

DEPARTMENT OF SCIENCE & TECHNOLOGY
Philippine Atmospheric, Geophysical & Astronomical Services Administration



2018

ANNUAL REPORT

The Weather & Climate Authority

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- Gender Sensitivity Training (GST) for PAGASA Regional Services Division
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- Senior Citizen Laws, Pre-retirement and Livelihood Seminar

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OTHER SIGNIFICANT ACTIVITIES

- Ted Talk and Research & Development Agenda
- Chief Meteorological Officers (CMO) Conference of National Capital Region (NCR) PRSD
- PAGASA at the Government Job Fair 2018
- Regional Science and Technology Week (RSTW) 2018

58
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AWARDS/RECOGNITION RECEIVED

- 2018 DOST International Publication Award
- Nominee for 2018 Freedom of Information (FOI) Champion under the Agency Category
- 2018 Bangko Sentral ng Pilipinas (BSP) Stakeholders Awards
- Inclusion of the Doppler Weather Radar in Laoang, Northern, Samar in the 2018 National Priority Plan (NPP)

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AGENCY'S INCOME FROM ITS PRODUCTS AND SERVICES

PUBLISHED RESEARCH PAPERS

LIST OF 2018 PROJECTS

DISTRIBUTION OF PERSONNEL BY JOB CLASSIFICATION

COMPARATIVE BUDGET EXPENSES, FY 2017-2018

DIRECTORY OF KEY OFFICIALS

PRODUCTION STAFF

63
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CITIZEN'S CHARTER

I. Mandate/Mission/Vision/Values/Functions

1 MANDATE

Provide adequate, up-to-date data, and timely information on atmospheric, astronomical and other weather-related phenomena using the advances achieved in the realm of science to help government and the people prepare for calamities caused by typhoons, floods, landslides, storm surges, extreme climatic events, and climate change, among others, to afford greater protection to the people.

Provide science and technology-based assessments pertinent to decision-making in relevant areas of concern such as in disaster risk reduction, climate change adaptation and integrated water resources management, as well as capacity building.

Ensure that the country fulfills its commitments to international meteorological and climate change agreements.

5 FUNCTIONS

Maintains a nationwide network pertaining to observation and forecasting of weather and flood and other conditions affecting national safety, welfare and economy;

58 Synoptic Stations

24 Agromet Stations

11 Upper-air Stations

16 Radar Stations

20 High Frequency Radar (HFR)

5 Automated Observing System (AWOS)

136 Automatic Weather Stations (AWS)

87 Automatic Rain Gauge (ARG)

1 Wind Profiler

43 Climat/Rain Stations

17 Airport Stations

21 Lightning Detection System

12 Flood Forecasting and Warning System

- Undertake activities relative to observation, collection, assessment and processing of atmospheric and allied data for the benefit of agriculture, commerce and industry;
- Engage in studies of geophysical and astronomical phenomena essential to the safety and welfare of the people;
- Undertake researches on the structure, development and motion of typhoons and formulate measures for their moderation; and
- Maintain effective linkages with scientific organizations here and abroad and promote exchange of scientific information and cooperation among personnel engaged in atmospheric, geophysical, astronomical and space studies.

2 MISSION

We deliver reliable and relevant weather-related information, products and services to develop communities resilient to typhoons, floods, rain-induced landslides, storm surges, extreme climatic events, climate change and astronomical hazards.

3 VISION

The Center of Excellence for weather-related information and services helping develop a disaster and climate-resilient nation.

4 VALUES

Spirituality

Integrity

Commitment

Patriotism

Innovation

Excellence

II Performance Pledge and Feedback and Redress Mechanisms:

1. Performance Pledge

We, the professional and dedicated officials and employees of the Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA), commit to:

Provide service promptly, efficiently and with utmost courtesy by authorized personnel with proper identification from Mondays to Fridays. 8:00 AM to 5:00 PM, without noon break; for Administration support and other similar services and 24/7 whole year round for forecasting services,

Adhere to strict compliance with service standards, with written explanation for any delays in the services we offered;

Give timely response to complaint about our services the soonest and take corrective measures accordingly;

Assure that every client's comments, suggestions and needs are given importance.

Satisfy our customers' needs by acting on their feedback and informing them of any developments first hand;

Allow the public access to information on our programs, activities and services through our website (<http://bagong.pagasa.dost.gov.ph>) or through SMS, and our trunkline 284-0800, follow us on twitter @dost-pagasa, https://twitter.com/dost_pagasa. Like us on facebook DOST_pagasa <https://www.facebook.com/PAGASA.DOST.GOV.PH>

Above all, we pledge to serve everyone with utmost honesty, dedication, respect and understanding, for we believe that in so doing, we are also serving and honoring our country and God Almighty.

2. Feedback and Redress Mechanisms

Please let us know how we have served you by:

A. Accomplishing our Feedback Form available at the lobby and put in the drop box located at the front desk or give to the employee of the division concerned.

B. Sending your feedback through our website (<http://bagong.pagasa.dost.gov.ph>) or call our trunkline 284-0800, follow us on twitter@dost-pagasa, https://twitter.com/dost_pagasa. Like us on facebook DOST_pagasa <https://www.facebook.com/PAGASA.DOST.GOV.PH>

Your written/verbal complaints shall immediately be attended to.

Thank you for helping us improve our service

SERVICE STANDARDS

I. Processed Data (Daily Summaries, rainfall maps, etc.)

Who May Avail of the Services : General Public

Fees : Minimum of P1,000 weather certificate first 3 pages
: Php 36.00/yr/parameter for monthly data
: Php 360.00/yr/parameter for daily data

How to Avail of the Services

Step	Client/Customer	Activity	Maximum Duration	Person In Charge
1	Register with the guard and seek the assistance of the personnel from the Section concerned.	Attend to the inquiries/needs of the client	30 minutes	Guard/Personnel from Section Concerned
2	A written request from the party. Fill out required form.	Inquire from climate databank the availability of the data	30 minutes	Personnel from the Section concerned
3	Pay at the Cashier	Process the request and the customer of the appropriate charges by preparing the Order of Payment	30 minutes	Personnel from the Section concerned
4	Execute conforme that data is to be used only for specified purpose.	Release data/maps to client upon presentation of receipt	15 minutes	Personnel from the Section concerned
5	Accomplish Feedback Form	Solicit client's appraisal of services provided	15 minutes	Personnel from the Section concerned

II. Other Services (Calibration, Planetarium Services)

Who May Avail of the Service : General Public
Fees : Minimum of P510 depending on the instrument calibrated
: P25 per person for planetarium services

How to Avail of the Services

Step	Client/Customer	Service Provider	Maximum Duration	Person In Charge
1	Register with the guard and seek the assistance of the personnel from the Section concerned.	Attend to the inquiries/needs of the client	30 minutes	Guard/Personnel from Section Concerned
2	A written request from the party. Fill out required form	Consult with the Division in charge of the desired services	30 minutes	Personnel from the Section concerned
3	Conform with the arrangements discussed.	Discuss and finalize arrangement like fees, date services can be provided, the equipment and services needed, etc.	1 hour	Personnel from the Section concerned

III. For weather forecast/reports/updates proceed to Weather Division at WFFC Building located a few meters from the PAGASA Main Office

MESSAGE FROM THE DOST SECRETARY

I wish to convey my warmest congratulations to the men and women of PAGASA for their excellent work this 2018, in continuing the Agency's thrust to enhance its capabilities to provide protection to the people against the impacts of weather-related hazards.

As a weather-warning agency, PAGASA has significantly improved its forecast track error to 77.3 kilometers over a target of 100 kilometers for the 24-hour forecast. This indicated that more precise and accurate forecasts were cascaded to Disaster Risk Offices for a better decision making in terms of mitigating actions, particularly, on community evacuation planning and management.

The expectation to the immense responsibility of the Agency has amplified the acquisition of additional equipment for enhanced and effective services. The reliability of its Doppler Radars, in terms of monitoring and forecasting day-to-day weather, is undeniable, thus, three more Doppler Radars have been established by the Agency in 2018. Lightning Detection Systems were also installed in strategic locations across the country to ensure safe operation of the aviation service. Of equal importance, is the installation of High Frequency Radars in strategic coastal areas for the issuance of reliable and accurate marine forecasts essential not only to public safety, but also to recreation and fishing activities.

Significantly, with the trust and confidence of the international communities on the capability of PAGASA, foreign donors have forged partnerships with the Agency, this includes the Korea International Cooperation Agency (KOICA), Japan International Cooperation Agency (JICA), Food and Agriculture Organization of the United Nations (UN-FAO), Australian Centre for International Agricultural Research (ACIAR) and The Regional Integrated Multi-Hazard Early Warning System (RIMES) for Africa and Asia. The growing international prominence of the PAGASA is a strong manifestation of the credibility of the Agency.

In a quest to enhance the Agency's strategy to information dissemination, a new website was launched in June 2018. This aims to improve the display of information particularly, products and services of the Agency, to fulfill its role in ensuring safety, well-being and economic security of all people.

PAGASA's commendable feat in 2018 is a testament to the agency's commitment and resolve to meet the public's expectation for effective provision of warnings and forecasts. Rest assured that the Department of Science and Technology will remain supportive to this end.

A portrait of Fortunato T. de la Peña, the DOST Secretary, wearing a white barong tagalog. He is standing with his arms crossed against a dark background with a network of glowing blue dots and lines.A handwritten signature in blue ink, reading "F. T. de la Peña".

FORTUNATO T. DE LA PEÑA

MESSAGE FROM THE DOST UNDERSECRETARY FOR DRR-CC

As the weather and climate authority of the country, PAGASA envisions to promote disaster and climate-resilient nation by providing accurate and reliable weather and climate information and services. It continuously strives to enhance its services and be at par with other leading meteorological centres in Asia and in the world.

The continuous acquisition of state-of-the-art equipment, such as weather radars, lightning detection systems, and automatic weather stations, enhanced the numerical modelling and forecasting system of PAGASA. Thus, timely, accurate and reliable weather and climate information are made available and accessible for the general public.

During Typhoon Ompong, which hit and devastated most provinces in Northern Luzon on September 2018, people were provided with timely rainfall warnings, and tropical cyclone track forecasts and advisories. The utilization of Color-Coded Storm Surge Forecasting and Warning System, an impact-based forecasting and warning system, helped and informed local government units and disaster response agencies in preparing hazard-specific and area-focused contingency management and action plans. The same warning system was also utilized during the occurrence of Typhoon Rosita in October 2018. It can be noted there were no casualties attributed to the storm surge during the passage of Typhoon Rosita. Moreover, the growing number of views on various social media platforms testifies and manifests the general public's awareness and interest in hazard warning messages. If taken positively, viewers may undertake appropriate preparedness action against an impending hydrometeorological threat. People are becoming more responsive to the products and services provided by PAGASA.

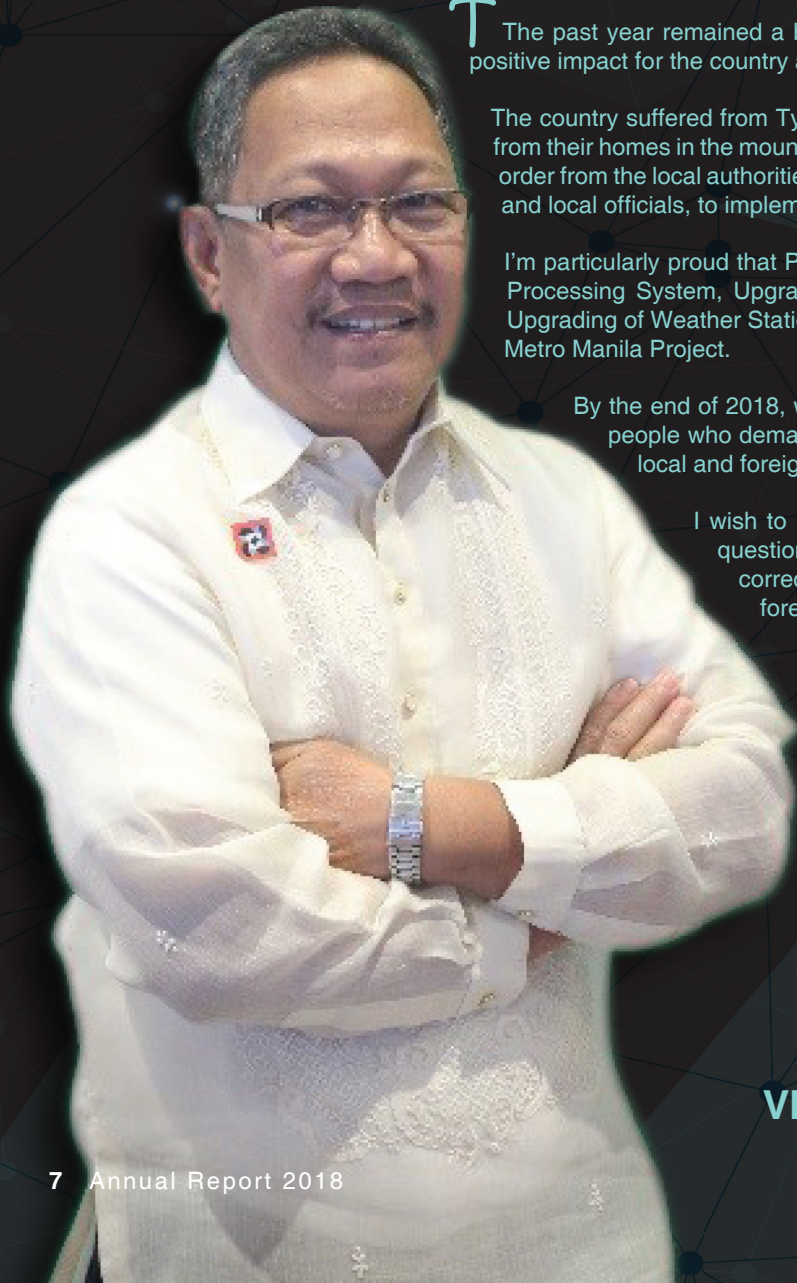
I congratulate the men and women of PAGASA for gaining the public's trust through its commendable accomplishments. I sincerely believe that PAGASA's commitment to providing quality services to its stakeholders, while maximizing the use of science and technology to continuously improve early warning services, helps achieve the desired disaster and climate-resilient nation.



RENATO U. SOLIDUM, JR.



MESSAGE BY THE ADMINISTRATOR



The past year remained a busy year for the agency as we stayed focus on our task to provide responsible public service which created positive impact for the country after some 21 visiting typhoons of 2018.

The country suffered from Typhoon Ompong, the strongest typhoon of 2018, which set off landslides that buried people who failed to move from their homes in the mountainsides despite PAGASA's severe weather warnings and advisories, and the preemptive and forced evacuation order from the local authorities. This experience calls, more than ever, for more improved coordination to enable PAGASA, disaster authorities and local officials, to implement early and timely action as landslides now pose bigger impacts in the country.

I'm particularly proud that PAGASA-DOST continued to implement vital modernization projects, such as the Upgrading of Interactive Data Processing System, Upgrading of Advanced Forecast Computing Facilities, Installation of High Frequency Radars, Establishment and Upgrading of Weather Stations; and the Implementation of the Automation of Flood Early Warning System for Disaster Mitigation in Greater Metro Manila Project.

By the end of 2018, we look forward to having a more relevant and inspired PAGASA egged on by the respect we earned from the people who demand nothing but correct and reliable forecasts. This, of course, will be done with the help of our valued partners, local and foreign, of which we will be most grateful.

I wish to reassure that PAGASA will continue to work on improving each day to satisfy everyone including those who question our capacity as a highly-qualified agency. Our devoted workers now live by the mantra of observing issuance of correct and reliable forecasts, being placed in a position to answer to the demands of delivering weather warnings and forecasts of higher precision and accuracy. We look forward to the year ahead to prove worthy of the public's trust.

VICENTE B. MALANO



WEATHER

730 Public Weather Forecasts

730 Shipping Forecasts twice

350 Gale Warnings/Advisories



TROPICAL CYCLONE

56 Advisories

240 Severe Weather Bulletins

250 International Warnings

2,059 Sigmet Information



FLOOD

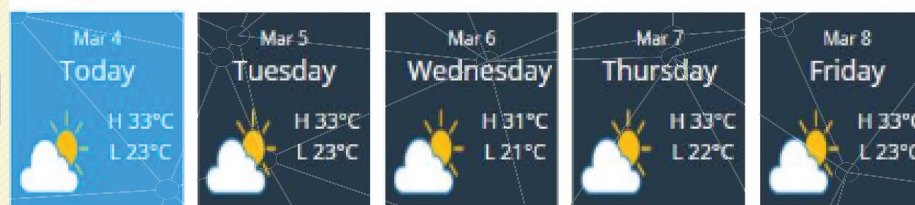
1,886 General Flood Advisories for the non-telemetered river basins

114 Flood Bulletins for the telemetered Pampanga, Agno, Bicol and Cagayan (PABC) river basins

Port Area, Metro Manila



5-Day Weather Outlook for Metro Manila



CLIMATE

11 National Climate Outlook Forum with **990** participants

6 Provincial Climate Forum with **846** participants

TRAININGS

9 Technical in-house training courses with **253** participants

24 Non-technical in-house training courses with **898** participants

AGRI-WEATHER



365 Daily Farm Weather Forecasts and Advisories (FWFA) to **240,900** recipients

7,776 copies of 10-day Weather Agro-Climatic Review and Outlook

4 Monthly Assessment and Outlook

1 Seasonal Climate Outlook

2018
PAGASA
THE WEATHER AND CLIMATE AUTHORITY



Key Venue of the 5-year Strategic Plan: The 2018 PAGASA Annual Program Review & Analysis (PRA) and Planning Conference



The Agency conducts Planning Conference to review different Office's performances and to discuss its plan for the year and for the coming years.

In 2018, the PRA and Planning Conference was conducted on 01-03 March 2018 at Hotel Stotsenberg in Clark, Pampanga where discussions focused on the review of the Strategic Planning Workshop held in 2017. The activity considered the Philippine Development Plan (PDP) 2017-2022, especially on key areas/chapters where the Agency plays a big role. Program Expenditure Classification (PREXC) implemented by the Department of Budget and Management (DBM) was also one of the main considerations, as PREXC seeks to restructure agencies budgets through grouping of activities and projects under appropriate programs or key strategies.

The three-day conference was able to develop new programs considering the previous programs identified during the 2017

Strategic Plan, linked into the programs of the General Appropriations Act (GAA). On the other hand, previously identified strategic objectives in 2017 were upheld:

PAGASA Strategic Programs:

1. Weather and Climate Monitoring, Forecasting and Warning Program
2. Flood Monitoring, Forecasting and Warning program
3. Astronomical Observation and Monitoring Program
4. Research and Development Program for Weather and Allied Sciences
5. Physical Resources and Operational Techniques Program
6. Climate Change Adaptation, Disaster Preparedness and Risk Reduction Program
7. Human Resource Development Program (HRDP)
8. Regional and International Cooperation Program
9. General Administration and Support Program



PAGASA Strategic Objectives:

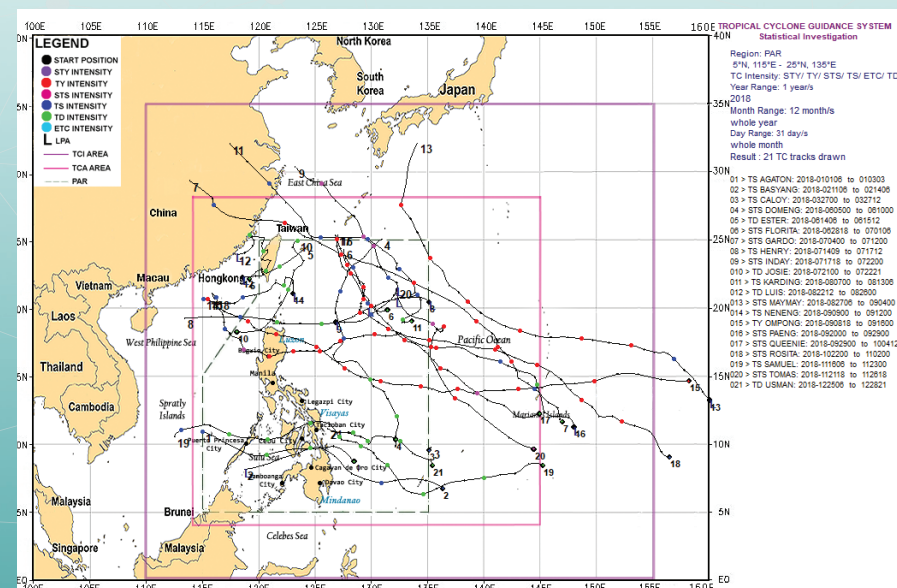
1. Develop safer communities resilient to typhoons, floods, rain-induced landslides, storm surges, extreme climatic events, climate change and astronomical hazards
2. Strengthen relationship with national/local government in support to DRR/CCA
3. Deliver reliable and relevant weather-related information, products and services
4. Ensure effective and efficient systems and processes
5. Develop and maintain a sufficient pool of competent human resources
6. Develop, upgrade and sustain functional capacity of equipment and facilities
7. Ensure sufficiency and sustainability of funds
8. Ensure proper and judicious utilization of financial resources

WEATHER AND CLIMATE MONITORING, FORECASTING AND WARNING PROGRAM

Weather Forecast and Tropical Cyclone Warning Services

Weather data from local observation and global networks are essential inputs to formulation of weather forecasts, advisories and warnings. Various weather information is disseminated to public, such as 24-hr Public Weather Forecast, Extended Weather Outlook and 5-day Weather Outlook for Selected Tourist Areas while bulletins like 6-Hourly Tropical Cyclone Warnings, Hourly Tropical Cyclone Update, Shipping Forecasts and Tropical Cyclone Warning for Shipping, Gale Warnings, Storm Surge Warning, Rainfall Warning System and Thunderstorm Alert System are issued during the presence of a severe weather system.

In 2018, 21 TCs hit the Philippine Area of Responsibility (PAR), resulting to constant issuance of warnings and information to warn the public. Overall, 56 Weather Advisories, 240 Severe Weather Bulletins, and 250 International Warnings (TCWS) were issued for the entire year. Considering the number of TCs that entered the PAR in 2018, the Agency surpassed its 100km target achieving the 77.3 kilometers forecast track error for 24-hour forecast.



100th National Climate Outlook Forum (COF)

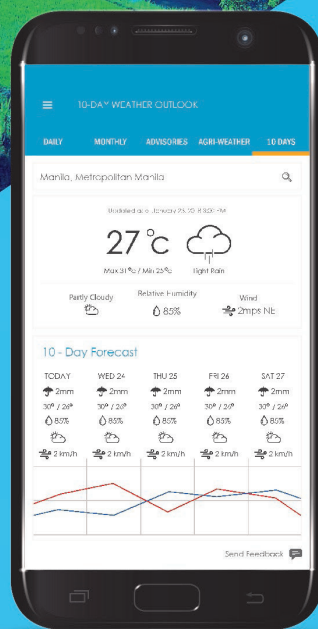
The 100th National COF was conducted on 22 March 2018 at the Hive Hotel in Quezon City, organized by PAGASA in collaboration with the United Nation - World Food Programme (UN-WFP).

It is a pre-event to the celebration of the 2018 National/World Meteorological Day that aims to integrate disaster risk reduction and management (DRRM), climate change adaptation (CCA) and water resources management in the sustainable socioeconomic development planning at the national and local levels in coordination with appropriate government agencies and other entities. It also seeks to strengthen linkages and cooperation at the national level among various providers and users of weather, climate and water-related information, products and services including provision of appropriate mechanisms.





PAYONG PAGASA MOBILE APP



PAGASA forecasts and advisories can now be reached right at your fingertips! Access to climatological and agrometeorological information, seasonal forecasts, advisories that will be beneficial for farmers and fisher folk, as well as government agencies and private sectors involved in decision-making



Realtime Updates

With every data that comes in, users can get up to date information from the app.



Interactive Maps

Choose from different maps, from rainfall and temperature data that fits according to your needs. Use the map as well to select from every municipality.



Submit Feedback

Users can send feedback or updates on their own regarding the weather situation in their location.

<https://www1.pagasa.dost.gov.ph> <http://bagong.pagasa.dost.gov.ph> [pagasa.dost.gov.ph](https://www.facebook.com/pagasa.dost.gov.ph) [@dost_pagasa](https://twitter.com/dost_pagasa)

Payong PAGASA Mobile App and PAGASA Interactive Display System (IDIS) Launching

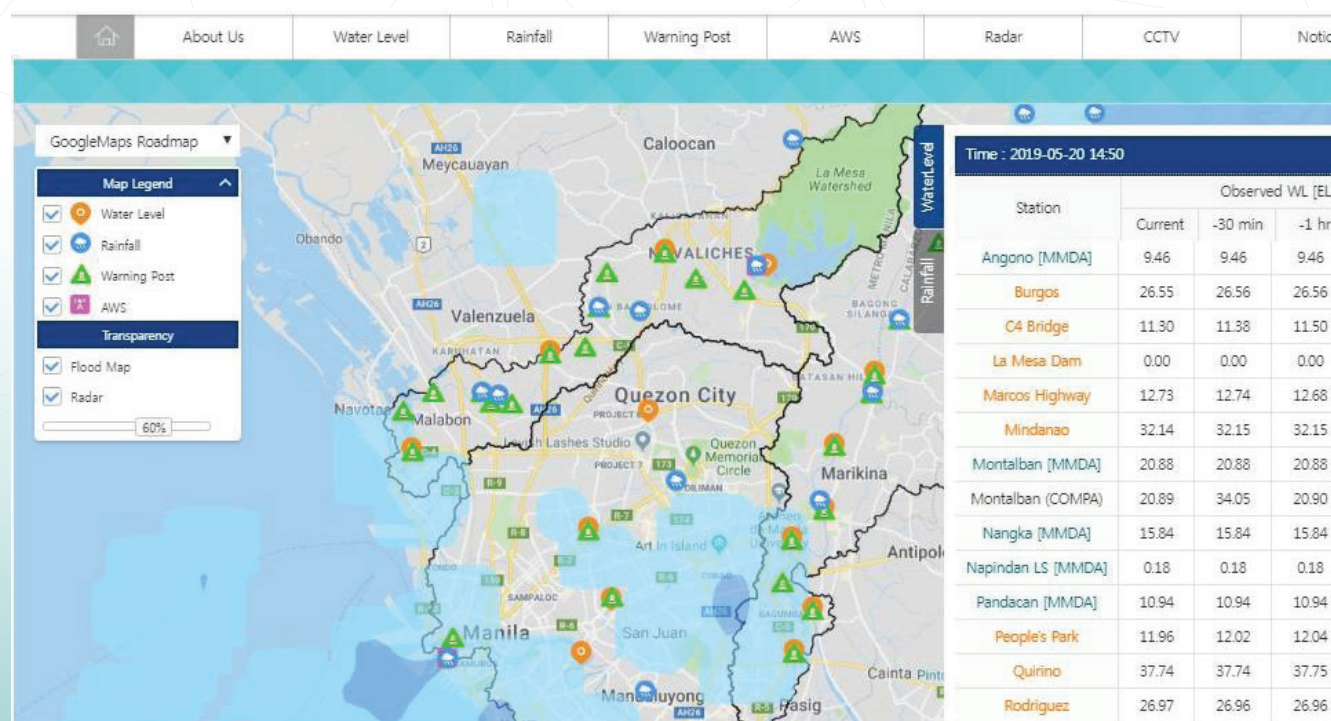
Payong PAGASA and PAGASA IDIS were launched during the Scientific Forum of the World/National Meteorological Day (WNMD) which was held on 23 March 2018 at the Amihan Conference Room. This mobile application is developed to have a wider dissemination Platform and to make climatological and agrometeorological information, seasonal forecasts and advisories conveniently accessible.

Climatological products accessible on the system are the Daily Monitoring of Rainfall and Temperature (DMRT), Monthly Climate Assessment and Outlook (MCAO), Daily Farm Weather Forecasts and Advisories (FWFA), 10-day Regional Agri-Weather Information (TRAI) and 10-day Weather Outlook (TWO)

The development of this system is in response to the advent of technological advancement where PAGASA forecasts and advisories should be made available not only on the internet but also on mobile systems considering the need for localized climate information and services (CIS).

FLOOD MONITORING, FORECASTING AND WARNING PROGRAM

Flood Forecasting and Warning Services



Flood advisory is one of the major products that PAGASA provides for the protection of flood-prone communities against flood hazards. In 2018, 1,886 general food advisories and 114 detailed/localized flood bulletins were issued.

The establishment of Flood Forecasting and Warning (FFWS) enables PAGASA to provide detailed/localized flood advisories, thus, its establishment were put in priority. As of 2018, 12 FFWS were already in place. These are located in Pampanga, Agno, Bicol, Cagayan, Pasig-Marikina, Tagum-Libuganon, Cagayan de Oro, Jalaur, Tagoloan, Abra, Davao and Buayan-Malungon.

Inauguration of the Project Automation of Flood Early Warning System for Disaster Mitigation in Greater Metro Manila

The inauguration of the Project Automation of Flood Early Warning System for Disaster Mitigation in Greater Metro Manila was launched on 7 December 2018 in PAGASA, Quezon City. The said project is a joint initiative of Korea International Cooperation Agency (KOICA) and DOST-PAGASA.

Korean envoy to the Philippines, Ambassador Han Dong-Man, together with the DOST Secretary Fortunato T. De La Peña, PAGASA Administrator, Dr. Vicente B. Malano and KOICA Country Director, Myung Seop Shin were present during the said ceremony.

On 26 September 2009, Tropical Storm Ondoy (Ketsana) caused the Marikina River reached its highest water level resulting to loss of lives and properties. This event was a call to the national government and foreign institutions to invest in flood forecasting and warning activities to alleviate inundation impacts in the country.

The \$5.2M grant by the Korean Government through KOICA aimed to provide advance warning to imminent floods in flood-prone communities in Metro Manila. Various early warning systems (EWS) or monitoring facilities such as Rainfall Stations, Water Level Stations, Warning Post Stations and CCTV Stations were given to the Agency. Workshops and flood drills were conducted to various LGUs to enrich them on the use of the installed system.



04 Establishment of the Infrastructure(10) – Command Center

No.	Item	Model	Qty.
1	NVR	XRN-1610	1
2	NAS	TS-453U-RP	1
3	LED DID Monitor	LH55UDEH4BB	6
4	DID Bracket	fabrication	6
5	HDMI Matrix Switcher	VDM-16X	1
6	IP Wall Controller	DXN-4200	1
7	Main Control Unit	GROOM-200	1
8	Operation PC	DB400TB6B-G5F	1
9	Monitor	LS24F350FHK	1
10	PTZ Controller	SPC-7000	1
11	UPS	GTX4-3000RT230	1

KOICA Automation of the Flood Early Warning System for Greater Metro Manila **TOCONET** **Dongha Engineering** 39



Establishment of Telemetered Flood Forecasting and Warning Systems for Davao, Buayan-Malungon and Tagoloan River Basins

The Government of Japan has provided weather and flood early warning facilities in three major river basins in Mindanao namely, Davao, Buayan-Malungon and Tagoloan since late 2014. Equipment such as Automatic Weather Stations (AWSs), Water Level Sensors (WLs), and Rainfall Gauges (RGs) were provided by the Small Medium Enterprises (SMEs) of Japan and administered by the Japan International Cooperation System (JICS), a general incorporated foundation assistance and support for developing countries, such as the Philippines. These early warning facilities granted to PAGASA would aid mitigate flooding in the said river basins.



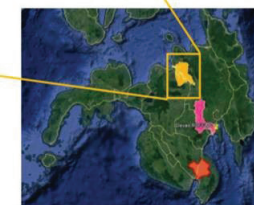
The complete system communicates via radio telemetry and data to be sent to the newly built Flood Forecasting and Warning Center (FFWC) in Davao City for Davao River Basin (RB), General Santos International Airport Compound for Buayan-Malungon RB and at Mindanao PRSD compound in El Salvador City, Misamis Oriental for the Tagoloan RB. Overall, the monitoring equipment established through the project is 3 AWSs, 17 WLs with alarm and 18 ARGs.

TAGOLOAN RIVER BASIN

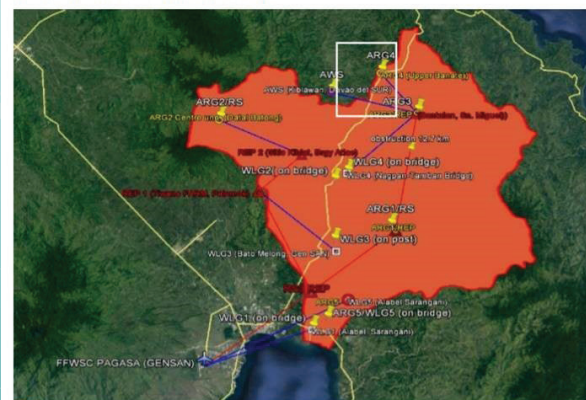


TAGOLOAN RIVER BASIN - HYDROMET SENSORS LOCATIONS

STATION	LATITUDE	LONGITUDE
ARG - Dahilayan	8.219769	124.850917
ARG - Poblacion	8.287583	124.284833
ARG - Alae	8.416400	124.807131
ARG - San Luis	8.533000	124.940260
WLA - San Vicente Bridge	8.383750	124.967944
WLA - Kulaman Bridge	8.378167	124.958944
WLA - Malibog Bridge	8.378167	124.958944
WLA - Sta. Ana Bridge	8.536278	124.794889
WLA - Tagoloan Bridge	8.542139	127.755861
AWS - Malaybalay	7.235500	125.455306
Repeater - Guihean	8.404500	125.002500



BUAYAN-MALUNGON RIVER BASIN



BUAYAN-MALUNGON RIVER BASIN - HYDROMET SENSORS LOCATIONS

STATION	LATITUDE	LONGITUDE
ARG - Bantalan	6.127490	125.259140
ARG & WLA - Alegria	6.113467	125.240506
ARG - Banate	6.422669	125.397361
ARG - Centro Uno	6.156731	125.288660
ARG - Suffa Alimanab	6.224561	125.268789
WLA - Upper Buayan	6.477439	125.318369
WLA - Batomelong	6.112417	125.238306
WLA - Nagpan Ampon	7.235500	125.455306
AWS - Kiblawan	6.341228	125.279131
Buayan-Malungon Flood Forecasting and Warning Center	6.057083	125.103400



Japan's Non-Project Grant Aid (NPGA) for the Provision of Japanese Small Medium Enterprises' (SMEs) Products for the Republic of the Philippines

This project is a grant by the Government of Japan in collaboration with the Japan International Cooperation Agency (JICA) and Helicom Corporation Inc. Japan. It aims to provide ten Wind Speed and Direction Sensors (WSDS) to ten PAGASA field stations. In 2018, seven out of ten WSDS were already installed in selected PAGASA field stations such as in Catarman, Cuyo, Coron, Daus, Masbate, UP-LB and Isabela State University. Only three remaining sites are left for WSDS installation but units for Dipolog and General Santos Synoptic Stations were delivered in Davao, and unit for Kalayaan Island was delivered in PAGASA Central Office.

A training on the Operation and Maintenance of Wind Speed and Direction Sensors (WSDS) was held on 25 January 2018 at the Amihan Conference Room at PAGASA Central Office.



Project Launch of OASIS Platform for Climate and Catastrophe Risk Assessment-Asia

The German Ministry of Environment, in collaboration with PAGASA, National Reinsurance Corporation of the Philippines (NatRe), Katrisk Germany GMBH and University of the Philippines-Diliman, launched the OASIS Project on 13 November 2018 at the Blue Leaf Cosmopolitan, Libis, Quezon City.

The project aims to overcome inadequate understanding about risks associated with climate events and reduce the gap between insured and uninsured losses in the Philippines through building capacity to understand and develop catastrophe model and through increasing the availability and access to transparent data and analytics. It also intends to facilitate development of effective financial risk transfer mechanisms to reduce the proportion of economic losses borne by the government, business and households.

The project will also hold capacity-building activities for government and non-government institutions for the development, use, and understanding of climate risk and the use of catastrophe models that will provide frequency and severity of potential events. It will also develop catastrophe models for flood except storm surge and establish e-market place to make data and models available to end-users for match making purposes to modeling community.



ASTRONOMICAL OBSERVATION AND MONITORING PROGRAM

2018 National Astronomy Week Celebration

National Astronomy Week (NAW) is celebrated every 3rd week of February per Proclamation No. 130, s. 1993. In 2018, the celebration was held from 18 to 24 February, which marked the NAW's 25th year. Various astronomical organizations and institutions gathered to come up with a unified theme for the year, "Astronomy Modernization: A Great Leap for a Collaborative Astronomy Community in the Philippines".



The opening ceremony was held in PAGASA Planetarium on 18 February 2018. It was attended by astronomical organizations from different universities namely Astronomical League of the Philippines (ALP), GAIA and Philippine Astronomical Society, PAGASA's Space Sciences and Astronomy (SSAS) led by Engr. Dario Dela Cruz.

The main event of the celebration was held in Cagayan De Oro City in coordination with the Mindanao PAGASA Regional Services Division (PRSD) and the Department of Education (DepEd). The event was hosted by the University of Science and Technology of Southern Philippines. Various activities comprised the celebration, such as the conduct of Seminar/Workshop on Basic and Observational Astronomy for public school teachers in Cagayan De Oro City participated by 61 Science teachers.

DOST-PAGASA Kicks Off 2018 Typhoon and Flood Awareness Week (TFAW)

The DOST-PAGASA celebrated TFAW 2018 from 18-24 June with the theme "Science and Technology Innovation: A Way to Typhoon and Flood Risk Reduction". TFAW is celebrated annually per Presidential Proclamation 1535, series of 2008.

The celebration kicked off with the conduct of a press conference on 18 June 2018 at the Amihan Conference Room. Media personnel from different news outlets attended the presscon. Dr. Vicente B. Malano, PAGASA Administrator, gave an opening statement proceeded by a press statement by Dr. Esperanza Cayan, Chief of Weather Division on the Agency's preparation for the rainy and tropical season. Ms. Shiela Schneider and Ms. Analiza Solis, both technical personnel of PAGASA, discussed early flood warning for Metro Manila and Climate Outlook, respectively.



Prior to the official celebration of TFAW, Infographics Competition was launched, which had youths as target participants. Winners of the competition was awarded after the press conference. Mr. Christian Joshua Lapuz won the first prize followed by Ms. Patricia Ong as the second best among the seven entries.

Furthermore, planetarium show, lecture on basic meteorological instruments and exhibits on rainfall intensity, tropical cyclone and augmented reality terrain/flood simulator were organized in coordination with the Public Affairs and Information Services Office (PAISO) of the Local Government of Quezon City. Grades 4 to Senior High School were target participants of the activities where seven schools participated. These activities were conducted on 20 June 2018 which included film showing on disaster preparedness.

More activities were included in the celebration, which included bloodletting activity organized by the Philippines Meteorological Society (PMS), conduct of Climate Outlook Form (COF), and the Orientation Seminar and Consultative Meeting with the (DepEd), in line with the recently completed JPOW Project, funded by the Japan International Cooperation Agency (JICA).

The annual Media Seminar-Workshop on the Agency's products and services wrapped-up the week-long celebration of TFAW which was held from 29 June to 01 July 2018 in Tagaytay City from. It included Media personnel from the National Capital Region (NCR), composed of novices and old timers.



RESEARCH AND DEVELOPMENT PROGRAM FOR WEATHER AND ALLIED SCIENCES

Analyzing CORDEX – SEA Regional Climate Simulations for Improved Climate Information over the Philippines: Sea Surface Temperature (SST) Influence, Variability and Extremes, Tropical Cyclone Activity

This program is a collaborative initiative of Ateneo de Manila University, Manila Observatory, PAGASA and DOST-PCIEERD. It has three project components.

Project 1: Multi-temporal and Extreme Analysis of Modeled Climatology over the Philippines in the SEA CORDEX Domain



The main objective of the project is to assess the capability of the Southeast Asia Regional Climate Downscaling (SEACLID)/CORDEX Southeast Asia (SEA) modeled results in capturing the multi-temporal change, variability, and extremes over the Philippine Region. Specifically, it aims to produce a model ensemble that can represent the whole CORDEX SEA dataset, to compare climatological means of modeled result with the observed and to assess the model performance in capturing large-scale atmospheric circulations that drive regional climate variability. It also intends to assess the model performance in capturing extremes, given the existing indicators for analyzing extremes and to determine possible mechanisms behind climate variability, extremes and change and investigate potential discrepancies between model results and observation.

Project 2: Analysis of the Influence of SST Representation in Downscaled Regional Climate using the SEACLID/CORDEX-Southeast Asia Simulations



The major aim of this project is to assess the importance of SST in simulating regional climate over Southeast Asia. More specifically it intends to describe the historical SST over Southeast Asia from observed data in terms of spatial patterns and its annual/decadal variability. It will also work on understanding the influence of SST variability on regional climate in the region and will assess the uncertainty in downscaled regional climate output contributed by the representation of SSTs in climate reanalysis data and the Global Climate Models (GCMs) used in Coupled Model Intercomparison Project Phase 5 (CMIP5) in the 5th Assessment Report of the Intergovernmental Panel on Climate Change.

Project 3: Detecting Tropical Cyclones (TCs) in a Downscaled Regional Climate Model (RCM) for CORDEX SEA

This project intends to investigate the ability of the Regional Climate Model Version 4 (RegCM4) to simulate tropical cyclones by analyzing the hindcast simulations of CORDEX-SEA and assessing the model's ability to reproduce historical climatology given the sensitivity experiments. It will also study on how to improve and tune the physics of RegCM4 to accurately model TC climatology in the Western North Pacific (WNP), therefore, applying the maximum model configurations for future TC projections driven by the regional downscaled climate from the CORDEX-SEA initiative. The ultimate goal of the project is to contribute in producing accurate predictions of TC activity for the improvement of understanding, preparedness and mitigating actions against TC-related disasters.

Project Climate Twin Phoenix – Resilience and Preparedness Towards Inclusive Development (PCTP-RAPID) Severe Wind and Risk Assessment

PCTP-RAPID project is implemented in collaboration with the Manila Observatory, funded by the DOST-PCIEERD. It aims to develop understanding of hazard and to assess the risk due to severe wind posed to Leyte, Samar and Eastern Samar by winds generated by TCs.



During the year, meetings and workshops were conducted involving concerned LGUs and other organization such as ClimexDB, and UPD-ICE, to draft methodology, to determine the exposure data that will be used for the project and to have discussion on the fragility and vulnerability computation for the existing exposure data. Typhoon Ompong Post-assessment report on structures with simulations of Tropical Cyclone Risk Model (TCRM) winds was also done.

In addition, zonal statistics and fragility program to be used for the project were developed and simulation was run for the National Grid Corporation of the Philippines (NGCP) toppled towers, caused by Typhoon Ompong.

Weather and Climate Science for Service Partnership (WCSSP) Southeast Asia

The WCSSP project supports scientific partnerships between the UK and 17 partner countries. This initiative aims to develop science and innovation partnerships that promote the economic development and welfare of collaborative countries. The WCSSP is developing a global network of partnerships that harness the scientific expertise needed to strengthen the resilience of vulnerable communities to weather and climate variability.

The WCSSP in Southeast Asia currently works bilaterally with Indonesia, Malaysia, the Philippines and UK to engage in scientific weather related research that aims to:

- Improve the understanding of the impact of large-scale atmospheric processes on the weather and climate in Southeast Asia
- Assess, develop and improve convective scale models (local fine scale modes) in order to forecast high impact weather better over Southeast Asia
- Improve processes which translate weather forecast models into advice that can help mitigate against high impact weather at a range of lead-times from hours to months;
- Ensure that the improvements made to weather forecasts meet the needs of end users.

There are three work packages for WCSSP Southeast Asia to deliver the above aims:

- **Work Package 1:** Global Scale Science – improve the understanding of the impact of large-scale atmospheric processes on the weather of SE Asia and the representation of this understanding in Global models;
- **Work Package 2:** Regional Scale Science – improve the understanding of regional to local scale processes and develop better convective-scale weather forecast models for SE Asia.
- **Work Package 3:** Improving and understanding the needs of

high impact weather advice- understand user needs, develop applications that support these needs and ensure that the science in other work packages directly helps mitigate against high impact weather (HIW) in SE Asia.

1st WCSSP Southeast Asia Regional Science Workshop



The 1st WCSSP Southeast Asia Regional Science Workshop was hosted by the Indonesian Agency for Meteorology Climatology and Geophysics. The event was participated by delegates from BMKG, Indonesia; NADMA, Malaysia; PAGASA, Philippines & MET OFFICE, United Kingdom. It was the first regional science meeting, which aimed to strengthen collaboration among all scientists and forecasters working on WSSP Southeast Asia to ensure the effective delivery on the aims of the project. The meeting allowed scientists and forecasters from collaborating countries to discuss their work related to WCSSP focusing on:

- Sharing progress and successes of latest in science, developing a greater understanding of the linkages across the partnership,
- Review the work packages and identify where there are synergies between country activities and between the work packages,
- Explore the links of other WCSSP projects.

Manila Economic and Cultural Office – Taiwan Economic and Cultural Office (MECO-TECO) VOTE Program: Improvement of Forecast Capability on Weather, Marine Meteorology and Short Range Climate

The MECO-TECO VOTE program is a joint initiative among Taiwan Central Weather Bureau (CWB), National Taiwan University, PAGASA and DOST-PCIEERD. It is composed of three project components.

1. Typhoon Formation, Structure and Intensity Change in Western North Pacific and Wave Observation and Modeling
2. Heavy Rain Monitoring and Forecasting in the Mountainous Area and Early Warning Landslides
3. Observations and Dynamical Downscaling of Seasonal and Sub-Seasonal Forecast

Workshop on El Niño-Southern Oscillation (ENSO), Madden-Julian Oscillation (MJO) and Associated Extreme Rainfall Events in Maritime Continent and South China Sea (SCS)

The ENSO/MJO/SCS workshop was held in Taipei, Taiwan on 16-20 July 2018, to share and discuss recent scientific advances in understanding ENSO, MJO, and their application to seasonal-to-sub seasonal (S2S) climate monitoring and forecasting being used between the National Meteorological and Hydrological Services of the Philippines and Taiwan.

TC tracking, S2S forecasting using the Model for Prediction Across Scales (MPAS), techniques for long term climate data homogenization and quality control procedure, methods for gridding climatological data, and S2S forecasting tools being used by PAGASA and Central Weather Bureau (CWB) were among the topics presented and discussed during the workshop. Experience and knowledge sharing, data exchange, and further collaborative plans between DOST-PAGASA project members and Taiwanese counterparts concluded the workshop.



2018 VOTE Meteorology Conference

The 2018 VOTE Meteorology Conference was held in Taiwan on 06-08 November 2018 to promote professional interaction and learning, through sharing of research ideas and accomplishments. It also intended to give directions to the current and future activities of VOTE Project.



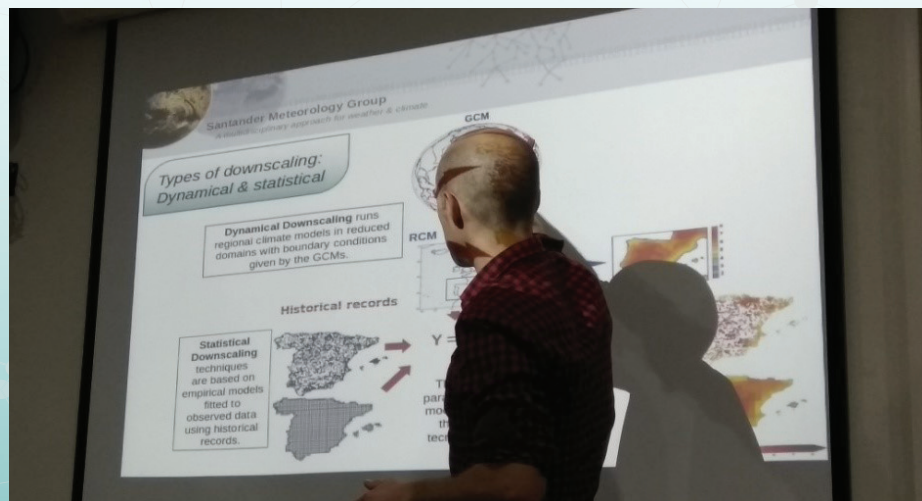
Participants from PAGASA: Ms. Ger Anne Marie Duran, Ms. Shirley David, Ms. Edna Juanillo, Dr. Cynthia Celebre, Dr. Flaviana Hilario, Dr. Esperanza Cayanan (1st, 2nd, 3rd, 4th, 6th and 9th from right, first row) and Mr. Michael Bala (1st from right at the row behind).

Food and Agriculture Organization (FAO) of the United Nations Integrating Agriculture in National Adaptation Plans (NAP-Ag) Project

The FAO NAP-Ag project has two major components entitled “Services for the development of municipal level sub-seasonal surface wave height and solar radiation forecast products” and “Services for assessing the requirements to enhance the climate and weather information system in the Philippines through upgrading, expansion and data sharing”.

The first component aims to identify and integrate climate adaptation measures in the agriculture sector to relevant national planning and budgeting. More specifically, it seeks to build technical capacities to forecast solar radiation and wave height and to improve capacities in conducting sub-seasonal forecast at municipal level of the identified pilot municipalities. It also aims to develop capacities of regional and provincial agricultural technicians to use forecast products for farm and fisheries advisories. The second component of the project aims to assess the requirements for upgrading and expansion of the national climate and weather information system.

Training Workshop on Seasonal Forecasting



The training workshop on Seasonal Forecasting is part of the capacity building activity of FAO-NAP-AgS Project. It was conducted at CAD Conference Room on 31 January to 08 February 2018 to discuss bias correcting 0-month lead predictions of precipitation and temperature from the Coupled Forecast System Model Version 2 (CFSv2) hindcast (1981-2010) for the standard 3-month long seasons, which was further extended to cover longer 6-month long seasons.

Japan Meteorological Agency (JMA) / Tokyo Climate Center (TCC) Training Seminar on Seasonal Climate Forecast



The JMA-TCC training was conducted at Cocoon Hotel in Quezon City on 10-12 July 2018 to examine the PAGASA pre-packaged sub-seasonal 10-day probabilistic forecast for improvement and to explain how seasonal forecast is generated using the Model Output Statistics (MOS). The training was also conducted to promote effective use of TCC's Interactive Tools for Analysis of the Climate System (iTacs), know and understand forecast verification and guidance and to check for possibility to include forecast parameters such as solar radiation and surface wave height into operational forecasting.

PHYSICAL RESOURCES AND OPERATIONAL TECHNIQUES PROGRAM

Establishment of PAGASA Doppler Weather Radar

Establishment of Doppler Weather Radars enhance the Agency's capability to provide accurate hydrometeorological and climate data that ensure safety of communities from natural hazards such as typhoon, climate and flood. It has the ability to scan and monitor rain clouds that enables the Agency to provide advance warnings and information. This gives Local Disaster Risk Management Offices and Local Government Units ample time to plan for evacuation of communities living in vulnerable areas.

Data sets from Doppler Radars are also used to provide climatological advisories useful to farmers, especially, in managing their cropping calendar according to the prevailing weather condition. It also has the capability to detect clouds, useful to cloud seeding operations, that helps mitigate impacts of El Niño.

In 2018, three Doppler Weather Radars were established. These radars are in addition to the existing 13 Doppler Weather Radars located in strategic areas across the country. Additional four more Doppler Radars will be established as the Agency aims to complete 20 Radars until 2020.

Establishment of Doppler Weather Radar in Busuanga, Palawan



The Busuanga Weather Radar was completed in March 2018 to broaden the scope of weather observation. It would enhance forecasting capability of the Agency, especially, in nearby provinces of Palawan.

Completion of the Newly Installed Doppler Radar in Daet, Camarines, Norte



The establishment of Doppler Weather Radar in Daet was completed in June 2018 in Barangay, Bagasbas, Daet, Camarines Norte. It is expected to enhance the accuracy of the Agency's forecasting capability, especially, in areas within Bicol Region.

Establishment of PAGASA Doppler Weather Radar in Baler



The Doppler Weather Radar in Baler Station Complex became operational in October 2018. It adds to the network of monitoring stations for the provision of timely and accurate meteorological information to the community and stakeholders, which include Rainfall Advisory, and Thunderstorm Advisory.

Installation of Automatic Weather Station (AWS) in 53 Sites

53 more AWSs were installed in 2018 to augment weather observation in selected areas and remote parts of the country. These are in addition to the existing 83 units established nationwide. The additional 53 AWSs is part of the Modernization Program of the Agency.

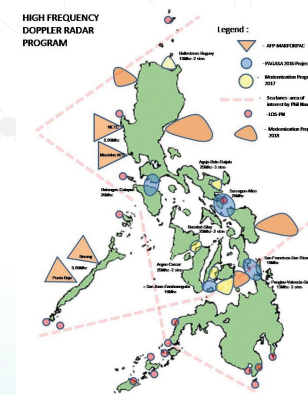
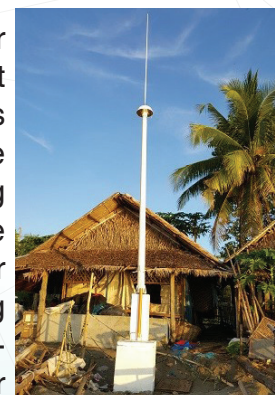
AWS is an automated version of the traditional weather station, which collects various weather parameters such as temperature, pressure, humidity, rainfall and wind direction transmitted to central forecasting for weather analysis and prediction.



Establishment of High Frequency Radars (HFRs)

HFR stations monitor significant wave height and other parameters to enhance the formulation of shipping forecast and issuance of gale warnings for maritime shipping routes and local roll-on roll-off ship transfer routes.

In 2018, eight HFRs were installed in addition to the existing 12 HFRs of the Agency.



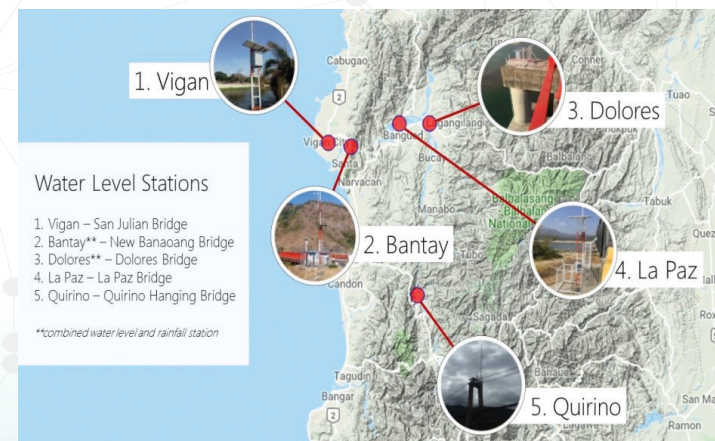
Enhancement of Aviation Forecasting and Warning Capability by Setting-up Lightning Detection Systems

LDS enhances monitoring and tracking of weather disturbances such as thunderstorms and clear air turbulence crucial to airport operations. In 2018, 21 LDS, were installed in selected areas.



Strengthening Hydrometeorological Services through Establishment of Flood Forecasting and Warning System (FFWS)

Establishment of FFWSs in major river basins of the country is part of the major initiatives of the Agency as it aims to broaden advance information on inundation warnings, specifically, to flood-prone areas. This year, establishment of FFWSs in the country's major river basins namely Abra, Davao, Buayan-Malungon and Tagoloan River Basins were completed. These new systems are additional to the existing eight FFWSs.



A New Hope in the Bagong PAGASA Website

The new PAGASA website (bagong.pagasa.dost.gov.ph) was launched at the Oak Conference Room, Sequoia Hotel in Quezon City on 11 June 2018.

Guests from various sectors and regional offices came to witness the finalized and fully functional website. The event was attended by distinguished guests, DOST Secretary Fortunato T. De La Peña, PCIEERD Deputy Executive Director Engr. Raul C. Sabularse, PAGASA Administrator Vicente B. Malano and DOST Undersecretary Dr. Renato U. Solidum, who gave an inspiring message through video message. Other notable guests who also joined the event were NDRRMC Executive Director and OCD Administrator Usec. Ricardo Jalad and DILG Undersecretary Epimaco Denising.



PAGASA Deputy Administrator for Operations and Services and Project Leader Dr. Landrico U. Dalida, Jr. led the presentation of the website. Walkthrough and instructional videos aided the presentation, underlining new and relevant features of the website pertinent to the needs of various users in their respective sectors. Among the new website features presented was the ongoing research on Impact-based Forecasting Warning to Wind Hazard supervised by Dr. Leoncio Amadore. After the presentation, a press conference followed, covered by television, radio, and newspaper media.

PAGASA Deputy Administrator for R&D Dr. Flaviana Hilario concluded the event with a closing remark. She expressed gratitude to all who attended the said activity for a fulfilling and stimulating experience.

Other Significant Accomplishments:



Completed the rehabilitation/improvement of the PAGASA upper-air synoptic station building in Tanay, Rizal



Rehabilitated the old Virac Radar Station building



Ground breaking of Quirino PAGASA Weather Station



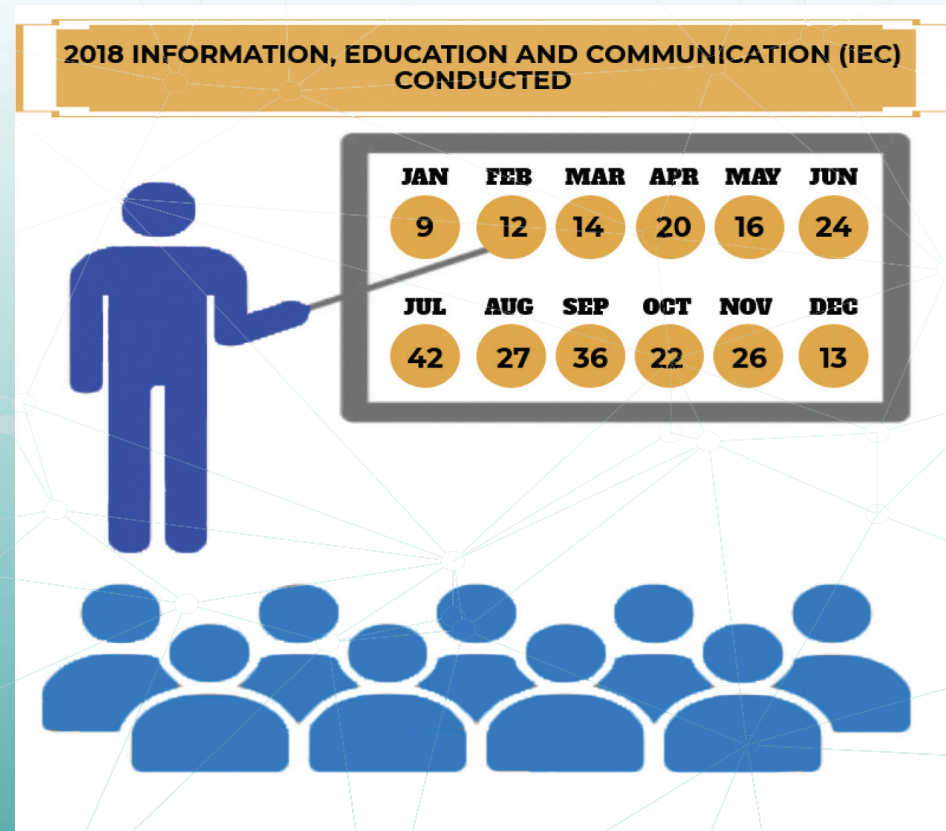
Repair of Baguio Synoptic Station – Inflation Building



Completion of the rehabilitation of Iba PAGASA station building

CLIMATE CHANGE ADAPTATION, DISASTER PREPAREDNESS AND RISK REDUCTION PROGRAM

Information, Education and Communication (IEC) Campaigns were conducted to selected stakeholders/beneficiaries nationwide to disseminate various products and services of the Agency. Information were disseminated in layman scheme to enhance the target audience' decision-making especially during occurrence of a prevailing weather condition. The infograph below shows the number of IECs conducted by the Agency in a month.



Public Information, Education and Advocacy Program

Information Education Communication (IEC) Campaign on Government and Non-Government Organizations (NGOs)



Lecture on Community-based Disaster Risk Reduction and Management Training Course for Formal Labor and Migrant Workers on 18-20 June 2018 at Wilmer's Resort Santiago City, Isabela



Lecture on Contingency Planning Workshop at Villablanca Hotel in Tuhuegarao City on 27-29 July 2018



Orientation/Coaching on the Enhanced Local Climate Change Action Plan (LCCAP) on 30-31 July 2018 in Tuguegarao City



Lecture on Climate Outlook during the Handover and Completion Disaster Risk Reduction and Climate Change Adaptation Project for the Province of Benguet hosted by WFP -Burnham Suits, Kzad Road, Baguio City



Youth Summit on Environment and Climate Change in Tuguegarao City on 30 August 2018



Lecture on Hydro-Met Hazard in the Disaster Risk Reduction Management for farmers of Benguet Province held in Strawberry Hotel, La Trinidad Benguet



Participated and facilitated Flood Drill for the Deployment of Early Warning System (DEWS) Project – Provincial IEC at Socbot Elementary School , Pinukpok, Kalinga on 03 Aug. 2018



Lecture on Understanding Weather Hazards in the Phil in the Seminar Workshop on Gender Mainstreaming in Workplace-Disaster Risk reduction Management and Basic First Aide Training at Awesome Hotel , San Juan La Union (12 Sept 2018)



Lecture on Hydro- Meteorological Hazard and attended the 1st Cordillera Regional Forum on Land Slide at City Light Hotel, Upper Gen Luna Road , Baguio City on 4-5 December 2018 (04- 05 Dec. 2018)



Presented Hydromet Hazard and Climate Change in Laoac, Pangasinan on 11 October 2018

Simple Science Research Forum and OJT Commencement Program



This activity was conducted by PAGASA in collaboration with the Cagayan State University (CSU) in Tuguegarao City from May to July 2018. It aims to impart knowledge on PAGASA's products and services to the OJT BS Physics students of CSU including increasing awareness on how to respond during natural disasters.

Radyo Panahon – Impormasyong Napapanahon Radio Program

The Northern Luzon PAGASA Regional Services Division (NL-PRSD), in collaboration with the Philippine Broadcasting System (PBS), launched Radyo Panahon – Impormasyong Napapanahon Radio Program aired on DWPE Radyo ng Bayan in Tuguegarao City. With a common goal to make the provinces of Cagayan and Isabela and its adjacent municipalities updated on the weather and climate information, NL-PRSD and PBS entered into MOA to make this initiative possible.

The program discusses various products and services of the Agency namely Local Weather Forecast, Updates of prevailing TC affecting the region, astronomical phenomena, flood bulletin and flooding scenario, Climate Outlooks and products among other, in local dialect.

This initiative is being replicated in Radyo-Pilipinas-Tabuk in Kalinga in coordination with NL-PRSD.



Trainings on Climate Information System for Agriculture

In 2018, several trainings were held in selected areas in Luzon to inform on climate information system and awareness on climate extremes. These trainings were done in collaboration with the Agricultural Training Institute of the Department of Agriculture. Agriculture and fisheries sectors were the key participants in the series of trainings conducted.



Cabagan, Isabela, 18-20 June 2018



San Fernando, Pampanga, 29 August 2018



Baguio City, 13-14 September 2018



Tarlac, 9-11 October 2018



Banga, Aklan, 26-28 November 2018



CAD Bldg., PAGASA, 19 September 2018

HUMAN RESOURCE DEVELOPMENT PROGRAM (HRDP)

Writeshop for the Calibration and Profiling of Technical Competencies



The Writeshop for the Calibration and Profiling of Technical Competencies was held at the CAD Conference Room, Weather and Flood Forecasting Center (WFFC) in PAGASA on 10-23 April 2018.

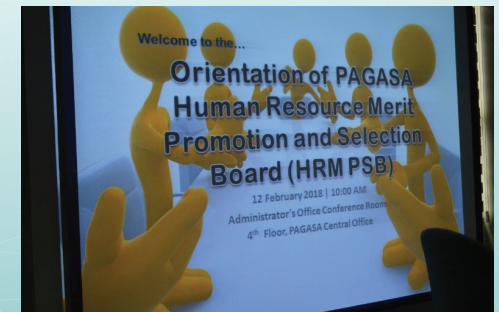
The activity aimed to identify competencies for positions in PAGASA that are aligned with the Agency's strategic directions, performance requirements and unit functions. It also intended to conduct competency inventory, calibrate and profile technical competencies according to positions across all Offices/Divisions.

Further, it aims to achieve the development of PAGASA competency model that will set standards and metrics to developing HR systems and processes.

Orientation on PAGASA Human Resource Merit Promotion and Selection Board (HRM PSB)



The Civil Service Commission (CSC) 2017 Omnibus Rules on Appointments and other Human Resource Actions (ORA OHRA), ensures that provision of policies in the government are in accordance with other administrative issuances and pertinent laws to respond to the changing needs of human resource management.



On 12 February 2018, the orientation on PAGASA HRM PSB, was held at the Administrator's Conference Room in PAGASA to ensure that the process of hiring and promotion is in accordance with the rules and regulation of CSC. It also aims to familiarize the PAGASA HRM PSB with the current policies and responsibilities and to update on new rules and regulation for judicious and objective selection of candidates/applicants in hiring personnel in the Agency.

Technical Human Resource Development

Meteorologists Training Course (MTC)



The World Meteorological Organization (WMO) designated PAGASA in 1968 as the Regional Training Centre (RMTTC) for South West Pacific (Region V). The Research & Development and Training Division (RDTC) of PAGASA, as the training component, conducts training courses on Meteorology, Hydrology, Meteorological Observations and other specialized technical courses.

MTC is opened to PAGASA employees, personnel of other National Meteorological and Hydrological Services (NMHSs) and other interested applicants who passed the set requirements including the qualifying exam. The course aims to equip participants with the basic knowledge and skills in operational weather, flood analysis, forecasting, climate monitoring and prediction and research and development.

The duration of the course ran from 23 October 2017 to 10 October 2018. It was composed of theoretical and practical phases held in PAGASA-WMO Regional Training Center (RTC) and in Weather Division and selected stations of the Agency, respectively.

On 10 October 2018, 39 students/participants finished the course with Mr. Gabriel S. Miro as the top finisher of the class. The student's excellence and perseverance signified in the closing ceremony held in PAGASA-WMO RTC.

The conduct of MTC, as one of the technical courses offered by the Agency, has been a continuing initiative to support the pool of Weather Forecasters of the Agency.

Meteorological Technicians Training Course (MTTC)

Meteorological Technicians carry out weather, climate, and other environmental observations and assist weather forecasters in the dissemination of forecasts, weather warnings, and related information, products, and services. A reliable forecast depends on how accurate the observations were made, encoded and transmitted to the Weather Forecasting Center where data are recorded and plotted.

Aside from signifying its role on the designation of WMO, the conduct of MTTC is also a strategy of the Agency to supplement the need for Weather Observers/Technicians considering the number of synoptic and agromet stations of the Agency.

MTTC ran from 16 July to 21 December 2018 with 25 participants. The learning activities involved in the said course included of written examinations, practical exercises, term papers, and on-the-job training.

After completing the training course, students/participants are expected to observe weather parameters to be used in weather analysis, diagnosis, forecasting.

The closing ceremony was held on 21 December 2018 in PAGASA-WMO RTC. Girlie G. Cortez ranked first among other training participants.



ArcGIS Enterprise Trainings



Series of ArcGIS Enterprise Trainings were held from January to February 2018. Overall, seven trainings related to ArcGIS were held in 2018 at 19th floor Strata 100 bldg., Emerald Avenue, Ortigas Center in Pasig.

The series of trainings were conducted to gain knowledge and skill in ArcGIS, particularly, Managing Geospatial Data, Performing Analysis, Sharing Content on Web, Site Configuration and Configuring Base Deployment.

Refresher Course on Meteorological Observations, Practices and Procedures for National Capital Region (NCR-PRSD)



The refresher course activity was held from 29 May to 01 June 2018 at BSA Twin Towers, Ortigas Center in Mandaluyong. This initiative was conducted to refresh the knowledge and practices of National Capital Region (NCR) PRSD in Meteorology.

Training for the Hyperconverged Mirror Forecasting



The HyperConverged Mirror Forecasting is a back-up system that serves as Disaster Recovery Facility equipment. Training on the system was held in Singapore from 29 April to 5 May 2018. Aside from the said training, selected PAGASA personnel were able to inspect the whole processes of assembling, testing, and packaging of the system. They were also able to discuss the overview of the operational functions of the system.

Training on Multi-Function Laser Optic Disdrometer



The training on Multi-Function Laser Optic Disdrometer was held in Germany on 14-18 May 2018. Participants were able to inspect the process of assembling, testing, packaging and were able to discuss the theory of product applications and operational functions. Disdrometer measures particle size and distribution, fundamental in Radar-based precipitation estimation, which shows great potential in calibration and improving quality of radar data for a more accurate heavy rainfall and thunderstorm warning.



List of 2018 Masteral and Doctorate Graduates from PAGASA

Due to the changing flow in development assistance, several funding institution has collaborated with PAGASA in terms of scholarship grants. Some of the Agency's personnel were granted scholarship to support their pursuit of finishing a higher-level academic degree. This would support further an escalated commitment to government service.



Mr. Alvin G. Pura
Master of Science in Environmental Science
The University of Sydney, Australia
January 2017 - July 2018
Philippines-Australia Human Resource and
Organisational Development Facility (PAHRODF)



Mr. Lorenzo A. Moron
Master's Degree Program in Atmospheric Environment
Hankuk University of Foreign Studies, Seoul, Korea
August 2016 - February 2018
KOICA Scholarship Program



Ms. Sheila Joy L. Go-oc
Master of Disaster Management
National Graduate Institute for Policy
Studies, Tokyo, Japan
October 2017 - September 2018
JICA Scholarship Program



Mr. Benison Jay N. Estareja
Master of Science in Applied Meteorology and
Climate with Management
University of Reading, United Kingdom
September 2017 - September 2018
WMO Fellowship Program



Mr. Junie G. Ruiz
Master's Degree Program in
Atmospheric Environment
Hankuk University of Foreign
Studies, Seoul, Korea
August 2016 - February 2018
KOICA Scholarship Program

List of Technical Courses Conducted

Meteorologist Training Course

17 October 2017 to 10 October 2018

PAGASA Training Room

Workshop on the Development of Prototype Impact-Based Forecasting System

19 to 21 March 2018

PAGASA Training Room

Seminar/Workshop on Rainfall Warning System (RWS) for PRSD Personnel

4 to 6 April 2018

Golden Prince Hotel and Suites, Cebu City

Operational JMA Wave Modelling Training

9 to 13 April 2018

PAGASA Training Room

Forecasters Training Course on the Use of Convective Scale Models (Batch 1)

23 to 27 April 2018

PAGASA Training Room

PAGASA Forecasters Training on the Use of Convective Scale Models (Batch II)

30 April to 4 May 2018

PAGASA Training Room

2nd PAGASA River Flood Forecasting and Warning Centers (PRFFWCs) Conference/Workshop

15 to 18 May 2018

White Rock Hotel and Water Park,
Matina, Subic, Zambales

Refresher Course on Meteorological Observations, Practices and Procedures for NCR-PRSD Personnel

30 May to 1 June 2018

BSA Twin Towers, Origas Center

Meteorological Technicians Training Course

16 July to 21 September 2018

PAGASA Training Room

List of Non-Technical Courses Conducted/Attended

Mandatory Random Drug Testing for Public Officials & Employees (Central Office)

12 January 2018

PAGASA Amihan Conference Room

Orientation of PAGASA Human Resource Merit Promotion and Selection Board (HRM-PSB)

12 February 2018

PAGASA Amihan Conference Room

Orientation on Philhealth Policies, Tights and Privileges of Job Order Contract Personnel

19 February 2018

PAGASA Amihan Conference Room

Orientation on Senior Citizen laws, Pre-retirement and Livelihood Seminar (PRSD)

13 to 16 March 2018

Cagayan de Oro

Writeshop for the Calibration and Profiling of Technical Competencies

10 to 12 April 2018

PAGASA CAD Conference Room

Workshop on Succession Planning

13 April 2018

PAGASA CAD Conference Room

Orientation on Senior Citizen Laws, Pre-retirement and Livelihood Seminar (Central Office)

20 April 2018

PAGASA Amihan Conference Room

Reorientation Training for Administrative Policies/Issuances, PRIME-HRM and Values Orientation Workshop (Batch 1) cum Values Orientation Workshop (VOW)

24 to 27 April 2018

PAGASA CAD Conference Room

SSS Information Seminar

3 May 2018

PAGASA Amihan Conference Room

Basic Nutrition and Livelihood Seminar for the Elderly

5 June 2018

PAGASA Amihan Conference Room

Basic Nutrition and Livelihood Seminar for Persons with Disability (PWD)

7 June 2018

PAGASA Amihan Conference Room

HR Learning Session and PRIME HRM (Batch1)

19 June 2018

PAGASA AO Conference Room

Disability Laws and Sensitivity Training (PRSD personnel)

17 to 18 July 2018

PAGASA Amihan Conference Room

Flu Vaccination Activity

26 July 2018

PAGASA Amihan Conference Room

Gender Sensitivity Training (CO & PRSD)

31 July to 3 August 2018

Iloilo City

Gender Equality & Women's Empowerment (GEWE) Plan for 2019-2025

31 August 2018

Manila Grand Opera Hotel, Sta. Mesa, Manila

Psycho-social Awareness for PAGASA Personnel

5 to 6 September 2018

One Vittoria Hotel, Vigan City

PRIME HRM TWG Meeting

18 September 2018

PAGASA Amihan Conference Room

Mentoring and Coaching

24 to 25 September 2018

PAGASA Amihan Conference Room

Orientation for New Entrants cum Values Orientation Workshop

16 to 19 October 2018

PAGASA Amihan Conference Room

Caregiving Seminar for SCs (Central & PRSD Personnel)

6 to 9 November 2018

Davao City

DOST GAD Focal Point Assembly 2018

13 to 15 November 2018

Bohol

Supervisory Development Course

20 to 23 November 2018

PAGASA Amihan Conference

Finalization of Gender Equality and Women's Empowerment (GEWE) Plan for 2019-2025

22 November 2018

Malate Manila

List of International Meetings/Conferences Attended

Meeting at RIMES

22 January 2018

Thailand

Fiftieth Session of the Typhoon Committee

28 February to 03 March 2018

Hanoi, Viet Nam

Joint Meeting on Coordination Procedure for Collaborative SIGMET Issuance and Signing of the Memorandum of Cooperation

06 to 07 March 2018

Japan

Special Board of Advisers to COST (BAC) Retreat and the 5th Meeting of BAC

11 to 14 March 2018

Bangkok, Thailand

Coordination Meeting for SIGMET Coordination in Southeast Asia Singapore

27 to 29 March 2018

Singapore

Technical Conference on Future Challenges and Opportunities in Agricultural Meteorology

16 to 17 April 2018

Korea

17th Session of the Commission for Agricultural Meteorology

18 to 20 April 2018

Korea

40th Meeting of the ASEAN Sub-Committee on Meteorology and Geophysics

02 to 04 May 2018

Singapore

Meeting of the Working Group on Tropical Meteorology Research and Workshop on the Total Warning System Concept
11 to 13 September 2018
Auckland, New Zealand

RA V Management Group Meeting for the Preparation of the RA V-17
17 to 18 September 2018
Indonesia

First International Conference on Tropical Meteorology and Atmospheric Science (ICTMAS)
19 to 20 September 2018
Indonesia

Ninth Asia-Oceania Meteorological Satellite Users Conference (AOMSUC-9)
08 to 10 October 2018
Indonesia

7th Working Meeting of Typhoon Committee Working Group on Hydrology
09 to 12 October 2018
Japan

Meeting of RA II WIGOS Project Coordination Meeting of RA V Task Team on Satellite Utilization
11 October 2018
Indonesia

Regional Conference (RECO)
12 to 13 October 2018
Nuku'olafa, Tonga

17th Session of the Commission for Instruments and Methods of Observation (CIMO-17)
13 to 16 October 2018
Netherlands

17th Session of the Regional Association V (RA V-17) of the WMO
15 to 17 October 2018
Nuku'olafa, Tonga

10th Southeast Asia Astronomy Network (SEAAN) Meeting
19 to 21 October 2018
Lampung, Indonesia

6th Meeting of the Intergovernmental Board on Climate Services Management Committee (IBCS MC-6)
24 to 25 October 2018
Rome, Italy

Inspiring Meeting to Promote a New Project for Flood Forecasting
28 to 31 October 2018
Korea

First Space-Based Weather and Climate Extremes Monitoring Demonstration Project (SG-SEMDP) Meeting
31 October to 02 November 2018
Kuala Lumpur, Malaysia

VOTE Meteorology Section Conference
05 to 08 November 2018
Taiwan

Regional Integrated Multi-Hazard Early Warning System for Africa and Asia (RIMES) 10th Council Meeting
12 to 13 November 2018
Thailand

Review of Basic Instructional Package for Meteorologists (BIP-M) and Basic Instructional Package for Meteorological Technicians (BIP-MIT)
27 to 28 November 2018
Geneva, Switzerland

WMO Global Campus Initiative
29 to 30 November 2018
Geneva, Switzerland

List of International Trainings Attended

Workshop on Operation and Maintenance of Radio-based Telemetry Systems
15 to 19 January 2018
Vienna, Austria

Factory Acceptance and Factory Training for the Project on the Provision of the WMO GTS/WIS Information System
21 to 27 January 2018
Kyoto, Japan

Factory Acceptance and Factory Training for the Project "Supply, Delivery, Installation, Testing, Training and Commissioning of One (1) Lot Himawari Cast Receiving System for Four (4) PRSDs
21 to 27 January 2018
Kyoto, Japan

TCC Training Seminar on Seasonal Forecast
28 January to 02 February 2018
Japan

WMO/ASEAN Training Workshop on Weather Radar Data Quality and Standardization
05 to 13 February 2018
Thailand

Doctor of Philosophy Program in Marine Meteorology
15 February 2018 to 30 June 2021
Korea

Training Program on the Automation of Flood Early Warning System for Disaster Mitigation in Greater Metro Manila
18 February to 03 March 2018
Korea

Factory Acceptance Test of Meteorological Equipment and Training on Weather-related Services
19 to 23 February 2018
Germantown, Maryland, U. S. A.

Factory Acceptance Test and Factory Radar Hardware Training for the BALER Weather Radar Project
19 to 23 February 2018
RaiffeisenstraBe 10, 41470 Neuss, Germany

Factory Acceptance Test and Factory HW Training of the DAET Weather Radar Project
19 to 23 February 2018
RaiffeisenstraBe 10, 41470 Neuss, Germany

Global Coupled Modelling Workshop and UM Partner Board Meeting
20 to 23 February 2018
Melbourne, Australia

Developments on Radar Data Quality Control and Associated Applications Program
11 March to 12 May 2018
Taiwan

Space-Based Weather and Climate Extremes Monitoring (SWCEM) Demonstration Project (SEMDP) Workshop
19 to 22 March 2018
Jakarta, Indonesia

JMA/WMO Workshop on Quality Management Surface Observations – RA II WIGOS Project
19 to 23 March 2018
Japan

WMO Severe Weather Forecasting Demonstration Project Southeast Asia (SWFDP-SeA) Regional Training Workshop on Severe Forecasting and Delivery of Warning Services
19 to 30 March 2018
Hanoi, Vietnam

Best Practices Workshop on Climate Change Projections and their Applications in ASEAN Countries
20 to 23 March 2018
Singapore

Women's Leadership Workshop
14 to 15 April 2018
Korea

Typhoon Committee Research Fellowship Scheme for 2018
23 April to 04 May 2018
Korea

Factory Acceptance and Factory Training for the Project “Supply, Delivery, Installation, Testing, Training and Commissioning of Digital HF Radio Data Collection System”
29 April to 05 May 2018
Adelaide, Australia

Factory Acceptance Test for the Project “Supply, Delivery, Installation, Testing, Training and Commissioning of One (1) Lot Hyperconverged Mirror Forecasting”
29 April to 05 May 2018
Singapore

Factory Acceptance Test of the Fully Motorized and Computerized 5.3-meter Radio Telescope
05 to 10 May 2018
United Kingdom

Final Workshop of the First Phase and the Second Technical Workshop of the Second Phase of the Southeast Asia Regional Climate Downscaling (SEACLID)/CORDEX Southeast Asia Project
07 to 09 May 2018
Malaysia

Severe Weather Forecasting Demonstration Project – Southeast Asia Training Desk
07 to 18 May 2018
Vietnam

2018 APEC Typhoon Symposium
08 to 10 May 2018
Taipei, Taiwan

Factory Acceptance and Factory Training for the Project “Supply, Delivery, Installation, Testing, Training and Commissioning of 22 Multi-Functional Laser Optic Disdrometer
14 to 18 May 2018
Kempton, Germany

Post-processing of Numerical Weather Prediction Outputs (The Philippines)

27 May to 09 June 2018

Korea

Unified Model User Tutorial and Unified Model User Workshop

04 to 15 June 2018

United Kingdom

Training Programme on Developing Climate Change Adaptation Projects for the Green Climate Fund

11 to 15 June 2018

Bangkok, Thailand

Southeastern Asia-Oceania Flash Flood Guidance System Operational Training (Step 3)

18 June to 13 July 2018

San Diego, U. S. A

1st WCSSP Southeast Asia Regional Science Workshop

21 to 22 June 2018

Jakarta, Indonesia

Project 1: Typhoon Formation, Structure and Intensity Change in Western NP and Wave Observation Training Program

24 to 30 June 2018

Taipei, Taiwan

Counterpart Training Program entitled Integrated Data Management of Flood Forecast and Warning System

24 June to 07 July 2018

Japan

VMWare Certification Training for the Project "Supply, Delivery, Installation, Testing, Training and Commissioning of One (1) Lot Hyperconverged Mirror Forecasting"

25 to 29 June 2018

Singapore

International Training Course on Application of Meteorological Satellite Products

26 June to 06 July 2018

Beijing, China

Factory Acceptance and Factory Training for the Installation of Aviation Weather Observation System

01 to 15 July 2018

Helsinki, Finland

Synergized Standard Operating Procedures (SSOP) II – Attachment Training

02 to 13 July 2018

New Delhi, India

Third DBCP Pacific Islands Training Workshop on Ocean Observations and Data Applications and the Fifth JCOMM Marine Instrument Workshop for Asia Pacific Region

09 to 12 July 2018

China

Training Workshop on Asian Aviation Hazardous Weather Coordination

09 to 13 July 2018

Beijing, China

Workshops on ENSO, MJO and associated extreme rainfall events in Maritime Continent and SCS

16 to 20 July 2018

Taiwan

Project 1: Typhoon Formation, Structure and Intensity Change in Western NP and Wave Observation Training Program

23 to 31 July 2018

Taipei, Taiwan

Factory Acceptance and Training of 2 units Wind Tunnel Assembly with Controller for Mindanao and Cebu

05 to 15 August 2018

Cologne, Germany

Master Class on Disaster Mitigation in Asia Pacific Advanced Network (APAN46)

05 to 09 August 2018

Auckland, New Zealand

ASEAN Workshop on Weather Modification 2018

06 to 09 August 2018

Bangkok, Thailand

2nd Training Workshop on Subseasonal to Seasonal Predictions for Southeast Asia

13 to 17 August 2018

Singapore

Typhoon Analysis and Forecasting Integration System II (TAFIS II) Training Session on Source Code Implementation and the Feedback of Weighted Analog Intensity Prediction (WAIP)

20 to 24 August 2018
Chinese Taipei

Training on Hydro-Meteorological Rainfall and Water Level Telemetry Monitoring System Equipment for Cagayan River Flood Forecasting and Warning System

20 to 24 August 2018
Kempten, Germany

APEC Climate Symposium 2018 and APEC Climate Center Working Group Meeting

21 to 23 August 2018
Papua New Guinea

International Training Course on Capacity Building for Climate Services

27 August to 14 September 2018
Korea

The IODE/OTGA-INCOIS Training Course: Data Visualization of Marine Meteorological Data using (FERRET)

27 to 31 August 2018
Hyderabad, India

International Training Course on Nowcasting Techniques on Severe Convection Weather for ASEAN Countries

28 August to 06 September 2018
China

Training on Automation of Flood Early Warning System for Disaster Mitigation in Greater Metro Manila (EWS3 Project)

02 to 08 September 2018
Seoul, Korea

Training on Automation of Flood Early Warning System for Disaster Mitigation in Greater Metro Manila (EWS3 Project)

02 to 08 September 2018
Seoul, Korea

Collaborative Research on the Validation of NWP Model Forecast Accuracy for Heavy Rainfall Associated with Typhoons

03 September to 01 November 2018
Japan

Leadership and Management Programme for Senior Management of National Meteorological and Hydro-meteorological Services in Regional Associations (RA) II and V

10 to 14 September 2018
Singapore

2nd China-ASEAN Meteorological Forum

12 to 13 September 2018
China

OSCAR/Surface Training Course in English for RA V

18 to 20 September 2018
Indonesia

APEC 12th Senior Disaster Management Officials Forum

25 to 26 September 2018
Papua New Guinea

Training Program on Reinforcement of Meteorological Services

26 September to 08 December 2018
Japan

Training Event Focus on Satellite Data and Products

06 to 07 October 2018
Indonesia

Training program on User-oriented Statistical Downscaling of Climate Change Scenario for Agriculture and Water Resources

15 to 20 October 2018
Korea

Typhoon Committee's Attachment Training at the Regional Specialized Meteorological Center (RSMC)

15 to 26 October 2018
Tokyo, Japan

Training Program on the Improvement of Meteorological Satellite Data Analysis and Application Capacity

21 October to 17 November 2018
Korea

11th Global Earth Observation System of Systems (GEOSS) Asia-Pacific Symposium

24 to 26 October 2018
Kyoto, Japan

Eleven ASEAN Regional Climate Outlook Forum (ASEANCOF-11)

29 October to 02 November 2018
Kuala Lumpur, Malaysia

2018 Common Alerting Protocol (CAP) Implementation Workshop and Associated Events

30 October to 02 November 2018
Hong Kong

13th Integrated Workshop

05 to 09 November 2018
Chang Mai, Thailand

Foreign Academic Travel

10 to 17 November 2018
Japan

TCC Training Seminar on One-Month Forecast

12 to 16 November 2018
Tokyo, Japan

11th Atmospheric Circulation Reconstructions over the Earth (ACRE) Workshop, which include the ACRE Japan Workshop, the 2nd ACRE South East Asia Meeting, and the 3rd ACRE China Workshop
12 to 16 November 2018
Japan

2018 International Cooperation Workshop in conjunction with the 2nd Regional Workshop on Impact-based Forecasts in Asia

19 to 22 November 2018
Seoul, Republic of Korea

International Training Course on the Application of Radar Data in High-impact Weather Nowcast

19 to 30 November 2018
Nanjing, China

Roving Seminar 2018

20 to 22 November 2018
Singapore

2018 ACTS Workshop

26 to 27 November 2018
Chinese Taipei

Enhancement of Fuzzy Logic Algorithm Based Radar Data Quality Control and Developments on Radar Qualitative Precipitation Estimation (QPE) and Doppler Wind Retrievals

02 to 15 December 2018
Taiwan, Republic of China

9th International Workshop on Tropical Cyclones

03 to 07 December 2018
Honolulu, Hawaii, USA

Radar Data Assimilation Technique

10 to 14 December 2018
Chinese Taipei

REGIONAL AND INTERNATIONAL COOPERATION PROGRAM

PAGASA-World Food Programme (WFP) Building Capacities for PAGASA Technical Staff



Multi-hazard monitoring and forecasting services i.e. weather/flood/climate monitoring, weather forecasts and climate predictions, with sound scientific and technological basis are essential and critical information to decision-making process of various socio-economic sectors. Monitoring and forecasting services are basis for quantifying hazards and exposure to risks. Adaptation and risk reduction advisories rely on this information thereby requiring the accuracy of forecasts and availability of monitoring products.

Monitoring and forecast products of PAGASA are required to be generated in accordance to accepted scientific and technical methodologies and disseminated within international standards. However, few technical staffs are trained in methodologies following the appropriate local and international standards. On this note, there is a need to capacitate PAGASA technical staff on climate monitoring and S2S prediction, most especially in producing week-2 and week 3-4 forecasts.

On 28 November to 07 December 2018, the WFP funded a four-day training/workshop on Data, Climate Services and Monitoring using the Climate Prediction Center's (CPC) Climate Monitoring Tool (CMT) and five-day training/workshop on sub-seasonal forecasting held at Marco Polo Hotel in Quezon City to capacitate PAGASA technical staff in performing climate assessment and diagnostics analyses utilizing GPC products.

Action-Ready Climate Knowledge to Improve Disaster Risk Management for Small-Holder Farmer in the Philippines



The ACIAR-ASEM Project is a collaborative project among agencies namely PAGASA, University of the Philippines-Los Baños (UPLB), Philippine Institute for Development Studies (PIDS), and the Agricultural Training Institute (ATI). It is funded by the Australian Centre for International Agricultural Research (ACIAR) with the general aim to improve the value of information flows between PAGASA and key decision-makers involved in managing climate and weather risk of small holder farmers. Specifically, it aims to understand the decision-making context of climatically sensitive decisions, establish the potential value of information, observe barriers to the use of information, and research ways to improve communication and use.

On 2-5 October 2018, the Project's mid-term review and assessment was held in Baguio City. This was conducted to determine and assess how well the project has achieved the outputs and milestones against each objectives and to identify follow-up activities and support that are desirable to ensure long-term benefits from the project.



PAGASA personnel together with ACIAR project partners conducted a field interview with farmers of La Trinidad, Benguet on 03 October 2018 as part of the Mid-Term Review and Assessment of the project.

Second Regional Workshop on Impact-Based Forecasts in WMO RA II (Asia)



The 2nd Regional Workshop on Impact-based forecasts (IBF) in RA II (Asia) was held on 19-21 November 2018 at the Glad Hotel, Yeouido, Seoul, Republic of Korea. The WMO and the Korean Meteorological Administration (KMA) hosted the workshop. Dr. Jong Seok KIM, KMA Administrator and Ms. Mirian Andrioli, Chief of the Service Delivery Division (SDD) of WMO provided the welcome and opening messages.

The workshop was attended by representatives of 18 WMO Member Countries and by representatives of local universities. Mr. Jose Daniel C. Suarez was the Philippine representative to the said event.

Activities included in the workshop were presentations on different areas of the IBF presented by some of the WMO experts, sharing of the overview on the current state of the Early Warning and/or IBFWS systems of several members' representatives in their respective countries. As a result, outcomes and recommendations on the challenges to implement IBFWS in each member country, data sources for IBFWS, how to build strong partnerships with stakeholders, collaboration (mentoring) between advanced and beginner member countries in terms of IBFWS and Public-Private Partnerships (PPP) were discussed.

The event was followed by the 2018 International Cooperation Workshop where Mr. Suarez presented the cooperation initiatives between the Philippines and the South Korea, specifically the KMA.

Green Climate Fund (GCF) International Technical Workshop – Adaptation Rationale for Project Pipelines and Other Climate Investment



The GCF International Technical Workshop was held from 14-17 November 2018 in Cebu City. It aimed to support the development of project pipelines that effectively articulate key elements of climate rationale to further attract adaptation finance and help ensure implementation of upstream readiness support including for adaptation planning processes.

Tokyo Climate Centre (TCC) Training Seminar on Seasonal Forecast



The TCC Seminar on Seasonal Forecast was held at Tokyo Climate Centre in Tokyo, Japan on 29 January to 02 February 2018. The seminar aimed to familiarize the participants with the outputs of JMA's Numerical Prediction model and tools for seasonal prediction and to improve the skills of the participants in generating seasonal prediction products using statistical downscaling methods.

The TCC serves as a WMO Regional Climate Center (RCC) in RA II and supports the National Meteorological and Hydrological Services (NMHS) through data/information provision and capacity development activities. The annual training seminar was conducted as part of their capacity-building activity in its role as RCC.

User-Oriented Statistical Downscaling of Climate Change Scenario for Agriculture and Water Resources



The APEC Climate Centre (APCC) conducted training in Busan, Korea on 15-20 October 2018 about introduction to statistical downscaling for climate change scenarios. It also intended to guide participants in applying the produced data to the fields of agriculture and water resources.

Climate information users learned the method to produce effectively downscaled climate information through APCC Integrated Modeling Solution (AIMS). After the training program, the participants are expected to be able to produce climate change scenarios, adjusted by their respective regional feature, by using weather observation data in their country and country-by-country climate change scenarios provided by APCC.

Second Workshop on Sub-Seasonal-to-Seasonal Prediction for Southeast Asia (S2s-Sea II)



During the hands-on activity at the workshop with PAGASA participants Nestor R. Eugenio and Ger Anne Marie W. Duran

The Meteorological Services Singapore (MSS) and the United Nations Economic and Social Commission for Asia and the Pacific (UN-ESCAP) organized a workshop on sub-seasonal-to-seasonal prediction for SEA to improve regional understanding on the mechanisms of sub-seasonal-to-seasonal predictability and to equip the participants with the knowledge to investigate the skill and usefulness of sub-seasonal forecasts in applications. The said activity was held in Singapore from 13-17 August 2018.

Other International Cooperation Activities



Best Practices in Climate Change Workshop and their Application in ASEAN Countries held in Singapore on 19-23 March 2018. PAGASA participants were Rosalina de Guzman and Thelma A. Cinco



40th meeting of the ASEAN sub-committee on Meteorology and Geophysics (SCMG) held in Singapore on 02-04 May 2018. The Philippines is the Chair of the SCMG. Dr. Flaviana D. Hilario (3rd from left, first row) were the Philippine representatives



6th Meeting of the Intergovernmental Board on Climate Services Management Committee held in FAO Headquarters, Rome, Italy on 24-25 October 2018. Dr. Flaviana D. Hilario (6th from right, first row) attended the meeting



Building Capacities of PAGASA technical staff to provide Better Climate Monitoring and Prediction Service held in Marco Polo , Ortigas, Pasig City on 29 November to December 7, 2018



WMO/ASEAN Training Workshop on Radar Data Quality and Standardization to understand the application of radar meteorology including radar data quality management on radar-based Quantitative Precipitation Estimation (QPE) held in Bangkok, Thailand on 5-13 February 2018



WMO Severe Weather Forecasting Demonstration Project Southeast Asia (SWFDP-SEA) Regional Training Workshop on Severe Forecasting and Delivery Warning Services held at Headquarters of NHMS, Hanoi, Vietnam on 19-30 March 2018



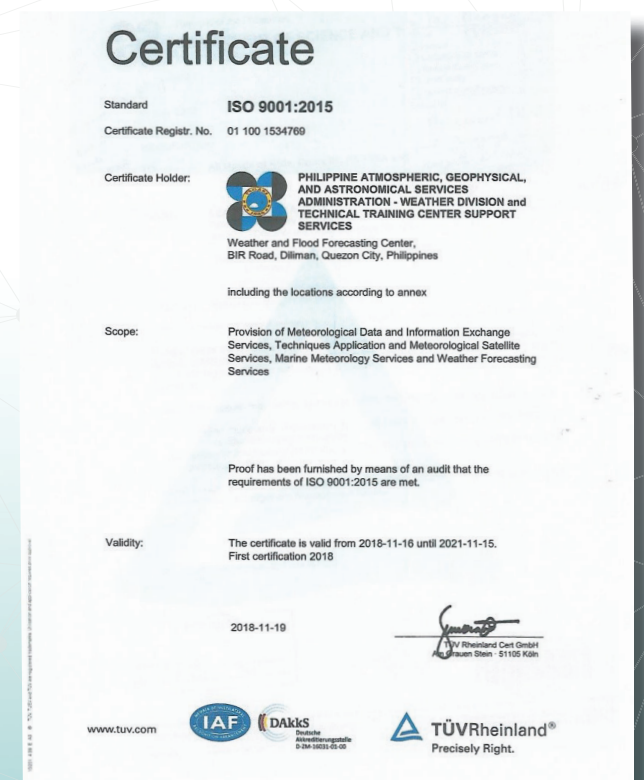
Training Course of Nowcasting Techniques on Severe Convection Weather for ASEAN Countries to discuss the nowcasting techniques and practices on Severe Weather in China and ASEAN Countries held in Nanning, China on 29 August 29 to 5 September 2018

GENERAL ADMINISTRATION AND SUPPORT PROGRAM

Upgrading of Quality Management System

The Weather Division (WD) of PAGASA was awarded with ISO 9001:2008 certification for its Quality Management System (QMS) in October 2015. Since then, WD has maintained the certification for three (3) straight years through a yearly external audit by the TUV-Rheinland certifying body. The scope of the certification includes the Provision of Meteorological Data and Information Exchange Services, Techniques Application and Meteorological Satellite Services, Marine Meteorology Services, Weather Forecasting Services and Aeronautical Meteorology Services. By October 2018, the ISO 9001-2008 version is no longer applicable and must be upgraded to the new version, ISO 9001-2015. The WD worked on the continuous improvement of its QMS and applied for the renewal of its certification to the upgraded version ISO 9001:2015. In the new version, the scope was expanded to include the Technical Training Support Services of the Research and Development and Training Division (RDTD) of the Agency.

The ISO 9001:2015 version of the Quality Management System focused on addressing the risks and opportunities to enhance customer satisfaction. The WD worked with the Synergy-At-Work (SAW) Group as consultants for the transition from 2008 to 2015 version of ISO 9001. Series of consultation meetings, seminars and trainings were conducted. Awareness Seminars attended by WD and selected RDTD Technical Training Support Services staff were conducted in April and May 2018. Risk Management Seminar was conducted in June and Internal Quality Audit (IQA) Seminar in July. After the IQA Seminar, an IQA Team was formed and conducted the internal audit of the expanded scope for the upgraded ISO certification. A meeting with the Top Management was held in August to review the outcome of the internal audit and get support from the top management. The final 2-day external audit was done on the 10th and 11th day of October 2018 with TUV-Rheinland as certifying body. It was indeed a momentous event for the WD and the RDTD Training Section to pass the external audit and be an ISO 9001:2015 certified. Certificates were received in November 2018. This certification is valid for three (3) years with a yearly follow up audit by external auditor from TUV-Rheinland. The WD and the Training Section have to work continuously for the improvement of the QMS to maintain its certification.



Gender Sensitivity Training (GST) for PAGASA Regional Services Division



The Gender-Sensitivity Training (GST) for PRSD personnel was conducted at Richmonde Hotel in Iloilo City on 31 July to 03 August 2018 to increase knowledge and appreciation of PAGASA field personnel on Gender and Development (GAD). 25 personnel attended the said training comprised of 14 female and 11 male attendees.

2018 National Women's Month Celebration



Republic Act 6949 series of 1990 is the act declaring March 8 of every year as the celebration of National Women's Day. It aims to increase the knowledge and appreciation on the role and contributions of women in nation building.

PAGASA joined the celebration, held at the Philippine Science High School, Quezon City in March 2018.

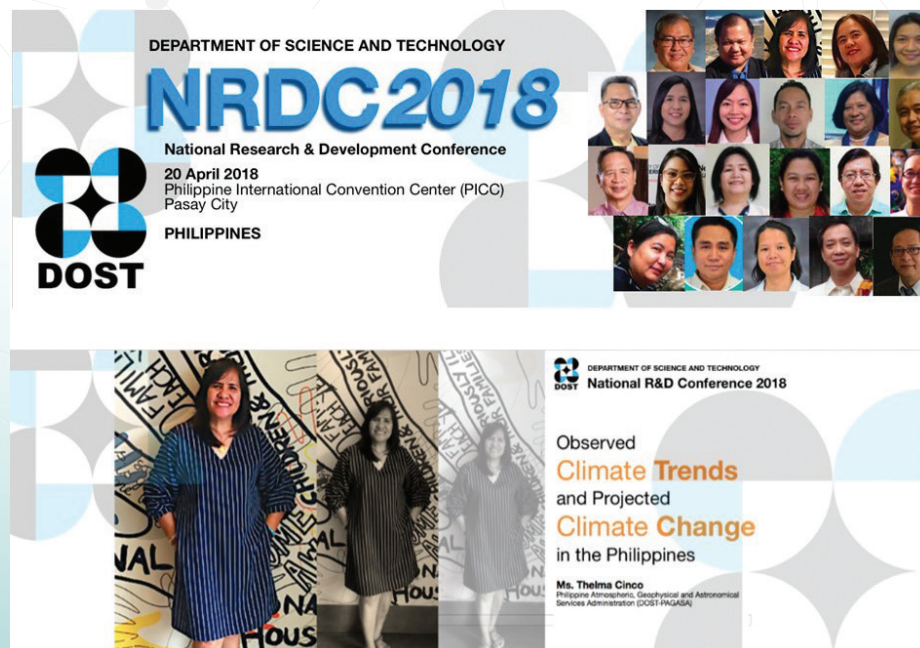
Senior Citizen Laws, Pre-retirement and Livelihood Seminar



In support to the RA 9994 or the "Expanded Senior Citizens Act of 2010", a seminar for Senior Citizen personnel of PAGASA was conducted on two batches. The first batch was held on 14-15 March 2018 at the N Hotel, Cagayan de Oro and the second batch was conducted on 20 April 2018 at the Amihan Conference Room in PAGASA Central Office with 27 and 22 participants, respectively.

OTHER SIGNIFICANT ACTIVITIES

Ted Talk and Research & Development Agenda



The Ted Talk and R&D Agenda was conducted at the PICC in Pasay on 20 April 2018. Ms. Thelma A. Cinco presented the published policy brief entitled “Observed Climate Trends and Projected Climate Change in the Philippines”. The said policy brief aims to disseminate the information on the current climate trends and projected climate change in the Philippines.

Chief Meteorological Officers (CMO) Conference of National Capital Region (NCR) PRSD



The Regional CMO Conference is conducted every year as a consultative meeting between management and the CMOs. This is to keep all the stations updated with the new technology and some updates on methods of observation. It also serves as a venue to discuss new rules and guidelines from the CSC and financial matters. Said conference was held at Subic Bay Travelers Hotel and Event Center on 22-25 October 2018.

PAGASA at the Government Job Fair 2018



As part of the activities of the 118th Philippine Civil Service Anniversary, PAGASA participated in the CSC organized 2018 Government Job Fair. The said event aimed to provide information on the job vacancies in government. Moreover, the Agency utilized this venue to entice pool of qualified applicants and to promote company branding. The said activity was held at SM North Edsa Sky Dome in Quezon City on 26-27 September 2018.

Regional Science and Technology Week (RSTW) 2018



The 2018 RSTW was held at Island City Mall in Tagbilaran, Bohol on 14-16 November 2018. This activity was conducted to display the region's Science and Technology researches and services, interactive exhibits, and technology-aided entrepreneurship and to give the public a unique experience on how S&T work for a better life. Various brochures on hydrometeorological hazards were distributed. Weather-related information was also distributed to students who visited the PAGASA booth.

AWARDS/RECOGNITIONS RECEIVED

2018 DOST International Publication Award



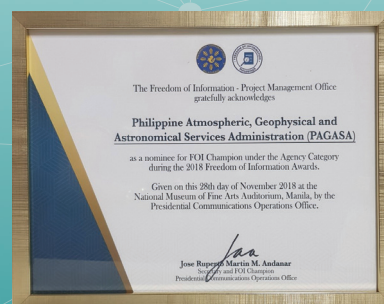
Awarding ceremony was held at the PICC in Pasay City. Awardees were Ms. Edna L. Juanillo, Ms. Rosalina G. de Guzman and Ms. Thelma A. Cinco (3rd, 5th and 6th from left respectively), together with Engr. Catalino L. Davis (1st from left) and Sec. Fortunato T. dela Peña (2nd from right).

The awarding ceremony of the 2018 DOST International Publication Awards was held at PICC in Pasay City on 18 December 2018. The Department of Science and Technology- National Academy of Science and Technology (DOST-NAST) initiated this activity to encourage DOST researchers and technology developers to publish on international referred journals, to register their developed technologies and to boost the publication, patent and utility model outputs of DOST and its attached agencies. In addition, this is also in support to the DOST's goal to initiate measures on the improvement of the R&D institutions' performance and to monitor and evaluate their R&D results. Each awardee received a cash incentive of P60,000.00 with plaque and certificate.

Nominee for 2018 Freedom of Information (FOI) Champion under the Agency Category



In 2018, PAGASA was awarded a plaque of recognition as nominee for the 2018 FOI Champion under the Agency category during the 2018 Freedom of Information Awards. The ceremony was held at the National Museum of Fine Arts Auditorium in Manila on 28 November 2018. It was attended by PAGASA Administrator, Dr. Vicente B. Malano and Mr. Jose Daniel C. Suarez, PAGASA's FOI Decision Maker for non-technical data.



The use of FOI portal is an integral medium for various users to access weather-related information/data. The transparency of the system enabled requesting parties to track the progress of their request and in the same way, allowed PAGASA to respond appropriately in a timely manner.

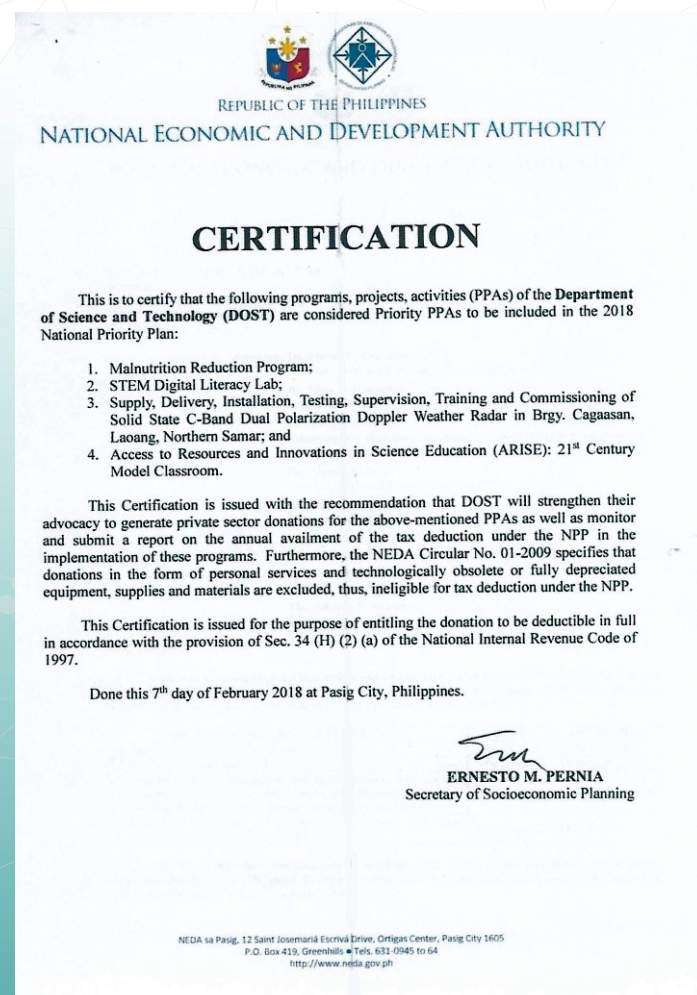
2018 Bangko Sentral ng Pilipinas (BSP) Stakeholders Awards



For the second time, PAGASA received an award conferred by the BSP for being an Outstanding Partner for Monetary Policy during the 2018 Awards Ceremony and Appreciation Lunch for BSP Stakeholders held on 10 July 2018 at the BSP Assembly Hall, BSP Complex in Manila. This year's theme is "Reinforcing Partnerships, Defying New Challenges". Mr. Jose Daniel C. Suarez, OIC of the Financial Planning and Management Division, graced the said event.

Inclusion of the Doppler Weather Radar in Laoang, Northern, Samar in the 2018 National Priority Plan (NPP)

The NPP are programs/projects/activities (PPA) of the government. Inclusion of PPAs in the NPP entitles private sector/entities donations to have full donor's tax deductions in accordance with the provision of Sec. 34 (H) (2) (a) of the National Internal Revenue Code of 1997. However, donations in the form of personal services or depreciated and obsolete equipment, supplies, and materials are not eligible under the program. This is also an advocacy to generate donations from the private sector to the PPAs of the government



On 22 January 2018, the Technical Committee of the NPP (TC-NPP) of the National Economic and Development Authority (NEDA), concluded in their meeting the inclusion of four PPAs of the DOST. Among these is one of the PAGASA's PPA entitled "Supply, Delivery, Installation, Testing, Supervision, Training, and Commissioning, of Solid State C-Band Dual Polarization Doppler Weather Radar in Brgy. Cagaasan, Laoang, Northern Samar". The complete list of the four DOST PPAs included in the NPP were as follows:

PROGRAM/PROJECT/ACTIVITY (PPA)	TYPE	PROPONENT
1. Malnutrition Reduction Program	for renewal	DOST-FNRI
2. STEM Digital Literacy Lab	new proposal	DOST-PSHSS
3. Supply, Delivery, Installation, Testing, Supervision, Training and Commissioning of Solid State C-Band Dual Polarization Doppler Weather Radar in Brgy. Cagaasan, Laoang, Northern, Samar	new proposal	DOST-PAGASA
4. Access to Resources and Innovations in Science Education (ARISE) : 21 st Century Model Classroom	new proposal	DOST-SEI

The NEDA finds the PPAs above consistent with existing government thrusts and various strategies identified in the PDP 2017-2022.

AGENCY'S INCOME FROM ITS PRODUCTS AND SERVICES

PAGASA PRODUCTS AND SERVICES	GENERATED INCOME
Hydromet/Hydrologic Prediction and Frequency Analysis & Other Information (Rainfall Intensity Duration Frequency– RIDF)	92,800.00
Customized Climatological Data/Weather Publications	1,078,918.00
Weather Certifications	12,099,562.00
Accommodation of visitors to planetarium lectures & shows at Central Office	266,675.00
Mobile Planetarium Lectures/Stargazing/Telescoping on Tour to Schools in Luzon	31,000.00
Viewers to Stargazing and Telescoping Sessions	7,950.00
Astronomical Publications, Information and Certifications	18,440.00
Number of assorted meteorological instruments calibrated for various clients	479,901.00
TOTAL	14,075,246.00

PUBLISHED RESEARCH PAPERS

TITLE	AUTHORS	PUBLICATION/JOURNAL
Observed and Modeled Temperature and Precipitation Extremes Over Southeast Asia from 1972 to 2010	W.K. Cheong B. Timbal N. Golding S. Sirabaha K.F. Kwan T. A. Cinco B. Arhevarahuprok V.H. Vo D. Gunawan S.Han	International Journal of Climatology <i>Received: 8 March 2017</i> <i>Revised: 18 December 2017 Accepted: 25 January 2018</i> <i>First published: 12 March 2018</i>
Providing Future Climate Projections Using Multiple Models and Methods: Insights from the Philippines	Joseph Daron Ian Macadam Hideki Kanamaru Thelma Cinco Jack Katzfey Claire Scannell Richard Jones Marcelino Villafuertell Faye Cruz Gemma Narisma Rafaela Jane Delfino Rodel Lasco John Manalo Emma Ares Ana Liza Solis Rosalina de Guzman Joseph Basconcillo Fredolin Tangang	Climatic Change <i>Received: 24 July 2017</i> <i>Accepted: 18 March 2018</i> <i>First Online: 29 March 2018</i>

TITLE	AUTHORS	PUBLICATION/JOURNAL
High-Resolution Regional Climate Model Projections of Future Tropical Cyclone Activity in the Philippines	Florian Gallo Joseph Daron Ian Macadam Thelma Cinco Marcelino Villafuerte II Erasmo Buonomo Simon Tucker David Hein-Griggs Richard Jones	International Journal of Climatology <i>Submitted: 26 March 018</i> <i>Revisions submitted: 05 August 2018</i> <i>First published: 7 October 2018</i>
Interdecadal Shifts in the Winter Monsoon Rainfall of the Philippines	Lyndon Mark Olaguera Jun Matsumoto Hisayuki Kubota Tomoshige Inoue Esperanza O. Cayan Flaviana D. Hilario	Atmosphere <i>Received: 30 September 2018 Revised: 9 November 2018 Accepted: 21 November 2018 Published: 26 November 2018</i>
Seasonal March Patterns of the Summer Rainy Season in the Philippines and their Long-Term Variability Since the Late Twentieth Century	Ikumi Akasaka Hisayuki Kubota Jun Matsumoto Esperanza O. Cayan Rosalina G. de Guzman Flaviana D. Hilario	Progress in Earth and Planetary Science <i>Received: 7 July 2017</i> <i>Accepted: 13 March 2018</i> <i>Published: 26 March 2018</i>

LIST OF 2018 PROJECTS

FOREIGN-FUNDED PROJECTS		
PROJECT TITLE	SOURCE	STATUS
Services for the Development of Municipal Level Sub-Seasonal Surface Wave Height and Solar Radiation Forecast Products on Integrating Agriculture Sectors into National Adaptation Plan NAP-AgS Project	UNDP	Completed
Rehabilitation of the Equipment for the Project to Strengthen Flood Forecasting and Warning System in the Bicol River Basin NPGA Bicol Project	Gov't of Japan	Completed
Automation of Flood Early Warning System for Disaster Mitigation in Greater Metro Manila KOICA 3	KOICA	Completed
Japan's Non-Project Grant Aid for Provision of Japanese SMEs Products NPGA Mindanao Project (JICS 1)	GoJ/JICS	Completed
Development and Implementation of User-Relevant End-to-End Hydrological Forecast Generation and Application System for Disaster Mitigation in the Philippines RIMES Project	RIMES	Completed
Strengthening Capacity of Integrated Data Management of Flood Forecasting and Warning JFreeDAM Project	JICA	On-going
Resilience and Preparedness towards Inclusive Development (RAPID Project) Program under the Project Climate Twin Phoenix Project (PCTP)	UNDP	On-going
Action Ready Climate Knowledge to Improve Disaster Risk Management for Small Holder Farmers in the Philippines ACIAR ASEM Project	ACIAR	On-going
Oasis Platform for Climate and Catastrophe Risk Assessment – Asia	Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (Germany)	On-going

PROJECTS FUNDED BY OTHER GOVERNMENT INSTITUTIONS

PROJECT TITLE	SOURCE	STATUS
Cloud Harvesting and Artificial Rain Making (Project CHARM)	DA-BSWM	Completed
Observations and Dynamical Downscaling of Seasonal and Sub-seasonal Forecasts (MECO – TECO)	DOST-PCIEERD	On-going
Heavy Rain Monitoring and Forecasting in the Mountainous Area and Early Warning Landslides (MECO – TECO)	DOST-PCIEERD	On-going
Typhoon Formation, Structure and Intensity Change in Western NP and Wave Observation and Modeling	DOST-PCIEERD	On-going
Optimization of the Operational Capabilities of Hydromet Sensors in Line with International Standards (WMO Standards) for Effective Weather, Flood Warning (CBFEWS) and Application to Research	DOST-PCIEERD	On-going
Enhancing the Hydro-meteorological Hazards Monitoring and Risk Assessment Capabilities of PAGASA through the Adoption and integration of NOAA Operating Systems	DOST-PCIEERD	On-going
Drought and Crop Assessment and Forecasting (DCAF)	DOST-PCAARRD	On-going
Detecting Tropical Cyclones in a Downscaled Regional Climate Model for CORDEX – SEA	DOST-PCIEERD	On-going
Analysis of the Influence of Sea Surface Temperature Representation in Downscaled Regional Climate Using the SEACLID/CORDEX – Southeast Asia Simulations	DOST-PCIEERD	On-going
Multi-temporal and Extremes Analysis of Modeled Climatology over the Philippines in the SEA CORDEX Domain	DOST-PCIEERD	On-going
A Dispersive Long-Wave Model for Predicting Coastal Flooding due to Storm Surges and Surface Waves in Manila Bay	DOST-PCIEERD	On-going

LOCALLY (GAA) FUNDED PROJECTS

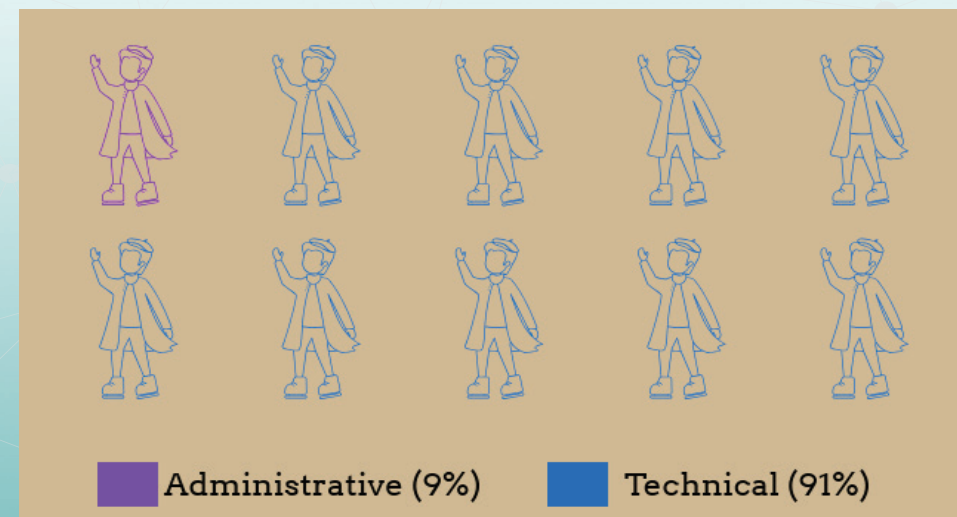
PROJECT TITLE	SOURCE	STATUS
Climate Monitoring and Prediction System	2018 GAA	On-going
Farm Weather Information System	2018 GAA	On-going
Sectoral Impact Modeling System	2018 GAA	On-going

DISTRIBUTION OF PERSONNEL BY JOB CLASSIFICATION

Reference: PLANTILLA OF PERSONNEL as of December 31, 2018

JOB CLASSIFICATION	FILLED	VACANT	TOTAL	%
ADMINISTRATIVE	79	11	90	9%
TECHNICAL	735	209	944	91%
TOTAL	814	220	1034	100%

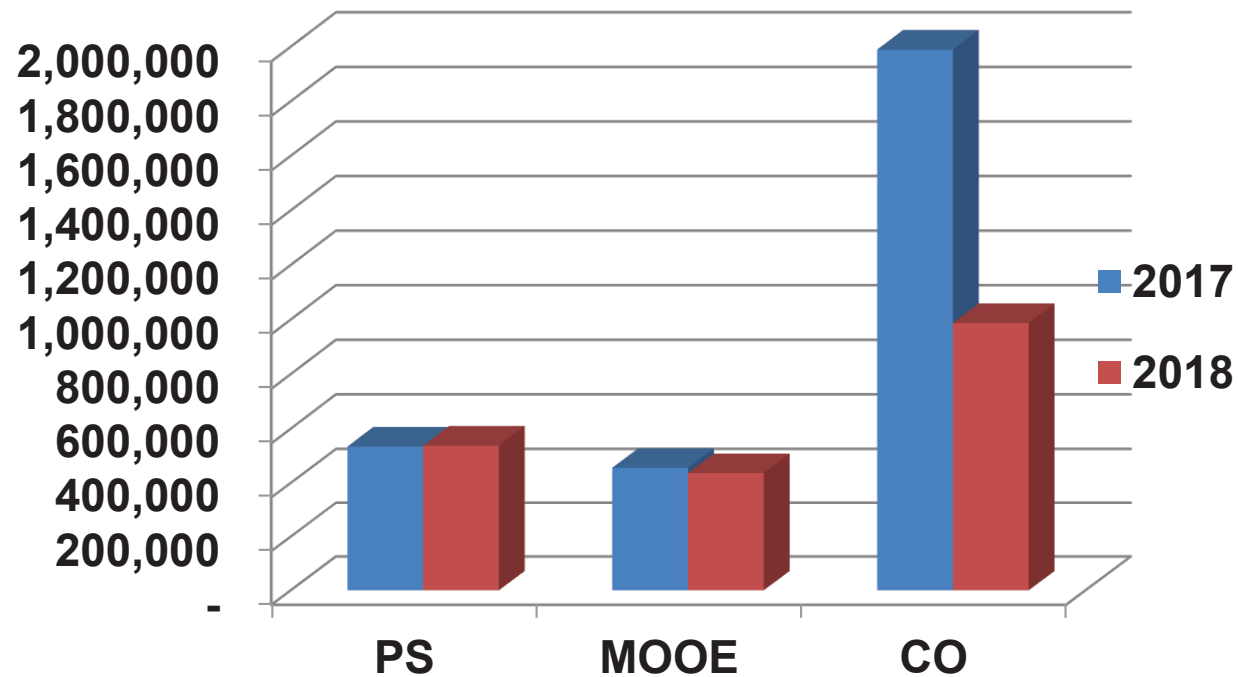
Weather, flood and climate products and services are major services of the Agency. In this connection, it is understood that 91% of employees are assigned on technical services while 9% comprised the administrative services. More specifically, 735 of 944 are occupying technical positions while 79 out of 90 are doing administrative functions.



COMPARATIVE BUDGET, FY 2017-2018

COMPARATIVE BUDGET (In Thousand Pesos)

	2017	2018	%
PS	534,406	537,647	1%
MOOE	456,400	436,695	-4%
<i>Regular</i>	454,851	436,695	
<i>Locally-Funded Projects (LFPs)</i>	1,549	-	
CO	1,989,206	987,244	-50%
<i>Regular</i>	1,477,867	985,445	
<i>Locally-Funded Projects (LFPs)</i>	510,914	1,799	
<i>Cloud Seeding Operations</i>	425	-	
TOTAL	2,980,012	1,961,586	-34%



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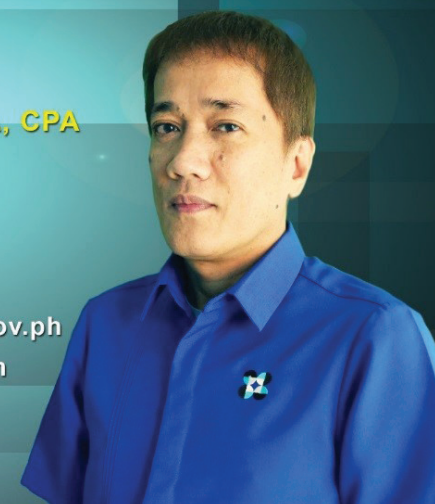
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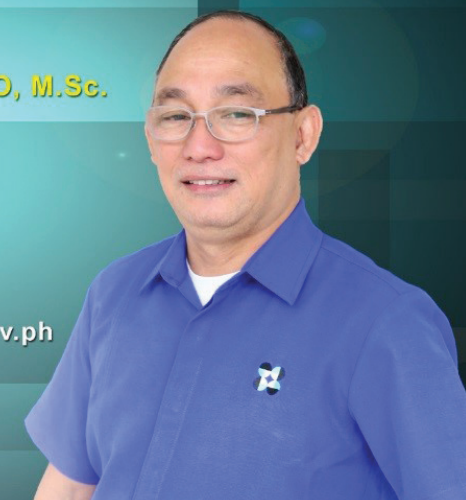
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ACKNOWLEDGMENT

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