



# JE Fuller and AFMA Present A Trilogy Brown Bag Series



JE Fuller is happy to announce a brown bag series trilogy consisting of three, 1-hour classes which are pre-approved through the Association of State Floodplain Managers for 1 CEC each! All presentations are free to attend!  
**Please register for each class individually by clicking on the links below.**

**[April 1, 2021 — 12:00 PM to 1:00 PM](#)**

## **Extreme precipitation events in Arizona: more intense monsoon rainfall and how the Pacific Ocean modulates winter precipitation**

**Speaker: Eleonora Demaria, Ph.D.—Pima County Regional Flood Control District**

**Abstract:** In semiarid Arizona, extreme precipitation events are linked to flooding leading to human casualties and economic losses. Using solely ground observations, we study how the occurrence of winter Atmospheric Rivers (ARs) account for ~60% of extreme total daily precipitation in central-northeastern AZ and how ARs are responsible for the January 1993 flooding event. In contrast, summer rainfall is due to the North American Monsoon. Because summer rainfall is highly intermittent and localized, detecting temporal changes in rainfall intensities in response to climatic change using climate models or isolated rain gauges has led to contradictory results. Using sub-daily and daily observations from 59 rain gauges located in the densely-instrumented Walnut Gulch Watershed in southeastern AZ we find an intensification of monsoon sub-daily rainfall intensities starting in the mid-1970s that has not been observed in previous studies or simulated with high-resolution climate models. Our results highlight the need for long-term, high spatiotemporal observations to detect environmental responses to a changing climate in highly-variable environments and shows that analyses based on limited observations or gridded datasets fail to capture temporal changes potentially leading to erroneous conclusions.

[CLICK HERE TO REGISTER](#)

**[April 15, 2021 — 12:00 PM to 1:00 PM](#)**

## **Parameterizing FLO-2D on high-gradient terrain in Maricopa County**

**Speakers: Peter Action, P.E.—JE Fuller Hydrology and Geomorphology, Inc.**

**Hussein Hussein, P.E.—Flood Control District of Maricopa County**

**Abstract:** The application of FLO-2D to steeper watercourses often results in high velocities in the results. As part of the Sun Valley Area Drainage Master Plan Update this model was applied to the western side of the White Tanks Mountains to develop hydrology for the downstream alluvial fans and piedmont areas. The extremely high velocities seen in the axial channels in the mountain suggested the need to properly account for hydraulic losses in steeper, mountainous watercourses. A repeatable methodology was derived in this study to adjust roughness values based upon field investigations and topographic mapping as well as relationships established in the literature. The results of the application indicate a strong sensitivity of channel n-values to downstream peak discharges, but more importantly they suggest the need to be highly critical when parameterizing distributed hydrologic models in steep watersheds.

[CLICK HERE TO REGISTER](#)

**[April 29, 2021 — 12:00 PM to 1:00 PM](#)**

## **Post-wildfire geomorphic research in Arizona**

**Speaker: Ann Youberg, Ph.D.—Arizona Geological Survey**

**Abstract:** Wildfire is a catalyst for change to ecologic, hydrologic, and geomorphic systems, resulting in a window of disturbance in which runoff and erosion increases relative to similar unburned areas. Most wildfires impact federal or state lands, however, the secondary effects from fire typically impact downstream communities leaving local and county agencies, emergency managers, and utilities to plan, prepare for and mitigate post-fire debris-flow and flood hazards, and to deal with the consequences of significant erosion and sedimentation to conveyance networks and infrastructure. In this talk, I will discuss the state of post-wildfire debris-flow research in Arizona, including the progress we've made towards hazard identification and mitigation, the development of a debris-flow inundation model, and what we are learning about the impacts of drought and of uncharacteristically short-time intervals between successive wildfires (reburns) on the hydrologic recovery of burned areas.

[CLICK HERE TO REGISTER](#)



# About our Speakers



## **Eleonora Demaria, Ph.D.—Hydrologist with Pima County Regional Flood Control District**

Eleonora is a Hydrologist with Pima County Regional Flood Control District in Tucson, AZ. Her work includes floodplain mapping and management. Before joining Pima County, Eleonora worked as a research scientist at USDA where she studied changes in summer monsoon precipitation in AZ and across the United States. She has expertise in hydrologic modelling, remote sensing, and climate change impacts on water resources. Eleonora has a BS in Water Resource Engineering from Argentina, a MS in Meteorology from the University of Utah, and a Ph.D. in Hydrology from the University of Arizona.



## **Peter Acton, P.E.— JE Fuller / Hydrology and Geomorphology, Inc.**

Peter is a registered professional engineer working with JE Fuller in Tempe, Arizona. Peter earned both his bachelor's and master's degree in Civil Engineering from the University of Kentucky, respectively, and has worked with JE Fuller for over seven years. Peter specializes in hydrologic and hydraulic modeling, sediment transport and river mechanics, as well as stream gaging design, installations, and data and dissemination.



## **Hussein Hussein, P.E.—Flood Control District of Maricopa County**

Hussein is a registered Professional Engineer with 13 years of experience in drainage design. Hussein has experience in both the public and private sectors. Hussein is currently working for the Special Projects Branch of the Flood Control District of Maricopa County, where he researches new technology, supports the Dam Safety Emergency Action Program, and provides technical support for the various branches within the District.



## **Ann Youberg, Ph.D.—Arizona Geological Survey**

Ann Youberg is a Senior Research Scientist at the Arizona Geological Survey in the University of Arizona. Ann has over 30 years of experience in geological, geotechnical and geomorphic investigations and has been with the Environmental Division of the AZGS for over 20 years. Ann's work at the AZGS includes surficial geologic, geomorphic and geologic hazards mapping, but her main focus is on post-wildfire hazard assessments and research. Ann has a BS in Geosciences from Montana State University, and an MS in Watershed Sciences and a Ph.D. in Hydrology from the University of Arizona.