A short review of Mexican Observing Systems

THORPEX
A World Weather Research Programme

The Observing system Research and Predictability EXperiment

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Objetives

- To review the different Observing Systems that operate in Mexico identifying the owner institutions and its potential to contribute to the THORPEX objectives.

- To propose a Scientific Plan to make possible to use all those systems to improve the weather forecast
Introduction

- During the last decade different Mexican institutions has been working and making important investments in order to get robust and modern observing systems.
- During this process it is clear the increasing interest on Automatic Weather Stations, especially in those with real time transmission capabilities.
- But there are a lot of different systems related with different variables
Automatic Weather Station Networks
The National Water Commission (CNA) through the National Weather Service has 94 AWS with the capability to transmit data via satellite, this information used to be available to the general public via Internet.

http://smn.cna.gob.mx/productos/emas/emas.html
The same CNA through the Superficial Water and River Engineer Division (GASIR) has 50 AWS with Hydrometric sensor, telemetry via GOES, available only for CNA through SIH.
The Mexican NAVY (SEMAR) also has 34 AWS in the coastal regions, they use a different satellite to transmit data every 30 minutes, the information is available to general public via Internet.

http://meteorologia.semar.gob.mx/
Agriculture, Livestock, Rural Development and Fishing Department, INIFAP and Produce Foundations currently has 502 AWS in 22 states of Mexico, they use radio transmission and the information is available in real time via Internet.

http://clima.inifap.gob.mx/
In Mexico City, UNAM operates a 20 AWS network, located at incorporated high schools, they use Internet for communication and the data is available real time via Internet.

http://pembu.atmosfcu.unam.mx/version/index.html
• Some other institutions like CFE, SCT and PEMEX, use to have AWS with telemetry capabilities, they use the information to take decisions and operate systems.

• There are also local efforts to instrument small basins with automatic rain gauges with telemetry capabilities, related to early warning systems.
There are several institutions: SMN, CONABIO, IG-UNAM, SENEAM and IMTA that have the capability to get Real Time Satellite data: TERRA, AQUA, NOAA, LANDSAT, GOES.
SMN has 13 radars currently only 5 are working well.
CEAMA from Querétaro get a new radar in 2005
Mexico has participation on the NASA Aerosol Robotic Network through ITSON, IGEOF-UNAM and IMTA

http://aeronet.gsfc.nasa.gov/
Other systems

- Sinoptic Observatories, Radiosondes, and Conventional Climatological Stations
Dr. Graciela Raga from the Atmospheric Science Center at UNAM has a Lightning Location Sensor as part of the World Wide Lightning Location Network.
Other systems

- CICESE, has an array of HF Radars working in the Gulf of Tehuantepec; they are trying to get real time data from marine currents and wind waves.

- CINVESTAV, is working in the installation of a Buoy with atmospheric and oceanographic sensors, planning to work in real time.
Other systems

- The National Data Buoy Center/NOAA has some buoy in the Mexican surrounding oceans, real time information via Internet.
Working Proposal

• There are a lot of systems and information available in Mexico and it is growing fast, but all this information is related with a lot of different institutions and Mexico does not have a standard to the variables, frequency, formats, etc. So we propose to write a grant proposal to develop a National Real Time Data System.

• All this information could be in a 3D grid

• The information could be used as Initial and Boundary conditions in the Atmospheric and Oceanographic numerical models.
To propose the standardization of some subjects related with AWS acquisition in order to be easy to add new stations to the National Real Time Data System this could be done by a Official Mexican Norm (NOM)