



SHAPING THE FUTURE  
THROUGH INNOVATION

*“tracking the sky...helping the country”*

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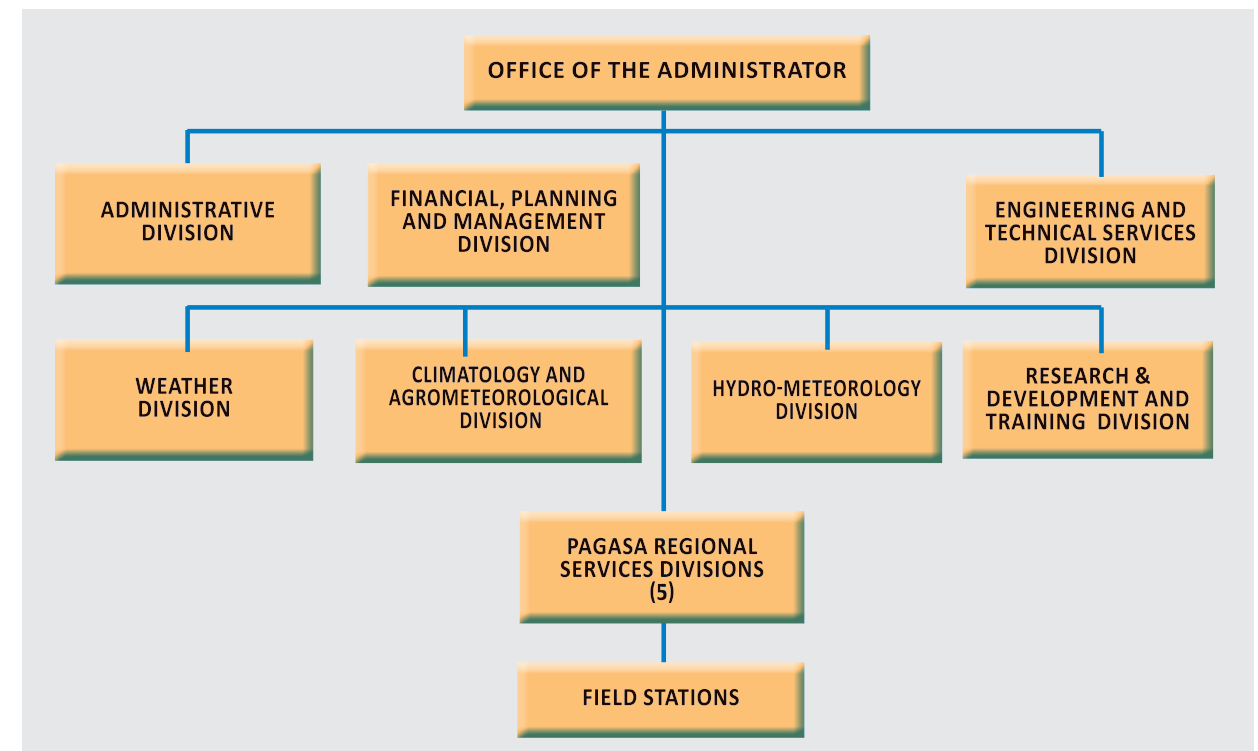
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## profile



PAGASA is one of the attached agencies of the Department of Science and Technology (DOST) mandated to provide protection against natural calamities and utilize scientific knowledge as an effective instrument to insure the safety, well-being and economic security of the people, and for sustainable development and national progress.

## organizational chart



## priority sectors

Disaster Prevention Organizations, Information Media & General Public, Agriculture, Industrial, Shipping, Transport, Environment & Health, Electrical Utilities & Energy, Water Resources and Recreation & Tourism.



# services

SERVICES	PRODUCTS
Weather Forecast & Tropical Cyclone Warning Services	<ul style="list-style-type: none"> <li>• 24-Hr Public Weather Forecasts and Severe Weather Bulletins</li> <li>• Hourly Tropical Cyclone Warning Update</li> <li>• Shipping Forecasts &amp; Tropical Cyclone Warning for Shipping</li> <li>• Gale Warning Information</li> <li>• Meteorological Aviation Services for Aeronautical Users through Access to the World Area Forecasts System (WAFS)</li> </ul>
Flood Forecasting & Warning Services	<ul style="list-style-type: none"> <li>• Basin Flood Bulletins for the Telemetered Basins and General Flood Advisories for the Non-Telemetered River Basins</li> <li>• Dam Discharge Warning Information During Spilling Operation of the Monitored Dams</li> <li>• Establishment of Community-based Flood Early Warning System</li> <li>• Daily Hydrological Forecasts During Non-flood Watch</li> <li>• Public Information Drives for the Target Areas of Monitored Dams</li> </ul>
Climatological & Farm Weather Services	<ul style="list-style-type: none"> <li>• Daily Farm Weather Forecast &amp; Advisories</li> <li>• 10-day Regional Agroclimatic Weather &amp; Advisories</li> <li>• 10-day Philippine Agroclimatic Review &amp; Outlook</li> <li>• El Niño/La Niña Watch and Information</li> <li>• Monitoring and Prediction of Seasonal Rainfall Forecasting</li> </ul>
Astronomical Services	<ul style="list-style-type: none"> <li>• Philippine Standard Time (PST)</li> <li>• Promotion of Astronomy through Stargazing/Telescoping Sessions and Planetarium Lectures and Shows</li> <li>• Planetarium Tour in Selected Areas in Luzon</li> <li>• Conduct of Seminar for Science Teachers on Basic Astronomy</li> </ul>
Education & Public Outreach	<ul style="list-style-type: none"> <li>• Public Awareness Campaign on Natural Hazards, specifically Typhoons, Floods, Storm Surges and Other Related Hazards</li> <li>• Dispatch of the Special Tropical Cyclone Reconnaissance, Information and Data Evaluation (STRIDE) Quick Response Team to areas threatened and affected by typhoons</li> <li>• Conduct Information Dissemination Activities</li> <li>• Conduct Seminars/Workshops on Meteorological &amp; Hydrological Hazards</li> <li>• Conduct Calibration, Repairs &amp; Testing (for private and government sectors) of Barometers &amp; other Related Equipment</li> <li>• Assist Researchers from Different Schools, Colleges, Universities and Agencies</li> </ul>

# mandate

*As provided for in Presidential Decree No. 78, (December 1972), as amended by P. D. No. 1149, (June 1977), the PAGASA is mandated -*

**“To provide protection against natural calamities and utilize scientific knowledge as an effective instrument to insure the safety, well-being and economic security of all the people, and for the promotion of national progress.”**

# vision

**Excellence in meteorology, geophysics, astronomy and the allied sciences that translates to quality products and services beneficial to the nation.**

# mission

**To provide weather, flood, climate and astronomical products and services to promote the people’s safety and well-being, and contribute to national development.**

# our key directions for 2011

## Upgrading in:

- Weather forecasting
- Flood monitoring and forecasting
- Warning system for marine navigation and transport
- Telecommunication system (VSAT & BGAN)

## Enhance Community-based early warning system

- Additional AWS, river sensors and rain gauge
- Automated data processing
- 2 off-shore marine meteorological buoys
- Localized forecasting

## Information dissemination

- Hourly tropical cyclone warning update
- Laymanized bulletins
- Integration of weather observational information through automated data processing

## Strengthen Regional Services Centers

- Establishment of Regional Strategic Study Center for weather forecasting and related fields.

**M**y warmest greetings to the Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA).

When I became a member of the Cabinet of President Benigno S. Aquino III as Secretary of the Department of Science and Technology (DOST), one of my immediate concerns was restoring the capability of the country's premiere weather monitoring and forecasting agency. The litmus test came when typhoon "Basyang" struck Luzon in July 2010.

Barely a few days into my appointed post, I initiated a series of significant changes in the approach and implementation of PAGASA's delivery of its services, as evidenced by the introduction of hourly weather updates whenever a tropical cyclone hits the Philippine Area of Responsibility (PAR).

This new system made its debut when typhoon "Juan" struck in October, and how it passed muster as well as won the support of both media and the public was among the most inspiring comeback stories in 2010. This is our idea of how science and technology can provide protection against natural calamities and utilize scientific knowledge as an effective instrument to ensure safety, well-being, and economic security for all.

For 2011, PAGASA-DOST is assured of total support not only from the Department but also from the Office of the President. Its 2011 budget was approved without incident in Congress after receiving high praise from the President himself. I also wish to express my continued support to PAGASA-DOST to solidify further the gains we worked hard to achieve under the most pressing circumstances.

Let me take this opportunity to congratulate the men and women of PAGASA-DOST for their outstanding performance in 2010. This was clearly demonstrated from their efficient monitoring of subsequent typhoons and the onset of the latest La Niña occurrence. Their efforts have contributed heavily to national efforts to mitigate the hazardous effects of extreme weather events in the country. Our countrymen are proud truly to have you as public servants.



*Marijo G. Montejo*  
MARIJO G. MONTEJO


**T**yphoon "Juan" (Megi) was one of the strongest tropical cyclones on record. Juan made landfall on October 18 striking Northern Luzon as what had been accurately forecasted by PAGASA-DOST. Other international warning agencies were not as close on their forecasts of Juan.

In response to orders from President Benigno S. Aquino III, the agency adopted a modified warning system on Typhoon Juan and introduced the posting of tropical cyclone updates in a social media platform. This innovation in typhoon forecasting strengthened people awareness and in turn resulted into cooperation and proper coordination among all concerned government and private groups.

The aftermath of Typhoon Juan revealed many important things from which our country has learned. Full awareness of an impending disaster from extreme weather phenomena made our people prepare and cooperate to prevent or reduce disaster damages, especially, loss of lives. Clearly, disaster preparedness and management is very essential in the mitigation and eventually prevention of widespread destruction of lives and properties. The feat was achieved through the innovative hourly updates designed for accuracy that was implemented by PAGASA-DOST. The accurate and timely monitoring of Typhoon Juan resulted limited casualties. President Aquino himself commended the men and women of PAGASA-DOST for the excellent performance.

In summary, the latter part of year 2010 was a remarkable event in the very existence of PAGASA-DOST. The trust and respect of our countrymen for the agency has been enhanced and strengthened. The positive changes effected in the agency's operation together with the tested competence of its personnel in serving the people well has worked wonders for the benefit of everyone.

As we enter another year of service to our country, the agency remains fully committed to sustain and even surpass what it has accomplished the past year. PAGASA-DOST will always aspire and work hard to secure the welfare of our countrymen toward achieving real progress.



*Graciano P. Yumju, Jr.*  
GRACIANO P. YUMJU, JR., D. Sc.  
Undersecretary for Research and Development, DOST

# Highlights of Accomplishments



Significant improvement of weather forecasting and warning system highlights PAGASA accomplishments in 2010. This was achieved through the adoption of a new system and acquisition of modern technological equipment.

The implementation of the hourly updates of warning information on tropical cyclone position has proven to be an effective program in typhoon monitoring and warning operation. This innovation was put to test during the passage of typhoon Juan in October 2010 where loss of lives was reduced to a significant number.

To provide a more adaptive meteorological information (i.e. weather forecasts, bulletins, advisories and warnings) to the general public, PAGASA-DOST initiated a program to laymanize such information. This aims to enable our countrymen to easily understand the weather information disseminated by the agency. To go with mass-based social networking, PAGASA-DOST recently opened a TWITTER ACCOUNT to further enhance its dissemination system during extreme weather events. Its web page was also improved to serve the public with vast and swift service-related information.

Equipment upgrade was another factor in the improvement of forecasting and warning capability of the agency. To address the issues on safe and efficient air navigation, PAGASA recently commissioned the Automatic Weather Observation System (AWOS) at the Aeronautical Meteorology Services Section. This is very important to secure accuracy of airport terminal weather forecast to safeguard landing and taking-off of aircrafts from severe weather systems. In addition, the acquisition and commissioning of Weather Observation Marine Buoys deployed in the open seas off Cebu province.

The completion of the Integrated High Performance Computing (iHPC) System activities under the Automation Forecasting Project was also undertaken. The integration of Baguio and Baler radars' data into the iHPC Hydromet Decision Support System (HDSS) as these radars were not transmitting raw data to the PAGASA Data Center.

The establishment of Doppler radar stations in strategic locations around the country aims to provide real-time data and information needed to formulate short range forecasts/nowcasts and early



warnings of weather related hazards. Doppler radars have been installed in Tagaytay and Subic and installation in Tampakan, Hinatuan and Cebu is still on-going.

In the field of flood forecasting, PAGASA has also upgraded its warning system to provide timely and accurate flood forecast and warnings thru the project "Improvement of Flood Forecasting and Warning System (FFWS) in the Pampanga and Agno River Basins". The project called for the rehabilitation of the telemetering system, rainfall and water level monitoring equipment and restoration of the computer system aimed at minimizing flood-related disasters in the Pampanga and Agno river basins. A similar on-going project is the improvement of the flood forecasting and warning system of the Bicol River basin. And then an ongoing project is the improvement of the flood forecasting and warning system in Magat Dam and downstream communities which aims to sustain the effective operation and monitoring of major reservoirs in Angat, Pantabangan, Binga/Ambuklao/San Roque complex and Magat. A landmark project was the completion of the Marikina-Pasig River Flood Monitoring System to prevent another Storm Ondoy tragedy in Metro Manila.

One of the long term challenges facing PAGASA-DOST is the issue of Global Climate Change. At present, PAGASA-DOST through the Climate Information Monitoring and Prediction Center (CLIMPC), is implementing the project entitled "Strengthening Support to Climate Change-Related Adaptation Measures" which includes the study on climate change scenario, climate seasonal forecast and climate field school. Another is the World Bank-funded Philippine Climate Change Adaptation project. The agency's active involvement in the field of research is thru the project "Hazard Mapping Assessment for Effective Community-based Disaster Risk Management" under the UNDP-READY.

PAGASA-DOST has continuously upgraded its human resource to keep abreast with the latest development in S&T advances and to develop their capabilities for proficiency and productivity. This program includes the conduct of in-house training and participation in local and foreign seminars/workshops and training courses.

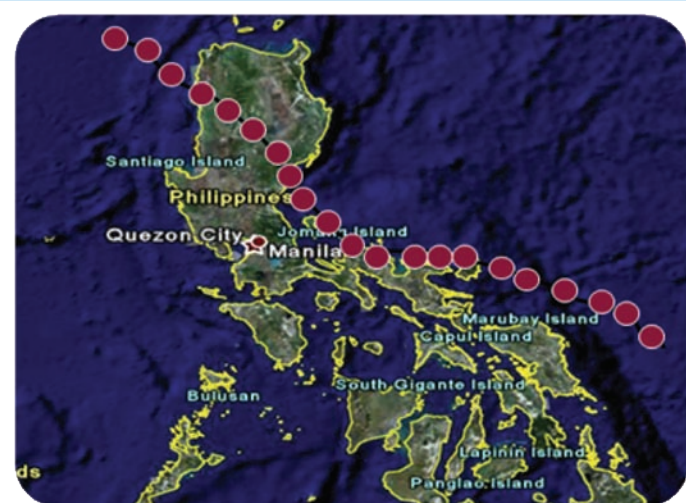
## HOURLY WARNING

**T**yphoon Juan (International Code Name Megi) was one of the most intense tropical cyclones on record. It was the second Super typhoon to hit the Philippines in 21 years after Typhoon Tasing in 1989. Juan made landfall early on October 18 in Northern Luzon at the Sierra Madre Mountains as accurately forecasted by PAGASA.

When typhoon Juan entered the Philippine Area of Responsibility (PAR) on October 16 at 1:00 a.m., PAGASA issued new and modified warnings. In response to the order from President Benigno S. Aquino III, the weather agency posted hourly tropical cyclone updates. This new innovation in local typhoon forecasting has strengthened people awareness in close cooperation and proper coordination of all concerned government agencies and private sector groups. Through the new hourly updates, concerned groups were able to alert the people at risk to stay from harm's way of typhoon Juan. Evacuation and careful preparation were made a day before the actual landfall on October 18. Over 17 provinces were placed under alert as the typhoon approached the country with over seven million people that could be affected. The center of the storm made landfall near Divacalan Bay in Isabela at 11:25 a.m. based on PAGASA forecast. Other international warning agencies were not as that close on their forecasts of Juan.

Estimates reported that the country lost more than two (2) billion pesos in rice and corn crops damage as the typhoon swept through several agricultural provinces in northern Luzon. It also caused substantial damage to infrastructures as it crossed Luzon. Despite the enormous strength of typhoon Juan, only 19 fatalities were recorded. This was in deep contrast to the number of casualties suffered in previous tropical cyclones that struck the country.

The aftermath of typhoon Juan revealed significant things which the country learned from. Full awareness of an impending disaster from extreme weather phenomena will make our people prepare and cooperate to reduce disaster damages, and loss of lives. Clearly, disaster preparedness and management is very essential in mitigation and even prevention of widespread destruction of lives



Initiated hourly updates of tropical cyclone (BAGYO) position (latitude and longitude) and distance to the nearest community once Public Storm Warning Signal (PSWS) #1 commenced. This was initialized during Typhoon "JUAN" and made landfall over Isabela by 3rd week of October 2010.



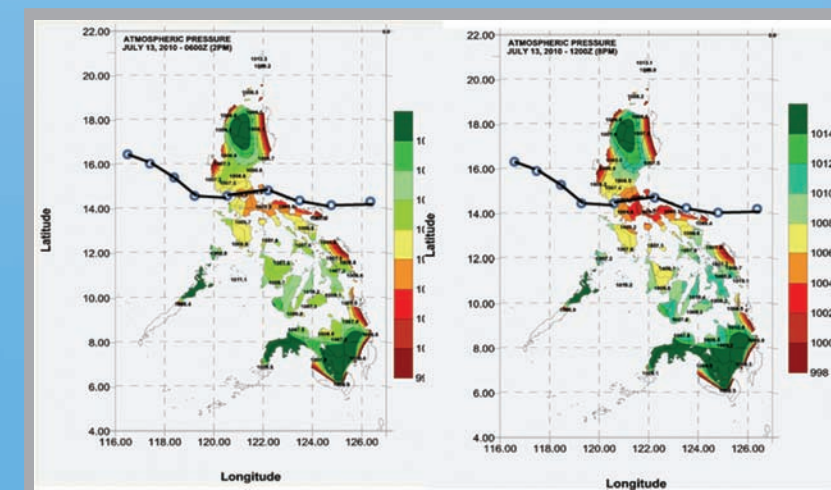
and properties. This feat was attributed to the issuance of hourly typhoon updates implemented by PAGASA-DOST. In an event of another "Super typhoon", the timeliness and accuracy of PAGASA forecasts and the cooperation of all sectors concerned will be relied upon for the benefit of the country and people.

## Automatic Aviation Weather Observation System (AWOS)



To address the issue on safe and efficient air navigation, through improvement of the quality and timeliness of weather forecasts intended for aviation, the acquisition, installation and commissioning of PAGASA AWOS at Aeronautical Meteorology Services Section- Weather Division (AMSS-WD) was undertaken. AWOS is vital to the accuracy of airport terminal weather forecast to safeguard landing and taking-off aircrafts from severe weather systems.

## Better visualization, data processing and analyses



For visualization, pressure and rainfall and winds are the most important atmospheric variables: a color coding of these parameters was done particularly during tropical cyclone landfalling activity.

## Inauguration of the Marine Meteorological Buoy in Madridejos, Bantayan Island, Cebu on Nov. 12, 2010

The Marine Buoy project, under the 2008 Calamity Fund, in Madridejos, Bantayan Island, Cebu was inaugurated on November 12, 2010 highlighted by the blessing of the Meteorological Buoy Station. The inauguration was attended by Honorable Salvador dela Fuente, Mayor of Madridejos Bantayan Island; Dr. Nathaniel T. Servando, Deputy Administrator for Operations and Services, PAGASA; Engr. Jesus Zamora, represented by Engr. Burt Llanto, Regional Director, Region VII; and some PAGASA personnel. Assistant Secretary for Strategic Planning of the Department of Science and Technology (DOST), Engr. Robert O. Dizon, delivered the keynote speech in behalf of Secretary Mario G. Montejo who was not able to grace the event due to a previous commitment.



*Blessing of the marine buoy presided by (from extreme left) Hon. Salvador dela Fuente (Mayor of Madridejos, Bantayan Island), Asec. Robert Dizon (Asst. Sec. for Strategic Planning, DOST), Dr. Nathaniel T. Servando (Acting Administrator, PAGASA), and Dr. Cynthia P. Celebre (Chief, R&D and Training Division, PAGASA)*

The marine buoy in the area of Madridejos will benefit the people of that town the most. Madridejos was very lucky since there were only two buoys installed in the country and the Municipality of Madridejos was chosen as a recipient. The townfolks may now be able to know the state of the sea, especially the fishermen and other seafarers. The buoy's meteorological sensors will enable them to know the real-time state of the atmosphere in the area. The people of Madridejos were requested to take care of the marine meteorological buoys, since its security will ensure their safety at sea. The Secretary commended PAGASA, the Municipality of Madridejos and the province of Cebu for their valuable support to the project. He congratulated everyone involved for giving hope for a brighter and safer voyage at sea. Barangay officials, fishermen and DepEd personnel also attended the inauguration.



### Marine Buoy

Deployed in coastal and offshore areas to measure and transmit:

- barometric pressure
- wind speed and direction
- air and sea surface temperature
- height, period and direction of wave propagation

PAGASA-DOST has acquired two (2) moored buoys, issued marine reports, meteorological weather forecasts and collected marine data installed at Madridejos, Bantayan Island in Cebu City and Burias Island in Masbate.



*Mayor Salvador Dela Fuente (third from left) was given a Plaque of Appreciation for his support to the project by Asec. Dizon, Dr. Servando, Dr. Celebre and Mr. Oscar Tabada.*

## Laymanized Bulletin

The too technical bulletins/advisories/warnings have been laymanized to make the general public easily understand the information being issued by PAGASA-DOST. Launching is on the first quarter of 2011 to be held at Amihan Conference Room, PAGASA Central Office, Diliman, Quezon City.



*The Technical working group in action.*

## Localized Weather Forecasts

PAGASA's Regional Services Division – the establishment of Regional Centers aims to bring closer enhanced services to the countryside and to cater to the essential requirement of the different sectors. Localized weather forecasts were implemented in Legaspi. Aside from the regular daily weather forecast being issued nationwide, a localized forecast is based on the observation gathered/collected in the area of locality.

## PAGASA Web Page

PAGASA bags the 2010 Digital Filipino Web Awards for government category.

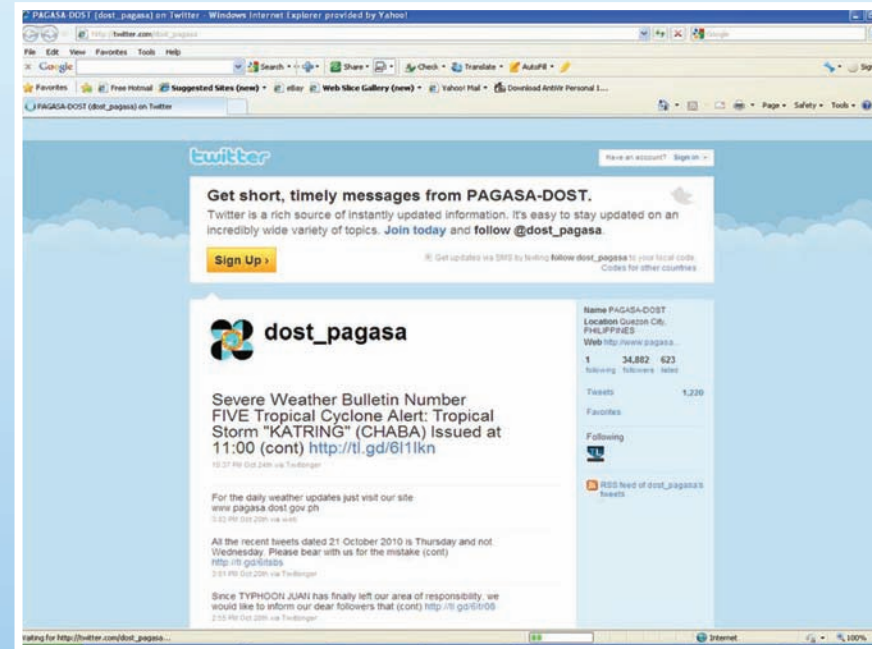
Digital Filipino Web Awards recognizes the changes with the way web sites are being perceived now and how it is valued. As the Filipinos primary internet activity today is to search and interact through social networks, high quality websites filled with relevant content and its attractiveness for social media sharing influences, matter more than the rest.

The awards aims to promote effective utilization of the Internet and e-Commerce for business development by recognizing websites which exhibited the best e-Commerce practices during various websites in the Philippines as stated by the organizer.

The nominated websites were meticulously selected based on search engine competitiveness, ranking on popular category keywords, website traffic stickiness, technical performance, and social media engagement, which were scanned from local websites in 50 to 100 categories to create the Digital Filipino Web Awards - Search Profile Index Top 100 list.

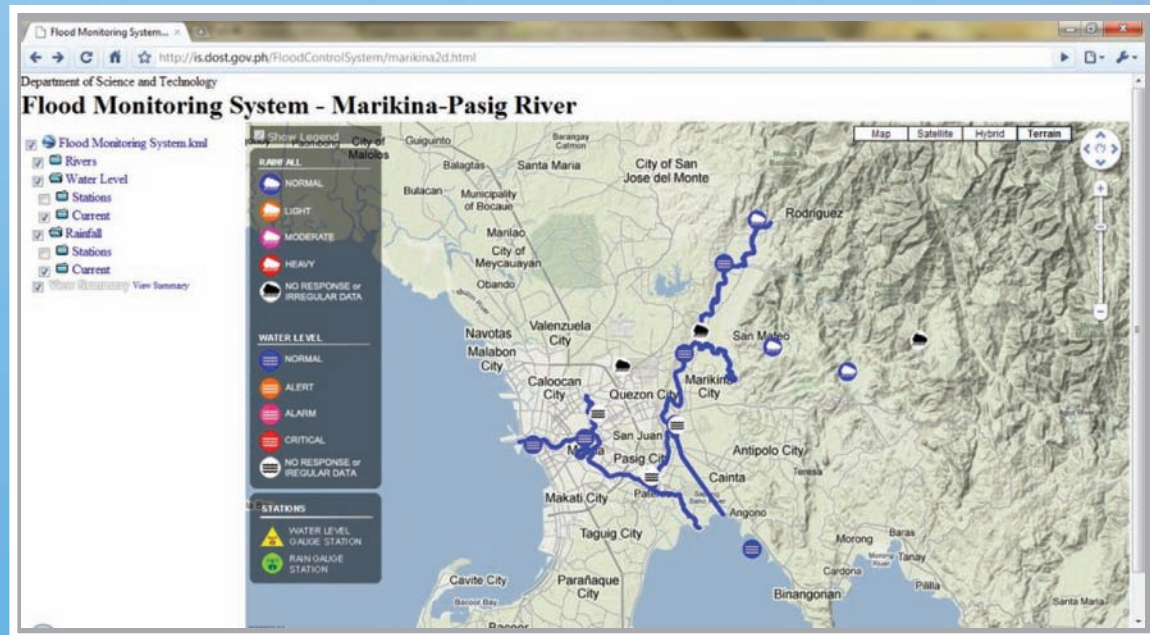


## DOST-PAGASA Twitter Account



The enhancement of dissemination system through the DOST-PAGASA TWITTER ACCOUNT particularly during extreme events.

## Marikina-Pasig River Flood Monitoring System



- Marikina-Pasig river flood monitoring system is operational
- Rolling-out and replication in other major river systems in the country to follow (request from provincial government and DOST)
- Web-based information system



**SPI 100 WEB AWARDS**  
presents the Government Category to  
**pagasa.dost.gov.ph**  
in recognition of its excellence in successfully harnessing the internet for public marketing, social engagement and e-commerce.  
November 24, 2010  
Hotel Intercontinental  
Makati City, Philippines

*PAGASA Web Team with Dr. Nathaniel T. Servando, PAGASA Acting Administrator*

From January to November 2010, pagasa.dost.gov.ph recorded 181.20 million hits, 18.7 million page viewed, 111 million files downloaded and 6 million unique visits.

The awarding ceremony was held on 24 November 2010 during the 4th Digital Filipino e-Commerce Summit held at the Bahia Room, Hotel Intercontinental, Makati City.

Other categories awarded were the following: social network, portal, marketplace, newspaper, telecommunication, television, gadget, jobs, organization, school, banking, travel, insurance, reference, magazine, retail, directory, sports, community, reviews, corporate, fashion, entertainment, technology, gaming and automotive.



# Strengthening and Sharpening Focus of Continuing Programs

## Disaster Preparedness and Hazard Mitigation

The provision of information in the fields of atmospheric, meteo-hydrological, climatological, astronomical and allied sciences, is PAGASA's important contribution in support to the Medium-Term Philippine Development Plan (MTPDP) 2004-2010 and one of the priority areas of the National Science and Technology Plan (NSTP) 2002 – 2020, embodying the national government's continuing efforts in natural disaster preparedness and hazard mitigation with the aim of attaining socio-economic growth.



Tracks of Tropical Cyclones that entered the PAR in 2010.

LEGEND		
1.	Tropical Storm AGATON	March 24-27
2.	Typhoon BASYANG	July 11-14
3.	Tropical Storm CALOY	July 18-19
4.	Tropical Storm DOMENG	August 3-5
5.	Tropical Storm ESTER	August 6-9
6.	Tropical Depression FLORITA	August 27-28
7.	Typhoon GLENDA	August 29-31
8.	Tropical Storm HENRY	September 2-4
9.	Typhoon INDAY	September 15-19
10.	Typhoon JUAN	October 15-20
11.	Typhoon KATRING	October 23-28

## Forecasts and Warnings

Public weather forecasts, including the 5-day special weather forecast, whenever significant change in the weather pattern are expected in at least 3 days and forecasts for shipping and aviation were regularly issued. Timely and fairly accurate issuance of 38,228 (including hourly updates warning information on tropical cyclones position) weather advisories and warnings were made possible by close monitoring and tracking of eleven (11) tropical cyclones, namely, tropical storm AGATON, typhoon BASYANG, tropical storm CALOY, tropical storm DOMENG, tropical storm ESTER, tropical depression FLORITA, typhoon GLENDA, tropical storm HENRY, typhoon INDAY, typhoon JUAN, and typhoon KATRING that entered the PAR as shown above. This information substantially contributed in enhancing preparedness of individuals and communities, thus mitigating the adverse impact of disaster-causing meteorological phenomenon.

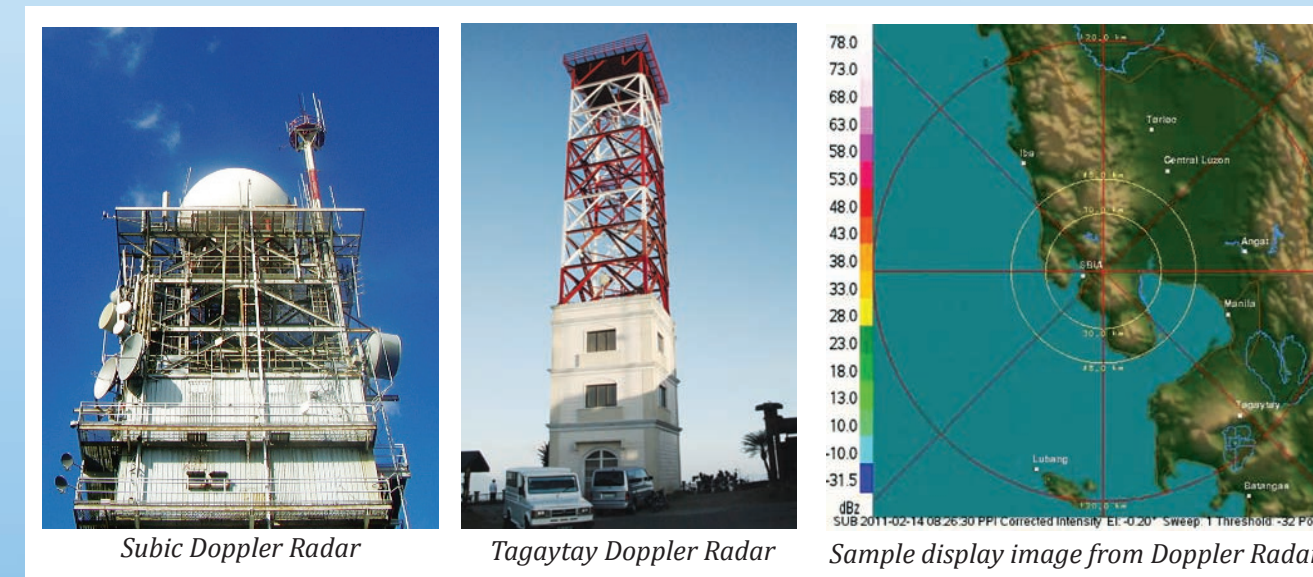
A total of 38 flood bulletins for Pampanga, Agno, Bicol and Cagayan (PABC) river basins; and 5 flood bulletins for dams operation were issued. Likewise, 99 general flood advisories for non-telemetered river basins were prepared and issued during flood watch operation in connection with the passage of tropical cyclones flood-causing monsoon rains. The general flood advisories and warning were very essential in disaster prevention, preparedness and management activities in the areas covered.

## PAGASA Projects Implemented

### Completed:

#### Establishment of Doppler Weather Radar Network for Disaster Prevention and Preparedness in Metro Manila

Provision of Doppler radar network for western, central and southern Luzon that consisted of C-Band Doppler and S-Band Doppler weather stations at People's Park in the Sky, Tagaytay and Sta. Rita Hill, SBMA, Zambales. The weather stations aim to utilize Doppler weather radar for information gathering/generation/awareness essential for natural hazards prevention, preparedness and mitigation from the national level down to the grassroots level. The installed Doppler is scheduled to be inaugurated in July 2011.



#### Disaster Reduction Through Establishment of Back-up Communication and Enhancement of Rapid Tropical Cyclone Impact Assessment and Forecast Evaluation System

Back up communication system is essential for PAGASA and PHIVOLCS in line with their efforts to continuously improve their services especially during critical situations with the support of DOST Regional Offices for centralized information dissemination during emergency situation. Expected outputs are the following:

- Availability of resilient and efficient communication system between the field stations and central offices of PAGASA and PHIVOLCS including DOST Regional Offices;
- Uninterrupted flow of observational data from field stations to central stations;
- Reliable BPS for communication consoles and computers interfaced with radio terminals;
- Training completed for PAGASA personnel on the operation and maintenance of the redundant communication system;
- Database Management System (DBMS) incorporating agromet and synoptic observational reports for research and operational activities;
- Improved Forecasting Schemes formulated based on in-site verified forecasts and rapid impact assessment and damage evaluation of landfalling tropical cyclones;
- Research on evaluating improvements in the forecasts performance for landfalling tropical cyclone using available information augmented by information from agromet and mobile meteorological stations.

**Improvement of Flood Forecasting and Warning System (FFWS) in the Pampanga and Agno River Basins – Phase II**

The upgrading of the flood forecasting and warning system (FFWS) will provide timely and accurate flood forecasts and warnings which included through rehabilitation of telemetering system, rainfall and water level monitoring equipment, restoration of the computer system and supply of spare parts and O & M equipment. It will greatly help to minimize flood-related disasters in Pampanga and Agno River Basins. Phase I (Pampanga) was completed in 2009 and Phase II (Agno) is to be completed in April 2011.



**On-Going:**

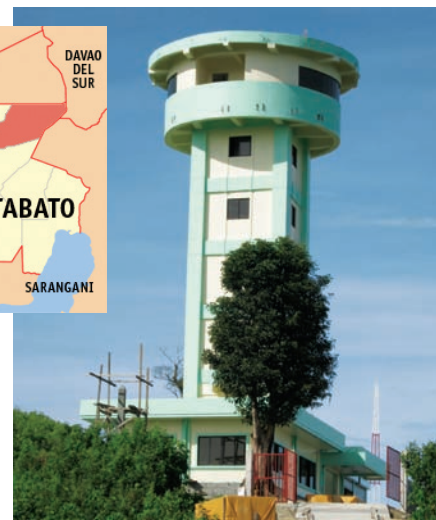
**Enhancement of Weather and Climate Monitoring in Cebu and the Visayas Region**

The establishment of Doppler Weather Surveillance Radar (DWSR) station in Cebu will be a valuable service tool to real-time forecasters of PAGASA Regional Services Division (PRSD)-Visayas, and to its weather observation station network in Visayas Region for a wide range of operational services. It is expected to improve short to medium range numerical weather forecasts and data archiving scheme with an integrated data bank. The radar building construction, including fence and office furniture was 100% completed. With the on-going installation of the Doppler radar, the project was completed on second quarter of 2011.



**Establishment of Doppler Weather Radar Network to Support Socio-economic Development in Mindanao**

The establishment of Doppler radar stations in Tampakan, South Cotabato and Hinatuan, Surigao del Sur aims to provide real-time data and information needed to formulate short range forecasts/nowcasts and early warnings of weather-related hazards and disasters for the benefit of the transportation (land, aviation and marine), communication,

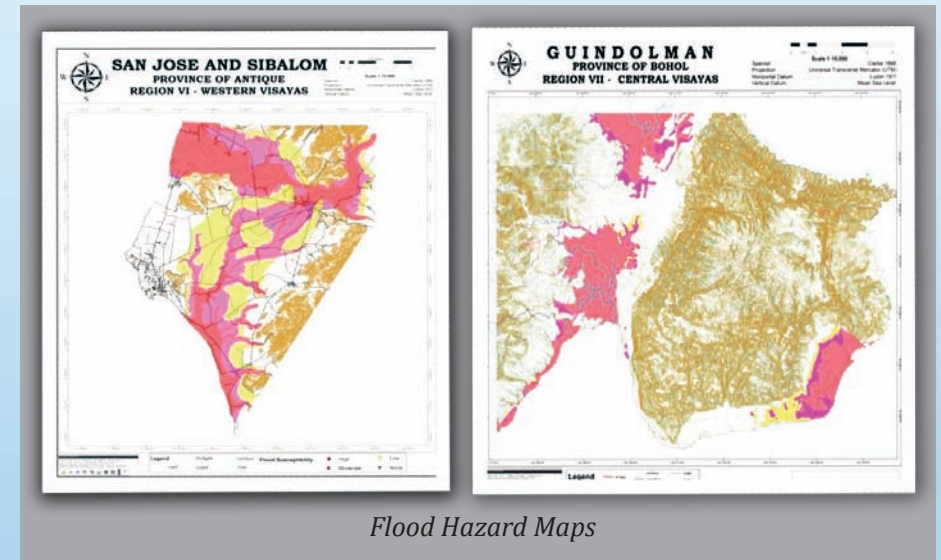


agriculture, aquaculture and fisheries sectors as well as decision-makers and community planners. The project will be completed on first quarter of 2011.

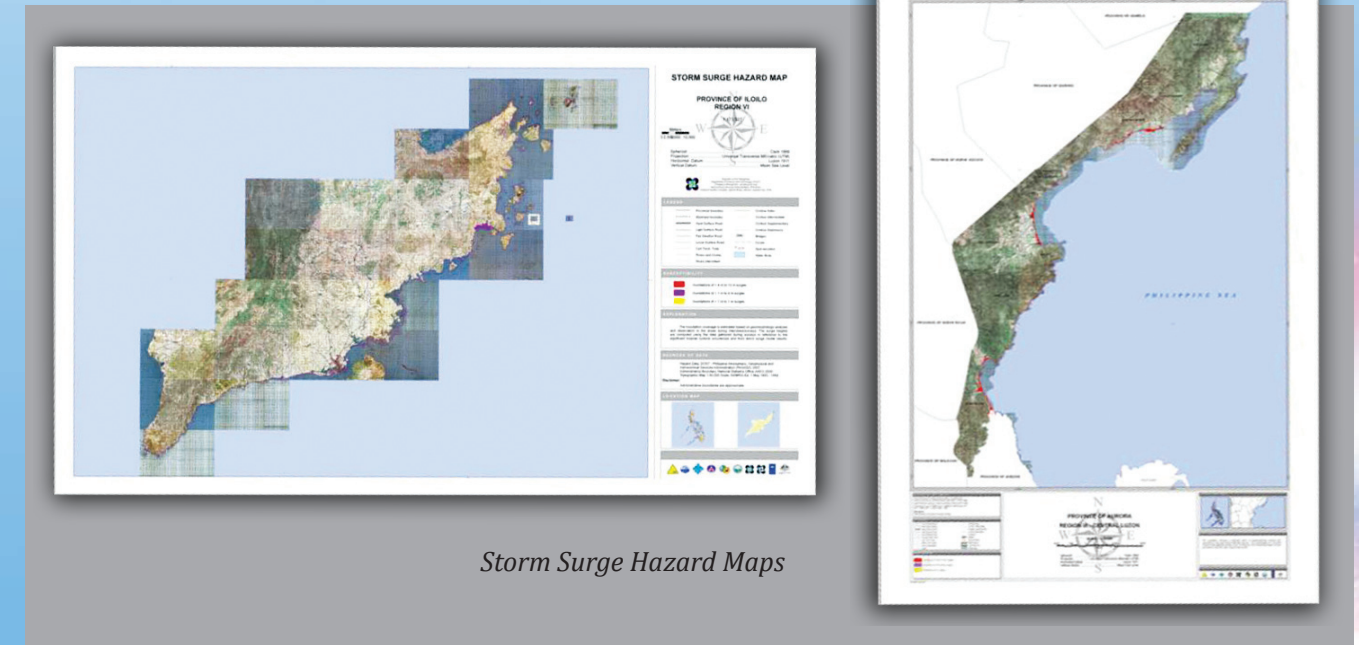
**Hazard Mapping and Assessment for Effective Community Based Disaster Risk Management (READY) Project**

READY project aims to develop a systematic approach to community based disaster risk management. It has been dubbed as the "READY" Project to connote action towards preparedness in terms of natural disasters.

Flood hazard mapping activities, under the READY project were conducted in Surigao del Norte, Surigao del Sur, Leyte, Bohol, Iloilo, Antique, Pampanga, Zambales, Cavite, Laguna, Rizal, Benguet and Ilocos Sur. For the year, storm surge mapping activities were undertaken and completed in Iloilo and Antique.



Flood Hazard Maps



Storm Surge Hazard Maps



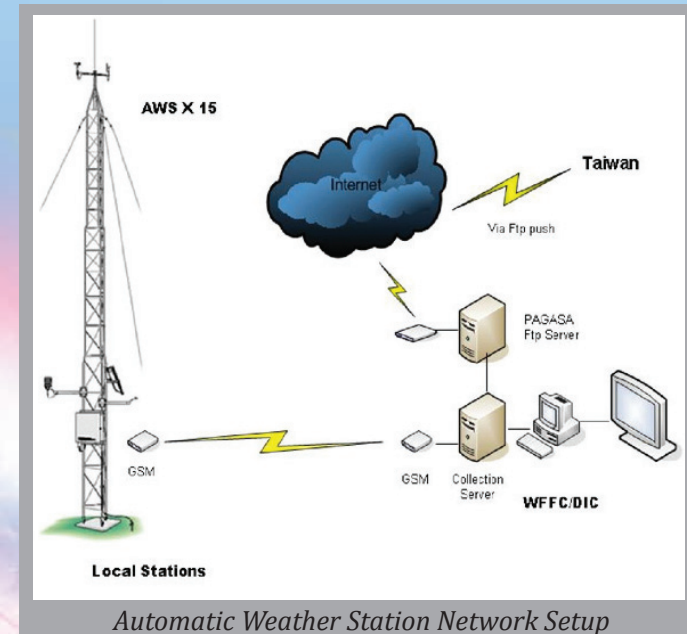
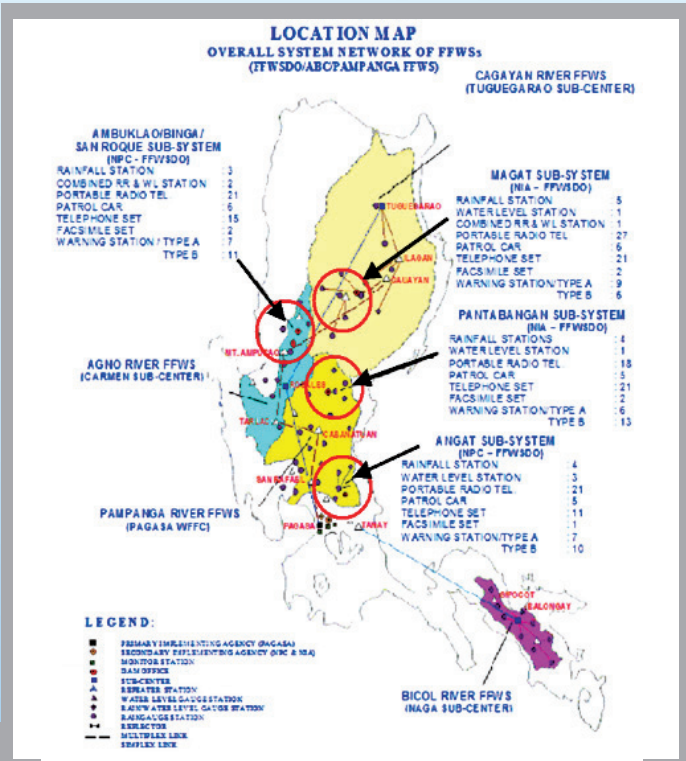
**Improvement of Flood Forecasting and Warning System for Magat Dam and Downstream Communities – Funded by Norwegian Agency for Development Cooperation (NORAD)**

The project aims to sustain the effective operation of the monitored major reservoirs in Angat, Pantabangan, Binga/Ambuklao/San Roque complex and Magat as well as to upgrade the existing facilities for flood forecasting and warning. With an upgraded system, flood forecasts will be improved and loss of lives and damage to properties will be minimized especially in the communities downstream of the dams.

The Signing of Agreement between the Norwegian Water Resources and the Energy Directorate (NVE) and PAGASA was officiated on 11 March 2010 at the conference room of the Office of the Secretary at DOST. The project technical group is presently working on the initial bid documents to be submitted to NVE for finalization.

**JICA**  
**Strengthening of Flood Forecasting and Warning System for Dam Operation (FFWSDO) - Japan International Cooperation Agency - Technical Cooperation Projects (JICA-TCP)**

The FFWSDO project aims to upgrade the existing facilities for flood forecasting and warning to sustain effective operation of the monitored major reservoirs in Angat, Pantabangan, Binga/ Ambuklao/San Roque complex and Magat. This project was submitted for funding under the Technical Cooperation Program of the Government of Japan. With an upgraded system, flood forecasts will be improved and loss of lives and damage to properties will be minimized in communities downstream of the dams. The implementation of project was delayed due to the May 2010 election.



**Strengthening of Surface-based Monitoring Network in Support of Scientific Research and Disaster Mitigation in the Philippines - TECO 2**

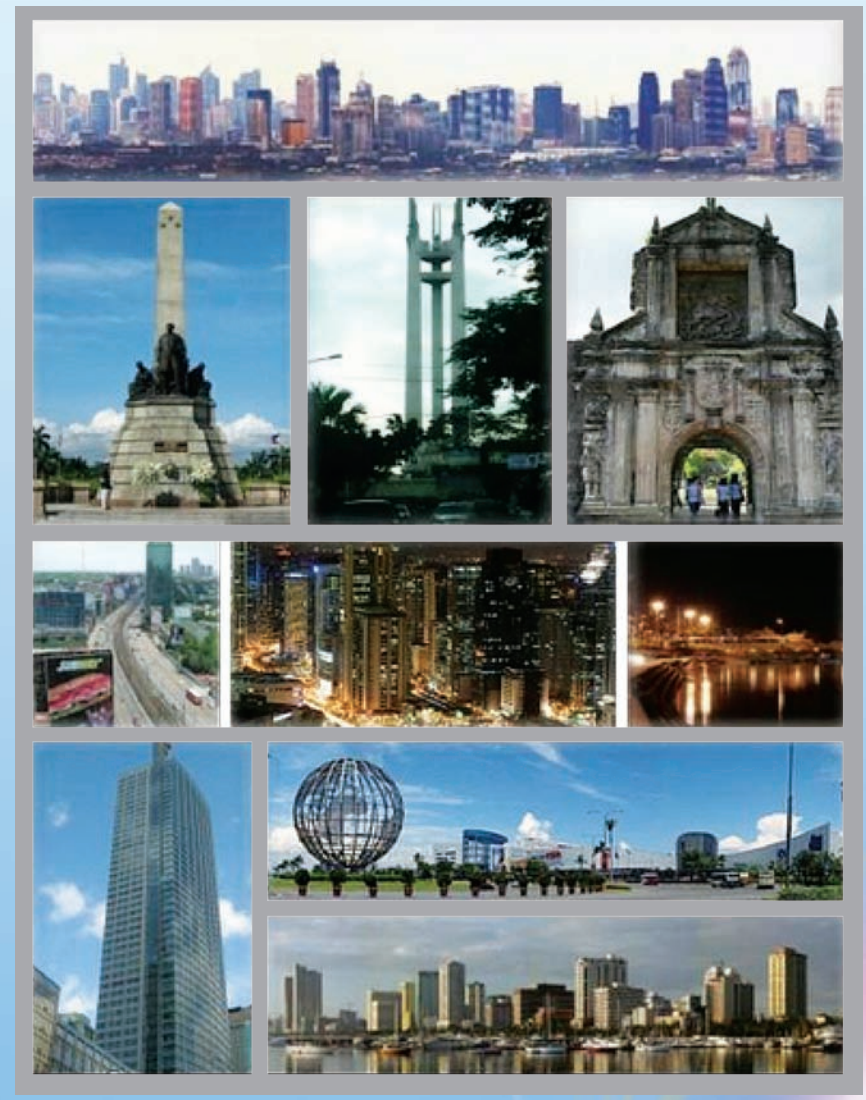
This project is designed to benefit the socio-economic sector of the country as it will serve as a valuable tool in decision-making process which has helped turn the DOST-PAGASA a critical partner of all weather and climate sensitive sectors. The project includes the installation of fifteen (15) Automatic Weather Stations (AWS), and establishment of communication link to the project which will also address the gaps in surface-based meteorological information vital to understand unusual weather and climate activities frequently observed. The outcome of the project will increase level of accuracy for timely forecast and warning to reduce property damage and loss of lives.

**Enhancing Greater Metro Manila's (GMMMA) Institutional Capacities for Effective Disaster/Climate Risk Management Towards Sustainable Development (CSCAND for GMMMA Project) and Enhancing Risk Analysis Capacities for Flood, Tropical Cyclone, Severe Wind and Earthquake for GMMMA (Risk Analysis Project)/AusAid-UNDP**

The above project is basically patterned after the "Hazards Mapping and Assessment for Effective Community-based Disaster Risk Management". It aims to lessen vulnerability of the Greater Metro Manila Area (17 local government units (LGUs) and contiguous provinces such as Laguna, Rizal, Cavite and Bulacan) to natural hazards and increase its resilience, by strengthening the institutional capacities of the LGUs, concerned national government agencies, academic institutions and civil society organizations to manage disaster and climate change risks. The duration of the project is three (3) years, 2010-2013 with a budget of US \$ 2,020,000.00. The funding agency the AusAID with UNDP as the implementing agency for AusAID.

The project will attempt to achieve its targeted outcome by:

- Assessing the GMMMA' vulnerabilities to disaster and climate change risks;
- Developing and implementing priority disaster/climate risk mitigation actions for GMMMA such as formulation and testing of an integrated contingency plan and establishment of early warning systems;
- Enhancing the competencies of GMMMA LGUs and critical partners to mainstream DRM/CRM into local planning and regulatory processes;
- Demonstrating of mainstreaming DRM/CRM into local land use/development plan(s) and regulatory processes of Metro Manila and selected GMMMA LGUs; and
- Establishing a knowledge management system, including a vigorous Community of Practice, on Disaster/Climate Risk Management.



**DA/DENR/PAGASA Philippine Climate Change Adaptation Project-Phase 1 (PhilCCAP-1) /World Bank**

Launching of project on capacity building for climate change adaptation was held on December 10, 2010. The project comprises of four main components:

1	Strengthening the Enabling Environment for Climate Change Adaptation
2	Demonstrating Climate Change Adaptation Strategies in the Agriculture and Natural Resources Sectors
3	Enhanced Provision of Scientific Information for Climate Risk Management
4	Project Coordination

Only component 3 will be implemented by PAGASA which supports the institutional strengthening of the agency as well as enhance provision of scientific climate information to end users. The primary objectives of component 3 are to improve the access of end users, especially in the agriculture and natural resources sectors and to provide more reliable scientific information to enable fast and accurate decision-making to safeguard against the impact of climate change that could affect productivity.

**Strengthening of the Philippines Institutional Capacity to Adapt to Climate Change/MDGF**

One of the outcomes of the project is the enhanced national and local capacity to develop, manage and administer projects addressing climate change risks. This would provide capacity building activities to PAGASA to generate needed climate risk scenarios, share the resulting data with the sectoral and planning agencies. PAGASA personnel will undergo special training on localization of available circulation models to generate the climate risk scenarios and also additional trainings on flood and typhoon forecasting to upgrade the quality of climate information released to the public and other users. Equipment necessary in running the model will also be provided thru the project. At the end of the project, PAGASA's competency on climate forecasting especially for typhoon and floods will be enhanced.



An on-going implementation includes four (4) AWS being installed at Albay, Ifugao, Sorsogon and Agusan del Norte.

**Provision of Risk Information for Sustainable Livelihood in the Agriculture Sector in the Philippines/FAO**

The project aims to reduce vulnerabilities to climate, market, and financial risks to ensure sustainable livelihoods in the agricultural sector. In addition to the seasonal climate forecast, it will generate and deliver, it will also develop capacities within PAGASA to enhance climate's early warning through the generation and delivery of medium range forecasts for reducing climate risks in the agriculture sector. The project also includes the delivery of market information for essential agricultural commodities ahead of the season in the demonstration sites to better manage market risks and facilitate the communities' identification and adoption of an appropriate financial instrument for managing financial risks. It also demonstrates the application of climate (medium and extended range and seasonal forecasts) and market information, supported by an appropriate financial instrument, for disaster risk management in the agriculture. Acquisition and installation of one (1) AWS and 9 automatic rain-gauges in Region V is one of the components of the project.

**Strengthening of the Flood Forecasting and Warning System in the Bicol River Basin/ Embassy of Japan (Eo)**

The project intends to upgrade the flood forecasting and warning system (FFWS) in Bicol in order to provide timely and accurate flood forecast and warnings through rehabilitation of telemetering system, rainfall and water level monitoring equipment, restoration of the computer system and supply of spare parts and O&M equipment. It aims to minimize flood-related disasters in the Bicol river basin. The final draft of the proposal was submitted to Embassy of Japan in May 2010. The first stakeholders' meeting was conducted by the Department of Finance in August 2010.



**Research and Development**

PAGASA's R&D is geared towards continuing year round activities to develop systems and techniques for improving operational forecasting and warning capabilities and is supportive to the R&D priorities of the DOST that respond to improving agricultural and industrial productivity and energy generation. For this year, two (2) completed researches were published in the International Science Institute (ISI) listed journals.

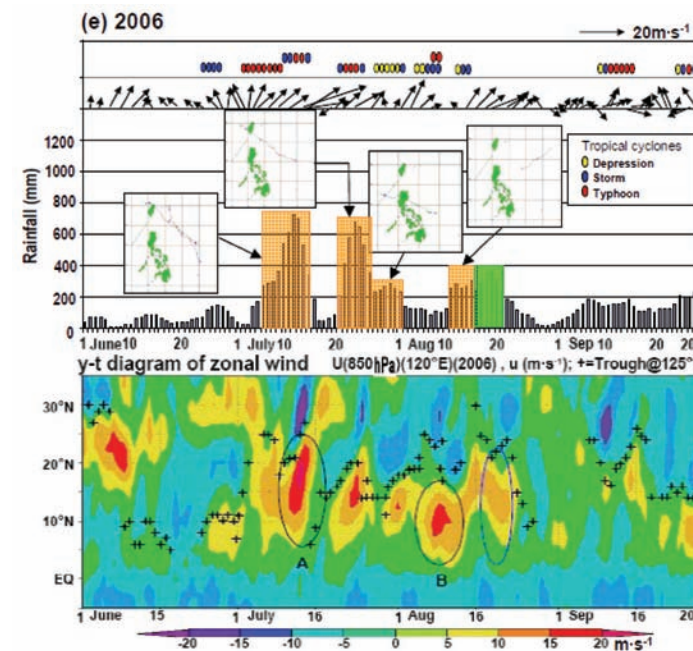
**THE EFFECT OF TROPICAL CYCLONES ON SOUTHWEST MONSOON RAINFALL IN THE PHILIPPINES**

Esperanza O. Cayanán<sup>1</sup>, Tsing-Chang Chen<sup>2</sup>, Josefina C. Argete<sup>3</sup>, Ming-Cheng Yen<sup>4</sup> and Prisco D. Nilo<sup>1</sup>

(Published in Journal of the Meteorological Society of Japan, Vol.89, No.1A, pp.319-335, 2011)

**Abstract**

Intense southwest monsoon (SWM) rainfall events causing massive landslides and flash floods along the western sections of the Philippines were studied. These rainfall events, are not directly coming from the tropical cyclones (TCs) for they are situated far north to northeast of Luzon Island. The heavy rainfall is hypothesized as caused by the interaction of strong westerlies with the mountain ranges along the west coast of Luzon which produces strong vertical motion and consequently generates heavy rainfall. Four of heavy SWM rainfall cases was examined to determine how the presence and position of tropical cyclones in the Philippine vicinity affect these SWM rainfall events; three cases with TC of varying positions within the Philippine area of responsibility (PAR) and the fourth case without TC. Using a spatial Fourier decomposition approach, the total streamfunction is decomposed into two flow regimes: monsoon basic flow (Waves 0-1) and tropical cyclone perturbation flow (Waves 2-23) over a domain of (20°E-140°W, 5°S-35°N). The purpose of this flow decomposition is to determine the latter's effect on or contribution to the monsoon activity. The analysis utilized the NCEP Final (FNL) data with 1° long. X 1° lat. resolution. Results show that the tropical cyclones over the Pacific Ocean located northeast of Luzon generate strong southwesterly winds over the west coast of Luzon. These in addition to the southwesterlies from the basic flow strengthened the southwest winds that interact with the high Cordillera Mountain ranges along the west coast of Luzon. When the tropical cyclone is located north or north-west of Luzon, it generates northwesterlies which converge with the southwesterlies from the basic flow. This results to enhancement of rising motion over western Luzon. The much stronger westerlies are then forced to rise above the mountains resulting to strong vertical motion that brings about heavy rainfall.



Time series of 5-daily rainfall running mean (bar graph) at 11 western Luzon stations with average 850 hPa wind ( $= 20\text{ms}^{-1}$ ) at  $119^{\circ}\text{E}-122^{\circ}\text{E}, 14^{\circ}\text{N}-20^{\circ}\text{N}$  and tropical cyclones (depression, storm or typhoon) within the PAR. Shaded portions in the series are heavy rain events together with corresponding track of tropical cyclones.

Green shaded events are the selected cases for discussion. The lower portion of the figure is the latitude-time cross-section (y-t) diagram of zonal wind (U) at  $120^{\circ}\text{E}$ , with latitudinal positions of monsoon trough (+) at  $125^{\circ}\text{E}$ . Blue circled area corresponds to case under study.

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 2 Department of Geological and Atmospheric Sciences, Iowa State University, Ames, Iowa, U.S.A.  
 3 Institute of Environmental Science & Meteorology, College of Science, University of the Philippines, Quezon City, Philippines  
 4 Department of Atmospheric Science, National Central University, Chung-Li, Taiwan.

**FORMATION OF THE PHILIPPINE TWIN TROPICAL CYCLONES DURING THE 2008 SUMMER MONSOON ONSET**

Tsing-Chang Chen and Jenq-Dar Tsay, *Department of Geological and Atmospheric Sciences, Iowa State University, Ames, Iowa*; Ming-Cheng Yen, *Department of Atmospheric Science, National Central University, Chung-Li, Taiwan*; Esperanza O. Cayanan, *Philippine Atmospheric, Geophysical and Astronomical Services Administration, Quezon City, Philippines*  
*(American Meteorological Society, Volume 25 Issue 5, October 2010)*

**Abstract**

Stretched from Indochina, across the South China Sea, to the Philippine Sea, a monsoon cyclonic shear flow was formed by easterlies of the cold-surge-like flow in the north and monsoon westerlies in the south before the onset of the tropical Southeast Asian monsoon on 12 May 2008. On this date, two named tropical cyclones (Halong and Matmo) evolved with a 12-h lag from a closed vortex adjacent to the coast of Central Vietnam and another closed vortex near Palawan Island (Philippines) within this shear flow. These two cyclones, named the twin Philippine tropical cyclones, moved almost on the same track, along the anomalous shear line (departure from the climatological one) across the Philippines, and turned northeastward to the ocean south of Japan. It was revealed from synoptic analysis that the cold surge-like flow was coupled with the midlatitude eastward-propagating short wave in northeast Asia, and part of the monsoon westerlies were fed by the cross-equatorial flow, the downstream flow of easterlies around the northern rim of the Southern Hemisphere subtropical high. The environment favorable for the formation of the twin cyclones was developed from the tropics - midlatitude interaction between synoptic systems in these two latitudinal zones. Formations of these cyclones were a result of drastic spinups of the two closed vortices (within the monsoon shear flow) following the surge of monsoon westerlies, which coincided with those of easterlies of the cold surge-like flow, and the cross-equatorial flow originating from easterlies between the Southern Hemisphere subtropical high and the Southern Hemisphere shear flow.



**Annual S&T Celebrations**

**60<sup>th</sup> World Meteorological Day (WMD) & 145<sup>th</sup> National Meteorological Day, March 23, 2010**

Activities marking the 60th World Meteorological Day (WMD) were held in conjunction with the 145th Anniversary celebration of PAGASA in Science Garden, Quezon City on 23 March 2010, simultaneously with five (5) PAGASA Regional Services Divisions and other field stations nationwide. Activities were thanksgiving mass, S&T Exhibit, scientific forum cum press conference, and recognition and service awards. The WMD 2010 has chosen the theme "60 years of service for your safety and well-being" and with PAGASA Sub-Theme "145 years of service for the safety and well-being of the Filipinos".



### AWARDEES



### National Science and Technology Week

The Department of Science and Technology spearheaded the celebration of the National Science and Technology Week (NSTW) on 19-29 July 2010 at the Centennial Hall of the Manila Hotel.

In line with the celebration, DOST featured activities such as business and scientific fora, S&T technology fairs and exhibits, and trivia quiz for visitors and participants. PAGASA personnel also participated in the regional fairs conducted for Northern Luzon Cluster on 24 August - 01 September, Southern Luzon Cluster on 12-19 September, Visayas Cluster on 27 September - 01 October, and Mindanao Cluster on 06-11 October. The year's theme, "Filipinnovation, The Way Forward", is a testimony of DOST's enthusiastic effort for steering the country and encouraging people towards innovation of products and services.



### Typhoon and Flood Awareness Week, June 21-27, 2010

The theme for this year's celebration is "Lupit ng Kalikasan Paghandaan!". Supporting the celebration and the project implementation are Smart and Jollibee Foods Corporation. SMART has agreed to help the disaster preparedness project of PAGASA and Typhoon Committee Foundation Inc. (TCFI) through its "Rain Gauge Project".

For this year celebration, PAGASA led the kick off activity on June 21, 2010 with the opening ceremonies. Other activities included the launching of project "Disaster Preparedness Seminar-Workshop Series", press conference and essay writing contest. On June 25-27, a media seminar-workshop was conducted to provide mass media practitioners a better understanding and appreciation of weather and flood forecasting in the country.

**OPENING and PROJECT LAUNCH**  
(Disaster Management & Preparedness from Natural Hazards)  
**TYPHOON & FLOOD AWARENESS WEEK**  
(Presidential Proclamation 1535)  
**June 21-27, 2010**  
*Theme: "Lupit ng Kalikasan, Paghandaan!"*

**Early Warning and Response System for Disaster Mitigation in Metro Manila.**

**Department of Science and Technology**  
**PAGASA**  
Philippine Atmospheric, Geophysical and Astronomical Services Administration

**MANDATE**  
To provide protection against natural calamities and other disasters, knowledge as an effective instrument to ensure the safety, well-being and economic security of all the people and for promotion of national progress.

**VISION**  
To become a leading global organization in providing weather, climate and atmospheric services and information to ensure the safety, well-being and economic security of all the people and for promotion of national progress.

**MISSION**  
To provide weather, climate and atmospheric services and information to ensure the safety, well-being and economic security of all the people and for promotion of national progress.

## Final Round of the International Year of Astronomy 2009 (IYA 2009) Philippine Astronomy Olympiad and Closing & Awarding Ceremonies of the IYA 2009

The Philippine Astronomy Olympiad is an activity on the Philippine participation to the International Year of Astronomy (IYA) 2009. Final round of the Astronomy Olympiad was held at the UP Nismed, University of the Philippines, under the supervision of Dr. Tan. Twenty four (24) finalists from high school level, four (4) from college level with eleven coaches from eleven schools joined the competition.

The awarding ceremonies for the Olympiad marked the closing on the participation of the Philippines in the IYA 2009. A program was prepared for the closing ceremonies of IYA 2009. Dr. Merle Tan, Director of UP-Nismed gave the opening remarks. Eng'r. Ma. Lourdes Orijola, Assistant Secretary for Technology Transfer, DOST, echoed the message of the DOST Secretary, and former Senator Nikki Coseteng, who graced the occasion, also gave a short message. Dr. Prisco D. Nilo delivered the closing remarks and congratulated the organizing committee, headed by Dr. Cynthia P. Celebre and members of the IYA 2009 for the success of the event.



## Year-end Thanksgiving Party with the Media

The presentation of the annual PAGASA-DOST Accomplishment Report and Year-end Thanksgiving for the Media was held last December 29, 2010 at the Central Office lobby. Dr. Graciano P. Yumul, Jr., along with other Key PAGASA officials graced the affair. The annual activity served as a token tribute of the Agency to media friends who played vital roles as partners in the provision of its services.



# Human Capital Development

Efficient and effective delivery of services depends to a great extent on the level of education and expertise of the agency's human resources. During the year, ten (10) specialized in-house training courses were conducted for a total of 259 participants. Table 1 lists the various in-house training courses conducted. Moreover, a good number of employees attended local and international training programs and other learning activities. Tables 2, 3 and 4 list the various trainings, seminars/workshops, meetings/conferences attended by PAGASA officials and employees.

Table 1: In-house Training Courses

TRAINING COURSES	INCLUSIVE DATES OF TRAINING	NUMBER OF PARTICIPANTS
Training Seminar on Radar and Satellite Data Interpretation	09-22 March	36
Series of Seminar on Enhancing PAGASA's Impact and Risk Assessment Capability for Severe Wind Associated with Tropical Cyclones	02-10 March	30
Training Seminar on STRIDE	28-29 April	46
Training Seminar on Internet and Network Maintenance	5-12 May	18
Training on WEB Content Management using JOOMLA	25-28 May	11
Training on Conformal Cubic Atmospheric Model (C-CAM)	28 June – 2 July	24
Basic Training on Linux	07 – 11 June	25
Refresher Course on Meteorological Observations, Practices and Procedures for Field Station Personnel – Southern Luzon	30 September – 2 October	21
Refresher Course on Meteorological Observations, Practices and Procedures for Field Station Personnel-Visayas Region	04-06 November	25
Refresher Course on Meteorological Observations, Practices and Procedures for Field Station Personnel-NCR-PRSD Region	30 November – 20 December	23



Training Seminar on Internet and Network Maintenance



Training on WEB Content Management using JOOMLA!



Training Seminar on STRIDE



Training on Conformal Cubic Atmospheric Model



Training Seminar on Radar and Satellite Data Interpretation



Dr. YU Xiaoding (Radar Expert) – professor and Head of China Meteorological Agency Training Department



Mr. WU Xiaojing (Satellite Expert) – Senior Engineer and Vice Director, Division on Remote Sensing Application, National Satellite Meteorological Center (NSMC), CMA.



Table 2: Local Training/Seminar/Workshop/Conference/Symposium/Meeting/Session Attended

NAME	TITLE	DATE & VENUE
Flaviana D. Hilario Rosalina G. de Guzman Thelma A. Cinco Analiza S. Solis	MDG-F 1656 JP Assessment and Planning Workshop	06-08 Jan – Tagaytay City
Cynthia P. Celebre	Asia Pacific Typhoon Committee Workshop	27-28 Jan - PAGASA
Ma. Rosario C. Ramos	Hands-on Training Session for Administrative Support Staff	26-27 Jan – Traders Hotel, Roxas Blvd., Pasay City
Susan R. Espinueva Bonifacio G. Pajuelas Maximo F. Peralta Shirley J. David Ma. Christina C. Uson Joel C. Jesusa Robert S. Sawi Renato M. Molina Samantha Christine V. Monfero Dante C. Medina Antonio C. Pagalilauan Lilian N. Guillermo Evangeline P. Tolentino Mario D. Guya Edwin R. Flores Geraldine Gilda P. Nilo Mario F. Palafox Renito B. Paciente	Asia Pacific Typhoon Workshop	27-28 Jan – Crowne Plaza Galleria, Pasig City
Myra S. Calicdan Aurora DS. Somera	Seminar – Workshop on Financial and Administrative Management	27-29 Jan - Bohol
Leo B. Buñag	Extension Methodologies Training and Retooling of Fisheries Extension Workers	25-28 Feb. – Aparri, Cagayan
Demosthenes G. Villanueva Jennifer M. Paat	Seminar-Workshop on R.A 9470 and Basic Records and Archives Management	02-04 March – Imperial Palace Suites, Quezon City
Ninio A. Relox Sharon Juliet M. Arruejo	3-day Training of Trainers on Disaster Management for Local Government Officials	04-06 March – Astoria Hotel, Ortigas, Pasig
Nathaniel A. Cruz Cynthia P. Celebre Ma. Cecilia A. Monteverde Thelma A. Cinco Robert S. Sawi Geraldine Gilda P. Nilo Robert Z. Quinto Ma. Cristina C. Uson Vicente C. Manalo III Analiza C. Tuddao Joel C. Jesusa Bernie R. De Leon Emma D. Ares Rosa S. Barba Edino Nonato L. Nolasco	Earthquake and Wind Vulnerability Workshop	12-13 March – Tagaytay City

Table 2 ... continuation.

NAME	TITLE	DATE & VENUE
Arceli S. Arroyo Dario R. Espe	Seminar Workshop on Electronic Updating of the Personal Services Itemization and Plantilla of Personnel	17-18 March – Hotel Veniz, Baguio City
Landrico U. Dalida Jr. Meriem R. Carbonel	Technical Working Group (TWG) Meeting	18 March – Casa Basilisa, Albay
Jose M. Perez Rudy R. Olalia Leon G. Echaves III Rolando M. Tarrayo	Seminar on Property and Supply Management System (Appraisal and Disposal)	24-26 March – Fernandina 88, Suite Hotel, Quezon City
Analiza S. Solis	Training on Irrigation Water Management and Modernization: Coping with Climate Variability in coordination with National Irrigation Administration (NIA) and World Bank (WB)	19-28 April – First Villa Christina Hotel and Resort, Antipolo City
Rene A. Gumapal Ralph Valtere V. Soquila	Training on Advanced Optic Fiber and Wireless Network Technology	21-23 April – Camp Aguinaldo, Quezon City
Prisco D. Nilo Bonifacio G. Pajuelas Susan R. Espinueva Esperanza O. Cayanan Cynthia P. Celebre Edna L. Juanillo Faustino Q. Lamsen Nestor Flores Recto M. Vidayo, Jr.	PAGASA-Institute of Environmental Science and Meteorology (IESM) Strategic Planning Workshop	26-28 April - Zambales
Arnel R. Manoos Yolanda P. Ordoñez	Seminar on ICT Resources Acquisition	26-30 April – NCC, Quezon City
Samantha Christine V. Monfero Karl Alexander P. Vasquez	Oracle Database 10g: Administration Workshop I Ed 3	02-06 August – Makati City
Christopher F. Perez Socrates F. Paat, Jr. Karl Alexander P. Vasquez Renito B. Paciente Susan R. Espinueva Edwin F Manresa Cynthia P. Celebre Analiza S. Solis Ma. Cristina C. Uson Vivian Grace N. Alisangco Sheila S. Schneider Flaviana D. Hilario Rosalina de Guzman	Learning Session and Course Counseling	24-25 August – Panglao Island, Bohol
Maximo F. Peralta Ma. Cecilia A. Monteverde Analiza C. Tuddao Ma.Cristina C. Uson Roy A. Badilla	Training on Flood Rainfall-Runoff and Inundation Modeling	30 Aug.- 03 Sept. – PHIVOLCS, Quezon City

Training Designer's, Management and Trainer's Course



Broadband Global Communication Network (BGAN) Communication Equipment Training (Batches 1&2)



Table 2 ... continuation.

NAME	TITLE	DATE/VENUE
Nancy T. Lance	United Nations Development Assistance Framework (UNDAF) Strategic Planning Retreat	06-07 Sept. – AIM Conference Centre, Makati City
Mark J. Arceo	PhilGEPS Training for Government Entities	28-29 Sept. – Cityland Show Tower
Myra S. Calicdan Pedro T. Hagad Larry A. Reyes	Seminar on Responding to the Call for CHANGE	30 Sept. - 02 Oct. – Alicia Hotel, Legaspi City
Edwin F. Manresa Diosdado S. Ornum Danilo F. Cambay Cesar V. Dato Fulgencio A. Austria, Jr. Willy F. Evangelista Jose F. Meredor Eufronio H. Garcia Florencio Fabile Rogelio T. Bagadiong Gerino Q. Prenda, Jr. Arnel G. Gonzales Henri A. Hermenegildo	Conduct of On-site Training for Operators and Engineers/ Technicians on Single Poll S-Band Doppler Weather Radar System	11-26 Oct. – Mt. Sta. Hill, Subic, Zambales
Ana M. Pangan	2010 Updates on Withholding Tax on Government Money Payment and New Annualized Requirements for Government Withholding Agents for 2010-10-19	11-14 Oct – Crown Regency Hotel, Davao City
Jannylyn C. Damasco	2010-2011 Fiscal Forum on Public Finance and Government Resource Management	18-21 Oct. – Puerto Princesa City, Palawan
Vicente B. Malano Fredolina D. Baldonado Venus R. Valdemoro	Forum-Workshop on PR, Crisis Communications, Media Relations	28-29 Oct. – Crown Plaza Hotel, Pasig City
Fredolina D. Baldonado Angelina S. Galang	Training Course on Practical Project Management in Public Investment (PPM-PI)	08 -10 Nov. – JICA Philippine Office Auditorium, Makati City
Landrico U. Dalida Jr. Meriem R. Carbonel	Technical Working Group Meeting	12 Nov. – Kanzo Hall, Legaspi City
Analiza S. Solis	Seminar on Enterprise Architecture and e-Services Strategic Planning	15 -19 Nov. – NCC Building, Diliman, Quezon City
Edino Nonato L. Nolasco	Department of Environment and Natural Resources (DENR) and the Partnerships in Environmental Management for the Sea of East Asia (PEMSEA) "Planning Workshop for the Implementation of the Sustainable Development Strategy for the Seas of East Asia	17-18 Nov. – Holiday Inn, Clark, Pampanga
Shirley J. David	I.T. Training in C Programming	21 Nov.-19 Dec. – UP Diliman, Quezon City

Table 2 ... continuation.

NAME	TITLE	DATE/VENUE
Emma D. Ares Sharon Juliet M. Arruejo Rosa S. Barba Renely L. Basiño Marilou D. Carpio Adelaida Castillo Susan Flores Juanito S. Galang Jori J. Loiz Ma. Cecilia A. Monteverde Teresa Millanes Nivagene Nievares Daisy Ortega Rowena C. Rañola Shiela S. Schnider Analiza S. Solis Annaliza C. Tuddao Ma. Cristina Uson Meyma Casilagan Felion Corona Landrico Dalida, Jr. Samuel Duran Henri A. Hermenegildo Cynthia Iglesia Aldrin Kaindoy Enriqueta Mendoza Juan Pantino, Jr. Mario Peñaranda Frances Semorlan Edwin Ubaldo Gregorio de Vera Lolita Vinalay Ramil Tuppil	6th PMS National Convention entitled "Adaptation Strategies: Building Blocks for a Climate Change Resilient Philippines"	18-19 Nov. – Amb. Alfonso Yuchengco Auditorium, Bantayog ng mga Bayani, Quezon Ave., Quezon City
		
Melanie Aquino Aldzcar Aurelio Roy Badilla Margarita Bantug Ferdinand Barcenas Fernando Cada Dominador Campo Rodelio Cruz Connie Rose Dativas Manuel Esguerra Felisa Gonzales Salvador Eleuterio Javier Alejandro Jesuitas Danilo Madiam Jose Mendoza IV Manolito Miguel Jorge Miras Edino Nonato Nolasco Marilou Rivera Sonia Serrano Analiza Solis Lourdes Sulapat Venus R. Valdemoro	Broadcasting Orientation Workshop for PAGASA Forecasters	22 -23 Nov. – 2nd Floor, WFFC Conference Room
		

Table 2 ... continuation.

NAME	TITLE	DATE & VENUE
Cynthia P. Celebre Vicente B. Malano Lilibeth B. Gonzales Ma. Cecilia A. Monteverde Oskar D. Cruz Thelma A. Cinco Venus R. Valdemoro Nestor B. Nimes Roy A. Badilla Julie M. Nimes Analiza C. Tuddao Leo Ortega Faustino Q. Lamsen Recto M. Vidayo Avelino dela Cruz	National Disaster Risk Reduction and Management Council (NDRRMC) Project Planning Meeting cum Workshop "Collective Strengthening for Community Awareness to Natural Disaster (CSCAND) Group and Other Partners"	23-25 Nov. – Canyon Cove, Nasugbu, Batangas
Susan R. Espinueva Hilton Hernando Robert Z. Quinto Ferdinand Y. Barcenas Edino Nonato L. Nolasco Roy Badilla Enrico Hilario Darwin Nabus	Empowering Partners and Practitioners in Managing Flood Early Warning Systems (FEWS)	25 -26 Nov. – Lancaster Hotel Manila, Shaw Boulevard, Madaluyong City
Noel B. Villar	Philippine S&T Human Resource Information (PSTHRIS) User Acceptance Training Workshop	01-02 Dec – PCARRD, Laguna
Leon G. Echavez III	DOST Facilities and Equipment Information System (DCPIS) User Acceptance Testing Workshop	06-07 Dec – PCARRD, Laguna
Chona V. Dionisio Marilou D. Carpio Mario A. Gascar Mercedes A. Lorilla Vivienca A. Estabillo Celia M. Homol	Seminar/Workshop on "Preparing a Classification and Filing Guide/ Scheme"	01-03 Dec. – Philippine Records Management Association (PRMA)
		

Table 3: Foreign Fellowships/Scholarships Attended  
(Meeting/Conference/Symposium/Activity/Forum/Session)

NAME	TITLE	DATE & VENUE	SPONSOR
Susan R. Espinueva	1st Global Meeting of the International Forum of Meteorological Societies (IFMS GM-I)	19-20 Jan Atlanta, Georgia	American Meteorological Society
Susan R. Espinueva	42nd Session of the Typhoon Committee of the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP)	24-26 Jan Singapore	PAGASA
Nathaniel A. Cruz	Forty-Second Session of the Typhoon Committee	25-29 Jan Singapore	PAGASA
Edna L. Juanillo	International Symposium entitled "Towards Low-carbon Society in Asia-Pacific 2050: A Technology Foresight Symposium"	27 - 28 Jan Thailand	Thai Government
Prisco D. Nilo Mario L. Dungca	Evaluation of tender documents relating to the Japan International Cooperation Agency (JICA) grant aid project entitled "Improvement of the Flood Forecasting and Warning System in the Pampanga and Agno River Basins (Phase II)"	07-12 Feb Tokyo, Japan	Nippon Koei Co., Ltd. of Japan
Esperanza O. Cayanan	United Nations Platform for Space-based Information for Disaster Management and Emergency Response (UN-SPIDER) Regional Support Offices Meeting	09-12 Feb Vienna, Austria	PAGASA
Edna L. Juanillo	4th Global Earth Observation System of Systems(GEOSS) Asia-Pacific Symposium	10-12 Mar Bali, Indonesia	GEO
Flaviana D. Hilario	4th Global Earth Observation System of Systems (GEOSS) Asia Pacific Symposium and 6th Meeting of the GEOSS Asia Water Cycle Initiative (AWCI) International Coordination Group (ICG)	10-12 Mar Tokyo, Japan 13 Mar Indonesia	University of Tokyo, Japan
Maria Cecilia A. Monteverde Romeo M. Pelagio Ceferino T. Hulipas	Visit to Disaster Prevention and Disaster Management Facilities in Hyogo Prefecture	17-18 Mar Japan	PAGASA
Prisco D. Nilo Cynthia P. Celebre Nathaniel A. Cruz	MORAKO Typhoon International Conference	23-28 Mar Taiwan	NSC CWB MSROC
Prisco D. Nilo	38th Asia-Pacific Economic Cooperation (APEC) Industrial Science and Technology (IST) Working Group Meeting	22-23 Apr Singapore	PAGASA
Daisy F. Ortega	Regional Working Group and Stakeholder Consultation Meeting on the Regional Cooperative Mechanism on Drought Disaster Monitoring and Early Warning	28-30 Apr Kunming, China	ESCAP



Table 3 ... continuation.

NAME	TITLE	DATE & VENUE	SPONSOR
Prisco D. Nilo	15th Session of the Regional Association V (South-West Pacific) of the World Meteorological Organization (WMO)	30 Apr - 06 May Indonesia	PAGASA
Nathaniel A. Cruz	Asia Regionalism: Responding to Climate Change and Natural Disaster	05-06 May Singapore	APEC, TATF
Nathaniel T. Servando	32nd Meeting of the ASEAN Sub-Committee on Meteorology and Geophysics (SCMG)	10-12 May Da Nang, Vietnam	DOST-GIA
Susan R. Espenueva	Regional Integrated Multi-Hazard Early Warning System (RIMES) Master Plan and Development Programme Implementation Meeting	16-18 May Korea	RIMES
Nathaniel T. Servando	United National Climate Change Talks	06-12 June Born, Germany	DOST-GIA
Prisco D. Nilo Flaviana D. Hilario Ana Liza S. Solis	APEC Climate Symposium (APCS)	20-24 June Busan, Korea	APEC
Prisco D. Nilo Catalino L. Davis Edwin F. Manresa	Project for Improvement of the Meteorological Radar System	22-28 June Tokyo, Japan	JWA
Fernando Cada Ana Liza S. Solis	Conference on Decadal Prediction	16-20 Aug Italy	ICTP
Cynthia Celebre Renito Paciente	Emergency Preparedness Working Group meeting	20 Sept Japan	PAGASA
Ferdinand Y. Barceñas	World Meteorological Organization Technical Conference on Meteorological and Environmental Instruments and Methods Observation (TECO-2010)	30 Aug-01 Sept Finland	WMO
Edna L. Juanillo	7th Meeting of the GEOSS Asian Water Cycle Initiative (AWCI) International Coordination Group	05-06 Oct Japan	ICHARM-PWRI-APN
Flaviana D. Hilario Rosalina G. de Guzman	32nd Session of the IPCC	11-14 Oct Korea	UNDP – Project – MDGF-1656
Flaviana D. Hilario	Asian Showcase Exhibition-“Observe, Share, Inform” – 2010 Group on Earth Observations Ministerial Summit	03-05 Nov China	Asian Showcase Exhibition Secretariat
Flaviana D. Hilario Rosalina G. de Guzman	United Nations Climate Change Conference	29 Nov-10 Dec Mexico	UNDP-MDGF Project
Susan R. Espinueva	International Policy-oriented Discussion on Gov't's Flood Risk Management Approaches	30 Nov-01 Dec USA	UNDP-MDGF Project

## INDONESIA

*Dr. CARINA G. LAO with fellow participants in the 11th Symposium on Education and Training (SYMET XI), Citeko, Indonesia, 25-29 Oct 2010, L-R: Mr. MOMADOU SAHO- In-Charge of training activities of WMO, Dr. NAJIM AL. BARAZANCHI – Head of Qatar Meteorological Dept and Ph. D. graduate (Met) from Philippine RTC (UP-Diliman), and Dr. JEFF WILSON – Director of Education & Training of WMO.*

## AUSTRIA

*Dr. Esperanza O. Cayanan with Dr. David Stevens, Programme Coordinator, UN-SPIDER, Vienna and Hon. Charlie P. Managan, Consul General, Phil. Embassy, Vienna, Austria.*

*47th Session of the Scientific and Technical Subcommittee of the Committee on Peaceful Uses of Outer Space, Vienna, Austria, 8-19 February 2010.*

Table 4: Foreign Fellowships/Scholarships Attended  
(Workshop/Training/Seminar/Colloquium)

NAME	TITLE	DATE & VENUE	SPONSOR
Socrates F. Paat, Jr.	5th Sentinel Asia System (SAS)	22-26 Feb Sri Lanka	Sentinel Asia Secretary (SAS)
Oskar D. Cruz	Frontiers of Space Science	08-10 Mar Japan	GUAS-JAXA
Arnel R. Manoos	International Workshop Towards the Successful Implementation of the WMO Information System in Asia	09-11 Mar Japan	JMA
Prisco D. Nilo	Consultation Meeting and Workshop of the United Nations International Strategy for Disaster Reduction (UNISDR) entitled "Strengthening Meteorological and Hydrological Services in Southeast Asia"	09-12 Mar Hanoi, Vietnam	UNISDR Project
Edwin F. Manresa Fulgencio A. Austria, Jr.	Factory Acceptance Test (FAT) Training for the Meteorological Buoys Project	22-26 Mar 29 Mar-03 Apr Australia	East Asia Technologies Corporation
Ma. Rosario C. Ramos Fernando R. Cada Teresa A. Millanes Maximo F. Peralta	4th East Asia WRF Workshop and Tutorial	5-10 Apr Seoul, Korea	Millennium Development Goal Fund
Ma. Cecilia A. Monteverde Thelma A. Cinco Emma D. Ares Analiza C. Tuddao	Training/Workshop on the Development of Tropical Cyclone Risk Assessment Model for the Philippines	26 Apr-07 May Canberra, Australia	Geoscience Australia
Rene A. Gumapal	Redhat Linux – Clustering and Storage Management Training	17-21 May Singapore	Philippine Institutional Capacity to Adapt to Climate Change
Cynthia P. Celebre Fulgencio A. Austria, Jr.	Factory Training for the Meteorological Buoys Project	20-25 June Australia	East Asia Technology Solution Corporation
Flaviana D. Hilario	International Workshop on Addressing the Livelihood Crisis of Farmers: Weather and Climate Services	12-14 July Brazil	UNDP – Project – MDGF-1656
Rosalie C. Pagulayan	Strengthening Climate Resilience (SCR) Regional Consultation Workshop for South East Asia	22-23 July Thailand	Plan Philippines
Bonifacio G. Pajuelas	Regional Weather Prediction and Data Assimilation Training Workshop	19-30 July Germany	Deutscher Wetterdiens. WMO & Spanish Government
Berlin V. Mercado	Workshop on ICT-based Real Time Monitoring and Management System for Dam Safety	01-05 Aug Thailand	National Electronics & Computer Tech Center
Teresa A. Millanes Marino L. Mendoza	Training on Analysis of Communication, Ocean and Meteorological Satellite (COMS) Data	26 Aug-18 Sept Korea	KMA

Table 4 ... continuation

NAME	TITLE	DATE & VENUE	SPONSOR
Hilton T. Hernando Hilario DG. Esperanza	Training Course on Measurement and Computation Discharge for RA V	18-22 Oct Indonesia	WMO
Cynthia P. Celebre Ma. Cecilia A. Monteverde	Asia Pacific Economic Cooperation (APEC) Workshop on Hazard Mapping and Risk Vulnerability Assessment	19-21 Oct Taiwan	APEC TATF
Cynthia P. Celebre Bonifacio G. Pajuelas	Factory Acceptance Test	23-29 Oct USA	e-PLDT and WDT
Carina G. Lao	11th WMO Symposium on Education and Training (SYMET-XI)	25-29 Oct Indonesia	WMO
Anthony Joseph R. Lucero Ma. Fe E. Villamora	Training Workshop on Meteorological Early Warning Systems for Prevention and Mitigation of Agricultural Disasters	15-19 Nov Thailand	Japan ASEAN Integration Fund
Joel Rivera	Workshop on Outer Space Law	16-19 Nov Thailand	Geo-Informatics & Space Technology Dev't. Agency
Bernie R. de Leon	Sandwich Program	26 Nov 2010- 30 Oct 2011 Taiwan	National Science Council of Taiwan
Juanito S. Galang Aldzcar D. Aurelio	Typhoon Committee Roving Seminar	30 Nov-03 Dec Thailand	TCTF
Susan R. Espinueva	Workshop on Space Application to Reduce-Water Related Disaster Risk in Asia	07-09 Dec Thailand	UNESCAP
Ma. Cecilia A. Monteverde	Regional Experience Sharing Workshop on Early Warning Systems	20-21 Dec Thailand	ADPC



Table 4 ... continuation.

NAME	TITLE	DATE & VENUE	SPONSOR
Lazaro M. Marqueses Arnel R. Manoos	Factory Level Training and Factory Acceptance Test in relation to the Aviation Weather	15-20 Aug Finland	VAISALA Oyj
Catalino L. Davis Bonifacio G. Pajuelas	- do -	23-27 Aug Finland	
Margaret P. Bautista Renito B. Paciente	Integrated Workshop on Urban Risk Management in a Changing Climate: Sustainable and Adaptation Challenges	06-10 Sept China	Typhoon Committee Trust Fund
Edwin F. Manresa Marcos P. Bacani	Factory Level Training and Factory Acceptance Test in relation to the Aviation Weather Observation System and Wind Profiler	13-17 Sept	VAISALA Oyj
Catalino L. Davis Bonifacio G. Pajuelas	- do -	20-24 Sept USA	
Ma. Cecilia A. Monteverde	Int'l Symposium on Integrated Use of Geo-spatial Information for comprehensive Safety: Asian Perspective for Geo-Intelligence	20-21 Sept Japan	Asian Development Bank Institute
Nenita A. Martinez Ma. Fe E. Villamora Remedios C. Liwanag	Training Workshop on Application of Growth Simulation Model with Satellite Remote Sensing and Geographic Information System Techniques for Agricultural Crop Yield Monitoring and Estimating	20-24 Sept Thailand	Japan ASEAN Integration Fund
Maximo F. Peralta	2nd Global Precipitation Data Utilization	27-29 Sept Japan	JAXA
Vivien S. Esquivel	11th International Pyrheliometer Comparison IPC XI of the World Radiation Centre	27 Sept-15 Oct Switzerland	PAGASA
Shirley J. David Michael Bala	Training Workshop on Mesoscale Numerical Weather Prediction – Phase I	27 Sept-08 Oct Korea	Korea Meteorological Agency
Renito B. Paciente Roy A. Badilla Joel C. Jesusa Charlie Rapadas Anianita Fortich Fredolina D. Baldonado Hannagrace F. Cristi Rusy G. Abastillas	Radar Training Session by the Central Weather Bureau	04-28 Oct Taiwan	National Science Council of Taiwan
Rusy G. Abastillas	Training Course on European Center for Medium-Range Weather Forecasts Products (ECMWF)	11-15 Oct England	ECMWF
Ma. Cecilia A. Monteverde	International Seminar on Sharing Experience on Disaster Risk Reduction in Asian Countries	13-15 Oct China	National Disaster Reduction Center of China
Margaret P. Bautista Leonida S. Santos Remilio I. Bautista	Counterpart Training Course on Hydrology/Equipment and Maintenance related to Flood Forecasting and Warning System	17-30 Oct Japan	JICA

Table 5: Scholars for SY 2009-2010

NAME	PROGRAM	STATUS
<b>Partial:</b>		
Ms. Shirley J. David	Ph. D. Statistics	On-going
<b>Full:</b>		
Ms. Zin Mie Mie Sein (Myanmar)	M. Sc. (Meteorology)	On-going
Mr. Kanda Durage Sujeewa (Sri Lanka)	- do -	- do -
Mr. Joseph Basconcillo (Philippines)	- do -	On-going
Ms. Rhonalyn Vergara (Philippines)	- do -	- do -
<b>Partial:</b>		
Mr. Aldczar Aurelio	- do -	- do -
Mr. Bernie de Leon	- do -	Sandwich Program to Taiwan
Ms. Bernadeth Lucillo	M. Sc. Agricultural Met.	On-going

2010 Graduates

**University of the Philippines Diliman**

**DOCTOR OF PHILOSOPHY IN METEOROLOGY**

DR. ESPERANZA O. CAYANAN      DR. LANDRICO U. DALIDA, JR.

**MASTER OF SCIENCE IN METEOROLOGY**

THET HTAR SU HLAING (MYANMAR)

**Ateneo School of Government**  
The Graduate School of Leadership and Public Service

**MASTER IN PUBLIC MANAGEMENT**

ROSALIE M. AGUILAR      VERONICA A. CHUI      FLODELIZA G. CLEMENTE      JORYBELL A. MASALLO      NOEL G. RAMOS

**ATENEO DE MANILA UNIVERSITY**

**MASTER OF SCIENCE IN ATMOSPHERIC SCIENCE**

SHEILA S. SCHNEIDER      SONNY N. PAJARILLA      NIVAGINE C. NIAVARES      MARCELINO Q. VILLAFUERTE II

**DIPLOMA IN ATMOSPHERIC SCIENCE**

ALLAN JULIUS S. ALCARAZ

**National Defense College of the Philippines**

**MASTER IN NATIONAL SECURITY ADMINISTRATION**

DR. VICENTE B. MALANO

# Strengthening of S&T Governmental Management and Linkages

# Linkages and Twinning (Local and International)

## Conducted Annual and Mid-year Program Review and Analysis (PRA) and Planning Conferences

The annual PAGASA Program Review and Analysis (PRA) and Planning Conference was conducted on 29-30 January 2010 at the Development Academy of the Philippines (DAP), Tagaytay City while the Mid-year PAGASA - PRA and Planning Conference was conducted on 17-18 August 2010 at the Island Cove, Binakayan, Kawit, Cavite. The PRA involved the assessment of the performance of all various operating units based on the Priority Programs/Activities for FY 2009, preparations of FY 2010 Operations Plan and FY 2011 Financial Requirements.

The PRA is part of the agency monitoring and evaluation process and serves as an input in the annual DOST Planning Conference. Discussions were focused on the pressing issues and concerns on the implementation of the program, activities and projects (PAPs) for FY 2010 Commitments and Considerations for FY 2011 Financial Plan. All heads of divisions presented the Highlights of Accomplishments for FY 2009 and possible solutions to the identified concerns in the implementation of programs, Priority Programs/Activities and New Initiatives for FY 2010, Financial Requirements for FY 2011 and Priority Thrusts and Objectives for FY 2011.



PAGASA maintained its linkages with local agencies and organizations to work together on issues and concerns such as El Niño/La Niña phenomenon, water crisis, floodings, natural hazards and other scientific and technical concerns affecting the social and economic growth of the country.

It likewise interacted with the meteorological and hydrological services of the community of nations to gain meaningful benefits in terms of exchange of meteorological data, information technology transfer including financial support.

PAGASA-DOST is a member of Presidential Task Force on Climate Change (Administrative Order 171), which was created to address problems that may be brought about by Climate Change. The primary role of PAGASA-DOST is to provide the Task Force with Climate Change related information, including updates and advisories.

In 2010, PAGASA-DOST actively organized, participated and conducted activities related to Climate Change as follows:

- Participation in the Climate Change Technical Expert Forum held at Dusit Hotel, Makati City on April 7-8, 2010
- Memorandum of Agreement (MOA) signing on implementation of the project entitled "Establishment of Agrometeorological Stations in Highly Vulnerable Agricultural Areas: A tool for Climate Change Adaptation and in the Development of Local Early Warning System (Agromet Cum Climate Change), DA-FOS, May 17, 2010
- El Niño/La Niña Presidential Task Force Meeting, DA-FOS Conference Room, May 13, 2010.
- 2nd Joint Coordination Committee (JCC) Meeting for the project for Strengthening of Flood Forecasting and Warning System for Dam Operation, Amihan Conference Room, May 28, 2010.
- Signing: Record of Discussion for KOICA 2 Project entitled "Enhancement of an Early Warning and Monitoring System for Disaster Mitigation in Metro Manila, Amihan Conference Room, June 03, 2010
- Participation in the 10th Science Council of Asia (SCA) Conference in Manila, Sofitel Hotel, Roxas Blvd, Manila, June 14-16, 2010.
- 3-day Writeshop on the Strategic Plan for the PRSD held at Amihan Conference Room, PAGASA, July 8-10, 2010
- Refresher Course on Weather Observation Methods, Orientation Seminar on the Installation of PMS-OPES, Seminar on Administrative Procedures and Teambuilding Activity
- Action Planning Conference on Environmental Protection and Disaster Risk Management on Affected Communities along the Agno River Basin spearheaded by Program Management Office of the North Luzon Growth Quadrangle Area (NLGQA)
- 2nd Workshop for the project "Strengthening Flood Forecasting and Warning System for Dam Operation" to held at Sulu Riviera Hotel, Quezon City, September 14, 2010.
- Conducted the 3-day Training on Designer's, Trainer's and Management Course held at Club Morocco, Subic Zambales, November 27-30, 2010.
- Kick-Off Meeting for "Project for the Improvement of the Meteorological Radar System in the Philippines" held at Amihan Conference Room, July 12, 2010.
- 3rd Joint Coordination Committee (JCC) Meeting, Amihan Conference room, October 13, 2010.



**• Visitation of Dr. Teofilo Abrajano and Dr. Rodolfo de Guzman, under the Balik Scientist Program (BSP)**

Under the Balik-Scientist Program (BSP), for 2010, there were 2 Balik Scientists assigned to PAGASA-DOST, namely, Dr. Teofilo A. Abrajano, Jr., Professor and Director, Environmental Science Program, Rensselaer Polytechnic Institute, Troy, New York; and Dr. Rodolfo A. De Guzman, a retired Director, Strategic Planning Officer and Special Adviser to the Secretary-General of the WMO.

Dr. Abrajano worked with PAGASA-DOST on the aspects of climate change which are the focused on priorities of the Philippine government. His work was focused on water crisis, water impact of climate and on the proposed "best practices" on science funding for DOST, while Dr. de Guzman dealt primarily on possible strategic plans approval which are linked to PAGASA's visions, mission and what it wants to accomplish in the future for effective delivery of PAGASA-DOST services. This includes the SWOT approach.



Dr. Teofilo A. Abrajano, Jr. Dr. Rodolfo A. De Guzman

**• Team Building Activities**



**• Climate Outlook Fora**



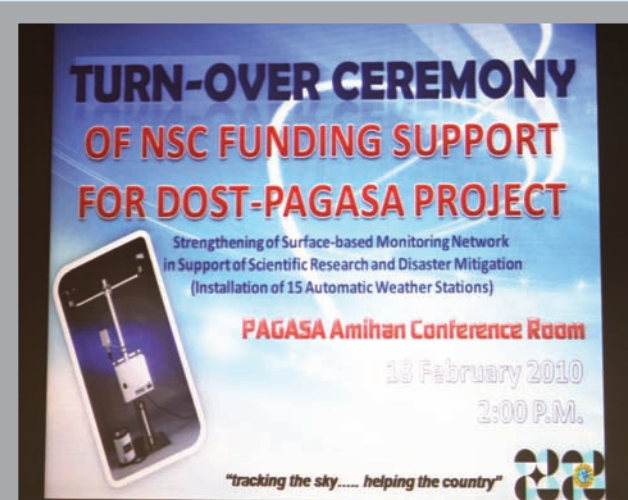
**• PAGASA-DOST Media Seminar Workshop**



- Turn over ceremony of TECO 2 project held on February 18, 2010 at the Amihan Conference Room, PAGASA Central Office.

Ambassador Donald Lee of TECO and Secretary Estrella Alabastro led the turn-over ceremony of the project entitled "Strengthening of Surface-based Monitoring Network in Support of Scientific Research and Disaster Mitigation" funded by the National Science Council, through TECO, in the amount of US\$280,000. In 2008, TECO donated an amount of US\$170,000 for the upgrading of the Upper-air Tanay station. The funds were to be used for the:

- 1) establishment of fifteen (15) Automatic Weather Stations (AWS) with GSM-CMMS (Cellular Mobile Telecommunications System) connectivity at the PAGASA-DOST Central Office;
- 2) utilization of results for dense network of observation for for scientific research and operations;
- 3) augmentation of present complement of AWS of PAGASA to provide automated collection of meteorological data from remote locations; and
- 4) sharing of data with host of regional, provincial and local government users and the Central Weather Bureau (CWB) of Taiwan.



The 15 AWS would be installed at selected areas throughout the country for the enhancement of the forecasting and warning capabilities of PAGASA aimed to address gaps in understanding the usual weather and climate conditions.

The TECO-PAGASA project is also designed to benefit the socio-economic sector of the country as it

will serve as a valuable tool in decision-making processes which have turned DOST-PAGASA a critical partner of all weather and climate sensitive sectors.

The turnover ceremony was attended by the Honorable Representative Donald Lee, TECO, Mr. Fu Shung, Director, TECO, Mr. Andy K.I Chen, Executive Assistant, Mr. William Tsai, Commercial Secretary, TECO, DOST Secretary Estrella F. Alabastro, DOST Undersecretary Graciano P. Yumul, Jr., PAGASA Administrator Dr. Prisco D. Nilo, and other officials from TECO and PAGASA.

- Inauguration of automatic rain gauge cell site in Montalban under the SMART-PAGASA Co-Location project on April 28, 2010.

The project was a joint collaboration between PAGASA and SMART which included the installation of an automatic rain gauge in San Rafael, Montalban.

The cell site houses a tipping bucket rain gauge that can automatically send rainfall data to PAGASA by telemetry at a frequency and according to parameters set by PAGASA.

The initiative is part of the PDRF program to help upgrade the country's flood forecasting system. The PDRF, which is headed by PLDT Chairman Manuel V. Pangilinan, is the private sector arm of the Special National Public Reconstruction Commission created in the wake of the devastation brought about by typhoons Ondoy, Pepeng and Frank.

Montalban was among the areas devastated by floodwaters resulting from the equivalent of a month's amount of rainfall that Ondoy dumped in Metro Manila in just six hours in September 2009.

The installation of PAGASA flood forecasting and weather instruments in the cell sites of the country's three telcos is expected to result in more accurate issuance of flood forecasts and warnings by PAGASA.



Project Rain Gauge (PRG) is a joint undertaking of Smart Communications, Inc. (SMART) and Manila Observatory's KLIMA Climate Change Center, in cooperation with the Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA) and the Department of Education. Project Rain Gauge aims to spark awareness in the study of earth science by building online meteorological data provided by a network of public high schools who monitor and record rainfall observations around the country

Co-location of PAGASA, instruments in the telcos cell sites would help ensure uninterrupted power supply for the instruments, efficient data transmission to PAGASA as equipment will be in secured locations, and reduction of installation costs for the instruments. The co-located gauges will also help validate PAGASA's radar rainfall estimations.

The inauguration was attended by Mr. Butch Meily, PDRF Executive Director, Mr Ramon R. Irberto, Head of Public Affairs SMART Communications Inc., Dr. Prisco D. Nilo, Administrator of PAGASA, Dr. Susan R. Espinueva, Chief, Hydrometeorological Division (HMD) of PAGASA and other delegates from SMART and PAGASA.

**Soft inauguration of PAGASA Synoptic Station in Juban, Sorsogon on July 22, 2010**

The PAGASA Synoptic Station in Juban, Sorsogon was recently established. The lot where the station was constructed is a donation of the Provincial Government of Sorsogon, through the Ex-governor Sally A. Lee.

The Sorsogon station is a part of the 100M Calamity Fund of 2008 from the Office of the President granted to PAGASA to fund various disaster mitigation programs of the agency.

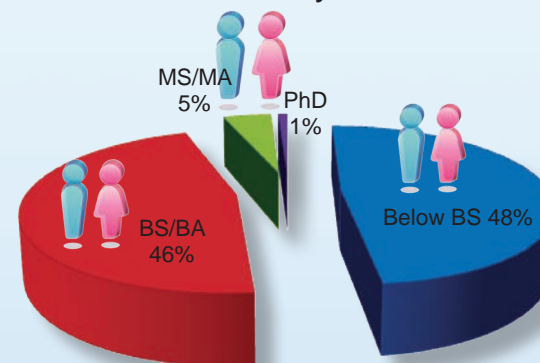
The inauguration was led by the former Governor of Sorsogon and the new Executive Director of Sorsogon Provincial Management Office (SPMO), Ms. Sally A. Lee; and Mayor of Sorsogon Jimmy Fragata, Regional Director, Department of Science and Technology (DOST); PAGASA Administrator, Dr. Prisco D. Nilo; Dr. Susan R. Espinueva, Officer-in-Charge of the Office of the Deputy Administrators for Operations and Services; and the Chief of Hydro Meteorological Division (HMD), PAGASA.



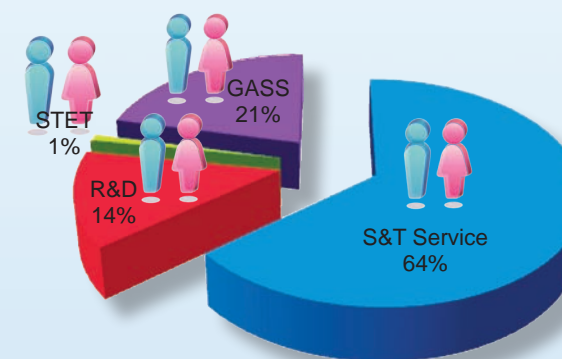
Mayor Fragata in his speech said that the province of Sorsogon was very lucky to have a PAGASA station which will be beneficial to the province of Sorsogon. Dr. Nilo said that the station had been requested for a long time. He also said that Sorsogon is one of the provinces affected by typhoons and other severe weather disturbances, and the province will have timely weather information very useful to agriculture since Sorsogon is an agricultural province. Regional Director Region V, Mr. Tomas Briñas in his speech, commended PAGASA for committing to implement improved services. He expressed gratitude and support to former Governor Lee for providing the PAGASA a piece of land for the station and for sending two station personnel to undergo training on meteorological observation and monitoring and analysis. Dir. Briñas said the increase in spatial resolution of weather observation will resolve for better analysis of typhoon and other severe weather system. Governor Lee said that Sorsogon is vulnerable to disaster and the station is really a blessing to the province of Sorsogon. The project was also a part of their program and it is a dream come true for the province of Sorsogon.

# Summary of Financial and Human Resources

**Personnel Distribution by Level of Education**



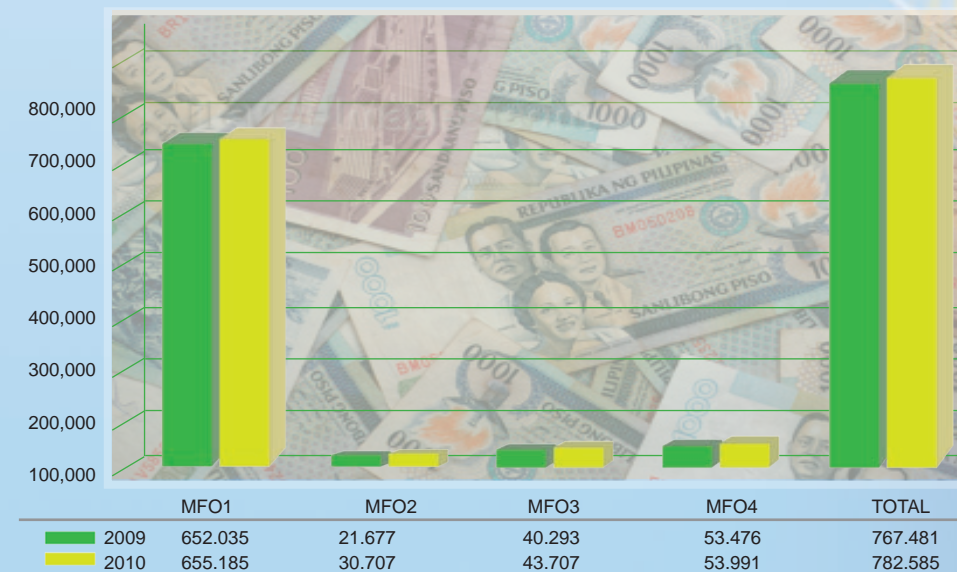
**Personnel Distribution by S&T Functions**



## Human Resources

CATEGORY OF PERSONNEL	LEVEL OF EDUCATION				TOTAL
	Below BS	BS/BA	MS/MA	PhD	
S&T Service (STS)	275	265	26	5	571
Research and Development (R&D)	33	48	7	4	92
S&T Education and Training (STET)	3	5	0	0	8
General Administration and Support Services (GASS)	73	105	8	2	188
<b>TOTAL</b>	<b>384</b>	<b>423</b>	<b>41</b>	<b>11</b>	<b>859</b>

## Financial Resources



**Major Final Output (MFO)**

- MFO 1 Forecast and Warning Services on Weather, Flood, Climate, Astronomy and Extreme Weather Events
- MFO 2 Hazard Mapping and Risk Assessment Services
- MFO 3 Research and Development
- MFO 4 Disaster Preparedness and Risk Mitigation and Other Services

# 2010 Directory of Key Officials



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### PLANS AND PROGRAMS DEVELOPMENT UNIT Administrator's Office

Nancy T. Lance • Ester M. Maunahan • Ramon G. Agustin  
Roque E. Adora • Jorybell A. Masallo • Renely L. Basiño

## PAGASA KO

*Ganap mong adhikain  
Kaligtasan ng buhay  
Sa pagbabago't  
Pagtugon ng kalikasan*

*Agham na kaakibat ng talino at husay  
Sa pinsala'y nagsisilbing  
pananggalang*

### KORO

*Sa pagdilim ng mga ulap  
Sa gitna man ng unos ay kabalikat  
Kaagapay kang lubos  
Sa pagtaas ng mga alon  
At maging sa tag-tuyo  
Sa bawat panahon  
Makakaasang PAGASA ko*

*Ang 'yong paglilingkod  
Sa bayan na pinag-inam  
Ay katiyakang dulot ay kapanatagan*

*Agham na kaakibat ng talino at husay  
Sa pinsala'y nagsisilbing  
pananggalang*

*Sa pagdilim ng mga ulap  
Sa gitna man ng unos ay kabalikat  
Kaagapay kang lubos  
Sa pagtaas ng mga alon  
At maging sa tag-tuyo  
Sa bawat panahon  
Makakaasang PAGASA....*

*Sa pagdilim ng mga ulap  
Sa gitna man ng unos ay kabalikat  
Kaagapay kang lubos  
Sa pagtaas ng mga alon  
At maging sa tag-tuyo  
Sa bawat panahon  
Makakaasang PAGASA ko*

DEPARTMENT OF SCIENCE AND TECHNOLOGY



PHILIPPINE ATMOSPHERIC,  
GEOPHYSICAL & ASTRONOMICAL  
SERVICES ADMINISTRATION

**PAGASA Bldg., Science Garden,  
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