



Teaching the Next Generation of LANDFIRE Users

LANDFIRE Interviews Heather Heward,
University of Idaho Senior Fire Instructor

Heather began her fire career in 2002. She worked eight seasons as a wildland firefighter in a variety of capacities – her favorite as a member of wildland fire modules in California and New Mexico. Her degrees are from the University of Idaho in Natural Resources Ecology and Conservation Biology with a minor in Fire Ecology and Management (B.S. 2006), and Forestry with an emphasis on remote observations of fires (M.S. 2009). During and since completing her master's studies, Heather has worked frequently with The Nature Conservancy's prescribed burn training exchanges (TRES).



Heather joined the University of Idaho in 2012; as a senior instructor, she teaches most of the on-campus fire classes. LANDFIRE data is used in the Prescribed Burning Lab, Fire and Fuel Modeling, and GIS Applications in Fire Ecology and Management classes. Heather created various instructional material ([SparkED Resources](#)) for the courses, drawing from her own experience, interviews with many who influence LANDFIRE's creation and growth, and with product users, to inform students about how they will likely use LANDFIRE when they enter the workforce.

"I love to learn almost as much as I love teaching. I am passionate about fire education and enjoy seeing the fire in my students as they learn about how they can make a difference in the broader world of fire ecology and management."

How did you find LANDFIRE and/or we find you?

I was an early "ground truther." In 2005 I was on a California-based fire use module on assignment in southern Utah. The fire was pretty much out, and we were put to work monitoring fire effects and collecting fuels measurements such as canopy height, crown cover, and species. Those measurements were used to ground truth a new product called LANDFIRE.

Later as a graduate student, I began using LANDFIRE data to understand cover characteristics and compare those metrics to active fire detections by satellites. I have used LANDFIRE continuously ever since, as both a visual base layer and as an important source of information. Most recently, I use LANDFIRE data to work with fire behavior models such as FlamMap and IFTDSS.

Tell us about SparkED Resources, and the inspiration and need for LANDFIRE videos

I started the website [SparkED Resources](#) in May 2018, after several students asked to access the course materials following college. I am no web designer and have too many other

things going on to keep the site (and [YouTube channel](#)) up to date as much as I would like, but it serves my and the students' needs well.

Regarding the [videos](#), I've been using LANDFIRE for some time in the classroom and developed some useful training material so that I don't have to repeat myself so much. During the summer of 2018 I connected what I want for the classroom – students learn best with video demonstrations where they can work at their own pace – with a need for more unified material about LANDFIRE. We are also in a rapidly growing online learning environment, and videos are the new classroom in many ways.

Further, during conversations with managers, I heard that many don't have time to figure out how to use something new – they are not given any training material on the topic and are given little reason to seek it out on their own. Through the development of additional training material, ideally, more fire and fuel managers can gain a better understanding of what LANDFIRE is and how to use it. I am planning more LANDFIRE videos, mostly how-to demonstrations.

How do your students work with LANDFIRE data?

In a freshman level class, Exploring Natural Resources, students complete a lab where they do a simple analysis of vegetation and fuel conditions in relation to other features on the landscape such as homes, rivers, birding sites, etc. In upper-level classes, LANDFIRE serves as the basis for most of the work we do in fire modeling and helps us with prescribed fire planning.



Students get experience downloading the data and saving it in a file structure with no spaces in the name. (If I had a nickel for every time students have had spaces in their path names after explicit directions to avoid them – I would have a lot of nickels.) In the Prescribed Burning Lab, LANDFIRE data are mostly used to verify fuel models on units where students will be writing burn plans. In Fire and Fuel Modeling and GIS Applications in Fire Ecology and Management, the students spend most of the semester working with the LANDFIRE data and going through all or most of the evaluation process. They then use the LANDFIRE data to generate a variety of fire behavior outputs, first to see how close their fire modeling can replicate what has occurred in the past, and then to develop output for potential fire behavior in the future.

Please comment on the challenges and/or successes that the students experience.

In other classes, the students learn about vegetations and fuels information such as canopy cover and fire behavior fuel model, and they like being able to see those metrics at a much larger scale. They also enjoy how easy it is to access LANDFIRE data and use it right away for various projects.

As they go through the evaluation process they recognize that there are differences between what exist on the ground and what is given in LANDFIRE. These differences are often just a matter of scale, but some could be opportunities for improvements in the algorithms. This is

an important learning opportunity for them as they come to understand that even high-quality data is not a total replacement for on-the-ground knowledge. It is a good starting place but should always be accompanied by experience. It is also important for them to learn that they have a voice and can contribute to the improvement of LANDFIRE products.

What do you think LANDFIRE does well, and where do you think LANDFIRE can up its game?

What LANDFIRE does well. A frequent topic we discuss in my classes is why models are useful. I make it clear that while models are not reality, they have an amazing ability to make us think. LANDFIRE products are useful, data applications are endless, and resources are easily accessible. But like any modeling tool, LANDFIRE data are often pulled from the shelf without having context about actual conditions.



Upping the game. I believe that with additional training material, not just on LANDFIRE but on fire and fuels in general, we can use LANDFIRE data more effectively.

Practitioners also need faster turnaround on updates, a better downloading process from landfire.gov, and more public training on how to use the data and submit feedback. That said, I know that those things take time and money, and I recognize that that is not always available. So, for now, I will keep plugging away with my contribution to education, and hope that my official students and others who watch my videos will learn what they need to and share their positive experiences with LANDFIRE.

More about Heather

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[Faculty bio](#)

[SparkED Resources](#)

[YouTube Channel](#)

["Introduction to LANDFIRE"](#) video

["Download Data from LANDFIRE.gov"](#) video