



ARRC Specialty Series and WaTER Center Seminar

“Advancing Precipitation Remote Sensing Techniques over Complex Terrain for Flood Modeling”

Emmanouil Anagnostou, Ph.D.

Professor of Civil and Environmental Engineering

Director, inter-disciplinary Environmental Engineering Program

University of Connecticut

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1:15 – 2:15 p.m.

National Weather Center, Room 1350

Abstract: Mountainous areas are prone to frequent rainfall induced hazards (i.e. flash floods, debris flows and landslides) that are difficult to predict by operational observational and modeling systems. Key component of this predictability issue is the quantification of precipitation, which remains a challenging task for operational weather radar (beam blockage, overshooting effects, etc) and rain gauge (almost inexistent in high elevation terrain) networks.

This study evaluates alternative remote sensing approaches that address scales ranging from local to regional hydrologic processes. The first part of the talk will present an advanced precipitation estimation framework applied on low-cost small-size (dual polarization and X-band) weather radars aimed at quantifying local scale hydrologic hazards (e.g. flash floods) that are typically missed by operational systems. The second part of the talk will focus on extending the coverage of operational radar networks over larger scale/data poor mountainous areas using global-coverage satellite precipitation estimates. Satellite rainfall products over complex terrain typically suffer from severe underestimation of heavy precipitation, and this study will demonstrate a procedure for correcting those precipitation biases using high-resolution numerical weather simulations and statistical error estimation techniques. The above precipitation remote sensing techniques are then evaluated in terms of flood simulations demonstrating improvements in terms of both peak runoff and runoff volume predictions.

Dr. Emmanouil Anagnostou is Professor of Civil and Environmental Engineering and the Director of the inter-disciplinary Environmental Engineering Program in the School of Engineering at the University of Connecticut (UConn). Since 2010 he holds the Northeast Utilities Foundation Endowed Chair in Environmental Engineering. He is also serving as senior research consultant of the Innovative Technologies Centre since October 2012. He holds Ph.D. and MSc degrees in Hydrometeorology from the University of Iowa and diploma in Civil and Environmental Engineering from the National Technical University of Athens.

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