

Extremes Working Group perspective on need for sustained and improved observations

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The US CLIVAR Working Group, "Large Scale Patterns Associated with Extremes," was formed in 2012 to focus on the dynamics of short-term extreme temperature and precipitation events, in terms of Large-Scale Meteorological Patterns (LSMPs).

The Working Group held a workshop in August 2013 at LBNL on Analyses, Dynamics, and Modeling of Large Scale Meteorological Patterns Associated with Extreme Temperature and Precipitation Events. The workshop report contains a detailed set of recommendations, including several that relate to observations (sometimes in combination with modeling datasets):

- Develop indices specific to exploring the causes of extreme temperature and precipitation that exploit the high quality North American observations. These metrics would be supplemental to the ETCCDI indices designed for climate change detection purposes and sparse data. These indices should include measures of the LSMPs associated with various regional extreme events.

- Better quantify and present the uncertainties in observed datasets as part of the downloadable datasets.

- Increase investments in "Big Data" technologies focused on climate and weather applications. These investments should include both software and hardware technologies.

- Promote efforts to maintain current observing networks, especially those with long observing records.

- Enlist scientists to engage and provide strong encouragement to volunteers who are maintaining cooperative observing networks.

- Foster a community consensus approach to comparing model data at different model grid sizes with observational station data and/or observed gridded datasets. Should one interpolate all gridded data to a common grid (for example to the observed gridded dataset) to make easier metric comparisons? Should there be a common interpolator?

- Build a library of extreme climate events for each index (e.g., in ETCCDI) that includes the date and location of every event, so that it would be possible to go back to create and analyze the LSMPs of the events.