

Precipitation in the Earth System: Global estimation, precipitation extremes and climate change



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Abstract:

Precipitation is the input to the hydrologic cycle and affects the water and energy balance at the local, regional and global scales. Precipitation extremes create hazards and endanger life, property and critical infrastructure. Under global warming, precipitation is expected to change in complex ways, including the mean annual precipitation, the duration of wet and dry spells, the seasonality, and the frequency and magnitude of extremes. In this talk, I will present recent results on two main aspects of precipitation: (1) global precipitation estimation from multi-satellite observations in places of the world that do not have ground measurements, with particular emphasis on preservation of extremes, and (2) assessment of the change of the space-time organization of precipitation in a warming climate, with small-scale short-lived features changing at a higher rate than larger long-lived features, and implications for resilience.

Bio:

Efi Foufoula-Georgiou (NAE) is a Distinguished Professor in the Department of Civil and Environmental Engineering and the Samueli Endowed Chair in Engineering at the University of California, Irvine. Her area of research is hydrology and geomorphology with an emphasis on understanding the space-time organization and multiscale structure of precipitation and landforms for improving modeling and prediction. She has served the community in several leadership roles, including president of the Hydrology section of AGU, Trustee of the University Consortium for Atmospheric Research, Councilor of AMS and AGU, and Director of an NSF Science and Technology Center, the “National Center for Earth Surface Dynamics” at the University of Minnesota where she spent almost 30 years before moving to California. Professor Foufoula-Georgiou's work has been recognized by several society awards including the John Dalton Medal of the European Geophysical Society, the Hydrologic Sciences Medal of AMS, the Horton Medal of AGU and the UNESCO/WMO International Hydrology Prize Dooge Medal. She is a fellow of AGU, AMS, AAAS and an elected member of four Academies: the European Academy of Sciences, the U.S. National Academy of Engineering (NAE), the American Academy of Arts and Sciences, and the Royal Academy of Engineering.