

Station fire reports show key information on hillsides, mudslides

Emma Gallegos, Los Angeles Newspaper Group, 5-30-10

After the firefighters put out most of the Station Fire in September, scientists swooped in from all over the country, studying the air, the soil, the water and what was left of the plants and animals.

Although the fire had died out, there were still hazards and this is what the scientists came to document: caustic ash, poisonous soil and unsteady hillsides.

In the weeks after the fire, they made predictions about what would happen when the rains came. Some of them returned to see how well - or poorly - their predictions on the fly fared after the winter rains.

Now that it's spring and the rains have eased, they're crunching their numbers and sharing their follow-up reports. Earlier this month the Southern California Academy of the Sciences hosted a symposium on the science that has come out of the Station Fire.

Sabrina Drill, the natural resources advisor at the UC Cooperative Extension who helped organize the symposium, said it was a good opportunity to bring the science of disasters - conducted mostly by federal agencies - to the academy.

"Sometimes the part of the Forest Service that manages the national forest gets absorbed with the management side," she said. "These fires are opportunities to sort of learn a lot and bring in a lot of the science."

Most scientists working on disasters say their work this time will be useful for the next disaster that strikes - that's especially true for researchers studying mudslides.

Geologist Susan Cannon and her team at USGS have been monitoring the hillsides since November, when they issued a report warning of "killer" mudslides that intense winter rains could unleash. Nine homes in La Cañada Flintridge were completely devastated by mudslides during a storm this February.

One of the biggest takeaways from all those months of measuring mudslides was a 10-minute rule. All the major mudslides this season began when there was a short, intense 10-minute burst of rain. It didn't matter how long it had been raining or how long it rained afterward, Cannon explained. All scientists had before was anecdotal evidence.

"People said stuff happened when it was raining hard," Cannon said. "We had an inkling but we were able to document that."

Now authorities know what to look out for, but that doesn't necessarily mean that it's much easier to predict when there is going to be a mudslide, Cannon said. It's hard to predict whether there will be a short burst of rain in the middle of a storm.

To Peter Wohlgemuth, a hydrologist with U.S. Forest Service, the Station Fire was just another Southern California fire - the only difference was this fire occurred above Los Angeles County's intricate system of debris basins. The basins provided him with a gold mine of data that he couldn't find anywhere else.

After any fire, federal scientists visit the burned area and create a report to assess the damage and predict. But typically, they don't have a good way of knowing how well their predictions work.

That's why when the Forest Service came in to assess the risk of mudslides, they used a model created by the Forest Service 60 years ago.

"People use them, because ... they're better than a Ouija board," Wohlgemuth said.

The scientists measured all the mud and water that came down into the debris basins, and the results showed those aging models weren't particularly accurate.

But now that he has this wealth of data, anyone who has predictions about what might trigger a mudslide is welcome.

"Everyone who has a model is welcome to come use our data," Wohlgemuth said. "Come on down, we're not raffling it off."

Some of the researchers have spent their time studying how soil changed in the fire's aftermath and how that affects animals, plants and even humans.

Geoff Plumlee - the same USGS geochemist dispatched to study the ashes of the World Trade Center after 9/11 - has been studying the ash of the Station Fire.

In the days immediately after a fire, white ash can change the pH balance of the water and burn the eyes, skin and lungs of anyone working.

Lucy Jones, chief scientist with the USGS, even noted that the pH in her pool changed in the days after the fire.

Plumlee and his team have also found traces of heavy metals like lead, arsenic and mercury, which can make their way into the air and water after a fire.

Plumlee worked with Megan Burke and Terri Hogue from UCLA to study how the fire affected the water quality of the Arroyo Seco.

Pollution in the air makes its way into the soil of the San Gabriel Mountains, which is more likely to tumble down the slope and into streams after a fire.

Scientists were already concerned about water quality there, so there were already studies from the years before the fire. The UCLA team was able to test how the fire affects the water quality.

Plumlee said that he - like scientists in other disciplines - is crunching the data now and comparing it to other fires or disasters to better understand what happens the next time.

"We'll have an interesting story to tell down the road," Plumlee said.