Influence of satellite sensor pixel size and overpass time on undercounting of cerrado/savannah landscape-scale fire radiative power (FRP): an assessment using the MODIS airborne simulator

The fire radiative power (FRP) of active fires (AFs) is routinely assessed with spaceborne sensors. MODIS is commonly used, and its 1 km nadir pixel size provides a minimum per-pixel FRP detection limit of ~5-8 MW, leading to undercounting of AF pixels with FRPs of less than around 10 MW. Since most biomes show increasing AF pixel...

Author(s): Samuel Sperling, Martin J. Wooster, Bruce D. Malamud

Year Published: 2020

Type: Document

Book or Chapter or Journal Article

Pre?fire vegetation drives post?fire outcomes in sagebrush ecosystems: evidence from field and remote sensing data

Understanding the factors that influence vegetation responses to disturbance is important because vegetation is the foundation of food resources, wildlife habitat, and ecosystem properties and processes. We integrated vegetation cover data derived from field plots and remotely sensed Landsat images in two focal areas over a 37?yr...

Author(s): Brittany S. Barker, David S. Pilliod, Matthew Rigge, Collin Homer

Year Published: 2019

Type: Document

Book or Chapter or Journal Article

Giving ecological meaning to satellite-derived fire severity metrics across North American forests

Satellite-derived spectral indices such as the relativized burn ratio (RBR) allow fire severity maps to be produced in a relatively straightforward manner across multiple fires and broad spatial extents. These indices often have strong relationships with field-based measurements of fire severity, thereby justifying their widespread...

Author(s): Sean A. Parks, Lisa M. Holsinger, Michael J. Koontz, Luke Collins, Ellen Whitman, Marc-Andre Parisien, Rachel A. Loehman, Jennifer L. Barnes, Jean-François Bourdon, Jonathan Boucher, Yan Boucher, Anthony C. Caprio, Adam Collingwood, Ronald J. Hall, Jane Park, Lisa B. Saperstein, Charlotte Smetanka, Rebecca J. Smith, Nicholas O. Soverel

Year Published: 2019

Type: Document

Book or Chapter or Journal Article

Efficiency of remote sensing tools for post-fire management along a climatic gradient

Forest managers require reliable tools to evaluate post-fire recovery across different geographic/climatic contexts and define management actions at the landscape scale, which might be highly resource-consuming in terms of data collection. In this sense, remote sensing techniques allow for gathering environmental data over large...

Author(s): José Manuel Fernández-Guisuraga, Leonor Calvo, Víctor Fernández-García, Elena Marcos-Porras, Angela Taboada, Susana Suárez-Seoane

Year Published: 2019

Type: Document

Book or Chapter or Journal Article

Evaluating Model Predictions of Fire Induced Tree Mortality Using Wildfire-Affected Forest Inventory Measurements

www.nrfirescience.org/resource/20259

Forest land managers rely on predictions of tree mortality generated from fire behavior models to identify stands for post-fire salvage and to design fuel reduction treatments that reduce mortality. A key challenge in improving the accuracy of these predictions is selecting appropriate wind and fuel moisture inputs. Our objective...

Author(s): Jason S. Barker, Jeremy S. Fried, Andrew N. Grey

Year Published: 2019

Type: Document

Book or Chapter or Journal Article

Deriving Fire Behavior Metrics from UAS Imagery

www.nrfirescience.org/resource/19743

The emergence of affordable unmanned aerial systems (UAS) creates new opportunities to study fire behavior and ecosystem pattern-process relationships. A rotor-wing UAS hovering above a fire provides a static, scalable sensing platform that can characterize terrain, vegetation, and fire coincidently. Here, we present methods for...

Author(s): Christopher J. Moran, Carl A. Seielstad, Matthew R. Cunningham, Valentijn Hoff, Russell A. Parsons, Lloyd P. Queen, Katie Sauerbrey, Tim Wallace

Year Published: 2019

Type: Document

Book or Chapter or Journal Article

Towards improved quantification and prediction of post-fire recovery in conifers: Expanding laboratory fire radiative energy-tree physiology experiments to a mature forest stand - JFSP Final Report

www.nrfirescience.org/resource/17721

Current assessments of the ecological impacts of fires, termed burn severity, investigate the degree to which an ecosystem has changed due to a fire and typically encompass both vegetation and soil effects. Burn severity assessments at local to regional scales are typically achieved using spectral indices (such as the differenced...

Author(s): Crystal A. Kolden, Aaron M. Sparks

Year Published: 2018

Type: Document

Technical Report or White Paper

How vegetation recovery and fuel conditions in past fires influences fuels and future fire management in five western U.S. ecosystems - JFSP Final Report

www.nrfirescience.org/resource/18062

Mixed severity wildfires burn large areas in western North America forest ecosystems in most years and this is expected to continue or increase with climate change. Little is understood about vegetation recovery and changing fuel conditions more than a decade post-fire because it exceeds the duration of most studies of fire effects...

Author(s): Andrew T. Hudak, Beth A. Newingham, Eva K. Strand, Penelope Morgan

Year Published: 2018

Type: Document

Book or Chapter or Journal Article

Demonstration and integration of systems for fire remote sensing, ground-based fire measurement, and fire modeling - Final Report to the Joint Fire Science Program

Proof-of-concept research is being conducted to: compare airborne and in situ, ground-based fire measurement systems; begin evaluation of two fire-behavior simulation models with these data; test approaches to incorporating improved wind-field and weather data in these models; test the utility of the airborne remote sensing for...
Author(s): Colin C. Hardy, Philip J. Riggan
Year Published: 2005
Type: Document
Technical Report or White Paper