Success Story

PAGASA
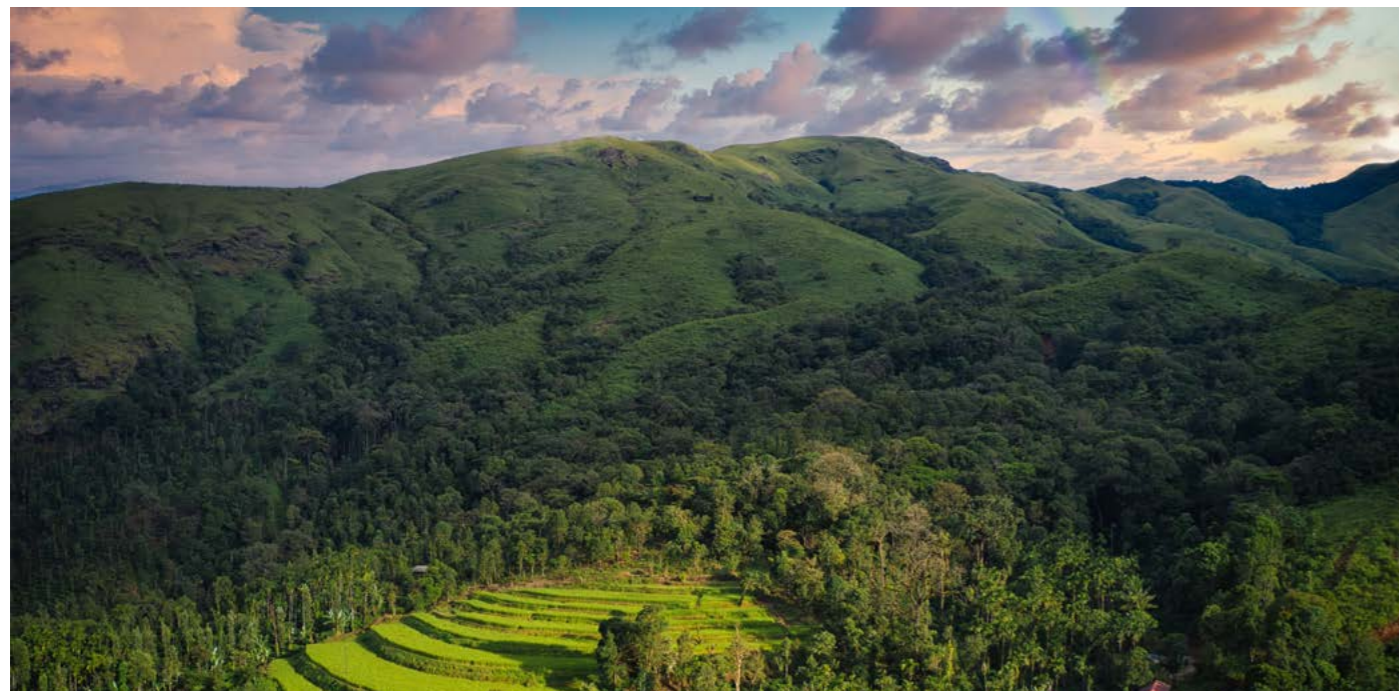Unified Meteorological
Information System

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, tropical cyclone tracks, disdrometer data, lightning data, ozone data and solar radiation data.

Before the observed data are presented to the end-user, they are processed by a wide variety of decoding modules and afterward by the quality control module. The 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 is a 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 the stations, sensors, and environment, calibration certificates, etc.

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

CHALLENGE

· Implementation of a 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 acces, display and visualization for all users.
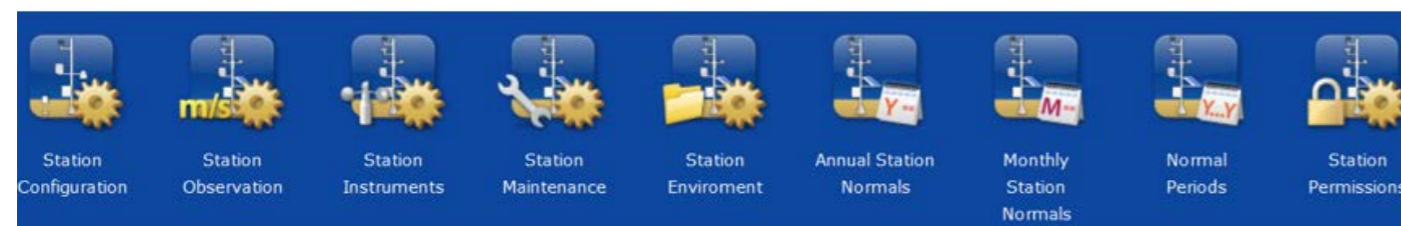
Modules

The CLDB offers a wide variety of output modules used for the presentation of stored data by end-users. These include **Statistical Summaries Module**, offers daily, monthly, 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 a flexible computer graphics system designed for professional usage. It provides map visualization of climatological information and helps users to create a more comprehensive view and anomalies detection by comparing historical and currently received data. 22 map profiles were created in PUMIS to provide all necessary map visualizations of data for end-users.
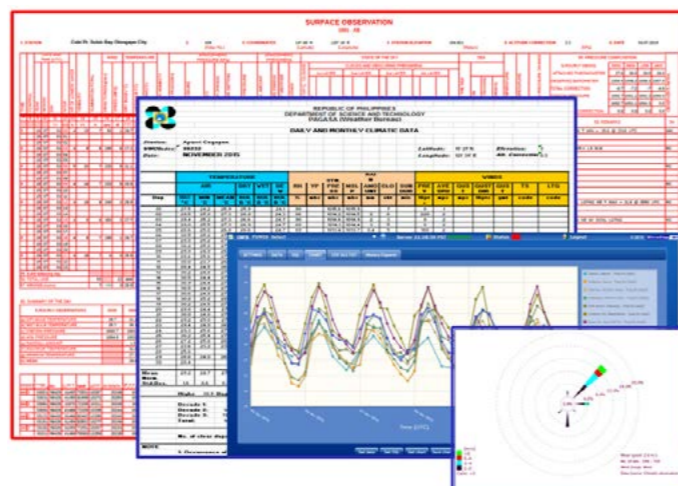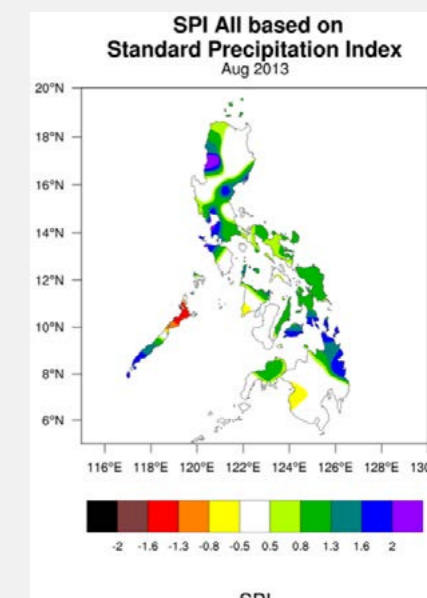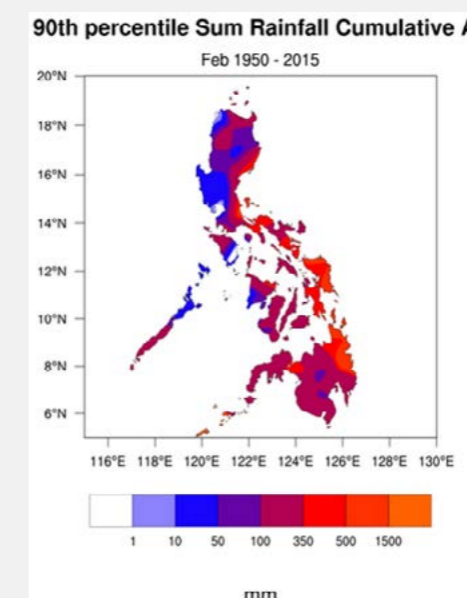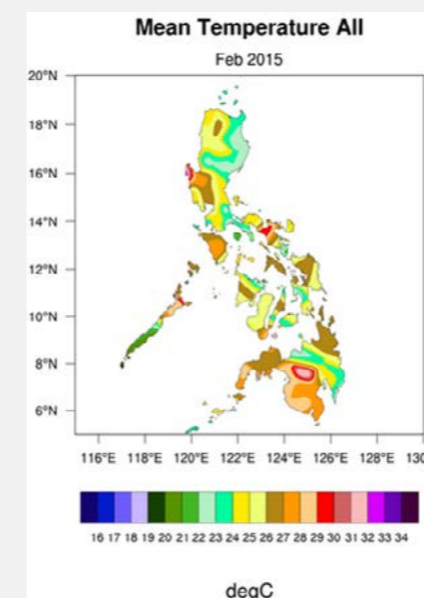

Statistical Summaries Module

*Map Analysis Module*

Meta Data Module

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 enter tropical cyclone tracks together with forecast data and present them on the fully interactive map. All the history of tropical cyclones from the 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. The capture of such information is through print media, sent comments about the event, or television or radio broadcast.

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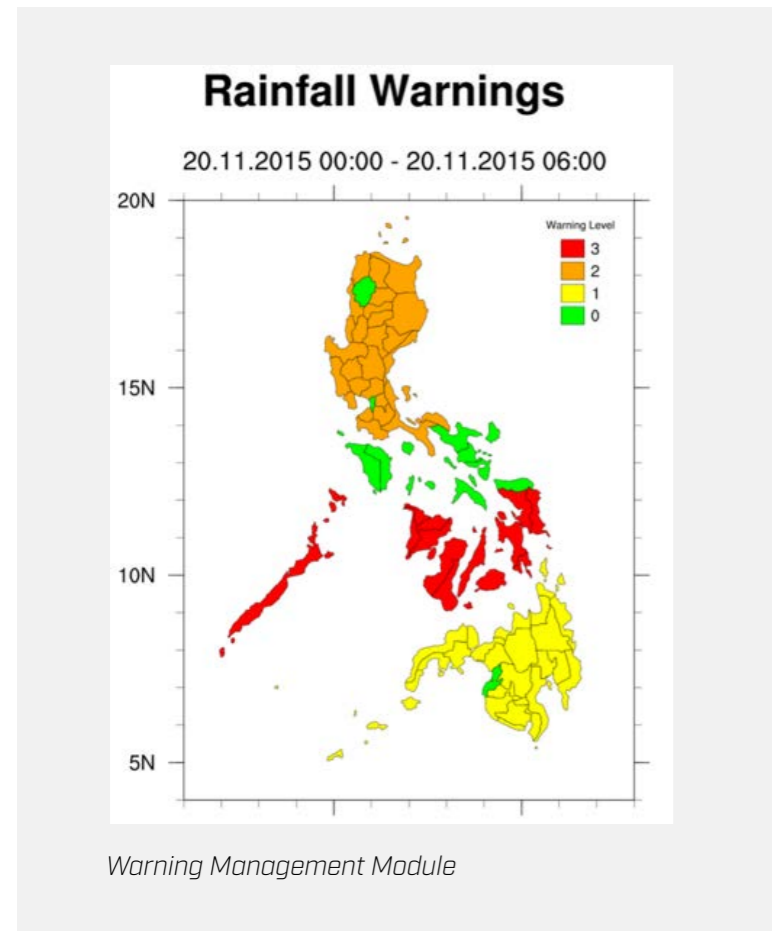
Warning Management Module, also specially designed for PUMIS, serves for the management of warnings in regions of the Philippines based on forecasts. Particular warnings are displayed as static maps, showing the affected regions using a predefined color scheme. Affected areas are selected by a privileged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

The Geospatial Data Module is used to view different static and dynamic (temporal) map layers from the PUMIS database. The module uses GeoServer for the administration and publication of geospatial data with OGC standards like Web Map Services. It is possible to display, overlay, and animate various map products such as radar data, lightning data, various forecast layers, satellite products, tracks of current tropical cyclones, map layers automatically generated from the Map Analysis module, etc.

Tropical Cyclone Module

Geospatial Data Module
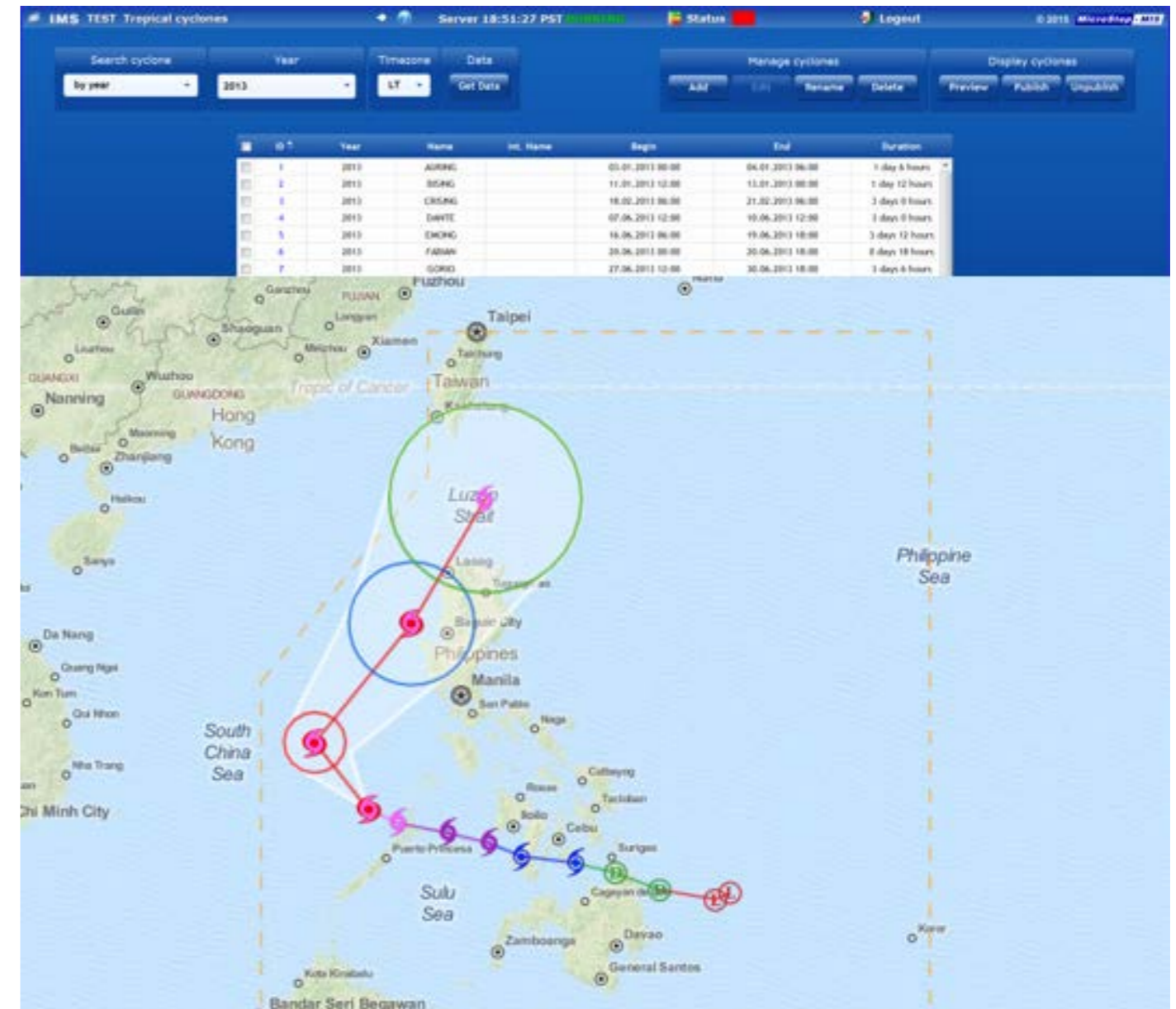
150+

talented and dedicated
professionals working
together

CONTACT US

info@microstep-mis.com

www.microstep-mis.com