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Detection and attribution of flood change across the United States

Stacey Archfield
U.S. Geological Survey, National Research Program, Reston, United States (sarch@usgs.gov)

In the United States, there have a been an increasing number of studies quantifying trends in the annual maximum flood; yet, few studies examine trends in floods that may occur more than once in a given year and even fewer assess trends in floods on rivers that have undergone substantial changes due to urbanization, land-cover change, and agricultural drainage practices. Previous research has shown that, for streamgages having minimal direct human intervention, trends in the peak magnitude, frequency, duration and volume of frequent floods (floods occurring at an average of two events per year relative to a base period) across the United States show large changes; however, few trends are found to be statistically significant. This study extends previous research to provide a comprehensive assessment of flood change across the United States that includes streamgages having experienced confounding alterations to streamflow (urbanization, storage, and land-cover changes) that provides a comprehensive assessment of flood change. Attribution of these changes is also explored.