Meeting of the CCSP Product 3.3 Committee on "Weather and Climate Extremes in a Changing Climate"
International Pacific Research Center, University of Hawaii
October 30 – November 2, 2006

Monday, October 30

Dr. Christopher Miller, Designated Federal Officer of the National Oceanic and Atmospheric Administration (NOAA) Climate Change Science Program (CCSP) Product Development Committee (CPDC) for Synthesis and Assessment Product 3.3 (CPDC – S&A 3.3) called the meeting to order and explained the procedures that govern a FACA meeting and FACA process. The meeting proceeded in accordance with the published agenda (http://www.cpo.noaa.gov/index.jsp?pg=./ccsp/33_meetings.jsp). Dr. Thomas Karl, the Co-chair, provided guidance on producing CCSP Product 3.3, based partly on experience with Product 1.1 (note: general guidance for CCSP Products is provided at http://www.climatescience.gov/Library/sap/sap-guidelines.pdf).

Tom Karl noted that the main body of the report will be written at the level of a "Scientific American" article; the Executive Summary will be written in a style understandable to a high school graduate.

There was open discussion concerning the need to make cited data available, if requested, including the data used to construct figures. For example, this requirement could be satisfied by making accessible the raw data and the methodology. For figures extracted from the literature, authors have to be able to vouch for a reputable source of the data. "Grey" literature can also be cited, if it is judged credible. The use of proprietary data (e.g., reinsurance industry data) will not be allowed; the use of data from reputable sources (e.g, national data centers) must be adhered to.

Tom Karl presented a modified version of a diagram used in the Product 1.1 report to convey information about the uncertainty associated with conclusions reached in the report. There was extended discussion about how best to communicate the degree of likelihood of a result, particularly with a view to how this was done in the latest IPCC assessment. It was agreed that this issue would be re-visited during the meeting and, if necessary, in post-meeting discussion.

Public Comment

There was no request from the public to make a comment or statement.

Presentations

Sara Veasey, of the National Climatic Data Center, described guidelines to facilitate the production of the report. For example, to accurately track changes, every time a change is made a new version number is assigned and all figures are updated. A web site for this production activity has been established and is accessible to the author team for review and posting of material. Dr. Jim Kossin, University of Wisconsin – Madison, discussed recent reanalyses of global tropical storm data. Committee members commented that this type of continuing effort to homogenize the global data set of tropical storms is needed.

Tom Peterson, of the National Climatic Data Center, addressed the working definition of "extremes", particularly from the impacts perspective. It was noted by the group that the observation of extremes is dependent on demographics, i.e., the intersection of society and extremes reflects the rapidly changing relation between climate and people. Extremes may produce positive, as well as negative, impacts and these should be noted, where appropriate. David Easterling, of the National Climatic Data Center, presented on the observation of changes in extremes. The U.S. landfalling hurricane data were identified as the most robust tropical storm data set currently available. A question was raised about climate modes of variability (e.g., El Nino, Atlantic Multi-decadal Oscillation (AMO), etc.) and their effect on extremes. [The reinsurance industry is paying attention to the AMO and tropical cyclones. Many biological indices relate to these modes.] Gabi Hegerl gave an overview of the IPCC assessment of climate effects on extremes. Changes in the mean, to first approximation appear to be a good indicator of changes in extremes. There is some disconnect between observations and model results, partly because of scale effects. Jerry Meehl described model results and the range of extremes projected in models, e.g., the Frich indices, which Tom Peterson discussed earlier from the observational perspective. Parameters like number of frost days and heat waves seemed very reasonable. Peter Webster presented information on the Pacific Warm Pool expansion over time and noted that any connection with numbers of severe hurricanes still remains a research topic that should be pursued.

Tuesday, October 31 – Thursday, November 2

In the afternoon Plenary Session on Tuesday the Committee returned to the issue of the "uncertainty bar". New uncertainty language and a new bar were introduced. Uncertainty is a key theme of the report and a necessary lead-in to Chapter 4 (("Recommendations for Improving Our Understanding").

Tom Karl stated that one goal of the team is to update data sets through 2006. A second goal is to consider short-term, targeted studies that would make a significant contribution to the assessment and could be published, or accepted for publication, by August 15, 2007, i.e., be available for the public comment period. Committee members were encouraged to make suggestions to the chairs.

A key message of Chapter 1 ("Why extremes matter") will be that both extremes and vulnerability are changing. Rick Murnane introduced the concept of a "tree diagram" (derived from catalogues of extreme events for the insurance industry) to categorize types of extremes. It was recommended that the diagram be expanded to show specific hazards.

For Chapter 2 ("Observed changes in weather and climate extremes") the point was made that there is a need to show smaller areas, like the Virgin Islands and Hawaii, from the larger maps. The issue was raised about the benefit of asking Dian Seidel to update her heat index work. The effect of changes in SSTs on coral bleaching should be investigated. An appropriate contact is the NOAA Coral Reef Task Force (Mark Eakin). How to address wildfires is another outstanding issue. This subgroup, also, will look at specific studies on the modes of variability.

For Chapter 3 ("Attributing causes of changes of extremes, and future projections") the subgroup agreed that case studies (e.g., heat wave, heavy precipitation), even though they don't imply attribution, are worthwhile and illustrative. One event cannot be attributed to climate change but it does influence the probability distribution (e.g., the return period for Hurricane Katrina in the J. Elsner paper). There is some recent relevant work on droughts – the paper by Burke et al 2006 in the J. of Hydrometeorology examining trends in PDSI.

On Thursday, in anticipation of the NRC review of the first version of the report, the Committee compiled a list of potential NRC panel members to cover the areas of observations, projections, extremes, impacts, statistics, and assessments.

There was extensive discussion of what the Committee wants to accomplish in the report's Abstract and a strawman was created.

Dave Easterling outlined some near-term research priorities that could provide the foundation for Chapter 4 ("Recommendations for Improving Our Understanding"). The recommendations (and the corresponding summary figure) in the Product 1.1 report provides material that can be usefully incorporated here. Also, it was suggested that recommendations should be tied to existing programs to make them more real and acceptable (e.g., CCSP Strategic Plan, section 4.4 on weather and climate extremes).

Meeting Adjourned at Noon.

Meeting Decisions and Actions
The previously published "National Assessment" brought out a lot of important issues relevant to extremes. It will be put on the author team web site for reference, so the team can avoid duplication of effort.

Committee members who have short-tem projects, for which they need some resources to cover costs of production, will submit a half-page proposal to the chairs as soon as possible.

Mike Wehner, a contributing author, will continue his work using a set of regional climate change runs to compute Frich extremes indices, which subsequently can be compared with indices computed from observations.

With the goal of producing a first draft for the NRC panel by February, the next meeting of the Committee is scheduled for January 9, 2006 at the Chicago O'Hare Airport Hilton Hotel.

The Committee members were encouraged to use teleconferences, which could be arranged through NCDC, as an effective way to interact between face-to-face meetings.

Tom Karl and Jerry Meehl will lead the effort to develop the report Abstract, Preface, and Executive Summary and will incorporate Committee member comments.

A list of possible NRC panel members for the review of the 3.3 report will be forwarded to the NRC.