



2009 Annual Report

PHILIPPINE ATMOSPHERIC,
GEOPHYSICAL & ASTRONOMICAL
SERVICES ADMINISTRATION



COUNTERING THE THREAT OF CHANGING

GLOBAL CLIMATE

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Message from the Secretary

I would like to extend my warmest congratulations to the men and women of PAGASA for their excellent performance in the fulfillment of their mandated tasks in 2009. The agency's efficient and competent handling of the Tropical Storm "Ondoy and Typhoon "Pepeng" tragedies truly deserved praises. This reflected the success of government's efforts to further mitigate the hazardous effects of extreme weather events.

As we usher in a new decade on a positive note, I fondly look back at the fruitful effort of the Department of Science and Technology (DOST) to vigorously support the PAGASA in its continuing quest to provide quality service to lessen if not eliminate the destructive effects of hydro meteorological hazards. Through the years, the DOST has supported projects that have served to enhance the forecasting and warning capabilities of the national weather agency.

As 2010 will be my final year with the government, I wish to convey my profound gratitude for having the singular opportunity to work with PAGASA in carrying out and fulfilling its mission. This modest personal achievement virtually rewarded my humble self with enormous fulfillment. The long years that I had helped PAGASA through the DOST to achieve its goals, reflected my sincere desire to serve our countrymen as the ultimate beneficiary. As I quietly bow out from service in the middle of 2010, I will cherish the feeling of fulfillment that I have served the people well. Wishing you more success in the future!

ESTRELLA F. ALABASTRO



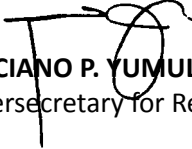
Message from the Undersecretary

My warmest congratulations to the men and women of PAGASA-DOST for their relentless efforts to enhance their capacity to provide improved weather services and to remain focused towards becoming a world-class national weather service.

In 2009, PAGASA-DOST remained at the forefront of providing valuable weather information. The timely dissemination of relevant information enabled our country to respond better to weather disturbances and helped lessen the loss of lives and damage to properties. Furthermore, the institute worked towards raising the public's level of awareness on the effects of climate change not only to mitigate and reduce disaster risks but also to improve the resiliency of our country.

I am confident that PAGASA-DOST, fortified with the common desire to better serve our country and people, will continue to move towards the realization of its vision.

Again, my heartfelt congratulations to PAGASA-DOST


GRACIANO P. YUMUL, JR. D. Sc.
Undersecretary for Research and Development



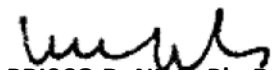
Message from the Administrator

Last year, the onslaught of Typhoon Ondoy and Typhoon Pepeng was considered as one of the worst in the history of recorded calamities in the country. It can be recalled that Marikina, Pasig, Rizal and other parts of Metro Manila were submerged in floodwaters due to continuous heavy rain brought about by Typhoon Ondoy (Ketsana). The amount of rain unleashed by Ondoy in nine hours was equivalent to a 30-day accumulated rainfall.

Even before the floods triggered by Ondoy subsided, Typhoon Pepeng hit the country, particularly Pangasinan and other parts of Northern Luzon, and caused massive floodings. The two typhoons which came in succession left a path of unimaginable destruction slowing down the country's economic growth. Hundreds of lives were lost, and damage to properties, infrastructure and agriculture was enormous.

While these extreme weather events could not be totally prevented, the men and women of PAGASA performed their avowed duty and mandate to serve the people to the best of their abilities. All throughout the unfortunate weather events, PAGASA was untiringly up on its feet providing timely and accurate information which helped lessen the impact of these disasters. The calamities brought out the best in the Filipino people who are known for their resiliency in times of hardships. Heroes were instantly born as the citizens tried to cope and rise from the painful and tragic experience. Within the weather agency, the calamity has created its own perennial heroes.

With the start of the new decade 2010, while we recover from the impacts of the killer typhoons, the country is facing an ongoing climate phenomenon on El Niño which had developed late last year. By then, the PAGASA has already alerted concerned agencies to prepare for the possible effects of this event. The persistence of El Niño conditions will continue to affect rainfall patterns throughout the country in the next coming months. These conditions may adversely affect domestic water supply, agriculture as well as the country's weather situation. PAGASA will be at the forefront to address its negative impact fulfilling its avowed duty to best serve the country and the Filipino people.



PRISCO D. NILO, Ph. D.

What have we accomplished?

MFO 1. Forecast and warning services on weather, flood, climate, astronomy and extreme weather events

In the delivery of public weather services...

Delivery of weather and flood forecasting and tropical cyclone warnings as a major commitment of PAGASA in serving the general public topped the agency's accomplishments for the year 2009.

During the year, PAGASA closely monitored tropical cyclones that entered the Philippines Area of Responsibility (PAR) as shown in Table 1.

Table 1 Summary of Tropical cyclones that entered PAR

TC NAME (LOCAL/INTN'L)	DURATION	MAXIMUM WINDS/ GUST (KPH)	REMARKS
01. TD AURING	JAN 03-06	55	
02. TD BISING	FEB 12-13	45	
03. TD CRISING	APR 30 – MAY 02	55	
04. TY DANTE	MAY 01 - 05	140 / 170	
05. TY EMONG	MAY 06 - 09	150 / 185	LANDFALL
06. TS FERIA	JUN 23 - 26	75 / 90	LANDFALL
07. TD GORIO	JUL 09 - 10	55	
08. TS HUANING	JUL 12 - 13	65 / 80	LANDFALL OVER TAIWAN
09. TS ISANG	JUL 14 - 18	95 / 120	
10. TS JOLINA	JUL 30 – AUG 02	75 / 90	LANDFALL
11. TY KIKO	AUG 03 - 09	175 / 210	LANDFALL OVER TAIWAN
12. TS LABUYO	SEP 02 - 05	95 / 120	
13. TD MARING	SEP 08 - 09	55	
14. TS NANDO	SEP 12 - 13	65 / 80	LANDFALL OVER TAIWAN
15. TS ONDOY	SEP 24 - 27	110 / 140	LANDFALL
16. TY PEPENG	SEP 30 – OCT 10	195 / 230	LANDFALL
17. TY QUEDAN	OCT 05 - 06	205 / 250	
18. TY RAMIL	OCT 16 - 25	195 / 230	
19. TY SANTI	OCT 28 – NOV 01	150 / 180	LANDFALL
20. TD TINO	NOV 02 - 03	55	
21. TD URDUJA	NOV 23 - 25	55	LANDFALL
22. TS VINTA	DEC 02 – 03	85	

SUMMARY OF 2009 TROPICAL CYCLONES

TROPICAL DEPRESSION :	07
TROPICAL STORM :	08
TYPHOON :	07
TC LANDFALL :	10 (2 OVER TAIWAN)

It has been considered an active year of tropical cyclone occurrence in the Western North Pacific of which 22 tropical cyclones entered and developed inside PAR, seven (7) of which are Tropical depression, eight (8) of them are tropical storm and the remaining seven (7) are typhoons. From the 22 tropical cyclones that entered and developed inside the PAR as shown in Figure 1, ten (10) had made landfall that devastated most parts of Luzon, particularly during the 2nd half of the year.

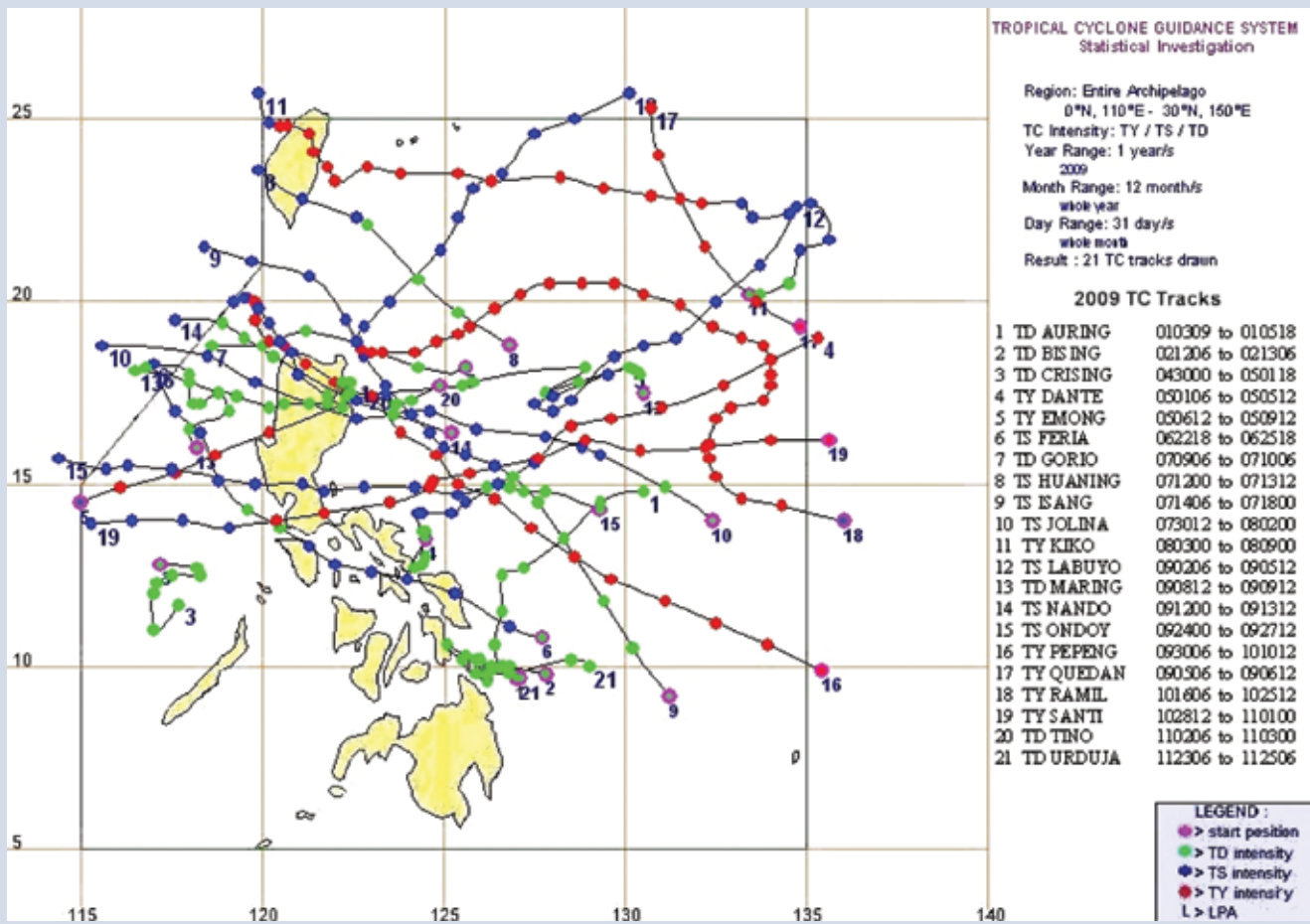


Figure 1: Tracks of Tropical Cyclones that entered the PAR in 2009

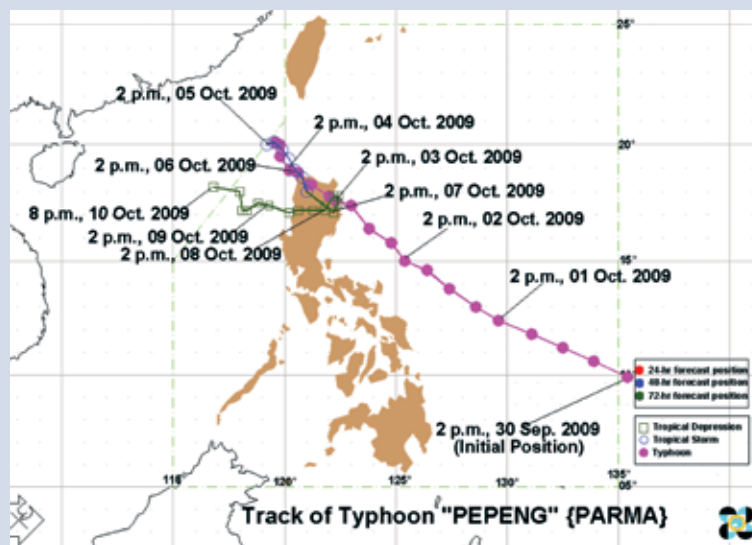
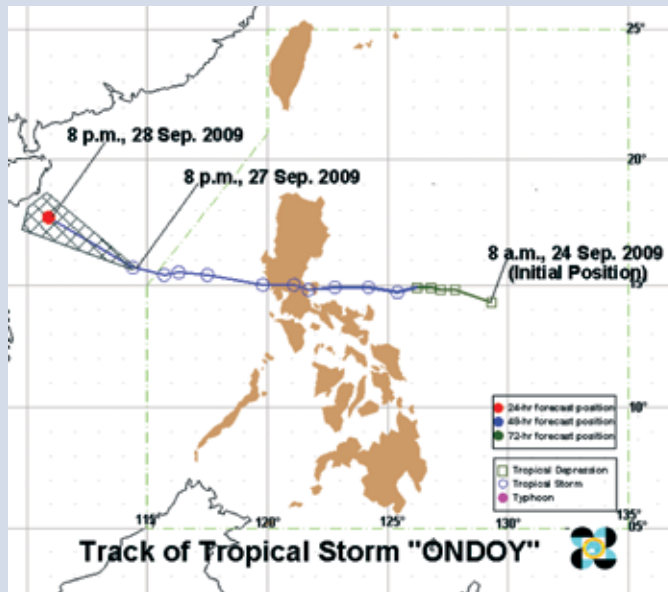
Two of the most destructive tropical cyclones of 2009 that brought large damage to lives and properties, below describe its behavior during their occurrences are:

TS ONDOY (KETSANA) {0916}

It developed inside the PAR from an active Low Pressure Area (LPA) east of Luzon and gradually moved westward towards Aurora-Quezon Area. Prior to its landfall, ONDOY intensified into a Tropical Storm 130 km northeast of Virac, Catanduanes. It continued moving westward and made landfall over the boundary of Aurora and Quezon at about 11 AM of Sept. 26 and crossed Central Luzon for almost 10 hours causing heavy downpour over the Metropolis and some parts of Central and Southern Luzon that resulted to flashfloods and landslides in these areas. After crossing Central Luzon, it continued to move farther as it intensified over the South China Sea and exited the PAR's western border towards Vietnam.

Public Storm Warning Signal (PSWS) # 2 was raised over Camarines Provinces, Burias Island, Catanduanes, and Quezon including Polillio Islands, Aurora, Rizal, Bulacan, Nueva Ecija, Quirino, Aurora, Nueva Vizcaya, Pampanga, Tarlac, Zambales, Pangasinan and La Union. PSWS # 1 over Albay, Laguna, Cavite, Batangas, Isabela, Mt. Province, Ifugao, Ilocos Sur, Mindoro Provinces, including Lubang Island, Marinduque, Bataan and Metro Manila. The maximum winds/gustiness reached 105/135 kilometers per hour. The initial and final warnings were issued @ 11 AM, 24 September and 11 PM, 27 September 2009 respectively. A total of 13 SWB and 15 IWS were issued.

Tracks of TS ONDOY (KETSANA) and TY PEPENG (PARMA)



TY PEPENG (PARMA) {0917}

TY PEPENG with international name PARMA developed from a broad area of low pressure over the Marianas Islands. It gradually moved almost westward and entered over the eastern boarder of the PAR east of Northern Mindanao as a full blown typhoon late afternoon of September 30, 2009. PARMA gained more strength as it moved closer to Eastern Visayas and slightly weakened as it approached the landmass of Northern Luzon and made landfall over Cagayan in the afternoon of October 03. PARMA moved west northwest and traversed the mountainous terrain of extreme Northern Luzon the whole evening of October 03 and exited over Luzon Strait (Northern Tip of Ilocos Norte) early morning of October 04. Typhoon PARMA slowed down and remain almost stationary over Luzon Strait due to interaction with the approaching typhoon (NEPARTAK) behind typhoon PARMA and then abruptly weakened to Tropical Storm intensity the following day due to the effects of the ragged terrain of northern Luzon. PARMA has slightly intensified offshore of Ilocos Norte and then moved south southwestward and made its 2nd landfall over the northern tip of Ilocos Norte causing heavy downpour over northern and central Luzon that resulted to flashfloods and landslides in most parts of northern Luzon. TC PARMA again traversed extreme northern Luzon and made exit over the coast of Cagayan early morning of October 08. Again, PARMA

remained almost stationary as it changed its course to west southwest and made its 3rd landfall over Cagayan. PARMA weakened into a tropical depression as it crossed northern Luzon for the whole evening that brought continuous rains over the provinces of Cordilleras, Ilocos region, Cagayan Valley and central Luzon prompting the major dams in Luzon to open its spillways. TC PARMA made its exit over the coast of La Union then moved farther away from the country and exited in the northwestern border of the PAR on the eve of October 10. Public Storm Warning Signal (PSWS)#3 was hoisted over Catanduanes, Cagayan including Babuyan and Calayan Group of Islands, Northern Isabela, Batanes group of Islands, Ilocos Norte, Abra, Apayao, Kalinga, Ilocos Sur and Mt. Province, PSWS # 2 over Camarines Norte, Camarines Sur, Aurora, Northern Quezon including Polillio Island, Quirino, Southern Isabela, Ifugao, Nueva Vizcaya, La Union and Benguet and PSWS # 1 over Albay, Burias Island, Sorsogon, Northern Samar, Rest of Quezon, Pangasinan, Tarlac, Zambales, Pampanga, Bulacan, Bataan, Rizal, and Metro Manila. The maximum winds/gustiness reached 195/230 kilometers per hour. The initial and final warnings were issued at 5 PM, 30 September and 11 PM, 10 October 2009 respectively. A total of 42 SWB, 42 IWS and 2 weather advisories were issued.

In rendering operational hydrological services...

Hydrological services were delivered, for the safety and well being of the population in flood prone areas. Telemetered flood forecasting and warning systems are servicing the population in the Pampanga, Agno, Bicol and Cagayan river basins and the downstream areas of the Pantabangan, Angat, Binga, Ambuklao and Magat dams.

Information issued for flood disaster prevention, preparedness and mitigation consisted of 163 basin flood

bulletins (40 Pampanga, 55 Agno, 18 Bicol, 50 Cagayan), 389 general flood advisories for non-telemetered (58 CARAGA, 33 R1, 3 R2, 72 R3, 36 R4A, 27 R5, 33 R6, 25 R8, 1 R9, 5 R10, 10 R11, 4 R12, 7CAR, 6 Guagua).

In addition, operational hydrological service personnel conducted IEC activity in the flood prone communities on awareness of the population against flood hazard and the mitigation of its effects.

In providing Astronomical services ...

As mandated by law, the PAGASA is the official keeper of the Philippine Standard Time. It maintains a precise standard clock from which the setting of time pieces may be referred to. Under normal conditions, the PAGASA Astronomical Observatory broadcasts time signals every hour on the hour. On many occasions, clients call to make time comparisons through telephone.

For the year under review, 8,827 telephone time clock were requested by clients majority of whom are from the Metro Manila area. The figure is rather small in relation to the population of the Philippines. This may be attributed to the low level of interest among the populace in keeping precise time.

In extending Climate Data and Information services...

From the early signs of El Niño, the agency has been issuing different information packages to increase awareness of the population on the nature of the phenomenon and its effects, and to serve as baseline information for developing action plans for mitigating the impacts of drought expected to be caused by El Niño. Information packages include seasonal and

monthly weather situation/outlook, drought advisory, El Niño primer and climate change primer. These information packages are supplemented by public discussions with the tri-media sector and seminars and lectures conducted in different parts of the country in collaboration with other agencies and organizations.



MFO 2: Hazard Mapping and Risk Assessments

Developed and updated Maps which serve as reference materials for natural disaster reduction is one of the activities accomplished within the year. These includes the Taguig Flood Hazard maps, the eight (8) coastal flood hazard maps in Bataan, and the eight provinces under the UNDP Ready Project.

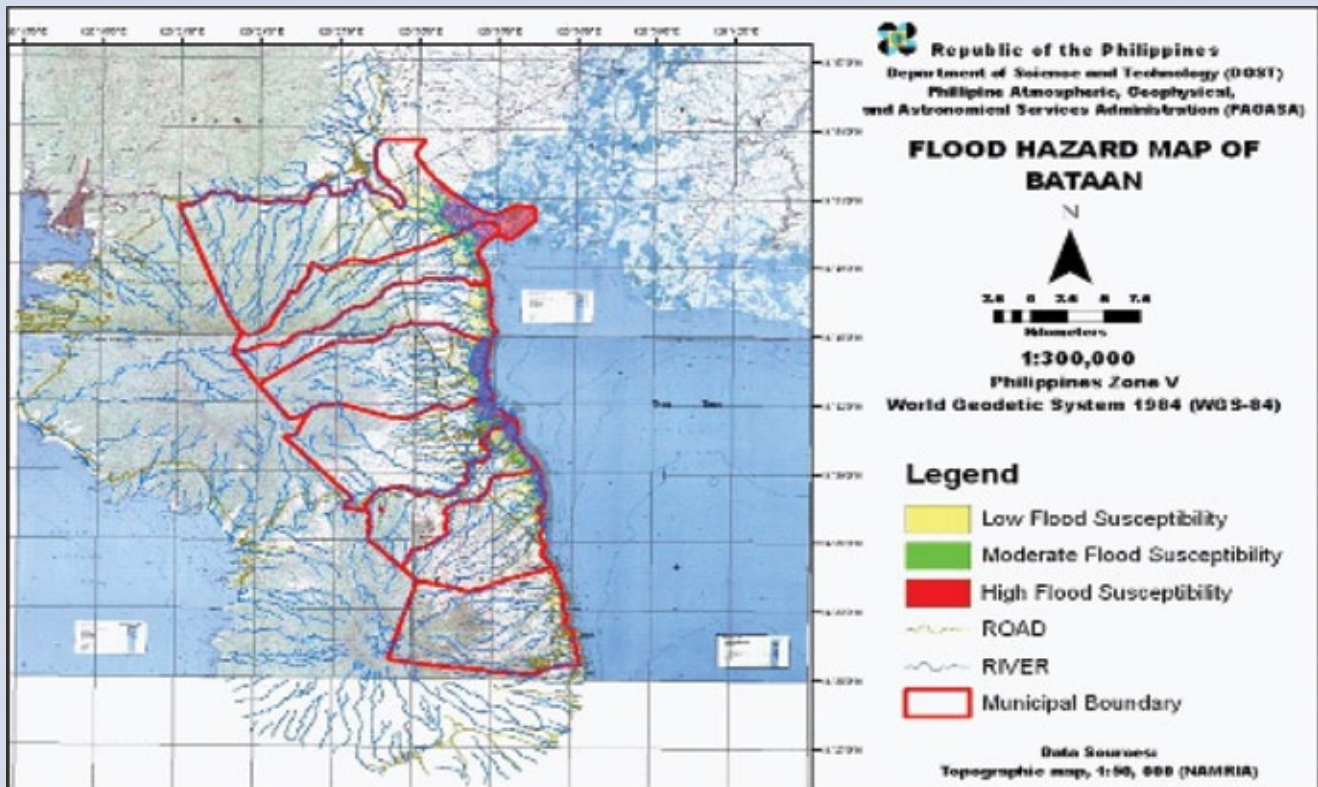
Updating of Flood Hazard Maps of the Eight Coastal Towns of Bataan along Manila Bay

A B S T R A C T

Flood hazard mapping conducted in eight coastal towns of Bataan are presented. The main criteria used in the selection of the study areas are their geographical location along the Manila Bay and the existence of historical flooding. Thus, the focus of the study is on the coastal towns namely, Hermosa, Abucay, Balanga, Limay, Samal, Orani, Orion and Pilar.

The study aims to develop a database on flooding of the coastal towns in Bataan, to evaluate the potential of flood occurrence and to prepare flood hazard maps of these towns in Bataan. Secondary data used include the historical data on flooding, barangay maps, soil maps, and hydrographic maps. The primary data consist of actual survey on flooding and on-site observation of the flood events with still photographs taken in the study areas. A simple hazard mapping method was used to delineate the flood prone areas. Analysis consists of defining the extent of flooding directly from the recorded inundation areas and data obtained from actual on-site surveys of recent flooding. In the absence of hydrologic and hydraulic data in Bataan, the evaluation was done by relating flooding to the primary physical characteristics of the coastal municipalities of Bataan using geographical information.

The results of the study showed that the geographical extent and severity of flooding are affected by the geomorphology, physiography, water run-off, topography and inadequate drainage system. Specifically, the coastal barangays facing Manila Bay and those barangays near the river channels are most prone to flooding. These include Hermosa, Abucay, Balanga, Samal, Orani, Orion and Pilar.



Under the UNDP-AusAID “Hazard Mapping and Assessment Effective Community Based Disaster Risk Management (READY) Project,” eight (8) hazard maps were completed in the provinces of Laguna, Olongapo City, Vigan, Ilocos Sur, Cavite, Rizal and Iloilo, while under the Community-Based Flood Early Warning System

component, facilities were installed at Ilocos Sur; Cavite; Northern and Eastern Samar; and Antique. Information, Education and Communication (IEC) campaign were conducted in Aurora, Pampanga, Iloilo, Northern Samar, Zambales and Vigan.

MFO 3: Research and Development

PAGASA research and development activities are geared towards developing systems and techniques for improving operational forecasting and warning capabilities and are supportive of the R & D priorities of the Department that respond to improving agriculture and industrial productivity and energy generation. Continuous improvement of services is brought to light with the completion of some research/studies undertaken by PAGASA. The following researches/studies were completed during the year.

Completion of researches/studies for utilization in improving operational forecasting and warning capabilities

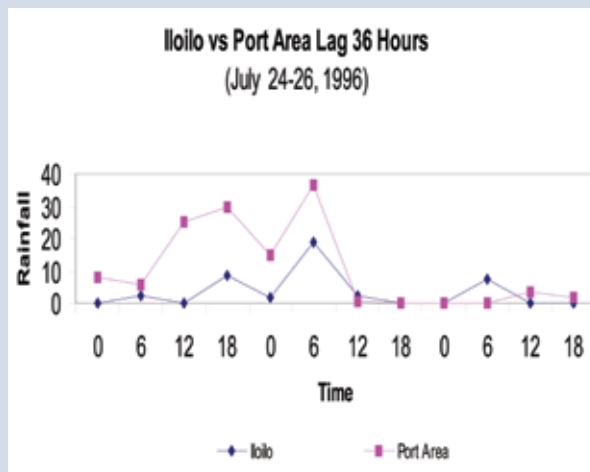
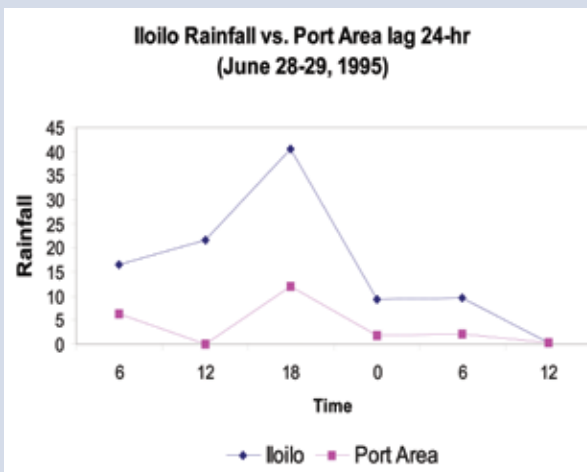
NOWCASTING OF SOUTHWEST MONSOON RAINFALL IN METRO MANILA

A B S T R A C T

Initial study towards the development of nowcasting scheme of rainfall in Metro Manila was conducted using rainfall observation in three weather stations located South to Southwest of the study area, namely: Iloilo, Puerto Princesa and Coron. The procedure which was adapted is similar to the Early Warning System (EWS) for flood although this initiative was based on the assumption that the amount of rain observed at three stations will be equal to the rain rate in Port Area.

Analysis show that real time rainfall in Iloilo, Coron and Puerto Princesa, gave similar pattern with Port Area rainfall which is lag 24-, 96-, and 72-hours, respectively, although with deviations in some cases. The amount, however, are not equal. Correlation coefficients of the test data also confirm the graphical result. Despite the fact that the rainfall observation in three identified stations is not reliable for nowcasting rainfall in Metro Manila the method used still shows great potential and can be improved by establishing a rainfall station close to and in front of where the monsoon wind is passing before it reaches Metro Manila.

It is therefore recommended that a follow-up study be conducted by establishing a rainfall observation station at the Southwest of Lubang Island which will serve as Early Warning Site of rainfall for Metro Manila during the Southwest Monsoon Season.



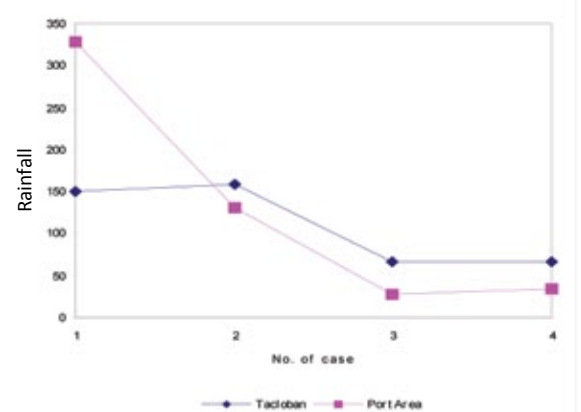
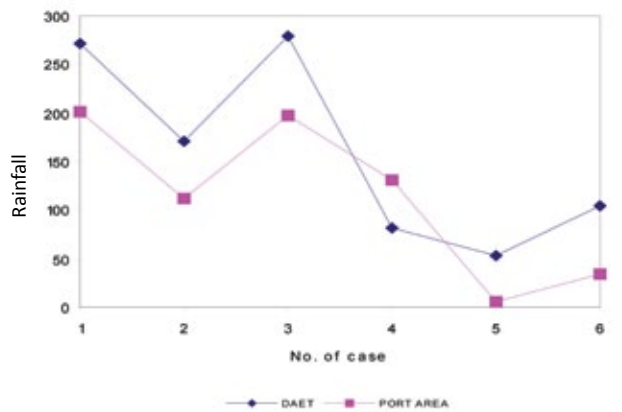
NOWCASTING OF TROPICAL CYCLONE RAINFALL IN METRO MANILA

ABSTRACT

Rainfall associated with tropical cyclone occurrence in Metro Manila was studied using Early Warning Area (EWA) where all the cyclone that traversed and moved in the Northwest direction within 12-16 °N latitude for the period of 17 years (1992-2008) were considered. This study is in response to the public demand for quantitative rainfall forecast for disaster mitigation and preparedness. It was accomplished by: 1) Reviewing the existing tropical cyclone climatology and forecast methodologies, 2) Developing a system that would convert information and transform all factors into rain rate, and 3) Documentation of the result using scientifically accepted format.

The result was obtained by comparison of the total tropical cyclone (10 cyclones) rainfall observed in five synoptic stations within the Early Warning Area, namely: Tacloban, Catarman, Virac, Legaspi, and Daet and the total rainfall that the cyclone brought in Metro Manila and recorded in Port Area. Statistical correlations were also obtained to determine the accuracy of the result.

The result showed that the rainfall in Daet (correlation coefficient = 0.88550) and Tacloban (correlation coefficient = 0.76994) have high potential for nowcasting of Metro Manila rainfall (see Figure below). Other stations like Virac, Legaspi, and Catarman have very low correlation coefficients. However, since the number of tropical cyclone cases being studied was very limited, it is recommended that further study be conducted.



MFO 4: Disaster Preparedness, Risk Mitigation and Other Services

A significant component of the IEC program of the agency was the active participation of PAGASA personnel as resource person in seminars, workshops, and other public gatherings organized by LGUs and NGOs and other disaster oriented organizations on such topics as hydrometeorological hazard, climate change, El Niño, La Niña, the agency's role in disaster preparedness and mitigation. A total of more than 86,407 persons in Metro Manila and in the provinces attended the different fora. In Astronomy a total of 17,251 students and science teachers attended as participants to planetarium lecture and shows and stargazing.

These activities have brought PAGASA closer to the public and likewise enhanced the participant's level of awareness on disaster reduction. Likewise, a total of 103,658 information materials such as pamphlet,

maps, poster, brochures, press releases, information materials on weather, flood, climate, astronomy and other related information on atmospheric science were distributed to the public to help sustain the agency's IEC campaign. Strengthening ties with the media also continued in support for a wider dissemination of hydrometeorological information.

The STRIDE Team also conducted on-the-spot investigation on the occurrence of Tropical Storm Ondoy and Typhoon Pepeng and made a comprehensive assessment of meteorological related damage on agriculture, fisheries, forestry, infrastructure and maritime industry and prepared reports on the characteristics and impacts of these phenomena. The Agency likewise participated in the National Science and Technology Week (NSTW).



COMPLETED PROJECTS

Upgrading of Baguio Radar for Enhanced Weather Forecasting and Typhoon Warning Services

ABSTRACT

The operation of the Doppler Weather Surveillance Radar Model DSWR-93 at Baguio is computer-based. It was procured in 1988 when computers were still using the low-end Microsoft "Disk Operating System" (DOS). Some of its parts needed upgrading to make it highly functional.

An attempt to replace the computer system of the radar with new computers (Pentium 4 Windows-based) did not work due to incompatibility with the hardware that resulted in the following:

- Industry Standard Architecture (ISA) bus is not designed for the operations of modern Pentium 4 computers, thus, rendering the new Pentium 4 to be ineffective aside from the fact that ISA Bus is no longer available in the local market.*
- The old video card (AT-VISTA) is not compatible with Pentium 4 computers.*
- The software, RADSYS 2000, is only operable with DOS 6.22 environment, thus incapable of displaying radar images.*

To support the Disaster Mitigation and Preparedness Program of the government, PAGASA needs to upgrade the obsolete software and hardware of its existing radar workstations. Coded messages of radar-observed weather systems and parameters are transmitted to the Meteorological Communication Section (MCS) located at PAGASA Weather & Flood Forecasting center for processing and analyses by operational weather forecasters. For operational forecasting or nowcasting purposes, these messages need to be presented in readily-understandable information. Development of software also needs to be undertaken. This will allow us to facilitate and fast-track the procedure in weather analyses and prediction and the preparation and formulation of forecasts and warnings for the public.

More importantly, radar imagery archiving and data storing coupled with regular synoptic weather and rainfall observation will be at a more acceptable and accessible format for research applications and for assimilation in numerical weather prediction models.



IMPROVEMENT OF FLOOD FORECASTING AND WARNING SYSTEM IN PAMPANGA AND AGNO RIVER BASINS

Phase 1 – Covering the Pampanga river basin has been completed and inaugurated by Her Excellency President Gloria Macapagal-Arroyo on 18 March 2009. The newly upgraded Pampanga FFWS is equipped with a network of monitoring facilities consisting of: – rainfall, – water level, – combined rainfall and water level and 3 repeater stations, a central station at the PAGASA Weather & Flood forecasting Center (WFFC) and monitoring stations at: Department of Public Works and Highways (DPWH), Office of Civil Defense (OCD), National Irrigation Administration

(NIA), National Power Corporation (NPC), and Pantabangan Dam Office.

The construction of the new FFWS Center in Pampanga province will facilitate the provision of timely forecasts while the newly upgraded FFWS will enhance the accuracy of flood forecasts in the Pampanga river basin and thereby improving the services of PAGASA in flood forecasting and warning. The project also provided the MIKE-11 software which is now being calibrated.



Phase 2 – Covering the Agno River Basin Preparatory works for the implementation of Phase 2 were conducted. Inauguration of the new Pampanga River Basin Flood Forecasting

and Warning Center. Shown in the figure are: The Philippine President, DOST Secretary, Japanese Ambassador, JICA Chief Representative and PAGASA Administrator.

Establishment of Early Warning and Monitoring System for Disaster Mitigation in the Philippines

ABSTRACT

One of the major operational service by the PAGASA is the flood forecasting and warning, one of the non-structural measures that complement the structural measures in flood disaster mitigation. This measure has gained popularity as the anticipated impacts of climate change are manifested in the occurrence of the extreme weather events such as floods. In recent years, there seems to be an increasing trend in the occurrence of flood and flashflood and it is important to factor in the participation of the community in mitigating the impacts of the hazard. This aspect is being addressed by the project in addition to the effective use of hydrological data and information for the provision of timely and useful flood warnings to mitigate flood damages, particularly loss of human lives.

Furthermore, the data and information derived from the project will also be utilized to provide climate outlook and advisories for development and planning processes.

The DOST-PAGASA /KOICA project “Establishment of Early Warning and Monitoring System for Disaster Mitigation in the Philippines”, to provide data and information on weather rainfall and water levels in rivers are now accessible in real time through the Early

Warning System (EWS) in the Province of Baler, Iloilo and Iligan. The data and information are available at the office of the Provincial Disaster Coordinating Council (PDCC) in Iloilo City and Baler while in Agus, Lanao, Iligan City at the office of the Mindanao Generation Office.



Dr. P. D. Nilo, Sec Estrella F. Alabastro, Hong Jong Former Ambassador of Korea and Mr. Kim In KOICA Representative



Cutting of Ribbon at the PDCC of Baler, From Left Mr. Kim In, KOICA Representative, Senator E. Angara, Mayor Angara of Baler, Ambassador Choi Joong-Kyung of Korea, Gov. Bellaflor Angara-Castillo and Secretary Estrella Alabastro

The project has been completed and inaugurated in the three (3) project sites as follows:

- Aurora and allied river basins – 27 February 2009 (Baler, Aurora)
- Jalaur river Basin – 15 May 2009 (Iloilo)
- Agus-Lake Lanao river basin – August 28, 2009 (Iligan City)



Unveiling of marker in Iloilo City with the Ambassador Choi Joong-Kyung, Sec. E. F. Alabastro, Mr. Kim In, Representative of KOICA, Asst. Sec. of DOST Carol M. Yorobe and Gov. Niel Topaz of Iloilo province



Ambassador Choi Joong-Kyung, Sec. E. F. Alabastro, Mr. Kim In, Representative of KOICA, and Dr. Prisco D. Nilo inauguration held at Agus-Lanao watershed, Maria Cristina, Iligan City

Project Aurora: Bagong Sigla Kabalik at PAGASA-Disaster Mitigation Through the Study of Rainfall Distribution Associated with Flooding Using the Radar Data

The operation of Doppler Weather Surveillance Radar Model DSWR-88 at Baler, Aurora is also computer-based. It was procured last 1988 when computers still using low-end DOS. In 2008 some of its parts are not functioning in its required efficiency. Replacing the integrated computer system of the radar with new computers, the PAGASA also needs to upgrade the obsolete software and hardware of its present radar workstations. This will allow PAGASA to facilitate and fast-track the procedure in weather analysis and

prediction and the preparation and formulation of forecasts and warnings. With a functional Doppler Radar system at Baler, Aurora; it optimizes utilization of Doppler Radar feature for now-casting meso-scale systems, typhoon and flood forecasting and warning; rainfall forecasting based on radar observation; Improved weather prediction models; Improved area-specific forecasting and early warning capabilities and; enhances software formulated to display coded messages from radar observation.



Acquisition of DA's VSAT Facility (donation)

VSAT stands for "Very Small Aperture Terminal" communication system, where receive/transmit terminals are installed at various sites connecting to a central hub via satellite using small diameter antenna dishes (.75 to 3.8 meter). It is a satellite-based communication system that offers flexible and reliable communications solutions including Enterprise Wide Networking with high reliability and a wide reach that extend even to remote sites. VSAT technology represents a cost effective solution for users seeking an independent communications network connecting a large number of geo-geographically dispersed sites. VSAT networks offer value-added satellite-based services capable of supporting the Internet, LAN, voice/ fax communications, video, security, and provide powerful, dependable private and public network

A Deed of Donation was formalized by the Department of Agriculture (DA) and the Department of Science and Technology (DOST) – PAGASA last 2008 whereby the VSAT equipment owned and operated by the DA was transferred to PAGASA DOST to augment its telecommunications facilities for the efficient operation of its Doppler radar stations. The VSAT system was acquired by the DA under the Agriculture and Fisheries Modernization Act (AFMA) to provide voice and internet communications to various Regional Field Units (RFUs). The system was valued at around 70 million pesos at the time of

purchase. The winning contractor Sumitomo Corporation sourced the entire system from NSI Canada, now Polarsat Inc. also based in Montreal, Canada.

Due to limited budget, PAGASA has decided to initially install the main hub and five remote sites at this time. The main hub will be located at the PAGASA DIC along Agham Road. The five remote sites were installed at Tuguegarao, Baguio, Baler, Legaspi and Davao. These five remote sites have existing infrastructure and building facilities.

The transport of data and images from radar sites has always been a problem due to lack of commercial telecom facilities. Our present MTS network cannot cope with the increasing requirement for connectivity of existing and additional radar sites. This timely implementation of the VSAT project will provide direct connectivity to present and future radar installations. Satellite technology utilizes a single point of contact with only the space satellite as its relay. The future provision of additional funding for the procurement of modules and parts will complete the communication support for the rest of the existing and planned radar installations.



ON-GOING PROJECTS

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 consists of C-Band Doppler and S-Band Doppler weather stations at People's Park in the Sky at Tagaytay and at Sta. Rita Hill SBMA, Zambales. It aims to utilize Doppler weather radar for weather surveillance typhoon tracking and rainfall estimation that are essential for natural hazards

prevention, preparedness and mitigation from the national level up to the countryside.

Completed the construction of Subic powerhouse, radar control room and radar technicians/observers' quarter; and installation of Doppler Radar is ongoing. While Tagaytay radar building construction and radar tower installation for Doppler radar antenna are ongoing.



Tagaytay Radar Station



Broadband equipment installed at PAGASA-Telof site, Tagaytay; the system currently supports Tagaytay of NAIA-DIC link



Subic Radar Station



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

Ongoing establishment of Doppler radar stations at Tampakan, South Cotabato and Agusan provinces 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 among others. Also part of the project is the establishment of the regional center in El Salvador, Cagayan de Oro, installation of 12 automatic weather station (AWS) installed in selected areas in Mindanao and acquisition of 10 vehicle (8 motorcycles and 2 trucks).



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

Establishment of a Doppler Weather Surveillance Radar (DWSR) station in Cebu will provide valuable data to real-time forecasters of PAGASA Regional Services Center (PRSC)-Visayas. Located at Cebu, and its weather observation station network in Visayas Regions, it will provide a wide range of operational services. It is

expected to improve short to medium range numerical weather forecasts and support a data archiving scheme in an integrated data bank. The construction of the building is on-going. Expected delivery of the Doppler radar is on July 2010 and is expected to be operational by end of 2010.

Improvement of Meteorological Radar Network in the Philippines

Involves the acquisition and installation of equipment and facilities for 3 Doppler radar systems, enhancement of knowledge and capacities of weather forecasters, development or improvement of forecasting techniques for rainfall, flash floods and landslides and strengthening of warning dissemination and communication to improve the forecasting and warning systems of PAGASA for typhoons, monsoons and other weather disturbances. It aims to reduce loss of lives and damage to properties due to the occurrence of typhoons, monsoons and other weather disturbances in the country.



The project has completed the basic design. The preparation of technical Bid document for Doppler radars funded under JICA Grant Aid is on-going.

S & T HUMAN RESOURCES DEVELOPMENT

PAGASA continues to develop its manpower resource to provide an adequate pool of highly qualified and well-trained scientists, technical and administrative personnel for effective and efficient delivery of services.

During the year, under the PAGASA scholarship program, 3 of its employees, 4 personnel of other countries and 3 from other institutions were enrolled

for post-graduate at the University of the Philippines. Personnel from other national weather service's in the Asian region were also given scholarships. Two (2) are enrolled in Doctoral degree and ten (10) in Masteral degree Program, while twenty-one (21) PAGASA scholars pursuing a Masteral degree are supported by DOST-SEI and DOST-HRDP programs. Table 2 and 3 shows the list of the PAGASA scholars for 2009-2010.

Table 2: PAGASA SCHOLARS for CY 2009-2010

NAME	PROGRAM	UNIVERSITY	STATUS
FULL SCHOLAR:			
1. Ms. Thet Htar Su Hlaing (Myanmar)	M. Sc. Meteorology	U.P. Diliman	On-going
2. Ms. Zin Mie Mie Sein (Myanmar)	M. Sc. Meteorology	U.P. Diliman	On-going
3. Mr. Joseph Q. Basconillo	M. Sc. Meteorology	U.P. Diliman	On-going
4. Mr. Nikos Viktor B. Peñaranda	M. Sc. Meteorology	U.P. Diliman	On-going
5. Ms. Ronalyn L. Vergara	M. Sc. Meteorology	U.P. Diliman	On-going
PARTIAL SCHOLAR:			
1. Ms. Shirley J. David	Ph. D. Statistics	U.P. Diliman	On-going
2. Ms. Esperanza O. Cayanan	Ph. D. Meteorology	U.P. Diliman	On-going
3. Mr. Bernie de Leon	M. Sc. Meteorology	U.P. Diliman	On-going
4. Mr. Aldczar Aurelio	M. Sc. Meteorology	U.P. Diliman	On-going
5. Mr. Joel C. Jesusa	M. Sc. Meteorology	U.P. Diliman	On-going
GRADUATED:			
1. Dr. Landrico Dalida Jr.	Ph. D. Meteorology	U.P. Diliman	Graduated
2. Khin Win Maw (Myanmar)	M. Sc. Meteorology	U.P. Diliman	Graduated
3. Jamyang Phuntshok (Bhutan)	M. Sc. Meteorology	U.P. Diliman	Graduated



MPM-TED Batch 3 with former DOST Undersecretary Dr. Amelia C. Ancog and ASOG Communications Head, Ms. Amihan R. Perez.



Dr. Merriam Carbonel graduated in Public Administration last March 30, 2009 in Bicol University, Legazpi City.

Table 3 LIST OF SCHOLARS SUPPORTED BY DOST

Ateneo de Manila University
(Master of Science in Atmospheric Science)
Science Education Institute (SEI),
Department of Science and Technology (DOST)

Ateneo de Manila University
Ateneo School of Government
(Master in Public Management specialized on
Technology-Based Enterprise Development)
Human Resource Development Program
(HRDP)- DOST

NAME	DIVISION/STATION
1. Allan Julius S. ALCARAZ	RDTD
2. Armando D. AVENILLA, Jr.	Baler, Aurora
3. Marcos D.P. BACANI	ETSD
4. Michael S. BALA	RDTD
5. Rolymer P. CANILLO	WD
6. Samuel F. DURAN	General Santos City
7. Jose P. FRIVALDO Jr.	Zamboanga City
8. Juanito S. GALANG	RDTD
9. Maria Joy A. IGLESIAS	FPMD
10. Jori J. LOIZ	WD
11. Anthony Joseph R. LUCERO	CAD
12. Julie M. NIMES	Virac Station
13. Sonny N. PAJARILLA	Borongan, Samar
14. Shiela S. SCHNEIDER	HMD
15. Wilfredo H. TUAZON	RDTD
16. Reynaldo L. YOSORES	Lanao Del Norte

NAME	DIVISION
1. Rosalie M. AGUILAR	AD
2. Flordeliza CLEMENTE	RDTD
3. Veronica A. CHIN	ETSD
4. Jorybell A. MASALLO	FPMD
5. Noel G. RAMOS	FPMD


TRAINING FOR CAPACITY BUILDING

Believing that the success of each organization lies in its human and financial resources, PAGASA developed its own human resource development agenda which aims to help its personnel grow personally and professionally. A total of 142 personnel attended trainings and workshops, while

68 officials and employees participated in international trainings and conferences. Table 4, 5 and 6 list the various trainings, seminars, conferences and meetings attended by PAGASA officials and employees here and abroad. Table 6 shows the in-house training courses, seminars and workshops conducted by the agency.

Table 4: Workshop/Training/Seminar/Colloquium/Meeting/Conferences Participated in PAGASA Personnel

NAME	TITLE	DATE & VENUE
Mario I. Dungca Antonio O. Villegas Jose G. Perin Hilton T. Hernando Berlin V. Mercado Remillo I. Bautista Socrates F. Paat, jr. Rolando Pajuyo John Dabu Federico Q. Osquiza Bienvenido M. Estacio Nestor Mangosong Edwin B. Bermillo	Training on the Operation and Maintenance of the Newly Installed FFWS Equipment and Facilities	09 – 27 February PAGASA

NAME	TITLE	DATE & VENUE
Ma. Cecilia A. Monteverde Oskar D. Cruz Socrates F. Paat, Jr. Hilario DG. Esperanza	East & South East Asia Regional Seminar on Flood Hazard Mapping	17 – 19 February Metro Manila
Lynne T. Gonzales Joselyn Lorenza Cayabyab	Seminar-Workshop on Records Disposition Administration	17 – 19 February Davao City
Dario R. Espe	Certificate Course on Basic Mediation – Level I	02 – 04 March Quezon City
Edna L. Juanillo Venus R. Valdemoro Melanie R. Aquino Thelma A. Cinco Marilou D. Carpio Ma. Jannylyn C. Damasco	Women Entrepreneurship Summit	02 March World Trade Center
Prisco D. Nilo Nathaniel T. Servando Nathaniel A. Cruz Carina G. Lao Catalino L. Davis Flaviana D. Hilario Alan L. Pineda Lucrecio O. About, Jr. Cynthia P. Celebre Landrico U. Dalida, Jr. Susan R. Espinueva Vivien s. Esquivel Calil H. Hadjilatip Edna L. Juanillo Nancy T. lance Marino L. Mendoza Ma. Cecilia A. Monteverde Nestor B. Nimes Julie M. Nimes Edino Nonato L. Nolasco Bonifacio G. Pajuelas Romeo M. Pelagio Robert Z. Quinto Ninio A. Relox Lourdes R. Sulapat Elena V. Tan	76th Annual Meeting of the National Research Council of the Philippines	11 March Manila Hotel
		
<p><i>Graduate Certificate Course on Corruption Prevention School of Public and Development Management</i></p>		
Judith T. Bomediano Claro Jesus M. Capulong Edino Nonto L. Nolasco	Management Program on E-Governance (MPEG) – Batch 2 FY 2009	Commencing 31 March On-line
Carina G. Lao Margaret P. Bautista Leonida S. Santos	UP Institute of Civil Engineering Seminar on Disaster Mitigation in the Philippines	05 March Sulo Hotel, QC
Alan L. Pineda Thelma A. Cinco Romeo M. Pelagio Sharon Juliet M. Arruejo	Sentinel Asia Success Story in the Philippines Workshop	20 March Makati City
Maribel Enriquez Leo a. Buñag	Joint RPOC-RDCC Meeting	24 March Pagadian City

Jorybell A. Masallo Roque E. Adora	Workshop on Basic Photography	03 – 04 April Intramuros, Manila
Nathaniel Servando Ma. Cecilia Monteverde	Enhancing Communities Capacity to Confront Extreme Geo-Meteorological Events at the Core of Climate Change	30 April Zamboanga City
Landrico Dalida	1st Exercise Planning Team (EPT) Meeting for ARDEX '09	08 – 10 May Batangas City
Shirley David	1st S&T Researchers Database Meeting	12 May UP, QC
Alfredo Quiblat	Senior Staff Meeting and the Presentation of the Automatic Weather Alert Radio System Project	14 May Taguig City
Wily Evangelista	Basic Occupational Safety and Health Training for Supervisors	25 – 29 May Quezon City
Claro Jesus Capulong Rene Gumapal	DOST Network and Multimedia Training	01 – 02 June Quezon City
Delia Basco	Mid Year Convention Cum-seminar on Good Governance	19 June Pasay City
Dario Espe	Certificate Course on Basic Mediation – Level II	20 – 21 Jun Cebu City
Mark Arceo Noel Villar	Free Training on Advanced features of MS Word, MS Excel and MS Power Point	22 June Quezon City
Chona Dionisio Lynne Gonzales	Philippine Records Management Association's 12th National Convention	24 – 26 June Manila
Yolanda Ordoñez	Seminar on Understanding, Auditing and Updates on Government Procurement System	12 – 14 Aug Quezon City
Liceria dela Cruz	Property Management System (Appraisal & Disposal) Seminar	02 – 04 Sep Quezon City



Basic Photography at Photoworld Manila



**Table 5: FOREIGN FELLOWSHIPS/TRAINING/WORKSHOPS/SEMINARS
Participated in by PAGASA Personnel**

NAME	TITLE	DATE & VENUE	SPONSOR
Fredolina D. Baldonado	Workshop for Development of Tsunami Propagation and Run-up/Inundation Model Capability	12 to 16 January Singapore	ASEAN
Meliton Pio F. Guzman	Last phase of the Japan Aerospace Exploration Agency (JAXA)	12 January to 13 February Thailand	Asian Institute of Technology (AIT)
Flaviana D. Hilario	3rd GEOSS Asia Pacific Symposium 4th Meeting of the GEOSS Asia Water Cycle Initiative (AWCI) International Coordination Group (ICG)	04 to 07 February (successively) Both in Kyoto, Japan	Asia Pacific Network for Global Change Research
Sharon Juliet M. Arruejo	4th Sentinel Asia System (SAS) Operation Training	10 to 12 February Vientiane, Lao P. D. R.	Sentinel Asia Secretariat
Robert Z. Quinto Lourdes R. Sulapat Florencio G. Fabile, Jr.	Remote Sensing for Disaster Management in South East Asia Workshop	04 to 06 February Bangkok, Thailand	Geo-Informatics and Space Technology Development Agency (GITSDA)
Fernando R. Cada	Capacity-building activities of the Tokyo Climate Center of the Japan Meteorological Agency	09 to 27 February Tokyo, Japan	Ministry of Land, Infrastructure, Transport and Tourism of Japan
Esperanza O. Cayanán	Research enrichment program (Sandwich Program)	17 February to April Taiwan	ASTHRDP Fund
Niño A. Relos	Training Program on Disaster Prediction and Warning System	05 to 20 March Korea	Korea International Cooperation Agency
Thelma A. Cinco	South East Asian Regional Workshop on Climate Change Scenario	16 March Hanoi, Vietnam	Japan International Cooperation Agency (JICA) and the Ministry of Natural Resources and Environment of Vietnam
Vicente V. Malano Roberto S. Sawi Joel C. Jesusa	1st Training and Research Coordination Group (TRCG) Technical Forum	12 to 15 May Jeju, Republic of Korea	Korea Meteorological Administration for Dr. Malano, and by the Typhoon Committee Trust Fund (TCTF) for Messrs. Sawi and Jesusa
Edino Nonato L. Nolasco	Global Precipitation Measurement (GPM) Asia Workshop on Precipitation Data Application Technique	13 to 15 May Japan	Japan Aerospace Exploration Agency (JAXA)
Flaviana D. Hilario Edna L. Juanillo Rosalina G. de Guzman Daisy F. Ortega	- Final workshop of the Australian Center for International Agricultural Research (ACIAR) - World Meteorological Organization (WMO) Workshop on the Content, Communication and Use of Weather and Climate Products and Services for Sustainable Agriculture	15 to 17 May 18 to 20 May Both in Australia	ACIAR project entitled "Bridging the Gap Between Seasonal Climate Forecasts in the Philippines and Australia"
Thelma A. Cinco Cristina C. Uson	High resolution climate modeling of climate change over the Indonesian Region workshop	16 – 31 May	Australia Spanish Government
Flaviana D. Hilario	1-week visit to the CSIRO Marine and Atmospheric Research (CMAR) Apendale for the summary workshop on climate change	25 to 31 May Australia	Spanish Government
Analiza S. Solis	Capacity Development for Adaptation to Climate Change in Asia – Climate Change Analysis	20 May to June 20 Japan	JICA
Rusy G. Abastillas	Training Workshop on Climate Variability and Prediction for South Asia and Eastern Southeastern Africa	22 to 29 June Hanoi, Vietnam	University Corporation for Atmospheric Research (UCAR)



AUSTRALIA



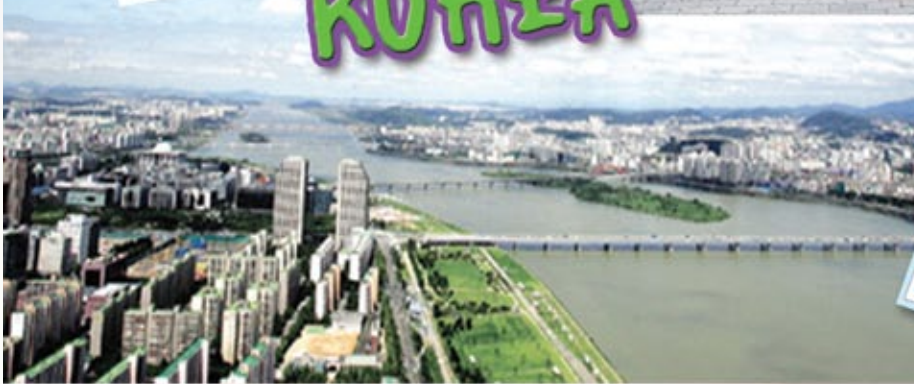
HAWAII



MALAYSIA



KOREA





JAPAN



ITALY



Renito B. Paciente	Training on Ocean Observation and Hydrographic Survey	06 to 25 July Korea	KOICA
Rosalie C. Pagulayan	Regional Learning Workshop on Early Warning Systems	26 to 30 July Dhaka, Bangladesh	ADPC
Rosalina G. de Guzman	Workshop on Climate Change & Disaster Risk Reduction	01 to 15 Aug. Nathiagali, Abbottabad, Pakistan	ADPC
Ana Liza S. Solis	Workshop on “High Resolution Climate Modeling	10 to 14 August Trieste, Italy	International Centre for Theoretical Physics (ICTP)
Samantha Christine V. Montero	Training Course on “Analysis of Communication Ocean and Meteorological Satellite (COMS) Data	03 to 24 Sep	KOICA
Maria Cristina C. Uson	Training Seminar on the Quality Control & Interpolation System used in APHRODITE Gridding Analysis	07 – 11 Sep Japan	Research Institute for Humanity and Nature
Arnel R. Manoos	WMO-ITU Seminar on the Use of Radio Spectrum for Meteorology: Weather, Water and Climate Monitoring and Prediction	16 to 18 Sep Switzerland	PAGASA
Salvador Eleuterio B. Javier Fernando R. Cada	Training Workshop on Climate Applications in Association of Southeast Asian Nations (ASEAN)	05 to 09 Oct. Malaysia	Japan - ASEAN
Thelma A. Cinco Emma D. Ares	ASEAN Regional Workshop on Providing Regional Climates for Impacts Studies (PRECIS)	12 to 15 Oct. Kuala Lumpur, Malaysia	British Government and Spanish Government
Maria Corazon L. Samar Cynthia O. Iglesia	Seminar on Information Services in Developing Countries	12 Oct. to 08 Nov Nanjing, China	Ministry of Commerce of China
Edna L. Juanillo	International Workshop on “Futures of Low Carbon Society: Scenarios for Asia Pacific	02 to 04 Nov Phuket, Thailand	Thai Government
Robert Z. Quinto Connie Rose S. Dativas	China-ASEAN Workshop on Disaster Early Warning and Space Technology Application	08 to 11 Nov Beijing, China	National Disaster Reduction Center of China (NDRCC)
Nancy T. Lance Rosalie C. Pagulayan	Training Course on Integrated Water Resource Management (IWRM)	08 to 14 Nov Korea	IWRM
Renito B. Paciente Salvador Eleuterio B. Javier	Roving Seminar 2009	16 to 19 Nov Nanjing, China	TCTF -WMO
Susan C. Flores	International Training Course on Agrometeorology	16 Nov to 04 Dec Nanjing, China	WMO
Bonifacio G. Pajuelas Bernie R. De Leon	Annual Modeling/ Workshop entitled “Modeling and Understanding High Impact Weather”	30 Nov to 02 Dec Melbourne, Australia	Spanish Government
Fraviana D. Hilario	Inter-regional Workshop on Indices and Early Warning Systems for Drought	08 to 11 Dec Nebraska, USA	WMO
Ana Liza S. Solis	Training Seminar on Climate Analysis Using Reanalysis Data Visit to the Meteorological Research Institute (MRI)	01 to 04 Dec Japan 07 to 10 Dec Japan	JMA
Karl Alexander P. Vasquez Shirley J. David Alfredo F. Quiblat, Jr Danilo F. Cambay Mario P. Palafox Gener M. Quitlong Fulgencio A. Austria, Jr Maximo F. Peralta	Training on Doppler Radar Operation, Maintenance and Interpretation	06 Dec to 04 Jan Taiwan	HRD and NSC
Ms. Maria Cristina C. Uson	International Workshop on Data Rescue (DARE)	07-11 Dec Indonesia	Meteorological Klimatologi Dan Geofisika (BMKG)
Dr. Carina G. Lao Ms. Venus R. Valdemoro	Asian Meteorological Partnerships and Cooperation Enhancement Training Workshop	21-23 Dec Korea	KMA



TAIWAN



INDONESIA

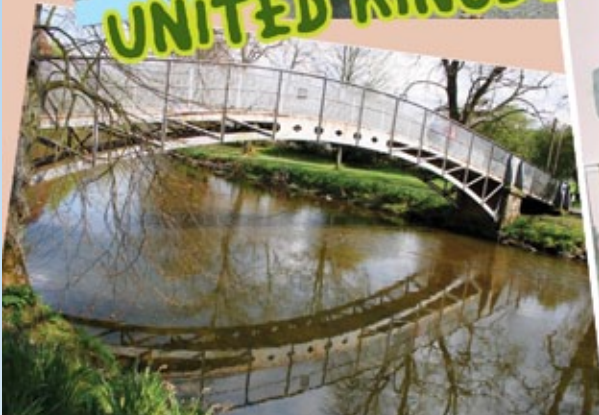


Table 6: Meeting/Conference/Symposium/Activity/Forum/Session Participated in by PAGASA Personnel

NAME	TITLE	DATE & VENUE	SPONSOR
Susan R. Espinueva	International Forum of Meteorological Societies and the American Meteorological Society (AMS) Annual Meeting 2009	11 to 15 January Phoenix, Arizona, USA	World Meteorological Organization (WMO)
Cynthia P. Celebre	-Opening Ceremony of the International Year of Astronomy (2009) -International Astronomical Union (IAU) Symposium	15 to 16 January 19 to 23 January Both in Paris, France	United Nations Educational Scientific and Cultural Organization (UNESCO) and PAGASA
Prisco D. Nilo Venus R. Valdemoro	41st Session of ESCAP/WMO Typhoon Committee	19 to 24 January Chiang-Mai, Thailand	PAGASA (PDN) Philippine Typhoon Committee Foundation, Inc. (TCFI) & the Philippine Science Journalists Association, Inc. (PSciJourn)
Flaviana D. Hilario	4th Sentinel Asia System (SAS) Operation Training	23 to 28 February New Delhi, India	WMO – airfare Indian Met Society - DSA
Susan R. Espinueva	Conference on Responding to Flooding – Improving the Preparation & Response	26 to 29 January Sussex, UK	Wilton Park of UK
Rosalina G. de Guzman	Meeting of the Commission for Agricultural Meteorology (CAgM) Team on Drought and Extreme Temperatures: Preparedness and Management for Sustainable Agriculture, Rangelands, Forestry, and Fisheries	16 to 19 February Beijing, China	World Meteorological Organization (WMO)
Prisco D. Nilo	First Session of the Committee on Disaster Risk Reduction	25 to 27 March Thailand	PAGASA
Nathaniel T. Servando	Meeting of the Ad Hoc Working Groups on Long-Term Cooperation and the Kyoto Protocol	29 Mar to 08 April Bonn, Germany	PAGASA
Nathaniel T. Servando	31st Meeting of the South East Asian Nations (ASEAN) Sub-Committee in Meteorology & Geophysics	08 to 10 April Thailand	DOST-GIA Project - PAGASA
Edna L. Juanillo	Fifth Session of the Forum on Regional Climate Monitoring, Assessment and Prediction for Asia (FOCRAM)	06 to 08 April Hangzhou, China	Beijing Climate Center (BCC)
Nathaniel A. Cruz	RA V Technical Conference	20 to 24 April Malaysia	World Meteorological Organization (WMO)
Vicente B. Malano	9th Group on Earth Capacity Building Committee Meeting (GEO)	27 – 28 April Athens, Greece	European Committee
Catalino L. Davis	Global Disaster Alert and Coordination System (GDACS) Global Stakeholders Meeting	28 – 29 April Switzerland	Emergency Relief Coordination Center
Prisco D. Nilo	2nd Bilateral Working Group Meeting	09 to 12 May Korea	Korea Met Agency
Nathaniel T. Servando	57th Meeting of the ASEAN COST and other related meetings	25 to 27 May Bali, Indonesia	Department of Science and Technology (DOST)
Nathaniel T. Servando	United Nations Framework Convention on Climate Change (UNFCCC) Meetings	05 to 12 June Bonn, Germany	DOST-GIA project of the International Technology Cooperation Unit (ITCU) entitled “Strengthening and Maximizing Benefits from Bilateral & Multilateral Linkages.”
Nathaniel T. Servando	Study tour to Germany on climate protection policies and science, renewable energies and environment	21 – 28 June Germany	German Technical Cooperation
Nathaniel A. Cruz Vicente B. Malano Sylvia N. Davis Ricardo A. Mercado Willy f. Evangelista Eufonio H. Garcia Danilo F. Cambay Erie S. Estrella Romeo M. Pelagio Edwin F. Manresa Arnel R. Manos	5-day factory visit (Radar)	22 – 26 June U. S. A.	Enterprise Electronics Corporation & Construction, Inc.



UNITED KINGDOM



ALABAMA





Daisy F. Ortega	Tokyo Climate Conference	06 – 08 July Japan	JMA
Renito B. Paciente	Ocean Observation & Hydrographer Survey	06 to 25 July Korea	KOICA
Flaviana D. Hilario	Annual AOEC Climate Symposium	12 to 15 July Singapore	Spanish Government & APEC Fund
Prisco D. Nilo Nathaniel T. Servando Catalino L. Davis Fredolina D. Baldonado Ceferino T. Hulipas Raymund Gerard L. Ordinario Manule P. Mendoza Gaspar B. Salaguste Allan T. Almojuela Lillibeth B. Gonzales Fulgencio A. Austria, Jr. Oscar C. Tabada Marianito A. Macasa Diosdao S. Ornum Gerry S. Pedrico	5-day factory visit (radar) 	13 to 17 July U. S. A.	Enterprise Electronics Corporation & Construction, Inc. 
Prisco D. Nilo	13th Session of the Intergovernmental Consultative Committee (ICC) on the Regional Space Applications Programme for Sustainable Development (RESAP)-cum Expert Group Meeting	20 to 22 July Bangkok, Thailand	UNESCAP
Edna L. Juanillo	Climate Field School & Validation of ASEAN Regional Climate Model 2009	11 to 13 Aug. Surabaya, Indonesia	BMKG
Nathaniel Servando	Pre-meeting for the 2nd Joint Science & Technology Cooperation	31 Aug – 02 Sep Taiwan	National Science Council
Prisco D. Nilo Flaviana D. Hilario	World Climate Conference-3	31 Aug – 04 Sep Switzerland	Spanish Government – Strengthening the Phils. Institutional Capacity to Adapt to Climate Change
Nathaniel T. Servando	– 9th Session of the Ad Hoc Working Group on Long-Term Cooperation Action (AWG-LCA) and 7th Session of the Ad Hoc Working Group on Kyoto Protocol (AWG-KP) – Disaster Risk Hyperbase (DRH) Workshop and ASEAN-DRH Session in Introduction to Intergrated Disaster Risk Management (IDRIM) Forum	28 Sep to 09 Oct Thailand 12-15 Oct Japan	DOST-GIA JSPS
Rosalina G. De Guzman	31st Session of the Intergovernmental Pane on Climate Chang (IPCC); 11th Session of the Working Group I of the IPPC; 9th Session of Working Group II of the IPPC; and, 10th Session of Working Group III of the IPPC.	26 to 29 Oct Indonesia	IPPC
Nathaniel T. Servando	ASEAN COST Sub-Committee Meeting	01 to 02 Nov Singapore	DOST-GIA
Nathaniel A. Cruz	International Symposium on Radar and Modeling Studies of the atmosphere.	10 to 13 Nov Japan	Research Institute for Sustainable Humanosphere (RISH)
Vicente P. Palcon, Jr.	Regional Association V (RA V) Sub-Group on Global Telecommunication System- Information and Services System (GTS-ISS)	02 to 05 Dec Hawaii	WMO
Edna L. Juanillo	– 5th Meeting of the Global Earth Observation System of Systems (GEOSS) Asia Water Cycle Initiative (AWCI) International Coordination Group (ICP) – Satellite data Training Course and Workshop	15 to 17 Dec 17 to 18 Dec Japan	APN (the Asia-Pacific Network for Global Change Research)

Table 7: In-house training conducted by PAGASA

TITLE	NUMBER OF PARTICIPANTS
Training on ALOS Image Processing for Hazard Map Application	14
Training Seminar on the Principles of Atmospheric Thermodynamics and its applications	23
Training workshop on STRIDE	30
PAGASA and NAMRIA Leveling of Understanding Session (Orientation Seminar on Data and Instrument Equipment Used in Weather Forecasting and Orientation Seminar on GPS Meteorology)	27
Extreme Weather Observation Protocol for S & T Officers (3 batches)	88
Orientation Seminar on ISO 9001:2008 and Documenting the QMS on ISO9001:2008	26
Training on the Enhancement of Tropical Cyclone Early Warning System	35



INTERNATIONAL AND LOCAL S & T LINKAGES AND NETWORKING

Linkages and collaboration are two important things for PAGASA's success. Strengthening partnership and establishing new ones are worthwhile endeavours that enable PAGASA to achieve its major final output (MFO) every year. For these initiatives, PAGASA

realizes its mission of leading and partnering with public and private institutions in generating S & T policies, strategies and technologies that will contribute significantly to the national economy.

EAST AND SOUTHEAST ASIA REGIONAL FLOOD HAZARD MAPPING SEMINAR

On 17 – 19 February 2009, the DOST-PAGASA hosted the East and Southeast Asia Regional Flood Hazard Mapping Seminar aimed to strengthen the capacity of professionals who have acquired trainings in Japan and an avenue to share experiences on flood hazard mapping techniques and flood disaster management tools. Eight (8) countries from East and Southeast Asia participated in the seminar as follows: Bangladesh, China, Indonesia, Malaysia,

Vietnam, Cambodia Laos and the Philippines. Representatives from the Typhoon Committee and the Infrastructure Development Institute (IDI) of Japan attended the seminar. The seminar was sponsored by the International Centre for Water Hazard and Risk Assessment (ICHARM), Public Works Research Institute (PWRI), and JICA in coordination with the Government of the Philippines.



Guests and participants in the East and Southeast Asia Regional Flood Hazard Mapping Seminar held in Manila on 17-19 February 2009

INTERNATIONAL YEAR OF ASTRONOMY (IYA) 2009 HELD AT THE MALL OF ASIA

The United Nations declared 2009 as the International year of Astronomy (IYA 2009). One of the concerns and interests of the celebration are the space weather and its possible implications on the climate on earth.

The IYA 2009 celebrates the first use in astronomy of the telescope developed by Galileo, which is a momentous event that initiated 400 years of astronomical discoveries and triggered a scientific revolution that profoundly affected our world view.



Now telescopes on the ground and in space explore the universe, 24 hours a day, across all wavelengths of light. The President of the International Astronomical Union (IAU) Dr. Catherine Cesarsky says that “the International Year of Astronomy 2009 gives all nations a chance to participate in this ongoing exciting scientific and technological revolution”.

The IYA2009 will highlight global cooperation for peaceful purposes – the search for our cosmic origin and our common heritage which connect all citizens of planet Earth. For several millennia, astronomers have worked together across all boundaries including geographic, gender, culture and race, in line with the principles of the UN Charter. In that sense, astronomy is a classic example of how science can contribute towards strengthening international cooperation.

The IYA 2009 is, first and foremost, an activity for the citizens of planet Earth. It aims to convey the excitement of personal discovery, the pleasure of sharing fundamental knowledge about the universe and our place in it, and the merits of the scientific method. Astronomy is an invaluable source of inspiration for humankind throughout all nations.

Among the activities lined up in the Philippines for the yearlong observance of IYA 2009 include the following: a) from Earth to Universe Exhibit which was hosted by the Mall of Asia for the month of February 2009 and then transferred to other venues in the country in succeeding months, b) Astro Olympiad conducted at the regional level and finally at the national level, c) Galileo Teacher Training on the use of the Galileo telescope, d) National Astronomy Congress hosted by Rizal Technological University and attended by students, e) Sidewalk astronomy where telescopes were set up in various parts of the country for viewing by students and others interested in astronomy.

The kick off ceremony to open the celebration of IYA 2009 was held on February 16, 2009 at the Mall of Asia. DOST Secretary Estrella F. Alabastro delivered a message during the ceremony. Excerpts of her message are quoted as follows:

“The world celebrates this year, the International Year of Astronomy 2009, that aims to bring to fore, the importance of science and the field of astronomy and the significance of its role in catalyzing international cooperation in the quest for knowledge and information about the world that we live in and the universe that our world is part of.

At the international level, IYA2009 is being spearheaded jointly by the International Astronomical Union (IAU) and the United Nations Educational, Scientific and Cultural Organization (UNESCO), with eight (8) major goals and objectives that include actions ranging from efforts to increase scientific awareness on science, to provide for better and wider access to knowledge and information, to the preservation and protection of the world’s cultural and natural heritage.

Ceremonies that ushered in the start of activities by the international community commemorating IYA 2009 was held in Paris in mid-January, which found representatives from 140 nations participating in the eventful kick-off activities that highlighted the latest in astronomical discoveries, the role of astronomy in culture and public engagements, and real-time astronomical observations, among others.

At the national level, the Department of Science and Technology is in the forefront of activities, with the support and cooperation of concerned agencies of government and state universities. A national organizing committee chaired by the Director of PAGASA, has been commissioned to plan for and

oversee activities during the year-long celebration. Part of the promotion of science activities that are being lined up include exhibits that highlight the work of astronomy enthusiasts, national astronomy Olympiad, nationwide series of lectures, "sidewalk" astronomy observing event, teachers' training program, national astronomy congress, and an information and education campaign. Details concerning the holding of these activities will be made available and disseminated by the Committee in appropriate announcements.

To give significance to the country's celebration of IYA2009, the national opening day for the year-long event has been made to coincide with the National Astronomy Week held every third week of February. As lead government agency for IYA2009, the DOST has committed some resources, through its Grant-in-Aid program, to support IYA2009 activities, in partnership

with the Rizal Technological University (RTU). It is noteworthy to mention that the RTU is the first university in the country to offer Baccalaureate and Masteral Degree courses in Astronomy; for which, I extend to them my congratulations.

IYA 2009 does not end this year. Follow up activities will continue through 2010. The organizers will assess performance at all levels, including public perception of the IYA2009 experience and science awareness.

As in the other fields of science, Astronomy will always be part of our lives and there is no doubt that this year's celebration of IYA2009 will even impact more on our lives, through a better understanding and appreciation of the science. Hand in hand, let us discover our universe and see the infinite wonders of the majestic night sky. It belongs to us, as it is where we all belong.

ACTIVITIES UNDERTAKEN IN LINE WITH TASK FORCE ON CLIMATE CHANGE (E.O. 774)

- ▶ Mainstreaming of Climate Change into Plans and Programs of PAGASA
- ▶ Preparation of a ROAD MAP TOWARDS A WORLD-CLASS ATMOSPHERIC/ METEOROLOGICAL-HYDROLOGICAL AGENCY
- ▶ Attended the following meeting/training/seminar/workshop:
 - Oversight Committee meeting (stock-taking exercise to assess current climate change adaptation and disaster risk reduction policies and programs being undertaken by the government agencies.



- Meeting on Capacity Assessment (MDG-F 1656: Strengthening the Philippines' Institutional Capacity to Adapt to Climate Change), May 04, 2009 at Astoria Hotel. Pasig City.
- Training of Trainers on Capacity Assessment and Competency Development of the MDG-F 1656: Strengthening the Philippines' Institutional Capacity to Adapt to Climate Change' conducted by NEDA under the MDGF project. Final outputs of the TOT were the identification of Core Development Issues and indicators for Capacity Assessment of PAGASA for CC Adaptation. Tentative work plan or next steps were the conduct of Capacity Assessment of Level 2 – PAGASA executives and Level 3- Technical Staff within 10 weeks or up to the end of July 2009.
- Workshop on "High Resolution climate modeling of climate change over the Indonesian Region at Aspen dale, Australia (May 16-31)
- 2nd Phase of the Training on 'Capacity Development for Adaptation to Climate Change in Asia-Climate Change Analysis' funded by JICA to develop local climate change scenarios using super high resolution AGCM, and extreme event projection. This was followed by Follow-Up Cooperation scheduled in September 2009 (upon approval of the fund request from JICA Tokyo), where 2 Japanese experts were dispatched here for a 2-day workshop on Supporting Adaptation to Climate Change on Climate Change modeling and Scenario Building.
- ▶ Prepared a work plan – re: Capacity Assessment (MDG-F1656)
- ▶ Submitted draft report on the preparation of Second National Communication (SNC) for UNFCCC commitment (last April 23). It covers scientific climatology, assessments of trends of various weather parameters (temperature and rainfall). Also delivered climate change projections based on time slices of 2050 and 2080. Parts of the Providing Regional Estimates for Climate Impacts Studies (PRECIS) model output climate projections is still running and require further validation of the model between the observed values and the simulated by the model.



Dr. P. D. Nilo with JICA Representative Mr. N. Matsuda



Dr. Prisco D. Nilo with Gov. Joey Salceda of Albay

STRENGTHENING OF FLOOD FORECASTING AND WARNING SYSTEM FOR DAM OPERATION (FFWSDO), JICA TECHNICAL COOPERATION PROJECT, AMIHAN CONFERENCE ROOM

This is the second Technical Cooperation Project (TCP) of the Government of Japan in PAGASA-DOST and will be implemented for a period of 3 years (2009-2012), covering the major reservoirs in Luzon namely: Angat, Pantabangan, Ambuklao, Binga, San Roque and Magat dams. This followed the first TCP, "Strengthening of Flood Forecasting and Warning Administration" implemented in April 2005-March 2006, covering the monitored river basins of Pampanga, Agno, Cagayan, and Bicol.

The main components of the project include: the dispatch of experts, provision of equipment, and training of Philippine technical personnel, both in Japan and in the Philippines.

The project is a collaboration between concerned government agencies composed of PAGASA as the

lead agency; the National Irrigation Administration (NIA) and National Power Corporation (NPC), as cooperating agencies; and the Office of Civil Defense (OCD), Department of Public Works and Highways (DPWH) and the National Water Resources Board (NWRB), as monitoring agencies.

The Record of Discussion (RoD) was signed on 22 June 2009 between the JICA, represented by its Chief Representative, Mr. Norio Matsuda, the Department of Science and Technology (DOST), represented by Dr. Graciano P. Yumul, Jr., Undersecretary, R&D and Dr. Prisco D. Nilo, Administrator of PAGASA. The signing of the RoD was attended by members of the Joint Operation Management Committee of the FFWSDO, key officials of PAGASA and the media.



Participants at the Joint Committee meeting of JICA and PAGASA related to the Dam Operation



Dr. Prisco D. Nilo with Mr. Norio Matsuda, JICA Representative

COMMEMORATION OF TYPHOON & FLOOD AWARENESS WEEK

In consonance with Proclamation No. 1535 by Her Excellency, President Gloria Macapagal-Arroyo, the Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA) – Department of Science and Technology (DOST), served as the lead agency in the national observance of the **Typhoon and Flood Awareness Week (TFAW)** for the period **15-19 June 2009**. The activity was conducted in

collaboration with the Philippine Science Journalists Association, Inc. (PSciJourn), Typhoon Committee Foundation, Inc. (TCFI), National Disaster Coordinating Council (NDCC), Metro Manila Development Authority (MMDA) and the Alyansa ng mga Grupong Haligi ng Agham at Teknolohiya para sa Mamamayan, Inc. (AGHAM). The theme for this year's observance is "Bagyo, baha ready ka na bro!"

A series of press conferences were conducted in the National Capital Region (NCR) and in other regions throughout the country. The first press conference was conducted on 01 June 2009 at the PAGASA Central Office, Agham Road, Diliman, Quezon City as a kick-off activity for a line-up of activities for the TFAW. On 07 June 2009, another press conference was conducted in Cebu City which focused on the impacts of typhoon on Agriculture with an invited resource person from the Department of Agriculture. It was followed by a press conference in Legaspi City, which focused on typhoon, flood and landslide prone areas. And finally, the culminating press conference was conducted at the PAGASA central office on 17 July 2009, highlighting the impacts of typhoon and flood on health in collaboration with the Department of Health.

Another highlight was the conduct of an orientation seminar on the PAGASA Regional Services Divisions (PRSD) and Typhoon & Flood Awareness Campaign in the newly organized Regional Divisions which was attended by the members of the Regional Disaster Coordinating Council (RDCC) and the DOST regional offices. The objective of the regional commemoration was to introduce the PAGASA-DOST Regional Divisions

to further establish linkages among the disaster managers in the region, with the end in view of reducing the effects of typhoons and floods.

The **PAGASA Regional Services division (PRSD) Visayas Cluster (Cebu)** was conducted on **08 June 2009** at the Conference Hall of the Police Provincial Office, followed by the Southern Luzon Cluster on **15 June 2009** at the Conference Hall of the Provincial Disaster Coordinating Council. Finally, a simultaneous TFAW observance on 18 June 2009 in Tuguegarao (Northern Luzon Cluster) at the Tuguegarao, Cagayan Provincial Center; Cagayan De Oro (Northern Mindanao Cluster) held at the PNP Conference Hall, Camp Alagar, Cagayan de Oro City; and Davao (Southern Mindanao Cluster) held at the DOST Regional Office in Davao.

Other activities included an “On-the-Spot Essay Writing Contest” for PAGASA employees, sponsored by the Philippine Meteorological Society; radio and TV guestings by the PAGASA-DOST experts, putting up of streamers through the members of the National Disaster Coordinating Council (NDCC), and a text contest courtesy of the Typhoon Committee Foundation, Inc.



Dr. P. D. Nilo with the participants from different government agencies



ROLLOUT ACTIVITY ON CAPACITY ASSESSMENT OF MDGF 1656: STRENGTHENING THE PHILIPPINES INSTITUTIONAL CAPACITY TO ADAPT TO CLIMATE CHANGE

MDG-F 1656: Strengthening the Philippines' Institutional Capacity to Adapt Climate Change, is a joint Programme (JP) partnership by the UNDP and the Spanish Government that seeks to mainstream climate risk reduction into key national and local development planning and regulatory processes, enhancing capacities of key partners and communities to undertake climate resilient development and testing of integrated adaptation approaches with upscaling potential. The programme bring together the Government of the Philippines (GOP) and United Nations (UN) partners over a period of 3 years to complete the country's knowledge base and strengthen institutional capacities to manage climate change risks.

The purpose of this activity is to assess PAGASA's capacity to address climate change adaptation and disaster risk reduction in accordance with its roles and responsibilities as a national agency, using the UNDP's capacity assessment methodology. PAGASA is one of the fifteen key national and sectoral government agencies involved in the MDGF 1656 project.

One of the objectives of the project is to enhance national and local capacity to develop, manage and administer projects addressing climate change risks. Capacity Assessment is one of the component of the programme which will benefit PAGASA through an assessment report as basis for the development of a program aimed at developing tools and instruments to enhance the capacity of stakeholders in better addressing climate risks. The

Capacity Assessment Team is comprised of experts on institutional development and climate change. Among the topics discussed included the MDG-F programme overview by Ms. Sheila Marie M. Encabo, Programme Coordinator, MDG-F1656; Role of PAGASA on Climate Change by Dr. Flaviana Hilario, Chief CAD; and UNDP Capacity Assessment Methodology by Mr. Noel C. Duhaylungsod, Team Leader, MDG-F 1656 CA, and DENR and UNDP will shepherd related activities of the CA. This rollout activity is the first phase of the project. The Capacity assessment was conducted using the UNDP self-assessment approach. It was participated by 41 PAGASA top and middle level management and those from the administrative and technical rank and file personnel.

Participants were divided into three groups based on Core Issues namely, Institutional Arrangement, Knowledge Management and Resource Management. These Core Issues were identified during the Scoping Workshop and was validated during the CA Training of Trainers. Final set of Core Issues and Indicators were refined to serve as the outline/template of the said Capacity Assessment. The result will be analyzed by the team.



NGCP-PAGASA COLLABORATIVE UNDERTAKING FOR THE SHARING OF WEATHER AND DATA SERVICES, SIGNING OF MEMORANDUM OF AGREEMENT HELD AT AMIHAN CONFERENCE ROOM

The Storm Tracking Alert and Relay System (STARS) of the National Grid Corporation of the Philippines (NGCP) got a significant boost when the PAGASA agreed to share its real-time weather information through a memorandum of agreement signed on November 24, 2009. Such information will be utilized during emergencies caused by severe weather conditions.

The system is expected to pave the way for the quick implementation of contingency plans and activities that will help prepare for and mitigate the adverse effects of weather disturbances on both transmission facilities and the power customers.

PAGASA, which is the country's main weather information gateway dedicated to provide meteorological, hydrological, climatological, astronomical and other scientific information and services, has committed to fully assist NGCP in its

efforts to prepare for weather-related contingency activities.

Included in the assistance services to be provided by PAGASA are tropical cyclone update, hourly weather data from synoptic, agromet, Doppler radar, hourly update of weather satellite images from various sources and numerical weather prediction model outputs every eight-hour period. Data on the monitored rainfall and water level of dams and rivers will also be provided.

NGCP, on the other hand, will be providing back-up communication link to the PAGASA data center so as to transmit real-time hydro-meteorological data from flood prone-areas, particularly in the Magat River Basin areas.

This involves enabling NGCP's subscription to the weather and hydro meteorological data to support NGCP's Integrated Action Plan (ITAP).



Dr. Prisco D. Nilo, PAGASA Administrator, Mr. Walter Brown, President of NGCP, and together with the PAGASA and NGCP officials

Dr. P. D. Nilo, PAGASA Administrator and Mr. W. Brown, President of NGCP



STRENGTHENING OF SURFACE-BASED MONITORING NETWORK IN SUPPORT OF SCIENTIFIC RESEARCH AND DISASTER MITIGATION

A meeting between Central Weather Bureau (CWB) delegation and PAGASA key officials and technical personnel regarding MECO-TECO Joint Science and Technology Collaboration (JSTC) project: entitled “Strengthening of Surface-based Monitoring Network in Support of Scientific Research and Disaster Mitigation” held at Amihan Conference room

A Joint Science and Technology Collaboration (JSTC) project: entitled “Strengthening of Surface-based Monitoring Network in Support of Scientific Research and Disaster Mitigation” funded by TECO with the aim of establishing Automatic Weather Stations with GSM-

CMTS (Cellular Mobile Telecommunication System) connectivity at the PAGASA-DOST Central Office, and to utilize the resulting dense network of observation for scientific research focused on local rainfall analysis and prediction, as well analyzing local wind system generated by either a localized weather system such as thunderstorm or from larger weather systems such as tropical cyclones. The CWB delegates were Mr. Wei-Jyh Hwang, Director, Telecommunications & Radar Division, Mr. CHZA-Peng Cheng, R & D Division, CWB, Mr. Ta’-Wei Lin, and Mr. Lin Hong-sheng, from Radar department also.



Central Weather Branch (CWB) delegates of Taiwan headed by Mr. Wei-Jyh Hwang Director, Telecommunications and Radar Division of CWB with Administrator Prisco D. Nilo.

ESTABLISHMENT OF EARLY WARNING AND RESPONSE SYSTEM FOR DISASTER MITIGATION IN METRO MANILA (Pasig-Marikina-Laguna Lake river basin) – KOICA 2 – new initiative

- ▶ Announcement of the project in the Philippines by the Korean Ambassador and the DOST Secretary through a Press Conference at the PAGASA Main Office in Quezon City – 29 October 2009
- ▶ Dispatch of the first KOICA Survey Team – from 13-17 November 2009 to conduct preliminary ocular inspection of the project sites and meetings with PAGASA officials and personnel
- ▶ Conducted meeting with private institutions (SMART/PLDT) for the co-location of proposed monitoring sites.

STRENGTHENING OF FLOOD FORECASTING AND WARNING SYSTEM (FFWS) IN MAGAT DAM AND DOWNSTREAM COMMUNITIES – NORAD (Norwegian Agency for Development Cooperation)

The Grant Agreement of the project: Improvement of Flood Forecasting & Warning System (FFWS) for Magat Dam & Downstream Communities funded by the Norwegian Agency for Development Cooperation (Norad) has been signed on 20 November 2009 between the DOST Secretary and the Norwegian Ambassador during a press conference on 20

November 2009. The project which aims to address the issues and concerns on the issuance of a timely and accurate flood forecasts and warnings in the Cagayan River Basin and the effective operation of the Magat dam for the safety of the communities in the downstream area will be implemented in CY 2010 to 2012.



PAGASA Administrator Dr. P. D. Nilo, with DOST Secretary Alabastro, His Excellency Ambassador Knut Solem of Norway and Mr. Kim Johannessen Lande of SN Power during the signing ceremony



PAGASA Administrator Dr. P. D. Nilo, DOST Secretary Alabastro, His Excellency Ambassador Mr. Knut Solem of Norway and Mr. Kim Johannessen Lande of SN with other delegates from SN Power and Aboitiz

STRENGTHENING OF FLOOD FORECASTING AND WARNING SYSTEM FOR DAM OPERATIONS (FFWSDO) – JICA TECHNICAL COOPERATION PROJECT

The project is an inter-agency collaboration among agencies involved in FFWSDO with PAGASA as the lead agency, the National Irrigation Administration (NIA) and the National Power Corporation (NPC) as cooperating agencies, and the Department of Public Works and Highways (DPWH), Office of Civil Defense (OCD) and the National Water Resources Board (NWRB) as monitoring agencies.

The project activities undertaken so far included:

- Signing of the Record of Discussion – June 2009

- Dispatched of 4 JICA Experts – 26 October 2009
- Kick-off meeting – Joint Coordination Committee – 16 November 2009

This project recently took off with the dispatched of four (4) JICA Experts. Preliminary surveys and site visits to the project sites were undertaken including the setting up of four (4) Working Groups, namely, Flood Modeling, Data Management, Meteorology and Hydrology and Telecommunication, and the conduct of hydrographic surveys in the downstream areas of all monitored reservoirs.

“On-the-Spot” Essay Writing Contest for PAGASA personnel on 19 June 2009

This activity is in celebration of the Typhoon and Flood Awareness week and aimed at getting the thoughts of the rank-and-file employees of the PAGASA on the theme It’s Typhoon and Flood Season, What’s the Challenge? Seventeen (17) PAGASA employees from the technical and support divisions participated. Non-winning participants were given consolation prizes while the first, second and third prizes were given cash prizes of P10,000.00, P5,000.00 and P3,000.00, respectively.



Winners and participants of the “On-the-Spot” Essay Writing Contest together with PMS Board of Trustees and PAGASA key officials.

“On-the-Spot” Poster Making Contest for NCR Elementary and High School Levels

In its advocacy to stir the imagination and underscore the participation of the school children and youth in disaster risk reduction and adopting the theme (Pag Alerto, Malayo sa Peligro) of this year’s observance of the National Disaster Consciousness Month, the PMS in collaboration with PAGASA and with support from the

Department of Education (DepEd) and the Office of Civil Defense (OCD) conducted the first “On-the Spot Poster making Contest” for public and private elementary and high school students in the National Capital Region (NCR).

The 49 finalists (25 for the elementary level and 24 for the high school level) in the NCR participated in the contest conducted on 28 July 2009 at the Amihan Conference Room, PAGASA Main Office, Agham Road, Diliman, Quezon City.



“On-the-Spot” Essay Writing Contest

Winners in the Elementary Level with their coaches and the Board of Judges



IMPROVEMENT OF S&T GOVERNANCE AND MANAGEMENT

At the start of the year, the annual PAGASA Program Review and Analysis (PRA) and Planning Conference was conducted on 26-27 January 2009 at the PAGASA Tanay Synoptic Upper-Air Station, Tanay Rizal.

The PRA involve the assessment of the performance of all various operating units based on the Priority Programs/Activities for FY 2008, preparations of FY 2009 Operations Plans and FY 2010 Financial Requirements.

The PRA was part of the agency's monitoring and evaluation process and served 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 2009, commitments and considerations for FY 2010 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 2009, Financial Requirements for FY 2010 and Priority Thrusts and Objectives for FY 2010.

The PAGASA Mid-year PRA and Stress Management were conducted on 17-18 August 2009 respectively at 9 Waves Waterpark, San Rafael, Bulacan. The mid-year PRA was conducted to assess the performance of each divisions while training on Stress Management was conducted to enhance the management and planning officers with the techniques and coping mechanisms to effectively manage the demands of complex work of their challenging role.



Commemoration of the World/National Meteorological Day



World/National Meteorological Day

Human and Financial Resources

Capitalization

PAGASA relied on available resources for it to operate and meet its goals for the year. Funds, personnel and their expertise, and physical assets were utilized in the implementation of its programs, projects, and activities. Aside from these resources, the established linkages and collaborations with other organizations and the considerable funding support for projects and for the agency operation constitutes the total funding for the year.

In terms of manpower, the year saw the mobilization of eight hundred sixty nine (869) individuals of diverse expertise and skills both at the main office in office Quezon City and field stations in the provinces. The distribution of personnel complement according to educational attainment and S&T Functions are shown in Table 8 and figures 2 and 3.

Table 8: Personnel Distribution by Level of Education and S&T Functions as of December 2009

CATEGORY OF PERSONNEL	LEVEL OF EDUCATION				TOTAL
	Below BS	BS/BA	MS/MA	PhD	
S&T Service (STS)	275	263	19	5	562
Research and Development (R&D)	42	57	7	3	109
S&T Education and Training (STET)	3	8	0	0	11
General Administration and Support Service (GASS)	73	99	13	2	187
TOTAL	393	427	39	10	869

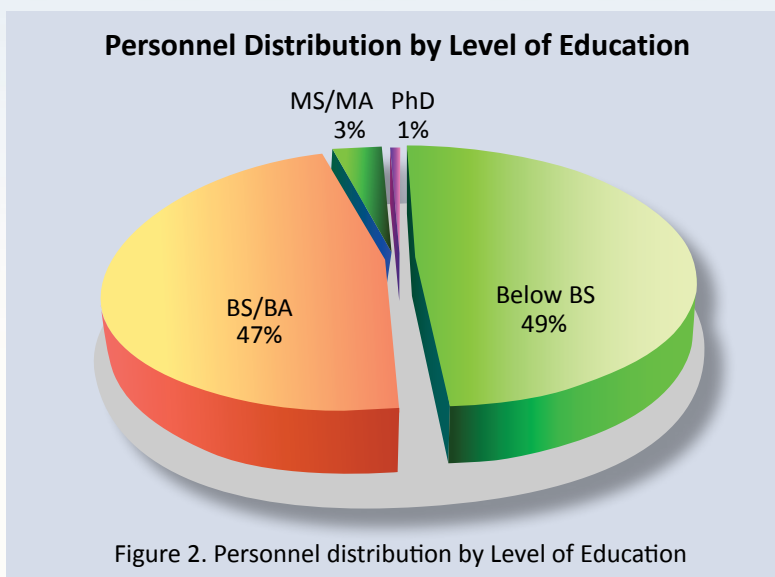
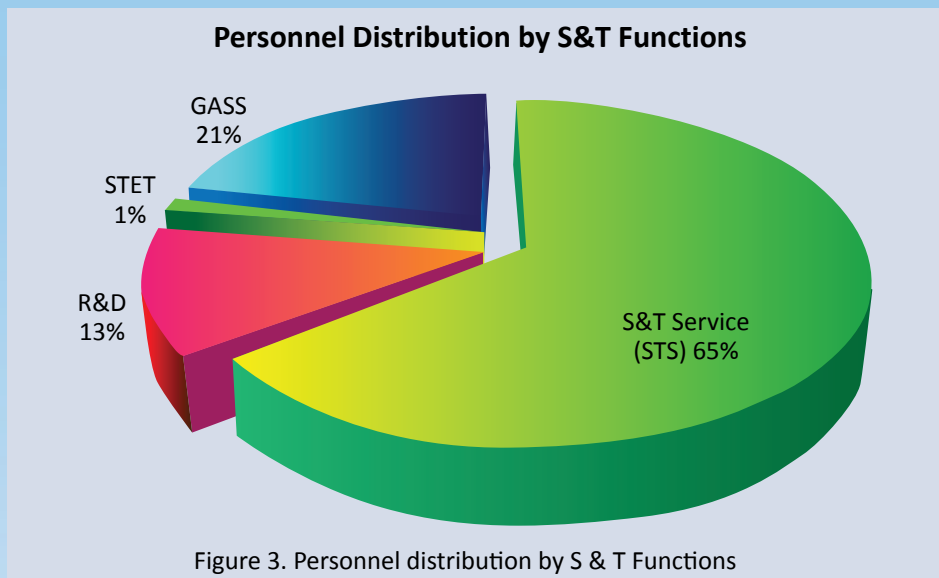


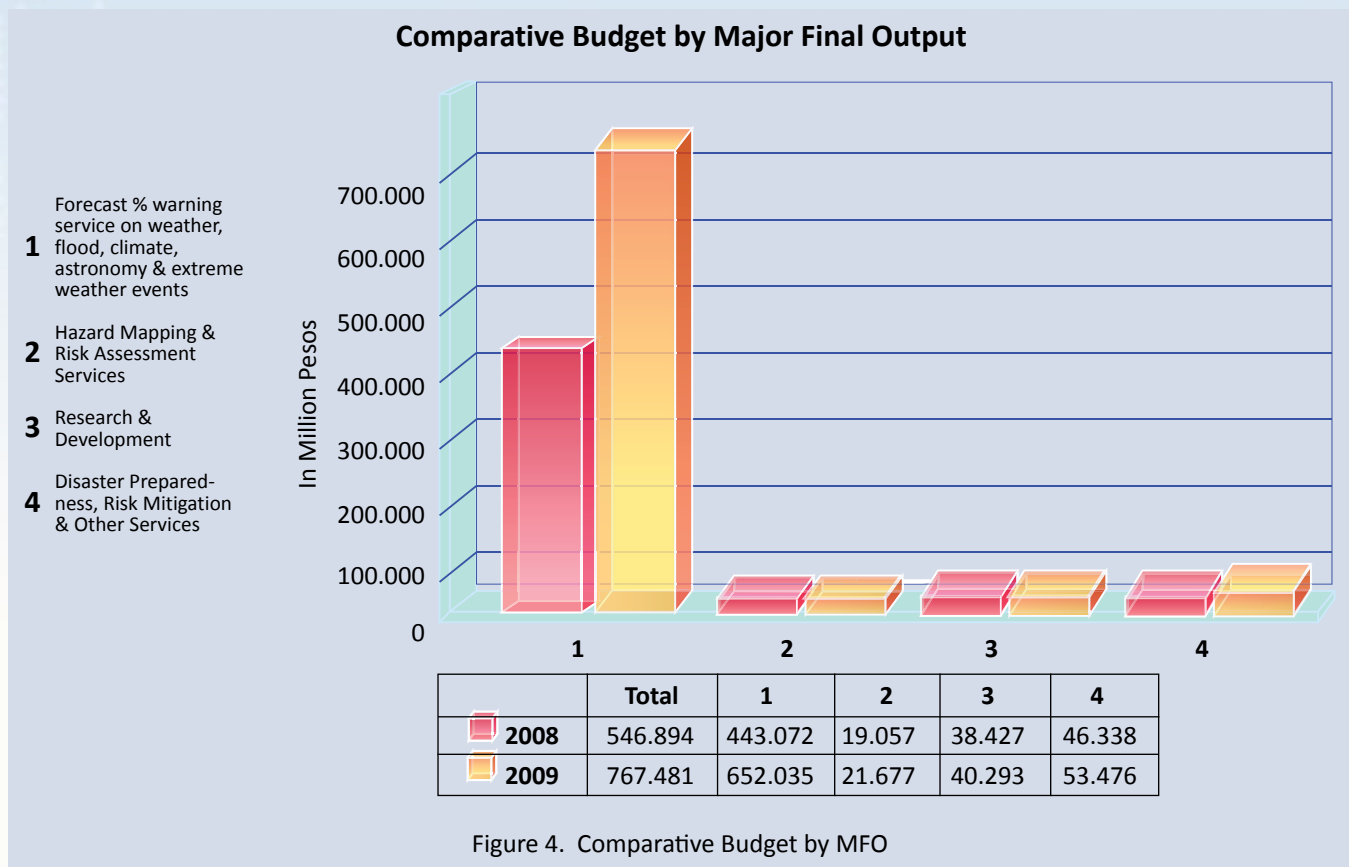
Figure 2. Personnel distribution by Level of Education



Part of PAGASA's 2009 inputs came from utilization of the expertise of its core personnel with specialized trainings here and abroad on various scientific and technical field. In particular, expertise on natural hazards, the mitigation of their effects and in natural disaster reduction looking through the window of disaster cycle stood out as valuable albeit immeasurable investment for the safety of lives and properties. Knowledge transfer intended to increase the level of awareness of the members of the

various communities in the country were carried out through different fora and media seminars.

Money spent for the 2009 operations consisted of the regular budgetary allocation of Seven Hundred Thirty Six Million Six Hundred Seventeen Thousand pesos (P736, 617,000.00). Compared with the total expenditures in 2008, the 2009 expenditures is higher by 7.5 %.



Recognition Awards

The PAGASA Gawad Award for Most Outstanding Employee of 2009 was conferred to Engr. Arnel R. Manooos, Weather Facilities Specialist III of the Engineering Services and Technical Division (ESTD). Engr. Manooos was given the top agency award for his exceptional performance and unquestionable dedication to duty. With his stature as a Unit Chief and proven technical expertise, Manooos could have easily sought for greener pastures abroad but chose to stay without expecting any special remuneration or recognition in return. He played a major role in upgrading the radar and network communication facilities. Mr. Lazaro Marquezes of NAIA station was chosen as the PAGASA Most Outstanding Employee for Operations and Services for spearheading the upgrading of the aeronautical forecasting service which helped rebuild the capability of the country's airport facilities for aviation meteorological services while Ms. Analiza Solis of CAB was awarded the PAGASA Most Outstanding Employee for the Research and Development Group. Ms. Solis was cited for her projects which were adapted by the agency. Her research works on climate studies were officially published and circulated around in Southeast Asia. The agency award has not change her unassuming low key character and innate humility which have endeared and to her peers even more.



Gawad PAGASA Awardees with Dr. Nathaniel T. Servando and Mr. Nathaniel A. Cruz.

Future Directions and Challenges



Hydrometeorological, Climatological and Astronomical services are essential to every human activity and to national development in the long term. PAGASA therefore, needs to be a dynamic institution not only responsive but also pro-active to the ever changing requirements of the various sectors and the general public for weather, climate and flood information services. There is also the changing physical environment and the rapid scientific and technological development that need to be integrated in the agency's development activities.

The PAGASA envisions in the coming year, to face more challenges and opportunities which are imperative in meeting the demands of an emerging global community. As in the past years, the agency is always committed to give the best service and products that the people truly deserve. To meet these challenges, the PAGASA has identified its set of priorities to be implemented in the year 2010 in attaining its primary goal of improved and enhanced services to better serve the needs of the people. These priorities are consistent with the DOST vision within the framework of the National Science Technology Plan, specifically on disaster preparedness and hazard mitigation:

- ▶ Improvement of Flood Forecasting and Warning System for Magat Dam and Downstream Communities – Norad funding
- ▶ Doppler Weather Radar Training for Operations and Maintenance Personnel – JICA
- ▶ Addressing Gaps in monitoring and Forecasting Maritime Weather and Sea Conditions in the Philippines – DOST-GIA
- ▶ Strengthening of Surface-based Monitoring Network in Support of Scientific Research and Disaster Mitigation in the Philippines – TECO
- ▶ Strengthening of National Capacities in Regional Downscaling for the Assessment of Climate Change and Its Impacts on Water Resources and Agriculture Sectors
- ▶ Establishment of Early Warning and Response System for Disaster Mitigation in Metro Manila – KOICA
- ▶ Improvement of Flood Forecasting and Warning System in the Bicol River Basin – GOJ
- ▶ Enhancement of National Climate and Agromet Data and Data Rescue
- ▶ Establishment of Storm Surge Monitoring and Prediction System in the Philippines
- ▶ Strengthening of National Capacities in Regional Downscaling for the Assessment of Climate Change and Its Impacts on Water Resources and Agriculture Sectors

Above all these set of priorities is the completion of the radar program that includes the upgrading of Guiuan, Virac and Aparri Radar Stations, funded by JICA, the Subic, Tagaytay and Mindanao radar for Tampakan and, Hinatuan for the new radar system.

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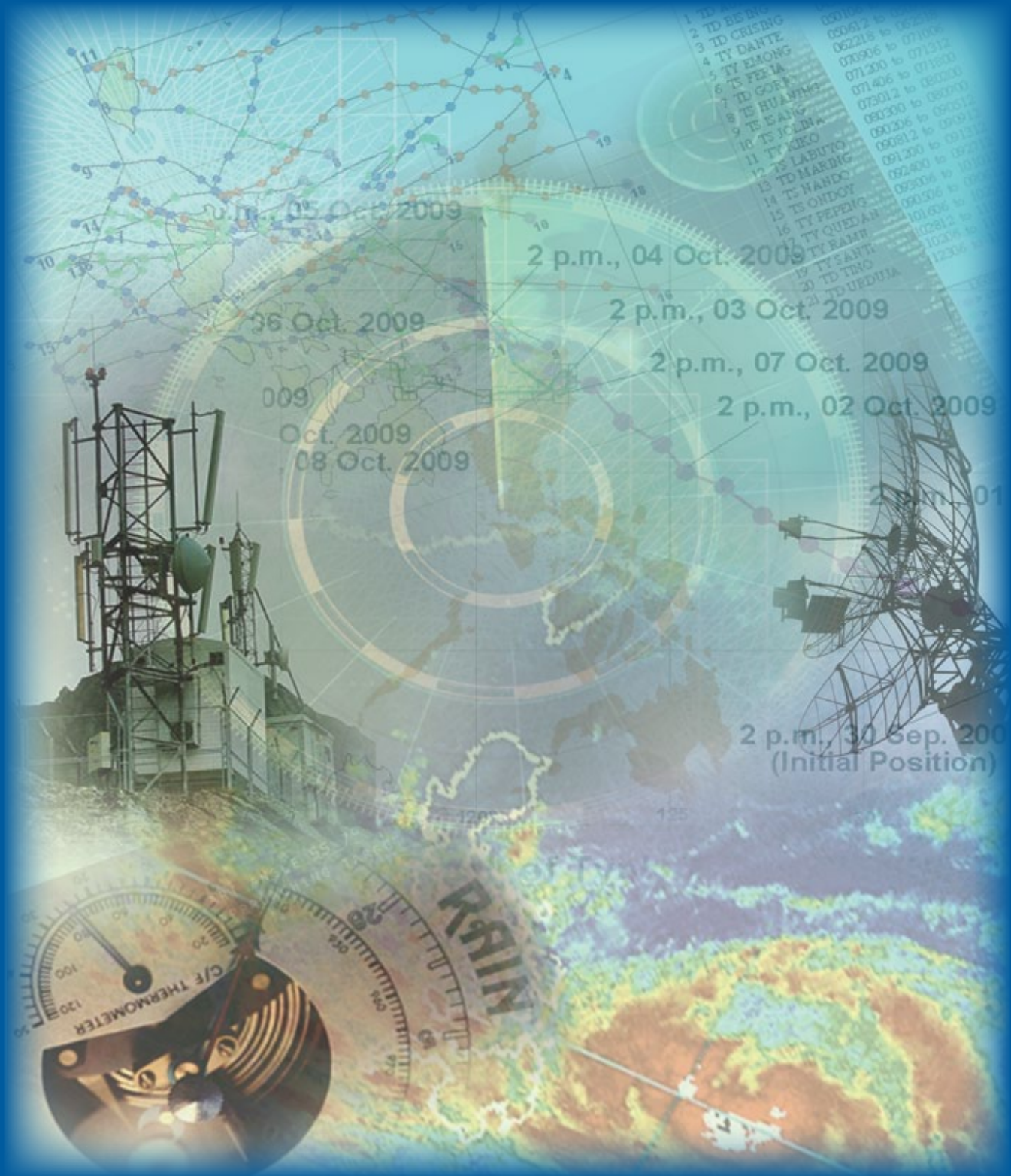
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