GUANACASTE: A REGION OF METEOROLOGICAL EXTREMES.

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Global and regional precipitation patterns are changing, bringing an added stress to the social, economic and environmental systems, reshaping prospects for food, water, and health security. The economic impacts of global climate change have been calculated based more on average variables rather than the extremes when bigger economic impacts come from extreme climatic events. This change is attributable in large part to the warming world we live in. It has led to the alteration of the occurrence and magnitude of extreme meteorological events like floods and droughts. To be able to predict how climate extremes could change in the near future, it is important to understand first the nature of changes in the historic record and their potential drivers. The main goal of this research is to identify the variability of extreme precipitation (excesses and a dearth of daily precipitation) in the Tempisque river basin in Costa Rica. Both extreme value theory, applied to annual maxima, and peak above the threshold are used to characterize excess rainfalls and the duration of dry spells are used as a surrogate for drought, during the rainy season (May-October). Annual properties of these variables derived from daily rainfall records (1970-2017) are linked to the global scale drivers of variability El Niño-Southern Oscillation and the Atlantic Multidecadal Oscillation. Results from this research will help identify possible trends in climate variability in the area improving the management and decision-making process involving water allocation, ecosystem services, and mathematical dynamic models.

PRESENTER BIO: Caroline Huguenin is part of the Water Institute Graduate Fellow cohort of 2017. She holds a Bachelor degree in civil engineering from the University of Costa Rica, a master's degree in Hydrology and Water Resources from UNESCO-IHE, The Netherlands and is a PhD student at the Geography department of the University of Florida