

Session 6 – GIS Applications

This year features the debut of an entire session devoted to Geographic Information System (GIS) Applications. Although GIS has been used extensively in other disciplines, such as Hydrology, Biology, Coastal Studies and Fisheries, it has only recently begun to be applied in meteorology and oceanography. The breadth and depth of the applications reported in IIPS Session 6: GIS Applications attest to the growing importance of data interoperability in the multidisciplinary hydrometeorological environment.

The future importance and impact of GIS in meteorology and oceanography was recently addressed by the National Center for Atmospheric Research (NCAR) in a GIS Forum conducted August 12-14, 2002 (<http://www.esig.ucar.edu/gis/>). Working groups addressed issues and opportunities associated with the use of GIS in our traditional disciplines, which have not yet taken full advantage of Commercial Off-The-Shelf (COTS) GIS software tools. How would weather or climate research and applications benefit from an improved GIS? What are the most significant research questions and programs that could be addressed with GIS technology? What is the expected pay-off in terms of research and broader societal benefits (i.e., data sharing, collaboration, reducing redundancies, interdisciplinary linkages, new types of analysis, data-model comparisons, communication of uncertainty, outreach and education)? Can GIS make data/products more usable to a broader range of users? What components of GIS are needed for weather or climate research?

The NCAR working groups pointed out the importance of defining "GIS". This was considered critical because many researchers in the atmospheric sciences community still do not know what is available or if their needs will be met by current GIS systems. There might be a misunderstanding about what GIS provides, since many researchers and IIPS developers consider GIS only as map-making software. The five components of GIS (i.e., hardware, software, people, tools, and data) should be identified to assess what components are already in place, and what components can be brought in. It appears that most of these GIS components already exist at institutions such as NCAR/UCAR, and yet GIS per se is not widely used by researchers at this time. It was a general observation that the atmospheric science community has developed many of their own visualization and other software applications (e.g., GraDs, Ferret, NCAR graphics, NetCDF). The tendency of each community of users to build their own applications has advantages of focus on discipline specific issues, but limits interactions with outside research and other, different, applications communities. These problems are beginning to be addressed by broader adherence to community standards (OGC, FGDC, JTA) and de facto standards (e.g., netCDF, DODS, etc.), and bridging the knowledge and technology gap between different applications communities (as in this session). The fourteen papers presented herein demonstrate the breadth and potential of GIS in the meteorological and oceanographic enterprise.

Nancy N. Soreide
Pacific Marine Environmental Laboratory

Scott T. Shipley
Raytheon ITSS