

CONVERGE Virtual Forum – 2021 Boulder County Fires, Session 2
February 17, 2022

Katie Murphy to Everyone:

You can find the titles, researcher names, and a brief abstract for each presentation on our Forum page for this session.

<https://converge.colorado.edu/virtual-forums/converge-virtual-forum-2021-boulder-county-fires-session-2/>

Question From Charles Scawthorn to Everyone:

Erica - you say characteristics that influenced survivability but will data re houses that burned also be captured (ie, complete dataset). Even though burnt, data can be captured via google streets etc. Thank you.

From Brad Wham to Everyone:

Hi Charlie, Absolutely. We have a team actively working with google earth, street view, and other sources to document characteristics before the fire.

From Abbie Liel to Everyone:

Hi Charlie, we are capturing data on burned, survived and damaged homes, focusing on areas where there was a mix. Hope that answers!

Question From Gary Morris to Everyone:

Erica, are you also looking into meteorological factors (wind speeds, wind directions, etc.)? That day was very windy, with prevailing winds from the SW, I believe.

From Erica Fischer to Everyone:

Gary, we will be including wind in our NSF more in depth analysis. I agree that can be very important!

From Abbie Liel to Everyone:

Related to wind, we did observe differences in temperature on foundations associated with the prevailing wind directions.

Question From Charles Scawthorn to Everyone:

Also, what about homeowner firefighting actions? were they significant - if so, how are you able to capture that?

Question From Brad Hall to Everyone:

Erica, Have you looked at home weather stations to see if there are in-neighborhood records of wind/temperature?

From Erica Fischer to Everyone:

Brad: We have not looked at home weather stations, but that is a great suggestion! Thank you!

Question From John Bates to Everyone:

Erica, do you have any data on the timing / progression of the fire through each of the houses to identify the effective cause of the fire for each house (ie house-to-house or direct from fire in the open space)?

From Erica Fischer to Everyone:

John - we do not have timing data on the fire progression. It is hard to tell post-fire how each home catches fire (embers or direct flame contact) we can try to guess as much as possible, but won't know for sure.

Question From Elliot Nichols to Everyone:

Hi Erica, thank you for the interesting talk! What kind of UAS imaging methods are you hoping to conduct after the initial recon?

From Erica Fischer to Everyone:

Elliot - we are using both quadcopter and fixed wings to fly. The quadcopter data can be used to create structures for motion models. Does that answer your question?

Comment From Jocelyn West to Everyone:

Just a thought with respect to the fire progression: it might be a lot of work, but you might be able to construct a rough idea of how the fire progressed based on the police scanner recordings.

From Erica Fischer to Everyone:

Jocelyn - I think the Denver Post or Colorado Sun was trying to do that. I hope I'm remembering the newspaper correctly. Since this is still an active investigation these are not being released right now.

Question From Elliot Nichols to Everyone:

Yes, thank you! Have you given any thought to using thermal/multispec?

Comment From Brad Wham to Everyone:

Elliot, we're also developing high resolution ortho mosaics for areas with in the burn area. We have some mutispec data. We are working to develop a publicly available data set that will be most helpful to all... if you have some potential uses please feel free to reach out brad.wham@colorado.edu

Question From Ben Mason to Everyone:

ECF, I'm curious about if you have any thoughts about best mitigation strategies for the future. I don't know much about this topic. Given limited resources, and abundant other needs for public funding, is our best bet changing housing design, or providing better firefighter training, or something else? Thanks!

Question From Marda Kirn to Everyone:

Has there been any kind of mapping of the cooperation and progression of cooperation of different sectors and entities (utilities, municipalities, not-for-profits? neighborhoods, whoever else who helped) along a "collaborative continuum of change" re: the fire?

Question From Charles Scawthorn to Everyone:

Andrew - have you obtained SCADA records (pressures, flows) from water utilities, for period during fire? If so, how dense were their sensors?



From Brad Wham to Everyone:

Charlie, Much of the SCADA was lost due to power and natural gas outages. We are working on getting what is available.

From Andrew Whelton to Everyone:

@CharlesScawthorn. Good question. We are working on obtaining online data that they have. We have not yet obtained it. Please reach out if you want to talk awhelton@purdue.edu. I'd love to discuss.

Comment From Erica Fischer to Everyone:

Good question HBM! There are tons of resources for residents through the NFPA FireWise program if you want to read about mitigation techniques. However, ultimately, it is a partnership of homeowners, the local government, and land management agencies to mitigate effectively. The towns impacted are considering code changes for reconstruction.

FireWise link: <http://www.nfpa.org/Public-Education/Fire-causes-and-risks/Wildfire/Firewise-USA>

Comment From Charles Scawthorn to Everyone:

Firewise just doesn't apply to these suburban/SFD neighborhoods, where houses as shown are spaced 10-15' apart. This is a gap.

Response From Brad Wham to Everyone:

Charlie, they also lost the fiber optic cable between two of the WTPs. Non-system depended power (diesel generator or battery back up) is a lifeline interdependence improvement for future

Question From Charles Scawthorn to Everyone:

Brad - the buried FO was "melted" (ie, damaged) by the fire?

Response From Andrew Whelton to Everyone:

@CharlesScawthorn, Yes! Second Brad. And intermittent signal was lost too. So, if the data exist it may not after a certain point. Communication loss was a really big problem.

Question From John Truesdale to Everyone:

Was there water testing for heavy metals, dioxins and furans which are very toxic and produced from structure fires? Same question for indoor air quality and soot/char/ash found in smoke damaged homes?

From Andrew Whelton to Everyone:

@JohnTruesdale In drinking water, no for metals, no for dioxins, and no for furans. I recommended SVOCs but they were not able to be sampled early on due to laboratories simply saying they are unable to handle the loads. SVOC testing is being conducted currently. I can't recall the exact method. If you email me I can send it.

Comment From Erica Fischer to Everyone:

^^ Lost cable due to a comcast box melting on top of the cable, not because of the cable itself.



Response From Andrew Whelton to Everyone:

@CharlesScawthorn, Yes! Second Brad. And intermittent signal was lost too. So, if the data exist it may not after a certain point. Communication loss was a really big problem.

Response From Erica Fischer to Everyone:

Charles it was at a junction box, not because of heat transfer through the soil.

Question From Shuna Ni to Everyone:

Hello, Erica, I am wondering whether you have observed any wooden pole damage during the survey?

From Erica Fischer to Everyone:

Shuna - electrical wooden poles? Yes, these did burn. We did not note them as we went through the neighborhood, but I'm sure Xcel Energy might have data on that!

From Brad Wham to Everyone:

Shuna, in addition to EF response, one observation/hypothesis is that petroleum products used to reduce vegetation around poles caused them to burn for longer

Question From Bart Croes to Everyone:

@Andrew Whelton, thank you for the excellent talk! For residents of Superior subject to smoky-ash tray smelling water, are the VOCs and sVOC you listed the likely culprits or have they actually been found in the water? Are they of health concern? For those worried about long-term exposure, is a whole house filtration system necessary and is there a type (or brand) of system you recommend?

From Andrew Whelton to Everyone:

@BartCroes CU Boulder scientists made the determination that BPCAs were responsible for the smoky odor. CSU Professor confirmed the odor was in the source water and in the water distribution system, not just in the distribution system. Corona Environmental Consulting, LLC and the Town of Superior are best to discuss the health risk conclusion. The odor testing methodology was not part of the study presented today and was a separate effort by CSU/CUBoulder/Corona through Superior. Today's presentation just mentioned what was reported on that. Today's presentation is here:

<https://engineering.purdue.edu/PlumbingSafety/resources/CONVERGE-Marshall-Fire-Large-Utilities-Final.pdf>

From Jorge Delgado to Everyone:

@BartCroes additionally if you have any questions about specific contaminants levels and their impacts to human health you can reach out to the Colorado Department of Public Health and Environments Toxicologists, Contact ToxCall at 303-692-2606 or cdphe_toxcall@state.co.us.

Question From Gary Morris to Everyone:

Chelsea, any idea of boundary layer heights as you were making your measurements? How different would things look at dawn vs midday?

Question From Ulana Bihun to Everyone:

Is anyone measuring the particle composition in different locations?

Question From Charles Scawthorn to Everyone:

Erica - thanks, an interesting vulnerability - in the junction box, what was damaged?



From Erica Fischer to Everyone:

@Charles - there was a comcast box on top of the cable that was completely melted and then damaged the fiber optic pipe below it. I'll send you some photos!

Question From Donna Sueper to Everyone:

@Chelsea Can you guess what the effect snow cover may have had on your measurements?

Question From Shuna Ni to Everyone:

Thanks, Brad. Do you mean the petroleum products make the fire around a pole lasts longer?

From Erica Fischer to Everyone:

Yes and may have helped the ignition

Question From Charles Scawthorn to Everyone:

Joost - does the air cleaner experiment imply the benzene is surface deposit from smoke, then is offgassing - the offgases "scrubbed" by the air cleaner, then when shut off more off gassing occurs so VOCs go back up?

From Joost de Gouw to Everyone:

@Charles Yes. The interesting aspect is that this reservoir persisted for so long.

Question From Gary Morris to Everyone:

Joost — I know some folks in the area who have acquired indoor PM2.5 and VOC monitors. Could that data be useful? Also, how do outdoor meteorological factors affect the indoor measurements?

From Joost de Gouw to Everyone:

@Gary Yes. Please have them contact me.

Questions From Laura Collins to Everyone:

Louisville resident here with smoke damage - not a scientist. Question about short- and long-term impact of the toxins from this fire. Based on the initial van samples, the community now thinks the air quality is safe. But from this presentation, it sounds like composition of particles have not been assessed yet. So would you agree that the air quality is okay or does further research need to be done to determine whether the air is safe?

Question From Charles Scawthorn to Everyone:

Is there a clearing house for all this data?

From Erica Fischer to Everyone:

@Charles - all of our drone footage will be released through DesignSafe. The GEER report will be published in early March with all of our findings.

From Lori Peek (NHC and CONVERGE) to Everyone:

@Charlie - That is a great question. We are encouraging all researchers to curate and publish data (as well as research instruments, where possible for social scientists) through DesignSafe.

Response From Chelsea Stockwell to Everyone:

@donnaS & @garymorris We sampled across several days including dusk, dawn, and warm and cold days to investigate how differences could be driven by changes in meteorology and boundary layer heights.



Question From Marda Kirn to Everyone:

I talked with a reservist from FEMA who worked both the Campfire fire and the Marshall Fire. He said what was particularly concerning about the Marshall Fire was that so many of the houses were newer houses and their construction and finishing materials have so many more and more dangerous chemicals included. Can any of you comment on that?

Question From Colleen Callin to Everyone:

Any policy guru's who know to enact changes in our community's? Such as not rebuilding with wood fences.

Question From Laura Collins to Everyone:

Is there any research that shows how potential toxins bond with different types of materials and therefore, whether things can truly be 'restored' without toxin? Thinking things like soft good (clothing, mattresses, couch, stuffies) and plastic items (toys, containers, air fryer, blender) and wood items (tables, chairs), etc.

From Joost de Gouw to Everyone:

@Laura Yes. More needs to be done about the composition of the particles.

Comment From Charles Scawthorn to Everyone:

A very interesting issue are decks. Everyone likes and many have a wood deck. There doesn't appear to be a good alternative to wood decking. does anyone know of alternatives?

Comment From Lori Peek (NHC and CONVERGE) to Everyone:

For anyone who is interested in doing social science survey work I hope you will reach out to Katie Dickinson, who is in this document:

https://docs.google.com/document/d/1jVKvzF2mHMT_n5bGbd0nN4qFq1kfCwRBwJPU-SoVedo/edit?usp=sharing

Question From Colleen Callin to Everyone:

I am very interested in homeowners who saved their homes or those that failed. There was a third fire in Boulder County on Dec. 30 and 20 plus neighbors saved all homes and most outbuildings...Is this something our community should create...a wildfire volunteer fire fighters brigade?

You can find out more information at the CONVERGE website:

<https://converge.colorado.edu/category/virtual-forums/>

The recording of the forum will be posted on the CONVERGE Virtual Forum website and also at the RISE website. <https://www.colorado.edu/irt/rise/>

