

Roles and Responsibilities for Observing, Collection, and Distribution Systems: An Academic/Research Viewpoint

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ABSTRACT

Before the Internet age, the primary sources of data for climate research were NCDC, NCAR, fax maps, teletype, atlases, and researcher-to-researcher correspondence. This has evolved into a highly distributed system. Primary sources within that new system include the websites of traditional providers like NCDC and NCAR, but also new players like the regional climate centers, state climatologists, and NCEP centers. These providers are augmented by secondary sources like research program, university, and individual scientist's websites. The academic user community has also evolved from weather research and basic climatological studies to multidisciplinary or cross-disciplinary research. Many current cutting edge research questions are not neatly confined within old discipline boundaries.

There is no true global climate observing system. Thus, climate research is generally based on data taken for other purposes, primarily in support of weather prediction. These observation systems do not generally satisfy the 10 climate monitoring systems principles of Karl et al (NRC, 1992). Furthermore, satellite data records are generally not long enough for many climate applications. To make these data sets useful for climate studies, it is often necessary to further process the basic observational record into a "climate data record." This is sometimes done by the primary source, and sometimes by the user. What is needed for climate research is a secondary "improved" data set, but this raises the issue of certification of secondary data and data products.

Academic research requirements comprise a wide spectrum of data/data product needs, including:

- Near-real-time data
- Limited volume data sets (case studies; process studies)
- Large volume data sets (climate variability/change)
- Information on data characteristics and quality (metadata)
- Processing/analysis software (including model assimilation)
- Climate data record (for climate research)

Important considerations associated with these needs include the following:

- Provision of data/information in standard formats, but also in a variety of "modes" (e.g., reanalysis)
- Cost containment
- Producer/user interface

Multidisciplinary or cross disciplinary research is rapidly coming to the fore. Examples of this type of research include climate science, earth system science, general environmental

studies, human dimensions (socio-economic impacts). Interdisciplinary users are not as familiar with the characteristics, sources, and quality of weather data. This consideration leads to greater need for mechanisms for interaction between producers and users.