

Rocky Mountain Research Station and Missoula Fire Sciences Lab

2017-2018 Seminar Series

2016-17	Title/Presenter Click on the Title to view abstract	
Oct 5	An overview of the USFS National Technology and Development Program / Mark Vosburgh	No Recording
Oct 12	High-Resolution Modeling of Environmental Transport Processes in Cities and Complex Terrain / Eric Pardyjak	View Recording
Oct 19	Enterprise research computing at the Firelab / Bryce Nordgren *Cancelled*	
Oct 26	Fire behavior on slopes: flame and plume attachment / Torben Grumstrup	No Recording
Nov 2	How Cattle, Logging, Fire, and Climate Shaped the Mississippi Piney Woods Since ca. 1700 CE / Grant Harley	View Recording
Nov 9	Evaluating the Swiss SNOWPACK modeling system across the Northern Rocky Mountains / Chris Gibson	View Recording
Nov 16	Complex patterns of the Lolo Peak Fire from Carlton Ridge to Bass Creek / Steve Arno	View Recording
Nov 23-30	No Seminars - Thanksgiving and AFE Fire Congress	
Dec 7	Joe Domitrovich	
Dec 14	Vulnerability and resilience of forest landscapes to changing fire regimes and altered post-fire recovery dynamics. / Alan Tepley	
Dec 21 - Jan 4	No Seminars, Winter Break	
Jan 11,	Whitebark Pine / Molly Retzlaff and Sarah Flanary	

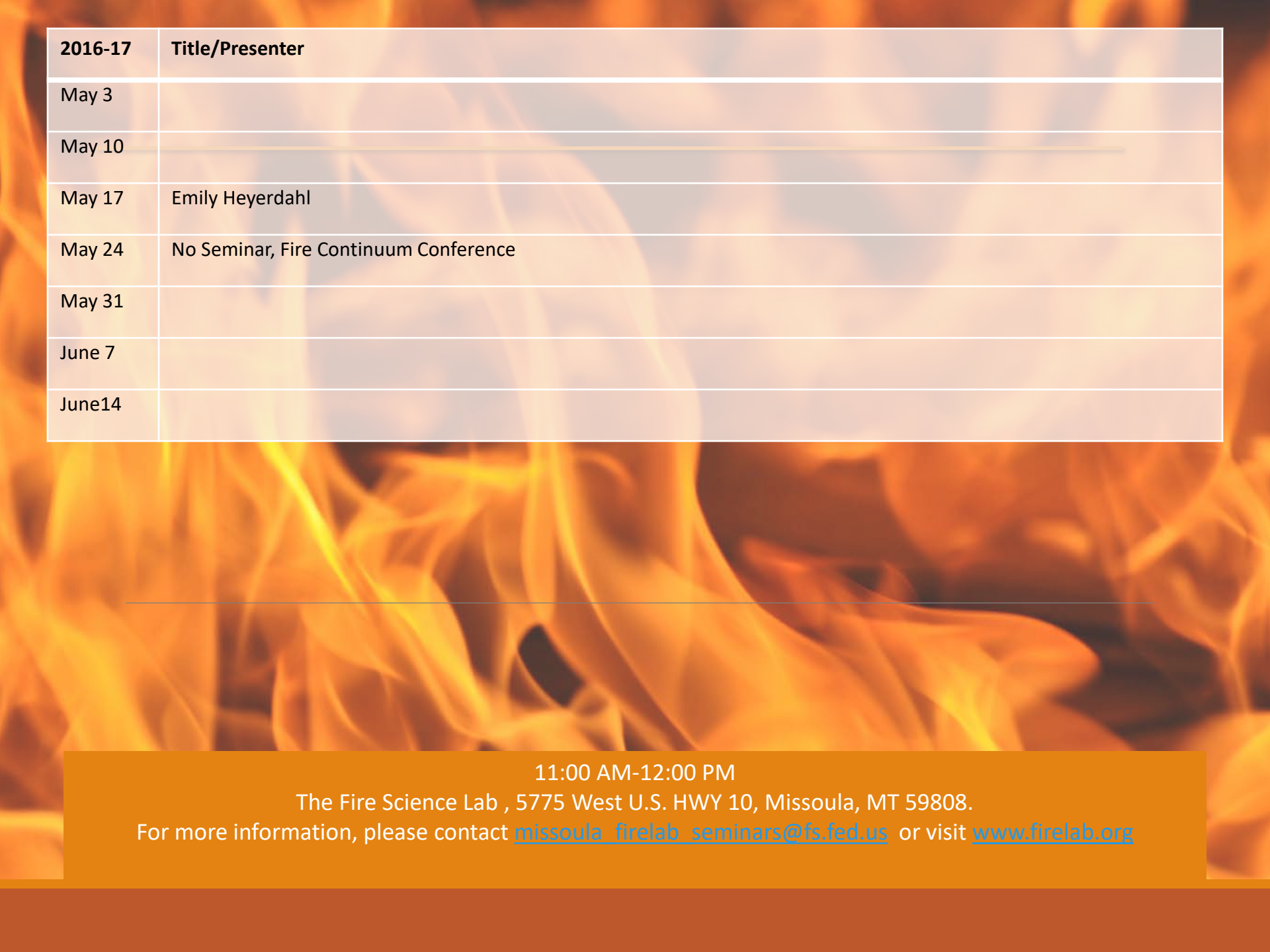
11:00 AM-12:00 PM

The Fire Science Lab , 5775 West U.S. HWY 10, Missoula, MT 59808.

2016-17	Title/Presenter
Jan 18	2017 Fire Season from the Missoula District Perspective / Jen Hensiek and Dave Williams
Jan 25	Avalanche ecology in Glacier National Park / Erich Peitzsch
Feb 1	Post-fire tree regeneration across lower-treeline forests of the western US / Kim Taylor
Feb 8	Scott Copeland
Feb 15	Nature Conservancy's management of former Plumb Creek Timber Lands in western Montana / Mike Schaedel and Chris Bryant
Feb 22	Fire Center research / Lloyd Queen
Mar 1	Alan Ager
Mar 8	Methane emissions from the United States natural gas infrastructure: Field measurements and national emissions modeling results / Anthony Marchese
Mar 15	The Forest Inventory and Analysis tree-ring data base: applications and opportunities/ Justin DeRose
Mar 22	Rangeland Fuelcasting: A Predictive Service for Improving Suppression Readiness/ Matt Reeves
Mar 29	
Apr 5	
Apr 12	
Apr 19	Serra J. Hoagland
Apr 26	

11:00 AM-12:00 PM

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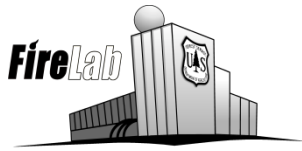


2016-17	Title/Presenter
May 3	
May 10	
May 17	Emily Heyerdahl
May 24	No Seminar, Fire Continuum Conference
May 31	
June 7	
June14	

11:00 AM-12:00 PM

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Seminar Series

Mark Vosburgh, USFS
**National Technology and
Development Program**
Host: Thomas Dzomba

Date: October 5, 2017

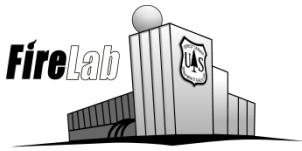
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An overview of the USFS National Technology and Development Program

In May of 2017 the Missoula, Montana and San Dimas, California Technology and Development Centers emerged from a multi year re-organization effort to form the National Technology and Development Program. Our new organization is guided by the following principles. **NTDP Mission:** The Forest Service National Technology and Development Program provides Forest Service employees and partners with practical, science-based solutions to resource management challenges. We evaluate, design, and develop new technologies, products, and systems to solve problems and deliver solutions. **NTDP Vision:** The Forest Service National Technology and Development program is recognized nationally for providing quality products and outstanding customer service. This presentation will provide an introductory overview for those unfamiliar with our organization. This discussion will include a high level overview of current program of work. For who have worked with us in the past, a summary of what is new and what has stayed the same in the reorganization will be provided.



Seminar Series

Eric Pardyjak,
University of Utah

Host: Natalie Wagenbrenner

Date: October 12, 2017

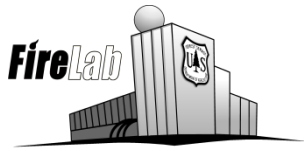
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High-Resolution Modeling of Environmental Transport Processes in Cities and Complex Terrain

Cities are diverse places with heterogeneous landscapes and are home to complex processes occurring over a wide range of length and time scales. Understanding and modeling these processes is critical to improved sustainability related to goals of improving urban microclimate, reducing energy and water usage, increasing clean energy production and mitigating pollution emissions. Due to difficulty in simulating the large disparity in length scales covering these processes, little is known about their impact. In this presentation, a description of our approach, which is designed to bridge these scales and improve our understanding of different processes occurring in urban environments at local (neighborhood), city, and meso-scales will be discussed. In particular, an overview of the fast-response QUIC EnvSim model will be presented along with recent model additions designed to resolve vegetation and mountainous terrain. QUIC EnvSim predicts winds, dispersion, radiation components, air temperatures and humidity at scales of 1-5 meters. A discussion will be presented on how this modeling system can be extended to other applications related to winds and microclimate in complex (e.g., mountainous) terrain such as fires at the wildland urban interface.



Seminar Series

Bryce Nordgren,
Missoula Fire Lab

Host: Thomas Dzomba

Date: October 19, 2017

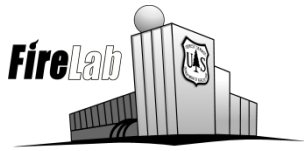
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Enterprise Research Computing at the Firelab

Fire Lab scientists press their computers into service in a variety of ways that government CIO professionals either strive to forbid or scramble to avoid supporting. The practice which causes the most discomfort is R&D's agile collaboration with external cooperators. Official mechanisms for coping with R&D's needs focus on documenting individual exceptions to the "office computer/office software" standard, explicitly treating each request as unrelated from all others. This talk focuses on common requirements which support multiple scientific inquiries, as embodied in our computing environment here at the Firelab. We will cover all three sides of the computing triangle: processing power, bandwidth, and storage. The goal of this talk is to show that although substantive professional IT support for these common R&D needs is not forthcoming, it is not necessary for each end user to separately re-invent all of their infrastructure from scratch, or self-support it indefinitely.



Seminar Series

Torben Grumstrup,
Missoula Fire Lab

Host: Natalie Wagenbrenner

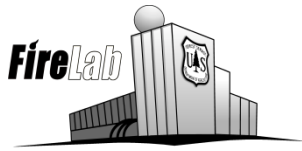
Date: October 26, 2017

Time: 11:00 AM-12:00 PM

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Fire behavior on slopes: flame and plume attachment



Seminar Series

Grant Harley,
University of Idaho

Host: Alina Cansler

Date: Nov. 2, 2017

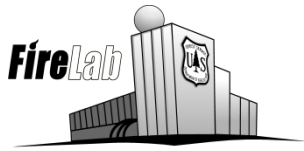
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How Cattle, Logging, Fire, and Climate Shaped the Mississippi Piney Woods Since ca. 1700 CE

Fire is a common occurrence in the longleaf pine (*Pinus palustris*) forests of the Southeast United States. Prescribed fire is used to manage these threatened ecosystems, but information regarding historical fire activity is unknown. My goals were to determine the historical fire regimes in De Soto National Forest (DSNF), southern Mississippi, and determine the influence of climate and land use history on fire activity at two study sites: Fern Gulley Ridge (FGR) and Death Scar Valley (DSV). The composite mean fire interval during the prescribed burning period (1980–2013) was 3.4 years. During settlements periods, fire intervals at FGR and DSV were as frequent as 1.7 years and 1.9 years, respectively. Hence, the historical fire regime was more frequent than the current schedule of prescribed fire designed to emulate past fire activity. Evidence of biannual burning was found at both sites, indicating up to three fires burned in a 12–15 month period likely caused by land use practices (i.e. logging, cattle herding). A significant ($p < 0.05$) albeit weak association between broad-scale Pacific and Atlantic Ocean oscillations were found, which suggests fire-climate interactions were masked by heavy anthropogenic land use over the past several centuries. Based on fire regime information gleaned in this study, burning the forest at a 2–3 year interval would be the first step towards simulating historical landscape conditions and fire activity.



Seminar Series

Chris Gibson,
NOAA

Host: Natalie Wagenbrenner

Date: Nov. 9, 2017

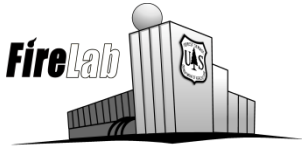
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Evaluating the Swiss SNOWPACK modeling system across the Northern Rocky Mountains

Since late 2015, a one dimensional model of snow pack structure, know as SNOWPACK, has been evaluated by the National Weather Service at Missoula, in collaboration with Montana State University. The model is driven by point-based output from a high-resolution numerical model (WRF-ARW). Hourly forecasts of incoming radiation, temperature, precipitation, etc., drive the SNOWPACK model, which simulates snow accumulation, structure of the snow pack and melting processes. Designed to assist with avalanche hazard evaluation and forecasting, the SNOWPACK model allows the meteorologists within the NWS to evaluate the impact of storm cycles, cold and clear periods, rainfall, etc., on snow pack structure. By simulating the snow pack near remote SNOTEL gauges, accuracy can be somewhat verified with observed snow depth readings, as well as occasional snow pits and avalanche center evaluations. WRF and SNOWPACK simulations and verification will be presented, for points across western Montana, for two winter seasons.



Seminar Series

Steve Arno (Retired),
Missoula Fire Lab

Host: Bob Keane

Date: Nov. 16, 2017

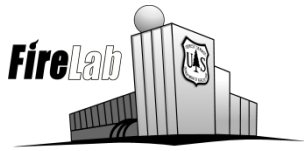
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Complex Patterns of the Lolo Peak Fire from Carlton Ridge to Bass Creek

The recent Lolo Peak Fire and associated burnouts and backburns resulted in both expected and unexpected burn patterns related to differences in forest structure, topography, and weather. It also illustrates the "perfect storm" of stifling constraints the Forest Service faces in attempting to implement ecologically-based management of the West's fire-dependent forests.



Seminar Series

Joe Domitrovich

National Technology &
Development Center

Host: Thomas Dzomba

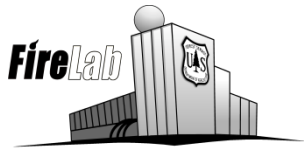
Date: Dec. 7, 2017

Time: 11:00 AM-12:00 PM

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The Lolo Peak Fire: observations of the evacuation process
and burnout operations



Seminar Series

Alan Tepley

University of Montana

Host: Alina Cansler

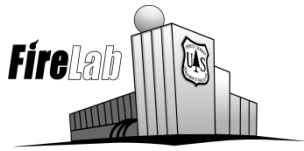
Date: Dec. 14, 2017

Time: 11:00 AM-12:00 PM

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Vulnerability and resilience of forest landscapes to
changing fire regimes and altered post-fire recovery
dynamics



Seminar Series

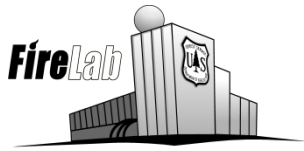
**Molly Retzlaff and
Sarah Flanary,**
Missoula Fire Lab
Host:

Date: Jan. 11, 2017

Time: 11:00 AM-12:00 PM

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Seminar Series

**Jen Hensiek and
Dave Williams, USFS**

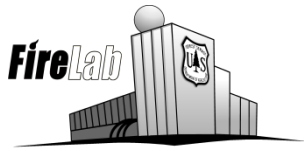
Host: Natalie Wagenbrenner

Date: Jan. 18, 2017

Time: 11:00 AM-12:00 PM

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Seminar Series

Erich Peitzsch,
USGS, West Glacier, MT

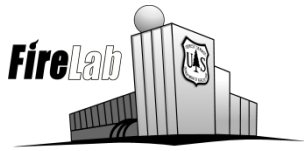
Host: Alina Cansler

Date: Jan. 25, 2017

Time: 11:00 AM-12:00 PM

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Seminar Series

Kim Taylor,
University of Montana

Host: Alina Cansler

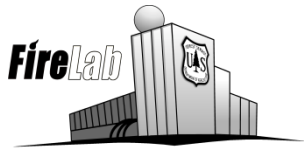
Date: Feb. 1, 2017

Time: 11:00 AM-12:00 PM

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Post-fire tree regeneration across lower-treeline forests of
the western US



Seminar Series

Scott Copeland,
Colorado State University

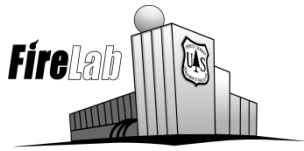
Host: Thomas Dzomba

Date: Feb. 8, 2017

Time: 11:00 AM-12:00 PM

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Seminar Series

**Speakers: Mike Schaedel
and Chris Bryant, The
Nature Conservancy**

Host: Alina Cansler

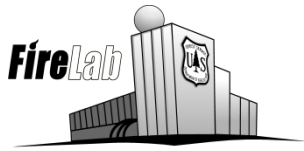
Date: Feb. 15, 2017

Time: 11:00 AM-12:00 PM

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The Nature Conservancy's management of former
Plumb Creek Timber Lands in western Montana



Seminar Series

Lloyd Queen,
University of Montana

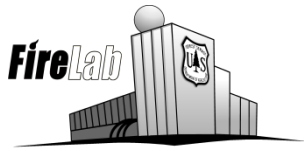
Host: Natalie Wagenbrenner

Date: Feb. 22, 2017

Time: 11:00 AM-12:00 PM

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Seminar Series

Alan Ager,
Missoula Fire Lab

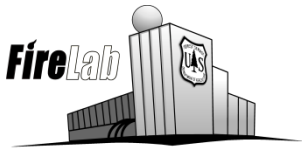
Host: Alina Cansler

Date: March 1, 2017

Time: 11:00 AM-12:00 PM

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Seminar Series

Anthony Marchese

Host: Torben Gumstrup

Date: March 8, 2017

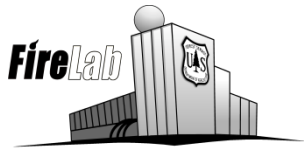
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Methane Emissions from the United States Natural Gas Infrastructure: Field Measurements and National Emissions Modeling Results

To realize immediate net climate benefits from the substitution of coal, diesel or gasoline with natural gas, the rate of methane loss from the entire natural gas supply chain must be less than a few percent. Since the natural gas supply chain consists of a vast network of infrastructure with countless emission sources, quantifying the total methane emissions from the U.S. natural gas supply chain represents a major challenge. In this study, facility-level methane emissions measurements were conducted using a new dual tracer gas technique at 130 natural gas gathering facilities and processing plants in 13 U.S. states. The results from the field campaign were combined with state and national facility databases in a Monte Carlo simulation to estimate methane emissions from U.S. natural gas gathering and processing operations. Total annual methane emissions of 2,421 (+245/-237) Gg were estimated for all U.S. gathering and processing operations, representing a methane loss rate of 0.47% ($\pm 0.05\%$) when normalized by annual methane production. The largest source of methane emissions from gathering and processing operations were attributed to normal operation of gathering facilities (1,697 +189/-185 Gg) and these emissions were eight times that of previous EPA Greenhouse Gas Inventory (GHGI) estimates. The methane emissions from processing plants (506 +55/-52 Gg) were 40% lower than previous GHGI estimates but a factor of three higher than that reported under the EPA Greenhouse Gas Reporting Program (GHGRP). In April 2016, the EPA GHGI was updated based directly on the results of this study, which effectively added over 1500 Gg of annual methane emissions to the inventory. With these updates to the EPA GHGI, gathering operations are now estimated to account for 27% of all methane emissions from natural gas supply chain.



Seminar Series

Justin DeRose

Forest Inventory and Analysis,
RMRS, USFS, Ogden, UT

Host: Alina Cansler

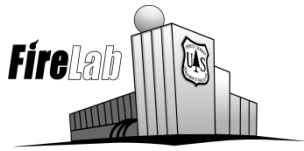
Date: March 15, 2017

Time: 11:00 AM-12:00 PM

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The Forest Inventory and Analysis tree-ring data
base: applications and opportunities



Seminar Series

Speaker Matt Reeves

Host: Thomas Dzomba

Date: March 22, 2017

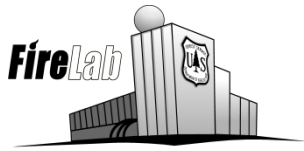
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Rangeland Fuelcasting: A Predictive Service for Improving Suppression Readiness

Nationally available maps describing fuel conditions, such as those produced by LANDFIRE, often struggle to remain up-to-date because rangeland vegetation and fuels exhibit high inter-annual variability. In addition, while the predictive services offered by the various GACCs provide copious information and maps regarding fuel moisture, they lack quantitative, objective, spatially explicit information describing fuel quantity. This is a conundrum since, especially in arid and semi-arid rangelands, fire spread is often limited by lack of fuel but can become very significant during years exhibiting relatively high vegetation production. To help this situation, we have developed a system for projecting peak fuel loads, bi-weekly, throughout the growing season, to describe the timing and peak of vegetation (and therefore fuel) production. The machine learning approach processes up to 9 indicators of rangeland production including lag times specific for each vegetation type. The resulting data indicate the estimated date of peak fuel production, estimated total annual production of fuel, and a confidence interval that assists in determining reliability of using the projections to estimate future conditions.



Seminar Series

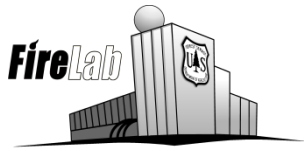
Host:

Date: March 29, 2017

Time: 11:00 AM-12:00 PM

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Seminar Series

Speaker TBA

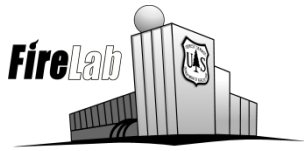
Host:

Date: April 5, 2017

Time: 11:00 AM-12:00 PM

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Seminar Series

Speaker TBA

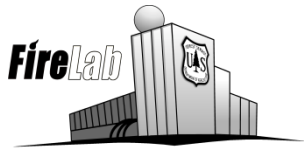
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Date: April 12, 2017

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Seminar Series

Serra J. Hoagland,
Missoula Fire Lab

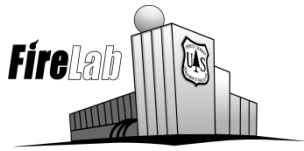
Host: Alina Cansler

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Seminar Series

Speaker TBA

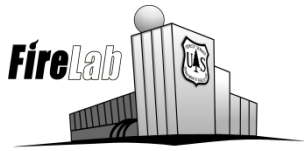
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Seminar Series

Speaker TBA

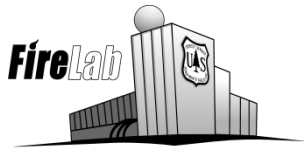
Host:

Date: May 3, 2017

Time: 11:00 AM-12:00 PM

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Seminar Series

Speaker TBA

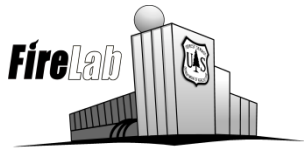
Host:

Date: May 10, 2017

Time: 11:00 AM-12:00 PM

Where: The Fire Science Lab
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Seminar Series

Speaker TBA

Host:

Date: May 17, 2017

Time: 11:00 AM-12:00 PM

Where: The Fire Science Lab
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