

Biological and geophysical feedbacks with fire in the Earth system

www.nrfirescience.org/resource/17407

Roughly 3% of the Earth's land surface burns annually, representing a critical exchange of energy and matter between the land and atmosphere via combustion. Fires range from slow smouldering peat fires, to low-intensity surface fires, to intense crown fires, depending on vegetation structure, fuel moisture, prevailing climate, and...

Author(s): Sally Archibald, Caroline E. R. Lehmann, Claire M. Belcher, William J. Bond, Ross A. Bradstock, Anne Laure Daniau, K. G. Dexter, Elisabeth J. Forrestel, M. Greve, Tianhua He, Steven I. Higgins, William A. Hoffmann, Byron B. Lamont, D. J. McGlenn, G. R. Moncrieff, Colin P. Osborne, Juli G. Pausas, Owen F. Price, Brad S. Ripley, Brendan M. Rogers, Dylan W. Schwilk, M. F. Simon, Merritt R. Turetsky, Guido R. Van der Werf, Amy E. Zanne

Year Published: 2018

Type: Document

Book or Chapter or Journal Article

How do weather and terrain contribute to firefighter entrapments in Australia?

www.nrfirescience.org/resource/17122

Adverse weather conditions and topographic influences are suspected to be responsible for most entrapments of firefighters in Australia. A lack of temporally and spatially coherent set of data however, hinders a clear understanding of the contribution of each weather type or terrain driver on these events. We investigate coronial...

Author(s): Sébastien Lahaye, J. Sharples, Stuart Matthews, Simon Heemstra, Owen F. Price, Rachel Badlan

Year Published: 2018

Type: Document

Book or Chapter or Journal Article

Optimizing precipitation thresholds for best correlation between dry lightning and wildfires

www.nrfirescience.org/resource/17429

This work examines how to adjust the definition of 'dry lightning' in order to optimize the correlation between dry lightning flash count and the climatology of large (>400 km²) lightning-ignited wildfires over the contiguous United States (CONUS). The National Lightning Detection Network™ and National Centers for...

Author(s): Brian Vant-Hull, Tollisha Thompson, William Koshak

Year Published: 2018

Type: Document

Book or Chapter or Journal Article

The sensitivity of US wildfire occurrence to pre-season soil moisture conditions across ecosystems

www.nrfirescience.org/resource/17379

It is generally accepted that year-to-year variability in moisture conditions and drought are linked with increased wildfire occurrence. However, quantifying the sensitivity of wildfire to surface moisture state at seasonal lead-times has been challenging due to the absence of a long soil moisture record with the appropriate...

Author(s): Daniel Jensen, John T. Reager, Brittany Zajic, Nick Rousseau, Matthew Rodell, Everett Hinkley

Year Published: 2018

Type: Document

Book or Chapter or Journal Article

Some requirements for simulating wildland fire behavior using insight from coupled weather-wildland fire models

www.nrfirescience.org/resource/17104

A newer generation of models that interactively couple the atmosphere with fire behavior have shown an increased potential to understand and predict complex, rapidly changing fire behavior. This is possible if they capture intricate, time-varying microscale airflows in mountainous terrain and fire-atmosphere feedbacks. However, this...

Author(s): Janice L. Coen

Year Published: 2018

Type: Document

Book or Chapter or Journal Article

Climate adaption and post-fire restoration of a foundational perennial in cold desert: Insights from intraspecific variation in response to weather

www.nrfirescience.org/resource/16523

1) The loss of foundational but fire-intolerant perennials such as sagebrush due to increases in fire size and frequency in semi-arid regions has motivated efforts to restore them, often with mixed or even no success. Seeds of sagebrush *Artemisia tridentata* and related species must be moved considerable distances from seed source to...

Author(s): Martha M. Brabec, Matthew J. Germino, Bryce A. Richardson

Year Published: 2017

Type: Document

Book or Chapter or Journal Article

How to generate and interpret fire characteristics charts for the U.S. fire danger rating system

www.nrfirescience.org/resource/15371

The fire characteristics chart is a graphical method of presenting U.S. National Fire Danger Rating System (NFDRS) indexes and components as well as primary surface or crown fire behavior characteristics. Computer software has been developed to produce fire characteristics charts for both fire danger and fire behavior in a format...

Author(s): Faith A. Heinsch, Patricia L. Andrews, D. A. Tirmenstein

Year Published: 2017

Type: Document

Technical Report or White Paper

Trend analysis of fire season length and extreme fire weather in North America between 1979 and 2015

www.nrfirescience.org/resource/16407

We have constructed a fire weather climatology over North America from 1979 to 2015 using the North American Regional Reanalysis dataset and the Canadian Fire Weather Index (FWI) System. We tested for the presence of trends in potential fire season length, based on a meteorological definition, and extreme fire weather using the non-...

Author(s): Piyush Jain, Xianli Wang, Michael D. Flannigan

Year Published: 2017

Type: Document

Book or Chapter or Journal Article

Evidence of fuels management and fire weather influencing fire severity in an extreme fire event

www.nrfirescience.org/resource/17228

Following changes in vegetation structure and pattern, along with a changing climate, large wildfire incidence has increased in forests throughout the western United States. Given this increase, there is

great interest in whether fuels treatments and previous wildfire can alter fire severity patterns in large wildfires. We assessed...

Author(s): Jamie M. Lydersen, Brandon M. Collins, Matthew L. Brooks, John R. Matchett, Kristen L. Shive, Nicholas A. Povak, Van R. Kane, Douglas F. Smith

Year Published: 2017

Type: Document

Book or Chapter or Journal Article

Climate change and the eco-hydrology of fire: will area burned increase in a warming western USA?

www.nrfirescience.org/resource/14916

Wildfire area is predicted to increase with global warming. Empirical statistical models and process-based simulations agree almost universally. The key relationship for this unanimity, observed at multiple spatial and temporal scales, is between drought and fire. Predictive models often focus on ecosystems in which this...

Author(s): Donald McKenzie, Jeremy S. Littell

Year Published: 2017

Type: Document

Book or Chapter or Journal Article

The normal fire environment—Modeling environmental suitability for large forest wildfires using past, present, and future climate normals

www.nrfirescience.org/resource/16643

We modeled the normal fire environment for occurrence of large forest wildfires (>40 ha) for the Pacific Northwest Region of the United States. Large forest wildfire occurrence data from the recent climate normal period (1971–2000) was used as the response variable and fire season precipitation, maximum temperature, slope, and...

Author(s): Raymond J. Davis, Zhiqiang Yang, Andrew Yost, Cole Belongie, Warren B. Cohen

Year Published: 2017

Type: Document

Book or Chapter or Journal Article

An improved canopy wind model for predicting wind adjustment factors and wildland fire behavior

www.nrfirescience.org/resource/16445

The ability to rapidly estimate wind speed beneath a forest canopy or near the ground surface in any vegetation is critical to practical wildland fire behavior models. The common metric of this wind speed is the “mid-flame” wind speed, UMF. However, the existing approach for estimating UMF has some significant shortcomings....

Author(s): William J. Massman, Jason M. Forthofer, Mark A. Finney

Year Published: 2017

Type: Document

Book or Chapter or Journal Article

Simulated fire behaviour in young, postfire lodgepole pine forests

www.nrfirescience.org/resource/16291

Early-seral forests are expanding throughout western North America as fire frequency and annual area burned increase, yet fire behaviour in young postfire forests is poorly understood. We simulated fire behaviour in 24-year-old lodgepole pine (*Pinus contorta* var. *latifolia*) stands in Yellowstone National Park, Wyoming, United States...

Author(s): Kellen N. Nelson, Monica G. Turner, William H. Romme, Daniel B. Tinker

Year Published: 2017
Type: Document
Book or Chapter or Journal Article

Spatio-Temporal Linkages between Declining Arctic Sea-Ice Extent and Increasing Wildfire Activity in the Western United States

www.nrfirescience.org/resource/17201

We examined relationships between monthly Arctic sea-ice extent (ASIE) and annual wildfire activity for seven regions in the western United States during 1980-2015 to determine if spatio-temporal linkages exist between ASIE, upper-level flow, and surface climatic conditions conducive to western U.S. wildfire activity. Winter ASIE...

Author(s): Paul A. Knapp, Peter T. Soulé

Year Published: 2017

Type: Document

Book or Chapter or Journal Article

Does prescribed fire promote resistance to drought in low elevation forests of the Sierra Nevada, California, USA?

www.nrfirescience.org/resource/14244

Prescribed fire is a primary tool used to restore western forests following more than a century of fire exclusion, reducing fire hazard by removing dead and live fuels (small trees and shrubs). It is commonly assumed that the reduced forest density following prescribed fire also reduces competition for resources among the...

Author(s): Phillip J. van Mantgem, Anthony C. Caprio, Nathan L. Stevenson, Adrian J. Das

Year Published: 2016

Type: Document

Book or Chapter or Journal Article

Ecohydrological implications of drought for forests in the United States

www.nrfirescience.org/resource/14110

The relationships among drought, surface water flow, and groundwater recharge are not straightforward for most forest ecosystems due to the strong role that vegetation plays in the forest water balance. Hydrologic responses to drought can be either mitigated or exacerbated by forest vegetation depending upon vegetation water use and...

Author(s): James M. Vose, Chelcy Ford Miniati, Charles H. Luce, Heidi Asbjornsen, Peter V. Caldwell, John L. Campbell, Gordon E. Grant, Daniel J. Isaak, Steven P. Loheide II, Ge Sun

Year Published: 2016

Type: Document

Book or Chapter or Journal Article

The Influence of Climate Model Biases on Projections of Aridity and Drought

www.nrfirescience.org/resource/15624

Global climate models (GCMs) have biases when simulating historical climate conditions, which in turn have implications for estimating the hydrological impacts of climate change. This study examines the differences in projected changes of aridity [defined as the ratio of precipitation (P) over potential evapotranspiration (PET)], or...

Year Published: 2016

Type: Document

Book or Chapter or Journal Article

A stochastic mixed integer program to model spatial wildfire behavior and suppression placement decisions with uncertain weather

www.nrfirescience.org/resource/13931

Wildfire behavior is a complex and stochastic phenomenon that can present unique tactical management challenges. This paper investigates a multistage stochastic mixed integer program with full recourse to model spatially explicit fire behavior and to select suppression locations for a wildland fire. Simplified suppression decisions...

Author(s): Erin J. Belval, Yu Wei, Michael Bevers

Year Published: 2016

Type: Document

Book or Chapter or Journal Article

Spatial coherence of extreme precipitation events in the Northwestern United States

www.nrfirescience.org/resource/15609

The complexity of impacts resulting from extreme precipitation events varies with the spatial extent of precipitation extremes. Characteristics of precipitation extremes, defined by the top 5% of 3-day accumulated precipitation, including their spatial coherence and relationships to two contrasting synoptic phenomena, were examined...

Author(s): Lauren E. Parker, John T. Abatzoglou

Year Published: 2016

Type: Document

Book or Chapter or Journal Article

Projected changes in cold hardiness zones and suitable overwinter ranges of perennial crops over the United States

www.nrfirescience.org/resource/15604

Average annual absolute minimum temperatures (TN_n) provide a means of delineating agriculturally relevant climate zones and are used to define cold hardiness zones (CHZ) by the United States Department of Agriculture. Projected changes in TN_n, mean winter minimum temperatures, and CHZs over the conterminous United States (CONUS...

Author(s): Lauren E. Parker, John T. Abatzoglou

Year Published: 2016

Type: Document

Book or Chapter or Journal Article

Contribution of cut-off lows to precipitation across the United States

www.nrfirescience.org/resource/15602

A chronology of cutoff lows (COL) from 1979 to 2014 alongside daily precipitation observations across the conterminous United States was used to examine the contribution of COL to seasonal precipitation, extreme-precipitation events, and interannual precipitation variability. COL accounted for between 2% and 32% of annual...

Author(s): John T. Abatzoglou

Year Published: 2016

Type: Document

Book or Chapter or Journal Article

Attribution of extreme weather events in the context of climate change - Report in brief

www.nrfirescience.org/resource/14069

As climate has warmed over recent years, a new pattern of more frequent and more intense weather events has unfolded across the globe. Climate models simulate such changes in extreme events, and some of the reasons for the changes are well understood. Warming increases the likelihood of

extremely hot days and nights, favors...

Author(s): Committee on Extreme Weather Events and Climate Change Attribution

Year Published: 2016

Type: Document

Technical Report or White Paper

Development of high-resolution (250 m) historical daily gridded air temperature data using reanalysis and distributed sensor networks for the US Northern Rocky Mountains

www.nrfirescience.org/resource/15620

Gridded temperature data sets are typically produced at spatial resolutions that cannot fully resolve fine-scale variation in surface air temperature in regions of complex topography. These data limitations have become increasingly important as scientists and managers attempt to understand and plan for potential climate change...

Author(s): Zachary A. Holden, Alan Swanson, Anna E. Klene, John T. Abatzoglou, Solomon Z. Dobrowski, Samuel A. Cushman, John Squires, Gretchen Moisen, Jared W. Oyler

Year Published: 2016

Type: Document

Book or Chapter or Journal Article

Effects of drought on forests and rangelands in the United States: a comprehensive science synthesis

www.nrfirescience.org/resource/13910

This assessment provides input to the reauthorized National Integrated Drought Information System (NIDIS) and the National Climate Assessment (NCA), and it establishes the scientific foundation needed to manage for drought resilience and adaptation. Focal areas include drought characterization; drought impacts on forest processes...

Year Published: 2016

Type: Document

Synthesis, Technical Report or White Paper

Closure to development of soil moisture drought index to characterize droughts

www.nrfirescience.org/resource/15608

This is a discussion article qualifying four issues related to soil moisture drought index (SODI) moisture departure.

Author(s): Mohammad Sohrabi, Jae H. Ryu, John T. Abatzoglou, John Tracy

Year Published: 2016

Type: Document

Book or Chapter or Journal Article

Recent advances and remaining uncertainties in resolving past and future climate effects on global fire activity

www.nrfirescience.org/resource/15603

Fire is an integral component of the Earth system that will critically affect how terrestrial carbon budgets and living systems respond to climate change. Paleo and observational records document robust positive relationships between fire activity and aridity in many parts of the world on interannual to millennial timescales....

Author(s): A. Park Williams, John T. Abatzoglou

Year Published: 2016

Type: Document

Book or Chapter or Journal Article

Weather, fuels, and topography impede wildland fire spread in western US landscapes

www.nrfirescience.org/resource/14716

As wildland fire activity continues to surge across the western US, it is increasingly important that we understand and quantify the environmental drivers of fire and how they vary across ecosystems. At daily to annual timescales, weather, fuels, and topography are known to influence characteristics such as area burned and fire...

Author(s): Lisa M. Holsinger, Sean A. Parks, Carol Miller

Year Published: 2016

Type: Document

Book or Chapter or Journal Article

Controls on interannual variability in lightning-caused fire activity in the western US

www.nrfirescience.org/resource/15601

Lightning-caused wildfires account for a majority of burned area across the western United States (US), yet lightning remains among the more unpredictable spatiotemporal aspects of the fire environment and a challenge for both modeling and managing fire activity. A data synthesis of cloud-to-ground lightning strikes, climate and...

Author(s): John T. Abatzoglou, Crystal A. Kolden, Jennifer Balch, Bethany A. Bradley

Year Published: 2016

Type: Document

Book or Chapter or Journal Article

Charred forests accelerate snow albedo decay: parameterizing the post-fire radiative forcing on snow for three years following fire

www.nrfirescience.org/resource/14443

As large, high-severity forest fires increase and snowpacks become more vulnerable to climate change across the western USA, it is important to understand post-fire disturbance impacts on snow hydrology. Here, we examine, quantify, parameterize, model, and assess the post-fire radiative forcing effects on snow to improve hydrologic...

Author(s): Kelly E. Gleason, Anne W. Nolin

Year Published: 2016

Type: Document

Book or Chapter or Journal Article

Verification of Spot Fire Weather Forecasts

www.nrfirescience.org/resource/15563

Software was developed to evaluate National Weather Service (NWS) spot forecasts. Fire management officials request spot forecasts from the NWS to provide detailed guidance as to atmospheric conditions in the vicinity of planned prescribed burns as well as wildfires that do not have incident meteorologists on site. A multi-year set...

Author(s): John D. Horel, Timothy J. Brown

Year Published: 2015

Type: Document

Technical Report or White Paper

Development of soil moisture drought index (SODI) to characterize droughts

www.nrfirescience.org/resource/15645

A new drought index termed the "soil moisture drought index (SODI)" is developed to characterize droughts. The premise of the index is based on how much water is required to attain soil moisture at field capacity. SODI captures variations of precipitation, temperature, and soil moisture over time. Three

widely used drought...

Author(s): Mohammad Sohrabi, Jae H. Ryu, John T. Abatzoglou, John Tracy

Year Published: 2015

Type: Document

Book or Chapter or Journal Article

Implications of climate change on wind erosion of agricultural lands in the Columbia plateau

www.nrfirescience.org/resource/15642

Climate change may impact soil health and productivity as a result of accelerated or decelerated rates of erosion. Previous studies suggest a greater risk of wind erosion on arid and semi-arid lands due to loss of biomass under a future warmer climate. There have been no studies conducted to assess the impact of climate change on...

Author(s): B.S. Sharratt, J. Tatarko, John T. Abatzoglou, F.A. Fox, D. Huggins

Year Published: 2015

Type: Document

Book or Chapter or Journal Article

Future mega-fires and smoke impacts

www.nrfirescience.org/resource/15579

"Megafire" events, in which large high-intensity fires propagate over extended periods, can cause both immense damage to the local environment and catastrophic air quality impacts on cities and towns downwind. Increases in extreme events associated with climate change (e.g., droughts, heat waves) are projected to result in more...

Author(s): Narasimhan K. Larkin, John T. Abatzoglou, Donald McKenzie, Brian E. Potter, E. Ashley Steel, Brian J. Stocks

Year Published: 2015

Type: Document

Technical Report or White Paper

Observations of distributed snow depth and snow duration within diverse forest structures in a maritime mountain watershed

www.nrfirescience.org/resource/14278

Spatially distributed snow depth and snow duration data were collected over two to four snow seasons during water years 2011–2014 in experimental forest plots within the Cedar River Municipal Watershed, 50 km east of Seattle, Washington, USA. These 40 × 40 m forest plots, situated on the western slope of the Cascade Range,...

Author(s): Susan E. Dickerson-Lange, James A. Lutz, Rolf Gersonde, Kael A. Martin, Jenna E. Forsyth, Jessica D. Lundquist

Year Published: 2015

Type: Document

Book or Chapter or Journal Article

Forecasting integrated lightning and fuels ignition potentials in a system with real-time analysis of fire weather prediction accuracy

www.nrfirescience.org/resource/15557

Weather forecasts can help identify environmental conditions conducive to prescribed burning or to increased fire danger. These conditions are important components of fire management tools such as fire ignition potential maps, fire danger rating systems, fire behavior predictions, and smoke dispersion modeling. Fire managers use...

Author(s): Miriam L. Rorig, Stacy Drury

Year Published: 2015

Type: Document
Technical Report or White Paper

Projected changes in snowfall extremes and interannual variability of snowfall in the western U.S.

www.nrfirescience.org/resource/15647

Projected warming will have significant impacts on snowfall accumulation and melt, with implications for water availability and management in snow-dominated regions. Changes in snowfall extremes are confounded by projected increases in precipitation extremes. Downscaled climate projections from 20 global climate models were bias-

Author(s): A.C. Lute, John T. Abatzoglou, Katherine C. Hegewisch

Year Published: 2015

Type: Document

Book or Chapter or Journal Article

Climate-induced variations in global wildfire danger from 1979 to 2013

www.nrfirescience.org/resource/15322

Climate strongly influences global wildfire activity, and recent wildfire surges may signal fire weather-induced pyrogeographic shifts. Here we use three daily global climate data sets and three fire danger indices to develop a simple annual metric of fire weather season length, and map spatio-temporal trends from 1979 to 2013. We...

Author(s): William Matt Jolly, Mark A. Cochrane, Patrick H. Freeborn, Zachary A. Holden, Timothy J. Brown, G.J. Williamson, David M. J. S. Bowman

Year Published: 2015

Type: Document

Book or Chapter or Journal Article

Seasonal reversal of the influence of El Niño–Southern Oscillation on very large wildfire occurrence in the interior northwestern United States

www.nrfirescience.org/resource/15643

Satellite-mapped fire perimeters and the multivariate El Niño–Southern Oscillation index were used to examine the impact of concurrent El Niño–Southern Oscillation (ENSO) phase on very large fire (VLF) occurrences over the intermountain northwestern United States (U.S.) from 1984 to 2012. While the warm phase of ENSO promotes...

Author(s): Renaud Barbero, John T. Abatzoglou, Timothy J. Brown

Year Published: 2015

Type: Document

Book or Chapter or Journal Article

Daily weather and other factors influencing burn severity in central Idaho and western Montana

www.nrfirescience.org/resource/15316

Burn severity as inferred from satellite-derived differenced Normalized Burn Ratio (dNBR) is useful for evaluating fire impacts on ecosystems but the environmental controls on burn severity across large forest fires are both poorly understood and likely to be different than those influencing fire extent. We related dNBR to...

Author(s): Donovan Birch, Penelope Morgan, Crystal A. Kolden, John T. Abatzoglou, Gregory K. Dillon, Andrew T. Hudak, Alistair M. S. Smith

Year Published: 2015

Type: Document

Book or Chapter or Journal Article

The changing strength and nature of fire-climate relationships in the northern Rocky Mountains, U.S.A., 1902-2008

www.nrfirescience.org/resource/15636

Time-varying fire-climate relationships may represent an important component of fire-regime variability, relevant for understanding the controls of fire and projecting fire activity under global-change scenarios. We used time-varying statistical models to evaluate if and how fire-climate relationships varied from 1902-2008, in one...

Author(s): Philip E. Higuera, John T. Abatzoglou, Jeremy S. Littell, Penelope Morgan

Year Published: 2015

Type: Document

Book or Chapter or Journal Article

A wildfire-relevant climatology of the convective environment of the United States

www.nrfirescience.org/resource/13270

Convective instability can influence the behaviour of large wildfires. Because wildfires modify the temperature and moisture of air in their plumes, instability calculations using ambient conditions may not accurately represent convective potential for some fire plumes. This study used the North American Regional Reanalysis to...

Author(s): Brian E. Potter, Matthew A. Anaya

Year Published: 2015

Type: Document

Book or Chapter or Journal Article

The potential impact of regional climate change on fire weather in the United States

www.nrfirescience.org/resource/13208

Climate change is expected to alter the frequency and severity of atmospheric conditions conducive for wildfires. In this study, we assess potential changes in fire weather conditions for the contiguous United States using the Haines Index (HI), a fire weather index that has been employed operationally to detect atmospheric...

Author(s): Ying Tang, Shiyuan Zhong, Lifeng Luo, Xindi Bian, Warren Heilman, Julie Winkler

Year Published: 2015

Type: Document

Book or Chapter or Journal Article

Regional projections of the likelihood of very large wildland fires under a changing climate in the contiguous western United States

www.nrfirescience.org/resource/13006

Seasonal changes in the climatic potential for very large wildfires (VLWF > or = 50,000 ac ~20,234 ha) across the western contiguous United States are projected over the 21st century using generalized linear models and downscaled climate projections for two representative concentration pathways (RCPs). Significant ($p < 0.05$)...

Author(s): E. Natasha Stavros, John T. Abatzoglou, Donald McKenzie, Narasimhan K. Larkin

Year Published: 2014

Type: Document

Book or Chapter or Journal Article

Questionable evidence of natural warming of the northwestern United States

www.nrfirescience.org/resource/15655

Johnstone and Mantua (1) claim that changes in atmospheric circulation were the primary cause of the observed warming of sea surface temperature around the northeastern Pacific margins and surface air

temperature (SAT) in Northern California, Oregon, and Washington from 1901 to 2012. The results of Johnstone and Mantua's report...

Author(s): John T. Abatzoglou, David E. Rupp, Philip W. Mote

Year Published: 2014

Type: Document

Book or Chapter or Journal Article

Seasonal climate variability and change in the Pacific Northwest of the United States

www.nrfirescience.org/resource/15671

Observed changes in climate of the U.S. Pacific Northwest since the early twentieth century were examined using four different datasets. Annual mean temperature increased by approximately 0.6°–0.8°C from 1901 to 2012, with corroborating indicators including a lengthened freeze-free season, increased temperature of the coldest...

Author(s): John T. Abatzoglou, David E. Rupp, Philip W. Mote

Year Published: 2014

Type: Document

Book or Chapter or Journal Article

Role of extreme snowfall events in interannual variability of snowfall accumulation in the western United States

www.nrfirescience.org/resource/15661

Water resources in the western United States are contingent on interannual variations in snowpack. Interannual snowpack variability has been attributed to large-scale climate patterns including the El Niño–Southern Oscillation (ENSO), however, the contribution of snowfall frequency and extreme snowfall events to this...

Author(s): A.C. Lute, John T. Abatzoglou

Year Published: 2014

Type: Document

Book or Chapter or Journal Article

Tracking interannual streamflow variability with drought indices in the U.S. Pacific Northwest

www.nrfirescience.org/resource/15659

Drought indices are often used for monitoring interannual variability in macroscale hydrology. However, the diversity of drought indices raises several issues: 1) which indices perform best and where; 2) does the incorporation of potential evapotranspiration (PET) in indices strengthen relationships, and how sensitive is the choice...

Author(s): John T. Abatzoglou, Renaud Barbero, Jacob W. Wolf, Zachary A. Holden

Year Published: 2014

Type: Document

Book or Chapter or Journal Article

A comparison of three approaches for simulating fine-scale surface winds in support of wildland fire management. Part II. An exploratory study of the effect of simulated winds on fire growth simulations

www.nrfirescience.org/resource/16922

The effect of fine-resolution wind simulations on fire growth simulations is explored. The wind models are (1) a wind field consisting of constant speed and direction applied everywhere over the area of interest; (2) a tool based on the solution of the conservation of mass only (termed mass-conserving model) and (3) a tool based on...

Author(s): Jason M. Forthofer, Bret W. Butler, Charles W. McHugh, Mark A. Finney, Larry S. Bradshaw, Richard D. Stratton, Kyle S. Shannon, Natalie S. Wagenbrenner

Year Published: 2014
Type: Document
Book or Chapter or Journal Article

Climate and very large wildland fires in the contiguous western USA

www.nrfirescience.org/resource/13009

Very large wildfires can cause significant economic and environmental damage, including destruction of homes, adverse air quality, firefighting costs and even loss of life. We examine how climate is associated with very large wildland fires (VLWFs > or =50,000 acres, or ~20,234 ha) in the western contiguous USA. We used composite...

Author(s): E. Natasha Stavros, John T. Abatzoglou, Narasimhan K. Larkin, Donald McKenzie, E. Ashley Steel

Year Published: 2014
Type: Document
Book or Chapter or Journal Article

Modeling very large-fire occurrences over the continental United States from weather and climate forcing

www.nrfirescience.org/resource/15656

Very large-fires (VLFs) have widespread impacts on ecosystems, air quality, fire suppression resources, and in many regions account for a majority of total area burned. Empirical generalized linear models of the largest fires (>5000 ha) across the contiguous United States (US) were developed at ~60 km spatial and weekly...

Author(s): Renaud Barbero, John T. Abatzoglou, E. Ashley Steel, Narasimhan K. Larkin

Year Published: 2014
Type: Document
Book or Chapter or Journal Article

De-coupling seasonal changes in water content and dry matter to predict live conifer foliar moisture content

www.nrfirescience.org/resource/12959

Live foliar moisture content (LFMC) significantly influences wildland fire behaviour. However, characterising variations in LFMC is difficult because both foliar mass and dry mass can change throughout the season. Here we quantify the seasonal changes in both plant water status and dry matter partitioning. We collected new and old...

Author(s): William Matt Jolly, Ann M. Hadlow, Kathleen Huguet

Year Published: 2014
Type: Document
Book or Chapter or Journal Article

Observed changes in false springs over the contiguous United States

www.nrfirescience.org/resource/15668

Climate warming fosters an earlier spring green-up that may bring potential benefits to agricultural systems. However, advances in green-up timing may leave early stage vegetation growth vulnerable to cold damage when hard freezes follow green-up resulting in a false spring. Spatiotemporal patterns of green-up dates, last spring...

Author(s): Alexander G. Peterson, John T. Abatzoglou

Year Published: 2014
Type: Document
Book or Chapter or Journal Article

Extent of the rain-snow transition zone in the western U.S. under historic and projected climate

www.nrfirescience.org/resource/15660

This study investigates the extent of the rain-snow transition zone across the complex terrain of the western United States for both late 20th century climate and projected changes in climate by the mid-21st century. Observed and projected temperature and precipitation data at 4 km resolution were used with an empirical...

Author(s): P. Zion Klos, Timothy E. Link, John T. Abatzoglou

Year Published: 2014

Type: Document

Book or Chapter or Journal Article

Is proportion burned severely related to daily area burned?

www.nrfirescience.org/resource/13018

The ecological effects of forest fires burning with high severity are long-lived and have the greatest impact on vegetation successional trajectories, as compared to low-to-moderate severity fires. The primary drivers of high severity fire are unclear, but it has been hypothesized that wind-driven, large fire-growth days play a...

Author(s): Donovan Birch, Penelope Morgan, Crystal A. Kolden, Andrew T. Hudak, Alistair M. S. Smith

Year Published: 2014

Type: Document

Book or Chapter or Journal Article

Observed and projected changes in absolute temperature extremes across the contiguous United States

www.nrfirescience.org/resource/15657

Changes in the extent of absolute, all-time, daily temperature records across the contiguous United States were examined using observations and climate model simulations. Observations from station data and reanalysis from 1980 to 2013 show increased extent of absolute highest temperature records and decreased extent of absolute...

Author(s): John T. Abatzoglou, Renaud Barbero

Year Published: 2014

Type: Document

Book or Chapter or Journal Article

The climate velocity of the contiguous United States during the 20th century

www.nrfirescience.org/resource/15681

Rapid climate change has the potential to affect economic, social, and biological systems. A concern for species conservation is whether or not the rate of on-going climate change will exceed the rate at which species can adapt or move to suitable environments. Here we assess the climate velocity (both climate displacement rate and...

Author(s): Solomon Z. Dobrowski, John T. Abatzoglou, Alan Swanson, Jonathan A. Greenberg, Alison R. Mynsberge, Zachary A. Holden, Michael K. Schwartz

Year Published: 2013

Type: Document

Book or Chapter or Journal Article

Evaluation of CMIP5 20th century climate simulations for the Pacific Northwest USA

www.nrfirescience.org/resource/15675

Monthly temperature and precipitation data from 41 global climate models (GCMs) of the Coupled Model Intercomparison Project Phase 5 (CMIP5) were compared to observations for the 20th century,

with a focus on the United States Pacific Northwest (PNW) and surrounding region. A suite of statistics, or metrics, was calculated, that...

Author(s): David E. Rupp, John T. Abatzoglou, Katherine C. Hegewisch, Philip W. Mote

Year Published: 2013

Type: Document

Book or Chapter or Journal Article

Development of gridded surface meteorological data for ecological applications and modeling

www.nrfirescience.org/resource/15682

Landscape-scale ecological modelling has been hindered by suitable high-resolution surface meteorological datasets. To overcome these limitations, desirable spatial attributes of gridded climate data are combined with desirable temporal attributes of regional-scale reanalysis and daily gauge-based precipitation to derive a spatially...

Author(s): John T. Abatzoglou

Year Published: 2013

Type: Document

Book or Chapter or Journal Article

Drought seasonality explains patterns in widespread aspen forest mortality across the western United States

www.nrfirescience.org/resource/15679

Globally documented widespread drought-induced forest mortality has important ramifications for plant community structure, ecosystem function, and the ecosystem services provided by forests. Yet the characteristics of drought seasonality, severity, and duration that trigger mortality events have received little attention despite...

Author(s): Leander Anderegg, William R.L. Anderegg, John T. Abatzoglou, Alexandra M. Hausladen, Joseph A. Berry

Year Published: 2013

Type: Document

Book or Chapter or Journal Article

The missing mountain water: slower westerlies decrease orographic enhancement in the Pacific Northwest USA

www.nrfirescience.org/resource/15674

Trends in streamflow timing and volume in the Pacific Northwest United States have been attributed to increased temperatures, because trends in precipitation at lower-elevation stations were negligible. We demonstrate that observed streamflow declines are probably associated with declines in mountain precipitation, revealing...

Author(s): Charles H. Luce, John T. Abatzoglou, Zachary A. Holden

Year Published: 2013

Type: Document

Book or Chapter or Journal Article

Fire weather case study - Mann Gulch Fire, Montana

www.nrfirescience.org/resource/11976

The intent of this report is to analyze weather conditions to determine if a 'critical fire weather pattern' also contributed to the 'blowup.'

Author(s): Paul A. Werth

Year Published: 2013

Type: Document

Book or Chapter or Journal Article

Climate and vegetation influences on fire impacts in Alaskan boreal forest: implications for carbon and fire management

www.nrfirescience.org/resource/15688

Boreal forest fires are an important source of terrestrial carbon emissions, particularly during years of widespread wildfires. Most carbon emission models parameterize wildfire impacts and carbon flux to area burned by fires, therein making the assumption that fires consume a spatiotemporally homogeneous landscape composed of...

Author(s): Crystal A. Kolden, John T. Abatzoglou

Year Published: 2012

Type: Document

Book or Chapter or Journal Article

Climate extremes and their linkage to regional drought over Idaho, USA

www.nrfirescience.org/resource/15683

To investigate consequences of climate extreme and variability on agriculture and regional water resource, twenty-seven climatic indices of temperature and precipitation over Idaho, USA, were computed. Precipitation, mean temperature and maximum temperature, self-calibrated Palmer Drought Index and Standardized Precipitation Index...

Author(s): Mohammad Sohrabi, Jae H. Ryu, John T. Abatzoglou, John Tracy

Year Published: 2012

Type: Document

Book or Chapter or Journal Article

An evaluation of multi-scalar drought indices in Nevada and eastern California

www.nrfirescience.org/resource/15687

Nevada and eastern California are home to some of the driest and warmest climates, most mountainous regions, and fastest growing metropolitan areas of the United States. Throughout Nevada and eastern California, snow-dominated watersheds provide most of the water supply for both human and environmental demands. Increasing demands on...

Author(s): Daniel J. McEvoy, Justin L. Huntington, John T. Abatzoglou, Laura M. Edwards

Year Published: 2012

Type: Document

Book or Chapter or Journal Article

Empirical downscaling of daily minimum air temperature at very fine resolutions in complex terrain

www.nrfirescience.org/resource/15692

Available air temperature models do not adequately account for the influence of terrain on nocturnal air temperatures. An empirical model for night time air temperatures was developed using a network of one hundred and forty inexpensive temperature sensors deployed across the Bitterroot National Forest, Montana. A principle...

Author(s): Zachary A. Holden, John T. Abatzoglou, Scott L. Baggett, Charles H. Luce

Year Published: 2011

Type: Document

Book or Chapter or Journal Article

Mapping the potential for high severity wildfire in the western United States

www.nrfirescience.org/resource/15320

Each year, large areas are burned in wildfires across the Western United States. Assessing the

ecological effects of these fires is crucial to effective postfire management. This requires accurate, efficient, and economical methods to assess the severity of fires at broad landscape scales (Brennan and Hardwick 1999; Parsons and...

Author(s): Gregory K. Dillon, Penelope Morgan, Zachary A. Holden

Year Published: 2011

Type: Document

Synthesis

Influence of the PNA on declining mountain snowpack in the western United States

www.nrfirescience.org/resource/15695

The widespread decrease in mountain snowpack across the Western United States is a hallmark indicator of regional climate change. Observed decreases in snowpack across lower-elevation watersheds are broadly consistent with model predictions of anthropogenic climate change; however, the magnitude of the decreases across much of the...

Author(s): John T. Abatzoglou

Year Published: 2011

Type: Document

Book or Chapter or Journal Article

Changes in climatic water balance drive downhill shifts in plant species optimum elevations

www.nrfirescience.org/resource/15690

Uphill shifts of species' distributions in response to historical warming are well documented, which leads to widespread expectations of continued uphill shifts under future warming. Conversely, downhill shifts are often considered anomalous and unrelated to climate change. By comparing the altitudinal distributions of 64 plant...

Author(s): Shawn M. Crimmins, Solomon Z. Dobrowski, Jonathan A. Greenberg, John T. Abatzoglou, Alison R. Mynsberge

Year Published: 2011

Type: Document

Book or Chapter or Journal Article

Detailed point weather forecasts: how to get them when you need them

www.nrfirescience.org/resource/12441

Detailed point weather forecasts are a critical component of fire management planning. Accurate hour-by-hour forecasts for your exact location are valuable when you are preparing to ignite a prescribed burn and want to compare your prescription with actual conditions. They also provide important weather documentation for your files...

Author(s): Alan J. Long, Annie Oxarart

Year Published: 2011

Type: Document

Research Brief or Fact Sheet

Large scale fire whirls: can their formation be predicted?

www.nrfirescience.org/resource/16937

Large scale fire whirls have not traditionally been recognized as a frequent phenomenon on wildland fires. However, there are anecdotal data suggesting that they can and do occur with some regularity. This paper presents a brief summary of this information and an analysis of the causal factors leading to their formation.

Author(s): Jason M. Forthofer, Bret W. Butler

Year Published: 2010

Type: Document

Initialization of high resolution surface wind simulations using NWS gridded data

www.nrfirescience.org/resource/16936

WindNinja is a standalone computer model designed to provide the user with simulations of surface wind flow. It is deterministic and steady state. It is currently being modified to allow the user to initialize the flow calculation using National Digital Forecast Database. It essentially allows the user to downscale the coarse scale...

Author(s): Jason M. Forthofer, Bret W. Butler

Year Published: 2010

Type: Document

Conference Proceedings

How much influence does landscape-scale physiography have on air temperature in a mountain environment?

www.nrfirescience.org/resource/15698

Spatio-temporal patterns of temperature in mountain environments are complex due to both regional synoptic-scale and landscape-scale physiographic controls in these systems. Understanding the nature and magnitude of these physiographic effects has practical and theoretical implications for the development of temperature datasets...

Author(s): Solomon Z. Dobrowski, John T. Abatzoglou, Jonathan A. Greenberg, S.G. Schladow

Year Published: 2009

Type: Document

Book or Chapter or Journal Article

January 31st 2009 off-season grassland wildfire

www.nrfirescience.org/resource/11145

Wildland fires can be high impact events no matter what the season or fuel type. While the first image that comes to mind of wildland fire suppression is timbered mountainous terrain on a late summer afternoon, this wildland fire occurred in relatively flat grasslands during the overnight and early morning hours, during the...

Author(s): Robert W. Hoenisch

Year Published: 2009

Type: Document

Technical Report or White Paper

Learning the rhythm of the seasons in the face of global change: phenological research in the 21st century

www.nrfirescience.org/resource/15709

Phenology is the study of recurring life-cycle events, classic examples being the flowering of plants and animal migration. Phenological responses are increasingly relevant for addressing applied environmental issues. Yet, challenges remain with respect to spanning scales of observation, integrating observations across taxa, and...

Author(s): Jeffrey T. Morrisette, Andrew D. Richardson, Alan K. Knapp, Jeremy I. Fisher, Eric A.

Graham, John T. Abatzoglou, Bruce E. Wilson, David D. Breshears, Geoffrey M. Henebry, Jonathan M.

Hanes, Liang Liang

Year Published: 2009

Type: Document

Book or Chapter or Journal Article

Influence of the Madden Julian Oscillation on summertime cloud-to-ground lightning activity over the continental US

www.nrfirescience.org/resource/15696

Summertime cloud-to-ground lightning strikes are responsible for the majority of wildfire ignitions across vast sections of the seasonally dry western United States. In this study, a strong connection between active phases of the Madden–Julian oscillation (MJO) and regional summertime lightning activity was found across the...

Author(s): John T. Abatzoglou, Timothy J. Brown

Year Published: 2009

Type: Document

Book or Chapter or Journal Article

Climate drivers of regionally synchronous fires in the inland northwest (1651-1900)

www.nrfirescience.org/resource/16892

We inferred climate drivers of regionally synchronous surface fires from 1651 to 1900 at 15 sites with existing annually accurate fire-scar chronologies from forests dominated by ponderosa pine or Douglas-fir in the inland Northwest (interior Oregon, Washington and southern British Columbia). Years with widespread fires (35 years...

Author(s): Emily K. Heyerdahl, Donald McKenzie, Lori D. Daniels, Amy E. Hessler, Jeremy S. Littell, Nathan J. Mantua

Year Published: 2008

Type: Document

Book or Chapter or Journal Article

Fuel consumption and flammability thresholds in shrub-dominated ecosystems - Final Report to the Joint Fire Science Program

www.nrfirescience.org/resource/11164

Research to quantify fuel consumption and flammability in shrub-dominated ecosystems has received little attention despite the widespread occurrence of fire-influenced, shrub-dominated landscapes across the arid lands of the western United States. While some research has addressed issues relating to fire behavior in some shrub...

Author(s): Clinton S. Wright, Roger D. Ottmar, Sue A. Ferguson, Robert E. Vihnanek

Year Published: 2007

Type: Document

Technical Report or White Paper

The asymmetry of trends in spring and autumn temperature and circulation regimes over western North America

www.nrfirescience.org/resource/15710

Observational evidence shows that spring temperatures over western North America have undergone significant warming over the past half century, while autumn temperatures have shown relatively little change. Low-frequency modes of atmospheric variability for spring and autumn are demonstrated to account for a great deal of the...

Author(s): John T. Abatzoglou, Kelly T. Redmond

Year Published: 2007

Type: Document

Book or Chapter or Journal Article

Wildfires, weather, and productivity

www.nrfirescience.org/resource/11016

The object of this paper is to show the intercorrelations existing between statistics of wildfires

(occurrences: N; areas burned: A), climatic parameters (precipitation: P; temperature: T) and net primary productivity: NPP. To this purpose, statistics of wildfires have been studied in several regions of the world, focusing on...

Author(s): Michel L. Bernard, Nouredine Nimour

Year Published: 2007

Type: Document

Conference Proceedings

The fire-climate connection

www.nrfirescience.org/resource/11985

JFSP-funded research is exploring and quantifying relationships among the large-scale drivers of climate and the occurrence and extent of wildfire in the various regions of the western United States.

Author(s): Gail Wells

Year Published: 2007

Type: Document

Research Brief or Fact Sheet

Warming and earlier spring increase western U.S. forest wildfire activity

www.nrfirescience.org/resource/8397

Western United States forest wildfire activity is widely thought to have increased in recent decades, but surprisingly, the extent of recent changes has never been systematically documented. Nor has it been established to what degree climate may be driving regional changes in wildfire. Much of the public and scientific discussion of...

Author(s): Anthony L. Westerling, Hugo G. Hidalgo, Daniel R. Cayan, Thomas W. Swetnam

Year Published: 2006

Type: Document

Book or Chapter or Journal Article

Planetary wave breaking and nonlinear reflection: seasonal cycle and interannual variability

www.nrfirescience.org/resource/15713

Forty-six years of daily averaged NCEP–NCAR reanalysis data are used to identify the occurrence of planetary wave breaking (PWB) in the subtropical upper troposphere. As large-amplitude waves propagate into the subtropics where the zonal flow is weak, they may break. PWB is diagnosed by observing the large-scale meridional...

Author(s): John T. Abatzoglou, Gudrun Magnusdottir

Year Published: 2006

Type: Document

Book or Chapter or Journal Article

Comparison of 2-D wind fields and simulated wildland fire growth

www.nrfirescience.org/resource/11019

The paper discusses wildfire growth simulated by the FARSITE model using high-resolution wind fields over complex terrain extracted from operational runs of the MM5 weather forecast model supported by the USDA FS Rocky Mountain Center (RMC: <http://www.fs.fed.us/rmc/>). The original 12-km resolution wind field (simulated by MM5) has...

Author(s): Karl F. Zeller, Ned Nikolov, John S. Snook, Mark A. Finney, Jason M. Forthofer

Year Published: 2003

Type: Document

Conference Proceedings

The 2000 fire season: lightning-caused fires

www.nrfirescience.org/resource/8141

A large number of lightning-caused fires burned across the western United States during the summer of 2000. In a previous study, the authors determined that a simple index of low-level moisture (85-kPa dewpoint depression) and instability (85-50-kPa temperature difference) from the Spokane, Washington, upper-air soundings was very...

Author(s): Miriam L. Rorig, Sue A. Ferguson

Year Published: 2002

Type: Document

Book or Chapter or Journal Article

Critical fire weather patterns of the United States

www.nrfirescience.org/resource/12780

Descriptions of critical fire weather patterns from across the United States. Watch out conditions discussed.

Year Published: 1999

Type: Document

Research Brief or Fact Sheet

Making sense of fire weather

www.nrfirescience.org/resource/8122

This paper analyzes data from 339 large wildland fires that occurred in the Continental United States from 1971 through 1984. Each fire burned 1,000 acres (400 ha) or more. Each fire was associated with the nearest upper-air weather station and classified according to its season (spring, summer, autumn, or winter). Results of this...

Author(s): Brian E. Potter

Year Published: 1997

Type: Document

Book or Chapter or Journal Article

Probability of fire-stopping precipitation events

www.nrfirescience.org/resource/11933

Fire managers in the Northwestern United States are often confronted by the problem of determining when precipitation might stop an ongoing fire. The possibility that a useful probability for fire-stopping precipitation could be developed from historical weather records was investigated. Persons familiar with weather and fire...

Author(s): Donald J. Latham, Richard C. Rothermel

Year Published: 1993

Type: Document

Research Brief or Fact Sheet

Lightning direction-finding systems for forest fire detection throughout the western United States and Alaska

www.nrfirescience.org/resource/7958

Extensive networks of magnetic direction-finding (DF) stations have been installed throughout the western United States and Alaska to facilitate early detection of lightning-caused fires. Each station contains a new wideband direction-finder that responds primarily to cloud-to-ground lightning and discriminates against cloud...

Author(s): E. Philip Krider, R. C. Noggle, A. E. Pifer, Dale L. Vance

Year Published: 1980

Type: Document

Book or Chapter or Journal Article

Progress toward locating lightning fires

www.nrfirescience.org/resource/12120

Systems to enable land managers to locate, evaluate, and counter the fire threat of lightning storms are in the early stages of development. In the western U.S. and Alaska, the Bureau of Land Management has established networks of instruments that locate lightning strikes by means of recorded azimuths.

Further research could add...

Author(s): Donald J. Latham

Year Published: 1979

Type: Document

Research Brief or Fact Sheet

Introduction to WFDSS - air quality tools

www.nrfirescience.org/resource/12865

Introduction to WFDSS - Air Quality Tools Smoke management is an important aspect of managing wildland fire. While mitigating smoke impacts from prescribed burns is important, smoke from large wildfire complexes (such as the AZ/NM fires in 2011) can expose millions of people to significant smoke, with hundreds of thousands living in...

Type: Media

Webinar

Introduction to the Canadian Forest Fire Weather Index System

www.nrfirescience.org/resource/14134

This video provides an introduction to the Canadian Forest Fire Weather Index System.

Type: Media

Video

Learning From The Experts: Margit Bucher - Another Pair of Eyes

www.nrfirescience.org/resource/16040

In this 9 minute video, Margit Bucher explains how she uses her crew as another pair of eyes and the importance of double checking assumptions that you are working on within the burn plan. The goal of the Learning from the Experts video series is to speed up individual and organizational learning. Project personnel have...

Type: Media

Video

Part 3. Wildland fire, smoke & roadway visibility series: Planned Burn (PB) Piedmont Web Tool - Estimating Superfog potential from Smoldering Combustion

www.nrfirescience.org/resource/15297

In Part 3 of the Wildland Fire Smoke and Roadway Visibility Webinar Series, Matthew Fearon, research meteorologist for the Desert Research Institute, presented on the PB-Piedmont Web Tool, Super-Fog Potential, and Estimated Smoldering Potential - all with a focus on moving science to a usable tool for managers and others.

Type: Media

Webinar

Rapidly-updating numerical weather prediction for fire weather situational awareness and forecasting: The High-Resolution Rapid Refresh model

www.nrfirescience.org/resource/15804

The 3-km High-Resolution Rapid Refresh (HRRR) numerical weather prediction model, developed at the NOAA Earth System Research Laboratory and operational since September 2014, is a tool for situational weather awareness and short-range forecasting for a variety of end-user applications, ranging from severe weather prediction to...

Type: Media

Seminar

Part 1. Wildland fire, smoke & roadway visibility series: Superfog: how it forms, where it forms, where it goes, what to do

www.nrfirescience.org/resource/15293

In Part 1 of the Wildland Fire Smoke and Roadway Visibility Webinar Series, Gary Achtemeier, former research meteorologist for the USFS Southern Research Station, presented information on the following topics: • What is Superfog and how it forms on your burn site • How common is Superfog on burn sites • Superfog weather:...

Type: Media

Webinar

Evaluating the Swiss SNOWPACK modeling system across the Northern Rocky Mountains

www.nrfirescience.org/resource/15791

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,...

Type: Media

Seminar

Comparison of sling psychrometer to digital weather meters

www.nrfirescience.org/resource/13774

Belt weather kits for recording of weather information have been in use since 1959. The use of a sling psychrometer from these kits is standard practice for the recording of dry and wet bulb temperatures to calculate relative humidity. Electronic based meters for recording weather information could replace belt...

Type: Media

Webinar

Transitioning from a small fire: fire behavior driving episodic fire growth after 1988 in Yellowstone National Park

www.nrfirescience.org/resource/15154

This presentation was part of the 13th Biennial Scientific Conference on the Greater Yellowstone Ecosystem held at Jackson Lake Lodge in Grand Teton National Park, October 4-6, 2016. The conference theme was Building on the Past, Leading into the Future: Sustaining the Greater Yellowstone Ecosystem in the Coming Century.

Type: Media

Webinar

Elements of the National Weather Service fire weather forecast

www.nrfirescience.org/resource/13247

Casey Sullivan provides an overview of the National Weather Service fire weather forecast program and discusses elements of the fire weather forecast available to any fire practitioner. The hourly

weather graph and definitions of surface winds were emphasized.

Type: Media

Webinar

Beyond the stability index: fire management and forecasting tools for air quality, weather and climate impacts of prescribed fires

www.nrfirescience.org/resource/13063

This webinar introduced and described forecasting tools for air quality, weather and climate impacts of prescribed fires.

Type: Media

Webinar

A dynamic, severe fire weather potential mobile mapping program

www.nrfirescience.org/resource/14536

Goal of this tool is to provide spatial, dynamic fire danger and fire behavior assessment tools so that firefighters can abide by the Standard Fire Orders 1 and 3: "Keep informed of fire weather conditions and forecasts" and "Base all action on current and expected fire behavior".

Type: Media

Video

Burn boss stories

www.nrfirescience.org/resource/14148

Veteran burn bosses share their stories and firsthand insights.

Type: Media

Video

Predicting local smoke dispersion during low-intensity wildland fires in forested environments

www.nrfirescience.org/resource/12835

Smoke generated from low-intensity prescribed fires used for fuels management can have an adverse impact on local air quality, raising human health and safety concerns especially in wildland-urban-interface areas. Local smoke behavior is a complex process and is highly dependent on local ambient atmospheric conditions (e.g....

Type: Media

Webinar

WFDSS modeling and weather

www.nrfirescience.org/resource/14131

This webinar was facilitated by Tom St. Clair, Fairbanks, Alaska, and focused on WFDSS modeling and weather. The agenda items covered included: how to pick RAWS to get the best data for wind and fuels, using predicted weather, ERC classes tab in WFDSS, ERC streams tab in WFDSS, winds tab in WFDSS, dealing with weather forecast...

Type: Media

Webinar

An Assessment of Temperature and RH from a Variety of Weather Meters

www.nrfirescience.org/resource/15934

Do you use belt weather kits or electronic handheld weather meters for measuring temperature and relative humidity in the field? Which device do you trust? Belt weather kits for obtaining weather information on prescribed fires and wildfires have been in use since the 1960's and the use of sling

psychrometers from these kits has...

Type: Media

Webinar

Part 2. Wildland fire, smoke & roadway visibility series: Weather information and tools available to stay ahead of superfog events

www.nrfirescience.org/resource/15295

In Part 2 of the Wildland Fire Smoke and Roadway Visibility Webinar Series, Gary Curcio, former Fire Environment Branch Head NC Forest Service, presented information on the following topics: • Obtaining and tracking key environmental variables • Reviewing operationally developed indexes (Turner Stability Index (TS),...

Type: Media

Webinar

Fire and Lightning from Space: Using the new GOES-16 Satellite for Fire and Total Lightning Detection

www.nrfirescience.org/resource/15802

GOES-16 is NOAA's latest earth-observing geostationary satellite, launched Nov 19, 2016. The GOES-16 platform hosts many improved earth-and sun-looking instruments, of which the Advanced Baseline Imager (ABI) and the Geostationary Lightning Mapper (GLM) are the primary earth-pointing instruments. Both instruments take current...

Type: Media

Seminar

A topographically resolved wildfire danger and drought monitoring system for the conterminous United States

www.nrfirescience.org/resource/15242

Patterns of energy and available moisture vary over small distances in mountainous regions and available climate data are too coarse to resolve these terrain-mediated effects. This seminar focused on efforts to improve the physical template we use to analyze vegetation patterns and post-fire ecological effects, including what has...

Type: Media

Seminar

A summary of fire season 2016 in Oregon and Washington

www.nrfirescience.org/resource/15112

John Saltenberger, Meteorologist with the US Fish and Wildlife Service, presented A Summary of Fire Season 2016 in OR and WA. This webinar was hosted by the NW Fire Science Consortium.

Type: Media

Webinar