



## Association of Environmental and Engineering Geologists

### MEETING DATE

*Thursday  
September 9<sup>th</sup>,  
2010*

### TIME

5:45 p.m. Social  
Hour  
6:30 p.m. Dinner  
7:30 p.m.  
Presentation

### LOCATION

Room 205  
Berthoud Hall,  
Colorado School of  
Mines  
1516 Illinois St.  
Golden, Co  
80401  
Room 205  
See Map Below

### COST

\$25 Members  
\$27 Non-members

### RESERVATIONS

[www.aegrms.org](http://www.aegrms.org)  
or  
[meetings@aeqrms.org](mailto:meetings@aeqrms.org)

**BY NOON,  
TUESDAY  
September 7<sup>TH</sup>**

### **NOAA/USGS Demonstration Flash-Flood and Debris-Flow Early-Warning System for Recently Burned Areas in Southern California, and Lessons Learned from Five Years of Operation**

Susan Cannon  
United States Geological Survey

Flash floods and debris flows are common following wildfires in southern California. On December 25, 2003, sixteen people were swept to their deaths by debris flows generated from basins that burned the previous fall. In an effort to reduce loss of life and property by floods and debris flows, the National Oceanic and Atmospheric Administration (NOAA) and the United States Geological Survey (USGS) established a warning system for recently burned areas in eight counties of southern California in the fall of 2005. The prototype system was initially based on comparisons of precipitation (including short-term forecasts, radar estimates, and actual precipitation measurements) with rainfall intensity-duration thresholds for the occurrence of post-fire flash floods and debris flows.

Rainfall thresholds were defined for three geologically- and morphologically-similar areas in southern California for the first winter after a fire and following a year of vegetative recovery. Over the five years of operation, thresholds have been defined for additional areas, and where available, information on potential response magnitudes has been incorporated. The system has also been advanced to provide forecasters with web-based information on each burned area and to display hazard maps that show those basins most likely to produce the largest debris flows.

And last, potential benefits from incorporating hillslope and channel monitoring information into the warning system were evaluated. During the winter of 2009-2010, the NWS issued 26 warnings, with 24 of these verifying, and during the entire five winters of operation, 91 warnings have been issued with a success rate of 85 percent.

*Continued from Page 1*

Four primary lessons have been learned during the five years of operation. First, the lead times of hours to days provided by Watches are more useful for emergency response than are Warnings with their minute to hour lead times. Second, a warning system based only on rainfall intensity-duration thresholds defined for recently-burned areas can provide only a rough approximation of life- and property-threatening conditions, and will thus result in high false alarm rates.

However, when information on hydrologic response magnitude is linked with rainfall information, better approximations of life- property-threatening conditions are possible. Third, hazard mapping is necessary to provide the spatially explicit information that emergency-response personnel need. And fourth, the debris-flow response to rainfall in recently burned basins is so rapid that hillslope and channel monitoring cannot be used to provide practical warnings; precipitation measurements downstream from burned areas are necessary for effective warning decisions. Ongoing work is focused on improving the warning system based on these lessons.



\*Apartment in Caraballeda extensively damaged by passage of debris-flow front at least 3.5 m in height, leaving boulders (> 1m) on second floor of structure.\* Source: <http://pubs.usgs.gov/of/2001/ofr-01-0144/Venezuela/image033.jpg>, accessed May 18, 2006.

## Meeting Changes

In an effort to improve the overall meeting experience, we are trying a **new caterer** beginning in September, and we are trying a new venue in October. Our September caterer will be Biscuits and Berries, a local Golden catering company.

The September and November meeting location remains unchanged from the last few years. Dinner in classroom/lab 205, and the talk will be downstairs in room 106. **The October meeting will be at the American Mountaineering Center**, conference room A, 710 10th St. in Golden (northeast corner of Washington and 10th). Depending on feedback from the October meeting, we will schedule some of the spring meetings at the Mountaineering Center.

We had a lot of RSVPs last year from people who did not end up attending meetings for which they RSVPed, especially the December social event at the Wynkoop. This cost the section hundreds of dollars in wasted catering charges. **If we continue to have a lot of no-show RSVPs this year, we will have to start billing for missed meetings.**

The 2010-2011 calendar has been updated on the [aegrms.org](http://aegrms.org) website. The current schedule is posted on the website (<http://aegrms.org>, then click on Calendar) but please be aware that some of the dates, speakers and locations have not yet been finalized.

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## Words from the Chair

It is that time of year once again. We find ourselves waking to darker mornings, school starts back up, and what you've all been waiting for, AEG meetings begin again. I and your fellow officers hope this year will be more successful than ever for the Section. We are making a few changes to try and help keep things interesting. First we are using a new caterer that promises to up the quality of our dinners. We welcome any comments once you've had a chance to sample the menu. Also, beginning in October, we will be moving our meetings to the American Mountaineering Center. Over the summer we considered a number of options for our meeting location. The AMC seemed a good choice to keep meetings local here in Golden yet take it out of the classroom setting (and of course keep it at a place where we can have our beer). Some meetings throughout the year will still be held at CSM and we appreciate the hospitality of the school and the G.E. department to host our gatherings. Please check the calendar each month for the meeting location. Again, all comments are welcome regarding the new location. If we all like the new spot, we can make it more permanent for years to come.

As the incoming Section Chair, I would like to extend a grateful thank you to our outgoing Section Chair Adam Prochaska. And I would also like to thank Ed Friend for his many years of service preparing the monthly newsletter. The Section appreciates you for your service.

I had the opportunity last month to take a road trip vacation through some of our country's spectacular geology. We passed through Dinosaur National Monument, the Flaming Gorge, and up into Teton and Yellowstone National Parks. I was pleasantly reminded that a large portion of the general public will take the time to get out and explore the geologic wonders preserved in these parks. Getting up close and personal with the enormous relief of the Tetons or the volcanic activity of Yellowstone forcefully reminds us of the awesome power of geology and how it influences everything we do. Often our work involves us, not with the grandiose displays of the planet, but with the down and dirty stuff closer to home. However, with school starting up again and education on our minds, consider taking the time to look again at the amazing geologic scenery we have around us here in the Rocky Mountains every day and share your knowledge with someone who might not appreciate it in the same way.

Nate Soule,  
Section Chair

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