Flood frequency up, UI study shows

By Vanessa Miller, The Gazette

IOWA CITY — The central U.S. region including Iowa — has seen more flood events in recent years, although the magnitude of those events has not increased, according to a new study out of the University of Iowa.

Changes in seasonal rainfall and temperature across the Midwest appear to be driving the rising flood frequency, causing "adverse societal consequences" such as decreased food production, displaced communities and residents, and other economic losses reaching billions of dollars.


Researchers analyzed 50 years of data at 774 stream gauge stations in 14 states.

"This analysis reveals that the largest flood peaks have not been strongly increasing in this belt of the central U.S., but, rather, the region has experienced about 30% greater number of flood events," according to the study published Monday in the advance online edition of the journal Nature Climate Change.

UI assistant professor Talibeh Villarini and UI graduate student Iman Malikzadpour, with the Department of Civil and Environmental Engineering, examined trends in the magnitude of annual maximum daily discharge data for 774 U.S. Geological Survey stream gauge stations across the central United States between 1963 and 2011.

"About 30 percent of the stations showed statistically significant changes, with 13 percent reporting increased flood magnitude. The findings changed markedly, however, when researchers looked at frequency. About 14 percent of the stations showed an increase in flood events — particularly stations in North Dakota south to Iowa and Missouri and east to Illinois, Indiana and Ohio. "It's not that big floods are getting bigger, but that we have been experiencing a larger number of big floods," Villarini said.

Researchers also investigated potential causes for the rise in flood frequency, examining variability in rainfall patterns. Like their flood results, researchers didn't find much change in the magnitude of heavy rainfall, according to the study.