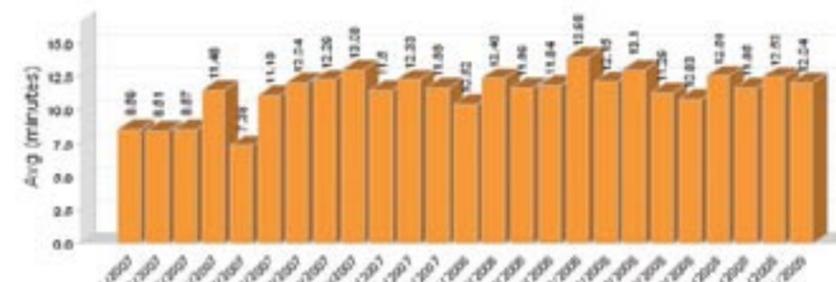


Figure 11. Average Login Session from January 2007 through January 2009

User accounts and logins are most often connected to projects that are hosted by FRAMES. Partners are the drivers of these projects. In 2008 existing partner sites matured and several new partnerships began. A few projects with new partners are in the scoping phase, and communities have been set up in anticipation for moving forward with them in 2009.

**FRAMES:
Information
at your fingertips.**

2008 Accomplishments: CONTENT

CONTENT: Ongoing and New Partnerships

Ongoing partners that have websites on FRAMES include Assessing the Causes, Consequences, and Spatial Variability of Burn Severity; Fire and Fire Surrogate Study (FFS); Fire Effects Monitoring and Inventory System (FIREMON); FEAT / FIREMON Integration (FFI) Ecological Monitoring Utilities; Fire History Analysis Exploration System (FHAES); Fire Regime Condition Class (FRCC); National Interagency Fuels Technology Team (NIFTT); and Northern Rockies Climate and Fire (NRCF)⁵. Of the 8 ongoing partner sites, 5 are largely being managed and maintained by the partners and FRAMES staff is maintaining the other 3 with partner help (See Table 3).

Table 3. Preexisting Partners Websites

FRAMES Public	Partner	Status 2008	Date Developed	With Intranet Communities
Assessing the Causes, Consequences, and Spatial Variability of Burn Severity	UI, JFSP, FS RMRS, and, FS RSAC	Maintenance	2007 by FRAMES Staff	None
Fire and Fire Surrogate Study (FFS)	JFSP, FS, USGS, UC-Berkeley, NPS, Auburn, UC-Davis, CSFS, JERC, UM QLQ, UI, CDF, UA, and OSU	Maintenance	2007 by FRAMES Staff	None
Fire Effects Monitoring and Inventory System (FIREMON)	FS RMRS Missoula Fire Lab, JFSP, USGS, SEM, and NASA	Maintenance	2006 migrated by FRAMES Staff	Fire Ecology
FEAT / FIREMON Integration (FFI) Ecological Monitoring Utilities	FS RMRS and NPS	Maintenance	2007 Partner Developed	Fire Ecology
Fire History Analysis Exploration System (FHAES)	NOAA Paleoclimatology Branch, RMRS, UA, Laboratory of Tree-Ring Science, and Rock Mountain Tree-Ring Research	Maintenance	2007 Partner Developed	FHAES Working Group, Paleo Development
Fire Regime Condition Class (FRCC)	FS, BLM, SEM, and TNC	Maintenance	2007 migrated by FRAMES Staff	NIFTT Working Group
National Interagency Fuels Technology Team (NIFTT)	BLM, NPS, FS, TNC, FS RMRS Missoula Fire Lab, SEM, BIA, USGS, and FWS	Maintenance	2006 by FRAMES Staff	NIFTT Working Group
Northern Rockies Climate and Fire (NRCF)	UI, JFSP, FS RMRS Missoula Fire Lab, and Aldo Leopold Wilderness Research Institute	Maintenance	2006 by FRAMES Staff	None

⁵ See the FRAMES 2007 Annual Report for descriptions of ongoing partners or see their websites under the "Partner Sites" tab on the FRAMES Home Page at <http://frames.nbii.gov>.

CONTENT: Ongoing and New Partnerships

Preexisting Partners Site Descriptions

The following descriptions are for partners that existed prior to this reporting cycle.



- **Assessing the Causes, Consequences and Spatial Variability of Burn Severity**

The JFSP funded the US Forest Service Rocky Mountain Research Station, Remote Sensing Applications Center, and the University of Idaho to conduct a project assessing the causes, consequences, and spatial variability of burn severity during and after active fire incidents. Nine large wildfires were sampled in Montana, California and Alaska. The team quantified conditions before, during and after fires burn with the goal of understanding the spatial variability in fire effects and exploring relationships between burn severity and fuels, fire behavior, local weather and topography. The project team worked closely and shared data and results with, Fire Use, Incident Management, and Burned Area Emergency Response (BAER) teams. It will be providing an improved set of quantitative indicators of burn severity that are scalable and mappable from the ground, using satellite and airborne hyperspectral imagery. This data will be useful to fire managers making challenging, timely decisions and in building the next generation of fire behavior and fire effects models. As part of this project, a Burn Severity – Spectral Library Project page was developed on FRAMES: (http://frames.nbii.gov/portal/server.pt?open=512&objID=500&mode=2&in_hi_userid=2&cached=true).

An objective of this project was to form an online spectral library of endmembers of the major surface component materials encountered on the wildfires we sampled in western Montana mixed conifer forest, southern California chaparral, and interior Alaska spruce forest. FRAMES assisted with this effort and organized the content into the three regions; FRAMES staff further organized the spectral endmembers into functional groups: 1. green (photosynthetic) vegetation, 2. non-photosynthetic vegetation, 3. soil and/or rock, and 4. char and/or ash spectra. A digital photo of the endmember material, a graph of the endmember spectrum, and a downloadable ASCII file of the actual spectrum is provided.



- **Fire and Fire Surrogates (FFS) Study**

The JFSP has provided funding for a long-term study to assess how ecological components or processes may be changed or lost, if fire "surrogates" such as cuttings and mechanical fuel treatments are used instead of fire, or in combination with fire. The FFS project managers are using FRAMES to deliver information about the various fire and fire surrogate studies. Numerous partners and study sites were utilized in this study and 169 publications have been produced. FRAMES is the home of all of the FFS study and hosts most of the publications.

The study network consists of 12 main sites and 1 satellite site (which has less than the full suite of core treatments. All of these initial sites represent forests with a historically short-interval, low- to moderate-severity fire regime. Eight sites are in

2008 Accomplishments: CONTENT

CONTENT: Ongoing and New Partnerships

western coniferous forests, ranging from the Pacific Northwest to the Southwest.

These sites share the fact that ponderosa pine is an important tree component, but sites vary in composition of other conifers and differ substantially in topographic and soil parameters. Two sites are in the southeastern U.S.--one in the Piedmont and one on the Coastal Plain--and are dominated by mixtures of southern pines with hardwood understories. Rounding out the network is a site in the midwestern oak-hickory type of Ohio. Collectively, these sites comprise a network that is truly national in scope. Depending on the level of interest and support available, future sites in the same or other fire regimes may be added to the network.

In 2005, four regional workshops were conducted with selected clients to identify effective and efficient means of communicating FFS study findings to users. We asked four overarching questions: (1) Who needs fuel reduction information? (2) What information do they need? (3) Why do they need it? (4) How can it best be delivered to them? Participants identified key users of FFS science and technology, specific pieces of information that users most desired, and how this information might be applied to resolve fuel reduction and restoration issues. They offered recommendations for improving overall science delivery and specific ideas for improving delivery of FFS study results and information. Workshop participants repeatedly stressed that different levels of information were needed from the FFS study: some kinds of managers needed relatively general kinds of information, whereas others needed more detailed information. Pl's are exploring ways to further advance the project and provide deliverables.



- **Fire Effects Monitoring and Inventory System (FIREMON)**

FIREMON is an agency independent plot level sampling system designed to characterize changes in ecosystem attributes over time. The system consists of a sampling strategy manual, standardized sampling methods, field forms, Microsoft Access® database, and a data analysis program. FIREMON is desktop application created for computers running Windows 98, ME, 2000 or XP operating systems. The system was developed by the US Forest Service, Missoula Fire Sciences Laboratory in cooperation with USGS, the National Park Service, and Systems for Environmental Management. Funding was provided by the JFSP. FIREMON was migrated from USFS Missoula Fire Sciences Lab and it was the first partner site on FRAMES. FIREMON is being combined with the NPS funded Fire Ecology Assessment Tool into a new monitoring tool called FFI. FIREMON will still be supported but further development and updates may be suspended.



CONTENT: Ongoing and New Partnerships



- **Fire Ecology Assessment Tool (FEAT) / FIREMON Integrated (FFI)**

FFI is a monitoring software tool designed to assist managers with collection, storage, and analysis of ecological information. It is being constructed through a complementary integration of the Fire Ecology Assessment Tool (FEAT) and FIREMON. The National Interagency Fuels Coordination Group is the sponsoring group. The National Park Service is the managing partner.

FEAT and FIREMON both facilitate fire ecology monitoring and have similar procedural characteristics and database architecture. Their integration results in an enhanced monitoring tool that eases data collection and supports cooperative interagency data management and information sharing. FFI supports scalable (site specific to landscape level) monitoring for land management agencies at the field and research level.

FFI provides data entry and storage, summary reports, analysis tools, Geographic Information System (GIS), Personal Digital Assistant (PDA) and Protocol manager modules. The field sampling procedures facilitate data collection. While most sampling procedures are focused on fire effects, FFI incorporates Protocol Builder, a component that lets users define their own sampling protocol, allowing FFI to be used for other natural resource applications including wildlife monitoring. The FFI data migration tool will move FEAT and FIREMON data in to the new system.

FFI employs a client-server architecture that is scalable from desktop to server installation, supporting simultaneous multiple user access. The system is designed to work on Windows XP® operating systems. Data is stored in a SQL Express 2005 database and accessed with SQL and dotNet code. ESRI Arc® products are used for GIS functionality. The system is designed for the varying IT requirements of the USFS, NPS, BLM, BIA and FWS. Much of the coordination between the developers and testers of the FFI was conducted through a collaboration server community on FRAMES. This community, The Fire Ecology Community, is discussed elsewhere.



- **Fire History Analysis and Exploration System (FHAES)**

The goal of the FHAES project is to enhance and/or redevelop components of FHX2, a DOS based software program originally developed by Henri Grissino-Mayer to analyze chronologies of fire scars developed from tree-ring data so that they are web-based, user-friendly, and easily accessible to a broad range of users on the Internet. The FHAES working group [Elaine Kennedy Sutherland (1), Henri Grissino-Mayer (2), Wendy Gross (3), Michael Hartman (3), Elena Velasquez (4), Connie Woodhouse (5), and Peter Brown (6)] is an informal collaboration of researchers coordinating the redesign effort. The revised system (now renamed FHAES: Fire History Analysis and Exploration System) is being written in platform-independent, open source software (for example, Java and JFreeChart), but to control costs and maintain a reasonable launch schedule some of the original PASCAL executable code will be retained. The new system is structured around a central graphical user

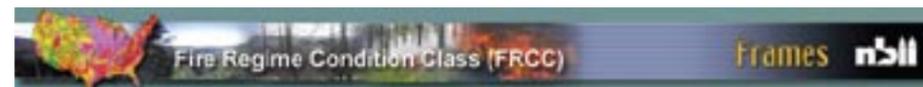
Website hosting and services for wildland fire researchers and managers.

2008 Accomplishments: CONTENT

CONTENT: Ongoing and New Partnerships

interface that calls out to other separate components. These components (data entry and file management, graphics, statistical analysis, climate relationships) have been or are being written by different individuals and contributed to the effort. The programmer writing the central interface is ensuring that the components are compatible.

FHAES will use FRAMES to link components developed and maintained by different groups and to deliver information about the project as well as distribute the software. The site will be hosted by FRAMES and managed by NOAA's National Climatic Data Center's Paleoclimatology Branch. FHAES also has an intranet site that is used to collaborate and coordinate between developers, researchers, and users.



- **Fire Regime Condition Class (FRCC)**

FRCC is an interagency, standardized tool for determining the degree of departure from reference condition vegetation, fuels, and disturbance regimes. A growing body of research shows that a century or more of fire exclusion and other practices have negatively impacted many ecosystems. Some lands are now in poor ecological condition, whereas other landscapes are still functioning in a natural state. In the simplest definition, a fire regime describes the basic "personality" of fire for a given vegetation type. Although fire frequency and severity are the most commonly used descriptors, many other aspects have been studied, such as fire spread patterns, fire seasonality, and post-fire patch dynamics.

The FRCC system uses two sets of descriptors that, when combined, can be used to diagnose condition class. The first set of factors measures vegetation composition and structure changes. The second set measures possible changes in fire frequency and severity. FRCC also uses a Fire Regime Classification system of five broadly defined Fire Regimes. Simply put, FRCC determines how similar a landscape is to its natural or historical regime. Fire Regime Condition Classes are broken down into three categories, 1, 2, and 3.

FRCC 1 contains vegetation, fuels, and disturbances characteristic of the natural regime. FRCC 3 contains vegetation, fuels, and disturbances uncharacteristic of the natural regime. FRCC 2 is in between the two. So, essentially a landscape with an FRCC of 1 is fairly similar in vegetation and in disturbance regimes to the historical or natural regime. A landscape in Condition Class 1 has key ecosystem components intact, such as large old trees and soil that is characteristic of that site. A landscape with an FRCC of 3 means the land is not very similar to its natural regime in terms of its vegetation or disturbance or both. Land with an FRCC of 3 has lost key ecosystem components; an example could be the loss of characteristic large trees due to uncharacteristic wildfires that occurred in uncharacteristic fuels. Assessing FRCC can help guide management objectives and set priorities for treatments. FRCC managers are using FRAMES to deliver information about FRCCs and also to register users for training.

CONTENT: Ongoing and New Partnerships



- **National Interagency Fuels Technology Team (NIFTT)**

It is the goal of each fire management program within each agency to assist in the effort to ensure public and firefighter safety in reducing risks to communities while improving and maintaining ecosystem health. Collaboration and cooperation among federal and non-federal organizations, as well as within communities, has further empowered this fire management purpose. Fuel treatments are one component of a fire management program. Treatments may be planned and implemented within the wildland urban interface community as well as outside the community in the surrounding ecosystem. Types of hazardous fuels reduction treatments which support fuels and fire management purposes include mechanical, prescribed fire, wildland fire use, and other treatments.

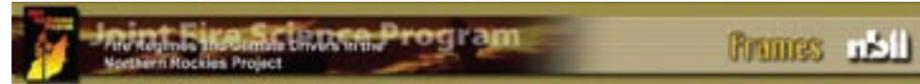
The National Interagency Fuels Coordination Group (NIFCG) was established under the guidance and direction of the fire directors of the Bureau of Land Management, the Bureau of Indian Affairs, the National Park Service, US Forest Service, and the Fish and Wildlife Service, with the common purpose of reducing risks to communities while improving and maintaining ecosystem health.

The **National Interagency Fuels Technology Team (NIFTT)** is sponsored by NIFCG to coordinate, develop, and transfer consistent, efficient, and science-based fuel and fire ecology assessment technologies. Specifically, NIFTT will – through development of a strategic approach – provide guidance, training, and application tools for the implementation of these technologies. Two examples include coordinating product implementation and associated technology transfer through the development of a fuel's fire behavior hazard measure, and coordinating research results from Forest Service, Interior, and Joint Fire Science, among others. Core team members include agency, The Nature Conservancy (TNC), and private consultant fire and landscape ecologists; software developers; project coordinators; and support staff. The team is currently focusing on the technology transfer component of the national LANDFIRE Project. LANDFIRE is a multi-partner mapping project that will generate consistent, comprehensive maps and data describing vegetation, fire, and fuel characteristics across the United States. For more information on NIFTT's contribution to the project, please visit the LANDFIRE website. NIFTT is using FRAMES to deliver information about NIFTT tools, as well as for NIFTT training registration (including LANDFIRE and FRCC training). A collaboration server space, the NIFTT Working Group, is also being used on FRAMES.



2008 Accomplishments: CONTENT

CONTENT: Ongoing and New Partnerships



- **Northern Rockies Climate & Fire (NRCF): Fire Regimes and Climate Drivers in the Northern Rockies**

The Joint Fire Science Program funded the US Forest Service Rocky Mountain Research Station and the University of Idaho to identify the climate drivers of regional fire and fuel dynamics in the Northern Rockies in the past, present, and future.

Climate is a major driver of regionally synchronous fires in many regions of the US. Regional fire events, like those that occurred in the Northern Rockies in 1910, 1988, 1994, 2000 and 2002, typically occurred during years when drought was similarly extensive, and account for the majority of area burned.

During such years, the threats to people and their property are highest, because fires during these years can quickly overwhelm our ability to suppress them. Furthermore, regional fire events play a critical role in governing ecosystem dynamics at broad scales. Predicting the climate conditions under which these ecologically and socially important regional fire years occur would have major benefits for fire management in the US.

The Joint Fire Science Program has funded this 3-year research project to identify the climate drivers of regional fire and fuel dynamics in the Northern Rockies in the past, present, and future. We will identify regional fire years from two sources: multicentury tree-ring reconstructions and multidecadal fire atlases. The principal investigators are using FRAMES to deliver information about this project.



Photography by Karen Wattenmaker

CONTENT: Ongoing and New Partnerships

Table 4 New Partner Websites

FRAMES Public	Partner	Status 2008	Date Developed	With Intranet Communities
First Order Fire Effects Model (FOFEM)	UI, JFSP, FS RMRS, USGS / NBII, FMI, SEM	Maintenance Version 1.0	2008 by FRAMES in conjunction with FS RMRS and OSU / NACSE	None
Human Dimensions & Fire Social Sciences (HDFSS)	UI, FS Northern Research Station	Under Development	Projected to be available early 2009	To be developed
Wildland Fire Science Partnership (WFSP)	UI, UM, FS RMRS	Under Development	Projected to be available early 2009	WFSP Community
Idaho Firewise	IDL, IBHS, BLM, FS, IDCL, Idaho Governor's Office, Nez Perce Tribe, Coeur d'Alene Tribe, RCD's, IFCA, IAC, BIA, FWS, NPS	Under Development	Projected to be available June 2009	Idaho National Fire Plan Community
JFSP Software Tools and Systems (STS) Study	JFSP		Projected to be available early 2009	None

New Partners

In 2008 work with existing partners at the Rocky Mountain Research Station's Fire Sciences Lab in Missoula, Montana led to a new project and partnership web pages for the Web First Order Fire Effects Model (FOFEM). Web FOFEM is a computer program developed to meet the needs of resource managers, planners, and analysts in predicting and planning for fire effects. It was originally developed as a downloadable executable program to be run on a PC.

The on-line beta version of Web FOFEM is a proof of concept to test the feasibility and benefits of Web delivered fire modeling software. The model logic in Web FOFEM is based upon Version 5.5 of the FOFEM desktop version. Some functionality found in the desktop version – such as the ability to save projects, run batch analysis, and view summary reports – is not currently enabled in Web FOFEM. Potential future enhancements include common versioning and matching functionality of the Web and desktop applications (See Figure 12).

2008 Accomplishments: CONTENT

CONTENT: Ongoing and New Partnerships

Let us show you how we can support your wildland fire-related work through FRAMES.



Figure 12. First Order Fire Effects Model – Web FOFEM

Another new partner previously mentioned is the **Wildland Fire Science Partnership (WFSP)**. This unites US Forest Service's Rocky Mountain Research Station (RMRS) and the University of Idaho (UI) and the University of Montana (UM) in a collaborative relationship that is tasked to reduce costs, improve on-the-ground performance, and enhance public health and safety by developing and delivering the best science-based information and decision support tools. The WFSP Community is currently under development and should be released in February of 2009 (See Figure 13).



Figure 13. Proposed WFSP Header

Human Dimensions & Fire Social Sciences (HDFSS) is a new FRAMES partner website that promises to offer wildland fire managers the "latest and best fire science to support all aspects of wildland fire planning, management, and policy-making that involves people." It will be a site dedicated to fire science applied to human dimensions of wildland fire management. The site is currently under construction, but hopes to come online to the public in the spring or summer of 2009 (See Figure 14).



Figure 14. Proposed HDFSS Header

FRAMES has been assisting the **Idaho State Fire Plan Working Group (ISFPWG)** by providing collaboration services to them and their constituents. FRAMES staff are also participating with this group and serves on two group subcommittees (communication and education). The Education Subcommittee was charged with exploring alternatives for developing a wildland fire education program for the state of Idaho. In the Education Committee's charter it states that their mission is to "...increase interagency wildland fire education effectiveness through a coordinated interagency effort. This effort is to achieve a level of awareness that will ultimately result in a 'firewise' culture in Idaho. Our hope is that it becomes well-understood that wildfires are a part of our natural systems and a part of living in Idaho." In addition to supplying collaboration services for this effort, FRAMES staff will assist with the construction of a new Idaho Firewise website at www.idahofirewise.org and will continue to support the development of the Idaho Firewise program (See Figure 15).

CONTENT: Ongoing and New Partnerships



Figure 15. Draft of Idaho Firewise Home Page

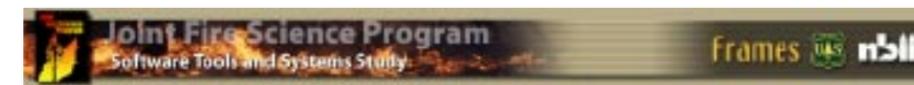


Figure 16. Proposed JFSP STS Study Header

The **JFSP Software Tools and Systems (STS) Study** partner website will be available by the beginning of March 2009. The JFSP STS Study is a collaborative study between the JFSP and the National Interagency Fuels Coordination Group (NIFCG). To date it has evaluated existing fire and fuels software systems and is investigating the feasibility of developing a framework architecture to support distributed collaboration to help solve fuels management problems. The JFSP STS Study partner webpage on FRAMES will communicate the study's progress; make documents generated by the study publicly available; and provide a mechanism to the natural resource community members to provide feedback in the forms of comments, questions, and criticism to members of the JFSP STS study team.

New partnerships and public websites are planned for the future. These include a new Wildland Fire Social Science subject area, an updated Fire History subject area, an AirFire public site, An Innovative Technology Transfer Approach, and a JFSP Software Tools and Systems (STS) study site (See Figure 16).

2008 Accomplishments: SERVICES

SERVICES: Notices / Training

SERVICES: Notices

As a service to FRAMES partners and others in the wildland fire and natural resources communities, FRAMES offers notice posting. Notices can be about upcoming conferences, meetings, jobs, and other events. There are 8 notice types listed below. In FY 2008, 95 notices were added to FRAMES.

4 call for papers	11 conference or symposium
31 general	12 jobs
4 meetings	5 request for proposals
19 trainings	9 workshops
95 Total Notices	

As with cataloged records, notices may also be categorized and sorted by subject and geographic areas, and by partner site. A project to update the system has been included in the 2009 program of work to improve efficiencies in entering and displaying the notices information.

SERVICES: Training and Tutorials

Training sessions on the portal technology provide a key overview for FRAMES partners and users with new login accounts. Since the collaboration services are so widely used, FRAMES developed a special Portal Training Community for login users. Once an account is set up for a new user and they login for the first time they are automatically directed to this community and encouraged to go through a set of on-line tutorials that introduce them to portal technology and the collaboration services.

The FRAMES Portal Training Community (See Figure 17) was developed and is accessible to all MyFRAMES users. Through this community, users can access the following online tutorials (slideshows with audio): "Introduction to the My FRAMES Portal," "Introduction to Collaboration Services," "Using Announcements," "Using Documents," and "Using Calendars."

FRAMES staff are also available to assist new users as they become familiar with the variety of FRAMES features and functionality.

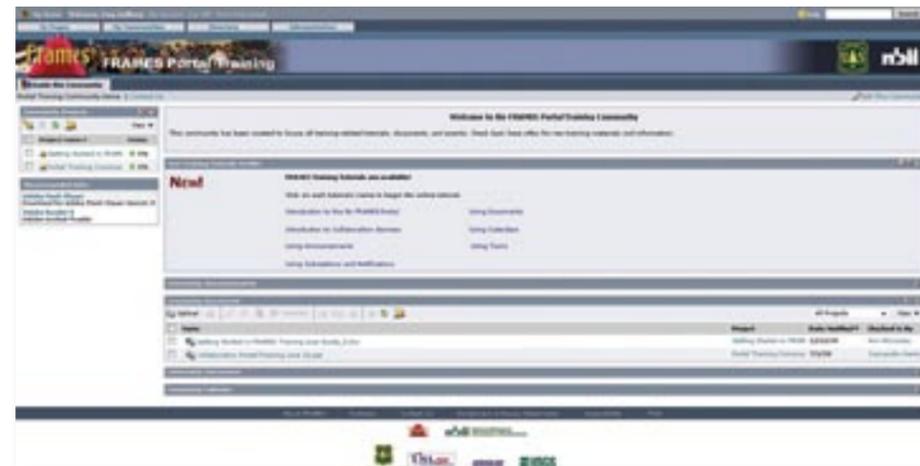


Figure 17. FRAMES Portal Training Community

SERVICES: Training / Collaboration / Communities

SERVICES: Training

On May 6-9, 2008 in Moscow, Idaho, the College of Natural Resources hosted the third FRAMES Portal Development Workshop for FRAMES staff and partners. The 20 participants covered a range of topics including: Portal Concepts, Community Management, Permissions, Project Concepts, Documents, Portal Notification System, Tasks, Calendar, Discussions, Advanced Project Management, Creating Portlets through Publisher Templates, Sharing Portlets, Displaying Resources from the Documents Directory, Notices, and Resource Catalog Database (RCD). The workshop resulted in several new sites and communities being created as well as improving and updating existing sites and communities.

SERVICES: Collaboration / Communities

One of the valuable features of the portal technology involves the ability to create collaboration communities. These communities provide users with an opportunity to work in a collaborative environment to share documents, hold discussion threads, develop tasks, and timelines, and many other features. FRAMES offers this service to any groups involved in fire related projects that need a secure login environment that enables a distributed team of people to work collaboratively in an efficient manner. In 2008, FRAMES provided community services to the following groups. Some of the communities have relationships with partner sites, subject areas, or geographic areas, while others simply serve groups of individuals as secure places to work together.

In 2008, the list of collaborations server communities that FRAMES is providing services and support for are the following:

AirFire Community – the Atmosphere and Fire Interactions Research Team (AirFire; <http://www.fs.fed.us/pnw/airfire/>) of the US Forest Service Pacific Northwest Research Station's Pacific Wildland Fire Sciences Lab (PWFSL) has recently initiated development of an AirFire partner website on FRAMES. Following the development of the partner website, AirFire will coordinate the development of the Emissions and Smoke Subject Area website. Development of both the partner website and subject area website will be facilitated by the AirFire collaboration server community. Eleven new user accounts have been created for this community and community members have been set up with Announcement, Document Sharing, Calendar, Discussion, and Task capabilities. Additionally, the PWFSL Information Technology Specialist has started working through the FRAMES content manager portal technology software training, which should eventually enable AirFire to provide much of its own IT support within the FRAMES portal.

Boreal Fire History Community – the Boreal Fire History collaboration community has been developed for community members to share files and information relating to the JFSP project "Compiling, Synthesizing and Analyzing Existing Boreal Forest Fire History Data in Alaska." Seven new user accounts have been created for this community, and community members are currently using Document Sharing (in part for sharing datasets), Calendar, and Task capabilities, and have access to Announcement and Discussion capabilities. Community members are spread across multiple agencies and universities, and a FRAMES collaboration community has streamlined file sharing and facilitated project planning.

*Communicating,
Managing,
and Sharing
Information.*

2008 Accomplishments: SERVICES

Services: Collaboration / Communities

Fire Activity And Emissions Tracking System (FAETS) Community – On June 24-25, 2008 in Atlanta, Georgia 30 people from 23 different state and federal agencies and 2 private organizations met to discuss the construction of a system to aid state forestry agencies in managing daily fire activity and supplying data for assessing air quality impacts from wildland fires. This project has come to be known as the Fire Activity And Emissions Tracking System (FAETS) and this community was set up to coordinate the efforts of all partners engaged in this activity.

Fire and Aquatic Ecosystem Synthesis (FAES) Community – Managing the balance between aquatic resources, wildfire, and fuel conditions has always been difficult, and is becoming further complicated by changes in climate that alter both aquatic ecosystems and wildfire characteristics. An important question is how we expect the changing nature of fire in the landscape and our shifting management responses to interact with the changing hydrologic and aquatic systems? A team of 16 scientists are exploring this question and are using this community to coordinate their efforts. Together these scientists have recognized the need to produce an updated review and synthesis of how fire affects aquatic ecosystems, how it interacts with land, fuel, and fire management decisions, and how this all fits into the context of a changing climate.

Fire Ecology Community – Recently the FFI public homepage came online on FRAMES, but prior to that a Fire Ecology Community was established using collaboration server functions on the FRAMES intranet for FFI developers. FFI developers (predominantly from Missoula, Montana and Boise, Idaho) coordinated their efforts within the Fire Ecology Community. Developers are using Task Management, Calendar (for workshops), Document sharing, and Discussions. Beta testing has also been coordinated in the Fire Ecology Community. Thirty-eight user accounts currently exist for this community.

Fire History Analysis and Exploration System (FHAES) Working Group – The goal of the FHAES project is to enhance and / or redevelop components of the FHX2 software program developed by Henri Grissino-Mayer so that they are web-based, user friendly, and easily accessible to a broad range of users on the Internet. An advisory group guides the direction of these efforts, and staff from NOAA's National Climatic Data Center, Paleoclimatology Branch is responsible for implementing projects. This community serves to help coordinate these activities.

FRAMES Development Community – This community serves FRAMES staff and all partners who are developing or maintaining websites that are hosted by FRAMES. This community is a means of communicating to all who are a part of the FRAMES network.

FRAMES Governance Community – This community was set up specifically for the FRAMES Interim Steering Committee, the new partnership between University of Idaho, University of Montana, and the USFS Rocky Mountain Research Station including the Fire Sciences Lab in Missoula, Montana and the Research, Development, and Applications (RD&A) unit in Boise, Idaho and FRAMES Staff and NBII Support. This site is expressly for these parties to use as FRAMES moves from research project to implementation as a national program.

Idaho National Fire Plan Community – Idaho has developed an extensive network of individuals and groups actively working on wildfire mitigation. Included are county emergency staff, planning and zoning officials, county commissioners, rural fire chiefs, state, federal, and tribal fire managers, interest groups, community leaders, and citizens. We have chosen counties as the key level for managing wildfire mitigation. Each county has developed their own County Wildfire Protection Plan (CWPP) and most counties have active interagency county working groups. The Idaho State Fire Plan Working Group and the National Fire Plan staff have facilitated communication throughout this statewide

Services: Collaboration / Communities

community. The goal of this community through FRAMES is to establish a systematic network of communication within counties, across counties, and out to state and federal agencies.

National Interagency Fuels Technology Team (NIFTT) Working Group – NIFTT is chartered by the National Interagency Fuels Coordination Group (NIFCG) and was set up to help NIFCG develop and implement an effective interagency fuels management program to address risks related to severe fires in wildland-urban interface communities and to restore healthy ecological systems in other wildland areas. Specifically, NIFTT coordinates, develops, and transfers consistent, efficient, science-based fuel and fire ecology assessment tools and trainings. This community was set up to help the staff of NIFTT coordinate these efforts.

Paleo Development Community – This community is used by the NOAA Paleoclimatology Branch staff and their constituents to share documents, etc. among their group and it has been used to demo and test material related to the National Integrated Drought Information System (NIDIS) that is being built by the National Climatic Data Center (NCDC).

Partners File Sharing – This community was recently set up for new FRAMES partners, so that they can share documents before they have a community of their own set up.

Portal Training Community – The Portal Training Community is the community that first time users with a login will be directed to. It will contain all self-contained training materials that are relevant to the portal. The initial design will target first time users who are interested in the collaboration services available on the FRAMES intranet.

Southern Fire Science Portal Working Group – A community was set up to manage the JFSP funded project, "An Internet Based Portal for Fire Science and Management in the Southern Region." This project brought together agencies and organizations including the Forest Encyclopedia Network, Southeast Fire Ecology Partnership, Southern Regional Extension Forestry, US Forest Service Southern Research Station, Tall Timbers Research Station, The Nature Conservancy, USGS / NBII, and the University of Idaho to develop a portal for single point access to fire data, documents, tools, and other information resources in support of fire and natural resource management for the southern United States. Although funding for the project ran out in 2006, the website and this community persist to help provide a collaborative environment for partners in the South.

Wildland Fire Science Partnership (WFSP) Community – This is a new community set up just for the WFSP including the members of the Executive Board, Program Managers, and the program's coordinator that are from The University of Idaho, University of Montana, and the Forest Service's Rocky Mountain Research Station. Over time this site will likely be used by the partnership to track collaborative projects its members are engaged in.

Wildland Fire Use Community – Was developed this year to accommodate the interagency Wildland Fire Use Modules. Fire plays a critical role in wildlands by recycling nutrients, regenerating plants and by reducing high concentrations of fuels that contribute to disastrous wildland fires. Land managers recognize the role that wildland fire plays in ecosystems and through careful planning, can manage naturally occurring fires, such as lightning ignitions, for resource benefits. The Fire Use Module (FUM) Program has developed teams of experienced and trained fire personnel and whose mission is to develop and provide national self-sufficient, multi-skilled fire professionals with a primary commitment to fire use operations and planning. This community is a mechanism for these modules to communicate amongst themselves and out to natural resource managers.

2008 Accomplishments: SERVICES

Services: Consulting & Product Development



Photography by Karen Wattenmaker

FRAMES also supplies consulting services for a variety of applications and services the portal can provide. FRAMES focuses on promoting the portal to better provide a mechanism for researchers and managers to jointly be engaged in science delivery and technology transfer, but also assists with distance education needs for wildland fire and natural resource professionals. FRAMES is beginning to explore web-enabling popular computer programs (i.e., models) and systems integration. Portal technology lends itself to connecting legacy and other information systems together to add value and improved performance for users. With regards to web-enabling tools, FRAMES collaborated with the Forest Service's Fire Sciences Lab in Missoula, Montana, Oregon State University's Northwest Alliance for Computational Science and Engineering (NACSE), and USGS / NBII to make the First Order Fire Effects Model (FOFEM) model a model that would run in the portal environment. Version 1.0 of this project was

completed in 2008. Next steps will be to pursue Version 2.0 that will be completely integrated into the portal environment.

FRAMES is also very interested in working with others to leverage investment and provide value added services to wildland fire and other professionals. A recent collaboration with the National Integrated Drought Information System (NIDIS) – <http://www.drought.gov> is likely to be beneficial to both FRAMES and NIDIS. NIDIS, led by NOAA, was created in response to extended drought conditions over the past decade. NIDIS coordinates use of the Portal for drought risk assessment and management among its federal, state, tribal and local partners. The goal of NIDIS is to improve the ability to understand and respond to climate change, natural disasters, and global environmental issues through better observation, data, analysis, models, and basic social science research. The FRAMES and NBII Portals were a role model, and provided much advice in getting the NIDIS portal started. The NIDIS – FRAMES collaboration will serve the users of both communities. Future collaboration includes federated searches and sharing of portlets between the two portals, especially since they are both built upon the same BEA Aqualogic (now Oracle) platforms. The NIDIS project continued to expand in 2008. We hope that FRAMES and NIDIS can leverage their shared technology and provide better service to users in the future.

FRAMES was involved with was the 2007 USDA Forest Service Fire Strategic Program Area (SPA) peer review. FRAMES provided technician time and server space in support of this effort. As part of the review, thousands of publications were entered into a reference database that was provided online for the reviewers. FRAMES provided data entry support for the review, as well as server space to post digital copies of hundreds of the publications. Records for the publications identified through the Fire SPA review have been integrated into the FRAMES RCS and will be available online later in 2009.

2008 Accomplishments: MARKETING

Marketing Materials and Presentations

In 2008, FRAMES developed new marketing materials. A 10' x 7' FRAMES display is available for use at conferences. (See Figure 18) FRAMES has two 48" x 24" tabletop displays (See Figure 19) for workshops and other smaller meetings. In addition, FRAMES produced two marketing brochures that focus on partners (See Figure 20) and collaboration services (See Figure 21).



Figure 18. FRAMES Large Display

This brochure highlights "FRAMES Partners" and explains the benefits of becoming a FRAMES partner. The other brochure focused on the "Collaboration Services" that are available through FRAMES.



Figure 19. FRAMES Tabletop Display

Technology In Support of Wildland Fire Research and Management.

2008 Accomplishments: MARKETING Marketing Materials and Presentations



Figure 20. Partners Brochure

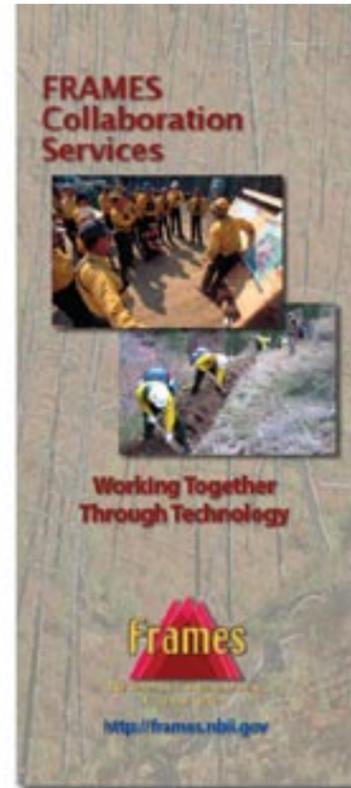


Figure 21. Collaboration Services Brochure

In 2008, staff continued to work with partners and promote FRAMES in meetings, workshops, and conferences throughout the year. The following is a list of events that were attended by staff.

Table 5. Events attended by FRAMES Staff in 2008

2008 Date	Venue	Description
January 29-31	Tucson, AZ	Poster at AFE Fire in the Southwest Conference
January 7-8	Denver, CO	Meeting with USGS / NBII
February 12-13	Boise, ID	Meeting with Idaho State Fire Plan Working Group
February 26	Washington, DC	Meeting with the FRAMES Interim Steering Committee
March 6-7	Corvallis, OR	Meeting with OSU / NACSE
March 24-25	Fairbanks, AK	Meeting with the Alaska Fire Effects Task Group
March 25-27	Denver, CO	Project Plan and Budget Meeting with USGS / NBII
May 6-9	Moscow, ID	FRAMES Developers Training Workshop
May 11-13	Boise, ID	Meeting with USGS
May 27-30	Boise, ID & Missoula, MT	Meeting with RD&A and with WFSP

Marketing Materials and Presentations

2008 Date	Venue	Description
June 3	Boise, ID	Idaho State Fire Plan Working Group (ISFPWG) Education Committee Workshop
June 5	Coeur d'Alene, ID	ISFPWG Education Committee Workshop
June 18-19	McCall, ID	ISFPWG Board Meeting
June 24-25	Atlanta, GA	Fire and Emissions Tracking System (FAETS) Scoping Meeting
August 18-21	Seattle, WA	FRAMES Staff Meeting
September 22-27	Jackson, WY	Vendor space at "88 Fires - Yellowstone and Beyond" Conference
October 8-9	Boise, ID	Presentation and space at 2008 Idaho Wildland Fire Conference
October 24	Boise, ID	Idaho Firewise Subcommittee Meeting
October 24	Fairbanks, AK	Meeting with the Alaska Fire Effects Task Group
November 18-19	Boise, ID	WFSP Meeting

Frames
Fire Research And Management Exchange System

 John Black Graphics & Interface Design	 Paige Eagle Database & Web Site Developer	 Greg Goliberg Program Manager
 Ann McCauley Content Specialist	 Diana Olson Project Manager	 Lynn Wells Content Specialist

2008 Accomplishments: MARKETING

Marketing: Partnerships

The list below shows the diversity of partners who are part of FRAMES. Many organizations are connected through partner sites hosted by FRAMES and through Intranet Collaboration Communities.

National Interagency Fuels Technology Team (NIFTT) Partners

Bureau of Land Management (BLM)
National Park Service (NPS)
US Forest Service (FS)
The Nature Conservancy (TNC)
FS Missoula Fire Sciences Lab
Systems for Environmental Management (SEM)
US Department Of Interior (DOI) Bureau of Indian Affairs (BIA)
US Geological Survey (USGS)
US Fish and Wildlife Service (FWS)

Fire and Fire Surrogates Project (FFS) Partners

USDOJ
University of California, Berkeley
University of California, Davis
FS Rocky Mountain Research Station
FS Region 5
USGS
FS International Programs
NPS
NPS, Redwood NP
NPS, SEKI
Auburn University
FS Southern Research Station
FS Forest Products Laboratory
Colorado State Forest Service
J. W. Jones Ecological Research Center
FS Missoula Fire Sciences Lab
University of Montana
FS Pacific Northwest Research Station
Colorado State University
Quincy Library Group
University of Idaho
FS Pacific Southwest Research Station
California Department of Forestry and Fire Protection
University of Arizona
Oregon State University
Yosemite National Park

Fire History Analysis and Exploration System (FHAES) Partners

National Oceanic and Atmospheric Administration (NOAA) Paleoclimatology Branch
FS Rocky Mountain Research Station
Laboratory of Tree-Ring Science
Rocky Mountain Tree-Ring Research
University of Arizona

Assessing Burn Severity Partners

University of Idaho
FS Rocky Mountain Research Station
FS Remote Sensing Applications Center (RSAC)

Marketing: Partnerships

Joint Fire Science Program (JFSP)

Idaho – National Fire Plan Partners

Idaho National Fire Plan Coordinator (shared USFS and IDL employee)
Idaho Department of Lands
Idaho Bureau of Homeland Security
Idaho State Fire Marshal
Idaho Department of Commerce and Labor
Idaho Governor's Office of Species Conservation
Nez Perce Tribe
Coeur d'Alene Tribe
Resource Conservation and Development Councils
Idaho Fire Chiefs' Association
Idaho Association of Counties
USDI Bureau of Indian Affairs
USDI Bureau of Land Management
USDI Fish & Wildlife Management
USDI National Park Service
US Forest Service

Northern Rockies Climate and Fire Partners

University of Idaho
FS Missoula Fire Sciences Lab
Aldo Leopold Wilderness Research Institute
JFSP

Fire Effects Monitoring and Inventory Protocol (FIREMON) Partners

FS Missoula Fire Sciences Lab
USGS
Systems for Environmental Management
JFSP

Fire Ecology Assessment Tool (FEAT)/FIREMON Integrated (FFI) Partners

National Interagency Fuel Coordination Group
NPS
FS Fire and Aviation Management
Systems for Environmental Management
Spatial Dynamics

Web - First Order Fire Effects Model (W-FOFEM)

UI
USGS / NBII
FS
Fire Modeling Institute (FMI)
Systems for Environmental Management (SEM)

Fire Research And Management Exchange System (FRAMES) Partners

FS Missoula Fire Sciences Lab
JFSP
USGS / NBII
FS Fire and Environmental Research Applications (FERA)
FS Pacific Wildland Fire Sciences Lab (AirFire)
FS
FWS

Bringing It All Together.

2008 Accomplishments: MARKETING

Marketing: Partnerships

National Association of State Foresters (NASF)
 National Center for Landscape Fire Analysis
 Cooperative Ecosystem Studies Unit (CESU)
 FS Rocky Mountain Research Station
 BLM
 USGS/NBII Center for Biological Informatics (CBI)
 Tall Timbers Research Station (TTRS)
 NPS
 FS Southern Research Station
 FS Pacific Southwest Research Station
 TNC
 BIA
 NOAA Paleoclimatology Program
 FS Northeast Research Station
 University of Idaho (UI)
 University of Montana (UM)
 University of Washington (UW)
 Oregon State University (OSU)
 BLM-Alaska Fire Service
 Forest Encyclopedia Network (FEN)
 National Fire Plan (NFP)
 Southern Regional Extension Forestry (SREF)



Figure 21. FRAMES Partners and Sponsors

2008 Accomplishments: INFRASTRUCTURE

BEA Merges with Oracle/FAMES Staff

BEA Merges with Oracle

When we talk about FRAMES infrastructure we mean the underlying technological foundation and human capital that supports the management and movement of information, communication, and tools that are on FRAMES servers. Although FRAMES servers are hosted and maintained by the USGS NBII in Denver, CO, the resources to maintain FRAMES technology and content reside with USGS / NBII personnel as well as the FRAMES Staff. The build-out of FRAMES includes 1) a data, document, and tool repository, 2) consolidation, visualization, and web-based analytical capabilities of spatial data in a Geographic Information Systems (GIS) framework, 3) linked spatial and non-spatial databases, 4) a framework for managing and accessing remote sensing data, 5) a model management system, 6) web-enabled communications and collaboration, and all of this 7) in a platform that provides for customization based upon user, community, and agency needs.

In June of 2008, the BEA portal technology AquaLogic suite of software that provided much of the information technology (IT) infrastructure for both NBII and FRAMES merged with Oracle. According to the CEO of Oracle, "...the addition of BEA will accelerate innovation by bringing together two companies with a common vision of a modern service-oriented architecture (SOA) infrastructure." "Together, Oracle and BEA will provide will provide a series of complementary and well-engineered middleware products, allowing customers to more easily build, deploy, and manage applications in a secure environment." USGS / NBII will be working with the new Oracle technical and service staff to determine implications for NBII, FRAMES, and others. The implications are unclear at this time, but they could affect licensing and other dimensions of support. At the very least, we expect to upgrade FRAMES portal software sometime in 2009.



Photography by Karen Wattenmaker

2008 Accomplishments: INFRASTRUCTURE

FRAMES Projects

Maintenance and Development

As mentioned previously the major infrastructure development initiative for 2008 and beyond is the Resource Catalog System (RCS). However there were additional infrastructure development projects. A complete redesign of the FRAMES Home Page was completed (See Figure 22). The redesign focused on comments we had received about the usability and navigation on the home page. Most notable were the inclusion of descriptions about the three functional areas of FRAMES: Subject Areas, Geographic Areas, and Partner Sites. To address user comments we also added some highlight portlets that direct visitors to new information or services available.

Other development efforts included the compilation of a FRAMES Style Guidelines document for staff and partners. We now have some inconsistencies on the site that need to be resolved and staff is gradually addressing these issues. Three infrastructure development projects for partners were begun. Two were completed and one is awaiting partner input. Although the Web FOFEM project was initiated by FRAMES staff it was completely supported and assistance was provided by staff at the RMRS Fire Sciences Lab in Missoula and an SEM contractor. Changes were made to the NIFTT training registration form and a database was built in order to provide easier management in the future. Finally, the FERGI model was moved to a different server in order to improve performance. However, a performance check still needs to occur.

Table 6. FRAMES Infrastructure activities for 2008

Infrastructure Maintenance	Infrastructure Development
FRAMES staff, NACSE, and NBII site content maintenance and partner support	FRAMES staff, NACSE, and NBII Resource Catalog System (RCS, in progress)
Web First Order Fire Effects Model (W-FOFEM)	Web First Order Fire Effects Model (W-FOFEM, complete)
NBII and FRAMES licensing of portal software	FRAMES Home Page redesign (complete)
FRAMES server hardware upgrade	FRAMES style guidelines (complete)
NBII and FRAMES security and accessibility / 508 compliance	Fire Enhanced Runoff and Gully Initiation Model (FERGI, in progress)
NIFTT training sign up portlet and database	NIFTT training sign up portlet and database (complete)
NBII hardware backups and maintenance	
FRAMES and NBII implement style guidelines (in progress)	
NBII and FRAMES IT support tracking	

Routine maintenance jobs must take place every day for FRAMES to function properly and provide services to the wildland fire and natural resource community. We have lumped many individual activities into the list in Table 6 under "Infrastructure Maintenance." Although many products and services are in maintenance mode and are not listed in this table, we did show that the two completed partner projects are now moved to infrastructure maintenance⁷.

⁷ For more information about the specific infrastructure maintenance contact Greg Gollberg, FRAMES Program Manager at gollberg@uidaho.edu or see the FRAMES 2009-2010 Program of Work.

FRAMES Projects

Figure 22. Redesigned FRAMES Home Page



*Adding Value
through Technology
and Partnerships.*

2008 Accomplishments: INFRASTRUCTURE

Financial Support

The FRAMES project involves many sponsors and partners to promote the distribution of wildland fire research and information to a broad community. In 2008, the primary source of funding came from a congressional earmark through the Forest Service that enabled FRAMES to continue building the system. However, the FRAMES project also received additional funding and in kind services from many partner organizations. In coming years through the Wildland Fire Science Partnership (WFSP) FRAMES hopes to move away from earmark funding into line item funding for the partnership with the US Forest Service's Rocky Mountain Research Station (RMRS).



Photography by Karen Wattenmaker

FRAMES Projects & Initiatives:

2009 and Beyond

Continuation of work on the development and implementation of the Resource Catalog System (RCS) will be the primary focus of FRAMES effort in 2009-2010. The goal is to have a robust, well documented system with extensive on-line help for researchers to begin using to create and edit records of their deliverables. As the implementation of the system progress FRAMES staff will be engaged in record clean-up and will seek researchers to work with to add new content into the RCS. We will also continue to support the efforts of our partners in the Wildland Fire Science Partnership (WFSP). We also expect to continue to work with the Idaho State Fire Plan Working Group (ISFPWG) on the Idaho Firewise project. We anticipate a ramp up on the work with the Fire Activity And Emissions Tracking System (FAETS) in cooperation with the FAETS team. We also expect to begin scoping and the initial work on the development of the Intelligent Decision Services, an automated planning tool that shows great promise for being an expert systems interface with the RCS.



APPENDIX A (Funding Report 2002-2008)

FRAMES Funding Chronology 2002 - 2008				
Projects funded in 2002	Date	Funded by	UI Amount	Partners
Fire Research And Management Exchange System (FRAMES)	27-Jun	RMRS, Missoula Fire Lab	\$30,000	
Projects funded in 2003				
A New Wildland Fire Tools Database and Security Protocols for FRAMES	9-Jun	RMRS, Missoula Fire Lab	\$40,000	
FRAMES Infrastructure Expansion Project I	9-Jun	Congressional Earmark	\$199,000	
An Expert System and New Web Interface for Tools on FRAMES	4-Nov	JFSP	\$99,475	
Projects funded in 2004				
Development of a Training Course for FRCC Assessment	25-Feb	NPS Pacific NW-CESU	\$39,230	
Development of a Training Course for FRCC Assessment		NPS Pacific NW-CESU	\$73,794	
A Continuation of the FRAMES Infrastructure Expansion Project I	22-Mar	Congressional Earmark	\$197,000	
An Information Portal for Fire Science and Management in the Southern Region	1-Jun	JFSP	\$117,509	\$380,254
Projects funded in 2005				
FRAMES Infrastructure Expansion Project II	16-Aug	Congressional Earmark	\$97,000	\$100,000
Provide access for FERGI into the FRAMES portal	31-Jul	RMRS, Boise Aquatics Lab	\$2,000	
Projects funded in 2006				
FRAMES Infrastructure Expansion Project III	29-Mar	Congressional Earmark	\$129,170	\$214,830
Development of a 5-year Strategic Plan for FRAMES	11-Jul	NFP		\$20,000
		USGS/NBII		\$20,000
Development of a Training Course for FRCC Assessment	?	NPS Pacific NW-CESU	\$20,000	
Projects funded in 2007				
Maintenance and Development of FRAMES	25-Jun	Congressional Earmark	\$223,950	\$124,050
Projects funded in 2008				
Ongoing Maintenance and Development of FRAMES	30-Jul	Congressional Earmark	\$349,665	\$289,716
Fire Regime Condition Class (FRCC) Training Delivery and Registration	30-Jul	NIFTT	\$13,765	\$4,148
Totals			\$1,631,558	\$1,152,998
Total Combined			\$2,784,556	



Photography by Karen Wattenmaker

APPENDIX B

Summary of the FRAMES Strategic Plan 2007-2012

FRAMES: Technology in Support of Wildland Fire Research and Management

The Fire Research And Management Exchange System (FRAMES) supports wildland fire and natural resource professionals and policymakers through an on-line informatics system. FRAMES utilizes enterprise portal technology to promote science delivery and technology transfer at a national level. Resources including data, documents, tools, notices, and web pages are publicly available through <http://frames.nbii.gov/>. FRAMES can host resources, link to them through its cataloging system, or provide a common view of resources (e.g., databases) that are remotely distributed. Access to these resources and other content can be customized for logged in users. Logged in users create and edit content that may or may not be publicly available. A suite of collaborative services including document management and sharing, threaded discussions, project and task management, and calendars are available to content developers and other logged in users. FRAMES is a collaborative effort to produce an integrative system for connecting the tools, information, and people who are part of the enterprise of wildland fire research and management.

The University of Idaho and the US Geological Survey's National Biological Information Infrastructure program (NBII) has led the development of FRAMES with guidance and support USDA Forest Service (FS), Joint Fire Science Program (JFSP), Bureau of Land Management (BLM), National Park Service (NBP) and other federal, state, and private agencies and organizations. Since 2003, FRAMES has received funding and in-kind support from many including the FS, USGS / NBII, JFSP, BLM, NPS, National Interagency Fuels Technology Team (NIFTT), Fire Regime Condition Class (FRCC) Working Group, National, US Fish and Wildlife Service, Tall Timbers Research Station (TTRS), The Nature Conservancy (TNC), and congressional earmarks. Funding has supported three areas of development: content, infrastructure, and services. Infrastructure and content development has been emphasized with some effort spent on developing services. In 2006 there was a dramatic increase in portal traffic, logged in users, content added, partners sites hosted by FRAMES, and the use of available services. Today, FRAMES is at a crossroads between prototype and an operational system for fire informatics. This transition presents new opportunities and challenges that require additional guidance and planning.

Beginning in 2007 and for each subsequent fiscal year, a FRAMES Project Management Plan will be developed by FRAMES staff, partners, and USGS/NBII personnel that will be reviewed by members of the FRAMES Interim Steering Committee (FISC). The FISC will continue to fill this role until such time as a permanent governance structure is established for FRAMES. Each annual plan will seek to further five-year goals established in the FRAMES Strategic Plan.

FRAMES Five Year Strategic Goals

1. Provide Content and Increase Content Utility. Develop a rich and usable base of content that is useful to wildland fire and natural resource professionals and policymakers.
2. Expand Services and Increase User Base. Identify opportunities to work with wildland fire and natural resource professionals (i.e., managers, practitioners, and researchers) to develop customized services that are complementary with FRAMES informatics architecture and that target their common technology transfer and science delivery needs.
3. Increase Name Recognition and Program Awareness: Develop marketing materials for outreach and cultivate relationships with agencies and potential FRAMES users and contributors.
4. Maintain and Upgrade the Infrastructure. Build a technological infrastructure that can support wildland fire and fire-related informatics.

APPENDIX B

5. Ensure Financial Support. Determine staffing requirements and develop a sustainable system of financial support to ensure that FRAMES remains viable.
6. Provide Responsive Governance and Management. Establish a long-term plan for governance and accountability for the management and implementation of FRAMES.

FRAMES makes the following commitments to the larger community of fire policymakers, managers, researchers, and practitioners. We will be mission centered. We will continuously stay focused on our core mission, goals, and strategic actions. We will focus on excellence and undertake all activities at the highest levels of distinction. We will stay current on developments in the fire community and informatics. We will be strategic in our partnerships. We will seek to measure our progress and work with sound metrics, learn from the results, and seek improvement as a result.



Photography by Karen Wattenmaker

