

# IMPACTS OF CONCURRENT EXTREMES ON WATER RESOURCES AND VULNERABILITY ASSESSMENTS

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Exposure of water resources under concurrent (multiple places, same time) precipitation extremes for small scale watersheds are often not studied. Exposure represents the degree of stress on the systems and is a component of vulnerability assessment. Three concurrent extreme precipitation events occurred over south Asia, Europe and Canada during June 2013. Wide- spread damage, threat to human lives and economic losses (~\$ 12 billion in total) were incurred. The present study analyzes the large- scale atmospheric drivers (such as meridional wind, North Atlantic Oscillation) associated with these concurrent extremes. The initiation and decay of these extreme events and how useful are atmospheric teleconnection patterns in explaining these events are examined using Global Precipitation Measurement (GPM) Integrated Multi-SatellitE Retrievals for GPM (IMERG), Geographic Information Systems (GIS) and NCEP-NCAR reanalysis data sets. This study will be carried out based on statistical (composite analysis) and dynamical (identifying teleconnection pattern) methods. The preliminary results show that all the extremes events in this study are associated with the teleconnection patterns, which links the extratropical weather events with the tropics. The findings from the study will have implications on the prediction of extreme events as well as its impacts on water resources and vulnerability assessments in multiple scales ranging from local and small watershed to global scales.

**PRESENTER BIO:** Deepa is a graduate (Master's) student at Florida A&M University in the college of Agriculture and Food Sciences. Her research interests are in Extreme Events, its impact on agro-ecosystems, use of Geographic Information Science in interdisciplinary research. She is currently working with Dr. Aavudai Anandhi Swamy in Biological System Engineering.