# Abstract: Analysis of Climate Extremes over the Contiguous United States

Liqiang Sun[1,2], Kenneth E. Kunkel[1,2], David R. Easterling[2],
Laura Stevens[1,2], Jim Biard[1,2], and Andrew Buddenberg[1,2]

[1]Cooperative Institute for Climate and Satellites – North Carolina (CICS-NC),
North Carolina State University (NCSU)
[2]NOAA's National Centers for Environmental Information (NCEI)

The Scripps Localized Constructed Analogs (LOCA) dataset is a new statistically-downscaled product. This dataset includes daily precipitation, and maximum and minimum temperature, downscaled from 32 CMIP5 models at a 1/16th degree spatial resolution, covering North America from central Mexico through Southern Canada. The historical period is 1950-2005, and there are two future scenarios available: RCP 4.5 and RCP 8.5 over the period 2006-2100.

A number of climate extreme indices were derived from the LOCA data, such as annual maximum 1-day precipitation, annual maximum number of consecutive dry/wet days, annual number of days with maximum temperature greater than 100F (38C), annual number of ice days, and etc.

Analysis of 21st century climate extremes under both emissions scenarios has been done. Precipitation extremes are projected to become more frequent and more intense: annual maximum 1-day precipitation will increase across the United States, annual maximum number of consecutive wet days will significantly increase in the eastern U.S. and annual maximum consecutive day days will significantly increase in the western U.s. Temperature extremes are most directly affected by the climate change: heat waves are projected to increase in frequency, intensity, and duration, and cold snaps are projected to diminish in their frequency, but not necessarily in their intensity.