Climate Observations and Monitoring Program (COMS)
FY 2014 Information Sheet

Observations are a foundational element of the climate research and services enterprise. NOAA and its national and international partners invest significantly in the development of a global climate observing system to address the needs of the research, forecasting, and assessment communities, as well as enable stakeholders and decision-makers to monitor and respond to changes in the Earth system. While observing systems routinely provide data and related metadata, raw data alone are often insufficient to realize the full value of these observations. Carefully developed and tailored value-added climate products, diagnostics, and indices based on these data can enhance the use of the data to address specific needs. They improve the connection between observations and their application within the climate enterprise. Such products, diagnostics, and indices should have a strong scientific foundation and be publicly accessible.

The climate monitoring (CM) component of the Climate Observations and Monitoring (COM) Program focuses on the development and improvement of climate-related data sets, the transformation of climate-related observations into informative products, and the interpretation of these products to better understand the current and changing state of the climate system.

In FY2014, CM will have two competitions. The first, **Data Sets and Indicators**, will comprise two elements: (a) Data Sets for Weather/Climate Extremes; and (b) Ocean Climate Indicators. The second competition will focus on **Paleoclimatology Proxy/Multi-proxy Reconstructions and Analyses**. This call for proposals does not include support for field measurements in either of these competitions.

1. Data Sets and Indicators

(a) Data Sets for Weather/Climate Extremes

Proposals are invited for the development and enhancement of long-term, continuous, and consistent high-resolution data sets that address weather/climate extremes in the physical climate system, including the degree to which these extremes may have changed over time or be expected to change in the future, e.g., exhibit characteristics outside their historical range.

Climate extremes encompass the large-scale natural modes of variability of the climate system (e.g., ENSO, PDO, NAO, AO, etc.), which have dynamic linkages to the extreme events that are experienced at smaller space and time scales, i.e., remote forcing of regional or local weather events. The highest priority for this activity is on those aspects of the physical climate system that have the potential for severe impacts on human and natural systems (e.g., energy, agriculture, forestry, water, health, transportation, fisheries) due to air temperature and precipitation-related extremes, as well as associated phenomena that

drive, or are driven by, these extremes (e.g., tropical and extratropical storms; floods; droughts; heat waves).

Candidate data sets may have existing deficiencies in the form of gaps, inhomogeneities, or biases that will need to be addressed to maximize the utility of the proposed data set for climate studies and applications. Successful proposals, which can also consider the output of model runs, will need to provide a detailed discussion of any planned enhancement processes and also include a component that demonstrates the expected utility of the resulting data set, through diagnoses that reveal new insights of underlying processes of weather/climate extremes.

(b) Ocean Climate Indicators

Proposals are invited to produce observation-based global and (preferably) regional indices that facilitate monitoring the status, trends, extremes, and variability of ocean physical properties over time scales of weeks to decades for the benefit of research, predictions, and decision-makers. Such indices should take full advantage of the global ocean observing assets that NOAA and its partners deploy in the open ocean (e.g. http://oco.noaa.gov). These indices may be single-parameter, multi-parameter, or be designed to capture 'compound events' that involve multiple impacts. The indices can be developed from climate-quality data sets produced as part of the proposed effort, or derived from established data sets that have demonstrated their usefulness in climate studies. When necessary, observation-based ocean syntheses may be used to develop such indices. Successful indices could become part of a nascent Climate Indicators program (USGCRP) and/or ocean monitoring efforts lead by the IOC, CLIVAR, and others (e.g. http://ioc-goos-oopc.org/state_of_the_ocean/).

The stakeholder(s) for a proposed index should be identified, and use of the developed indices must be demonstrated and evaluated. The project should have a strategy to address the scientific robustness (e.g. through publications and/or feedback from the wider community) of the proposed indices. An index should not duplicate an index currently produced or reported on by other groups, although an index may modify or extend an existing index to increase its usefulness. Providing estimates of uncertainty would also be helpful. Proposals should address how the developed indices and relevant data will be made accessible to the wider community. Selected PIs should plan to cooperate (e.g. via teleconferences and/or annual meetings) with others developing a comprehensive ocean monitoring and indicators system.

2. Paleoclimatology Proxy/Multi-proxy Reconstructions and Analyses

Proposals are encouraged that encompass high resolution, proxy/multi-proxy reconstructions that (1) identify and characterize historical extreme events that have severely stressed human or natural systems (e.g., the onset, duration, frequency, intensity, and decline of droughts or megadroughts); and/or (2) describe hemispheric changes in

extreme events and the linkage of these changes to large-scale natural modes of climate variability.

Emphasis will be placed on using currently available measurements at sub-decadal resolutions as fine as seasonal, mining the time- and frequency-domain (including the low-frequency variability) information in multiple, well-calibrated proxies, and producing spatially complete data sets. Proposed proxies should have demonstrated relevance, i.e., maturity, for climate studies. Proposals that involve a field campaign(s) to collect data should be directed to programs other than the Climate Program Office.

Additional Information

Proposals are required to address the long-term preservation and accessibility of relevant data sets. Proposers should ensure that any data sets produced that document climate change have a dedicated archive identified for the data and indicate in the proposal the final disposition of the data. Proposals with period of performance of one, two, or three years may be submitted.

Competition Manager

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