



**SOUTHERN
Fire Exchange**

Uniting Fire Science and Natural Resource Management



SFE 10 Minutes 2014-2

10 Minutes with the Southern Fire Exchange: Caroline Noble

10 Minutes is an interview series where the Southern Fire Exchange talks with experts, leaders, and sages in southern wildland fire management and research. In this interview, the SFE speaks with Caroline Noble, a Florida based fire mapping and GIS manager with the National Park Service.

As a NPS Regional Fire Ecologist, how are you using GIS and mapping tools?

“GIS and mapping tools are playing an ever-increasing role in our day-to-day work. We use GIS and mapping tools for fuels treatment planning and monitoring as well as for communication and record keeping. We also utilize many models that incorporate both our local datasets as well as national datasets. GIS allows us to tie together location based information like soil type, vegetation, elevation, slope, photographs and qualitative measurements. With this information we can track changes and develop models to develop change analysis techniques.

During the planning phase, GIS allows us to focus our treatments on vegetation communities of specific interest and/or areas where fuel reduction will help mitigate the risk of unwanted fire. Post fire, we can look at any plot data we have gathered regarding site specific treatment effects and begin to extrapolate that to similar areas on the landscape. We also rely heavily on remotely sensed GIS data to help us map burn severity for larger prescribed fires or wildfires where we don't have the means to collect site specific plot data. We are beginning the process of serving up most of our data through a web interface that allows multiple interested parties to have access to the same data in a timely fashion.”

Caroline Noble **Southeast Region Fire Ecologist** **National Park Service**

From 1985 - 1992 Caroline worked for the USFS in Idaho and Montana as a hotshot, timber crew member, and fuels specialist. In 1993 she switched to the National Park Service becoming Prescribed Fire Specialist in Yosemite. In 1997 she moved back to Montana as Assistant FMO for Glacier National Park. Since 2000 Caroline has been the Fire Ecologist for the NPS southeast region where she provides fire ecology and fire effects monitoring program oversight.



How can GIS and mapping tools help southern fire managers carry out their various responsibilities?

“One of the most pronounced benefits of GIS is increased situational awareness in terms of where you are and what you are near. This basic information adds an extra margin of safety both for fire managers and for the public. Additionally, with a good set a base data, you can really begin to hone in on areas of interest for prescribed fire by querying the data for attributes of interest, whether that is specific habitat requirements for an endangered species, time since the last fire in areas where you want to keep burn frequency within a specified range, or looking at values at risk in proximity to your proposed burn area. The tools can be especially helpful at identifying contingency plans should a fire escape the prescribed area as well as for identifying smoke sensitive areas that might be impacted by your burn. Another benefit is that maps are a great communication tool. By providing homeowners, cooperators, the media, or other interested parties with maps of proposed treatments, you can minimize confusion and really focus on any specific issues or concerns that might arise as a result of the proposed project.”

Where would you direct novice or even experienced managers to learn more about wildland fire GIS and mapping?

“Probably all fire folks are familiar with using Google Earth, but they may not be aware that Google has an outreach program with tutorials about how to annotate Google Earth. This is probably the simplest and easiest way to create a basic map (www.google.com/earth/outreach/tutorials/all.html). ArcMap also provides tutorials and online training, often free, for both beginner and advanced users using both online mapping through ArcGIS Online or desktop software such as ArcGIS. Some of them are self-paced and others are available on YouTube where you can watch video presentations. These resources can be found at www.esri.com/training/main or by searching within YouTube. Additional training information that is geared toward fire suppression is also available (www.esri.com/library/bestpractices/fire-mapping.pdf). Support tools for fire and lightning detection data can also be accessed at: http://gis.nwcg.gov/links_tools.html. To access free burn severity maps for larger fires (> 300 acres) from 1984 to the past year, go to www.mtbs.gov/dataaccess.html. From the MTBS site you can get a Google Earth file (.KMZ), a .PDF map of burn severity, or download the raw GIS data. Additionally I would recommend managers contact a university extension office. They are a great resource that can open the door to the wealth of knowledge a university has.”

What are some spatially-related questions or issues that you would like to see addressed by fire science researchers?

“I would like to see improvement in remotely sensed data interpretation in the southeast United States. Currently we are often hampered by both cloud cover and water reflectance. If analysis techniques could be developed to minimize this “noise” in the datasets we could develop great change-over-time series each time the satellites pass over. Additionally, finer resolution in some of these remotely sensed images would help capture the variability in southern landscapes that is often missed with a 30 m spatial resolution image. I also think that the field of utilizing unmanned aircraft to capture localized or site specific imagery on a much finer scale is about to take off. Development of image analysis software that

can help us to monitor vegetation and fuel changes post fire would really be a revolution in terms of fire effects monitoring. Initially these analyses would need fairly rigorous ground truthing, which the research community could provide. Lastly, LiDAR data, which gives more of a three dimensional dataset of vegetation and fuels, is becoming increasingly inexpensive. I would like to see fire modelers explore incorporation of this remotely sensed technology into fuel model and fire behavior mapping.”

Finally what is one ‘must-hear’ fire GIS and mapping message that you would like to share with fire managers in the South?

“For private landowners and smaller organizations, I would encourage them to become proficient in at least creating GIS maps of their wildfires or proposed burns so they can both communicate this information and have an archival record of the occurrence. Simply knowing the burn history of a site can be invaluable and a GIS data record is the most efficient way to store this type of information. A few years ago, it would have been sufficient to capture a ballpark point of your prescribed fire. Today decision support systems and models are being used that rely heavily on accurate location based information. Technology advancements have made tools for the collection of GIS data (perimeters) very intuitive and available to nearly everyone. For larger landowners, I would say that GIS is the future of land management and the future is now. All federal fire programs and many state programs are utilizing GIS based spatial models and datasets for wildfire decision making, prescribed fire funding, fire management staffing, and resource location. Examples of such spatial models and datasets include the *Southern Wildfire Risk Assessment* (www.southernwildfirerisk.com) and the soon to be released *SouthWRAP* program, as well as *LANDFIRE* (www.landfire.gov/). While these models were initially developed for government users, their scope is continuous on the landscape and all ownerships are represented. While some of the data utilized in these models come from nationally produced datasets, the best data come from local units. Therefore, it is in the best interest of local fire managers to provide feedback on these datasets to ensure that the data are accurate and to ensure that their local interests are well represented in the spatial model development processes.”

Special thanks to Caroline Noble for sharing her perspectives and for being part of our 10 Minutes Interview.

For more information on the Southern Fire Exchange, visit www.southernfireexchange.org.

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