

PAGASA Unified Meteorological Information System PHILIPPINES

Tender: Unified Meteorological Information System

Client: PAGASA Science Garden Complex

PAGASA
 The Philippines Atmospheric, Geophysical and Astronomical Services Administration, PAGASA, is the National Meteorological and Hydrological Services (NMHS) agency of the Republic of the Philippines.



Philippines

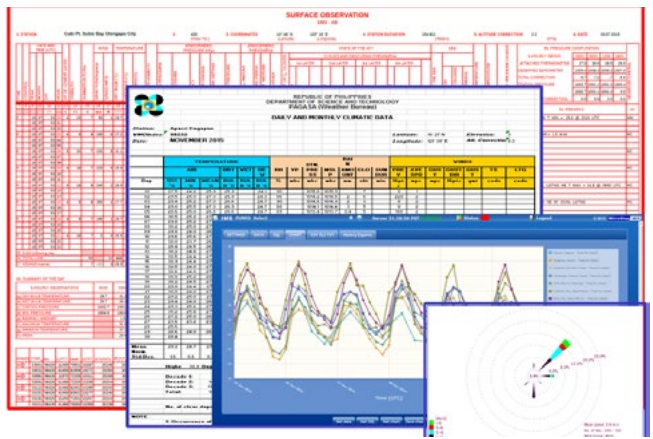
Observation data of PAGASA are very rich and are coming from various observation networks. These includes: observation network of synoptic stations, observation network of agromet stations, observation network of climatic stations, PAGASA Automatic Weather Station observation network, DOST ASTI Automatic Weather Stations observation network, Flood Forecasting and Warning observation network, Upper air stations, Doppler radars, meteorological satellites, wind profiler station, marine buoys and tropical cyclone tracks.

Before the observed data are presented to the end user, they are processed by a wide variety of decoding modules and afterwards by quality control module. Quality control module includes data validity (elements limits), internal consistency (elements relationships), temporal consistency (rate of change) as well as spatial consistency.

The CLDB provides storage of the observed data together with its meta-data information structures. The meta-data are very important part of climate data. The CLDB allows storing various meta-data inside the database according to WMO requirements and recommendations including textual and numerical information, accompanied by copies of datasheets, photos of station, sensors and environment, calibration certificates etc.

Modules

The CLDB offers wide variety of output modules used for presentation of stored data by end users. These include Statistical summaries module, which offer daily, monthly,



Statistical summaries modules

annual summaries, as well as WMO ETCCDI Extreme Indices, Standardized Precipitation and Heat index and many others.

Manual Data Entry module is highly configurable and integrates the functionality of data tracking, data entering and data repair. Data Entry offers a comprehensive tabular view of station data. More than 60 data entries were created in PUMIS.

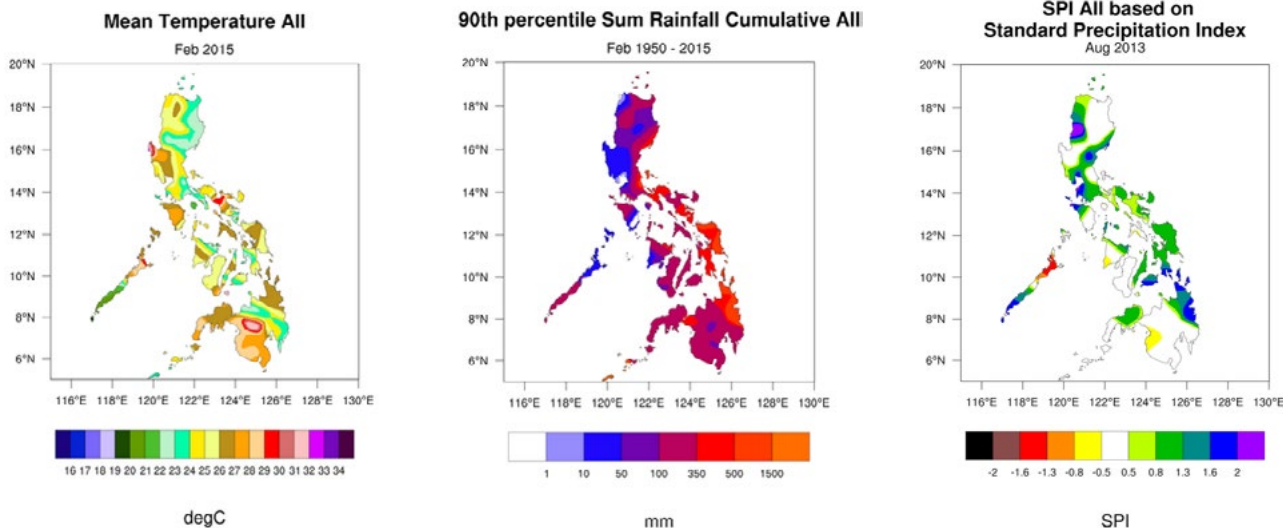
Map Analysis module is flexible computer graphics system designed for professional use. It provides map visualization of climatological information, and helps users to create more comprehensive view and anomalies detection by comparing historical and currently received data.



Meta data modules

22 Map profiles were created in PUMIS to provide all necessary map visualizations of data for end users.

As the PUMIS is based on modular architecture it was possible to build special nonstandard decoding modules to process all PAGASA observations as well as to design special output modules. Tropical Cyclones application is one of them. Specialized meteorologists connect tropical cyclone tracks together with forecast data and present them on fully



Map analysis module

interactive map. All the history of tropical cyclones from year 1948 is archived in CLDB.

Another tailored module is Manual Data Entry for Extreme/ Severe Weather Data. This module enables to process and archive information about extreme/severe weather beyond the traditional data and metadata in form of video, audio, photos, documents, etc. Capturing of such information is carried out through print media, and comments are sent

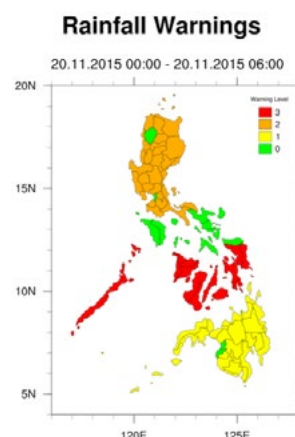
about the event or television or radio broadcast.

Warning management module, also designed for PUMIS, serves for management of warnings in regions of Philippines based on forecasts. Particular warnings are displayed as static maps, showing the affected regions using predefined color scheme. Affected areas are selected by privileged user manual based on the forecast. All entered warnings are archived in PUMIS.

Tropical cyclone module



Warning management module



Challenge

- Implementation of unified meteorological information system which would integrate PAGASA's current observing facilities into one centralized database to have a single point of access and archives of all meteorological data

Our solution

- Climatological database system storing all observed data in one unified structure
- Import of valuable historical observations since 1900 to the unified structure

Achievements

- Integration of all PAGASA's current observing facilities into one centralized database
- Elimination of data inconsistencies and discrepancies
- Single, standard and comfortable data access, display and visualization for all users