

EXTREME URBAN FLOODING IN THE UNITED STATES: AN URBAN HYDROMETEOROLOGICAL PERSPECTIVE

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Abstract. In September 2009, the metropolitan area of Atlanta, host city for the 2010 American Meteorological Society's Annual Meeting, and surrounding areas in northern Georgia experienced disastrous and historic urban flooding. The United States Geological Survey (USGS) and National Weather Service (NWS) noted record flood levels and cumulative rainfall totals, respectively. Additionally, in 2010, major urban flooding also occurred in Oklahoma City, Boston, Nashville, Milwaukee, Chicago, and Washington, DC. Whether the attribution lies with a climate change signal associated with greenhouse gases is still not clear, but herein, we establish that other anthropogenic factors (urban impervious surface, increased population, etc.) were important to the hydrometeorological outcomes. The goal of this presentation is to present a brief overview of the synoptic, mesoscale, climatic, and urban processes associated with the recent urban floods in the United States, particularly the 2009 Atlanta flood. A specific focus will be placed on the hypothesized roles that urban land cover had on meteorological and hydrological aspects of such events. We will also review recent modeling results for Atlanta that test some of the hypotheses discussed.