Assisting Communities to Understand Post-Fire Flood Risk Before the Fire
Gerald Blackler - April 5, 2021
Audience Questions

Section - What data is available before and after a fire?		
	What H&H studies are needed to determine if a detention basin system will be effective?	They can be the same, or they can be simpler by using small catchment hydrology such as the rational method or FAA methods. The important thing is that the methodology can account for pre and post burn changes.
	Winds also affect intensity	Yes, rain under catch can effect the measurement of rainfall. Thus making the actual rainfall more intense then measured. There are peer reviewed publications on this phenomena that are important to understand.
	What is considered the size of a “small area” as you referred to with respect to burn size?	That is a great question, and I don't have the exact answer at this time.
	Does the modeling account for fluvial erosion hazard flood mapping (like the type of flood risk the front range in CO experienced in 2011) or just inundation flooding?	The modeling accounts for depths, velocities, shear forces, stream power, and all the physics from a change in a pre burned to post burn watershed. These control the physics of sediment transport and debris. Unlike fluvial erosion hazard mapping, this modeling can account for the change in pre and post fire for a range of risk frequencies, it is not like the fluvial erosion hazard flood mapping that includes just one unchanging boundary that does not consider risk, or the change in risks from post fire.
	Where do people come into the equations and models? Beyond land use	People are the ultimate goal of all the equations, the point of the modeling is to identify risk to protect and save infrastructure and people as much as possible.
	How did you model burn severity and post-fire vegetation?	Within the BAER burn severity files, you can import these to be weighted to the watershed area after the burn. The vegetation recovery can be modeled over a 3-6 year period based on published reports.
	How are drinking water sources incorporated into VAR considering the treatment type in the source water body and service area size and proximity?	This is a good question. I would recommend taking a pre and post sedimentation analysis for frequent storms (annual to the 10 year) and then take the delta between the values and say that x- amount of increase sedimentation equals y amount of loss of storage, and then multiply that by the value of storage to say this is the value of mulching, sediment capture, and so forth.
	Is there geology data. The rock that will move below the soil	There is geology data, however, most rock that moves is unconsolidated already broken rock, unless there is a major landslide, which is also a risk.

	For long term recovery planning, are there different data sets needed?	There are always more data sets needed, although, they aren't necessarily different.
	Do you think giving communities a real-time dashboard for their community would increase awareness and involvement in being prepared?	Yes
	PTSD	We hear you.
	Loss of soil. Regeneration/reestablishment of forest improbable.	Some are more successful than others, especially dependent on the underlying soils and rock configurations.
	Explain how a "100 yr. flood event" has a 68% chance of occurring during a mortgage. What is the math?	My apologies, it has a 26% chance of occurring, the math is the probability P=1-(1-1/tr)^n, where Tr is the return period and n is the number of years.

Comments

USGS working to add post-fire flood equations to Stream Stats, with pilot in Upper Colorado- stay tuned!	That is great.
Fire perimeter data is updated every 24 hours during an active wildfire By NIFC. Fire radiative power is available from NOAA satellites.	Thank you!
Florida is getting ready to launch a real-time dashboard for Harmful Algal Blooms with a community connection.	That's interesting, thank you!

Section - Estimating unknown events

Why use 100-year flood, 50-year flood? Do we really think people understand what it REALLY means?	Yes, I think people understand. And, yes it matters. We can't design and protect to infinity and we can't do (zero) nothing. So we must have something.
Still need to know if there is a hydrological evaluation done for our area that I can use for quick evaluation and planning.	If you let us know your area maybe we can help.
What is a good resource for determining CN reduction as a watershed recovers from a wildfire.	The links posted to the website later will help, I typically say, if the CN is +10 from pre fire, then let the recovery be equal intervals. As the math unfolds, it's not as linear as it sounds and it turns out to be realistic.
Is there a hub for linking to various resources we can tap into?	We are working on that.
What is a 50-year and runoff event??	An event that has a 2% chance of being equal or larger in any given year, for every year.

How do you relate predicted post-fire floods to pre-fire flood hazard zones? E.g. the post-fire 2-year flood, floods the 500-year floodplain.	If you perform the modeling, these results become very clear.
LOTS of small communities are vulnerable to post fire. What prompts these projects and how are they paid for.?	Typically an emergency prompts the projects, and by then, everyone is behind. We are presenting this to encourage stakeholders to consider the efficiencies in doing this work ahead of time. They are usually sponsored by a state or local agency or watershed group.
While a community waits for local government to sponsor the 25% share, is there another funding source to fill in when "lives and property are in eminent threat"?	Sometimes state's will help with the match. HUD funds are some of the only funds that can also be used to match government funds.
(& follow up to my earlier question): Is it the larger communities that generally benefit?	Possibly, but hopefully the benefit is equal to all as much as possible.
Stream Stats is not good for post-fire.	Agreed.
Stream Stats uses pre-fire curve number conditions.	Stream stats rarely uses Curve Numbers but instead uses multi varied regression analysis.
Could you talk about hydraulic model resolution. What resolutions are you using and how does that support the need of the end users? How do you ensure that models with coarse resolution (i.e. 100 foot grids) are not used inappropriately?	This is a great discussion. There is a trade off between resolution and time. Being able to produce something decent in a reasonable time frame is optimal. I would recommend producing something that is reasonable to make a first cut on prioritization and then knowing high priority areas will have to be refined during design or further study.

Comments

I explain the 100 flood as gambling you have a 1% chance of it happening in a storm	That's one way to explain it, thank you.
The percentages are more confusing. I'd rather stick to 100-year, not 1%.	I really don't think people find them confusing. In my many years, if someone has lived in a house for over 30 years, they've seen the flood that resembled the one your discussing (and there was a 25% chance they did).
Rainfall intensity is changing with Climate Change energizing rainfall events. We have more moisture in the atmosphere as the atmospheric temp increases. More floods will happen more frequently. We have to educate communities. Thanks.	Rainfall intensity for more frequent events are changing, and the more frequent events are happening more frequently, this highlights the need to focus on more frequent events for post fire hydrology than events that make fluvial hazard boundaries and other larger events (100-year) as the more frequent events have the highs pre to post change and are the most dangerous to communities.

In addition to stream stats I find historical flooding and compare the historical vegetation to the post fire vegetation	Agreed… Dr. Jarret was on by PhD committee and I appreciate his critical depth philosophy for paleo flood hydrology. Many should study especially those performing fluvial hazard boundaries of streams.
Sometimes the State has funding to assist with post-fire flooding.	Yes, they can.
Always have your local elected officials ask a Governor for match support if it is needed for your project.	That is an option.

Section - Final

Have you worked with the National Water Center at all to discuss the National Water Model and how it could provide Impact-based Decision Support Services from NWS?	No, I have not. I have not been asked to work with them to perform this work. Maybe they can perform this work for the people who commented in this webinar who are asking for help and don't know how to get funded or how to get help for small communities.