Workshop on Attribution of Weather and Climate Extremes

Boulder, Colorado 9-11 September 2014
NOAA Earth System Research Laboratory

Scope of the Meeting

To discuss recent research and to advance efforts toward understanding physical causes of extreme events. The meeting will examine the conditioning of extreme event statistics on seasonal to multi-decadal time scales, in addition to assessing effects of long-term climate change.   The meeting will also explore prospects for the predictability of weather and climate extremes.

Specific Meeting Topics

° Modeling strategies for attribution of weather and climate extremes.
   ---- multi-model methods
   ---- large ensemble methods
  ----- use of operational seasonal forecasts for event attribution
   ---- coupled and component modeling approaches

° Process understanding of extreme events
   ---- conditioning by atmospheric circulation and initial conditions
   ---- conditioning by sea surface/sea ice/land surface boundary states
   ---- conditioning by long term climate change

° Statistical analysis of extreme events and their probability
   ---- return period estimates
   ---- Generalized Extreme Value theory applications

Meeting Outcomes

I. *Discuss possible architectures for ongoing coordinated model simulations, including facilities (i.e., analysis, intercomparison, and visualization tools) that might be used by a broad research community to study causes for climate variations and extreme events.*

II. *Discuss possible collaboration on the assessment of several recent extreme events that have had a profound effect on society including the California drought, the eastern US severe winter cold, and the UK severe flooding.   These have been occurring simultaneously, and questions of interest include whether large scale climate forcing is responsible for their mutual occurrence, the predictability of both the forcing(s) and the events, and whether such events are likely to occur more frequently in the future.*

Meeting Format

The meeting will cover 2.5 days from 9am Tuesday September 9 thru Noon Thursday September 11. The meeting will be structured around individual presentations related to the scope and topics of the meeting, and also will involve group-wide discussions to explore how to advance on the identified meeting outcomes.

The meeting will have about 25 attendees, comprised of scientists from institutions that are focused on extreme event attribution, especially in the context of predictive understanding. Talks that integrate attribution with predictability, that employ ensemble modeling strategies, and that address the underlying physical causes of extremes including their context in a warming climate are encouraged. Preliminary analyses of the 2014 events including the California drought, the severe US cold winter, and the UK flooding are also encouraged. Presentations would be about 20 minutes, with ample time devoted to discussion. Thursday would be devoted to addressing the specific meeting outcomes.