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CAUSES OF FLOODING IN LOUISIANA VS. ARIZONA: SIMILARITIES AND DIFFERENCES

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Flood hazards in humid and arid regions are linked to the meteorological and climatic variations that occur in these areas. This project compares and contrasts the underlying causes of variability in flooding in a humid subtropical region and an arid region by updating a previous study of Louisiana gauged flood records and comparing it to a new flood database for Arizona being developed by the Climate Assessment of the Southwest (CLIMAS). To determine the cause of recent floods in Louisiana, updated peak discharge records were compiled for selected USGS gauging stations. The type of storm that generated each flood event was classified using a “decision tree” approach based on analyzing synoptic weather maps, examining precipitation data, and reviewing tropical storm tracks. The results show that in both Louisiana and Arizona, three main types of storms produce floods: extratropical cyclones, convective thunderstorms, and tropical storms. Differences in the flooding behavior of the two regions arise from storm seasonality, magnitude, frequency, and the way in which watersheds respond to the precipitation that the different storm systems deliver. This study also examines how recent major hurricanes (Katrina and Rita) affected inland flooding in Louisiana and speculates on whether Louisiana’s flooding variability can be linked to recent trends in extreme precipitation and warmer temperatures.