Announcing a Modern Applied Climate Information System (ACIS)

NOAA's National Climatic Data Center (NCDC) and NOAA's Regional Climate Centers (RCCs) announce a new internet based system designed to provide directed access for user specified queries to climate data archives. The new system is called the Applied Climate Information System (ACIS). Climate data are in high demand as evidenced by the millions of hits annually to the NCDC and RCC web pages. Climate products give information on events that are critical to decision makers, planners, and managers, e.g. climate trends can guide decisions relative to expected "future" climates. The availability of products on ACIS allows the user to conduct their own climate analyses using high quality data.

ACIS is a distributed and synchronized system that provides consistent and timely climatic products. The implementation of the system at multiple centers provides redundancy and ensures timely availability. The synchronization and standardization ensures that users will receive the same information regardless of the point of contact. The system was designed with layers of independent modules interconnected by Common Object Request Broker Architecture (CORBA) to ensure flexibility in both the location and programming language of the modules. We have used 'open source' and standards based software to reduce any barrier to usage.

ACIS was designed to allow access through three interfaces that provide a different balance of detail, customization, and ease: 1) low-level CORBA, 2) mid-level XML-RPC and 3) high-level web-based interfaces (html). Even the low-level interface provides a fairly abstracted and coherent view of the climate data. Figure 1 shows a series of program steps in the python

programming language. In part A, the program gets the acis_id for a station associated with a Cooperative Observer Network station identifier that reports daily maximum temperature (TMAX). The acis_id is an internal id that will define a climatologically coherent record regardless of how the data is reported (NCDC TD3200 format, shef-encoded or locally keyed). Part B of the program creates a TSVar (time series variable) that represents the TMAX values from that station. When a date range is set and data requested, the data server will collect data from local or remote data stores and return it to the client. The client program does not need to know the data format or location. These data stores will change dynamically to return the best available data at the time of the request.

To avoid a single point of failure and regulate traffic, redundant ACIS computer servers are maintained around the country at the six Regional Climate Centers. Data are available from NOAA networks including the Cooperative Observer Network, the Hourly Surface Airways Network, and the Historical Climatology Network. Additional meso-net data such as the Automated Weather Data Network in the High Plains region are also available. Future plans include access to other network data including the USDA's SnoTel Data and NOAA's Climate Reference Network, and several state networks. ACIS provides seamless access to a continuously updated data stream. As a result, standardized products and maps are available for various climate variables and time frames right up to the current time. Climate data users may subscribe to ACIS to obtain access to both near-real time and historical climate information and will receive the same information regardless of which RCC interface they choose. An example of the RCC user interface (UI) is illustrated in Fig. 2 with the UI from the Northeast Regional Climate Center. The UI is standardized for all RCCs with the exception of organizational logos

and locally developed products. The UI provides direct access to products that are available for both single station and multiple station analyses and can include listings, comparisons to normal,rankings, extremes of record, first and last occurrence dates and other statistical information on a daily, monthly, or seasonal basis.

The ACIS system is now available to the public. Links to the ACIS system can be found at http://rcc-acis.org. These links take the user to the UI where it is possible to view sample products and use ACIS to set up "individualized" requests on-line, although you will not be able to receive the actual summaries until you become a subscriber. This approach gives you the opportunity to try out the system and see what stations and years are available, as well as see samples of the product/summary before subscribing. Subscription information is available at the bottom of each UI.