

Site Highlight: Centro de Investigación Científica y de Educación Superior de Ensenada

by Luis M. Farfán, CICESE

Luis M. Farfán is an atmospheric scientist at CICESE (Centro de Investigación Científica y de Educación Superior de Ensenada) in Mexico and an active member of Unidata's community. He is a GEMPAK user, who plans to implement an LDM connection to receive regional-scale information during the summer months.

The weather on the southern Baja California Peninsula (where CICESE is located) is mild and dry most of the year. During the summer, humid air masses that move northward in the eastern Pacific Ocean provide favorable conditions for the development of localized, convective systems that result in rainfall episodes. Eventually, there are tropical cyclones that approach the northwest coast of Mexico. These systems tend to occur late in the summer and, upon landfall, they generate heavy precipitation, and strong winds, that cause significant property damage to the local population.

During the last 10 years, 17 systems moved over land, and eight of them crossed the peninsula. Prior to the approach of these systems, emergency managers perform activities to prepare the population. Luis has attended several of the most recent planning meetings and assisted the managers: 1) to better understand the storm structure and intensity as well as 2) to make an interpretation of the tracks forecasts provided by the U.S. National Hurricane Center. For this purpose, the analysis of real-time, high-resolution imagery from the GOES satellites is extremely useful.

Plans for the warm season of 2008: June-October

- Install equipment to collect observations:
 - a) digital raingauge in southern mountains
 - b) surface stations at 5 locations (real time)
- Install and operate Unidata's software:
 - a) LDM to receive regional-scale information
 - b) GEMPAK, McIDAS and IDV to visualize weather observations and forecasts
- Participate in emergency manager's meetings.



The 2006 season was very active; three tropical cyclones made landfall in northwestern One of them, Hurricane John, became a storm that brought large amounts of rainfall along most of the southern peninsula. The other two systems (Lane and Paul) occurred later in the season and moved across the mainland to cause impact over the state of

Sinaloa. In 2007, only one Hurricane (Henriette) made landfall in the eastern Pacific Basin and this was over the southern peninsula. The storm track was across the Gulf of California to make a second landfall over Guaymas, in the mainland state of Sonora.

Luis supports several groups. Among them is a group of security managers of hotels and resorts from Los Cabos, in the peninsula's southern tip, where most of the landfalling storms can cause significant damage. The managers last met in mid-May 2008, and 72 participants attended a 3-hour seminar on the impact from storms during the 2006 and 2007 seasons. Attendees included representatives from 20 hotels as well as local government officials. Other attendees were firefighters and Red Cross and military personnel.

Additional training has been offered to undergraduate and graduate students from Latin-American countries, where capacity building is in the early stages of development. As part of an international research project, a couple of training courses have been offered. These courses are based on the current understanding of tropical cyclones in the Pacific Ocean, and instructors are from Mexico, the United States, Costa Rica, and Cuba. The courses combine lectures and computer-based sessions to analyze case studies with impact in northwestern Mexico. Students use GEMPAK for analysis of storm structure and motion during the occurrence of recent landfall events.

In addition to GEMPAK, Luis will introduce IDV and will increase use of McIDAS during the coming months while initiating the LDM feed.

Historic netCDF release

With the release of netCDF-4 June 12, 2008, a long planned dream has come to fruition. The plan, combining the capabilities of two scientific data access libraries (netCDF and HDF5), was initiated about five and a half years ago, in the fall of 2002.



Shortly thereafter, developers at NCSA and Unidata submitted a joint proposal to NASA whose stated purpose was to combine these two widely-used scientific libraries. The proposal was funded in the spring of 2003, developer, Ed Hartnett, was hired in the summer of 2003, and work then began in earnest.

This project was designed to provide an enhanced netCDF data model and library by using HDF5 for a storage layer. Version 4.0 is compatible with existing netCDF programs and data, additional data modeling abstractions, and features for use in high performance computing, such as parallel I/O. Support for an enhanced data model is made possible by including the capability to use HDF5 as the data storage layer for the netCDF API. New features made available include user defined types, multiple unlimited dimensions, and per-variable data compression.

New features made available include multiple growable dimensions, compression, user-defined compound and variable-length types, groups for nested name scopes, multidimensional tiling, efficient dynamic schema changes, parallel I/O, and improved

support for strings and Unicode names. For a comprehensive list of features, see: <http://www.unidata.ucar.edu/software/netcdf/release-notes-4.0.html>.

There are specific instances where continuing to use netCDF-3 may be desirable. For the present, HDF5 developers have prepared a netCDF-4 performance report that addresses the following: (1) How does the performance of netCDF-4 compare to that of netCDF-3? (2) Under what circumstances can an application get better performance with netCDF-4? How can performance be optimized? (3) Under what circumstances can an application get poor performance with netCDF-4? What can be done to avoid poor performance?

Lest you think that with this release development of netCDF has ceased, please be aware that netCDF-4.1 is under active development, while version 4.2 is in the planning stage.

Announcement of available NCAR Databases

Unidata's collaborations with NCAR's CISL division have almost always been useful. Now there's a new product. The CISL Research Data Archive contains two datasets that are automatically drawn off the Unidata motherlode server.

One of them, <http://dss.ucar.edu/datasets/ds336.0/>, contains Upper Air and Surface observations in netCDF format back to May 2003. Under the "Data Access" tab Internet Download link, there is a 3-month retrospective archive.

The other, <http://dss.ucar.edu/datasets/ds335.0/> contains eight model products in GRIB format back to December 2002. Under the "Data Access" tab Internet Download link, there is a 1-month retrospective archive.

The NSF facilities assessment database

The NSF Facilities Assessment Database is now online and available for community use at <http://www.eol.ucar.edu/fadb/>. This database is the product of a two-year community-wide assessment of atmospheric science observing facilities and instrumentation led by NCAR/EOL and sponsored by NSF. It contains pertinent information about research facilities and instruments, where they reside, some technical specifications, means for gaining access to the facility for research, persons to contact for further details, and, if applicable, the stage of development at a facility relative to deployment-ready conditions.