

Fire Ecology Chats: A Podcast Series by the Association for Fire Ecology



Transcript of Episode 10

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Guest: Cristina Fernández (Centro de Investigación Forestal de Lourizán-Consellería do Medio Rural)

Link to Full Article in Fire Ecology: <https://fireecology.springeropen.com/articles/10.1186/s42408-020-00089-7>

Bob Keane: Good morning everybody. My name is Bob Keane. I am the host of Fire Ecology Chats, the podcast that advertises the new papers that are in the great journal Fire Ecology, which is sponsored by AFE. Today, we have a wonderful guest, a very interesting paper that was recently published a Fire Ecology. Our guest is Dr. Cristina Fernandez. And go ahead and introduce yourself.

Cristina Fernandez: Hello, I am Cristina Fernandez. I am biologist. I am a specialist in in fire ecology. I work in a research center that belongs to the government of Galicia, that is a region that located in the northwest part of Spain in the southern Europe. It's one of the regions of Europe most affected by forest fires. And it's also the only one with a post-fire soil erosion risk mitigation program that is coordinated by our for the forest management section in the region.

Bob Keane: Very good. Thank you. So, talk about your very interesting paper on the use of the new Sentinel-2 satellite sensor to go ahead and see if it can identify severity. So Cristina, could you go ahead and tell us about your study?

Cristina Fernandez: For us, the evaluation of fire severity is a very important step in the planning of post-fire soil erosion risk mitigation actions as post-fire runoff and erosion are highly dependent, especially on the level of soil burn severity. We are involved in the soil erosion mitigation actions planning with the government. We have been working for years improving fire severity assessment methodologies to speed up this work before the autumn rains. And remote sensing can be very useful for that. This work has been carried out in the framework of project that is funded by the European Union to propose actions and methodologies to mitigate the impact of forest fires in the shoulder part of Europe that is the most affected by wildfire. This project gives us the opportunity of collaborating with other groups in global change unit in Valencia University in Spain that is a group of reference in remote sensing worldwide. Since we are a specialist in soils and in ecology. And I think is a good example of joint collaboration between two different sides of the same problem.

Bob Keane: Thank you for that. Well, your study did something kind of special is that it correlated a number of burn indices to soils information. You use three soil variables, I believe. Cristina, what were those three soil variables?

Cristina Fernandez: We choose three properties, soil properties that we know that they are related with soil erosion risk because it's not always easy to have soil erosion measures. But they are soil hydraulic conductivity, soil carbon content, and the weighted mean of soil aggregates. We know by previous studies that they are

related with soil erosion risk. As you are indicating, that is not very frequent to find the relationships between spectral indices and soil properties. But maybe, this is small contribution, because it's three particular wildfires, but we think that this is beginning point to find a way of collaborating with remote sensing people.

Bob Keane: Yeah. What amazed me, and what was fascinating about the study, is that you got high correlations with a number of burn indices mainly NBR, which is normalized burn ratio, but also one that was specifically designed for the Sentinel-2, right, it was BAIS. Could you tell us about that?

Cristina Fernandez: We are looking for another kind of indices, because the experience we have with NBR is that they can be very, very variable. The BAIS is something related with the burned area that is not so focusing in severity. But for us, it was a surprised to find this kind of correlation. We know now that all the Sentinel-2 bands related with the red and infrared maybe the way to find better correlations with soil properties in the future.

Bob Keane: Well, another thing I found fascinating was that, in order to get at high severity fire, that the relativized indices did actually better than the normalized indices, is that correct?

Cristina Fernandez: Yeah, it's right. Maybe, because we are carrying out the research in three different parts of Spain. And maybe these relative indices are better if you want to generalize your results, because you are comparing the pre and post images. Maybe, this is the proper way as other authors found before, even so comparisons between the pre and post seems better if you want to generalize your results.

Bob Keane: This is wonderful information. Everybody can actually download this paper for free from the Fire Ecology website. Cristina, do you have any funding sources that you'd like to recognize at this time?

Cristina Fernandez: Yeah, I want to thank the SUDOE program from the European Union that is particular funding for Spain, Portugal and south France. This project is a joint effort between the three countries trying to find better solutions to solve the wildfire problems in the area.

Bob Keane: Well, thank you, Cristina. And thank you everyone for listening. Really appreciate it. Next time you want to learn something new, go to the website for Fire Ecology and download some of our really interesting papers. Thank you very much, Cristina. Goodbye.