DEPARTMENT OF SCIENCE & TECHNOLOGY

PHILIPPINE ATMOSPHERIC, GEOPHYSICAL AND
ASTRONOMICAL SERVICES ADMINISTRATION

PAGASA
2022
ANNUAL REPORT

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FOREWORD

Hippocrates, the father of medicine, once said: *"Healing is a matter of time, but it is sometimes also a matter of opportunity"*. Over the past two years of dealing with the global pandemic, PAGASA always embraced its opportune time to provide information pertinent to the welfare of the general public.

When the whole nation was fighting for the unspeakable threat of Covid-19; times we did not anticipate coming, PAGASA rallied with the fight for life protection, disaster risk reduction through dissemination of weather and climate-related information, fulfilling its humble yet noteworthy mandate. All the men and women in PAGASA, in all aspects of work assigned to them, gave their best in public service delivery because the Filipino people are worthy of the best.

It was a great learning experience to be prepared in times of uncertainty. PAGASA faced each day hopeful and grateful that today's sacrifices have been worth it, that the values we carried have not led us astray, and that our best efforts were good enough. With healing hearts, we will continue to strive to give more beyond the best.

Together, let us always dedicate ourselves to the values, ideals and into a common goal: the best public service for our nation.

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.

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

Patriotism

Integrity

Innovation

Commitment

Excellence

5. Functions

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

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 trunk line (02) 8284-0800, 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. Accomplish our Feedback Form available at the lobby and put it in the drop box located at the front desk or give the form to the division concerned.

b. Sending your feedback through our website (http://bagong.pagasa.dost.gov.ph) or call our trunk line (02) 8284-0800, 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

* For full details of the PAGASA's Citizen Charter, kindly visit our official website at **www.bagong.pagasa. dost.gov.ph.**

MESSAGE
BY THE DOST SECRETARY

The aspiration for a "safer, adaptive, and disaster-resilient Filipino community towards sustainable development", espoused under the National Disaster Risk Reduction and Management Framework, is the spirit behind the DOST Philippine Atmospheric, Geophysical and Astronomical Services Administration (DOST-PAGASA)

DOST-PAGASA's steady progress in providing timely, accurate, and relevant warning information, especially in cascading them in a manner that meets the growing demands of the stakeholders it serves is truly noteworthy.

DOST-PAGASA has become more engaging and dynamic, keeping abreast with fast-paced developments in warning services by establishing its visibility and solid presence on social media platforms as well as ease of access to its services made available through its official website and various mobile applications.

DOST-PAGASA' tradition of Research and Development (R&O) also fuels its continuous institutional growth. In 2022. it channeled its resources and R&D partnerships with different entities to complete 12 researches, which were published in various weather and climate-related publications. I proudly extend my support in these efforts to elevate the delivery of public service.

Also, I commend DOST-PAGASA for demonstrating that Science is indeed for the people when its public service commitment was tested again and again during the occurrence of strong Tropical Cyclones (TC): Tropical Storm Agaton/Megi, which caused landslides in Leyte; Super Typhoon Kardlng/Noru, Which devastated

Regions 3 and 4A; and Typhoon Paeng/Nalgae, which caused flooding events in Maguindanao, and also during the 18 TCs that entered the Philippine Area of Responsibility in 2022. Their hard work resulted to a 66.7 km forecast track error at a 24-hour lead time.

DOST-PAGASA has consistently delivered meritorious performance results and preserved PRIME HRM Systems which gained them the Performance-Based Bonus award for two (2) consecutive years.

Let me again express my appreciation and give assurance of my continued support to DOST-PAGASA. Your continual commitment to excellence. even under the most pressing situations, is worthy of recognition. Kudos to the men and women of DOST-PAGASA!

RENATO U. SOLIDUM, JR.
Secretary

MESSAGE BY THE ADMINISTRATOR

"But they that wait upon the Lord shall renew their strength; they shall mount up with wings as eagles; they shall run, and not be weary; and they shall walk, and not faint."
– Isaiah 40:31, KJV

The year 2022 has been another testament of God's faithfulness and grace. 18 Tropical Cyclones have entered the country, only five of which have made a landfall. The most notable ones were Super Typhoon Karding/Noru, which left damage in Regions 3 and 4A, Tropical Storm Agaton/Megi, which caused a landslide in Leyte, and Typhoon Paeng/Nalgae, which caused floods in Maguindanao.

Through the years, we have strived to disseminate timely, reliable and data-based forecasts and other weather and climate-related information. This year, the forecast track error was recorded at 66.7 km lower than our 100 km baseline. 96.68% of flood warnings

were issued within 15 minutes of scheduled time. Hence, 96% of our stakeholders were satisfied with our services. The growing number of followers and subscribers in our social media platforms could also be noted. We also take pride in our ISO:9001 Certification.

To keep our stakeholders fully-informed and equipped with science-based information, we have conducted various climate forums in the areas of agriculture, water resource management, public health and safety and disaster-risk reduction management. We believe that these forums would aid our stakeholders in making sound and science-based decisions.

To significantly improve our ability in providing fast, accurate, and localized weather forecasts, the agency continuously installs cutting-edge meteorological equipment around the nation and forges partnerships with both the public and private sectors. This year, we have established four Flood Forecasting Systems (FFWSs), installed two X-band Radars and two Doppler Weather Radars and completed four Field Weather Stations in strategic areas in the country.

PAGASA has been my home for 40 years. I've been its administrator for a decade and as this journey comes to an end, allow me to extend my deepest thanks and gratitude to our stakeholders, our foreign and local partners, our national and local governments, and especially to all the men and women of PAGASA. Without you, PAGASA wouldn't have met its goals and targets throughout the years. I believe that with your continued support and dedication, PAGASA would continue to grow and flourish in the years to come.

To GOD be all the glory!

Maraming, maraming salamat po!

DR. VICENTE B. MALANO
Administrator

2022
HIGHLIGHTS OF
PAGASA

Number of seasonal climate forecasts, climate impact assessment, tropical cyclone warning advisory for agriculture and farm weather forecasts and advisories issued.

946

1,331

Annual Mean
24-Hour Forecast Track Error
(in kilometers)

TY = 46.5 km

TS = 66.7 km

Tropical Storm - less or equal to 120 km

Typhoon - less than or equal to 100 km

Number of timely and accurate flood warnings issued

2,962

1,360

Number of hazard maps developed/generated/updated

20

28

Percentages of stakeholders who rated the forecasting capability services as satisfactory or better

90%

96.1%

Number of technical assistance on action/policies adopted by The LGU

98

5,854

Number of researches /studies completed/published/ operationalized and development of real innovative/ pioneering

6

12

TARGET

ACTUAL ACCOMPLISHMENTS

Sustainable Delivery of Reliable Forecasts/Warnings

Since the dawn of civilization, people have used periodic meteorological and astronomical occurrences to better track weather trends and prepare for seasonal shifts. The technique of using technology and scientific knowledge to predict the weather is known as weather forecasting. In order for a forecaster to produce accurate forecasting, a great deal of scientific investigation, technology, and skill should be present.

Atmospheric conditions are unstable, such that weather, by its nature, is complex and unpredictable. It makes predictions and forecasts of the exact track of a particular TC prone to errors. Considering an average of 19-20 TCs that enter the Philippine Area of Responsibility (PAR) every year, with about 8-9 landfalls, an improved Forecast Track Error (FTE) is a milestone for the Agency. To raise the bar, the target good FTE was reduced from 120 km to 100km for a 24-hour forecast in 2016.

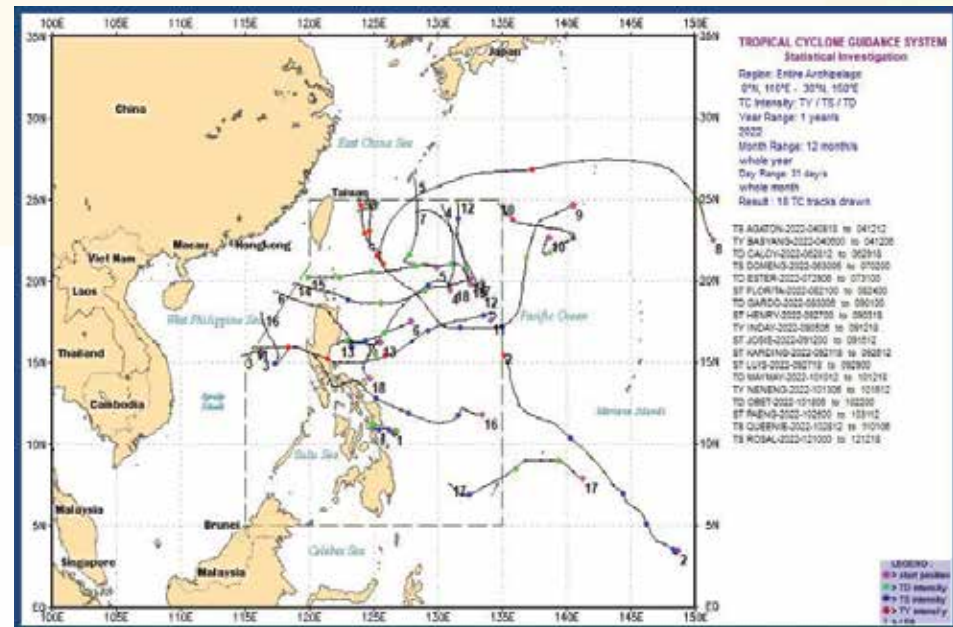In 2022, PAGASA achieved an overall 66.7 km FTE for 24 hour forecast position. Particularly, 79.6km for Tropical Storms and Severe Tropical Storms from the maximum target error of 120 km and 46.5 km out of the target 100 km error for typhoons and super typhoons.

PAGASA boosts its capacity and effort to provide timely dissemination of information for the utilization of action delivery by the national and local decision-makers.

Modification of the Tropical Cyclone Warning System

During the World and National Meteorological Day on 23 March 2022, PAGASA announced the modification of the tropical cyclone warning system specifically modifying the intensity classification of tropical cyclones. Tropical Cyclone Wind Signals relate the issuance of the maximum wind signal relative to the intensity of the tropical cyclone monitored by PAGASA

PAGASA Modified Tropical Cyclone Wind Signal (TCWS) System (Effective 23 March 2022)

Adapting to the changes that climate change brings in our modern world is a crucial aspect in the life of a modern man. There is an urgent need for fresh data as well as for the refinement of already-available data. In order to provide a precise picture of future repercussions, local and regional in-scope data are important. Two-way communication is one of the key factors for warnings and advisories to be impactful to designated beneficiaries.

Over the years, PAGASA is continuously looking for creative ways on how information could reach as many recipients as possible in this fast-pacing era. In this year alone 12 Climate Outlook Forums (COFs) were conducted via Facebook live. It is a venue for PAGASAs' stakeholders to interact and discuss on climate information updates, issues, and concerns which is utilized further for the improvement and enhancement of forecast information Nine

forums were also conducted on La Niña. It is a condition where a complex weather pattern is present which occurs every few years, as a result of variations in ocean temperatures in the equatorial band of the Pacific Ocean. La Niña influences the probability of above-normal rainfall conditions, potentially leading to adverse impacts such as heavy rainfall, floods, flash floods, and rain-induced landslides in some highly vulnerable areas.

Four (4) Climate Workshops in the PAGASA Regional Services Divisions (PRSDs) and one (1) with the Department of Agriculture were also conducted. These forums aimed to help PAGASA's stakeholders to make wise decision making in areas of agriculture, water resource management, public health, safety and disaster-risk reduction management.
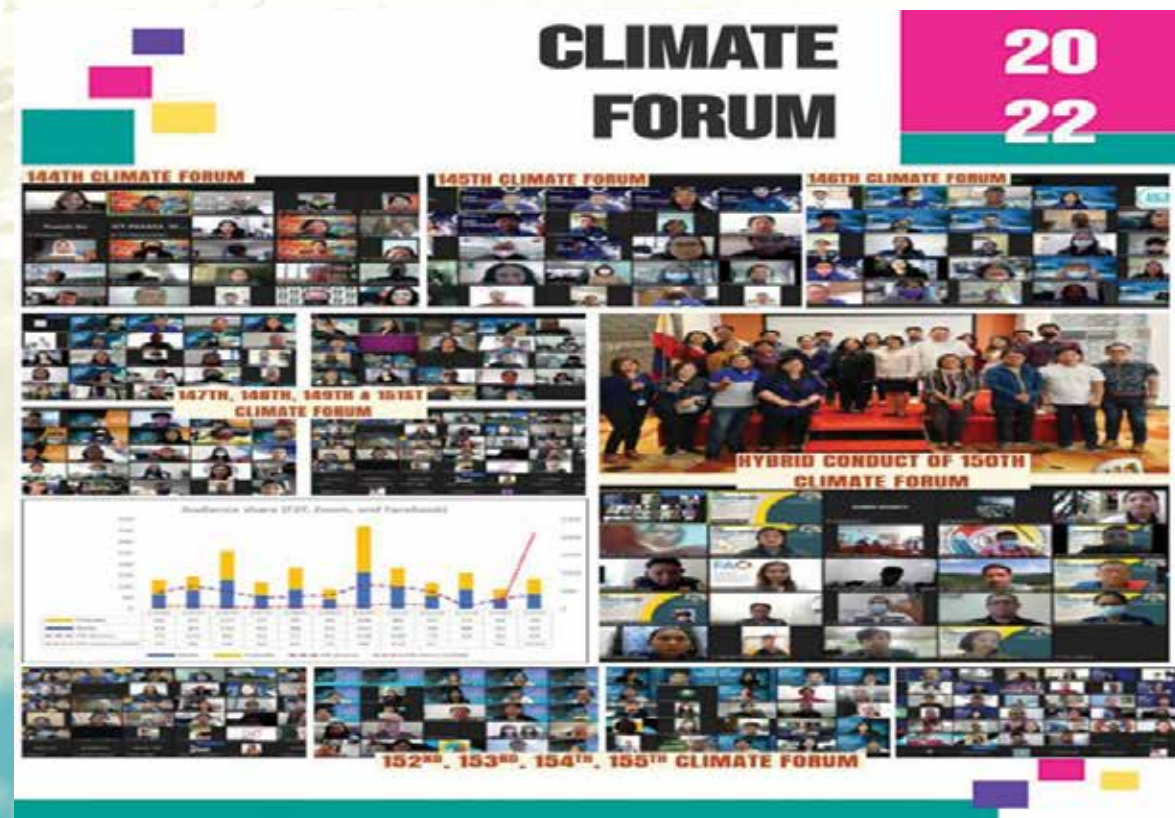
For Tropical Cyclone: TC threat Potential forecast for Week 1 and Week 2
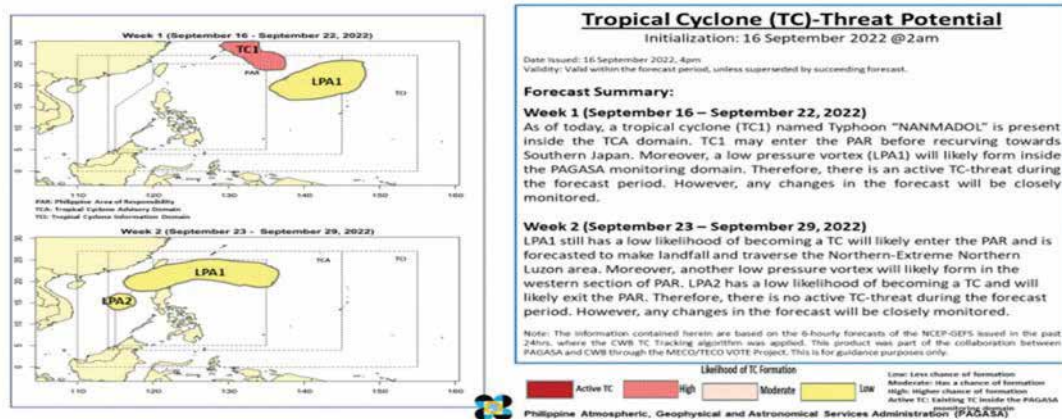
Provision of Sub-seasonal to seasonal (S2S) Forecast: Tropical Cyclone Threat Potential Forecast (TCTPF) and Rainfall Exceedance Probability Forecast (REPF) for Week 1 and Week 2

The S2S is one of the latest innovations of DOST-PAGASA that aims to provide advance information among operational forecasters, LGUs, DRRMOs as well as planners and decision-makers from specific sectors on impending tropical cyclone formation and rainfall probability **as early as two weeks.**

For Rainfall: Rainfall Exceedance Probability Forecast

Rainfall Exceedance Probability Forecast

Week 1: Sep 16 - 22, 2022
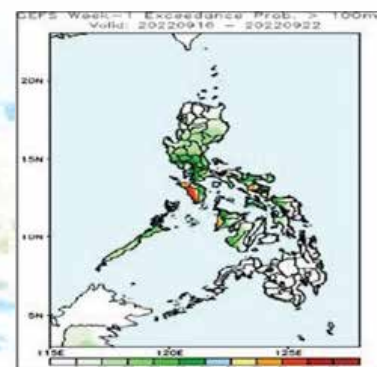
Week 2: Sep 23 - 29, 2022

Low probability of rainfall to exceed 100mm in most parts of the country during the forecast period.
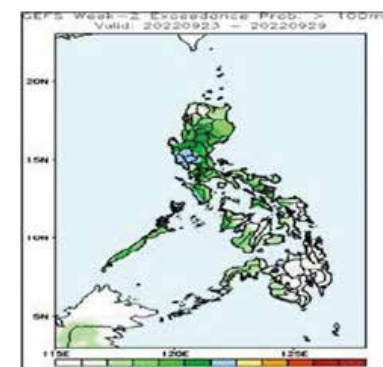
Low probability of rainfall to exceed 100mm in most parts of the country during the forecast period.

What is CliMAP?

CliMap is an interactive climate information map, that provides an online platform for disseminating climate change projections developed by PAGASA where users can explore and download the available climate projections data produced by PAGASA.

Revision of heat index monitoring and early warning system

PAGASA provided an improved heat index monitoring and early warning system to the public

Strengthened Public Connections through Social Media

Social media has a significant impact on the way people consume and share information. For government agencies like PAGASA, social media can be a powerful tool for disseminating information to the public quickly and efficiently. Social media platforms like Facebook, Twitter, and Instagram have millions of active users, which means that government agencies can reach a much wider audience than they could through traditional media channels. It allows government agencies like PAGASA to provide real-time updates on important events, emergencies, and other time-sensitive information. This can be especially helpful in situations where people need to receive information quickly in order to stay safe

Social media also allows for two-way communication between government agencies and the public. Citizens can ask questions, provide feedback, and engage in discussions with government agencies, which can help build trust and increase transparency. It allows room for target messaging, which means that PAGASA can reach specific demographics or geographic areas with its messages. This can be especially helpful when trying to reach specific populations, such as people in rural areas.

Social media is a relatively low-cost way for government agencies to disseminate information. It requires little to no printing or distribution costs and can be managed with a small team.

PAGASA is pleased with the growing numbers of support received in 2022 on its Social Media Platforms. As of December 2022, 5,295,747 followers were gathered in our Facebook page, 6,478,409 M followers on our Twitter account and 654,818 Subscribers in its YouTube Channel.
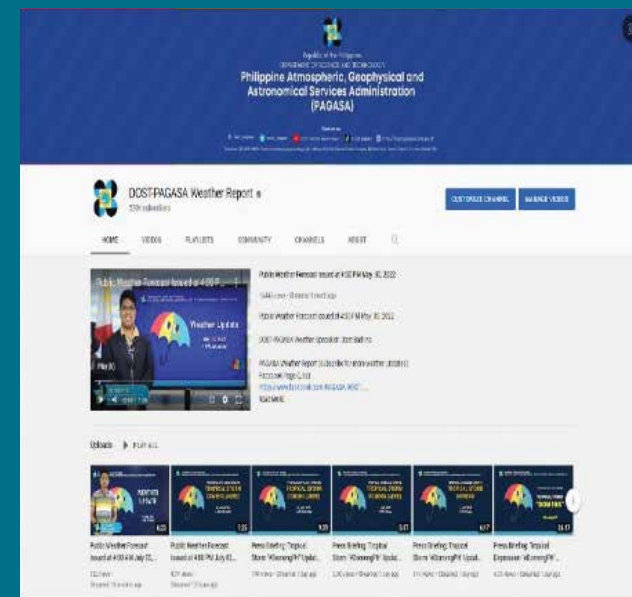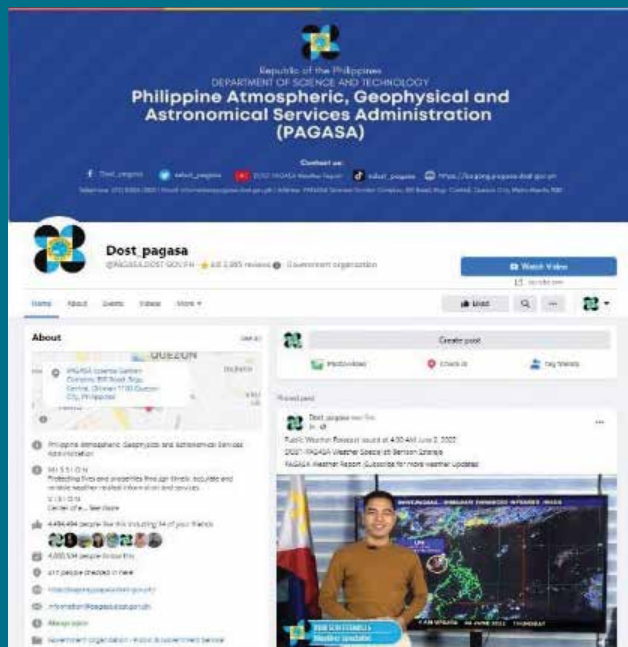
FLOOD FORECASTING & WARNING PROGRAM

Flood Forecasting and Warning System (FFWS)

The knowledge required to enhance decision support for the operation of structures is provided by a flood forecasting and warning system. A local operations center receives automated notification when the early warning system detects a potentially hazardous rise in the upstream water level brought on by heavy rain. The local operations center then alerts the at-risk districts. Early warning systems and flood forecasts are used to lower hazards in flood-prone locations. This tool is designed to be used by decision-makers when they need to create a thorough picture of the flood situation, offer precise and timely early warnings, and offer flood forecasting services to a range of users.

The establishment of Flood Forecasting and Warning Systems (FFWS) in strategic areas expands the Agency's base of operations and coverage in providing information and warnings to flood-prone areas in the countryside.

As of December 2022, a total of 17 FFWS (16 major RBs and 1 Principal RB) are established nationwide which include four systems that are installed in Mindanao, Agusan, Abulog, and Aklan (Principal).

4th PAGASA River Basin Flood Forecasting and Warning Center Conference and 2nd Stream Gauging Field-Workshop

The main function of PAGASA River Basin Flood Forecasting and Warning Centers (RBFFWC) is to issue hydrological information in their respective basins of concern. Hydrological information can be a daily hydrological forecast, a flood advisory (FA), or a flood bulletin (FB), which are issued during inclement weather conditions and/or imminent river flooding within the basin of concern. The information is provided to the national, regional, and local partner agencies/institutions and eventually cascaded to communities within the basin.

It should be a constant program, therefore, for RBFFWCs to be operationally competent in performing their hydrological activities in their respective river basins. Decentralization of operational activities, as described in PAGASA's modernization plan, requires RBFFWC personnel to be familiar or adept with the hydrological dynamics of their basin of concern, self-sufficient in conducting stream gauging activities and empowered in providing hydrological information to target stakeholders.

Since the first and only workshop on stream gauging in 2019, no river basin center has conducted stream gauging activities except for the Pampanga RBFFWC. In addition, a lot of the PAGASA RBFFWCs have been issuing hydrological information, particularly FAs, and FBs that have varying formats. It is for this main reason that a continuing program of stream-gauging training needs should be undertaken.

PRBFFWC in 2022

About mid-year in 2022, pandemic-related limitations were eased up. The Pampanga River Basin Flood Forecasting and Warning Center (PRBFFWC) opened up its usual direct river basin center hydrological activities that included stream gaging fieldwork, initiate and participate in face-to-face (F2F) meetings, conferences & workshops, post-flood surveys, and many other related activities apart from its continuing basin hydrological monitoring and operational flood forecasting & warning services.

On 17-21 October 2022 with the initiative of the Southern Luzon PAGASA Regional Services Division (SL-PRSD), the 4th PAGASA River Basin Flood Forecasting and Warning Center Conference, and 2nd Stream gauging Field Workshop were conducted with the objectives of discussing recent developments, best practices, challenges/gaps and innovations in stream gauging activities of the PAGASA RBFFWC; constructing a systematic program of stream gauging activities in river basins, and pointing out the importance of stream gauging to PAGASA RBFFWCs.

The event was held face-to-face and online via Google Meet at Villa Caceres Hotel, Naga City, Camarines Sur.

The PRBFFWC rendered some presentations / lectures in about 61 events with estimated participants / attendees totaling 2,927 individuals. About a third, or 20 to be exact, of these events were already done in a face-to-face setup. The usual presentations that were provided during these events covered the various topics that included such as latest and updated climate and weather outlook; hydrological updates on Pampanga River Basin and status of major Dams – Angat & Pantabangan; hydrometeorological hazards awareness and mitigation, climate change and early warning system (mostly in the DOT3 trainings and seminar to Provincial Tourism Officers and DRRMOs), and Tropical Cyclones updates during PDRA meetings. There were 19 Pre-Disaster Risk Assessment (PDRA) meetings that the PRBFFWC participated in and 12 of these were meetings by the PDRA Analyst group, while the rest were core group meetings of the Regional, DRR thematic clusters, and Provincial DRR councils

There were also some media interviews that were accommodated in 2022 and many of these were mostly done online (via zoom platform) and few were live or face-to-face interviews. A total of 14 interviews were attended during the year with topics mostly covering the status of the main Pampanga River particularly during Super Typhoon "KARDING" and Severe Tropical Storm "PAENG". These interviews included flood issues during the said event and dam situations. As always, the PRBFFWC regarded media interviews and briefings as a part of its enhancement on its information and dissemination campaigns within the Pampanga River Basin.

2022 Completed Projects

Optimization of the Operational Capabilities of Hydromet Sensors in Line with International Standards (WMO Standards) for Effective Weather, Flood Warning (CBFEWS) and Application Research

In a bid to improve the country's flood forecasting and warning capabilities, the Department of Science and Technology (DOST)

has embarked on the Optimization Project, aimed at utilizing existing Hydromet Devices from previous DOST initiatives. These devices, including Automated Rain Gauges, Water Level Monitoring Stations, Tandem Stations, and Warning Posts, will be employed in the establishment of a Community-Based Flood Early Warning System (CBFEWS) setup.

The Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA) has already implemented a Flood Forecasting and Warning System across 18 Major River Basins, employing telemetered equipment and radar technology. However, there remains a gap in monitoring and providing timely warnings for areas encompassing principal and small river basins, primarily due to the lack of ground observations. The Hydromet Devices developed by DOST aim to address this limitation and bridge the monitoring gap.

To ensure accurate data collection, these Hydromet Stations have been reconfigured and recalibrated in accordance with World Meteorological Organization (WMO) standards. Positioned strategically within a river basin network, they function as components of the CBFEWS. By integrating this technology with existing flood warning protocols, communities will be empowered to independently monitor relevant weather and hydrological parameters, enabling them to issue appropriate warnings and take necessary actions during times of disaster.

During the early stages of the Optimization Project, comprehensive assessments were conducted to inventory all the existing equipment obtained from previous DOST projects. The assessment reports provide detailed information on the status of the equipment, including recommendations for replacement parts, equipment conditions, photographs, updated coordinates, and other relevant metadata.

An extensive inspection of 1,921 stations was successfully completed, ensuring the efficient functioning of the Hydromet Devices.

Furthermore, a total of 179 maintenance and troubleshooting activities were conducted, addressing any non-operational stations and undertaking periodic repairs.

As part of the project's holistic approach, hydrographic surveys and leveling activities were carried out at 119 sites. These surveys yielded essential data, including river cross-sections and water assessments, allowing for the determination of river threshold levels. These threshold levels are assigned corresponding alert levels, such as Alert, Alarm, and Critical, which are instrumental in issuing flood warnings. Differential leveling was also performed to tie the collected elevation data to the Mean Sea Level (MSL), a vital component for the establishment of flood models.

Recognizing the importance of community preparedness, region-wide Information, Education, and Communication (IEC) campaigns and flood drills were conducted, inviting Disaster Risk Reduction and Management (DRRM) officers from different cities and municipalities that have received the Hydromet Devices. These initiatives aim to familiarize local officials with the equipment and guide them on integrating the system into their existing flood warning protocols. As a result, a total of 887 Local Government Units (LGUs) have been capacitated to effectively utilize the technology.

The Optimization Project represents a significant step forward in bolstering the nation's flood forecasting and warning capabilities. By harnessing the potential of existing Hydromet Devices and empowering communities, the DOST is making great strides toward enhancing early warning systems and enabling more proactive disaster response measures across the country.

Flood Adaptation Master Plan in Response to Climate Change in Eastern Visayas

In a proactive effort to combat the devastating effects of flooding, the government has announced the establishment of a Flood Adaptation Masterplan, along with other measures aimed at improving flood forecasting and warning systems. These initiatives are part of a broader strategy to enhance disaster resilience and protect the lives and properties of the communities affected by flooding.

The first step in this comprehensive plan is the thorough data collection within the target areas. PAGASA gathered vital information regarding historical flood patterns, topographical details, hydrological data, and other relevant factors. This data will form the foundation for accurate

flood predictions and better decision-making in the future.

To ensure effective implementation, a consultation meeting was held, bringing together various stakeholders such as LGUs, the DPWH, and other concerned organizations. The aim of this meeting was to foster collaboration, share expertise, and align efforts in combating the challenges posed by floods.

Taking a major stride towards enhancing flood forecasting capabilities, a pilot test for an AI-based Flood Forecasting and Warning System (FFWS) was conducted in three selected river basins in Biliran Province. The Caray Caray, Anas, and Pinangomhan Rivers were the sites chosen for the groundbreaking initiative. A thorough site survey was carried out, to determine the unique characteristics and dynamics of each river basin.

The next phase involved the installation of five stations equipped with

state-of-the-art AI-based FFWS technology. These stations gather real-time data on rainfall, river levels, and other relevant parameters, facilitating early flood detection and warning dissemination. The FFWS technology will be strengthened further by the development and application of an AI flood prediction algorithm, which will process the collected data and generate accurate flood forecasts.

Capacity-building programs were also included in the plan to training PAGASA personnel in the efficient operation and maintenance of the FFWS considering the importance of long-term sustainability. Additionally, collaborative training sessions were conducted involving PAGASA and LGU personnel, promoting better coordination and cooperation between the two entities.

These comprehensive flood adaptation initiatives demonstrate the government's commitment to mitigating the impact of flooding on the vulnerable communities of Biliran Province.

Strengthening the Capability of the Republic of the Philippines on Disaster Risk Reduction (Phase 1)

PAGASA has launched a project aimed at establishing a Flood Early Warning System (FEWS) in Toledo City and Dumanjug Town. This initiative comes in response to the recurrent flooding caused by the rising water levels of Hinulawan River and the river in Dumanjug during the rainy season.

Historically, heavy rains have triggered inundation in these areas. To effectively mitigate damages and protect the local population, it is crucial to gather critical information, such as accurate rainfall estimates and the location of heavy rainfall, enabling timely warnings and evacuation procedures.

Prior to the implementation of this project, Toledo City had a very limited observation network consisting of one water level and two automated rain gauge stations which were both non-functional. In the Dumanjug river basin, no observation stations were installed. Because of this situation, PAGASA and local governments faced challenges in determining the actual state of meteorological phenomena and river water levels in a timely manner also affecting the provision of accurate meteorological

and hydrological warnings to the public, particularly those residing in flood-prone areas.

To address these issues, PAGASA has outlined a comprehensive plan to establish Flood Early Warning System (FEWS) which include field surveys, development of web-based FEWS, installation of hydrometric equipment and warning posts and conduct of capacity building trainings.

The established FEWS in Toledo City and Dumanjug Town provided PAGASA and local authorities with the necessary tools to monitor meteorological conditions and river water levels. Timely issuance of accurate warnings will safeguard the residents of flood-prone regions.

ASTRONOMICAL OBSERVATION & MONITORING PROGRAM

National Astronomy Week

Under the Presidential Proclamation No. 130, s. 1993, the Philippine Atmospheric, Geophysical, and Astronomical Services Administration (PAGASA) is mandated to spearhead the annual celebration of National Astronomy Week (NAW), observed every 3rd week of February. PAGASA has been organizing educational and outreach activities such as free planetarium shows and free telescope viewing & stargazing sessions to showcase the facilities of PAGASA to the general public. The celebration also includes seminars for Science Teachers and astronomy-related contests *(i.e., essay writing, astrophotography, poster making, etc.)* for high school students of a particular school in a target area or region.
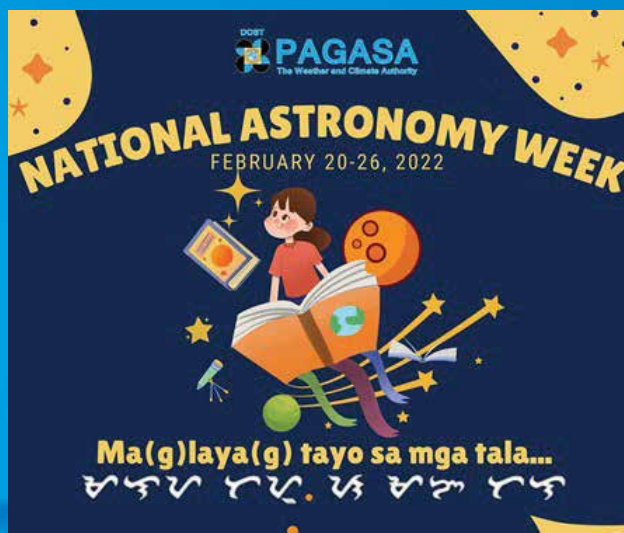
For a couple of years, PAGASA organized online activities for the celebration of NAW. As the health and safety protocols ease up this year, PAGASA prepared hybrid activities utilizing online platform and face-to-face at the same time maximizing further this year's theme "Ma(g)laya(g) Tayo sa mga Tala"

The following are the activities prepared for the week-long celebration:

- Free Planetarium Show;
- Free Telescope viewing and Stargazing session;
- 1st PAGASA Astro Vlog Contest;
- Webinar series "*Revisiting Philippine Ethnoastronomy amidst the pandemic*" held on 21 – 22 February 2022;
- Understanding Philippine Ethnoastronomy: A Research Symposium on 24 February 2022; and Virtual telescope viewing using the 45-cm GOTO telescope of PAGASA Astronomical Observatory

The Dark and Quiet Skies

The Dark and Quiet Skies project raises awareness about the need to preserve dark and quiet skies. This is to inform people on the importance of dark skies for human culture, heritage, and health, as well as the use of dark and quiet skies for astronomy research.
The Philippine Atmospheric, Geophysical and Astronomical Services Administration invited Mr. Reuel Norman Marigza Jr International Astronomical Union (IAU) Dark Sky Ambassador for the Philippines, to talk about "Dark & Quiet Skies Initiatives in the Philippines" and share the importance of the dark sky, and its impact on the world's cultures and on the global ecosystem.

The said webinar gathered a total of 94 Zoom participants *(Male: 39, Female: 55)* and reached 256 peak livestream viewers on Facebook on May 16, 2022 held via Zoom while simultaneously being streamed on DOST PAGASA FB Page.

Global Astronomy Month

Global Astronomy Month (GAM) is the world's largest annual event occurring for the entire month of April to celebrate astronomy. GAM is the flagship event by Astronomers Without Borders to encourage everyone to go outside and enjoy the beauty of the sky. The highlights of GAM 2022 are the Planetary Trio on the first few days of the month and the Venus-Jupiter Conjunction at the end of the month.

Held on April 27 & 29, 2022 via Zoom and streamed on DOST PAGASA FB Page, the virtual telescope viewing reached 645 peak live stream viewers on Facebook, while the virtual planetarium show had 413 Zoom participants *(235 Males and 178 Females)*

100 hours of Astronomy

From 01 to 04 October 2022, the IAU Office for Astronomy Outreach (OAO) continued the legacy of celebrating 100 Hours of Astronomy. The OAO's motto: "Astronomy for Everyone" inspired this year's theme capturing the same. It aims not only to celebrate OAO's 10th anniversary but also to invite amateurs and professional astronomers, teachers, outreach professionals and astronomy enthusiasts from all over the world to collaborate and come together as a community to help make astronomy more inclusive of all Earth's people. (PAGASA), in collaboration with the National Outreach Coordinator–Philippines, hosted the outreach activity on 100 Hours of Astronomy on 03 October 2022. with a title, "Sunny Skies: A Fun Way in Learning the Sun''.

A total of 131 Grade 1 students *(Male: 67; Female: 46)* were accommodated and given free school supplies. A brief video presentation summarizing the event was prepared and shared on DOST PAGASA and IAU Office for Astronomy Outreach's Facebook pages.

The main purpose of this program is to engage children on basic understanding of the astronomical surroundings. PAGASA's target participants for this particular event are Grade 1 students for this event, which can further be expanded to other grade level in the future. The program basically contains a 10-minute astronomy lecture for kids, a 20-minute astronomy art and craft session, and a 30-minute sun-viewing activity *(using solar glasses and a solar telescope).* This program currently caters both students and teachers in Grade 1.

World Space Week

The World Space Week (WSW) is a week-long international celebration of Science and Technology and its contribution to the betterment of the human condition. It is an annual space event celebrated globally every 04–10 of October. For this year's theme *"Space and Sustainability"*. PAGASA prepared a webinar livestreamed on PAGASA's official Facebook page. An outreach activity also took part in the celebration which is conducted in a selected community. The aim of these activities is to promote astronomy and public awareness, and to inspire Filipinos as well, to pursue careers in science and technology.

This said activity includes interactive outreach programs particularly introducing the basic concepts of astronomy and providing them inspirational and motivational discussions on astronomy.

Held on October 4 & 10, 2022 via Zoom while being streamed simultaneously on DOST PAGASA FB Page, the World Space Week webinar had a total of 190 Zoom participants *(Male: 81, Female: 109)*, and a total of 100 face-to-face participants *(Male: 71; Female: 29)* for the said outreach activity.

Women and Girls in Astronomy

The women and girls in Astronomy is a global project organized by the IAU-OAO from 11 February to 8 March 2022 to recognize the roles and contributions of women in advanced science and to encourage them to consider careers in the field (PAGASA), in partnership with the National Outreach Coordinator for the Philippines (NOC Ph), hosted a virtual meeting entitled "Recognizing Women and Girls in Philippine Astronomy". This celebration covers two international days adopted by the United Nations, including the International Day of Women and Girls in Science on 11 February and International Women's Day on 8 March.
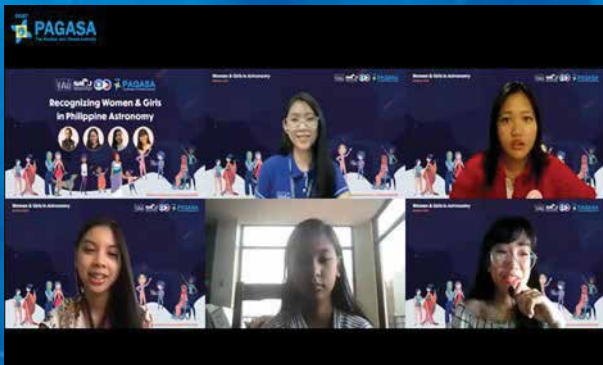
PAGASA invited girls who make and establish their names in the field of Space Science and women who play significant roles in the advancement of Philippine Astronomy for this year's celebration in line also with the women's month. The International Astronomical Union (IAU) strongly encouraged activities throughout the year, with a particular focus between two International Days adopted by the United Nations: the International Day of Women and Girls in Science on 11 February and International Women's Day on 8 March.

In 2022, the IAU Office for Astronomy Outreach (OAO) with the IAU National Outreach Coordinators (NOCs) supported a number of virtual and in-person events to recognize the contributions of women and girls in astronomy between 11 February 2022 and 8 March 2022. Other OAO activities include online campaigns and contests.
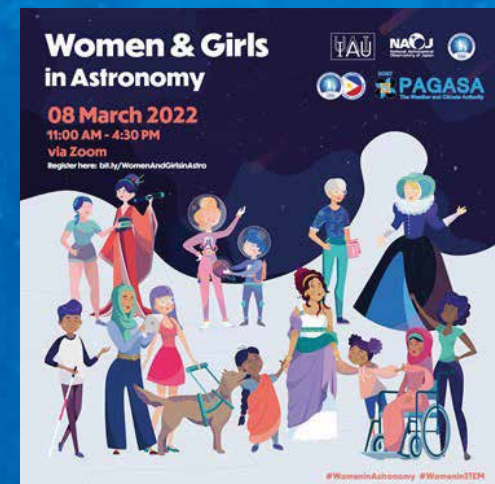
Published Research Papers

Research is essentially the act of attentively and in-depth researching something in order to gain profound knowledge about it. It needs to be properly structured, compiled, and recorded in order to be successful. Furthermore, research can provide the basis of governmental policies and can be applied into operational processes when proven effective.

The following are the major research papers published this year.

Can Southeast Asia Continue to be a Major Rice Bowl? Nature Food (Accepted for publication February 2022)

S. Yuan, A.M. Stuart, A.G. Laborte, J.I. Ratallino Edreira, A. Dobermann, L.V.N. Kien, L.T. Thuy, K. Paothong, P. Traesang, K.M. Tint, S.S. San, **M.Q. Villafuerte**, E.D. Quicho, A.R. Pame, R. Then, R.J. Flor, N. Thon, F. Agus, N. Agustiani, N. Deng, T. Li, and P. Grassini

Impacts of Planetary Boundary Layer Parameterization in REGCM4.7 on the Internsity and Structure of Simulated Tropical Cyclones over the Philippines (2022)

Climate Dynamics, DOI:10.1007/s00382-022-06246-9

M.C. Lagare, R. Coronel, F. Cruz, G.T. Narisma, **M.Q. Villafuerte**, and J. Tibay

Southeast Asia must Narrow Down the Yield Gap to Continue to be a Major Rice Bowl (2022)

Nature Food, 3:217-226

Yuan, ., A.M. Stuart, A.G. Laborte, J.I. Ratalino Edreira, A. Dobermann, L.V.N. Kien, L.T. Thuy, K. Paothong, P. Traesang, K.M. Tint, S.S. San, **M.Q. Villafuerte**, E.D. Quicho, A.R. Pame, R. Then, R.J. Flor, N. Thon, F. Agus, N. Agustiani, N. Deng, T.Li, and P. Grassini

The Effect of Urbanization on Temperature Indices in the Philippines (2022)

International Journal of Climatology, 42: 850-867

Manalo, J.A., J. Matsumoto, H.G. Takahashi, **M.Q. Villafuerte**, L.M.P. Olaguera, G. Ren, and **T.A. Cinco**

Influence of Boreal Summer Intraseasonal Oscillation on Rainfall Extremes in the Philippines (2022)

International Journal of Climatology, 42: 4656-4668

Olaguera, L.M.P., **J.A. Manalo** and J. Matsumoto

Decadal Changes of the Early Summer Asian Monsoon and the South China Sea Tropical Cyclones during 2001-2020 (2022)

Terr. Atmos. Ocean. Sci., https://doi.otg/10.1007/s44195-022-00005-3

Cho, Y.M., Lu, M.-M., Sui, C.-H., **Solis, A.L.S.** and M.-D Chen

Increasing Activity of Tropical Cyclones in East Asia during the Mature Boreal Autumn linked to Long-Term Climate Variability (2022)
npj Climate and Atmospheric Sciences 5,4, https://doi.org/10.1038/s41612-021-00222-6
Basconcillo, J., and I.J Moon

Influence of Multiyear Variability on the Observed Regime Shifts in Philippine Climatology (2022)
Asia-Pacific Journal of Atmospheric Science, https://doi.org/10.1007/s13143-022-00298-x
Basconcillo, J., G.A.Duran, S.L. Maratas, I.J Moon, **E. Juanillo and E. Cayanan**

Impact-based Forecasting in South East Asia – What Underlies Impact Perceptions?
International Journal of Disaster Risk Reduction, 76 (2022) 102943. Published by Elsevier Ltd. This is an open access article under the CC BY license (http://creativecommons.org/licenses/by/4.0/), https://doi.org/10.1016/j.ijdrr.2022.102943
Sarah C Jenkins, Agie W Putra, Sefri Ayuliana, Riefda Novikarany, Norhadizah M Khalid, Che Siti Noor Bt Che Mamat, **Lorenzo A Moron, Maria Cecilia A Monteverde, Esperanza O Cayanan**, Rebecca Beckett , Adam JL Harris

Investigating the decision thresholds for Impact-Based Warnings in South East Asia
International Journal of Disaster Risk Reduction, 76 (2022) 103021. Published by Elsevier Ltd. This is an open access article under the CC BY license (http://creativecommons.org/licenses/by/4.0/), https://doi.org/10.1016/j.ijdrr.2022.103021
Xiangbo Feng, Kevin I. Hodges, Lam Hoang, **Alvin G. Pura**, Gui-Ying Yang, Huyen Luu, **Shirley J. David, Ger Anne M. W. Duran**, Yi-Peng Guo

A New Approach to Skillful Seasonal Prediction of Southeast Asia Tropical Cyclones Occurrence (2022)
Journal for Geophysical Research (JGR) Atmospheres, https://doi.org/10.1029/2022JD036439
Xiangbo Feng, Kevin I. Hodges, Lam Hoang, **Alvin G. Pura**, Gui-Ying Yang, Huyen Luu, **Shirley J. David, Ger Anne M. W. Duran**, Yi-Peng Guo

Publications

Feng, X., Hodges, K. I., Hoang, L., **Pura, A. G.**, Yang, G. Y., Luu, H., ... & Guo, Y. P. (2022). **A new approach to skillful seasonal prediction of Southeast Asia tropical cyclone occurrence**. Journal of Geophysical Research: Atmospheres, 127(12), e2022JD036439.

Wang, C. C., Tsai, C. H., Jou, B. J. D., **David, S. J., Pura**, A. G., Lee, D. I., ... & Lee, J. S. (2022). **Time-Lagged Ensemble Quantitative Precipitation Forecasts for Three Landfalling Typhoons in the Philippines Using the CReSS Model, Part II: Verification Using Global Precipitation Measurement Retrievals.** Remote Sensing, 14(20), 5126.

Ibanez, M.P., Pura, A.G., Sajulga, R.A., David, S.J. (2023). **Raindrop Size Distribution (RSD) Characteristics during the Southwest Monsoon Period in Western Luzon, Philippines**. Philippine Journal of Science Vol. 152 No. S1, Special Issue on Philippine Meteorological Research. https://philjournalsci.dost.gov.ph/publication/special-issues/meteorology

Poster Presentations

2022 Philippine Meteorological Society Annual Convention

"Derivation of Reflectivity-Rain Rate (Z-R) relationship for Subic and Tagaytay Radar Systems Using Drop Size Distribution Measurements from a Networks of PARSIVEL2 Disdrometer ''. **Alvin G. Pura, Marco Polo A. Ibanez, Shirley J. David, Ramjun A. Sajulga, Darwin D. Perez, Patrick John R. Torres, Evan James K. Carlos, Bradley G. Balbuena, Celia H. Homol**
https://philmetsoc.com/PMS/Uploaded_Files/_PMSProceedingsVol5.pdf

7th Taiwan-Philippines Earth Sciences International Conference (TPESIC2023)

Oral Presentations

40th Samahang Pisika ng Pilipinas Physics Conference (2022)
"Raindrop size distribution during different monsoon periods over Metro Manila, Philippines". **Marco Polo A. Ibanez, Alvin G. Pura, Ramjun A. Sajulga, Shirley J. David.**

24th Samahang Pisika ng Visayas at Mindanao Physics Conference (2022)
"Raindrop size distribution (DSD) characteristics of tropical cyclones and mesoscale convective systems in Luzon, Philippines using Disdrometer observations". **Marco Polo A. Ibanez, Alvin G. Pura, Ramjun A. Sajulga, Shirley J. David.**

7th Taiwan-Philippines Earth Sciences International Conference (TPESIC2023)
"Impact of assimilating radar data on forecasting enhanced southwest monsoon rainfall over the Philippines''. **Gabriel S. Miro, Michael B. Simora**, Heinritz Majella S. Miguel, Xander Andre B. Magtibay, and Louie Jane R. Taguinod

7th Taiwan-Philippines Earth Sciences International Conference (TPESIC2023)
"Monsoonal variation of Raindrop Size Distribution (DSD) in Metro Manila, Philippines" **Marco Polo A. Ibanez, Alvin G. Pura, Ramjun A. Sajulga, Shirley J. David**

4th Regional WCSSP Southeast Asia Workshop (2022)
"Evaluation of heavy rainfall events enhanced by the presence of a tropical cyclone in coupled and uncoupled numerical weather prediction forecasts". **Alvin G. Pura**, Julian T. Heming, **Gabriel S. Miro, Ramjun A. Sajulga, Shirley J. David**

4th Regional WCSSP Southeast Asia Workshop (2022)
"Tropical cyclone tracking and rainfall verification from PAGASA WRF model and UKMO Unified Model simulations. Highlights on Typhoon Rai (Local Name : Odette)"
Regional Scale Science Component. Presented by **Kate Esguerra**.

Atmospheric Science Conference (2022) "Numerical simulation of Tropical Cyclones in the Philippines using the Weather Research and Forecasting (WRF) and Cloud-Resolving Storm Simulator (CReSS) Model." **Kate Ann R. Esguerra, Ramjun S. Sajulga, Shirley J. David**

Submitted Technical Reports

"Evaluation of heavy rainfall events enhanced by the presence of a tropical cyclone in coupled and uncoupled numerical weather prediction forecasts (2022)". **Alvin G. Pura, Julian T. Heming, Gabriel S. Miro, Ramjun A. Sajulga, Shirley J. David**

"Weather Regime time-aggregated forecasts and their skill in forecasting Southeast Asia rainfall (2022)". Samantha Ferrett, Tom Frame, Paula Gonzalez, Emma Howard, Oscar Martínez-Alvarado, John Methven, **Alvin Pura**, Steve Woolnough, **Shirley David, Ger Anne Marie Duran**

2022 Completed Projects

Flood Risk Assessment for Pilot Flood-Prone Area in the Province of Isabela

Isabela is situated in the vicinity of Cagayan River Basin which is the largest river basin (RB) among the 18 major RBs of the Philippines. Some cities/municipalities in Isabela, experience flooding events annually due to its geographic location, topography and anthropogenic factors affecting the communicates thereby including their economy.

This study focused on the assessment of flood risk in one of the flood-prone cities/municipalities of Isabela. Rainfall-Runoff-Inundation (RRI) model was used to produce inundation maps of Ilagan City particularly updated flood hazard and risk maps with 10, 25, 50 and 100-year return periods. These maps can aid the disaster leaders, managers, and policy makers in dealing with the future flood events in the area. Also, a social vulnerability map is an additional output of the methodological approach presented in this study.
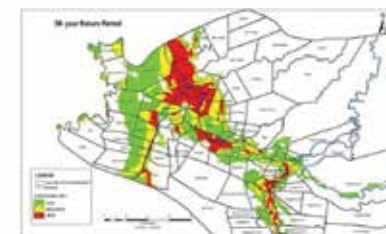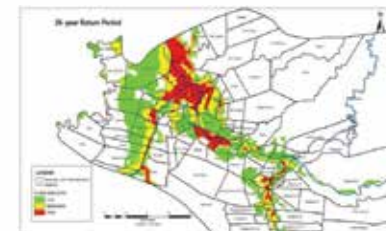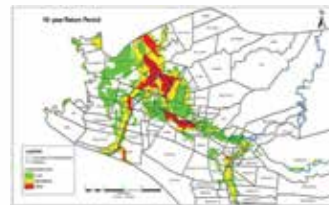
The output of the study can be used as tools that may aid the DRR managers and authorities in their policy and decision-making such as their prioritization in planning and evacuation procedures. The maps can also be used to increase the level of awareness of the community, as these maps can be utilized to spatially analyze the level of risks present in the flood-prone barangays.
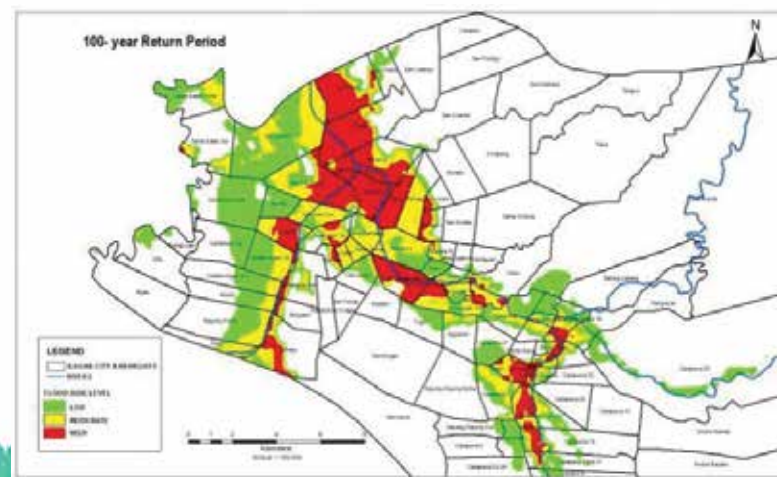
An organization whose primary mission is to deliver reliable and relevant weather-related information, products and services to reduce the effects of approaching weather and climate-related disasters requires a modern, effective, and dependable facilities. To keep up with the fast-paced requirement of weather, flood, and climate monitoring warning systems, PAGASA invested in cutting-edge infrastructure and technology.

In 2022, PAGASA is pleased with another string of momentous achievements in the field of its infrastructure projects.

Inauguration of the 18th Doppler Radar of PAGASA: The Masbate Radar Station

DOST-PAGASA inaugurated its 18th Doppler Radar situated in Calasangan Hill in the municipality of Cataingan in the province of Masbate. The facility is expected to boost the agency's monitoring and forecasting capabilities of extreme weather events. Held in the afternoon of 17 August 2022, the inaugural ceremonies were attended by key officials from the DOST, PAGASA, local officials of Masbate and representatives from various stakeholders. Among the notable personalities in the occasion included Congressman Wilton T. Kho of the Third Legislative District of Masbate, DOST Secretary Renato U. Solidum

Jr., DOST Regional Office V Director Rommel R. Serrano, PAGASA Administrator Dr. Vicente B. Malano, PAGASA Deputy Administrator Dr. Landrico U. Dalida Jr. and Masbate Public Information Officer Nonielon C. Bagalihog Jr., representing the office of Governor Antonio Kho of the province of Masbate. Former provincial Disaster Risk reduction and Management Officer and the incumbent Mayor Fernando Talisic of Esperanza, Masbate and Mr. Pedrito Malunhao of Japan Radio Co. Ltd. also graced the event.

The ribbon-cutting ceremony and the blessing of the radar building was led by Rev. Fr. Arnel C. Bruza of St. Vincent Ferrer Parish Church of the Diocese of Masbate. The inauguration concluded with a mini press conference.
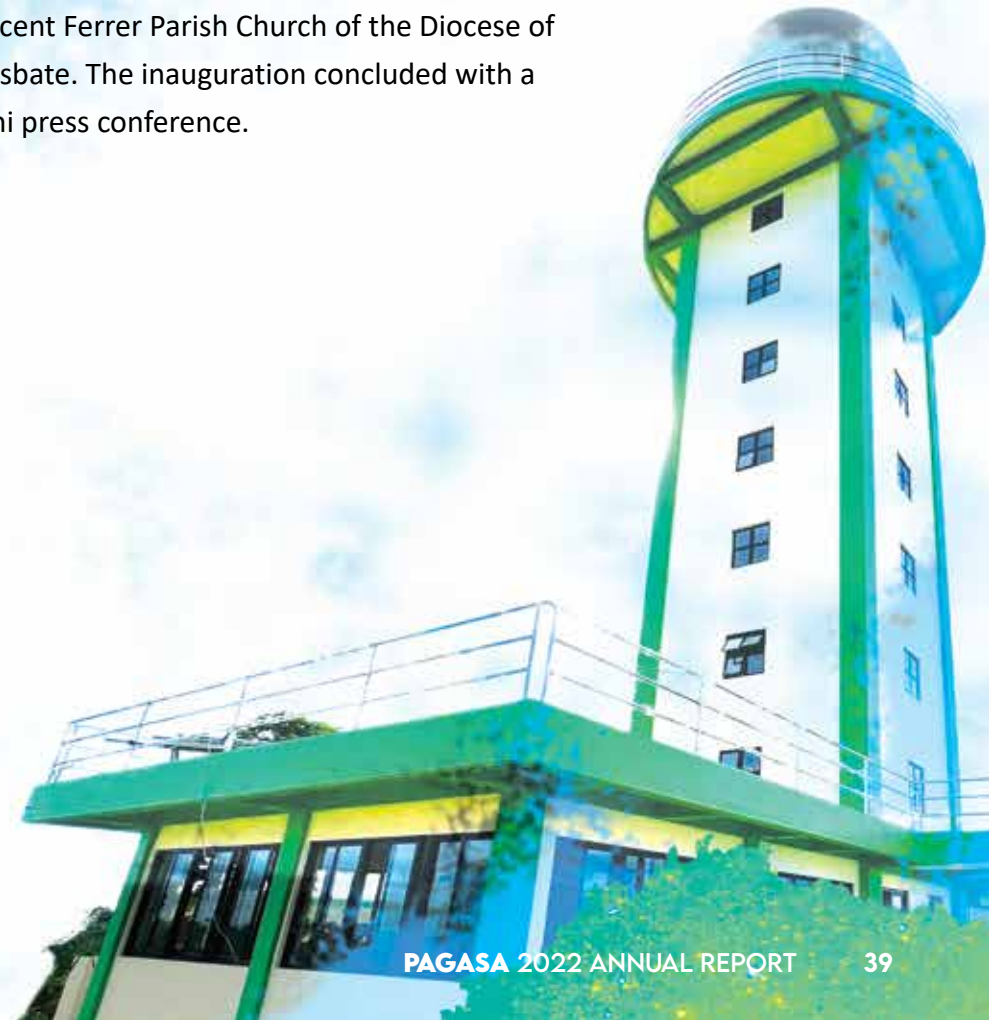
Honorable Cong. Wilton Kho, Representative of 3rd legislative district of Masbate, DOST Sec. Renato Solidum Jr. and key officials of DOST-PAGASA made a tour at the agency's new Doppler Radar facility in Cataingan, Masbate. The distinguished guest of honor and DOST-PAGASA key officials answered queries from members of the media

DOST Secretary Renato Solidum Jr. and Honorable Cong. Wilton Kho led the ceremonial cutting of the ribbon and unveiled the Radar building marker, joined by Dr. Vicente Malano of PAGASA and Dir. Rommel Serrano of DOST Regional Office V. Rev. Fr. Arnel C. Bruza of St. Vincent Ferrer Parish Church of the Diocese of Masbate officiates the blessing of the Cataingan Doppler Radar facility with key officials and stakeholders participating in the ceremonies.

The distinguished guest of honor delivering their messages during the inauguration of the PAGASA Doppler Radar in Cataingan, Masbate, arranged according to their sequence of speech. With Dr. Landrico U. Dalida Jr., PAGASA Deputy Administrator for Operations and Services (top left), Hon. Cong. Wilton T. Kho 3rd District Masbate (top right), Masbate PIO Nonielon C. Bagalihog Jr. representing the Office of Gov. Antonio Kho (mid left), Dr. Vicente B. Malano, PAGASA Administrator (mid right), DOST V Regional Director Rommel R. Serrano (bottom left) and Dr. Renato U. Solidum, Jr. Secretary of the Department of Science and Technology (bottom right)

X-Band Radars

In this year alone, two (2) additional X-Band Radars were installed in Davao for Davao River Basin and in Kabankalan, Negros Oriental for Ilog Hilabangan River Basin. A total of five fixed X-Band Radars were established namely in Tagum-Libuganon River Basin (Panabo, Davao del Norte), Mindanao River Basin (Kabacan, North Cotabato), Ilog-Hilabangan River Basin (Kabankalan, Negros Oriental), Davao River Basin (Davao City), and Cagayan River Basin (Echague, Isabela) and three (3) mobile X-Band Radars.

X-band radars (80-100 km range) are a cost-effective way to augment the capabilities of existing radar infrastructure due to rugged terrains that may result in clutter or noise, such as mountain ranges and tall buildings, that obstruct the field of view or radars, resulting in false echoes reflecting on the radar scope.

CLIMATE CHANGE ADAPTATION, DISASTER PREPAREDNESS & RISK REDUCTION PROGRAM

Memorandum of Agreement Signing Ceremony for Project #MAGHANDA between the Department of Science and Technology (DOST) and the Department of the Interior and Local Government (DILG)

Held on March 16, 2022 in Quezon City, the signing of the Memorandum of Agreement between the DOST and DILG marked the beginning of a strong collaboration between the two Departments of the Philippine government mandated in the National DRRM framework to act on Disaster Prevention and Mitigation as well as Disaster Preparedness, respectively.

Project #MAGHANDA aims to upskill the knowledge of Local Government Units (LGUs), Disaster Risk Reduction and Management Officers (DRRMO), Municipal Local Government Operations Officers (MLGOO), local information officers, uniformed personnel, and the media, with regard to the warning messages and advisories issued by DOST-PAGASA and DOST-PHIVOLCS. This project also aims to develop policy recommendations for the DILG and LGUs to serve as basis in updating their Disaster Risk Reduction and Management Plans.

The Department of Science and Technology (DOST) approved the implementation of the project, "#MAGHANDA: Meteorological and Geological Hazard Advisories, Warnings and Notifications for Decisive Action," on January 27, 2021. DOST-PAGASA, implementing agency of the project, together with the Philippine Institute of Volcanology and Seismology (DOST-PHIVOLCS), and the Science and Technology Information Institute (DOST-STII), Project #MAGHANDA will be conducting a nationwide campaign to improve understanding of DOST-PAGASA and DOST-PHIVOLCS' products and services. In cooperation with the Department of Interior and Local Government (DILG) and its training arm, the Local Government Academy (LGA), and the Kapisanan ng mga Brodkaster ng Pilipinas (KBP), and the Philippine Information Agency (PIA), the project will be conducting 28 training sessions covering all regions of the country.

The general objective of #MAGHANDA is to provide a clearer understanding of warning messages to have better response action among LGUs and media. Specifically, it aims to develop the skills of the LGUs, DRRMOs, MLGOOs, Local Information Officers, and First Responders

in understanding warning messages and planning for response actions; develop the skills of Local Information Officers and Media in understanding warning messages and developing news reports and articles; and develop policy recommendations for DILG and LGUs to use as a basis for updating their DRR plan.

MOA signing between DOST and DILG for Project MAGHANDA, held 16 March 2022 at Seda Hotel QC. In the Photo: (standing at the back, from left to right) Dr. Ma. Mylene Villegas GDAPD Chief DOST-PHIVOLCS; Dr. Esperanza O. Cayanan PAGASA Deputy Administrator for Research and Development; Dr. Vicente B. Malano Administrator of DOST-PAGASA; and Dir. Edgar Allan Tabell, DILG-CODIX. (seated in front, from left to right) Dir. Thelma Vecina, Exec. Director of Local Govt. Academy (LGA); Dr. Renato U. Solidum Jr., Secretary of the Dept. of Science and Tech. (DOST); Hon. Martin Diño Undersecretary of the Dept. of Interior and Local Govt. (DILG); Dir. Richard P. Burgos DOST-STII

Governors' Summit for Meteorological and Geological Warning Messages and Project #MAGHANDA Closing Ceremony

Governors' Summit for Meteorological and Geological Warning Messages and Project #MAGHANDA Closing Ceremony served as a showcase of the project's accomplishments as well as an expression of gratitude for invaluable contributions of partner entities.

The agencies participated in this ceremony are the representatives from DOST-PCIEERD, DOST, DILG, DILG-LGA, DILG-CODIX, OCD, PNP, BFP, DENR-MGB, PIA, and KBP. Several key stakeholders from the local government, academe, and scientific community gathered for the press conference and closing ceremony of the Project #MAGHANDA at the Novotel in Quezon City

The activity was held on December 14, 2022 at Novotel Manila Araneta City, Cubao Quezon City.

Project #MAGHANDA Learning Sessions

In compliance to the Memorandum of Agreement between the DOST and the DILG signed last 16 March 2022, Project #MAGHANDA rolled out its learning sessions starting 4 July 2022, with the activation of the Learning Management System (LMS) for MAGHANDA as well as with the newly-procured high-capacity zoom platform.

The #MAGHANDA project conducted both asynchronous and synchronous learning sessions for all regions in the country. The first batches of participants were from

#MAGHANDAPhotoRelease

Project #MAGHANDA synchronous session for the local chief executives in the Mindanao region starts

The first synchronous session of Project #MAGHANDA for the Local Chief Executives (LCE) started in the Mindanao region on August 16, 2022. The learning session aimed to equip participants with updated information on natural hazards and warning messages and the appropriate DRR response actions for policy making.

#MAGHANDA
Meteorological And Geological Hazard Advisories, Warnings, and Notifications for Decisive Action

Regions XIII, XII, XI, X, IX, VIII, and VII, which included local chief executives, DRRMOs, municipal local government operations officers, information officers from national and local government units, first responders (Philippine National Police and Bureau of Fire Protection), and media practitioners. Starting with an online LMS orientation, the participants were given an overview of the course as well as access to the LMS by setting up their respective accounts. They were also given two weeks after the orientation to complete all the course requirements before engaging once again into

an online learning session via zoom to review all the materials and be given a chance to interact with the resource speakers.

The DOST's two frontline agencies, PAGASA and PHIVOLCS prepared visually compelling presentations and workshops that covered the following hazards: tropical cyclones, gale warnings, thunderstorms, storm surges, heavy rainfall, flood, ENSO (El Niño and La Niña), volcanoes, earthquakes, and tsunamis. In the two-day synchronous session, the

agencies were given a day each, to cover their areas of expertise and mandate, namely on hydrometeorological and geologic hazards and warning messages, respectively. On the other hand, the Science & Technology Information Institute (STII) handled the science communication aspect as well as the monitoring evaluation of the project.

Several tools and services such as the DOST-PAGASA website and the development of the impact-based Forecasting and Warning System,

the GeoRiskPH platform, Rapid Earthquake Damage Assessment System (REDAS), and How Safe is My House, among others, were also explained in full detail by respective experts from both agencies.

Project #MAGHANDA training session in Visayas region officially starts
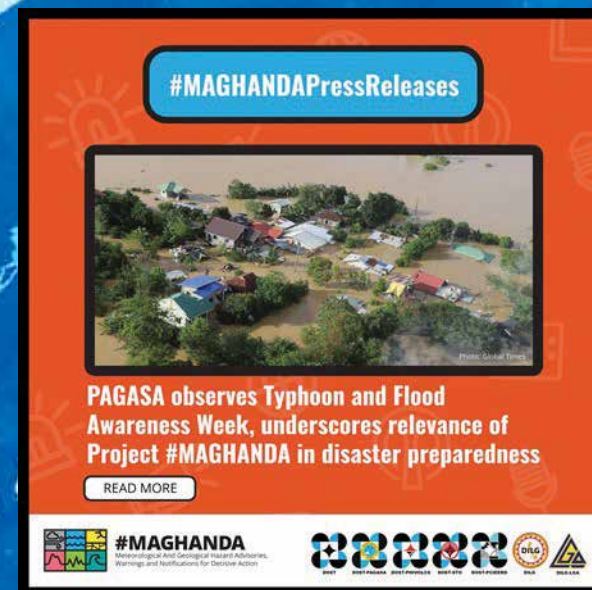
#MAGHANDA workshop for the Media in Mindanao

The first online workshop of #MAGHANDA for the Media personnel from Mindanao Regions IX, X & XI was held last August 12, 2022. The workshop aims to equip the media personnel on how to report hydromet and geological hazards through news writing or feature story on social media, television, and radio broadcast.

PAGASA observes Typhoon and Flood Awareness Week, underscores relevance of Project #MAGHANDA in disaster preparedness

Webinar on Weather, Flood and Climate Information for Public Teacher Disaster Risk Reduction (DRR) Coordinators of Camarines Sur

The Southern Luzon PAGASA Regional Services Division (SLPRSD) conducted a webinar on Weather, Flood and Climate Information for Public Teacher Disaster Risk Reduction (DRR) Coordinators of Camarines Sur on 10-11 November 2022. It was conducted to increase and enhance the participants' perception and understanding on weather, flood, and climate information. Their responsibility is crucial as they directly convey the awareness to students – categorized as one of the most vulnerable in the society. The webinar is also expected to translate the knowledge learned in the formulation of the school's localized suspension/cancellation of classes and offices during extreme weather and climate events.

Messages from different PAGASA officials were given and the same with the Camarines Sur school officials. Notable were the remarks of appreciation given by the education program supervisor of the School Governance and Operations Division, Dr. William A Villare. He

valued the technical information imparted to them and expressed their school's willingness to tie up with PAGASA, particularly, SL-PRSD.

The activity was a success which exceeded its 100 target participants.

Presentation of Hydrometeorological Hazards, Climate Review and Outlook – MDRRM Tubod, Lanao Del Norte

Weather and climate hazards such as storms, heat waves, cold waves, floods and droughts cause more economic damage and loss of life than any other natural disasters. As some studies indicate, climate change could make such events even more severe. The municipality of Tubod, Lanao Del Norte are among those suffering considerable losses from natural disasters.

The importance of early warning systems in disaster risk reduction, especially mitigating flood losses, cannot be over emphasized—especially in the challenging atmosphere of climate change and the increasing occurrences of climate extremes. Early warning systems coupled with response, mitigation, awareness and preparedness are needed in many developing countries.

Due to the current and projected impact of weather induced natural hazards, the effective functioning of hydrometeorological systems is critical for disaster risk mitigation, preparedness and response.

On March 15, 2022, the Mindanao PAGASA Regional Services Division (MPRSD) conducted a series of lecture presentations for the Municipal Disaster Risk Reduction Management (MDRRM) of Tubod, Lanao Del Norte. One of its main purposes is for the said municipality to be prepared for the various hydrometeorological hazards, and weather and climate-related disasters.

3-Day Updating of the Provincial Disaster Risk Reduction and Management Plan (CY 2023-2025) for PDRRM Council – Bukidnon (May 04, 2022)

The Provincial Disaster Risk Reduction and Management (PDRRM) is responsible for setting the direction, development, implementation and coordination of disaster risk management programs within the territorial jurisdiction. It contributes in building towards a disaster prepared and resilient communities by advocating, implementing and supporting Disaster Risk Reduction and Management – Climate Change Adaptation and Mitigation programs in the Province.

The PAGASA Regional Services Division of Mindanao (MPRSD) takes a cohesive and collective effort with the PDRRM Council of Bukidnon in coming up with this revised and updated Provincial Disaster Risk Reduction and Management (PDRRM) Plan for 2023-2025.

The succeeding series of typhoons that hit the province of Bukidnon may be tragic, but somehow it was a wake-up call for the region and paved the way for them to showcase and strengthen the Filipino spirit of resiliency that allowed them to rise from the rubbles and pushes them to become what they are and to where they shall be heading to.

On May 04 2022, a series of lecture presentations was conducted in Malaybalay City, Bukidnon by the MPRSD relative to the four thematic areas of disaster management – disaster prevention and mitigation, disaster preparedness, disaster response, and disaster rehabilitation and recovery. In the said event the topic is addressed in all aspects considering that numerous agencies of the government also provided their inputs by way enumerating the various PPAs specific for each disaster pillar attuned to the respective goals, objectives, and outcomes.

Presentation of Basic Meteorology, Weather Forecasting and Hydrometeorological Hazards — PCG District Northern Mindanao

Beyond weather forecasting, meteorology is concerned with long-term trends in climate and weather, and their potential impact on human populations. An important area of meteorological research these days is climate change and the effects it may cause. Meteorological and climatological information is now being used in many applications, ranging from agricultural management to energy demand forecasting. Use of such information in applied contexts requires a strong understanding of regional weather and climate variability as it relates to larger scales.

On October 27, 2022, the PAGASA Regional Services Division of Mindanao (MPRSD) conducted a lecture presentation for the personnel of the Philippine Coast Guard District - Northern Mindanao. Its purpose is to prepare our coast guards for the various hydrometeorological hazards, and weather and climate-related disasters.

Regional Climate Forums 2022 for Northern Mindanao and Zamboanga Peninsula, Caraga and Davao Region, and BARMM and SOCCSKARGEN

Regional Climate Outlook Forums (RCOFs) produce consensus-based, user-relevant climate outlook products in real time to reduce climate-related risks and support sustainable development for the coming season in sectors of critical socio-economic significance for the region in question. Its aim is to provide collaboratively developed and consensus-based seasonal climate outlooks and related information on a regional scale. These activities support decision-making to manage climate-related risks and support sustainable development.

The Mindanao PAGASA Regional Services Division (MPRSD) in collaboration with various stakeholders in the Northern Mindanao and Zamboanga Peninsula, Caraga and Davao Region, and BARMM and SOCCSKARGEN held a series of Regional Climate Forum which served as an opportunity to share lessons and challenges from working towards regional climate resilience and engage in strategy discussions to facilitate more effective coordination both within their regions and with counterparts from across the Mindanao Region. It was held in successive dates: 09 September 2022 (Northern Mindanao and Zamboanga Peninsula), 28 October 2022 (Caraga and Davao Region), and 11 November 2022 (BARMM and SOCCSKARGEN).

Information, Education and Communication Campaigns for the Province of Pangasinan, Ifugao, Kalinga and Apayao LGUs

PAGASA Regional Services Divisions (PRSDs) holds the responsibility in informing the concerned offices or organization within their jurisdiction about the meteorological and hydrological conditions. This is done by communicating useful forecasts and climate information to various stakeholders and decision-makers in order to increase their capacity at the local level.

The PAGASA Northern Luzon conducted an Information, Education and Communication Campaign on Understanding Tropical Cyclone Warnings and Information applicable to operations for Pangasinan on April 20, 2022. Its main purpose is to give information on the different weather systems and updates on the Tropical Cyclone Warnings. The activity's target outcome is coming up with shared information on the different weather systems and presentation on the new Tropical Cyclone Warnings.

Likewise, NL-PRSD presented lectures to Local Governments of Ifugao, Kalinga and Apayao to provide information on the seasonal climate forecast held on October 26, 2022.

Community Based Disaster Risk Reduction and Management Training for Civic Society Organizations - Region 2

In an effort to enhance disaster preparedness and response within local communities, a community based disaster risk reduction and management training has been conducted for civic society organizations. The said training was held virtually from March 28-31,2022 to equip participants with the necessary knowledge and skills to effectively manage and respond to disasters in their respective communities. It covered a range of topics including hazard identification and mapping, risk assessment, early warning systems, evacuation planning, and search and rescue operations.

Organized by the NL PRSD and in collaboration with local government units, the training program targeted civic society organizations, non-governmental organizations, community-based organizations, and volunteer groups. The program provided an opportunity for these organizations to come together and learn from each other's experiences, as well as from

the experts leading the training. It also emphasized the importance of community involvement in disaster risk reduction and management efforts. Participants were encouraged to engage with their respective communities and work collaboratively to identify and address potential hazards and risks.
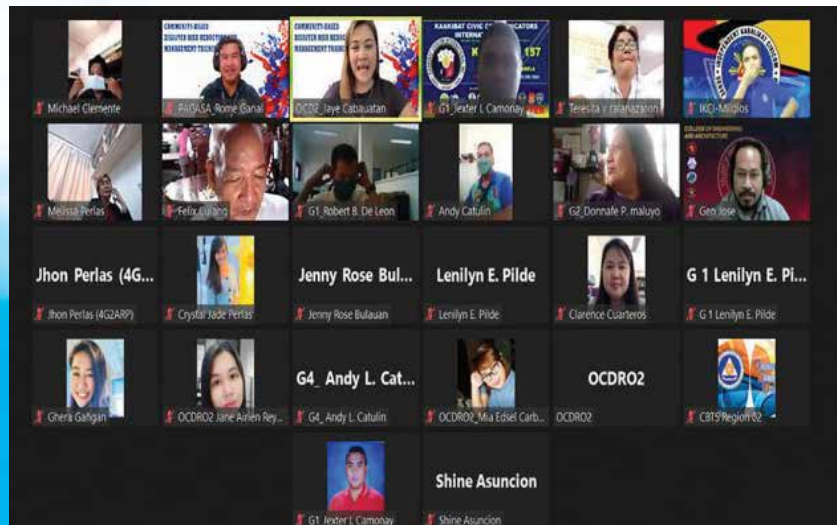
The Important Role of the Media during Disasters:
A Webinar in Celebration of the National Disaster Resilience Month

In a world where natural disasters and emergencies are becoming increasingly common, the role of media has become more critical than ever before. To shed light on this crucial topic, a webinar entitled "The Important Role of Media during Disasters" was organized on July 20, 2022 in celebration of the National Disaster Resilience Month.

The webinar brought together journalists, broadcasters, and media experts from around the world. The panelists including Ms. Bernadeth Lucillo of the National Capital Region PAGASA Regional Services Division (NCR PRSD) discussed the crucial role that media plays during disasters and how it can help in mitigating the impact of emergencies.

The speakers emphasized the need for accurate and timely reporting during disasters. They pointed out that the media can act as a vital link between the public and the authorities, providing critical information about the

disaster, its impact, and the measures being taken to address it. They also highlighted the importance of responsible reporting, which can help prevent panic and misinformation among the public.

The panelists also discussed the challenges faced by media during disasters, such as the difficulty of accessing affected areas, limited resources, and the need to balance the need for accurate reporting with the sensitivity of the situation.

The webinar concluded with a call to action for media professionals to continue to prioritize the important role they play during disasters. The speakers emphasized the need for collaboration among media outlets, authorities, and other stakeholders to ensure that accurate and timely information reaches the public during emergencies.

Regional Climate Forum for CALABARZON

For workers of various local government units in the CALABARZON Region as well as stakeholders, a Regional Climate Forum was held in an effort to improve disaster preparedness and response within local communities. The training session on November 8, 2022, was designed to provide participants the information and abilities they would need to manage and respond to catastrophes in their local communities. Risk assessment, early warning systems, evacuation planning, and search and rescue operations were just a few of the subjects that were addressed in the curriculum.

The event, which was sponsored by the National Capital Region PAGASA Regional Services Division (NCR PRSD) in partnership with local governments, included non-governmental organizations, community-based organizations, and volunteer groups. These organizations had the chance to interact through the program and benefit from one another's and the

training's experts' experiences. The need of community engagement in efforts to reduce catastrophe risk was also underlined by the training program. Participants were urged to get involved in their local communities and work together to identify and mitigate any risks and hazards.

In order to promote efficient disaster response and recovery, they also emphasized the significance of creating strong collaborations between the government and civil society groups. The community-based disaster risk reduction and management training program, taken as a whole, was a significant step towards increasing local disaster planning and response capabilities and creating more resilient communities

HUMAN RESOURCE DEVELOPMENT PROGRAM

Mental Health Awareness

People with mental health disorders frequently face significant human rights breaches, discrimination, and stigma notwithstanding advances in certain nations. Despite the fact that many mental health illnesses may be successfully treated for comparatively little money, there is still a wide disparity between those who require care and those who have access to it. Coverage of effective treatments is still quite low.

Whether or not a person directly struggles with a mental health condition, Mental Health Awareness Month raises awareness of how mental illness affects people's lives, informs people about the resources that are available, and emphasizes advocacy strategies. The stigma attached to mental illness can be reduced via education and recognition. With the help of Mental Health Awareness Month, a dialogue may be started. Speaking about mental health may help dispel stigma and misunderstandings, as well as motivate individuals who are struggling to get assistance and connect with others.

On August 23, 2022, a Mental Health Awareness webinar was conducted with an objective to enhance programs for the preventive and promotive aspects of health and wellness of employees.
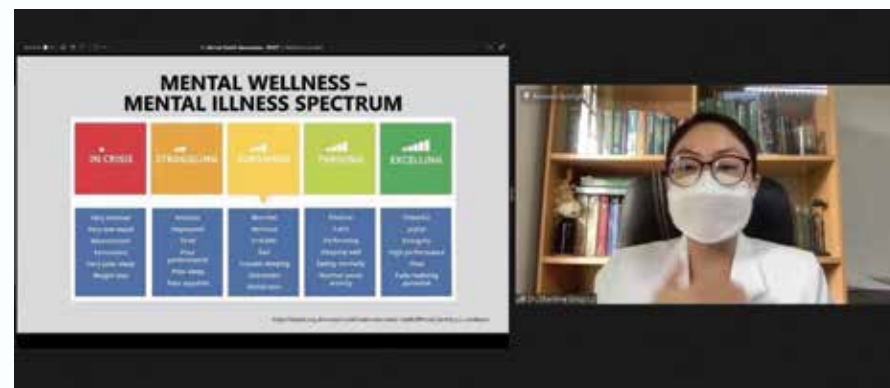
It is conducted to further educate not only the PWDs and SCs but to enhance programs for the preventive and promotive aspects of health and wellness of every employee in PAGASA about mental health. This seminar helps reduce the stigma associated with mental illness. By raising awareness and promoting understanding about mental health issues, individuals can learn about the symptoms, causes, and treatment options for these conditions, and be more likely to seek the help they need.

COVID-19 Booster Vaccination Activity

One of the biggest public health issues of our day is the COVID-19 pandemic. A recently identified coronavirus is the cause of the potentially deadly Coronavirus Disease 2019 (COVID-19). Globally contagious COVID-19, which caused significant human casualties and socioeconomic panic, has been a threat to humanity since 2020. The pandemic significantly changed how individuals think, feel, and interact with the world. The virus's combined impacts and the measures used to stop its spread have created social isolation, financial instability, and future uncertainty.

The Philippine government implemented extensive preventative steps after it occurred to stop its spread. The COVID-19's assault drastically altered both the working lives of adults and the lives of youngsters. These actions included enforcing a stringent house quarantine, putting facilities with confirmed COVID-19 cases into lockdowns, stopping public transit, and limiting air and sea travel. However, these actions have brought to an economic crisis that has touched practically every area of society, including markets, logistics, education, and the health system.

In compliance with the requirements of the Department of Health (DOH) and Inter-Agency Task Force (IATF), PAGASA conducted a COVID-19 Booster Vaccination Activity on August 26 and 30, and on September 01 and 02, 2022. Most employees got their second booster shots including their family members who took part in the vaccination effort.

The event was spearheaded by the joint effort of PAGASA Weather Employees Association (PWEA), Administrative Division (AD) of PAGASA, and the Quezon City Local Government.

PAGASA SPMS approved by the CSC

In a letter addressed to our Administrator Dr. Vicente B. Malano on January 31, 2022 from Director Judith A. Dongallo-Chicano of the Civil Service Commission (CSC), CSC has granted approval for PAGASA's proposed Strategic Performance Management System (SPMS) that affirms PAGASA's commitment to enhancing its performance management practices in accordance with CSC Memorandum Circular No. 6 s. 2012.

The SPMS serves as a comprehensive framework that aligns PAGASA's strategic objectives with individual employee performance, fostering a culture of accountability and productivity within the organization. It emphasizes the importance of performance planning, monitoring, coaching, and development to ensure the efficient and effective delivery of PAGASA's services to the Filipino people.

Under CSC Memorandum Circular No. 6 s. 2012, all government agencies are mandated to implement a performance management system that adheres to certain standards and principles. The objective is to improve public sector performance and promote a results-oriented work environment. PAGASA's SPMS underwent a rigorous evaluation process by the CSC to determine its compliance with these guidelines.

Upon thorough review, the CSC commended PAGASA for its commitment to enhancing performance management practices and ensuring compliance with CSC guidelines. The approval of the SPMS signifies PAGASA's dedication to fostering a results-driven culture and encouraging professional growth among its employees.

PAGASA's successful implementation of the SPMS is expected to have a positive impact on its operations, ultimately benefiting the Filipino people. The systematic evaluation and development of employee performance will contribute to the agency's ability to deliver accurate and timely weather forecasts, early warnings for natural hazards, and other vital services that ensure public safety and support informed decision-making.

CSC
CIVIL SERVICE COMMISSION
Republic of the Philippines

Civil Service Commission National Capital Region

31 January 2022

DR. VICENTE B. MALANO
Administrator
Philippine Atmospheric, Geophysical and
   Astronomical Services Administration
Science Garden Compound, BIR Road
Quezon City

Dear Administrator Malano:

This refers to the proposed Strategic Performance Management System (SPMS) of the Philippine Atmospheric, Geophysical, and Astronomical Services Administration (PAGASA), which was submitted to this Office for appropriate action.

Evaluation of the proposed PAGASA SPMS shows its compliance with **CSC Memorandum Circular No. 6, s. 2012**[1]. Thus, the same is hereby **APPROVED**.

We look forward to the successful implementation of the PAGASA SPMS.

Very truly yours,

JUDITH A. DONGALLO-CHICANO
Director IV

C: DIRECTOR II DICK N. ECHAVEZ
         CSC FO - Bureau of Internal Revenue

Impact-Based Forecasting Visualization Tool Launching

Impact-based Forecasting was developed and tested for selected pilot areas in the Philippines through the Weather and Climate Science for Service Partnership (WCSSP) for Southeast Asia Project. The said initiative enabled the development of a visualization tool designed to improve and digitize the IBF warning process.

On 19 December 2022, the launching of the IBF Visualization Tool was conducted at Luxent Hotel in Quezon City which gathered various stakeholders including media partners.

Under the WCSSP-SeA Project, several products have been developed which aims to improve the forecasting and warning

capacities of PAGASA and one of which is the IBF Visualization Tool. The platform presents an innovative system that integrates critical information that serves as a decision-support tool for forecasters when issuing IBF warnings. With new tools available, it is crucial to inform and disseminate to relevant stakeholders the development and purpose of these tools and how beneficial it is to them. The said activity provided a channel to the target stakeholders the various functions and purpose of the IBF Visualization Tool. The feedback gathered from them is essential to the improvement and expansion of the IBF Visualization Tool.

REGIONAL & INTERNATIONAL COOPERATION PROGRAM

Consultative Meeting with Cebu Stakeholders

Cebu province is one of the IBF pilot testing areas under the WCSSP-SeA Project. The partnership and collaboration between PAGASA and Cebu province in the development and implementation of the Impact-Based Forecasting and Warning System (IBFWS). shall be guided by policy frameworks that define the roles and responsibilities of each member.

On 25 November 2022, a consultative meeting with Cebu Stakeholders was conducted in Capitol Social Hall, Cebu City. The development, implementation, and operationalization of IBF over Metro Manila, which was passed through a board resolution issued by the Metro Manila Disaster Risk Reduction and Management Council, is targeted to be adapted for Cebu Province. Through the leadership of the Provincial Government and cooperation of their three Highly Urbanized Cities (HUCs), the consultative meeting was held to deliberate

the partnership agreement between PAGASA and the Cebu stakeholders. Likewise, the activity also aims to ensure common understanding between PAGASA and Metro Cebu stakeholders on IBFWS.

Continuous cooperation during IBF test cases over Cebu province is a commitment expected from them. This will be signified by issuance of a board resolution agreed upon deliberations to be passed by the said province including its three HUCs.

Reinforcement of Meteorological Services

A variety of natural hazards has frequently manifested in recent years. In addition, global climate risks have also emerged and threatened sustainable development. To cope with such circumstances, it has become an important challenge for the meteorological authorities of each country to compile meteorological and climatological data and provide it effectively to authorities in charge of disaster risk reduction (DRR) and communities. However, many meteorological authorities of developing countries still have some difficulties in providing basic meteorological services. In response to these situations, JICA has been implementing this JICA Knowledge Co-Creation Program (KCCP) in partnership with the Japan Meteorological Agency (JMA), which is known for its advanced meteorological services.

This program aimed to provide NMHSs with the relevant knowledge and key techniques (e.g. numerical weather prediction, disaster risk reduction, satellite meteorology and climate information for advanced meteorological services) to improve their operational abilities. This was designed for promising staff members, who are expected to lead National Meteorological and Hydrological Services (NMHSs) of the World Meteorological Organization (WMO), or its equivalent.

The participants from each meteorological agency in 11 countries namely Philippines, Cambodia, Timor-Leste, Viet Nam, Bhutan, Bangladesh, Fiji, Kiribati, Tonga, Vanuatu, and Mozambique gathered to learn comprehensive knowledge to improve their meteorological capacity under the guidance of passionate instructors from the Japan Meteorological Agency. The program included virtually component held on September 12-16, 2022. Furthermore, PAGASA's delegate Ms. Ranshelle Parcon went to Japan to finish the second half of the program on October 03 to December 10, 2022.

Completed Projects

Weather and Climate Science for Partnership for Southeast Asia

The Project Weather and Climate Science for Service Partnership for Southeast Asia (WCSSP SE Asia) aims to form strong, sustainable science and innovation partnerships that can be harnessed to advance scientific understanding and modeling capabilities that can be used to deliver underpinning services to protect lives and livelihoods across South East Asia and particularly in the Philippines.

The project enables PAGASA researchers were able to publish a paper with a title, "Introduction of IBFWS, Paradigm Shift and Project Collaboration," which was presented during the 2019 UM Users Conference that focused on three typhoon test cases and involved a comparison of the WRF and UM models.

Furthermore, the team hosted the WCSSP Southeast Asia Second Regional Science Workshop and conducted five local workshops, engaging stakeholders, project teams, technical working groups, and forecasters. In the same year, the team also developed an evaluation tool and testing applications for both regional and global numerical weather prediction models.

Another significant achievement, as highlighted in the paper "Strengthening Local Partnership and Collaboration," was the adoption of the Impact-Based Forecasting and Warning System (IBFWS) in Metro Manila. This policy, approved in June 2021 through an MMDRRMC Resolution No. 1, resulted from consultative meetings in 2020. Furthermore, several papers were submitted for publication in respected journals, including the International Journal of Disaster Risk Reduction and the Journal of Geophysical Research - Atmosphere.

The team's accomplishments were also showcased through published papers in the International Journal of Disaster Risk Reduction and the Journal for Geophysical Research (JGR) Atmospheres. Additionally, two papers were accepted for presentation at the 15th National Statistics Convention and a poster presentation at the AGU. Workshops on IBF development and implementation, including the IBF Visualization Tool Testing with PAGASA researchers, forecasters, stakeholders, and media partners, continue to be a priority. The team also conducted consultative meetings to explore potential agreements and partnerships with local stakeholders, particularly those from the Province of Cebu and its independent cities.

GENERAL ADMINISTRATION & SUPPORT PROGRAM

ISO 9001 Certification (2021-2024)

In 2022, PAGASA with its various offices is recommended for the maintenance of its ISO 9001 Certificate as per January 2023 Surveillance Audit. These offices include the Weather Division, Technical Training Center Support Services (WMO RTC), Climate and Agrometeorological Data Section – CAD, and the Administrator's Office for Administration and Support Services.

Meanwhile, the Climate Monitoring and Prediction Section – CAD recommended issuance of Certificate.

There are several benefits to being ISO 9001 certified in a government agency. First and foremost is its influence in improving one's quality of services. ISO 9001 certification requires the implementation of a quality management system (QMS) that helps ensure that services are delivered consistently and meet customer requirements. This means that this certification helps identify and eliminate unnecessary processes and procedures, leading to increased efficiency and reduced costs. Because of this recognition and responsibility at the same time, focus on customer needs and expectations are given priority, which can lead to improved customer satisfaction and loyalty.

ISO 9001 certification is recognized worldwide and can enhance the reputation of a government agency, demonstrating the agency's commitment to quality and customer satisfaction. It is with honor that PAGASA remains ISO 9001 Certified and can consistently meet the standards of the International Organization for Standardization.

The extra milestone and dedication to public service of some PAGASA personnel have proven that through perseverance and hard work, anything is achievable. The new list of graduates has shown their pursuit to set a great example to others as their quest for knowledge and personal growth is expressed.

LIST OF GRADUATES

FULL NAME: Joseph Q. Basconcillo
COURSE: Doctor of Philosophy Program in Marine Meteorology
DATE COVERED: February 15, 2018 to June 30, 2021, extended until February 15, 2022
SCHOOL: Jeju National University

FULL NAME: Ailene R. Abelardo
COURSE: Master's Degree Program in Flood Disaster Risk Reduction
DATE COVERED: September 29, 2021 to September 16, 2022
SCHOOL: National Graduate Institute for Policy Studies (GRIPS) JICA
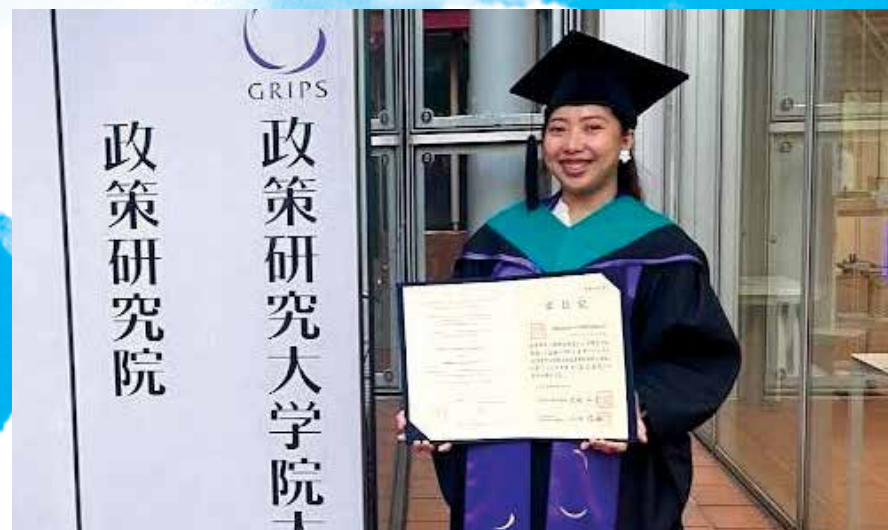
FULL NAME: John A. Manalo
COURSE: Doctor of Philosophy in Science
DATE COVERED: September 18, 2019 to September 30, 2020
SCHOOL: Tokyo Metropolitan University, JICA

FULL NAME: Rhonalyn V. Macalalad
COURSE: Ph.D in Meteorology
DATE COVERED: January 22, 2019- August 2022
SCHOOL: University of the Philippines, Diliman, QC

FULL NAME: Vhan Therese S. Sabellano
COURSE: M. Sc. in Physics
DATE COVERED: August 1, 2019-December 31, 2021
SCHOOL: San Carlos University, Cebu City

AWARDS AND RECOGNITION

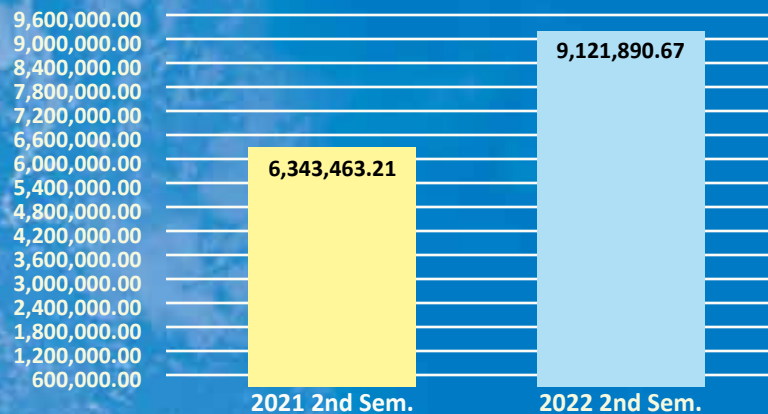PAGASA is thrilled and honored to share some awards received by the agency as fruit of hard work, dedication, and commitment to excellent public service reflecting the trust and confidence of their stakeholders.

NL PRSD Awards

SUMMARY OF S&T PERSONNEL

DISTRIBUTION OF PERSONNEL BY FUNCTION
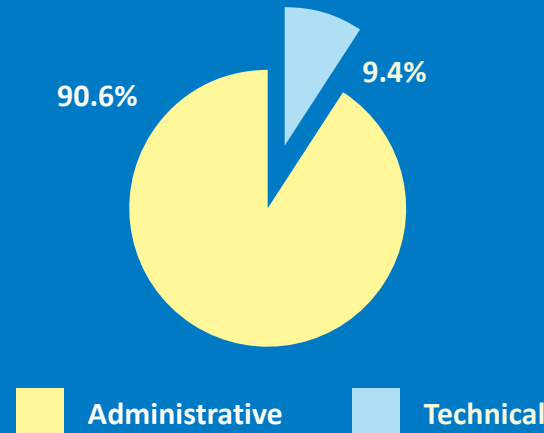
	Filled	Vacant	Total	%
Administrative	77	14	91	9%
Technical	737	138	875	91%
Total	**814**	**152**	**966**	**100%**

Reference: PLANTILLA OF PERSONNEL as of December 31, 2022

DISTRIBUTION OF PERSONNEL BY FUNCTION

90.6% 9.4%

- Administrative
- Technical

DISTRIBUTION OF PERSONNEL BY FUNCTION

800

737

600

400

200

138

77

14

0

Administrative   Technical

- Filled
- Vacant

COMPARATIVE INCOME

9,600,000.00
9,000,000.00
8,400,000.00
7,800,000.00
7,200,000.00
6,600,000.00
6,000,000.00
5,400,000.00
4,800,000.00
4,200,000.00
3,600,000.00
3,000,000.00
2,400,000.00
1,800,000.00
1,200,000.00
600,000.00

9,121,890.67

6,343,463.21

2021 2nd Sem.   2022 2nd Sem.
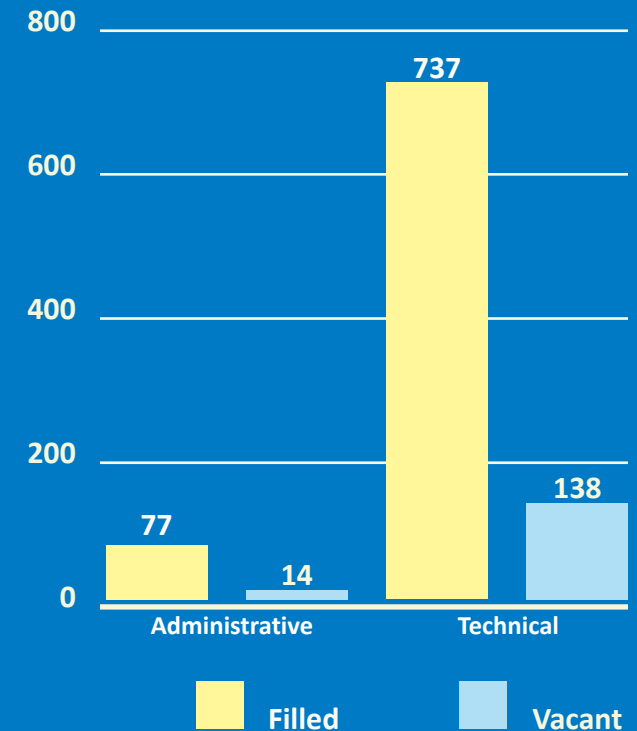
HALL OF HONOR

2022 PAGASA COMPULSORY RETIREES

Remedios P. Agdigos
42 years in service

Carmelita T. Cook
33 years in service

Rene P. Cruz
42 years in service

Landrico U. Dalida Jr.
39 years in service

Eufronio Z. Delos Santos Jr.
27 years in service

Leticia S. Dispo
40 years in service

Nestor C. Flores
37 years in service

Mario C. Guya
36 years in service

Marissa M. Javier
42 years in service

Pedro M. Lerio
13 years in service

Francisco M. Macatumpag
30 years in service

Edwin F. Manresa
38 years in service

Marilyn V. Medina
43 years in service

Rosena O. Melecio
45 years in service

Rudy R. Olalia
33 years in service

Alexander R. Padin
32 years in service

Faina B. Pascual
44 years in service

Myrna A. Pedeglorio
19 years in service

Leoncia U. Quiroz
38 years in service

Cesar A. Ramos
39 years in service

Romulo B. Rapayrapay
43 years in service

Cleofas C. Rosas
44 years in service

Damiano C. Sobejana Jr.
38 years in service

Serlita A. Torcolas
29 years in service

Luisito G. Velasco
39 years in service

2022 PAGASA OPTIONAL RETIREES

Anacleta C. Agustin
43 years in service

Clod M. Alviola
41 years in service

Evangeline B. Asis
39 years in service

Antonio M. Azarias
39 years in service

Teodulo C. Cepe
42 years in service

Gerardo L. Cerbito
43 years in service

Margarita E. Constantino
33 years in service

Sylvia N. Davis
43 years in service

Eva L. De Paz
33 years in service

Chona V. Dionisio
42 years in service

Filomeno S. Entela
33 years in service

Susan C. Flores
39 years in service

Julieta M. Ilagan
28 years in service

Rafael O. Mañas
29 years in service

Ester M. Maunahan
37 years in service

Leila S. Mercado
38 years in service

Ma. Cecilia A. Monteverde
38 years in service

Lolito N. Recudo
31 years in service

2022 PAGASA POSTHUMOUS RECOGNITION

Norberto P. Anillo Jr
31 years in service

Joselyn Lorenza P. Cayabyab
29 years in service

Reynaldo J. Diaz
38 years in service

Rex P. Guerrero
32 years in service

Edna L. Juanillo
43 years in service

Geraldine Gilda P. Nilo
39 years in service

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OIC from August 16 to December 2022

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THE PRODUCTION STAFF

Each of you should use whatever gift you have received to serve others,

as faithful stewards of God's grace in its various forms.

I Peter 4:10

From left:

Mr. John Marc B. Estoque,

Mr. Noel B. Villar,

Ms. Cynthia R. Paltuob (Chief, PPDU),

Mr. Jose Daniel C. Suarez (Chief, FPMD),

Ms. Sheena Marie P. Goloyugo,

Mr. Oliver Ryan V. Pasion

The Production Staff extends their heartfelt appreciation to all the men and women who dedicated their time, effort, skills and service to fulfill the 2022 Annual Report. All the contributions given by each Division were all valuable in the foundation upon which this report was built. The Production staff is equally grateful to have finished another Annual Report worthy to be proud of with the guidance and supervision of Mr. Jose Daniel C. Suarez. This is a testament of the continued commitment of PAGASA men and women to pursue holistic excellence in public service. Soli Deo Gloria!

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