

OUTCOME 8

#HandaTayo

Mitigation Strategies for a Disaster and Climate Change Resilient Philippines



Department of Science and Technology

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Science and Technology Information Institute

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Contents

- 6** DOST sets cloud seeding for Angat Dam, water reservoirs to offset imminent severe El Niño episode
- 8** DOST conducts flood, storm surge drill in Baseco, Tondo
- 10** DOST spearheads science journalism writeshop for students
- 12** DOST-PHIVOLCS warns Muntinlupa of quake or eruption-induced hazard called “seiche”
- 14** Meteorologist: The job for all seasons
- 18** Building Back Libraries reaches out to schools in Yolanda affected areas
- 20** DOST, DENR launch one-stop info hub for Yolanda rehab efforts
- 22** Luzon media learn responsible weather reporting from DOST seminar
- 24** PHIVOLCS launches material for assessing house’s safety against quake
- 26** DOST cooks up a ‘pack of hope’ for hungry disaster victims
- 28** Marikina receives 20 MOSES tablets from DOST

FOREWORD

Science Nation. The phrase is not an apt description for our country of 7,107 islands. Not yet.

The key to make the Philippines a real “Science Nation” is information. With information, programs and technologies developed or funded by the Department of Science and Technology (DOST) – as well as other locally crafted technologies which help solve the country’s multi-sectoral problems - become known among Filipinos in all corners of the archipelago, thus pushing them to avail or to take advantage of these science-based innovations to uplift their lives.

When such information is cascaded to the Filipino everyman – every Juan and Maria, including those in the so-called “laylayan ng lipunan” - a lot of things are on cue to take place:

Farmers will become more productive and earn more, small enterprises will grow, thrive and be more competitive, industries will be revitalized, technopreneurship will be more prevalent and employment will increase via the Business Process Management (BPM) sector, government services will become more responsive, healthcare services will improve and become more accessible to more Filipinos, opportunities for S&T education especially among the underprivileged will become more available, and the citizenry will be armed with more effective strategies for disaster preparedness and strategies.

What I had just mentioned are the DOST 8 Outcomes – eight specific targets that the Department aims to achieve in the long run via the following sectors: Agriculture (Outcome 1), Enterprise (Outcome 2), Industry (Outcome 3), IT-BPM (Outcome 4), E-governance (Outcome 5), Health (Outcome 6), Education (Outcome 7), and Disaster Preparedness (Outcome 8).

This compendium of seven publications is a tool for delivering such vital information. It presents to you how DOST and its 8 Outcomes address the current problems in each of these sectors, and thus help contribute to the Philippines’ economic resurgence. Six of these seven publications tackle one DOST Outcome each, while the seventh publication focuses on both Outcomes 4 and 5.

In short, this collection is a veritable showcase of the Department’s various initiatives across these eight sectors, with stories of ordinary Filipinos whose lives have been touched by the possibilities that S&T has to offer. These stories – encapsulated in news and feature articles – were written by information officers from the different DOST agencies. The articles capture in a nutshell the pivotal role of S&T in a nation’s journey to progress and prosperity and why, therefore, S&T should not be taken lightly by any nation, much less a developing country such

as the Philippines. S&T, on the contrary, should be at the forefront of government efforts to drive the country forward and sustain this horizontal trajectory. S&T therefore, should not take the backseat.

This particular publication – titled **#HandaTayo Mitigation Strategies for a Disaster and Climate Change Resilient Philippines** focuses on DOST Outcome 8 which is Disaster Preparedness. For this Outcome, DOST develops and delivers science-based information on weather, climate change, and geological hazards to ensure the country's survival and future in an era of extreme and rapidly changing climate. These information are not just science-based; they are complete, accurate, laymanized in order to be comprehensible, and timely. Outcome 8 has especially become relevant in these times not only because of climate change, but also because of the emergence of sophisticated telecommunications gadgets such as Android phones and tablets, and easier access to wireless technology.

Indeed, information is one of the starting blocks for the country's successful run toward being the definitive Science Nation that it should be. For it is only through complete, accurate, comprehensible,

and timely information that mass or public awareness is generated. If the public is aware of scientific and technological developments, they now know how to improve their lives, and thus take action to make this a reality. If there is action, S&T then gets the chance to show off its full capability: rolling its veil of magic across the sectors, over the entire nation, to wrap the entire Philippine population with the bountiful fruits of harnessing its S&T resources. All these, for the welfare and the future of the Filipino.

I humbly invite you to read the stories in this publication and in all of the other six publications as well. In reading these, not only will you get a sense of S&T's importance to a nation, you will also learn how S&T can actually touch your life and that of your family, how it can help you fulfill your dreams, keep you safe and healthy, and allow you to touch other people's lives as well.

Reading these stories will make you realize that S&T has always been a part of our lives and will always be. All we have to do is acknowledge it, use it, and maximize it.

When we do, we're well on our way to becoming a real "Science Nation."



Dr. Aristotle P. Carandang

Chief, Communication Resources and Production Division
Department of Science and Technology-Science and Technology Information Institute (DOST-STII)

MESSAGE

Science and technology remain as the bedrock of weather forecasting and in addressing the negative effects of climate change; a reality that is literally at our doorstep.

The Department of Science and Technology (DOST) has taken the lead in harnessing the power of science, technology, and innovation by thinking out of the box in developing cutting-edge technologies in the field of weather monitoring, forecasting, and climate change adaptation.

Likewise, programs that focus on the use of science and technology in disaster preparedness were prioritized like the Iba na ang Panahon: Science for Safer Communities IEC campaign in all 17 regions including NCR. This program has since been expanded to include other DOST technologies being promoted in the regions through the Science Nation Tour.

This book documents the many stories of different DOST programs implemented through the years to scientifically address hydrometeorological and geological hazards through its frontline agencies - PAGASA and PHIVOLCS.

Information is a powerful tool in educating our people about the scientific innovations and

inventions of our Filipino scientists and engineers in the areas of disaster management, disaster mitigation, and climate change adaptation.

You will find here the story on PAGASA's cloud seeding program to lessen the negative impact of El Niño. On flood monitoring and weather forecasting, there are stories on Project NOAH and the MOSES Tablet, as well as the storm surge drill in Baseco, a coastal community in Manila. The stories on PHIVOLCS underscore the institute's unrelenting education campaign to ensure the safety of the community during an earthquake.

Lastly, two heartwarming stories reflect the triumph of the human spirit amidst destruction; the story of building back libraries after Typhoon Yolanda unleashed its wrath in the Visayas and the inside look into the life of our meteorologists, our modern day heroes.

Indeed there is more to know and appreciate in the wonderful things that science and technology can do to make our lives better and our communities safer – *nasa siyensya ang pag-asa!*



RAYMUND E. LIBORO
Assistant Secretary

MESSAGE

The Department of Science and Technology's (DOST) information arm – the Science and Technology Information Institute (STII) – is proud to present “#HandaTayo Mitigation Strategies for a Disaster and Climate Change Resilient Philippines” for Disaster Preparedness, a collection of informative articles about DOST-developed technologies and its various initiatives poised to keep Filipino communities safe, aware of and prepared for impending disasters.

“#HandaTayo Mitigation Strategies for a Disaster and Climate Change Resilient Philippines” for Disaster Preparedness is part of a compendium chronicling the DOST 8 Outcomes – or eight thrusts for the Philippines as it fulfills its mandate to “provide central direction, leadership and coordination of scientific and technological efforts and ensure that the results therefrom are geared and utilized in areas of maximum economic and social benefits for the people.”

This particular publication is all about Outcome 8 which is geared toward Disaster Preparedness. In the face of climate change, DOST helps to ensure the safety and survival of the citizenry via science-based information on weather and geological hazards.

Some of DOST's efforts are detailed here, giving the readers a bird's eye view of how DOST is navigating its roadmap for the country's disaster risk reduction management.

Yet, Disaster Preparedness is just one of its 8 Outcomes. The others are: **Agriculture** (Outcome 1), **Enterprise** (Outcome 2), **Industry** (Outcome 3), **IT-BPM** (Outcome 4), **E-governance** (Outcome 5), **Health** (Outcome 6), and **Education** (Outcome 7).

Together, DOST's projects across these 8 Outcomes will help keep the country on course, and keep its desired results on target.

For this end, STII will keep on churning timely, accurate, and easy-to-understand information to help make the DOST mission complete. After all, it is through information via publications such as this that scientific and technological advancements – key ingredients for national development – are made known to policy makers, leaders, and the general public who are ultimately the beneficiaries of well-utilized S&T resources.

May the reader find this publication useful – for his daily life, his education, his work and livelihood, his family, for the present, and most of all, for his future.


RICHARD P. BURGOS
Director, STII

DOST sets cloud seeding for Angat Dam, water reservoirs to offset imminent severe El Niño episode

By ALAN C. TAULE
S&T Media Service, DOST-STII



The Department of Science and Technology, through the Philippine Atmospheric, Geophysical, and Astronomical Services Administration (DOST-PAGASA), will lead cloud seeding fly-bys along the country's main reservoirs to address the worsening impact of El Niño in the country.

Cloud seeding is the process of inducing rain by dispersing chemicals into the air to serve as cloud condensation. Cloud seeding is usually practiced to increase the amount of rain, making it a dependable and affordable water-supply practice in many areas.

Science Secretary Mario G. Montejo formed the DOST El Niño Task Force composed of PAGASA and DOST regional offices and set cloud seeding operations to

start Oct. 5 or until Typhoon Kabayan has left the Philippine Area of Responsibility.

The cloud seeding operations will be implemented in partnership with the Department of Environment and Natural Resources- Bureau of Soil and Water Management, and others.

According to PAGASA, the El Niño Southern Oscillation will persist until the middle of 2016. The sea surface temperature has risen to 1.5 degrees Celsius above average in the equatorial Pacific basin since the middle of July this year. As a result, rainfall is expected to be significantly reduced starting October over most of the country, while average temperatures are forecast to be warmer for October 2015 to May 2016.



DOST Assistant Secretary Raymund Liboro discusses with key people, including a Philippine Air Force representative, the cloud seeding option to address El Niño.

Yesterday, DOST Assistant Secretary Raymund E. Liboro met with representatives from the departments of agriculture and natural resources, as well as the United States Agency for International Development, Metro Manila Water and Sewerage System, and Philippine Air Force, to discuss DOST's cloud seeding operations. The operations aim to induce more rains and raise the water levels of dams including Angat Dam in

Norzagaray, Bulacan which supplies a great percentage of the water requirements for Metro Manila.

"We have set cloud seeding operations especially for Angat Dam since the dam is 21 meters below the normal level," he said.

Meanwhile, PAGASA said that Typhoon Kabayan helped raise the Angat Dam water level but it is still below normal, thus making cloud seeding highly necessary.



DOST conducts flood, storm surge drill in Baseco, Tondo

By RODOLFO P. DE GUZMAN, DOST-STII

Manila City officials, disaster risk reduction officers and Manila residents participated in a simulated flood and storm surge drill conducted last July 19 in Baseco, Tondo by PAGASA, an agency under the Department of Science and Technology (DOST).

Tondo, which is near the mouth of Manila Bay, is vulnerable to storm surges.

During the drill, different typhoon scenarios were played up by PAGASA to equip the various communities with the necessary tools to prepare for flood and storm surge

events, and thus minimize human casualties and damage to properties.

Communication protocols were established by barangay officials and residents. Life boats, rescue fire trucks and ambulances were likewise provided to help simulate rescue and evacuation activities.

"The role of science and technology is important not only in improving life but also in safeguarding life. This was stressed by President Benigno S. Aquino after Typhoon Sendong devastated Cagayan de Oro in 2011 and Yolanda. Science should be put to work



to save lives. That is the order of President Aquino to DOST,” said DOST Secretary Mario G. Montejo who was present during the activity.

Montejo further stressed the need for residents to heighten their awareness of hydromet hazards and embrace a culture of safety by communicating the hazards brought about by floods and storm surges from members of the family to the whole community.

The drill was followed by an evaluation activity where it was stressed that preparedness must include effective communication tools like signals and warning systems and logistics like rescue equipment that are working.

“During evacuation all must be reminded to have their emergency bags ready at all times where basic provisions like food and medicine are kept,” reminded MDRRMO Operations Officer Alan Toledo.

Previously, PAGASA conducted an information and education campaign (IEC) on floods and storm surges at the Palma Hall of Manila City Hall with the theme “Ligtas ang Handa, Kaya ng Pinoy”.

PAGASA experts briefed participants on the different hydromet hazards, the PAGASA modified public storm warning system which includes storm signal number 5, rainfall and storm surge warning systems, and the flood forecasting and warning system.

DOST spearheads science journalism writeshop for students

By ALLAN MAURO V. MARFAL
S&T Media Service, DOST-STII



DZRH radio anchor and Philippine Science Journalists Association President Angelo B. Palmones speaks to student participants of the Department of Science and Technology-Science and Technology Information Institute's (DOST-STII) writeshop for science journalists during DOST's recent National Science and Technology Week at SMX Convention Center in Pasay City.

As part of this year's celebration of National Science and Technology Week (NSTW), the Department of Science and Technology's Science and Technology Information Institute (DOST-STII) conducted a writeshop for campus science journalists and mass communications students to mold a new breed of science communicators in the Philippines.

"The Art in Science Journalism Writeshop," held last July 25, 2015 at SMX Convention Center in Pasay City, gathered

communication students, campus paper journalists, and professors from different educational institutions, mostly in Luzon.

It covered print and online journalism with focus on disaster preparedness information. Participants were given the chance to engage in writing exercises involving typhoon and earthquake bulletins, and be critiqued by professionals in the industry. They were GMA News Online SciTech Editor Timothy James Dimacali and Philippine Star's Helen Flores.



"We are aware that many science journalists do not have degrees in the scientific disciplines they cover," said DOST Assistant Secretary Raymund E. Liboro in his opening message. "Regardless of background, though, it is always good practice for all science journalists to formulate and answer deceptively simple questions such as 'What does this mean to Mang Juan and Aling Nena?,' because they can go a long way in developing useful material for their respective readers."

DZRH radio anchor and Philippine Science Journalists Association President Angelo B. Palmones gave an overview of science journalism before the start of the talks and the writeshop proper.

"If S & T consciousness could reach the grassroots, the process of development could be achieved. That is the role of science journalists," said Palmones.

According to Dimacali, the solution is "to use an analogy or metaphor to help make it understandable."

Meanwhile, Flores, who has been covering DOST's PAGASA for almost a decade, said that science journalism has already evolved in recent years.

"In the past, they just mentioned LPA, thunderstorm, and storm surge in their reports," she said in her presentation. "Now, they explain specifically what it means and how it will affect the life of the readers."

Flores added that this has resulted to a scenario wherein even young children can understand what an LPA or thunderstorm are and their possible hazards.

The writeshop was attended by approximately 230 students and advisers from about 28 schools around Metro Manila and neighboring regions.



DOST-PHIVOLCS warns Muntinlupa of quake or eruption-induced hazard called ‘seiche’

By JOY M. LAZCANO, DOST-STII

Now here is another hazard to remember especially if you are living near a lake.

It's called seiche, pronounced as "saysh". It is a large wave similar to a tsunami that occurs only in enclosed bodies of water such as a lake, bay, or gulf. It is triggered by the strong shaking from an earthquake or volcanic eruption.

Joan Salcedo, supervising science research specialist from the Department of Science and Technology's Philippine Institute of Volcanology and Seismology (DOST-PHIVOLCS), introduced this term during a recent earthquake awareness seminar in Muntinlupa organized by the DOST-National Capital Region.

According to Salcedo, Muntinlupa should not be aware of storm surges alone, but of

seiches as well, since Laguna Bay is just on its eastern side.

A seiche occurs during a meteorological or seismic event which causes water to oscillate or move back and forth, which could produce large waves. For a body of water to produce this phenomenon, it should be partially constrained to allow the formation of standing waves. In some instances, seiches can also be caused by a tsunami.

DOST-NCR Director Teresita N. Fortuna emphasized the need for Metro Manila officials to be proactive in the event that a magnitude 7.2 earthquake occurs due to the active Valley Fault system. Experts foresee problems in accessibility and mobility as major bridges and national roads shall be impassable due to collapse and sprawled debris, cutting the metropolis off from the rest of the provinces, said Fortuna.



sassylawyer.com.

Laguna de Bay

According to the book "Philippine Tsunamis and Seiches (1589-2012)," a compilation of tsunami and seiche events that occurred in the country from 1589 to 2012, the country has had six seiche incidents caused by volcanic eruptions and 16 others caused by an earthquake, including the seiche that took place in Laguna de Bay on July 18, 1880. During that time, a magnitude 7.6 quake hit the southern part of Luzon which generated strong waves inside the Laguna de Bay and almost caused a boat to capsize.

Meanwhile, Muntinlupa Mayor Jaime Fresnedi shared that his administration is encouraging their constituents to do similar information and education campaigns on disaster preparedness as the threat of a big catastrophe lurks. "Sabi nga ng mga taga PHIVOLCS, hinog na ang West Valley Fault

kaya naman dapat tayong maghanda (As PHIVOLCS officials said, the West Valley Fault is now ripe and so we must be prepared)," Fresnedi emphasized.

During the seminar, PHIVOLCS also introduced its "How Safe is my House?" checklist for earthquake safety (downloadable www.phivolcs.dost.gov.ph) for residents to make initial examinations on the structural soundness of their concrete hollow block houses.

Disaster preparedness is one of DOST's eight key objectives in pursuing its vision of inclusive growth for the country.



Meteorologist: The job for all seasons

By JOY M. LAZCANO
S&T Media Service, DOST-STII

It could be a career that is off the radar, but a meteorologist could somehow be a worthwhile job after all.

In the Philippines, pounded by an average of 20 tropical cyclones every year, there will always be job openings for meteorologists whether in the government, military, or private sector. Even media outfits have vacancies for the job.

In 2009, America Online (AOL) ran an article on the topic, stating that atmospheric scientists, better known as meteorologists or mets, are among the top 10 jobs in science. AOL ranked meteorologist at number six among the hottest jobs in the coming years as the work is “gaining more visibility as mets learn more about global warming, which has become a media and political focal point.”

The website also revealed that in 2016, the demand for these professionals is projected to grow by 11 percent, with individual salaries reaching more than \$77,000.

True enough, the global climate will become more erratic as the world experiences hotter summers, more freezing winters, and relentless monsoons. While these climate conditions are predicted not to let up anytime soon, meteorologists are more widely needed now than they were a few years back.

Indeed, the demand for meteorologists worldwide is not seasonal; instead, it is a responsibility that cuts through borders and seasons.

What is a meteorologist?

A meteorologist observes and interprets

Who says that meteorologists are needed only during rains and typhoons? In seasons when the sun is at its fiercest, the mets study how hot the days would be and how long the humid or dry days would last. They explain why we sometimes get a bloody moon and a haloed sun; how tsunami is different from storm surge; and why we need to prepare for the weather. Yes, they are there for all seasons, whatever weather. It's their job.

the earth's atmospheric patterns and phenomena using scientific principles. With these data, meteorologists are tasked to develop the necessary weather forecasts for the rest of the week. If they are lucky enough, they could even be hugging the TV limelight, delivering the weather news.

One prime example is Dr. Nathaniel Cruz, popularly known as Mang Tani, who made the jump from being a DOST-PAGASA meteorologist to being a TV sensation who delivers the weather reports on the boob tube. Mang Tani, who used to work as PAGASA spokesperson during inclement weather, is the heir to Dr. Amado Pineda, a well-known meteorologist in the '70s and '80s. Like Mang Tani, Dr. Pineda's

appearances as a weather reporter on TV endeared him to the public.

What does it take to be a met?

"Not everyone can qualify as a met," points out Alvin Pura, a weather specialist at PAGASA. He says that due to the stringent skills requirements, not everyone is cut out for the job. According to him, the aspiring meteorologist should be highly analytical because the job involves a lot of numerical data to come up with weather models. A meteorologist should also have spatial skills or the knowledge of space. Pura says that, aside from his innate love for nature, gazing at the skies and looking at the objects above is a daily habit for him while on duty at the

PAGASA weather command center.

He adds that a student should have an engineering or science background to qualify as a met. A degree in mathematics can also suffice.

Educational and training opportunities

Some of PAGASA's meteorologists went through rigorous diploma training in meteorology and other related specializations while others pursued graduate and post-graduate studies either locally or abroad. Locally, mets specialize at the Institute for Environment Science and Meteorology at the University of the Philippines-Diliman, the university component of PAGASA.

Actually, the country has been producing topnotch mets for more than four decades now as the Philippines, through PAGASA, serves as the regional meteorological training center for the South West Pacific (Region V) designated by the World Meteorological Organization (WMO).

In addition, PAGASA also conducts rigorous training courses for individuals who are currently employed in sectors related to national security, disaster management and the like, including PAGASA personnel engaged in meteorology and operational hydrology.

One of these courses is the Meteorologist Training Course (MTC), pioneered in 1961. MTC offers courses on physical, dynamic, and synoptic meteorology and usually requires a full academic year. It covers climatology and includes elective fields of specialization on aeronautical and agricultural meteorology and weather forecasting, among others.

Foreign participants from the 21 member countries of Region V of the WMO can also join the training course. Once a participant finishes the training, he is given a diploma as

a met after which he may pursue graduate and post-grad specialization. To date, MTC has produced 26 trainings with 468 graduates.

Career options

Belonging to the most sought after professionals in the face of global climate change, our local atmospheric scientists have so much in store for them as far as career opportunities are concerned. Many companies pay substantially for the job.

Pura describes PAGASA's mets as highly esteemed in the tropical region despite PAGASA's lack of cutting-edge technologies. They can also do well in countries situated at the middle and higher latitudes which are characterized by arid deserts and snow-filled climates respectively, he says. In these countries, industries are highly affected by climate disruptions, and thus eye Filipino meteorologists to do the hard research and development projects for them.

In the United States, a big chunk of the job vacancies for meteorologists are found in the National Oceanic and Atmospheric Administration and National Aeronautics and Space Administration. In recent years, there has been a growing need in the US for private sector meteorologists. They provide a variety of services to industries and other organizations such as consulting services and development of specialized weather data and displays.

Locally, mets are mostly employed by weather bureaus like PAGASA. Moreover, the military - Philippine Air Force, Navy, and Army – also have their own climatology research staff while big agricultural companies may require atmospheric scientists in their agriculture and energy departments.

Climate experts are also recruited by radio and television networks to present weather information to their viewers and listeners. This trend has caught up in the Philippines and is becoming the normal practice by local broadcast networks as in the case of Mang Tani.

A Reader's Digest online article reveals that, "meteorologists are the highest-paid persons on the broadcast, because weather is one of the top reasons why people watch local news." Whether this one might be true or not, it underscores the importance of meteorologists in today's lifestyle.

Most importantly however, working as a meteorologist is considered a vocation because it involves saving human lives via information.

Raising the numbers of mets

Surely, mets are among the rare breed of public servants in the country as the lure of big buck offers overseas drastically reduces the pool of weather experts in the Philippines. With the flight of many of our meteorologists, we could be seeing darker days ahead.

That is why in 2012, DOST announced the establishment of the first undergraduate program in meteorology facilitated by PAGASA. Secretary Mario G. Montejo declares that he wants the country to be the center of excellence in meteorology. But more importantly, the move serves as the midterm solution to stop the exodus of experts outside the country.

The initiative was conceived through the Consortium for Meteorology Education and Training (COMET) which convinced five universities to offer BS programs in meteorology. These universities are Mariano Marcos State University (MMSU), Bicol University, Rizal Technological University, Western Visayas State University, and Central Luzon State University.

Currently, the program accepts junior students taking up science, mathematics and engineering courses. Once qualified, they are automatically considered as scholars and their tuition fees and other miscellaneous fees are shouldered by the government. Last year, two met students from MMSU graduated.

The lack of undergrad programs for mets is a major concern for the science community since this might lead to more adverse effects in the future as global climate change intensifies. But with the available training and education opportunities on the field, the Philippines is assured that the government is leaving no stone unturned for a sustained crop of highly skilled meteorologists who will continue studying the atmosphere, informing the public, and saving lives - whatever the season.



Building Back Libraries reaches out to schools in Yolanda affected areas

By ROSIEA. ALMOCERA
S&T Media Service, DOST-STII

Building Back Libraries for Typhoon Yolanda-stricken Areas is a project of STII conceptualized by DOST Assistant Secretary Raymund E. Liboro and borne out of a desire to help Yolanda affected areas build back their washed out libraries.

On November 8, 2013, typhoon Yolanda, regarded as the most powerful storm to make landfall in recorded history, struck the Philippines. Leyte and Eastern Samar, with a combined population of 2.3 million, were the worst hit provinces. These areas experienced sustained winds of 270 kph, gusts of up to 312 kph, and a storm surge as high as 7 meters. Presidential Proclamation No. 682, dated November 11, 2013, declared a state of national calamity, affecting Samar, Leyte, Cebu, Iloilo, Capiz, Aklan, and Palawan



Library materials donated by Don Alejandro Roces Sr. Science Technology High School in Marikina City.

The Building Back Libraries project aims to solicit books and other library resources from generous donors here and abroad. In line with this goal, DOST Secretary Mario G. Montejo quickly responded by issuing DOST Memo dated February 14, 2014 with the subject "Building-Back Libraries for Typhoon Yolanda Stricken Areas." In said memo, Sec. Montejo appealed for everyone's kindness and generosity to donate books (in print or in electronic format), videos, and other library resources and encouraged everybody to launch campaign activities for the said project.

Likewise, DOST Usec. for Regional Operations Dr. Carol M. Yorobe issued a Memorandum to DOST regional directors to submit a list of potential beneficiaries

of this project. DOST IV-B MIMAROPA Regional Director Dr. Josefina P. Abilay identified 21 schools as beneficiaries while DOST VIII Regional Director Engr. Edgardo M. Esperancilla, submitted a list for Leyte province where 831 academic institutions need assistance (712 elementary, 93 high school and 26 college).

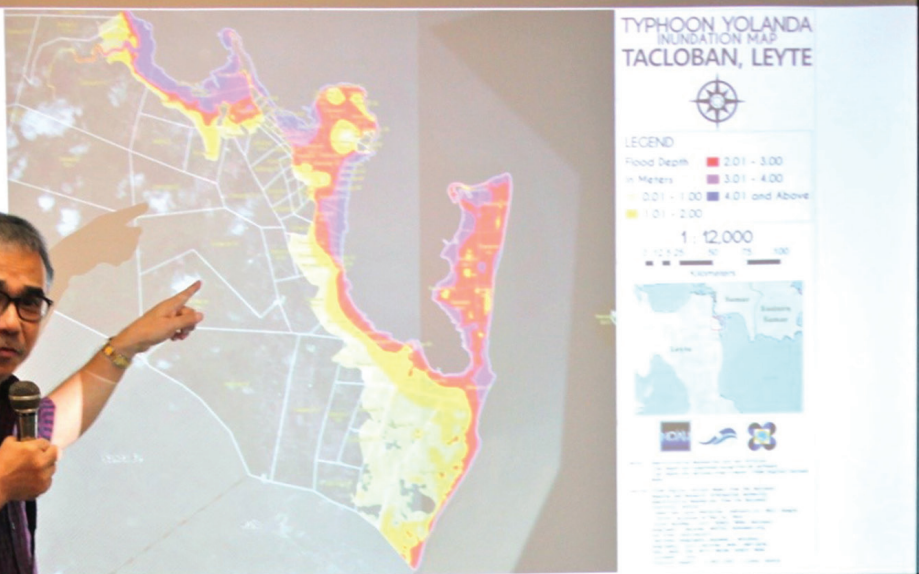
Among the donor institutions are Don Alejandro Roces Sr. Science Technology High School in Marikina City, International Rice Research Institute, DOST's Forest Products Research and Development Institute, Philippine Nuclear Research Institute, Information Communication and Technology Office, and Philippine Council for Agriculture Aquatic and Natural Resources Research and Development.

DOST, DENR launch one-stop info hub for Yolanda rehab efforts

By MARIA THERESA A. VALMERO, DOST-STII

The Department of Science and Technology (DOST) announces the opening of the Yolanda Rehabilitation Scientific Information Center or YORINFOCENTER - a one-stop information hub for LGUs, government agencies, the Office of the Presidential Adviser for Rehabilitation and Recovery and local and international humanitarian organizations tasked to assist in the rebuilding of Yolanda-affected areas.

An initiative of DOST and the Department of Environment and Natural Resources (DENR), the center is housed at the UP National Engineering Center in UP Diliman and will facilitate the release of science-based data and information. These



include LiDAR topographic maps, multi-hazard maps from DOST and the Mines and Geosciences Bureau (MGB), and the latest satellite images of Yolanda-stricken areas to support rehabilitation efforts.

In a statement issued at a press conference held last May 17, 2014, DOST Secretary Mario G. Montejo disclosed that the Department continues to process data in order to produce hazards maps for flood, landslide and storm surges. "Recently, we have completed the new multi-hazard map for Tacloban and other areas," he revealed.

Sec. Montejo added that DOST and DENR had previously been releasing such materials but realized the need for a one-stop-information shop due to the numerous

inquiries they have been receiving in the aftermath of the Yolanda tragedy.

Earlier, the DOST through the DREAM Program has launched the Satellite-based Monitoring and Assessment of Rehabilitation in Typhoon-affected Regions or SMARTER Visayas wherein it acquired the latest satellite imageries necessary to assess damage along Yolanda's devastation path.

YORINFOCENTER is manned by experts from DOST's Project Noah and DREAM, Philippine Atmospheric Geophysical and Astronomical Services Administration, Philippine Institute of Volcanology and Seismology, and the MGB. The center will be in operation for the next three months or longer, if necessary.

Luzon media learn responsible weather reporting from DOST seminar

By ALLAN MAURO V. MARFAL, DOST-STII

Weather news TV and radio announcers from the different regions in Luzon learned how to properly disseminate news via easy to understand, non-technical, non-scientific, and detailed mode of reporting through the Seminar-Workshop on Responsible Weather Reporting held from September 3-4, 2014 at Hotel Carmelita in Tuguegarao City, Cagayan.

Spearheaded by the Department of Science and Technology-Science and Technology Information Institute (DOST-STII) in cooperation with the Kapisanan ng mga Broadcaster ng Pilipinas (KBP), the event served as the Luzon leg of the three-part nationwide seminar-workshop which aims to increase the knowledge of local broadcasters in order to provide responsible weather reporting to the public.

In the Philippines, weather news reporting remains too scientific and general, hampering the delivery of truly informative,

accurate, and comprehensible reports to the public. Furthermore, most folks in the provinces still rely heavily on television and radio to get much-needed information coming from national and local government units.

During the Tuguegarao City seminar-workshop, Dr. Aristotle P. Carandang of DOST-STII pointed out that as one of the first entities to receive early warning information, the media is a partner of government and disaster response units in raising the awareness of the public about the different types of hazards and their potential impact on communities.

"The media has the responsibility to ensure that the dialogue it builds with the public can lead to a better understanding of the dangers and impact of the hazards so the public can be equipped with the proper information and can prepare accordingly," Dr. Carandang said.

He noted that the issue was more than translating news from English to Pilipino, in



order to enable the public to make important information decisions.

"Laymanizing does not mean translating from English to the vernacular. For example, the term 'storm surge' may be explained as is without translating it to 'daluyong.' What people expect is for them to be equipped with information that will empower them in making decisions in times of disasters," Dr. Carandang explained.

Meanwhile, Sharon Juliet M. Arruejo and Venus Valdemero, senior weather specialist and Public Information Unit head, respectively of DOST's Philippine Atmospheric Geophysical and Astronomical Services Administration (PAGASA), facilitated the seminar-workshop.

Arruejo explained to participants the different signals and codes used in weather reporting, among others, while Valdemero initiated an activity wherein participants were divided into five groups with each group producing 3-5-minute mock flash reports from a broadcast release containing severe weather bulletin issued by PAGASA.

The Seminar-Workshop on Responsible Weather Reporting was part of the 2014 Northern Luzon Cluster Science and Technology Fair also conducted by DOST in Tuguegarao City.

PHIVOLCS launches material for assessing house's safety against quake

By ESPIE ANGELICA A. DE LEON
S&T Media Service, DOST-STII

Is your house ready for a strong earthquake?

To help owners of concrete hollow block (CHB) houses answer this question, the Philippine Institute of Volcanology and Seismology (PHIVOLCS) in partnership with the Japan International Cooperation Agency (JICA), launched an information material last February 19, 2014 at the PHIVOLCS Auditorium in Quezon City to guide them in assessing whether their homes are strong enough to withstand a major earthquake.

The material, titled "How Safe is My House? Self-check for Earthquake Safety of CHB Houses in the Philippines", contains 12 questions, each with three possible answers. Each answer is equivalent to a point. The total number of points earned determines the strength or vulnerability of the structure.

Among the questions in the checklist are: Who built or designed my house? How old is my house? What is the shape of my house? Has my house been extended or expanded? The rest deal with equally important information such as damage incurred from previous disasters, CHB thickness, soil condition, use of standard size steel bars, width of unsupported walls, among others.

"The solution is to recognize the problem. Where will this recognition start?

It should start with the homeowner," emphasized PHIVOLCS Director Dr. Renato U. Solidum Jr. during the launch. Previously, Solidum explained that an earthquake resistant house will not collapse even if an Intensity 9 temblor strikes.

However, the info material is not just useful for homeowners alone. Local engineers, building officials, and local government unit authorities stand to benefit as well.

"This material can also be practically used to ensure safety before the construction of houses," reminded Takahiro Sasaki, chief representative of JICA Philippines, in his message.

The questionnaire, which was tested on some damaged houses and structures in Bohol following the Oct. 15, 2013 tremor in the province, was derived from field verifications, quake damage surveys and several experiments and tests.

Among these experiments were the full-scale Shaking Table Test of CHB Houses conducted by Filipino and Japanese experts at the National Research Institute for Earth Science and Disaster Prevention in Tsukuba, Japan in February 2011. The experiment involved two houses, an engineered model which followed the Building Code, and a non-

EARTHQUAKE RESISTANCE CHECKLIST FOR HOMEOWNERS. Do you want to know if your house is strong enough not to collapse or be damaged in the face of a strong earthquake?

The Philippine Institute of Volcanology and Seismology launched “How Safe is My House? Self-check for Earthquake Safety of CHB Houses in the Philippines” last February 19, 2014 at the PHIVOLCS Auditorium to provide a 12-point checklist for owners of concrete hollow block (CHB) houses. The material helps residents to determine whether their CHB homes are earthquake resistant or not. The material may be downloaded at <http://www.phivolcs.dost.gov.ph>. (Photos by Joy M. Lazcano, S&T Media Service, DOST-STII)



engineered one representing the more common CHB residence in the Philippines. Tests showed the latter incurring damage immediately, leading to the eventual collapse of certain parts during the earthquake simulation.

“Casualties from past earthquakes were caused by the collapse of buildings. And part of those are from damaged to collapsed non-engineered houses,” revealed Solidum.

During the open forum, Engr. Ronaldo S. Ison of the Association of Structural Engineers of the Philippines (ASEP), another project proponent, said that a strong earthquake may still cause debris to fall, however, an eventual collapse will not take place if it is an engineered house.

“What we’re trying to do is to educate everybody, that even if you employ masons and carpenters, they should be following certain standards. It is the right time for us to inform the public that we should not just rely on masons and carpenters to build our houses,” declared Engr. Ison.

The PHIVOLCS director added that a safe house should be combined with appropriate



response from people living in it to make them safer and further prevent damage and injury.

PHIVOLCS, an agency under the Department of Science and Technology, and its partners, are currently preparing a Pilipino version of the 12-point questionnaire and plan to come up with a similar checklist for wooden houses. Also in the pipeline is a computer simulation program to test the earthquake readiness of engineering and architectural designs.

Aside from PHIVOLCS, JICA, and ASEP, the Japan Science and Technology Agency is also involved in the project.

“How Safe is My House? Self-check for Earthquake Safety of CHB Houses in the Philippines” may be downloaded at <http://www.phivolcs.dost.gov.ph>.



DOST cooks up a 'pack of hope' for hungry disaster victims

By REGINALD ROY U. DELA CRUZ

Many disasters have already happened in the country with the Bohol earthquake and typhoon 'Yolanda' as the most recent. Disasters left the country with many lessons learned. After super typhoon Yolanda for example, many victims were reported to have no food to eat for many days. Preparing food was impossible with no electricity, water and gas in the disaster zone.

The disaster victims' real need is food that can fill their hunger and doesn't need any elaborate preparations before filling up an empty stomach. Generally all emergency food such as canned foods, noodles, coffee, rice, crackers stockpiled by the local governments and the Department of Social Welfare and Development (DSWD) and distributed to the

victims require water and heat which maybe unavailable.

According to Daisy Tañafranca, head of the Packaging Technology Division (PTD) of the Department of Science and Technology-Industrial Technology Development Institute (DOST-ITDI), there are three stages of providing relief foods:

First stage - Immediately after disaster, power, gas, and water are cut off. Survivors need food that can be eaten without drinkables and without cooking.

Second stage - Upon restoring power and other utilities, survivors can make use of emergency instant food requiring hot water and cooking.

Worry no more because the Packaging Technology Division of the Department of Science and Technology-Industrial Technology Development Institute (DOST-ITDI) developed a technology which will lessen the agony of every disaster victim. The ready-to-eat (RTE) chicken arroz caldo was developed to give immediate satisfaction to every victim. It will also lessen their agony. (Photos by Ceajay Valerio, S&T Media Service, DOST-STII)

Third stage - All utilities are back on line, allowing survivors to use cooking equipment and prepare food and ingredients as relief from outside the disaster zone. At this stage, nutritious foods or supplement are provided to survivors.

Considering said stages, Tañafranca's team developed a new technology that is ready to address the need of every disaster victims with regard to hunger.

PTD developed a "pack of hope" which will lessen the agony of the disaster victims by providing them a complete meal in every pack. Said "pack of hope" is the ready-to-eat (RTE) chicken arroz caldo categorized as disaster food ready to eat without drinkables.

Tañafranca said the product was developed as a disaster mitigation/relief food to address immediate hunger of disaster victims. It has a shelf life of at least one year. The packaging structure is lightweight and very handy. It was designed to withstand aerial distribution of about 800-1000 ft for distribution in flooded areas or in disaster zones that cannot be reached by land because of damages.

According to Ms. Tañafranca, relief foods can be classified into:

Category A - Food requiring no preparation and consumed without drinkables. Chicken arroz caldo is under this category, said Tañafranca. Products under this category are provided to survivors in the first stage

of disaster, in which food can satisfy hunger for two days after the disaster.

Category B - Food requiring no preparation and consumed with a drinkable.

Biscuits/crackers can be eaten with an accompanying drinkable.

Category C - Food eaten after adding or immersing in hot water like instant noodles or pre-gelatinized rice.

Category D - Food eaten must be cooked such as rice.

Tañafranca's research team will do the field testing and validation study of the RTE chicken arroz caldo in collaboration with the Department of Social Welfare and Development (DSWD) using DSWD's protocols.

PTD still has three RTE disaster preparation foods in the pipeline, said Tañafranca. One is the chicken rice meal which is in the process of validation. Another is the beef tapa rice meal which is in the development stage, and the corn soup which is in the process of shelf life study.

In an initial meeting with DSWD, Tañafranca said that DSWD was receptive to the project and accepted chicken arroz caldo as disaster/relief food. "In fact, DSWD now prefers relief foods that are convenient to pack, ready to eat, does not require cooking, with a shelf life of at least one year, and chicken and fish as main ingredients." Tañafranca said.

Tañafranca also informed that the DSWD will fund the commercial production using toll packers' facility and stock them in the regions. "At least two companies are interested to produce the product for DSWD and at the same time commercialize the product under different brand name," she revealed.

DOST-ITDI's partnership with the private sector will be covered by a Memorandum of Agreement.

Marikina receives 20 MOSES tablets from DOST

By JOY M. LAZCANO, DOST-STII

Twenty MOSES tablets, or the Monitoring and Operating System for Emergency Services – the first of its kind in the Asian region - were turned over to Marikina City last June 9, 2014 at the Marikina City Freedom Park to help enhance disaster preparedness of its barangays and prevent casualties from floods in the event of strong typhoons.

The MOSES tablet is an 8-inch Internet-based, two-way communication tool between warning agencies and disaster responders. It was developed by the Department of Science and Technology (DOST) in partnership with the Department of the Interior and Local Government and the National Disaster Risk Reduction and Management Council.

According to Project NOAH (Nationwide Operational Assessment of Hazards) Director Alfredo “Mahar” Lagmay, two-way communication is essential in mitigating the impact of disasters.

The MOSES tablet can receive real-time weather and flood information from pre-installed mobile applications such as PAGASA or the Philippine Atmospheric, Geophysical, and Astronomical Services Administration; DOST’s Project NOAH; and ARKO which provides detailed flood maps.





Using the tablet, a barangay captain or disaster officer can go around the community to take pictures of evacuation centers, schools, hospitals, lifeline services, and others. The images are then uploaded via 3G or WiFi on the Project NOAH website map and are automatically geo-tagged to provide disaster responders a more visual map of the area in relation to available facilities, or lack thereof, during disaster preparedness activities.

In the event of a typhoon, the tablet can also be used to monitor water level in the rivers as soon as a storm signal is raised in the community. Photos of flood levels can also be sent to national warning agencies and the Project NOAH team for data verification and search-and-rescue operations.

Furthermore, the tablet has television and radio functions with a battery that could last for three days.

The tablets will be given to each of the 16 barangays in Marikina. DOST is set to hand over additional units of the MOSES tablet to other cities and municipalities in the country as it was able to fabricate the first 50 units. It is targeting a total of 42,028 barangays to have their own MOSES tablets.

Marikina as its first recipient

With MOSES as the first two-way disaster communication platform in the region, Marikina becomes the first local government to have this groundbreaking technology.

In 2009, Marikina was badly hit by Typhoon Ketsana also known as Ondoy, where a month's rainfall poured in less than 24 hours of torrential rain, producing around 78 feet of floodwater. Typhoon Ondoy resulted in 464 deaths in Marikina alone in which 80 percent of the area is considered flood prone due to the Marikina River system.

In 2011, DOST launched Project NOAH and made Marikina City as its test site. A year after, during the August 2012 Southwest Monsoon or Habagat, Marikina River swelled with 68 feet of floodwater. However, this incident was subdued by the zero casualty situation posted by the city, considered as one of the breakthrough achievements of Project NOAH. The city achieved this by taking heed of Project NOAH's warnings and implementing early evacuation of the local communities.



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