Royce C. Engstrom
President

The University of Montana
FY2017 Federal Initiatives

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For details or more information, contact Dr. Scott L. Whittenburg, Vice President for Research and Creative Scholarship, The University of Montana, at VPR@umontana.edu or (406) 243-4766
Defense and Veterans

Defense Critical Languages and Cultures Program
UM has received funding from the Department of Defense, Operations and Maintenance, Defense-wide, for language instruction and cultural background training related to Arabic and Chinese. A special focus has been Afghanistan, although the program is expanding into other areas and needs to turn its focus more in these new directions. Funding has been obtained through direct contact with DOD/National Security Education Program and response to BAAs. The University is also interested in looking at larger contract opportunities.

Expansion of VA Services in Missoula
The UM Neural Injury Center is part of UM's campus-wide initiative to provide diagnostic care and rehabilitative intervention for veterans and other Montanan's with traumatic brain injury (TBI). The Center stands apart as a resource for veterans as it provides state-of-the-art clinical intervention for patients within a university setting that is coupled with basic biomedical research and facilitates the direct integration of their rehabilitative therapy with their educational goals. The University is interested in expanding the clinical psychology space already existing on the campus to provide clinical space for the Neural Injury Center (NIC) in order to provide care to veterans with TBI and behavioral mental health issues.

Montana Center for Work Physiology and Exercise Metabolism (WPEM)
The Montana Center of Work Physiology and Exercise Metabolism (WPEM) at the University of Montana is a high tech $1.5 million, 3,550 square foot facility which includes a biochemistry lab and a climate controlled environmental chamber that researches can manipulate temperature and humidity. The research findings of WPEM fulfills the need to know about how the human body performs under stress which benefits those involved in activity beyond recreation extremes. Soldiers and wild-firefighters exert themselves in slogs that last for days in hostile environmental conditions, or in bursts of energy followed by minimal downtimes. It is vital to the military men such as the Marines, Navy Seals, Army Rangers and wild-firefighters to know about how the human body performs under stress. WPEM heads the way in this leading edge research.

Agriculture, Ecology and Fire

McIntire Stennis Cooperative Forest Research Program
The McIntire Stennis program provides support to state-certified Schools of Forestry across the U.S. The program is funded under the USDA’s National Institute for Food and Agriculture (NIFA). Funds are formula-based and must be matched on a one-to-one basis. Funds can be used for research and training across a broad variety of efforts including ecological restoration; catastrophe management; valuing ecological services; energy conservation, biomass and biobased materials; carbon sequestration and climate change; fostering healthy forests; and maintaining competitiveness in the forestry resource sector.

Fire Center
The National Center for Landscape Fire Analysis at the University of Montana was created in 2001 to serve as a unique bridge between on-the-ground fire managers, fire science, and applied fire technology. The Fire Center engages in workforce development thru training of traditional students through innovative curriculum and learning experiences at UM and middle managers from within the fire organization by working directly with Incident Management Teams and on national forest districts. Also the Fire Center helps obtain efficiencies in fire management using appropriate technology and increases safety and situational awareness of firefighters. Finally, the Center builds collaborative relationships by working with managers year-round and long-term to help natural resources agencies keep moving toward smarter, better landscape management.

Wildlife Biology
The University of Montana is a leader in both educating students in wildlife biology and in conducting research in selected areas. Montana's tourism and timber and agricultural industries are dependent on understanding of the wildlife-habitat relationships. UM can be -- and needs to be -- a leader in the emerging fields of conservation
genetics, landscape pattern and connectivity and quantitative wildlife ecology. It can build on its expertise in threatened and endangered species, the maintenance of biological diversity and problems associated with small population sizes.

**Crown Managers Partnership**

UM representatives to the Crown Managers Partnership (CMP) work directly with the various agencies to solve critical challenges in large-scale systems ecology and social dimensions in the environment. These include topics such as ecological restoration, specific ecology-based policy decisions, adaptation and resiliency to current and pending climate change, and landscape-scale land use change across the region. The University of Montana, in partnership with the University of Calgary, coordinates and implements critical research and graduate education projects, designed to address collaboratively identified management priorities. The University requests funding for the Large Landscape Conservation Initiative (LLCI). This is a long-term program that focuses on key landscape scale resources threatened by landscape scale stressors. The initiative seeks to secure desired outcomes for key priority species (bull trout, whitebark pine, grizzly bear), and priority landscape processes (water quality/quantity, air quality, fire). Landscape issues addressed in this ask include: 
1) Climate change and 2) Invasive species. Invasive species issues to be addressed are
1) Aquatic Invasive Species (AIS), 2) Whitebark pine, 3) Cold-adapted native salmonid species, 4) Invasive plants, 5) Fire, and 6) Meso-carnivores.

**NSF EPScOR**

Montana NSF EPScOR is a statewide science infrastructure program funded by the National Science Foundation. EPScOR, which stands for Experimental Program to Stimulate Competitive Research, builds capacity across the state in science and technology through investments in people, tools, and ideas. Montana currently has an NSF Track-1 EPScOR of approximately $4M per year to develop research infrastructure. The NSF EPScOR program also funds Track-2 awards which include several NSF EPScOR jurisdictions and Track-3 awards which are single faculty awards. Montana is currently working on the proposal to be submitted in the 2017 competition.

**USGS Cooperative Research Unit (CRU)**

UM houses the Montana Cooperative Wildlife Research Unit. Research emphases within the Unit include ecology and management of carnivores, applied landscape ecology, management of large game, interactions between forest management and wildlife, environmental influences on the demography and diversity of birds and related issues. CRUs generally have several positions assigned to a campus.

**Forest Products/Wood Utilization**

UM participates in the Wood Utilization Research (WUR) consortium consisting of 14 institutions. Funding was earmarked under USDA/NIFA and used for research on sustainable bioproducts from wood and woody residues, advanced engineered wood and biopolymer composites, biofuels, biopharmaceuticals and the manufacture, marketing and economic analysis of these bioproducts. While there are no longer earmarks, some language which seems to have similar objectives has been included in the Agriculture Appropriations Bill under the title, “forest products”.

**Wildland Fire Science Partnership**

The Wildland Fire Science Partnership is a joint program of the US Forest Service, the University of Montana and the University of Idaho. It is funded under the Forest Service/Joint Fire Science account in the Interior Appropriations Bill and operated out of the Rocky Mountain Research Station in Fort Collins, CO. Current funding for the Partnership is $2.6 million which is divided as follows: $1.3 million to the Forest Service and $650,000 each to UM and UI. The program is designed to integrate multiple fire programs to give wildland fire managers new approaches, techniques, information and advanced tools to help them address rising fire suppression costs, deteriorating ecosystems, increasing fire hazards and other disturbances that affect water and environmental quality.
Health and Education

Rural Institute on Disabilities
UM’s Rural Institute on Disabilities teamed with the Research and Training Center on Independent Living at the University of Kansas to develop this program. Living Well with a Disability aims to reduce the severity and incidence of secondary conditions (e.g. depression and pressure sores) thru promotion of healthy, independent living. Federal funding currently comes from the National Institute on Disability and Rehabilitation Research (NIDRR) in the Department of Education.

NIH IDeA
The IDeA program is NIH’s version of EPSCoR. There are two components to IDeA. One is the INBRE program which seeks to develop a network of researchers in the medical and biomedical fields and the other is the COBRE program which supports the development of research clusters. UM currently has a COBRE 3 award. We are submitting both a COBRE 1 and a COBRE 2 this year.

Re-authorization of the Rehabilitation Act of 1973 / Workforce Investment Act
UM’s RTC:Rural program currently receives funding from the NIDRR, a division of the Office of Special Education and Rehabilitative Services within the Department of Education. The Rehabilitation Act of 1973 actually requires the NIDRR to fund a rural center. This requirement does not appear in at least one draft of the Workforce Investment Act of 2012 though, leaving the potential for a rural center to appear at odds with the NIDRR’s long-range plan. Changing the language to include a requirement will help ensure the RTC:Rural program receives NIDRR funding.

Pell Grants
Students pursuing undergraduate degrees can apply for this need-based grant, which does not have to be repaid, by filling out FAFSA. Awards are determined based on expected family contribution, cost of attendance per institution, the student’s enrollment status and whether the student attends for a full academic year or less. The grant will now only cover 12 straight semesters, rather than the previous 18. Funds will only cover fall and spring courses, leaving students who take summer courses to find other sources of funding, such as Stafford loans. A recent change to that structure means the loans begin accumulating interest at the end of study, whether the student has graduated or is no longer enrolled. It also led to significant decrease in summer enrollment at UM. About 37 percent of UM students receive Pell Grants.
MAKING AN IMPACT ON

Defense Critical Language and Culture

The Defense Critical Language and Culture Program (DCLCP) provides intensive language and culture training for members of the Active Duty Military, the National Guard, Reserve and Intelligence Agencies utilizing a congressionally funded contract through the Defense Language and National Security Education Office (DLNSEO). DCLCP customers are primarily Special Operations Forces, Intelligence Agencies, and the National Guard. Currently training includes on-site (University of Montana) and synchronous on-line language courses in Arabic (MSA and Levantine dialect), Chinese, Dari, Indonesian, Korean, Persian and Pashto; as well as culture courses about the Middle East and East/Central Asia. Reflective of the armed forces reduced footprint in Central and Southwest Asia, and the US foreign policy shift towards East Asia, DCLCP has retained Dari and Pashto language capabilities while adding Arabic (MSA and Levantine dialect), Chinese, Indonesian, Korean and Persian language and associated regional studies/culture courses.

BENEFITS of the DEFENSE CRITICAL LANGUAGE AND CULTURE PROGRAM

DCLCP courses are designed to enable students to learn languages and understand cultures of strategically significant nations in the world of modernity at a time when bilateral and multilateral relations are increasingly complex. DCLCP provides students with language fluency and cultural awareness, essential elements of Counter-Insurgency Warfare, allowing them to conduct effective interaction in a variety of settings with heritage populations through language classes ranging from basic to advance. Each class is instructed by language and culture professors and is an accredited college course from the University of Montana. DCLCP is committed to adapting the content, length, location and timing of instruction and courses offered to fit the needs of military units and US government agencies. Department of Defense test results demonstrate DCLCP students’ end of course fluency rates are among the best in the nation.

DCLCP has leveraged the academic capabilities of The UM and fully integrated our program to afford our DoD students the optimal academic experience that fortifies them with a deep cultural and area studies understanding of their region and its peoples as well as language fluency consistent with their diverse needs. Their accomplishments are validated with transferable college credit as well as the opportunity to combine their UM credits with those earned elsewhere and thereby earn a college degree.

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BUDGET REQUEST
For Grant Year 2015-2016, the DCLCP requests an award of $3,826,144; the requested amount will enable us to continue providing courses in Arabic (MSA and Levantine dialect), Chinese, Dari, Indonesian, Korean, Persian and Pashto which have been requested by Command Language Programs of the United States Special Operations Command.
THE UNIVERSITY OF MONTANA’S Neural Injury Center (NIC) offers timely, reliable, and accessible evidence-based brain injury screening and testing services, free of charge to all student veterans, along with access to cutting-edge Traumatic Brain Injury (TBI) research opportunities.

**BENEFITS/GOALS for NIC:**
- Become a Medicare and VA Choice status to be able to better serve our veterans’ community at large, outside just the student veterans at the University of Montana.
- Serve all Montana veterans as needed to provide specialized testing and screening services for the VA and other clinicians, and to help speed the time to treatment.
- Create an identifiable, unified clinical space is greatly needed to better identify the NIC as an active service center and to help better coordinate multi-specialty clinical functions and services to better serve our students and veteran’s communities. Currently the NIC is operating out of multiple unconnected spaces throughout the Skaggs Building complex at the University of Montana. Collaborations are also occurring with other UM Departments, local clinicians and businesses, and other universities.

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Traumatic Brain Injury or TBI is now widely known to be the ‘signature wound’ of Operation Enduring Freedom and Operation Iraqi Freedom Veterans. Many veterans do not (or cannot in a timely manner) access VA healthcare. Increased exposures to IED blasts, service in multiple tours, and other factors are contributing to the higher incidence of both severe and mild to moderate TBIs. A DOD report cited rates of diagnosed mild TBI in service members as rising from 5,000 diagnosed cases in 2000 to 28,000 diagnosed cases in 2014, a five-fold increase. These cases represent only diagnosed cases, with the actual numbers likely to be considerably higher. The symptoms of mild TBI are complex and can often be mistaken for other problems. The Neural Injury Center’s sophisticated screening services are well-suited for testing using objective measures that can help to identify a mild TBI diagnosis early on.

When veterans visit the NIC, a comprehensive one-hour history is taken, a neurological exam is then given, which is then followed by specialized testing tailored to the issues identified. If additional medical testing or assistance is needed, the NIC assists with referrals to other specialists, and ensures that care and follow-up happen in a timely manner. This request seeks to expand clinical services for veterans in MT through expansion of the clinical psychology space currently available on the UM campus to include additional space to house clinical space for the NIC and to provide comprehensive support to veterans including both TBI, behavioral mental health and education.

**BUDGET REQUEST**
Current base funds in budget: 0
FY14 Request: $2.3M
Program Title: Expansion of Clinical Space for Veterans in Missoula
Appropriation bill: ; Department: VA
The Montana Center for Work Physiology and Exercise Metabolism (WPEM) is a recognized, Regents approved research center on the University of Montana campus (Missoula). Boasting two fully mobile laboratory setups, and a 3,550 square foot facility, including an environmental chamber that can simulate nearly any location on earth, WPEM has become a preeminent leader in occupational and environmental physiology. To improve the performance and safety of American warfighters, WPEM provides practical, translational research of the highest caliber.

Since inception in 2007, WPEM has:
- Secured nearly $8 million in funding
- Published 40 peer-reviewed publications
- Established working relationships with: US Air Force (AFRL, AFSOC, Surgeon General), Department of the Army (DMRDP, USARIEM, USAMRMC), Office of Naval Research (ONR), US Special Operations Command (USSOCOM), and the US Forest Service (USFS)

CRITICAL NEED: Objective management of physical stress using combined environmental conditions and real-time physiological metrics is not available. Present approaches that attempt to mitigate environmental related injury are cost prohibitive, inaccurate, and unable to aid in operational and/or training planning to reduce health risk and/or enhance performance. The technologies exist to execute the solution for this problem, but the incorporation of knowledge with the technology is lacking. The purpose for further work is to broaden the environmental stress physiological algorithms and predictive models beyond a theoretical construct and collaborate with commercial partners to advance findings towards product development.

WPEM has the scientific capabilities and the Federal wide connections to collect additional laboratory and field data to demonstrate the cost effectiveness and commercial potential of our environmental stress models, furthering the research capabilities of the University of Montana and contributing to economic development within the state.

Our objectives are:
- Transition research findings to increase the commercial viability of these approaches and predictive models.
- Implement predictive models into physiological monitoring to reduce the incidence of heat and cold related injury within the US military, private industry, and youth and professional sport.
- Contribute to a reduction in accidental death from environmental stress. Heat related injury is the leading cause of death and disability from participation in high school sports.

Immediate US military applications.

1. Provide the primary predictive algorithms for thermal and metabolic management associated with the USSOCOM TALOS project directions.
2. Promote operationally specific training, accomplishing necessary heat acclimation while minimizing the risk for heat injury (HRI).
3. Produce a heat readiness assessment tool that can be immediately implemented into the US military training pipeline.
4. Allow for a user friendly, real-time interface so personnel can revisit the metrics repeatedly to “re-assess” changes (both positive and negative) in heat readiness after periods of deployment, detraining, re-assignment, etc.
5. Produce a pre-enrollment candidate fitness assessment tool to increase recruiter/candidate success so that the issues recognized by the Commandant (fitness and fatness) can be better established prior to entering US military training pipelines.

We approach our research models with the use of a state of the art research facility on the University campus and during aggressive field studies using our three mobile research trailer systems. This combination of efforts increases the capacity at which we can provide meaningful data to teams and organizations within the operational environment.

Our recent work with the Air Force, Army, Office of Naval Research, and USSOCOM has led to the development of advanced predictive algorithms that allow us to forecast environmental stress and the degree to which individuals may be at risk for heat and/or cold related injury or reduced performance. Using these models, we can A) pre-identify candidates that are more susceptible to risk and B) provide a real-time comprehensive physiological monitoring system to greatly reduce injury risk while maximizing training adaptations.

Leveraging our cooperative agreements with the U.S. Army Research Institute for Environmental Medicine (USARIEM) and data share agreement with the Office of Naval Research (ONR) and our collaborations with Air Force Special Operations Command (AFSOC), we have a unique capacity to serve the US military and other agencies to better understand the physiological demands during training and operational stress in every environment.

FY 16 Budget Request: $500,000 – 1,000,000

FOR MORE INFORMATION
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The National Center for Landscape Fire Analysis at the University of Montana was created in 2001 to serve as a unique bridge between on-the-ground fire managers, fire science, and applied fire technology. We provide sophisticated science and technical expertise to support fire and fuels management. We promote ownership of new science and technology by land managers while providing the research community with exposure to current fire management practices.

Areas of focus

Workforce development: Fire management needs smart people skilled in resource management, science, and technology. We help train traditional students through innovative curriculum and learning experiences at UM. We also train middle managers from within the fire organization by working directly with Incident Management Teams and on national forest districts.

Efficencies in fire management: By using appropriate technology, fire managers can work more efficiently, save money, and increase safety and situational awareness of firefighters. We develop and transfer technical knowledge in the areas of remote fire monitoring; cloud-based services in a distributed environment; and small-scale apps that provide a two-way information flow on fire incidents.

Collaborative relationships: We utilize a bottom-up approach to transfer technology to fire management agencies, by building strong relationships with fire managers and other agency personnel. We work with managers year-round and long-term to help natural resources agencies keep moving toward smarter, better landscape management.

Strategic investments

- Remote monitoring based on extended internet networks.
- Information services provided through expanded use of portable electronic devices linked to central IT clearinghouses.
- Development and application of remote sensing technologies for fuels, fire behavior and fire effects characterization.
- Innovation in training and education programs for current and future firefighters.
Progress to-date

Tech transfer: We have MOUs with four state, federal, and NGO partners to ensure long-term partnering for fire success

Smart IT: Five of our information technology systems are in national use, with fire weather, behavior, and information-sharing apps on smart phones

Remote monitoring: Since 2004, we have installed remote monitoring networks in more than two dozen national forests, national parks, and other public lands

Grounded knowledge: Our staff averages 200+ days per year on fire assignments, ensuring that our perspectives are grounded in the current challenges of fire

Workforce development: We offer new curricula and training opportunities for UM students, including a minor in Wildland Fire Sciences & Management and a Prescribed Fire Practicum that has taken 70 students out to treat more than 7,000 acres

Strategic partnerships

National Forest Systems
- Lolo
- Bitterroot
- Flathead
- Gallatin
- Bridger-Teton
- Beaverhead-Deerlodge
- Caribou-Targhee
- Clearwater
- Nez Perce
- Gila
- Kaibab
- Lewis and Clark
- Okanogan-Wenatchee

National Parks
- Glacier
- Yellowstone
- Denali
- North Cascades
- Grand Canyon
- Grand Teton

The Nature Conservancy, GA Chapter

Georgia Forestry Commission, Georgia Non-Game Division
Missoula County
Headwaters Economics
Missoula Fire Sciences Lab and four USDA Forest Service Research Stations: RMRS, Pacific SW, Pacific NW, and Southern
Montana DNRC Fire and Aviation Management Bureau
Montana Climate Office
Montana Association of Geographic Information Professionals
Northwest Fire Science Delivery
Northern Rockies Fire Science Delivery
Eglin Air Force Base
Blackfoot and Clearwater Challenge(s)

Program request

FY16 Request: $2.6 million
Appropriation Bill: Interior
Program Title: National Center for Landscape Fire Analysis
Department: USDA Forest Service

NATIONAL CENTER FOR LANDSCAPE FIRE ANALYSIS
Fire Center | College of Forestry & Conservation
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MAKING AN IMPACT ON
Crown of the Continent

**BENEFITS:** UM representatives to the Crown Managers Partnership (CMP) work directly with the various agencies to solve critical challenges in large-scale systems ecology and social dimensions in the environment. These include topics such as ecological restoration, specific ecology-based policy decisions, adaptation and resiliency to current and pending climate change, and landscape-scale land use change across the region. The University of Montana, in partnership with the University of Calgary, coordinates and implements critical research and graduate education projects, designed to address collaboratively identified management priorities.

**The Opportunity**
- Landscape-scale hydrologic/geomorphic models with geospatial analysis
- Riverscape/landscapes scale thermal models
- Wildland fire model and application
- Temporal land-use change models
- Social dimensions in ecology and applications in policy

Glacier National Park is important to Montana and North America economically and ecologically. According to the National Park Service, the park generates roughly $200 million for gateway communities and supports nearly 4000 jobs. The Crown of the Continent ecosystem (CCE) is also one of North America's most ecologically rich and jurisdictionally fragmented ecosystems. Encompassing 18 million acres across the Rocky Mountains of Montana, Alberta and British Columbia, the ecosystem is challenged by climate change, invasive species, energy development, increased and diversifying recreational use, intensified demands for resource use and extraction, expanded urban and rural development and the growth of infrastructure required to support all these. The Crown is warming at 2-3 times the rate of the global average, and by 2030, glaciers are no longer predicted to exist in Glacier National Park.

The CCE is one of three locations identified as a priority in the second tranche of President Obama's *Priority Agenda for Enhancing the Climate Resilience of America's Natural Resources*. These *Resilient Lands and Waters* represent a range of scales, geographies, and ecological stressors such as fire, sea-level rise, changing ocean conditions, and drought, and will focus on multiple community and ecosystem needs, such as coastal resilience, protecting drinking water for urban areas, improving wildlife habitat connectivity, and preventing threats like wildfire and invasive species.

The Crown Managers Partnership (CMP) is a group of state, federal (NPS, USFS, USGS & EPA) and provincial agencies, universities, tribes and first nations in Montana, Alberta and British Columbia who formed to address and practice collaborative environmental stewardship with stakeholders to secure ecosystem health and resiliency across boundaries and borders. The CMP developed the Large Landscape Conservation Initiative (LLCI). This is a long-term program that focuses on key landscape scale resources threatened by landscape scale stressors. The initiative seeks to secure desired outcomes for key priority species (bull trout, whitebark pine, grizzly bear), and priority landscape processes (water quality/quantity, air quality, fire). Landscape issues addressed in this ask include: 1) Climate change and 2) Invasive species. Invasive species issues to be addressed are 1) Aquatic Invasive Species (AIS), 2) Whitebark pine, 3) Cold-adapted native salmonid species, 4) Invasive plants, 5) Fire, and 6) Meso-carnivores.

**FOR MORE INFORMATION**
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**BUDGET REQUEST**
Current base funds in budget:
FY17 Request: $1.2M
Program Title: Crown of the Continent Large Landscape Conservation Initiative
Appropriation bill: ;
Department: National Park Service
Agency Contacts: Cat Hawkins Hoffman, NPS, cat_hawkins_hoffman@nps.gov, 970-225-3567; Jeff Mow, NPS, jeff_mow@nps.gov, 406-888-7901

URL: http://crownmanagers.org/
Wildfires are increasing: The fires are larger, more intense, and the suppression and rehabilitation costs are not sustainable. In the decade up to 2014, total fire-fighting suppression costs exceeded $15 billion and currently average $30 million per week. Effective fire management must protect people, limit money spent, and foster resilient communities and landscapes to future fires. Strategic, cohesive action, grounded in science is needed. The lessons learned must also be shared with the public. Scientists and managers together can reduce wildfire risk, mitigate wildfire impacts, and help residents, local governments, and public policy work together to achieve fire adapted communities and resilient landscapes. Without proactive work, fire seasons will become more destructive, threatening people and landscapes in the ever-expanding wildland-urban interface.

Meeting the Challenges of Wildland Fire: Since 2007, University of Idaho and University of Montana have provided independent perspectives on fire management; extraordinary scientific, technical, and educational capacity; and unique interdisciplinary teams of scientists, students, and managers. The College of Forestry and Conservation at the University of Montana and the College of Natural Resources at the University of Idaho work closely with partners, including the U.S. Forest Service’s Rocky Mountain Research Station Fire, Fuels, and Smoke Science Program. We provide solutions and science-based strategies for dealing with the new realities of fire.

- Since 1984, global fire seasons are 20% longer and the fire season in Idaho has increased by a month. The length of fire seasons across the west are increasing. This figure shows current predictions of increase in fire season days by 2045 (margin of error ± 3 days).
- In 2015, 9.3 million acres burned in US, ~45% more than 10-year average. Rocky Barker (Idaho Statesman) called Idaho the wildfire capital because more than ½ million acres burned/yr since 1992.
- In August, 52 large fires burned in Idaho, Montana, Washington and Oregon. Smoke from large wildfires spread across US every day for weeks. Image from airnow.gov on 28 August 2015.
- Recent data from the 2007 fires that burned across Idaho reveal limited forest regeneration in high severity patches (Photo Credit: C. Stevens-Rumann).

Meeting the Challenges of Wildland Fire: Since 2007, University of Idaho and University of Montana have provided independent perspectives on fire management; extraordinary scientific, technical, and educational capacity; and unique interdisciplinary teams of scientists, students, and managers. The College of Forestry and Conservation at the University of Montana and the College of Natural Resources at the University of Idaho work closely with partners, including the U.S. Forest Service’s Rocky Mountain Research Station Fire, Fuels, and Smoke Science Program. We provide solutions and science-based strategies for dealing with the new realities of fire.

- We are proven leaders in fire science and management.
- We deliver timely, relevant science to land managers, policy makers, and citizens.
- We educate leaders and work with managers to reduce fire costs, increase safety and effectiveness.
- Our work is oriented to economical and sustainable forest and rangeland management.
- We have educated hundreds of firefighting students who are now professional leaders better prepared to integrate fire science to deal with current management challenges.
- We have assisted communities in effectively addressing and understanding current and future fire challenges.
- We are building research capacity and collaboration to benefit people in the West, the U.S. and the world.
Our innovations are increasing effectiveness of fire management through application of relevant science, educating current and future fire professionals, and sharing science with users.

Previously we successfully:

- Provided tools for improved fire fighter and public safety.
- Provided science access and synthesis for effective fire management.
- Conducted syntheses, workshops, and interviews to help define fire adapted communities.
- Identified factors driving resilience of forests and rangelands.
- Delivered an updated smoke management guide and related educational and training materials online for national interagency training in partnership with the National Wildfire Coordinating Group’s Smoke Committee.

Proposed Projects:

Satellite assessments before during and after fires. Remote sensing and field assessments are widely used to map fire potential, monitor fires in real-time, and assess fire effects. Our guides will help managers do this more effectively, helping them to predict and assess burn severity and help evaluate consequences for salvage logging, air and water quality, and recreation.

Mobile technology for improving firefighter safety. We will deliver applications that support better decision-making and that increase situational awareness. Our tools will produce on-the-fly 3-D weather surfaces on firefighters’ mobile devices so they may better understand changing weather dynamics and extreme fire behavior. We share these with students to facilitate rapid feedback and adoption of new ideas.

Assessing vulnerability of communities and landscapes. The selection of yard plants and landscape features that can inhibit fire spread could help decrease the ignition risk and increase community resilience. Our guides will help communities more effectively plan yards to reduce wildfire impacts. Testing the components of social vulnerability to wildfire by conducting interviews, surveys and spatial modeling with local communities in Idaho and Montana.

Fuels science: We will use the only U.S. university-based combustion lab to engage students in hands on learning and to conduct foundational research in fuels science, including understanding how fires spread in heterogeneous fuel beds and the effects of mastication fuel treatments to reduce extreme fire behavior.

Learning networks. We will integrate boots-on-the-ground fire service with science, technology, and education. We will help students gain experience by supporting student internships with fire management agency and fire science laboratories. As part of these experiences our students hone their skills for communicating with the public and the media. Our professional networks will allow us to share new ideas with others and ensure we use effective outreach strategies, share new ideas, and obtain feedback from managers and citizens about emerging wildfire management issues.

Understanding how fires kill vegetation and how ecosystems recover. Laboratory and field investigations are needed to understand how and why wildfires kill trees, shrubs, and grasses in forests and rangelands. Guides will help inform managers to reduce the loss of key timber species, forage, and sage-grouse habitats.

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