S&T POST
2ND QUARTER 2012

Celebrating NSTW 2012

Pisay studes ace int'l Math tilt

Preparing for disasters

www.stii.dost.gov.ph

EDITORIAL

Balancing S&T information, moving forward with change

"Life is like riding a bicycle. To keep your balance you must keep moving."

This quote from Albert Einstein is very much true not only for this issue of the S&T Post but also for the entire DOST system. With the initial transformation of the 'The Post' on its 30th issue, changes continue for it to keep moving. These changes, which are well balanced, also reflect the efforts of the entire Department.

The cover shows the newest Doppler radar that President Benigno Aquino III recently installed in one of the most frequently typhoon-visited areas in the country-- Virac, Catanduanes in Region V. On May 02, 2012, a number of top officials of the country inaugurated the weather facility in cooperation with JICA, an effort that hopes to deliver the most accurate and timely information to help save lives and properties. The cover also shows Pres. Aquino with DOST Secretary Mario Montejo during the launch.

Part of this issue is a special section devoted to disaster-related stories, including technologies and efforts of the Department as its contribution to disaster preparedness and risk reduction program of the national government. The Post also highlights the annual National Science and Technology Week which showcases the DOST's latest offering of wide array of technologies, products, and services for the Filipinos.

While maintaining its regular sections such as news and feature stories, the second quarter issue of the S&T Post also shares with the readers a new section devoted to stories from the regions. This is one way of showing the importance of developments in the regions which have been initiated by the DOST regional offices. After all, the DOST personnel in the regions are the ones who serve as 'the face' of the Department, dealing directly with people and the communities.

Truly, what the S&T Post does is the balancing act of bringing to the fore S&T information that is science-based but easily understandable by its audiences. It is only through this balancing act of the S&TPost can move forward its mission of creating change through the appropriate delivery of S&T information.

Aristotle P. Carandang

S&T POST

VOL. XXX No. 2

The S&T Post is published quarterly by the Science and Technology Information Institute-Department of Science and Technology (STII-DOST) with editorial office at DOST Complex, Gen. Santos Avenue, Bicutan, Taguig City.

Telefax: (02) 837-7520
Tel No.: (02) 837-2071 to 80 local 2148

Email: dost_stii@yahoo.com; stpost@dost.gov.ph

Visit:
www.stii.dost.gov.ph

Like us on Facebook

Science and Technology Information Institute (DOST)
Science and Technology Information Institute-DOST (Library)
Ignite the Mind
Expo Science 2011
DOST Starbooks

Department of Science and Technology

Vol. XXX No. 2 Second Quarter 2012

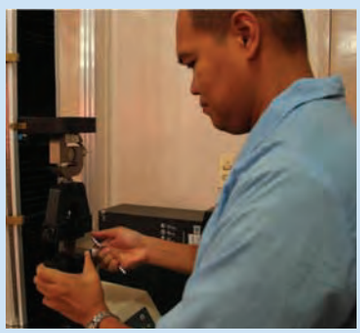
OUR COVER

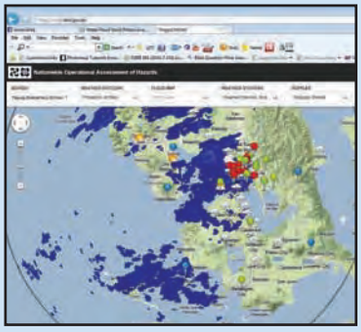
Our cover shows President Benigno S. Aquino III and DOST Sec. Mario G. Montejo in a huddle during the installation of the country's latest Doppler radar in Virac, Catanduanes. The Aquino government committed to the Filipino people more efficient and more reliable systems in early warning and disaster preparedness, and the Department of Science and Technology plays a significant role in this commitment.

NSTW NEWS

FEATURES

WHO'S WHO





IN THE REGIONS

DISASTER MITIGATION

ENVIRONMENT

ICT

TECH•NEW•LOGY

Exhibits are open to the public

DEPARTMENT OF SCIENCE AND TECHNOLOGY

2012 National Science and Technology Week

Science, Technology and Innovation:

Working Together for Growth and Development

10-14 July 2012
SMX Convention Center
Seashell Lane, Mall of Asia Complex, Pasay City

General Program of Activities

JULY 10, 2012

Opening Ceremonies & NSTW Awards	Halls 1 & 2, SMX Convention Center, MOA
Opening of Exhibits (Open to the public)	Halls 1 & 2, SMX Convention Center, MOA
Press Conference	Rooms 7-9, SMX Convention Center, MOA
7th OYSI Annual Meeting and Scientific Convention	The Manila Hotel, One Rizal Park, Manila

JULY 11, 2012

PSHS Science and Technology Interactive Activity	Halls 1 & 2, SMX Convention Center, MOA
Technology and Industry Forum I	Rooms 4-6, SMX Convention Center, MOA
34th NAST Annual Scientific Meeting	The Manila Hotel, One Rizal Park, Manila

JULY 12, 2012

Technology and Invention Demo	Halls 1 & 2, SMX Convention Center, MOA
Technology and Industry Forum II	Room 10, SMX Convention Center, MOA
ON3 Nationals (DTI-DOST-STAC Sponsored Competition)	Halls 1 & 2, SMX Convention Center, MOA
SEI Talk and Play: Understanding Career Options in the Sciences	Meeting Rms 2 & 3, SMX Convention Center, MOA
In Touch with Excellence: Awarding of Outstanding DOST Scholars	Hyatt Hotel and Casino, Manila

JULY 13, 2012

SETUP Forum	Halls 1 & 2, SMX Convention Center, MOA
SEI Talk and Play: The Science Explorer Bus	Parking Lot, SMX Convention Center, MOA

JULY 14, 2012

Technology and Invention Demo	Halls 1 & 2, SMX Convention Center, MOA
NICE Awarding Ceremonies	Halls 1 & 2, SMX Convention Center, MOA

JULY 20, 2012

DOST Run for Wellness	DOST Complex

OYSI - Outstanding Young Scientists, Inc.
NAST - National Academy of Science and Technology
SETUP- Small Enterprise Technology Upgrading Program
SEI - Science Education Institute
PSHS- Philippine Science High School
NICE - National Invention Contests and Exhibits

Northern Luzon Cluster
CAR Region 1
Region 2
ILOCOS NORTE
30 July - 03 August 2012
MMSU (Batac)

Visayas Cluster
Region 6 Region 7
Region 8
TACLOBAN CITY
24-28 September 2012
Tacloban City Convention Center

Mindanao Cluster
Region 9 Region 10 Region 11
Region 12 CARAGA ARMM
GENERAL SANTOS CITY
10-14 October 2012
KCC Mall

Southern Luzon Cluster
NCR Region 3 Region 4A
Region 4B Region 5
TARLAC CITY
22-24 November 2012
SM Tarlac

for more details, please visit: www.science.ph www.dost.gov.ph

NSTW 2012 highlights partnerships, local tech

By ARISTOTLE P. CARANDANG
S&T Media Service, *STII*

BANNERED BY the theme, "Science, Technology and Innovation: Working Together for Growth and Development", the National Science and Technology Week (NSTW) this year showcases the importance of partnership and highlights locally developed technologies.

The Secretary of the Department of Science and Technology (DOST), Mario G.Montejo has emphasized the significance of the event in showing the readiness of the science community to push the innovation agenda of this administration. He also hopes that science and technology will someday be integral to the lives of all Filipinos.

Meanwhile, Undersecretary Fortunato T. Dela Peña and NSTW Steering Committee Chair said that the DOST pushes for the transformation of scientific knowledge into useful and value-adding technological innovations in order to meet the needs of the country and in keeping up with the demands and challenges of the global environment.

This year's five-day celebration from July 10 to 14 at the SMX Convention Center, Mall of Asia in Pasay City not only serves as a venue to show to the world the Filipino genius and ingenuity but also displays the importance of cooperation among Filipinos in nation building. "Through the NSTW, we hope to engage more stakeholders in ongoing efforts to engender a more dynamic S&T community and likewise spur the spirit of partnership to take advantage of today's technological opportunities," explained Usec. Dela Peña.

The annual event opens with the presence of four members of the Cabinet: Science and Technology Secretary Mario G. Montejo, Trade and Industry Secretary Gregory L. Domingo, Agriculture Secretary Proceso J. Alcala, and Health Secretary Enrique T. Ona.

The NSTW highlights in its exhibits as its centrepiece the DOST's High Impact Technology Solutions or HITS, a showcase on the latest locally developed technologies and services. All of these are believed to help achieve the much sought after national development by serving as tool to help alleviate the socio-economic conditions of Filipinos. These technologies and services are results of the efforts of the science community that are anchored on the Aquino administration's social contract and the pursuit of the Department's five key result areas such as 1) Solutions to Pressing National Problems; 2) Developing Appropriate Technologies that Create Growth in the Countryside; 3) Improving Industry Competitiveness; 4) Use S&T to Enhance Government and Social Services; and 5) Building Capacity in Emerging Technologies.

Among the technologies included in the exhibits are those that deal with disaster mitigation,

Mandated by Executive Order 128 (EO 128), the DOST provides central direction, leadership and coordination of scientific and technological efforts and ensure that the result there are geared and utilized in area of maximum economic and social benefits for the people.

Technology solutio

By ALLAN ACE ACLAN
S&T Media Service, *STII*

INNOVATION IS the key word that aptly describes technologies that will form the core of the Department of Science and Technology's offering in the upcoming National Science and Technology Week (NSTW) to be held on July 10-14, 2012 at the SMX Convention Center, SM Mall of Asia.

Formally called the DOST's High Impact Technology Solutions or HITS, these technologies aim to alleviate the socio-economic conditions of Filipinos, provide long-term solutions, strengthen national competitiveness towards national development. Among the technologies to be presented are on disaster mitigation; health and food processing; information and communication technology for delivery of government and social services.

The latest technologies and services from the DOST system on display includes the Mosquito Ovicidal-Larvicidal Trap, Water Hyacinth Harvester, Nanoclay water filter, baby/complementary food, and initiatives on disaster preparedness and warning systems. Also to be featured are relevant projects in the emerging fields of

DOST fetes science workers, administrators

By ALLAN ACE ACLAN
S&T Media Service, *STII*


Dr. Christian Joseph R. Cumagun


Dr. Maria Corazon A. De Ungria


Rolando C. Dela Cruz


Dr. Carmencita D. Padilla

IN CELEBRATION of Filipino genius and ingenuity in the field of S&T, the Department of Science and Technology, through its advisory body, the National Academy of Science and Technology (NAST), gives recognition to researchers and administrators in the upcoming National Science and Technology Week (NSTW) to be held on July 10-14, 2012 at the SMX Convention Center, SM Mall of Asia.

To be awarded for the Outstanding R&D Award are Dr. Christian Joseph R. Cumagun (Eduardo A. Quisumbing medal) for his extensive research on fusarium and Dr. Maria Corazon A. De Ungria (Julian A. Banzon Medal) for her significant research on forensic DNA.

The Outstanding Technology Commercialization Award (Gregorio Y. Zara Medal) will be conferred to Mr. Rolando C. Dela Cruz, technology generator and developer of various herbal antiviral products, most famous of which are DeMole and DeWart, both made from cashew nut.

The Dioscoro L. Umali Medal will be awarded to Dr. Carmencita D. Padilla for her notable leadership as executive director of the Philippine Genome Center.

ns at S&T week

genomics, biotechnology, nanotechnology nuclear energy.

Themed "Science, Technology and Innovation: Working Together for Growth and Development", the NSTW features S&T fairs and exhibits, and other events in different venues to give audiences updates on the goings-on within the local science community. This year's NSTW will be participated in by government offices, the business sector, and the academic community, mostly with their respective exhibits. Meanwhile, the HITS Industry and Technology Forum will be held on July 11, 9:00 A.M to 12 NN.

Started as Philippine National Science Week in the 1950s and instituted in 1982, the National Science and Technology Week is an annual celebration that describes the latest breakthroughs in the Philippine science community. For more information please log on to http://nstw.dost.gov.ph/ or contact the secretariat c/o DOST Planning and Evaluation Service at 8372932 or 8373165.

OL traps for every classroom

BY FRAMELIA V. ANONAS
S&T Media Service, *STII*

"It's not rocket science."

- Usec. Jesus Lorenzo Mateo
Department of Education

Before the rainy season goes full blast, the Department of Science and Technology is distributing some 435,000 Ovicidal-Larvicidal Traps or OL Traps to all public elementary and secondary schools nationwide before the rainy season comes.

"DOST will provide OL Trap kits to every public school classroom all over the country," DOST Sec. Mario Montejo said. "OL Traps prevent the larvae from maturing into dengue-carrying mosquitoes, thus we aim to contain and reduce the spread of the disease in places where mosquitoes congregate and breed during daytime, like classrooms."

The OL Trap is a simple technology that kills the eggs and larvae of the female *Aedes aegypti* mosquito that carries the dengue virus. The black container attracts mosquitoes to lay their eggs on the lawanit strip soaked with the OL pellet-water solution. The OL pellets, made of organic and non-toxic material, attract mosquitoes and kill their young, in effect reducing the number of the next generation of mosquitoes.

DOST's school-based OL Trap program intends to reduce the number of mosquito population in schools and communities, and subsequently lower dengue incidents, through the use of the OL Trap.

to page 57

Making Antipolo kids healthier

By FRAMELIA V. ANONAS
S&T Media Service, *STII*

If the youth are the hope of the nation, then Antipolo City can aspire for a healthier, more dynamic future. The city anchors its aspirations on its youth who will be freed from the burden of malnutrition with the launch of the Department of Science and Technology's PINOY program in one of Antipolo's barangays.

Officially called the "Package for the Improvement of Nutrition of Young Children", DOST's PINOY program was launched May 11 in this city to beef up the nutrition status of children 6-35 months old in Barangay Cupang particularly. The DOST-PINOY implementation in this barangay is made possible through the sponsorship of Alagad, a partylist that focuses on improving the plight of the Filipino urban poor.

DOST's PINOY is designed to improve the health status of children under three years old and to give opportunity to entrepreneurs who are interested to produce DOST-developed complementary food.

Breaking the malnutrition cycle

"The first two years of life is a very critical period. When kids are malnourished at this stage, the ill effects of malnutrition to their bodies a nd brains will be irreversible," said DOST Sec. Mario Montejo. "Malnourished kids are sickly, do not perform well in school, and have unhealthy worldview. When they grow up, they will become unproductive and raise malnourished families. The cycle will just keep repeating itself."

"It's time to break this cycle through DOST's PINOY program," he added.

The DOST-PINOY program was launched last year in various parts of the country, including Negros Occidental, Iloilo, Antique, and Taguig City, where positive results were found by the PINOY research team from the DOST's Food and Nutrition Research Institute (FNRI).

The FNRI team rolled out the DOST-PINOY program in Brgy. Cupang by holding first a two-day nutrition education training for Barangay Nutrition Scholars (BNS), barangay health workers (BHWs), and barangay volunteers. The trainees will later train the mothers and caregivers on proper nutrition, breastfeeding, meal planning, proper food handling, and others. They will also handle the 120-day feeding of FNRI-developed complementary food to Brgy. Cupang's young children aged 6-35 months. The feeding will run from May 21 to Sept. 17.

What is complementary food?

Studies have shown that malnutrition among younger children is usually caused by inadequate feeding after the baby weans from breastfeeding, which is from six to 24 months after birth.

According to Julieta Dorado, PINOY project leader, babies are usually fed with "am" or the viscous liquid taken from boiling rice which lacks micronutrients that growing babies need. To address this nutrition shortage, DOST-FNRI developed various complementary foods to add more nutrients, particularly energy and protein, to the diet of children who at this age are usually weaned from pure breastfeeding and introduced to other kinds of food.

The DOST-FNRI complementary foods are rice-mongo-sesame blends in 20-gram boxes that come in ready-to-eat and ready-to-cook packages. Meanwhile, DOST encourages entrepreneurs interested to produce complementary foods to partner with DOST and FNRI in the PINOY program.

Automated guideway transport rolls on

By GEORGE ROBERT VALENCIA III
S&T Media Service. *STII*

This will be the future of mass transport systems made by Filipinos," DOST Secretary Mario Montejo said.

The Department of Science and Technology (DOST) has awarded the P22 million-worth contract to Miescor Builders Inc. to construct 465-meter test tack of the first all-Filipino mass transport—the Automated Guideway Transit System—in the University of the Philippines Diliman campus. The ceremonial awarding was done during the Metals Industry Research and Development Center (DOST-MIRDC) Metals and Engineering (M&E) Week Conference at the Traders Hotel on June 19, 2012.

The AGTS is one of DOST's high-impact technology solutions and is the first among DOST's several proposed public transportation systems for Metro Manila, Sec. Montejo added.

Meanwhile, Miescor Builders Inc. is a leading construction and engineering company wholly owned by the Meralco Industrial Engineering Services Corp.

The AGTS in UP Diliman will run on a track that curves from the CP Garcia Avenue near the CHED building to the area of the College of Arts building.

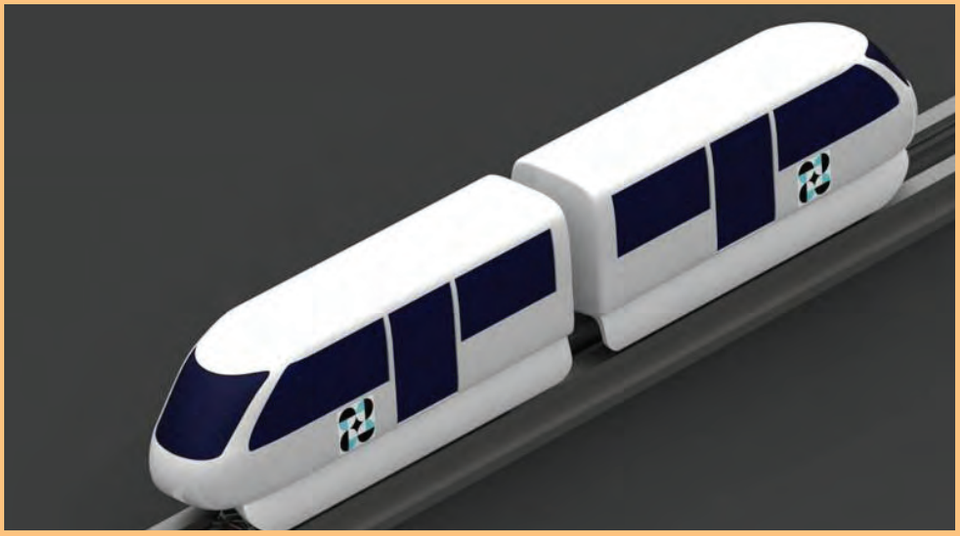
Composing the project team are engineers from DOST-MIRDC, UP Diliman, and the Project Management Engineering and Design Service Office (PMEDSO). The team aims to create a fully-automated, driverless electric transportation that travels on an elevated guideway.

The guideway will stand at an elevation of 6.1 meters supported by high-quality concrete material, while the train body will be composed of two adjoining coaches, each having 30-people capacity. Also, the coaches will roll on rubber tires instead of metal wheels to minimize track noise, and will have bogies to ensure comfort and stability.

According to Engr. Jonathan Q. Puerto, Officer-in-Charge of the office of the Deputy Executive Director of DOST-MIRDC, the test track in UP Diliman will help MIRDC to fine-tune the technology's

to page 57

The Metals Industry Research and Development Center (DOST-MIRDC) has awarded the P22-million worth contract to Miescor Builders, Inc to construct the 465-meter test track of the Automated Guideway Transit System (AGTS) in the University of the Philippines Diliman Campus. DOST MIRDC Director Engr. Arthur Lucas D. Cruz (middle, left) and Miescor Builders, Inc..President Jesus P. Francisco (middle, right) signed the contract during the Metals and Engineering (M&E) Week Conference on June 19, 2012 at Traders Hotel. (Photo by Gerardo Palad)



The Filipino Automated Guideway Transit System (AGTS) will be composed of two connected coaches that will roll on an elevated guideway The technology is driverless, reliable, and environmentally sound, and is an established mode of transportation in countries like the United States, Japan, and Canada. The Department of Science and Technology (DOST) will use locally-available materials in the construction of the AGTS. and will begin its testing in the University of the Philippines Diliman Campus on October 2012. (Image by DOST-PMEDSO)

Gearing up the metals industry and economy through MakiBayan

By GEORGE ROBERT VALENCIA III
S&T Media Service, *STII*

Metalworks and allied sectors machinery and electronics will now get the very important push they need to slug it out in the global arena. Through the program called "MakiBayan" or Makina at Teknolohiya para sa Bayan, the Department of Science and Technology (DOST) along with industry giants and the academe will work together to poise the industries into addressing local demand and global competition.

This partnership is formalized through a Memorandum of Understanding signed by DOST Secretary Mario G. Montejo on April 16 in Bella Ibarra, Quezon City with leaders of the metal and electronics sectors, with collaboration coming from a consortium of top-notch engineering schools.

Industry associations involved in the tie-up include the Electronics Industry Association of the Philippines, Inc. (EIAPI), the Metalworking Industry Association of the Philippines (MIAP), and the Philippine Die and Mold Association (PDMA).

The academic consortium, meanwhile, is the Engineering Research and Development for Technology (ERDT) which is currently led by the University of the Philippines Diliman.The ERDT consortium consists of eight engineering schools from Ateneo de Manila University, Central Luzon State University, De La Salle University, Mapua Institute of Technology, Mindanao State University-Iligan, UP Diliman, UP Los Baños, and University of San Carlos.

The MakiBayan program unites the government, the private sector, and the academe to advance a more enabling environment for the metalworks, machinery and electronics industries by the sharing of technology, expertise, skills, manpower and facilities among the partners.

Through a collaborative research and development (R&D) roadmap, MakiBayan serves as an avenue for the government-private-academe triumvirate to frame all its plans, projects, and

to page 56

MakiBayan partners formalize their commitment by signing the Memorandum of Understanding. From left are EIAPI president Victor Gruet, MIAP president Lanzuela, DOST Secretary Mario Montejo, PDMA president Antonio Fuster, and ERDT Chair and UP College of Engineering Dean Ma. Aurora Matias. (Photo by Gerardo Palad, S&T Media Service)

Every partner serves as a gear to set the Makibayan program in motion. From left are EIAPI president Victor Gruet, DOST Secretary Mario Montejo, STII Director Raymund Liboro who emceed the event, MIAP president Lanzuela and PDMA president Antonio Fuster. Rightmost: ERDT Chair and UP College of Engineering Dean Ma. Aurora Matias. (Photo by Gerardo Palad, S&T Media Service)

milestones from 2012 to year 2016. This is expected to propel the metalworks, machinery and electronics industries toward newer heights of competitiveness both in the local and global markets.

"The country should have a strong, vibrant metalworking and electronic sector for it industrialize and modernize," said DOST Secretary Montejo.

Transportation, robotics, and machine building for manufacturing processes, disaster mitigation, and food processing for small and big enterprises are the identified beneficiaries of the program. Once realized, MakiBayan will result in earnings and wealth for Filipinos through jobs generated, efficient production, and quality outputs.

"I thank the DOST, through the leadership of Secretary Montejo, for the MakiBayan Program. It has always been our aspiration to upgrade the status of the tool and die sector of the country. Now we can work together to bring this objective into reality," said PDMA President Luis Antonio T. Fuster.

Also during the MakiBayan launch, PDMA proposed the establishment of the Die and Mold Solution Center that shall serve as a common service facility to accommodate small and medium enterprises who cannot afford to purchase costly pieces of equipment. Its ultimate goal is to increase the country's production of die and mold and reduce dependence on their importation.

MIAP, who specializes in metalworking, or transformation of the shape and properties of metals to produce tools and components, also thanked the DOST for the opportunity of taking part in the commercialization of mature R & D projects.

"We at MIAP are privileged to be part of this event in crafting the roadmap of the metalworking sector. As a gesture of gratitude we are taking a bold stance by accepting the challenge as one of the government partners in working towards improving productivity in the metal sector," said Virgilio F. Lanzuela, MIAP president.

Meanwhile, Dr. Aura C. Matias, ERDT Program Leader, stated that the lack of researchers, scientists and engineers to conduct R&D can be a big reason for the slow growth of the country. UNESCO put the benchmark for a developing country at 360 researchers, scientists and engineers per year in order to . According to her, the country produced 125 researchers, scientists and engineers in 2005, and only five after two years, with a total of 130 in 2007. In addition, Philippine neighbors like Vietnam, Thailand and Singapore produce six, 25 and 200 Master graduates, respectively, for one produced in the country.

With regard to the MakiBayan, Dr. Matias said, "The ERDT consortium is an investment to make the Philippines globally competitive by addressing R&D manpower needs."

"Through this partnership, the industry can tell us what expertise they need, and we will supply them with what they need," she added.

Coming up: Strategic communication in the region

By GEORGE ROBERT VALENCIA III
S&T Media Service, *STII*

" Our objective is to improve the internal and external communication systems of the Department."

- Dr. Anthony C. Sales
Director, OST ID X

Communication is the lifeblood of a healthy organization, so it must flow freely within and among the components. Thus, to improve the communication system within and between the agencies and regional offices of the Department of Science and Technology recently gathered its regional directors and information officers in a three-day-workshop in Davao City. The workshop, organized by the DOST'sScience and Technology Information Institute (DOST-STII) with DOST Region XI and DOST'sTechnology Application and Promotion Institute, likewise aimed to instill a sense of 'corporate identity' within the DOST system. The participants also prepared their respective strategic communication plan for critiquing and review. The plan was an offshoot of the Strategic Communication Planning Workshop held in Tagaytay City a couple of years ago.

Ruby Cristobal, chief of Manpower Education Research and Promotion Division of the DOST-SEI and workshop's resource speaker, delivered lectures on basic communication research concepts and theories along with the relevant applications to science and technology promotion.

Individual regional cluster study proposal drafts were prepared and critiqued by a panel of experts to improve its scope, methods, and instruments..

"Our objective is to improve the internal and external communication systems of the Department," said DOST XI Director Anthony Sales. The ultimate purpose of the strategic communication plan is to instill the DOST corporate identity among regional officers. Special module on communication research, as well as manual on DOST Corporate Identity which contains prescribed rules and formats of official materials such as letters, press releases, and other important documents; and manual on DOST branding initiatives were provided to participants.

Also, Statistical Package for the Social Sciences or SPSS, a widely used computer program in research, was discussed by Director Raymund E. Liboro and Ms. Geraldine Ducusin of DOST-STII. The SPSS contains additional updates on the National Flood Monitoring, Forecasting and Mitigation Program and the Early Warning Communications Protocol.

Titled "Basic Communication Research Workshop for DOST Regional Information and Promotion Managers," the activity is part of the Changing the Mindset (CTM) Program led by Aristotle Carandang, Chief of the Communication Resources and Production Division of DOST-STII.

Towards the end, a resolution was crafted to address various pressing matters identified in the proposed strategic communication plan.

Plastic out, paper in

By APPLE JEAN C. MARTIN
S&T Media Service, *FPRDI*

Plastic is out, paper is in. And to the mounting need for paper bags as the best environmental-friendly option, the country's science agency is looking into more ways to make paper packaging more accessible to all and even provide additional income opportunities to people.

"The greater use of paper packaging is in line with our current initiatives that protect the environment and uplift the ecosystem," said Science Secretary Mario Montejo. "One of the thrusts of the Department of Science and Technology is the support to green technologies, products, and services."

In Metro Manila and nearby areas, more and more local governments are slowly easing out plastic in their own backyards, compelling stores and vendors to use paper bags in wrapping their wares. The back to paper drive is considered as one good way of avoiding the build up of plastic garbage that clogs up the waterways and contributes to flooding. Plastics likewise are harmful to the environment because of their chemical content and very long degradation process, in addition to making the environment look bad.

"People have become more aware of the environmental risks posed by the continued use of plastics after the onslaught of typhoon Ondoy. Today, 27 towns already have in place local ordinances that regulate the use of plastic bags," said Aimee Beatrix Habon, Science Research Specialist at DOST's Forest Products Research and Development Institute-Technology Innovation Division.

"Increased demand for pulp and paper means more challenges for the industry and for DOST-FPRDI as well," Habon added.

FPRDI has completed and on-going research studies on alternative raw materials such as low grade abaca fibers, banana fibers, and palm oils' empty fruit bunch fibers for packaging paper, according to Adela Torres, Chief of FPRDI's Pulp and Paper Products Development Section.

FPRDI is also working out a collaboration with UP Los Banos' Institute of Plant Breeding in studying hybrid abaca as reinforcement fiber. Currently, FPRDI is part of the Department of Trade and Industry-Bureau of Product Standards' Technical Committee on Board, Paper, and Pulp which develops standards for packaging paper.

FPRDI was likewise part of the initial stages when the "No to Plastic" campaign in Los Baños, Laguna was conceptualized. Los Baños was one of the first towns in the country to regulate the use of plastic bags for packaging.

Animal welfare is no petty matter

BY GEORGE ROBERT VALENCIA III
S&T Media Service, *STII*

WHAT IS the punishment for maltreating an animal? Not much, basing on the existing Philippine Animal Welfare Law.

The penalties for being cruel to animal are fine of between P1,000 to P5,000 or jail time between180 days to two years, or both. According to animal welfare advocates, these punishments are quite puny. The law needs tougher fines and more severe punishment for animal offenders, according to animal welfare advocates.

To discuss this concern, the Department of Science and Technology (DOST) through its arm in basic research, the National Research Council of the Philippines (NRCP), recently hosted a round table discussion (RTD) with leaders of the country's major animal welfare societies. The discussion (sought to amend Republic Act 8485,popularly referred to as the Philippine Animal Welfare Act,

to page 56

Dr. Teodulo M. Topacio Jr., (left) displays a cut-out of the spreadsheet editorial that prompted the DOST'sNational Research Council of the Philippines (DOST-NRCP) to organize a round table discussion on Philippine Animal Welfare Acd. Topacio, is a National Scientist and member-at-large of the DOST-NRCP.

Young people get into textile research

VOGUE IN STREAMS. Who'd have known that high fashion also lives in streams? Water hyacinths, known as the gadfly that clogs waterways and causes floods, now offer a new fashion dimension. CINTH, the new fashion brand, breaks the stereotype fashion pieces into something fresh and innovative. (Jelly Limos' ad for CINTH)

By JOY CAMILLE A. BALDO
S&T MediaService, *PTRI*

The empowered youth plays a crucial role in boosting our textile industry. Advocating this belief is the Philippine Textile Research Institute of the Department of Science and Technology (PTRI-DOST), making sure to cater to the needs of students in gaining access to textile information; textile technologies; technical services such as textile processing, testing, and contract researches; as well as plant tour visits and consultancies from its pool of experts.

"Through various assistances provided by the Institute, we aim to empower the youth and get them involved in our advocacies," said PTRI Director Carlos C. Tomboc.

It can be recalled that through PTRI's weaving services, handwoven cogon grass or talahib was designed by a budding fashion designer, Kristal Leen de Guzman, into a posh bag that won her the 9th place in the social design competition themed "Weaving the Future" led by the Fashion Design Council of the Philippines (FDCP).

There is also the Philippine Science High School-Southern Mindanao Campus student Elson Ian Galang, whose research on pandan fabrics was inspired by the technology of PTRI in developing PTF. Throughout the duration of Elson's training/summer internship program in PTRI and under the supervision of Engr. Cora Llorico the head of the Institute's Pilot Plant, he was able to create a prototype of the pandan fabric. This research earned him numerous awards such as first place in the Regional Invention Contests and Exhibits (RICE) of DOST Region XI and another first place in the individual category of the National DepEd-Intel Science and Engineering Fair 2011. This paper was also accepted in the 2012 AATCC International Textile Conference in North Carolina, USA.

In addition, a graduating student of St. Scholastica's College Manila, Jelly Limos, was also inspired by PTRI's initiative in developing water hyacinth fibers for textile manufacture so much so that she initiated an advocacy campaign focusing on water hyacinths from being a gadfly of nature into an innovative new material in the commerce of fashion.

Jelly unveiled two fashion pieces under the fashion label "CINTH", a dress with cut-out accent and a corset featured in their Artvocacy, an artistic exhibit that takes on various relevant issues to generate awareness and build interest of the public, for Artekolasa 2012 at the Glorietta, Ayala Center. PTRI weaving specialists, Ms. Josefa Garlitos and Mr. Ramiro Guab, crafted the Institute's water hyacinth yarns into fabrics to create these stylish outfits.

"My fashion line intends to set fresh and eco-friendly trends that will be beneficial to both fashion aficionados and to the environment and, thanks to PTRI, I was able to actualize this plan," explains the Visual Communication and Design student.

PTRI was also host to a number of Filipino students studying fashion and textile-related courses abroad. Taking advantage of their vacation here in the Philippines, they took a side trip to the Institute to learn more about our indigenous materials. "I really want to learn more about our indigenous textile materials and incorporate them in my designs," said Angelica Maranan,

The eco-chic outfits crafted from water hyacinth fibers, meant for fashion and environment enthusiasts alike. These creations of Jelly Lomos were showcased during Artekolasa 2012 exhibit at Glorietta 5.

"I really want to learn more about our indigenous textile materials and incorporate them in my designs."

Angelica Maranan

a student of BA Fashion and Textiles at Bournemouth University, UK, during her visit at PTRI last April.

Committed in fostering a well-informed S&T generation, the lead textile agency actively conducts technical trainings to students from several academic institutions such as the Central Luzon State University, Southern Luzon State University, Don Mariano Marcos Memorial State University, Polytechnic University of the Philippines, Technological University of the Philippines, De La Salle University, Philippine Science High School, and Bicol University.

PTRI also caters to the textile processing and testing requirements of the academe which comprised 44% of the over-all clients of PTRI's Technical Services Division (TSD) in 2011. PTRI provided spinning, handloom weaving, and finishing/dyeing services to students from 14 academic institutions like the Philippine Science High School, Technological University of the Philippines, De La Salle University, School of Fashion and the Arts, and others. Services rendered include processing of fibers from red sister, abaca, birds of paradise, human hair, mussels fiber, water hyacinth, talahib, banana, rice stalks, coconut grass, and sugar cane bagasse, among others. Addressed were the students' thesis requirements to explore indigenous sources of fiber as possible raw material for handicraft items and apparel.

Recently, PUP students, Jesus Dumelod, John Arsenal, John Alfaro, and Mary Sambot, won the best thesis award among the graduating batch of 2011 B.S. Chemistry students for their work in developing a simple and efficient method for the photocalytic degradation of toxic chemicals from the effluents of dyeing. This thesis was undertaken at the Institute's Research and Development Division (RDD) laboratories with PTRI's Jeannie Lyn Cabansag as the students' external adviser. Jesus Dumelod is currently working in RDD, under job-order, for its neo-ethnic project. He extends his gratitude to the PTRI staff, "I could not imagine how we could have pushed through finishing our thesis without their help, aside from their technical support, PTRI helped us save a great deal of money by allowing us to use their facilities."

As part of PTRI's efforts to build up science and technology consciousness among our youth, which DOST considers vital in contributing towards the orientation of a science career specially for the younger generation, PTRI provides on-the-job training programs for students. This OJT experience will not only provide them with hands-on training on textile production but also immerse them on the agency's efforts to help solve the country's problems through science and technology. The Institute also conducts guided tours to PTRI laboratories and pilot plant facilities.

Pandan: From flavor to fabric

By JOY CAMILLE A. BALDO
S&T Media Service, *PTRI*

Elson Ian Galang proudly shows his developed yarn and fabric from pandan fibers that won him prestigious awards. Galang is a senior student of DOST's Philippine Science High School-Southern Mindanao Campus.

FROM AN ordinary tropical plant well-known for its fresh aroma and unique flavor it adds to cooking, we can now view pandan in a whole new light as an eco-chic fabric. Thanks to an inquisitive high school student, Elson Ian Galang of DOST's Philippine Science High School-Southern Mindanao Campus. In his search for other uses of the pandan plant growing abundantly in their backyard, he tried to manually scrape off the leaves to extract the fibers which led to his idea of developing a new high-quality indigenous fiber.

"It became my dream to develop this plant… as part of high-end products showcased in the runways of Paris and New York," said the 16 year-old student. He then turned his idea into a research project in class titled "Pandan, Ultimate Leaf Fibers as Blend for a New Philippine Tropical Fabric."

Inspired with the technology used to develop Philippine Tropical Fabrics (PTF), Ian, with the help of the teacher-in-charge of the Summer Science Internship Program (SSIP) Michelle Louise Enano, sought the help of DOST's Philippine Textile Research Institute in designing and accommodating a one-month internship course on processing and testing of pandan fibers. Ian then flew all the way from Davao to PTRI's pilot plant in Bicutan, Taguig City to train under the supervision of Engr. Cora P. Lloricoon on various textile processes from fiber extraction, spinning, weaving, up to the finishing and dyeing processes.

Using the textile machineries in the Institute's pilot plant, a fabric with optimum blend of 80/20 cotton/pandan was developed. This fabric was then dyed a dark pink hue using dyestuff extracted from young coconut husks.

Ian's research on pandan fabric earned him various awards. He won first place in the Regional Invention Contests and Exhibits (RICE) of DOST Region XI. He also bagged the first place in the individual category of the National DepEd-Intel Science and Engineering Fair 2011. His paper was also accepted in the 2012 AATCC International Textile Conference held on March 21 to 23, 2012 in North Carolina, USA. PSHS-SMC Director Delia Legaspino expressed her gratitude saying "[PTRI] is instrumental to the success of our student… The guidance and nurturing atmosphere of PTRI staff reinforced [his] learning in conducting scientific research."

"As public servants, it is our pleasure to help these students materialize their concepts and ideas. It is surprising

to page 57

Beefing up S&T Scholarship

DOST targets 3,300 undergraduate, 660 master and 130 doctorate scholars for 2012.

By GEORGE ROBERT VALENCIA III
S&T Media Service, *STII*

There is a general increase in scholarship grants this year," announced Science Secretary Mario G. Montejo in his address to new undergraduate science and technology scholars recently during their presentation to the Department of Science and Technology (DOST) officials.

According to Montejo, DOST now targets new scholars: 3,300 undergraduate, 660 master and 130 doctorate scholars for 2012, through its arm in scholarships and S&T human resource development, the Science Education Institute (DOST-SEI).

Three hundred forty-six scholars from the National Capital Region and their parents attended the welcoming program — a mere fraction of the total 3,359 new DOST undergraduate scholars in the country this year. The said total figure is, however, in fact, a tripling of the just-over-a-thousand "then fresh scholars" of 2011. The DOST also sponsors a total of 402 master and 73 doctorate scholars at present.

Montejo said the abovementioned increase of scholars is in keeping with the DOST's commitment to support future scientists and science and technology (S&T) workers who are expected to help spur progress in the economy. "The country's future is through S&T. Its greatest asset is its human resource", he asserted.

Amid the increasing demand for S&T professionals, DOST-SEI over the years has managed to produce a significant number of undergraduate, master's and PhD scholars that are now working in several industries in the Philippines and abroad.

Aside from the baccalaureate scholarships given annually to qualified high school graduates, DOST-SEI administers two other major scholarships for college graduates who wish to pursue master and doctorate studies: the Accelerated S&T Human Resource Development Program for basic and applied S&T fields, and the Engineering Research and Development for Technology for engineering fields. Both programs are implemented in collaboration with academic consortiums or alliances of leading schools and universities offering master and PhD degrees in identified priority fields of study.

"It is through awarding scholarship grants to eligible individuals that we enable the country to better produce high level human resources to fill the gaps in identified areas of S&T", said DOST-SEI Director Dr. Filma G. Brawner.

Upon graduation, DOST scholars are required to render service to the country for a period equivalent to the entire duration of their scholarship, which Dr. Brawner says is a way to help sustain the country's S&T human resources.

Among the advantages of being a DOST scholar are subsidy on tuition fees, monthly stipends, book and transportation allowances, group insurance, and thesis or dissertation allowances during their four-to-five-year study period.

"For 2013, DOST-SEI now accepts applications of interested individuals who wish to avail of this opportunity to pursue a degree or career in science and technology", she added.

PWDs for ICT jobs....

By ROY ESPIRITU
S&T Media Service, *ICTO*

THE DEPARTMENT of Science and Technology steps forward for PWDs or persons with disabilities as it marks this year's National ICT Month with the first ever ICT job fair for PWDs. Spearheaded by DOST's Information and Communications Technology Office (ICTO) in partnership with the National Council on Disability Affairs (NCDA) and SM Supermalls, the job fair had the theme "ICT: Enabling People, an ICT Job and Skills Fair for PWDs" held June 14, 2012 at the Cyberzone, SM North EDSA Annex.

The ICT job fair aimed to provide a venue for job matching qualified PWDs and employers and to showcase the latest IT-enabled productivity tools for differently-abled folks. The job fair likewise gave an opportunity for employers in the ICT industry to appreciate the talents and capabilities of PWDs, as well as to inspire participants that anything is possible with ICT, including giving opportunities for PWDs to make a niche in their chosen ICT-related careers.

Undersecretary Louis Casambre of the DOST-ICTO and Undersecretary Alicia R. Bala of the Department of Social Welfare and Development shared their thoughts on this unique program that provides equal opportunities for Filipino PWDs.

The ICT job fair also featured exhibits of ICT companies, demonstrations on technologies enabling PWDs to be more productive, and testimonials from PWD ICT professionals that aimed to inspire other PWDs to pursue ICT-related professions.

The DOST-NCDA-SM Supermalls ICT job fair is a collaboration among various partners in government, private sector and people's organizations.

DOST-ICTO is the Philippine Government's lead agency on ICT related matters. Its primary thrusts are in the ICT Industry Development, eGovernment, ICT policy development, Internet for all, and Cybersecurity.

...and personal care products

By MARIA VICTORIA DADO
S&T Media Service, *DOST-XI*

PERSONS WITH Disability (PWD) from the different barangays in Nabunturan, Compostela Valley Province were all awash with excitement over their newly-learned skill-- bath and laundry soap, shampoo and dishwashing liquid making. They were all participants to the seminar conducted by the Provincial Science and Technology Center- Compostela Valley of the Department of Science and Technology XI.

The PWD-participants were trained on the procedures and methods in making soap, shampoo, and dishwashing liquid under the supervision of the resource speaker, DOST XI's Darius dela Cerna. After the interactive discussion, the participants were divided into small groups for their hands-on activity to experience the actual method of making their own soap, shampoo, and dishwashing liquid. After the hands-on activity, the participants were given time to ask questions and share their experience.

The seminar was held in partnership with Municipal Social Welfare and Development of said town. The 41 participants were from arangays San Isidro, Anislagan, Manat, Mainit, Sasa, Mipangi, Pangutusan, Sta. Maria, Poblacion, Antequera, Basak, Bayabas, Cabidianan, Katipunan, Linda, Magading, Magsaysay, Matilo, New Sibunga, Ogao, Kao, Tagnucon and Bukal.

DOST XI and the town of Nabunturan are optimistic that the participants will adopt the technology for their livelihood and become entrepreneurs in the future. The knowledge gained from the training is helpful for the participants and may be used into business venture through production of personal care merchandises.

The Resource Speaker, Mr. Darius F. dela Cerna (right) demonstrated the different technologies before the participants.

Indigenous material for basket weaving

By RIZALINA K. ARARAL
S&T Media Service, *FPRDI*

Mang Ponciano (standing) meets his group, wearing his brand new rubber shoes bought from his wife's weaving income.

TWO AND a half years ago, the townsfolk in Basud, Camarines Norte had very little livelihood skills. They made money mainly by making charcoal and planting rice. But their income was not enough-- they could not even afford small conveniences such as a pair of rubber shoesto complete a decent garb.

Today, Basud folks are looking forward to a strongly-woven future. Thru a forest-based livelihood project by the Depatment of Science and Technology's Forest Product Research and Development Institute, in partnership with the International Tropical Timber Organization (ITTO), many of them have learned to make baskets from local vines. They sell the baskets in the local public market and in trade fairs to raisethe needed cash for their families.

Some of the vine baskets produced by trainees of the DOST-FPRDI.

"DOST-FPRDI will continue to be on hand for training and technical assistance in forest-based livelihood project," said DOST Secretary Mario Montejo. "This is in consonance with DOST's commitment to help improve the economic conditions of Filipinos, especially the community folks."

"Our work in Basud started in 2010," says Dr. Emelyne C. Cortiguerra, project staff. "We worked with people's organizations in three Community-Based Forest Management (CBFM) areas there to teach the townsfolk how to make wise use of their non-timber forest resources. We trained them how to sustainably harvest their local vines, and how to make baskets using basic and advanced techniques."

The project also helped the folks market their products by linking them with trade fair organizers and Southgate Ltd., a baskets exporter. The baskets reportedly sell very well during trade fairs and at the local public market.

According to For. Robert A. Natividad, project leader, "Now that our work on the project is almost over, it is encouraging how various government groups are willing to help sustain the livelihood of members of the Basud Handicraft Producers Association (BHPA) after we leave."

"The LGU, for instance, pledged to showcase the products in a display center, while the DOST-Provincial Science and Technology Office of Camarines Norte promised to provide grants-in-aid to acquire a handicraft dryer," said Natividad. "The DTI provincial office, on the other hand, is involved in the crafting of medium and long term plans to sustain support for the BHPA."

"While all this is encouraging," adds Cortiguerra, "what is really rewarding is seeing how people's lives have improved. This is true not only in Basud but also in the two other areas where we implemented the project, namely in Tagkawayan and Atimonan, Quezon."

"The last time I was in Tagkawayan," she recounts, "Mang Ponciano, the leader of a forest-based people's organization, proudly showed me his brand new rubber shoes. He said he was finally able to buy one, many thanks to his wife's weaving skills."

"In Atimonan, the mothers we trained tell us that because they now earn more, they can now give allowances to their children who go to school. One mother said that after selling baskets, her family – for the very first time – was able to enjoy a simple Noche Buena meal last Christmas."

DOST directors get CES presidential award

By ENGR. RAMIL UY , *DOST VI* and
GEORGE ROBERT VALENCIA III, *STII*
S&T Media Service

DEPARTMENT OF Science and Technology VIII and Philippine Institute of Volcanology and Seismology Directors Edgardo M. Esperancilla and Renato U. Solidum, Jr. received the Gawad Career Executive Service (CES) presidential award last May 30, 2012.

Both were awarded presidential citations and cash prizes by Executive Secretary Paquito N. Ochoa Jr. in a ceremony held at the Heroes Hall of Malacañang Palace.

Engr. Esperancilla and Dr. Solidum were among this year's five recipients of the Gawad CES award, given yearly by the Career Executive Service Board (CESB) to career executive service officers who 'have shown excellent performance, nobility of character, and excellent leadership in their respective fields'.

DOST Secretary Mario G. Montejo said that the recognitions only prove that excellent people lead the DOST agencies. "The awards show that we have excellent leaders who are working sincerely in delivering DOST services to the people and the community," he added.

Engr. Esperancilla was recognized for his solid support to Region 8's micro, small, and medium enterprises in three specific industries; namely, coconut, essential oil and natural fibers. His innovative approaches and strategies also led to an increase in number of S&T scholars and examinees in the region in the last five years.

The DOST regional director was also the man behind the regional office's successful ISO certification, and was noted for envisioning the Technology Business Incubator (TBI) for information and communication technology (ICT)-based SMEs. This, through the support of the Technology Application and Promotion Institute (DOST-TAPI) and the provincial government of Leyte, provided the SMEs necessary support and resources to harness their ideas to commercial fruition.

PHIVOLCS Director Dr. Solidum, meanwhile, was lauded for spearheading the Tsunami Risk Mitigation Program. This consisted mapping of the country's tsunami prone areas along with tsunami education, awareness campaign, and capacity building of Local Government Units (LGU). He was also noted for improving DOST-PHIVOLCS' monitoring and communication capabilities (for both tsunami and earthquakes).

In addition, the earthquake expert was extolled for paving the way for the

next page

DOST Region VIII Director Engr. Edgardo M. Esperancilla (middle) received the Gawad Career Executive Service for his remarkable support to the region's micro, small, and medium enterprises and innovative approaches to upgrade science and technology services. Executive Secretary Paquito N. Ochoa Jr (in coat and tie) handed the presidential citation to the DOST director at a ceremony held in Malacañang, wherein the latter was joined by his wife and one of his three daughters.

Dr. Renato U. Solidum, Jr., (middle) director of Philippine Institute of Volcanology and Seismology, was also awarded the Gawad Career Executive Service (CES) for helming the national programs for natural risk researches and disaster preparedness. Like Engr. Esperancilla, Dr. Solidum was joined by his family when he received his award in Malacañang, last May 30, 2012.

DOST Forester Ella is Mancono Awardee

By APPLE JEAN C. MARTIN
S&T Media Service, *FPRDI*

OFTEN STICKY and viscous, extruding resin on trees can be a startling sight to some people. But for folks who know the value of forest products, such as Forester Arsenio B. Ella, a Scientist III of the Department of Science and Technology's Forest Products Research and Development Institute (DOST-FPRDI), resin is like a precious gift particularly that of pili and almaciga trees that are important dollar earners of the country.

Forester Ella has in fact notable and exemplary accomplishments in forest product research and in generation, commercialization, and transfer of technologies on scientific tapping of tree exudates that earned him the honor of his Alma Mater, the University of the Philippines Los Baños, College of Forestry and Natural Resources (UPLB-CFNR) that bestowed him the Most Outstanding Alumnus Award (Mancono Award) in April 2012.

According to Ella, to sustain the yield of resin, such trees must be tapped properly. Over-tapping, deep tapping, and frequent re-chipping can damage and eventually kill the trees. Ella formulated the scientific procedures for harvesting different kinds of local resins to prolong the life of exudates-producing trees andincreasetheir resin yield. Benefitting out of Ella's work

Ella receives his trophy from CFNR Dean Dr. Juan M. Pulhin

are those who obtain livelihood from collecting resins such as pili growers and indigenous communities of the Dumagats, Tagbanuas, Bataks, Mandayas, Maranaos, Palau-ans, Manobos, Isnegs, Aetas, and Bungkalots.

The Mancono Award is the highest award given by the UPLB-CFNR Alumni Association to its distinguished graduates. Ella finished his Bachelor's degree in Forestry in 1973 and Master of Science in Forestry in 1983 at UPLB.

Ella joined the DOST-FPRDI in 1974 and was conferred the rank of Scientist III in the DOST Scientific Career System in 2001. He was given the UPLB-CFNR Institutional Service Award in 2003 and the National Research Council of the Philippines' Research Achievement Award also in 2003, among others. He has also won in various technical paper competitions both local and international. Moreover, Ella authored numerous books and scientific articles on wood anatomy, wood identification, and utilization of non-wood forest products.

---

development of multi hazards information campaign and detailed mapping. Through solid collaboration with several government agencies, this resulted to better safeguarding of communities from natural risks.

Lastly, Dr. Solidum was instrumental in the approval of several important internationally funded projects that promoted effective utilization of hazards information and improved the understanding of earthquake, tsunami and volcanic processes in the country.

"I'm very happy (with the Gawad CES), but essentially this is for the whole PHIVOLCS family," said Dr. Solidum of the award. "I had to share my ideas and guide the agency, but the accomplishments were the fruits of team effort."

Meanwhile, Dr. Esperancilla told that his award is dedicated to the DOST 8 family "who worked beyond what is expected of them."

"Our goal was simplyto provide better S&T services each time and make a difference in the lives of the people we serve. Our joy comes everyday from the warm smiles of our clients who are satisfied with out services. This award comes as a bonus and we thank CESB for the recognition," he added.

Dr. Solidum has been in the government for 28 years, while Engr. Esperancilla had 29 years of government service.

Dr. Solidum never left PHIVOLCS since 1984, after finishing his Bachelor's degree in Geology in UP Diliman. He attained his Masters Degree in Geological Science from the University of Illinois and completed his PhD in earth Science at the Scripps Institute of Oceanography, University of California in San Diego.

Engr. Esperancilla, meanwhile, worked first for the Department of Trade and industry (DTI) before joining DOST in 2003. He graduated with the Bachelor's degree in Mechanical Engineering from the University of Iloilo, and earned his Master's degree in Business Management at the University of the Philippines-Visayas.

DOST's retired career scientist with Asec. Marilou Orijola, Usec.Carol M. Yorobe and Civil Service Commission Chair. Francisco Duque *(middle).*

Laurels for retired career scientists

BY ALIAN ACE ACLAN
S&T Media Service, *STII*

THE DEPARTMENT of Science and Technology recognized six retired scientists who had individually contributed their knowledge to the science community last March 29 at the Eastwood Richmonde Hotel. The said recognition was hosted by the office of DOST Assistant Secretary Maria Lourdes Orijola. Giving recognition to the retired career scientists were Commission on Civil Service Chair Francisco T. Duque III with DOST Undersecretary Carol M. Yorobe who represented DOST Secretary Mario Montejo.

Dr. Eulito U. Bautista, Scientists 3, PhilRice (Conferment: Feb 2002; Retired: 2012) Dr. Bautista specializes in the manufacture and design of farm machinery and post-harvest equipment. He obtained his PhD degree in Agricultural Sciences from the University of Tsukuba in Japan. Bautista also wrote and published 84 technical and scientific papers on post harvest processing. He holds several patents on agricultural machines that include fertilizer applicator, drum seeder, rice and flour mills, rice reaper, and seed cleaner which have been widely commercialized in the country.

Dr. Victoria B. Cosico, Scientist 1, CODA (Conferment: May 1999; Retirement:2011) Dr. Cosico is a botany and crop physiology specialist. She was the former head of Crop Physiology and Agronomy Department of the Cotton Development Administration. Her research focus on plant physiology and agronomy in relation to the variety, pest management and water requirement is to improve the productivity of the local cotton varieties. In 2001-2011, she conducted a study on Bt cotton which became part of the limited field trial report of the project. She served as the chair of the Institutional Biosafety Committee of CODA.

Dr. Domiongo A. Madulid, Scientist 4, National Museum (Conferment: October 2001;Retirement:2011) Six species of plants were named after him in recognition of his scientific discoveries. Dr. Madulid was the chief of the Botany Division in the Philippine National Museum before his retirement in the government in August 2011. He founded and became the first president of the Association of Systematic Biologists of the Philippines in 1982.

Dr. Celeste C. Tanchoco, Scientist 3, DOST–Food and Nutrition Research Institute (Conferment: September 2002; Retirement: 2012) Dr. Tanchoco was a former nutrition promoter in 1970-1972 at DOST-FNRI and led the "Nutrition School on Air." She was also a researcher on clinical nutrition in which she led studies on glycemic (carbohydrates in blood sugar) effect of food, enteral nutrition, and the tolerance to high dose of vitamin A (which served as basis for the policy formulation of the Department of Health), risk to osteoporosis, and health implications of egg consumption. Her recent studies focuson the effectiveness of the Whiz Kids program and Kinetic Kids Fitness program for School Children.

Dr. Gabriel Romero, Scientist 1, PhilRice (Conferment:February 2002; Retirement:2012). Dr. Romero was the principal scientist of PhilRice in charge of the collection, conservation, characterization and DNA fingerprinting of rice germplasm. Some of his significant contributions include the genetic analysis and breeding of rice varieties resistant to the Tungro virus. While he was at PhilRice, the size of the traditional varieties in collection nearly doubled to around 5,000 accessions and around 1,000 germplasm accessions. Some 20 hybrid parental lines were also fingerprinted.

Dr. Severino S. Magat, Scientist 4, Philippine Coconut Authority (Conferment:19 December 1991; Retirement: 2011) Dr. Magat was the Department Manager III and program leader of Agricultural R&D at the Philippine Coconut Authority before he retired from government service in 2011. As a scientist, he provided advisory on crop agronomy, plant nutrition, integrated soil fertility, management, and sustainable cropping system. Dr. Magat served as the program leader from 1996-2003 of the Action Piloting of Promising Technologies on Coconut with Emphasis on Multi-Location Testing of Recommended Coconut Varieties and Hybrids. Dr. Magat was also one of the recipients of PANTAS Award for of Outstanding Scientist.

GOLD for the GIFTED

DOST-Pisay studes get top plum in *ASEAN* science tilt

By FRAMELIA V. ANONAS
S&T Media Service, *STII*

STUDENTS FROM the Department of Science and Technology's Philippine Science High School - Western Visayas Campus in Iloilo got the grand champion title in the ASEAN+3 Junior Science Odyssey held June 10-17, 2012 in Brunei Darusallam. Bagging seven gold medals for the championship in the nine-country competition are Ina May Sison, Magin Benedict Ferrer, and Vicah Adrienne Villanueva.

Meanwhile, PSHS-Central Luzon (Clark) students Gabriel Pineda, Gabriel Sophia Seva and Michael Eubanas won four silver and one bronze medals in the same tilt, bringing a total of 12 medals for the Philippine team.

Second place went to the Korea Science Academy team of the Korea Advanced Institute of Science and Technology while third place went to the the Hwa Chong Institution team of Singapore.

In Biology, the team of Sison, Ferrer, and Villanueva grabbed the top prize for the study "Differences in leaf morphology of plants in the Andulao rainforest", while Seva's team placed second for the study "Variations in microclimate and soil characteristics in the tropical rainforest of Bukit Sawat."

Meanwhile, Pineda's team won the bronze for the study "Seedling abundance, density, height and size-classes distribution in a tropical rain forest in Bukit Sawat, Brunei." Individual scores were added to the team score to get the over-all final score for each country.

"The APT JSO is the equivalent of the International Science Olympiad in Asia," said Dr. Josette T. Biyo, PSHS System executive director, who accompanied the team herself. "It is a science competition that assesses laboratory skills in Chemistry, Biology and Physics."

For the lab skills assessment, the contenders were grouped into teams of three members from the same country. They were tasked to do titration experiment for Chemistry on which they were judged based on the accuracy of their individual titrations. For Physics assessment, the students experimented with dye sensitized solar cells using natural pigments obtained from plants of Brunei's tropical rainforest.

For Biology assessment, the students studied the flora and fauna, including the microclimate in two of Brunei's rainforests. Their findings were presented to a panel of judges and to student and teacher participants. They were assessed based on teamwork, skills, effort and communication skills.

Organized by the ASEAN Center for the Gifted in Science, the eight–day event was participated in by 70 gifted students with ages 13-15 years from Brunei Darussalam, Indonesia, Malaysia, People's Republic of China, the Philippines, Republic of Korea, Singapore, Thailand and Vietnam. Sweden also participated in as an observer country.

Hosting the event was the Brunei Ministry of Education in collaboration with the Universiti Brunei Darussalam and the Brunei Ministry of Development. The Philippine team was coached by Flordeliza Remonde and Arnold Pitpetunge of PSHS Western Visayas and Central Luzon campus, respectively.

The winners in the ASEAN+3 Junior Science Odyssey with the PSHS System Exec. Director Josette Biyo (fourth from right).

DOST VII launches SETUP catalogue

By YVETTE HOPE LABUS
S&T Media Service, *DOST VII*

THE DEPARTMENT of Science and Technology in Region VII in the early part of the year launched the Small Enterprise Technology Upgrading Program (SETUP) Catalogue Launchingin Sudlon, Lahug Cebu City.The catalogue includes 91 pages of all the best products and designs from 42 of the 82 SMEs that had enrolled to SETUP in the region. The SMEs are based in Cebu, Bohol, Negros Oriental and Siquijor. The collection also features stories of said beneficiaries detailing their situations before and after technology assistance provided by DOST VII.

"SETUP is one of the best programs of the DOST," said Regional Director Rene Burt Llanto in his opening remarks. He added that the program is unique since it is the first time that DOST helped enterprises directly. It corrected the common misconception that S&T is only dedicated to research and the academe.

Communications specialist Ms. Conchita Bigornia, wrote all 42 stories of the catalogue.

Also present during the launch were Atty. Alejandro Florian Alcantara, owner of Raw Brown Sugar Milling Co., representing the featured beneficiaries; DOST 7 ARD for Technical Operations EdilbertoParadela; and ARD for Finance & Admin. Bernarda Perez.

Since 2002, SETUP has been one of the strongest programs in the region that spurred economic development. It is a program of the DOST that assists SMEs in improving their productivity and competitiveness. The program enables firms to address their technical problems through technology transfer and technological interventions to improve productivity.

The full catalogue can be viewed online at the publicaionsmenu of the DOST 7 website at http://www.ro7.dost.gov.ph

CATALOGUE UNVEILED. Communications Specialist Conchita Bigornia, DOST VII Regional Director Rene Burt Llanto, Raw Brown Sugar Milling Co. President Alejandro Florian Alcantara, DOST VII ARD for Finance and Admin. Bernarda Perez and DOST VII ARD for Technical Operations Edilberto Paradela unveil the catalogue which features products and stories from DOST-assisted SMEs in Region VII.

Bicolanos get trained on culinary herbs and spices

By DOMINADOR PEÑA
S&T Media Service, *DOST V*

BICOLANDIA IS a spice country alright and Bicolanos need to fine-tune their tastes so they can come up with better food preparations that will excite the gustatory nerves of spice lovers. This is the reason why DOST V's Nutrition Communication Network (NUTRICOMNET) conducted the Training on Production of Culinary Herbs and Spices early this year at Bigg's Diner Daraga, Albay. This year's first NUTRICOMNET major activity was participated in by NUTRICOMNET members, media and DepEd agriculture supervisors from the Divisions of Masbate, Masbate City, Catanduanes, Camarines Norte and Tabaco City.

Hosting the training was the Agricultural Training Institute in Guinobatan Albay wih Dr. Gloria Salazar, DA-RFU V, and Dr. Gilda De. Asis and Ms. Julieta Casaul, CBSUA as resource persons. The tandem shared the latest knowledge and their own insights and experiences on Culinary Herbs and Spices based on current Research and Development (R&D) undertakings conducted in their institutions. Discussed were the nature and characteristics, as well as the nutrient composition and health benefits derived from a variety herbs and spices. They also advised the participants to grow these plants in small containers, for home and even in indoor gardens.

Mr. Jose Arnel Obias, Manager, Green Earth Café, Naga City gave a comprehensive lecture on healthy lifestyle with emphasis on vegetarian (all vegetables, no meat, with or without poultry/dairy products) vis-a-vis vegan diet (all vegetables, no meat/poultry and dairy products). He encouraged the group to consume plant-based foods such as fruits, vegetables, grains, nuts and seeds.

The participants were also treated to actual cooking demonstration on the preparation of soy cream, mint and tomato sauce, vegan pizza and grilled veggies. Obias shared his own recipes and distributed these to members who were willing to try and adopt the vegetarian and vegan cooking.

No chemical for this farmer-scientist's ube production

By JANISHA J. NOCETE
S&T Media Service, *CVCIRRD-RACE*

ALBURQUERQUE, BOHOL – "We should not just rely on the old farming methods that have been handed down to us. Instead, we should continually search for new ways to increase and improve our production," so said Ireneo S. Penticase to some 48 farmers in a techno forum at the field day of the Science and Technology-based Farm (STBF) on chemical-free ube (yam) production.

Penticase is a Magsasaka-Siyentista (MS) implementing the STBF project, and in this forum he shared his successful story on his ube farming, including the use of vermicast and vermitea.

According to Penticase, since he started using vermicast in his 250-square meter farm lot two years ago, he observed a significant increase in his ube production. His 5.4-ton yield increased to 12.4 tons in 2011. However, due to diseases and pest infestation, his yield this year decreased to 7.82 tons but hopes that the continuous use of the vermitea as fertilizer and pesticide will help him get a good yield again.

He also found out that the use of vermicast and vermitea prolonged the productive life of ube compared with those applied with commercial fertilizer.

Agricultural Training Institute Center Director Carolyn May Daquiolikewise encouraged the ube farmers to adopt the MS farming practices. She added they should also learn to add value to their crops.

"Soon, Bohol will no longer sell ube tubers. What we will be producing is ube powder -- same taste, same aroma, but light, easy to transport, and has a longer shelf life," Daquio stressed.

Meanwhile, Dr. Melvin Carlos, director of the Technology Transfer and Promotion Division of DOST's Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development (PCAARRD), advised ube growers to be more patient and persistent as the demand for ube continues to increase not only locally, but also internationally.

He assured the farmers that PCAARRD will always be there to support them and that the Council will work even harder to help them increase their production.

Incidentally, the field day was hosted by the Farmers Information and Technology Services Center in Alburquerque, Central Visayas Consortium for Integrated Regional Research and Development, and Agricultural Training Institute in Region 7 in collaboration with PCAARRD.

Shaking up Region 6 organic muscovado industry

By OFELIA F. DOMINGO
S&T Media Service, *PCAARRD*

A P2.89-MILLION research fund from the Department of Science and Technology-Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development is expected to shake up the organic muscovado industry in Region 6 and give it chunky bits of sweet success.

The grant is intended to study and develop Western Visayas' muscovado industry through the program "Science and technology (S&T) development of the organic muscovado industry in Western Visayas." The research outputs will help sugarcane farmers improve their cultural management practices; increase their volume of production; and raise their income, according to PCAARRD.

Moreover, partner-member agencies' counterpart shared a total of P1.2 million as a way of expressing their commitment to address the needs of the industry.

The program, led by the Negros State College of Agriculture, will run for a year and has two components. The first component, which started in October 2011, is a comprehensive analysis of the muscovado supply chain in Antique and a benchmark study in Queensland, Australia, which has the biggest concentration of organically managed sugarcane farms worldwide.

The second component is a technology demonstration of organic sugarcane production for muscovado processing in Negros Occidental and Antique. This component started in December 2011. Under this component, trials will be set up in farmers' fields to demonstrate organic sugarcane production. S&T interventions on land preparation, choice of variety, nutrient management, and pest control management will be introduced in the farm.

Results of the demonstration trials will be compared with farmers' existing inorganic method of sugarcane production. Costs and returns involved in both farmers' practice and recommended technology will be compared. The technology on organic sugarcane production will be promoted through field days and other means to encourage other farmers in the region to do the same.

NCSA will partner with TRIAS and INSOL Development Foundation in enhancing the skills and capability of the farming communities in organic muscovado processing. Both non-government organizations are known for serving small-scale Filipino entrepreneurs.

Other program partners include University of the Philippines Visayas, Sugar Regulatory Administration, University of Antique, Office of the Provincial Agriculturist, Regional Office of the Department of Science and Technology, and Metals Industry Research and Development Center.

DOST's "smart" science HS to rise in Koronadal City

By FRAMELIA V. ANONAS
S&T Media Service, *STII*

Philippine Science High School- Soccsksargen groundbreaking. Science Sec. Mario Montejo, DOST-12 Director Zenaida Laidan, Gov. Arthur Pingoy, PSHS System Executive Director Josette Biyo, and Koronadal Mayor Peter Miguel show their unified support to the establishment of the PSHS- Soccsksargen by laying the capsule and sealing the landmark for the future site of the so-called "smart campus" in Mindanao.

"THIS WILL be a smart campus," so said Science Secretary Mario Montejo on his plans for the Philippine Science High School - Soccsksargen campus during its groundbreaking ceremony at Brgy. Paraiso, Koronadal City on June 22, 2012. The campus is the is the latest PSHS to be built.

"We'll make this new campus really unique, not only in curriculum but also in physical structure and design of the buildings and architecture. This campus will stand out," he added.

The PSHS system, also endearingly called "Pisay," is under the administration of the Department of Science and Technology. Pisay campuses prepare students for science careers, thus designing their curriculum with science and mathematics in focus but balanced with humanities and the arts.

The newest PSHS will sit on a five-hectare land worth P7.3 million donated by the South Cotabato province. The campus will comprise academic buildings, research and laboratory facilities, dormitory, and other facilities to complete the learning experience of students.

"Hindi po kayo manghihinayang sa budget na ibibigay nyo," Dr. Josette Biyo, executive director of the PSHS system, said. "We promise to give your kids the best education."

Earlier, Sec. Montejo reported that PSHS students from the Western Visayas campus bagged the grand champion title in the ASEAN+3 Junior Science Odyssey held June 10-17, 2012 in Brunei Darusallam. Meanwhile, while another set of PSHS students from the PSHS-Central Luzon (Clark) students won four silver and one bronze medals in the same tilt, bringing a total of 12 medals for the Philippine team.

"This just proves that PSHS students are world class," said Sec. Montejo.

The new campus received full support from various leaders to jumpstart its construction in time for next school year. Gov. Arthur Pingoy Jr allocated P5 million to fund the initial construction of the campus's facilities, while YACAP Partylist Carol Jayne Lopez donated P5 million which Special Allotment Release Order (SARO) she handed to Gov. Pingoy during the turn-over ceremony.

In addition, Lopez also allocated an additional P1 million as a counterpart to Gov. Pingoy's additional P1 million budget for constructing the road going to the campus.

Koronadal City Mayor Peter Miguel allocated P5 million while, Agham partylist Rep. Angelo Palmones, who pledged P2 million also committed an additional 1 million for road construction from his Priority Development Assistance Fund (PDAF).

Pingoy revealed that the provincial government has already prepared the campus' initial program of work, to be approved by Sec. Montejo and Dr. Biyo. Pingoy hopes that the campus will be ready by 2013.

Meanwhile, PSHS- Soccsksargen is now accepting applications for school year 2013-2014 up to July 6. DOST-12 Director Zenaida Laidan invites students who are in the top 10 percent of the graduating class and those with special aptitude in science and mathematics to take the PSHS National Competitive Examination on Sept. 29, 2012.

DEPARTMENT OF SCI

Science, Technology
Working Together for

Exhibits • Press Conference • 34th NAST Annual Scientific Product and Invention Demo • Interactive Activity • Talk & ON3 Nationals • NICE Awarding Ceremony

FOR MORE DETAILS,
PLEASE VISIT OUR WEBSITES:

www.nstw.dost.gov.ph
www.science.ph

ENCE AND TECHNOLOGY

SMX Convention Center
Seashell Lane, Mall of Asia Complex
Pasay City

10-14 July 2012

2012 National Science and Technology Week

and Innovation:
Growth and Development

Meeting • Technology & Industry Forum • SETUP Forum
Play • NSTW Awards • 7th OYSI Annual Meeting & Convention
• In Touch with Excellence • DOST Run for Wellness

New Doppler radar in Catanduanes

By FRAMELIA V. ANONAS
S&T Media Service, *STII*

THE DEPARTMENT of Science and Technology, through the sponsorship of the Japan International Cooperation Agency, installed last May a new Doppler radar in Bato, Catanduanes. Set in a very strategic location, the Doppler faces the Pacific Ocean and lies in the Bicol area where 90 percent of typhoons pass through this corridor every year. The Doppler radar functions as a sentry that monitors weather conditions that affect not only Bicolandia and the Visayas but most areas in the western side of the archipelago.

"The Doppler radar serves as a sentinel. It is always on guard to provide valuable info on incoming typhoon," said DOST Secretary Mario Montejo. "Its installation in a highly strategic location like in Bato, Catanduanes is very vital to the government's disaster preparedness and mitigation program."

The new Doppler radar is equipped with advanced features such as more extensive weather monitoring, rainfall measurement, and destructive winds tracking. The radar comes with state-of-the-art solid state transmitter that can transmit and analyze information in real time.

Through the Doppler radar, DOST's Philippine Atmospheric, Geophysical and Astronomical Services Administration's (Pagasa) will be able to detect and track rain-clouds and potential thunderstorms more accurately.

President Benigno Aquino III who inaugurated the project expressed the importance of the Doppler project which he personally pushed, and was attentive to Sec. Montejo's presentation on the long-term plans on radar systems that are capable of rainfall forecast.

"The DOST is steadfast in its commitment to improve weather forecasting and timeliness of detecting weather conditions," said Sec. Montejo. "It is our aim to minimize human casualty during weather disturbances."

The new Doppler radar replaced an existing radar system that was installed in 1964. Two more Doppler radars will be established to complement the system—one in Aparri, Cagayan province and another in Guiuan, Samar province to be installed in December this year and in September 2013, respectively.

The Doppler radar which costs about P580 million was funded by grant aid from the JICA. The total project cost totals to P1.7 billion.

The newly-installed Doppler radar in Bato, Catanduanes that serves as a sentinel to provide valuable information on incoming typhoons. Strategically situated in the Bicolandia where most typhoons pass through, the Doppler radar will have a very crucial role in the government's disaster preparedness and mitigation program. (Photo by Henry A. de Leon, S&T Media Service)

President Benigno S. Aquino III thanks the Japan International Cooperation Agency, represented by Motohiko Kato, deputy chief of mission and consul general of the Japanese Embassy , for funding the Doppler project through a P1.7 billion grant aid. Looking on are DOST Sec. Mario Montejo (second from left), Energy Secretary Jose Almendras (leftmost), and Catanduanes Governor Joseph Cua (right). (Photo by Henry A. de Leon, S&T Media Service)

Cyclones, storms, typhoons

Why "rains" are different

Oceans and seas have great influence on the weather of continental masses. A large portion of the solar energy reaching the sea-surface is expended in the process of evaporation. These water evaporated from the sea/ocean is carried up into the atmosphere and condenses, forming clouds from which all forms of precipitation result. Sometimes, intense cyclonic circulations occur which is what we call the tropical cyclones.

Tropical cyclones are warm-core low pressure systems associated with a spiral inflow of mass at the bottom level and spiral outflow at the top level. They always form over oceans where sea surface temperature, also air temperatures are greater than 26°C. The air accumulates large amounts of sensible and latent heat as it spirals towards the center. It receives this heat from the sea and the exchange can occur rapidly, because of the large amount of spray thrown into the air by the wind. The energy of the tropical cyclone is thus derived from the massive liberation of the latent heat of condensation.

Tropical cyclone is defined as a non-frontal, synoptic-scale cyclone developing over tropical and sub-tropical waters at any level and having a definitely organized circulation. In other parts of the world, these are referred to as hurricanes, typhoons or simply tropical cyclones depending on the region. In the North Atlantic, Eastern North Pacific and South Pacific Ocean, they are called "hurricanes". In the bay of Bengal, Arabian Sea and Western South Indian Ocean, the name is "cyclonic". In the eastern part of the Southern Indian Ocean, it is "willy-willy", and in the Western North Pacific Ocean, they are called "typhoons".

Tropical cyclones can only form over oceans of the world except in the South Atlantic Ocean and the south eastern Pacific where a tropical cyclone could never be formed due to the cooler sea surface temperature and higher vertical wind shears. They develop at latitudes usually greater than 5° from the equator. They reach their greatest intensity while located over warm tropical water. As soon as they move inland, they begin to weaken, but often not before they have caused great destruction.

The Philippines is prone to tropical cyclones due to its geographical location which generally produce heavy rains and flooding of large areas and also strong winds which result in heavy casualties to human life and destructions to crops and properties. Thus, it is of utmost importance to have sufficient knowledge on such maritime phenomena for beneficial purposes.

Tropical cyclones derive their energy from the latent heat of condensation which made them exist only over the oceans and die out rapidly on land. One of its distinguishing features is its having a central sea-level pressure of 900 mb or lower and surface winds often exceeding 100 knots. They reach their greatest intensity while located over warm tropical waters and they begin to weaken as they move inland. The intensity of tropical cyclones vary, thus , we can classify them based upon their degree of intensity. The classification of tropical cyclones according to the strength of the associated winds are as follows:

TROPICAL DISTURBANCE is a discrete weather system with an apparent circulation. It is characterized by a poorly developed wind circulation of weak velocities and with one or no closed isobars (isobars are lines of equal pressures). This is commonly observed throughout the wet tropics and subtropics.

TROPICAL DEPRESSION is a weak low pressure disturbance with a definite surface circulation having maximum wind speed of up to 63 kilometers per hour (kph) or approximately less than 25 mile per hour (mph). It has one or more closed isobars and is most common in the equatorial regions or intertropical convergence and less frequent in the trades.

TROPICAL STORM, a moderate tropical cyclone with maximum wind speed of 64 to 118 kph (25 to 75 mph) and with closed isobars.

TYPHOON, an intense tropical cyclone with maximum wind speed exceeding 118 kph.

Source: DOST-PAGASA

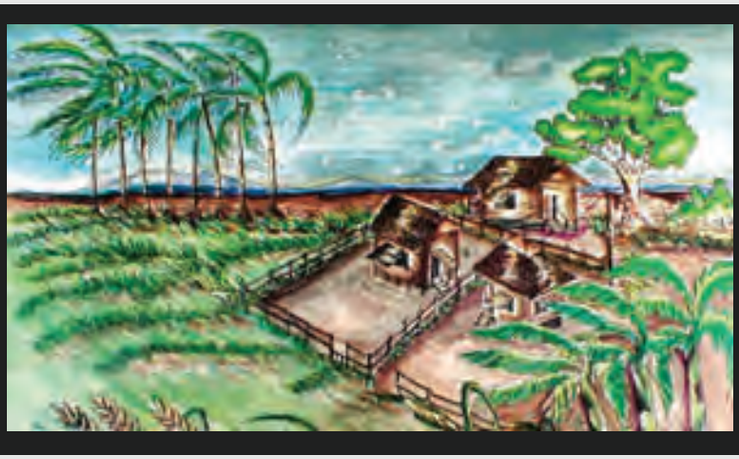
What public storm signals mean

Public storm warning signal No. 1 (PSWS # 1)

Meteorological conditions
- A tropical cyclone will affect the locality.
- Expect winds of 30-60 kph or intermittent rains in at least 36 hours (When the tropical cyclone develops very close to the locality, expect shorter lead time of wind occurrence to be specified in the warning bulletin.)

Impact of the wind:
- Twigs and branches of small trees may be broken.
- Some banana plants may be tilted or knocked down.
- Some houses of very light materials such as nipa and cogon may be partially unroofed.
- Unless thisw arnings ignali su pgradedd uringt heen tireex is tence of the tropical cyclone, there may only be very light or no damage at all to the exposed communities.
- Rice crop, however, may suffer significant damage when it is in its flowering stage.

Precautionary measures:
- When the tropical cyclone is strong or is intensifying and is moving closer, this signal may be upgraded to the next higher level.
- The waves on coastal waters may gradually develop and be come bigger and higher.
- The people are advised to listen to the latest severe weather bulletin issued by PAGASA every six hours. In the meantime, business may be carried out as usual except when flooding occurs.
- Disaster preparedness is activated to alert status.



Public storm warning signal No. 2 (PSWS #2)

Meteorological conditions
- A tropical cyclone will affect the the locality.
- Winds of greater than 60-100 kph may be expected in at least 24 hours.

Impact of the wind:
- Some coconut trees may be tilted, others may be broken.
- Few big trees may be uprooted.
- Many banana plants may be knocked down.
- Rice and corn may be adversely affected.
- Large number of nipa and cogon houses may be partially or totally unroofed.
- Some old galvanized iron roofings may be peeled off.
- In general, the winds may bring light to moderate damage to the exposed communities.
- The sea and coastal waters are dangerous to small seacrafts

Precautionary measures:
- Special attention should be given to the latest position, the direction and speed of movement and the intensity of the storm as it may intensify and move towards the locality.
- The general public especially people travelling by sea and air are cautioned to avoid unnecessary risks.
- Outdoor activities of children should be postponed.
- Secure properties before the signal is upgraded.
- Disaster preparedness agencies / organizations are in action to alert their communities.

It is important to note that when Public Storm Warning Signal Number is put in effect for the first time, the corresponding meteorological conditions are not yet prevailing over the locality. This is because the purpose of the signal is to warn people that the given meteorological conditions are about to happen. It must be noted also that the approximate lead time to expect the range of the wind speeds given for each signal number is valid only when the signal number is put in effect for the first time. Thus, the associated meteorological conditions are still expected in at least 36 hours when PSWS #1 is put in effect initially; in at least 24 hours with PSWS #2; in at least 18 hours with PSWS #3; and in at least 12 hours with PSWS #4. The lead time shortens correspondingly in the subsequent issues of the warning bulletin when the signal number remains in effect as the tropical cyclone comes closer.
It is also important to remember that tropical cyclones are constantly in motion; generally towards the Philippines when PAGASA is issuing the warning. Therefore, the Public Storm Warning Signal Number over a threatened/ affected locality may be sequentially upgraded or downgraded. This means that PSWS #1 may be be upgraded to PSWS #2, then to PSWS #3 and to PSWS #4 as

Public storm warning signal No. 3 (PSWS #3)

Meteorological conditions
- A tropical cyclone will affect the locality.
- Winds of greater than 100-185 kph may be expected in at least 18 hours.

Impact of the wind:
- Many coconut trees may be broken or destroyed.
- Almost all banana plants may be knocked down and a large number of trees may be uprooted.
- Rice and corn crops may suffer heavy losses.
- Majority of all nipa and cogon houses may be unroofed or destroyed and there may be considerable damage to structures of light to medium construction.
- There may be widespread disruption of electrical power and communication services.
- In general, moderate to heavy damage may be experienced, particularly in the agricultural and industrial sectors.

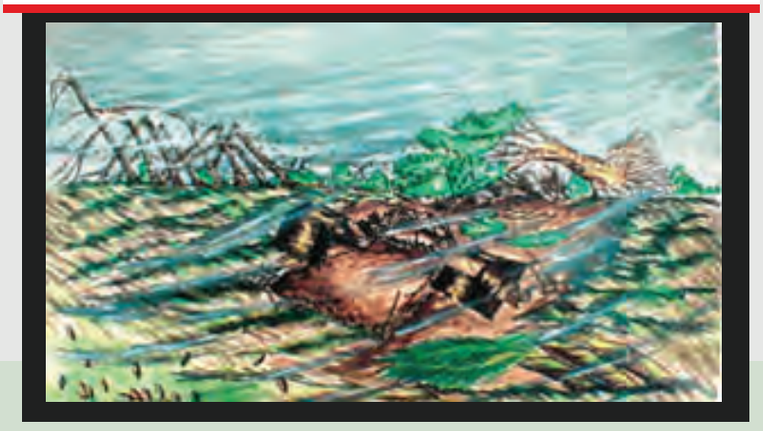
Precautionary measures:
- The disturbance is dangerous to the communities threat ened/affected.
- The sea and coastal waters will be very dangerous to all seacrafts.
- Travel is very risky especially by sea and air.
- People are advised to seek shelter in strong buildings, evacuate low-lying areas and to stay away from the coasts and river banks.
- Watch out for the passage of the "eye" of the typhoon indicated by a sudden occurrence of fair weather immediately after very bad weather with very strong winds coming generally from the north.
- When the "eye" of the typhoon hit the community do not venture away from the safe shelter because after one to two hours the worst weather will resume with the very strong winds coming from the south.
- Classes in all levels should be suspended and children should stay in the safety of strong buildings.
- Disaster preparedness and response agencies/organizations are in action with appropriate response to actual emergency.

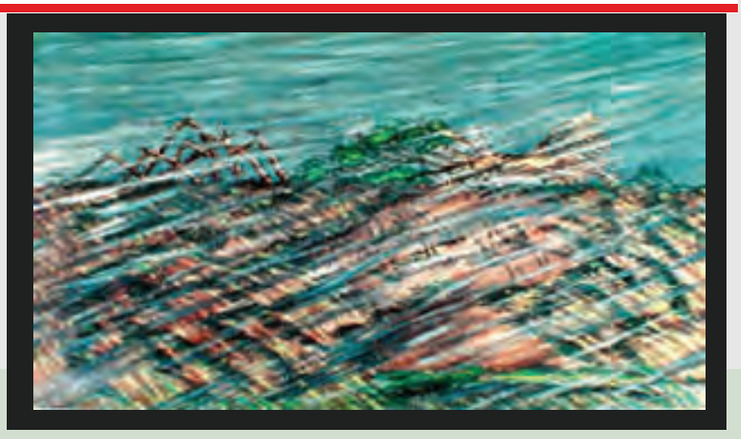
Public storm warning signal No. 4 (PSWS #4)

Meteorological conditions
- A very intense typhoon will affect the locality.
- Very strong winds of more than 185 kph may be expected in at least 12 hours.

Impact of the wind:
- Coconut plantation may suffer extensive damage.
- Many large trees may be uprooted.
- Rice and corn plantation may suffer severe losses.
- Most residential and institutional buildings of mixed con struction may be severely damaged.
- Electrical power distribution and communication services may be severely disrupted.
- In the overall, damage to affected communities can be very heavy.

Precautionary measures:
- The situation is potentially very destructive to the community.
- All travels and outdoor activities should be cancelled.
- Evacuation to safer shelters should have been completed since it may be too late under this situation.
- With PSWS #4, the locality is very likely to be hit directly by the eye of the typhoon. As the eye of the typhoon approaches, the weather will continuously worsen with the winds increasing to its strongest coming generally from the north. Then a sudden improvement of the weather with light winds (a lull) will be experienced. This means that the eye of the typhoon is over the locality. This improved weather may last for one to two hours depending on the diameter of the eye and the speed of movement. As the eye moves out of the locality, the worst weather experienced before the lull will suddenly commence. This time the very strong winds will come generally from the south.
- The disaster coordinating councils concerned and other disaster response organizations are now fully responding to emergencies and in full readiness to immediately respond to possible calamity.





necessary when a very intense typhoon is approaching or downgraded when the typhoon is moving away. However, in case of rapid improvement of the weather condition due to the considerable weakening or acceleration of speed of movement of the tropical cyclone moving away from the country, the downgrading of signal may jump one signal level. For example, PSWS #3 may be down-graded to PSWS #1 or all signals from PSWS #2 may be lowered.

The delineation of areas for a given signal number is based on the intensity, size of circulation and the forecast direction and speed of movement of the tropical storm or typhoon at the time of issue of the warning bulletin. The change in intensity, size of circulation or movement of the tropical cyclone also determines the change in the PSWS number over a given locality. Source:DOST-PAGASA



Weather forecasting and its nuances

What is a weather forecast?

A weather forecast is simply a scientific estimate of future weather condition. Weather condition is the state of the atmosphere at a given time expressed in terms of the most significant weather variables. The significant weather variables being forecast differ from place to place. In the Philippines, the weather parameters with significant variation and therefore of interest to the users of the forecast are cloudiness, rainfall and wind.

How is a weather forecast made?

In forecasting the weather, a Meteorologist must at least know something about the existing weather condition over a large area before he can make a reliable forecast. The accuracy of his forecast depends largely upon his knowledge of the prevailing weather conditions over a very wide area. The forecast decision is based on various forecasting tools. The basic tool of a weather forecaster is the WEATHER MAP. The weather map depicts the distribution patterns of atmospheric pressure, wind, temperature and humidity at the different levels of the atmosphere. There are two types of the basic weather map namely, the surface map and the upper-air maps. There are five standard levels of the upper-air maps that are constructed twice daily at twelve-hourly interval. The surface maps are made four times daily at six-hourly intervals. On the surface maps, the distribution patterns of rain or other forms of precipitation and cloudiness can also be delineated.

1st Step: Observation

• Surface observations are made at least every three hours over land and sea. Land-based weather stations around the world and automatic stations observe the atmospheric pressure, wind direction and speed, temperature of the air, humidity, clouds, precipitation and visibility using standard weather instruments such as the barometer, wind vane, anemometer, thermometer, psychrometer or hygrometer and raingauge. In addition to these, coastal weather stations, weather ships and ocean data buoy observe the state of the sea by observing the height and period of wave.

• Upper air stations around the world also make observations at least every twelve hours. The pressure, temperature, dew point temperature, wind direction and speed are observed at selected levels in the atmosphere using radiosondes which record these data by tracking helium-filled balloons attached to transmitters. Another apparatus, the theodolite, is used in observing wind direction and speed also at selected levels. In addition to these, commercial air planes observe the weather along their routes at specified times.

• Meteorological satellites, geostationary and polar orbiting, take pictures of the cloud imagery of the atmosphere. These satellites take picture of the earth's cloud formations every hour and continuously, respectively.

• Weather radars are also used to observe the cloud coverage within the range of the radar.

• A vast array of weather data are fed to the computer which analyzes them as programmed and makes a time integration of physical equations. This is called numerical weather prediction.

2nd Step: Collection And Transmission Of Weather Data

Weather observations which are condensed into coded figures, symbols and numerals are transmitted via radiophone, teletype, facsimile machine or telephone to designated collection centers for further transmission to the central forecasting station at WFFC. Weather satellite pictures are transmitted to ground receiving stations while radar observations are transmitted to forecasting centers through a local communication system.

3rd Step: Plotting Of Weather Data

Upon receipt of the coded messages, they are decoded and each set of observations is plotted in symbols or numbers on weather charts over the respective areas or regions. Observations made over land and sea are plotted on the surface or mean sea level charts which are prepared four times a day. Radiosonde, theodolite, aircraft and satellite wind observations are plotted on upper level charts which are prepared twice daily.

4th Step: Analysis Of Weather Maps, Satellite And Radar Imageries And Other Data

Current weather maps are analyzed as follows:

• SURFACE (MSL) CHART: The data plotted on this weather map are analyzed isobarically. This means the same atmospheric pressure at different places are inter-connected with a line taking into consideration the direction of the wind. Through this analysis, weather systems or the so-called centers of action such as high and low pressure areas, tropical cyclones, cold and warm fronts, intertropical convergence zone, can be located and delineated.

• UPPER AIR CHARTS: The data plotted on this weather map are analyzed using streamline analysis. Lines are drawn to illustrate the flow of the wind. With this kind of analysis, anticyclones or high pressure areas and cyclones or low pressure areas can be delineated.

• NUMERICAL WEATHER PREDICTION MODEL OUTPUT: The computer-plotted weather maps are analyzed manually so that weather systems like cyclones and anticyclones, troughs, etc. are located.

• MONITOR WEATHER CHARTS: Plotted data on the cross-section, rainfall and 24-hour pressure change charts are analyzed to determine the movement of wind waves, rainfall distribution and the behavior of the atmospheric pressure.

Compare the current weather maps with the previous 24 - 72 hour weather maps level by level to determine the development and movement of weather systems that may affect the forecast area.

Examine the latest weather satellite picture, noting the cloud formations in relation to the weather systems on the current weather maps.

Compare the latest weather satellite picture with the previous satellite pictures (up to 48 hours) noting the development and movement of weather systems that may affect the country.
Examine the latest computer output of the numerical weather prediction model noting the 24-hour, 48-hour and 72-hour objective forecast of the weather systems that may affect the forecast area.
Analyze the latest radar reports and other minor forecasting tools.

5th Step: Formulation Of The Forecast

After the analysis of all available meteorological information/data has been completed, the preparation of forecasts follows. The first and one of the preliminary steps is the determination as accurately as the data permit, of the location 24 hours hence of the different weather systems and the existing weather over a particular region. In many cases a fairly satisfactory estimate of the direction and rate of movement may be made by simply measuring the movement during the last 12 or 24 hours and then extrapolating, or extending, this movement into the future and hence what weather will be experienced in different areas in the immediate future.

How is the weather forecast disseminated?

The forecasts are then aired in various radio stations by telephone or sent by telefax machines a few minutes after completion and are immediately sent to the weather stations nationwide. Copies are also furnished to different media outlets without delay.

Source: DOST-PAGASA

Reading the weather

WEATHER EXPERTS use many instruments in determining weather conditions in order to make a forecast. Below are some of them:

Thermograph

A thermograph is an instrument that records air temperature continuously on graphing paper. It usually consists of a cylinder made to revolve once each week by means of clockworks inside. A sheet of graph paper is fastened on the outside. A pen-point that rests on the paper traces the temperature curve, according to the expansion and contraction of a sensitive metallic coil or strip corresponding to the reading of a thermometer. These instruments are housed in a thermometer shelter which has double-louvered sides and a double-top roofing designed to permit air to circulate freely through the shelter.

Aneroid Barometer

An aneroid barometer is made by removing the air from a thin, circular, metallic box. With practically no air on the inside the box would collapse. A spring is installed to limit the collapse of the box commensurate to the air pressure or weight of the column of air on the box. If one side of the box is fixed, the other side will move due to changes in atmospheric pressure. The surface of the metallic box is corrugated in order for the box to collapse and return uniformly. The movement of the spring causes a pointer to move over a scale of figure corresponding to the readings of a mercury barometer. Since air pressure decreases with increase in altitude, the aneroid is also used as altimeters. On the altimeter, the scale is marked off in hundreds and thousands of feet or meters above sea level. The altimeters is a basic instrument in aeronautical stations and on board an aircraft.

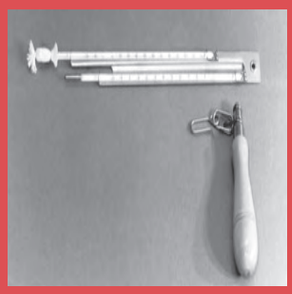
Aerovane

An aerovane indicates both the wind direction and wind speed or simply the wind velocity. It is shaped like an airplane. he nose of the plane points to the direction from which the wind blows and the rotation of the propeller measures the wind speed. The propeller shaft is coupled to a small dynamo which generates current. The amount of current generated depends on the rate of rotation of the propeller which depends on the speed of the wind. The generated current activates a dial which gives a reading equivalent to the wind seed.

Tipping bucket Raingauge

The tipping-bucket raingauge is a type of rainfall recording instrument. It is an upright cylinder that has funnel-shaped collector. The precipitation collected by the collector empties into one side of a "tipping bucket", an inverted triangular contraption partitioned transversely at its center, and is pivoted about a horizontal axis. Once one compartment is filled with rain, it tips, spilling out the water and placing the other half of the bucket under the funnel. The tipping activates a mercury switch causing an electrical current to move the pen in the recorder. Each tipping is equal to one-half millimeter of rainfall.

Sling Psychrometer



The sling psychrometer consists of a dry and wet-bulb thermometer. The term bulb refers to that portion of the glass tube where the mercury is stored. The dry and wet bulbs are exactly alike in construction. The only difference is that the wet-bulb has a piece of muslin cloth or wick wrapped around its bulb and which is dipped in water shortly before the psychrometer is read.

This is how it is done. The weather observer firsts wets the cloth cladding the wet-bulb, whirls the psychrometer a few times, then reads the wet-bulb. He reads the dry-bulb last. Normally, the wet-bulb's reading will be lower than the dry-bulb's. The dry-bulb reading is the air temperature. The difference between the dry and the wet-bulb readings will give, with the aid of a psychrometric table, the dew point temperature and the relative humidity. (Dew point is the temperature at which the water vapor will condense while relative humidity is the ratio of the amount of water vapor actually present in the air to the maximum amount of water vapor the air can hold at a given temperature).

Ceiling Light Projector

A ceiling light projector projects vertically a narrow beam of light on to a cloud base. The height of the cloud base is determined by using a clinometer located at a known distance from the projector to measure the elevation angle included by the illuminated spot on the cloud, the observe, and the projector. From trigo nometry, the height of the cloud base is equal to the distance of the observer from the ceiling light projector multiplied by the tangent of the elevation angle.

Pilot Balloon/Theodolite

A Pilot Balloon is a meteorological balloon that is filled with gas lighter than air. When the pilot balloon is used in conjunction with a theodolite it is used to determine the speed and direction of winds at different levels of the atmosphere. The theodolite is similar to an engineer's transit. It consists of a sighting telescope mounted so that it is free to rotate around a horizontal and a vertical axis and has graduated scales so that the angles of rotation maybe measured while tracking the pilot balloon. The elevation angles and azimuths of the balloon are recorded from the theodolite and these data at the end of the flight which may last for more than an hour are plotted to a plotting board. The wind speed and direction at selected levels are calculated either by trigonometric methods or graphical methods. Night observation is accomplished by attaching a lit paper lantern to the balloon.

Source: DOST-PAGASA

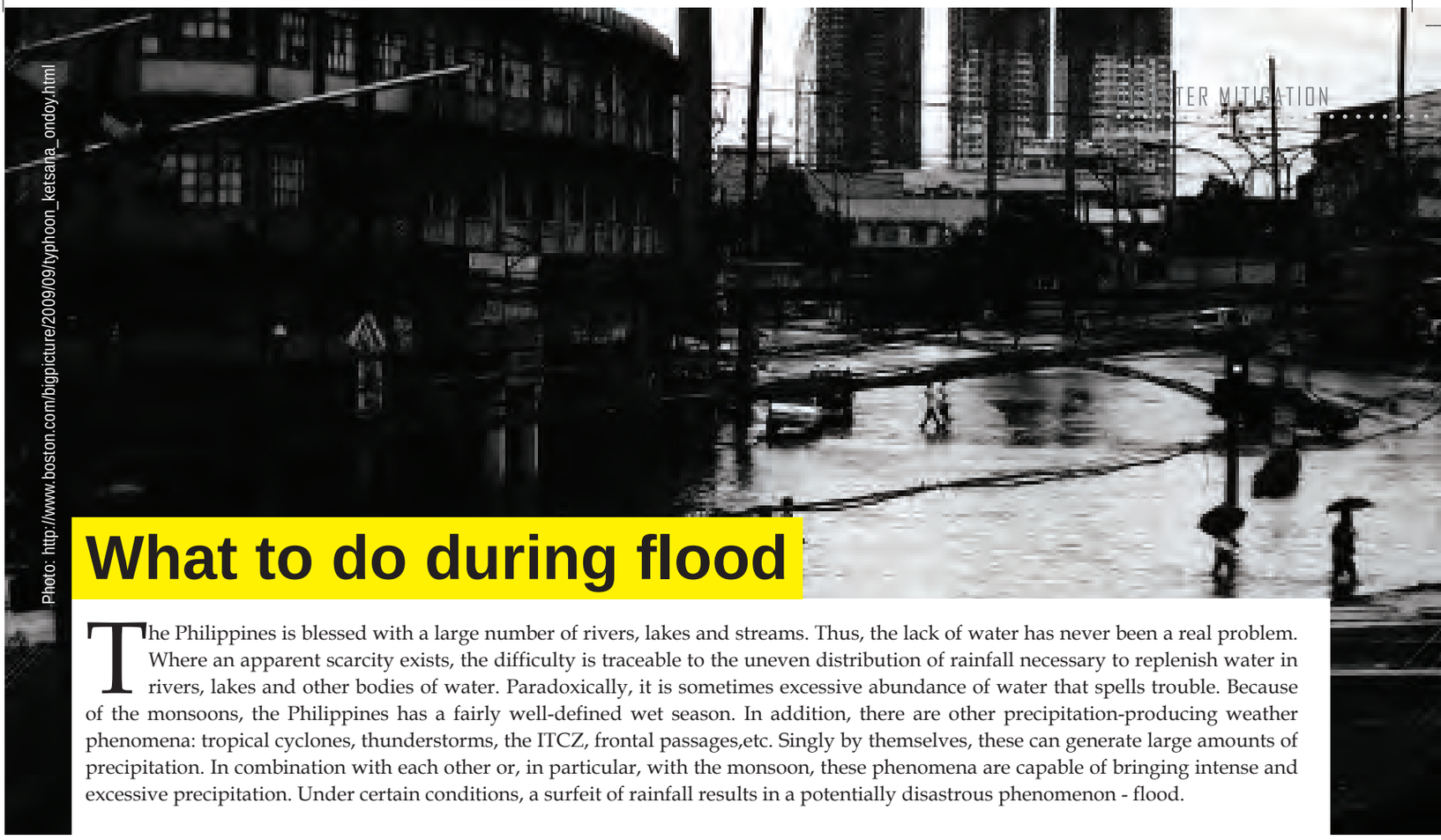


Photo: http://www.boston.com/bigpicture/2009/09/typhoon_ketsana_ondoy.html

What to do during flood

The Philippines is blessed with a large number of rivers, lakes and streams. Thus, the lack of water has never been a real problem. Where an apparent scarcity exists, the difficulty is traceable to the uneven distribution of rainfall necessary to replenish water in rivers, lakes and other bodies of water. Paradoxically, it is sometimes excessive abundance of water that spells trouble. Because of the monsoons, the Philippines has a fairly well-defined wet season. In addition, there are other precipitation-producing weather phenomena: tropical cyclones, thunderstorms, the ITCZ, frontal passages,etc. Singly by themselves, these can generate large amounts of precipitation. In combination with each other or, in particular, with the monsoon, these phenomena are capable of bringing intense and excessive precipitation. Under certain conditions, a surfeit of rainfall results in a potentially disastrous phenomenon - flood.

What do you do when flood is likely to happen?

BEFORE THE FLOOD:

- Find out how often your location is likely to be flooded.
- Know the flood warning system in your community and be sure your family knows it.
- Keep informed of daily weather condition.
- Designate an evacuation area for the family and livestock.
- Assign family members instructions and responsibilities according to an evacuation plan.
- Keep a stock of food which requires little cooking and refrigeration; electric power may be interrupted.
- Keep a transistorized radio and flashlight with spare batteries, emergency cooking equipment, candies, matches and first aid kit handy in case of emergency.
- Store supplies and other household effects above expected flood water level.
- Securely anchor weak dwellings and items.

WHEN WARNED OF FLOOD:

- Watch for rapidly rising flood waters.
- Listen to your radio for emergency instructions.
- If you find it necessary to evacuate, move to a safe area before access is cut off by flood waters.
- Store drinking water in containers, water service may be interrupted.
- Move household belongings to upper levels.
- Get livestock to higher ground.
- Turn off electricity at the main switch in the building before evacuating and also lock your house.

DURING THE FLOOD:

- Avoid areas subject to sudden flooding.
- Do not attempt to cross rivers of flowing streams where water is above the knee.
- Beware of water-covered roads and bridges.
- Avoid unnecessary exposure to the elements.
- Do not go swimming or boating in swollen rivers.
- Eat only well-cooked food. Protect leftovers against contamination.
- Drink clean or preferably boiled water ONLY.

AFTER THE FLOOD:

- Re-enter the dwellings with caution using flashlights, not lanterns or torchers. Flammables may be inside.
- Be alert for fire hazards like broken wires.
- Do not eat food and drink water until they have been checked for flood water contamination.
- Report broken utility lines (electricity, water, gas and telephone) to appropriate agencies authorities.
- Do not turn on the main switch or use appliances and other equipment until they have been checked by a competent electrician.
- Consult health authorities for immunization requirements.
- Do not go in disaster areas. Your presence might hamper rescue and other emergency operations.

Floods are aggravated by factors resulting from the carelessness and indifference of people usually before floods occur.

In order to mitigate flooding, here are some things that should be done:

- Regulate the cutting of trees.
- Report illegal loggers and kaingeros.
- Report illegal construction of fishponds and other establishments in waterways.
- Do not throw garbage in esteros and rivers.
- Help clean the neighborhood.
- Support community activities intended to lessen the occurrence of floods.
- Avoid throwing anything like plastic wrappers anywhere which may clog or block the drainage system.

Source: DOST-PAGASA

What's in a name?

Gone are the days when typhoons were named for Pinoy nicknames that were used in the olden times. The names usually end with "ng" as in "Andang", the usual nickname for "Yolanda." Now typhoon names are more hip, though there are still some old-sounding names and nicknames. Scrolling through the list, there are also some unusual names such as "Labuyo", "Alakdan" and "Quedan."

The list was the result of PAGASA's "Name a Bagyo Contest" launched in 2000. There were 18,000 entries, and only 140 code names were selected.

The first tropical cyclone of the year starts with the name beginning in letter A, followed by another beginning in letter B, and so on, as one weather disturbance succeeds another. In the event that the number of tropical cyclones within the year exceeds 25, an auxiliary list is used, the first ten of which are listed under each column. For 2012, typhoon names are under Column 4.

The names of destructive typhoons are usually stricken off the list and replaced. Typhoon names are decommissioned if cost of damage totals P1 billion or above and casualties number 300 or higher.

1	2	3	4
2009	2010	2011	2012
2013	2014	2015	2016
2017	2018	2019	2020
2021	2022	2023	2024
AURING	AGATON	AMANG	AMBO
BISING	BASYANG	BETTY	BUTCHOY
CRISING	CALOY	CHEDENG	CARINA
DANTE	DOMENG	DODONG	DINDO
EMONG	ESTER	EGAY	ENTENG
FERIA	FLORITA	FALCON	FERDIE
GORIO	GLENDA	GORING	GENER
HUANING	HENRY	HANNA	HELEN
ISANG	INDAY	INENG	IGME
JOLINA	JOSE	JENNY	JULIAN
KIKO	KATRING	KABAYAN	KAREN
LABUYO	LUIS	LANDO	LAWIN
MARING	MARIO	MARILYN	MARCE
NANDO	NENENG	NONOY	NINA
ODETTE	OMPONG	ONYOK	OFEL
PAOLO	PAENG	PERLA	PABLO
QUEDAN	QUEENIE	QUIEL	QUINTA
RAMIL	RUBY	RAMON	ROLLY
SANTI	SENIANG	SARAH	SIONY
TINO	TOMAS	TISOY	TONYO
URDUJA	USMAN	URSULA	ULYSSES
VINTA	VENUS	VIRING	VICKY
WILMA	WALDO	WENG	WARREN
YOLANDA	YAYANG	YOYOY	YOYONG
ZORAIDA	ZENY	ZIGZAG	ZOSIMO

The following are the auxiliary names, in case typhoons exceed 25 in a given year:

1	2	3	4
ALAMID	AGILA	ABE	ALAKDAN
BRUNO	BAGWIS	BERTO	BALDO
CONCHING	CHITO	CHARO	CLARA
DOLOR	DIEGO	DADO	DENCIO
ERNIE	ELENA	ESTOY	ESTONG
FLORANTE	FELINO	FELION	FELIPE
GERARDO	GUNDING	GENING	GARDO
HERNAN	HARRIET	HERMAN	HELING
ISKO	INDANG	IRMA	ISMAEL
JEROME	JESSA	JAIME	JULIO

Temblor alert!

Preparing for earthquakes

Precautions

You can actually prepare yourself to avoid serious damage in case an earthquake happens. Here are some reminders:

Know the earthquake hazards in your area.

Follow structural design and engineering practices when constructing a house or building.

Evaluate the structural soundness of the buildings and houses; strengthen or retrofit if necessary.

Prepare your homes, workplace or schools:

Strap or bolt heavy furniture such as cabinets to the walls.

Check stability of hanging objects like ceiling fans and chandeliers.

Breakable items, harmful chemicals and flammable materials should be stored properly in the lowermost secured shelves.

Familiarize yourself with the exit routes.

Know where fire extinguishers, first aid kits, alarms and communication facilities are located. Learn how to use them beforehand.

Prepare a handy emergency supply kit with first aid kit, canned food and can opener, water, clothing blanket, battery-operated radio, flashlights and extra batteries.

Conduct and participate in regular earthquake drills.

During an earthquake

- Stay calm.
- When you are INSIDE a structurally sound building or home…

Stay there!

Do the "duck, cover and hold"

– Duck or drop down to the floor.

– Take cover under a sturdy desk, table, or other furniture. If that is not possible, seek over against an interior wall and protect your head and neck with your arms. Avoid danger spots near windows, hanging objects, mirrors, or tall furniture.

– If you take cover under a sturdy piece of furniture, hold on to it and be prepared to move with it. Hold the position until the ground stops shaking and it is safe to move.

– When you feel an earthquake, duck under a desk or sturdy table. Stay away from windows, bookcases, file cabinets, heavy mirrors, hanging plants, and other heavy objects that could fall. Watch out for falling plaster or ceiling tiles. Stay under cover until the shaking stops. Hold onto the desk or table, if it moves, move with it. Here are some additional tips for specific locations.

- If possible quickly open the door for exit
- Duck the under a sturdy desk or table, and hold on to it, or protect your head with your arms.
- Stay away from glass windows, shelves, cabinets and other heavy objects.
- Beware of falling objects. Be alert and keep your eyes open.

If you're outside, move to an open area!

- Stay away from trees, power lines, posts and concrete structures.
- Move away from steep slopes which may be affected by landslides.

If you're near the shore and feel an earthquake, especially if it's too strong, move quickly to higher grounds. Tsunamis might follow.

If you're in a moving vehicle, STOP and get out! Do not attempt to cross bridges, overpasses, or flyovers which may have been damaged.

After

Be prepared for aftershocks. Once the shaking stops, take the fastest and safest away out of building.

Don't

- Use elevators
- Enter damaged buildings
- Use telephone unless necessary
- PANIC…

Check…

-Yourself and others for injuries.
- Water and electrical lines for damages.
- For spills of chemical toxic and flammable materials and

Control fires which may spread.

If you need to evacuate your residence, leave a message starting where you are going and bring your emergency supply kit.

Keep updated on disaster prevention instructions from battery-operated radios.

Source: DOST-Phivolcs

Shake, shiver, and quiver

Earthquake intensity explained

Intensity is the measure of how an earthquake was felt in certain locality or area. It is based on relative effect to people, structures and objects in the surroundings. It is represented by Roman Numerals with intensity I being the weakest, and intensity X the strongest. It is used since 1996, replacing the Rossi- Forel scale.

I. Scarcely Perceptible

Perceptible to people only under favorable circumstances.
Delicately-balanced objects are disturbed slightly.
Still water in containers oscillates slightly.

II. Slightly Felt

Felt by few individuals at rest indoors.
Hanging objects swing slightly.
Still water in containers oscillates noticeably.

III. Weak

Felt by many people indoors specially in upper floors of buildings. Vibration is felt like the passing of a light truck. Dizziness and nausea are experienced by some people.
Hanging objects swing moderately.
Still water in containers oscillates moderately.

IV. Moderately Strong

Felt generally by people indoors and some people outdoors. Light sleepers are awakened. Vibration is felt like thepassing of a heavy truck.
Hanging objects swing considerably. Dinner plates, glasses, windows and doors rattle. Floors and walls of wood-framed building creak. Standing motor cars may rock slightly.
Water in containers oscillates strongly.
Rumbling sounds may sometimes be heard.

V. Strong

Generally felt by most people indoors and outdoors. Many sleeping people awakened. Some are frightened; some run outdoors. Strong shaking and rocking are felt throughout the building.
Hanging objects swing violently. Dining utensils clatter and clink, some are broken. Small light and unstable objects may fall or overturn. Liquids spill from filed open containers. Standing vehicles rock noticeably.
Shaking of leaves and twigs of trees is noticeable.

VI. Very Strong

Many people are frightened many run outdoors. Some people lose their balance. Motorists feel like driving with flat tires.
Heavy objects and furniture move or may be shifted. Small church bells may ring. Wall plaster may crack. Very old or poorly built houses and man-made structures are slightly damaged though well-built structures are not affected.
Limited rock fails and rolling boulders occur in hilly to mountainous areas and escarpments. Trees are noticeably shaken.

VII. Destructive

Most people are frightened and run outdoors. People find it difficult to stand in upper floors.
Heavy objects and furniture overturn or topple. Big church bells may ring. Old or poor built structures suffer considerable damage. Some well-built structures are slightly damaged. Some cracks may appear on dikes, fish ponds, road surfaces, or concrete hollow block walls.
Limited liquefaction, lateral spreading and landslides are observed. Trees are shaken strongly. (Liquefaction is a process by which loose saturated sand losses strength during an earthquake and behaves like liquid.)

VIII. Very Destructive

People are panicky. People find it difficult to stand even outdoors.
Many well-built buildings are considerably damaged. Concrete dikes and foundations of bridges are destroyed by ground settling or toppling. Railway tracks are bent or broken.
Tombstones may be displaced, twisted or overturned. Utility posts, towers and monuments may tilt or topple. Water and sewer pipes may be bent, twisted or broken.
Liquefaction and lateral spreading cause man-made structures to sink, tilt or topple. Numerous landslides and rock falls occur in mountainous in hilly areas. Boulders are thrown out from their positions particularly near the epicenter. Fissures and fault rupture may be observed. Trees are violently shaken. Water splashes or slops over dikes or banks of rivers.

IX. Devastating

People are forcibly thrown to the ground. Many cry and shake with fear.
Most buildings are totally damaged. Bridges and elevated concrete structures are toppled or destroyed.
Numerous utility posts, towers and monuments ate tilted, toppled or broken. Water and sewer pipes are bent, twisted or broken.
Landslides and liquefaction with lateral spreading and sand boils are widespread. The ground is distorted into undulations. Trees are shaken very violently with some toppled or broken. Boulders are commonly thrown out. River water splashes violently or slops over dikes and banks.

X. Completely Devastating

Practically all man-made structures are destroyed.
Massive landslides and liquefaction, large scale subsidence and uplifting of landforms, and many ground fissures are observed. Changes in river courses and destructive seiches in lake occur. Many trees are toppled, broken or uprooted.

After the Shaking:
The REDAS software

By ALLAN ACE ACLAN
S&T Media Service, *STII*

Unlike thunderous storms and heavy rainfall, earthquake is relatively unpredictable compared with other natural calamities. Earthquakes manifest only during shaking and sometimes displacement of the ground.

WHEN THE epicenter of a large earthquake is located offshore, the seabed may be displaced sufficiently to cause a tsunami. Earthquakes can also trigger landslides, and occasionally volcanic activity.

However, the damages created by earthquake onslaught can be avoided or reduced by identifying the hazards and risky areas in a certain place, thanks to the intervention of science and technology.

In 2004, Dr. Bartolome C. Bautista and Maria Leonila P. Bautista of the Philippine Institute of Volcanology and Seismology developed an earthquake simulation software called Rapid Earthquake Damage Assessment or REDAS.

The software REDAS is a seismic hazard simulation software that can produce hazards and risk maps quickly after strong and potentially damaging earthquakes. The REDAS software can also be used in conducting seismic hazard and risk assessment, sorting earthquake data parameters, producing map of different sizes, performing screen digitization, and developing risk database in Philippines and other Asian countries. The results can also aid rescue groups in the prompt deployment of rescue and relief operations, and other life-saving activities.

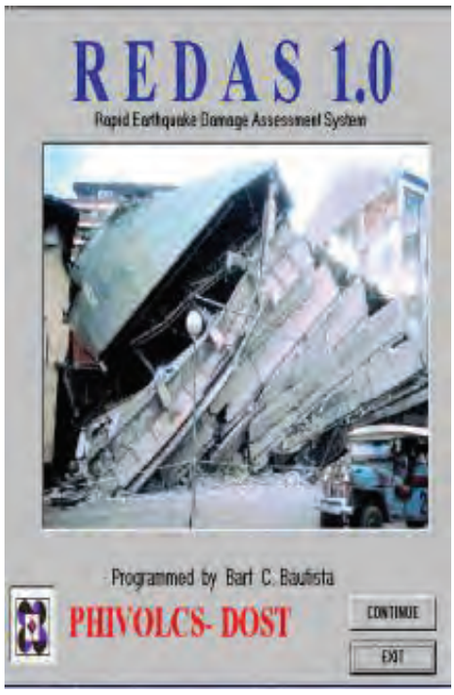
The software also serves as an effective simulation tool for decision makers and city planners of the need to prepare thru serious land use regulation, strict enforcement of the building code, and modernizing critical structures.

The hazard maps that can be simulated are ground shaking, liquefaction, earthquake- induced landslide; and tsunamis. It also includes risk database which consists of population centers, roads and communication networks, high rise buildings power plants and dams and other critical infrastructures.

In addition, REDAS can sort earthquake data parameters, produce seismicity maps. It allows the users to build their own database by themselves.

The software was awarded first place in the national competitions in the DOST-sponsored industry and energy research.

From its forerunner REDAS 1.0 to its current REDAS 2.0 version, the software has been calibrated with actual earthquakes and improved based onconsultations from users. The software has multihazard maps produced under the READY (Hazards Mapping and Assesment for Effective Community based Disaster Risk Management) Project and these are being integrated in the software, making REDAS multihazard in approach.



Providing REDAS software and training is one of the major efforts of PHIVOLCS in mainstreaming Disaster Risk Reduction (DRR), especially in the development plans of the government units and other national institutions in the Philippines.

Earthquake safety in schools: A primer for teachers

What is earthquake?

An earthquake is a weak to strong shaking the ground due to the sudden movement or displacement of the rocks underneath.

What are the possible effects of an earthquake?

Strong ground shaking can cause injuries to people due to broken glasses and fallen objects. Buildings maybe damaged. Buildings that are not properly constructed can collapse and can cause death.

Why do we need to prepare for an earthquake?

We need to orient the students. We do not know where and when exactly an earthquake will occur, but we can learn and teach the needed actions to avoid the possible effects and impacts that it can bring. School children spend most of their time in school. If an earthquake occurs during school time, as teachers you will have to respond and secure the safety of all your students.

What do we need to do at school during earthquakes?

We can observe safety measures to avoid the impacts of an earthquake. We need to familiarize ourselves and teach our students about our school surroundings. You can start by having a class activity wherein you and your students can go around the school premises to be familiarized with the earthquake safe spots in your school (open spaces, etc.) and identify unsafe practices, potential hazards and danger zones in case of an earthquake.

Some possible hazards include:

1. Large and heavy pieces of furniture that could topple, such as book cases and cabinets;
2. Hanging flower pots and ceiling fans
3. Glass window panes and walls that could break;
4. Heavy picture frames and mirrors;
5. Latches on cabinets that will not hold cabinet door closed;
6. Glass or other breakable objects that are kept on high and open shelves;
7. Obstructions such as plant boxes, chairs and benches, bulletin boards, trash cans that may block exit points and corridors; and
8. Elevated water tanks and electrical posts.

Explain to the class what to expect during an earthquake. This could be done through discussions about the common observations during earthquakes.

Orient the students with the what to do's during an earthquake.

BBC.com

What to teach….

You will feel…

A weak or a very strong shaking during an earthquake. The shaking may start out gently and then it becomes stronger, enough to knock person off his feet.

You will see….

- Hanging objects like lamps, wall frames swing violently or may even fall down.
- Bookshelves, cabinets, tables and chairs may move, be shifted and/or fall over.
- Window panes may rattle and may even break.

You will hear…

- Low and loud rumbling noises, followed by the sounds of shaking, cracking and creaking wood, breaking glass and /or other falling objects.

What to do during an earthquake

When a strong shaking starts…

- Protect yourself.
- Stay away from falling objects such as pieces of broken glass windows, ceiling fans, etc.
- Get under a sturdy table/ desk and do the "DUCK,COVER and HOLD"
- Stay put until the shaking stops.

Remember:

- Prepare a school earthquake evacuation plan.
- Conduct school earthquake drills regularly.
- As soon as the shaking stops….
- Leave the classroom immediately.
- Get out of the building in an orderly manner

Give the following instructions to students:

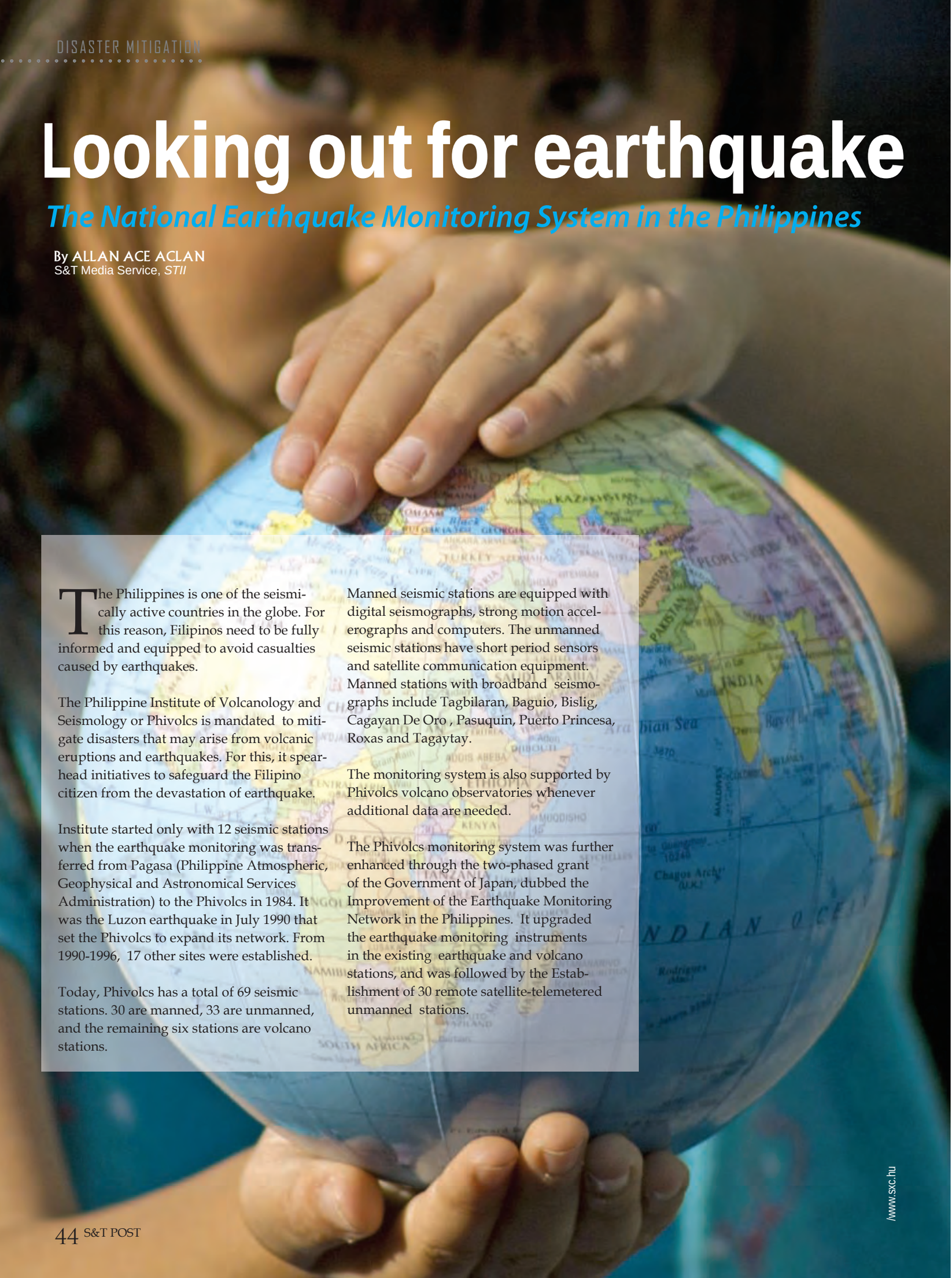
- WALK
- DO NOT RUN
- DO NOT PUSH
- DO NOT TALK
- Proceed to the identified evacuation area.

Source: DOST-Phivolcs

Looking out for earthquake

The National Earthquake Monitoring System in the Philippines

By ALLAN ACE ACLAN
S&T Media Service, *STII*



The Philippines is one of the seismically active countries in the globe. For this reason, Filipinos need to be fully informed and equipped to avoid casualties caused by earthquakes.

The Philippine Institute of Volcanology and Seismology or Phivolcs is mandated to mitigate disasters that may arise from volcanic eruptions and earthquakes. For this, it spearhead initiatives to safeguard the Filipino citizen from the devastation of earthquake.

Institute started only with 12 seismic stations when the earthquake monitoring was transferred from Pagasa (Philippine Atmospheric, Geophysical and Astronomical Services Administration) to the Phivolcs in 1984. It was the Luzon earthquake in July 1990 that set the Phivolcs to expand its network. From 1990-1996, 17 other sites were established.

Today, Phivolcs has a total of 69 seismic stations. 30 are manned, 33 are unmanned, and the remaining six stations are volcano stations.

Manned seismic stations are equipped with digital seismographs, strong motion accelerographs and computers. The unmanned seismic stations have short period sensors and satellite communication equipment. Manned stations with broadband seismographs include Tagbilaran, Baguio, Bislig, Cagayan De Oro , Pasuquin, Puerto Princesa, Roxas and Tagaytay.

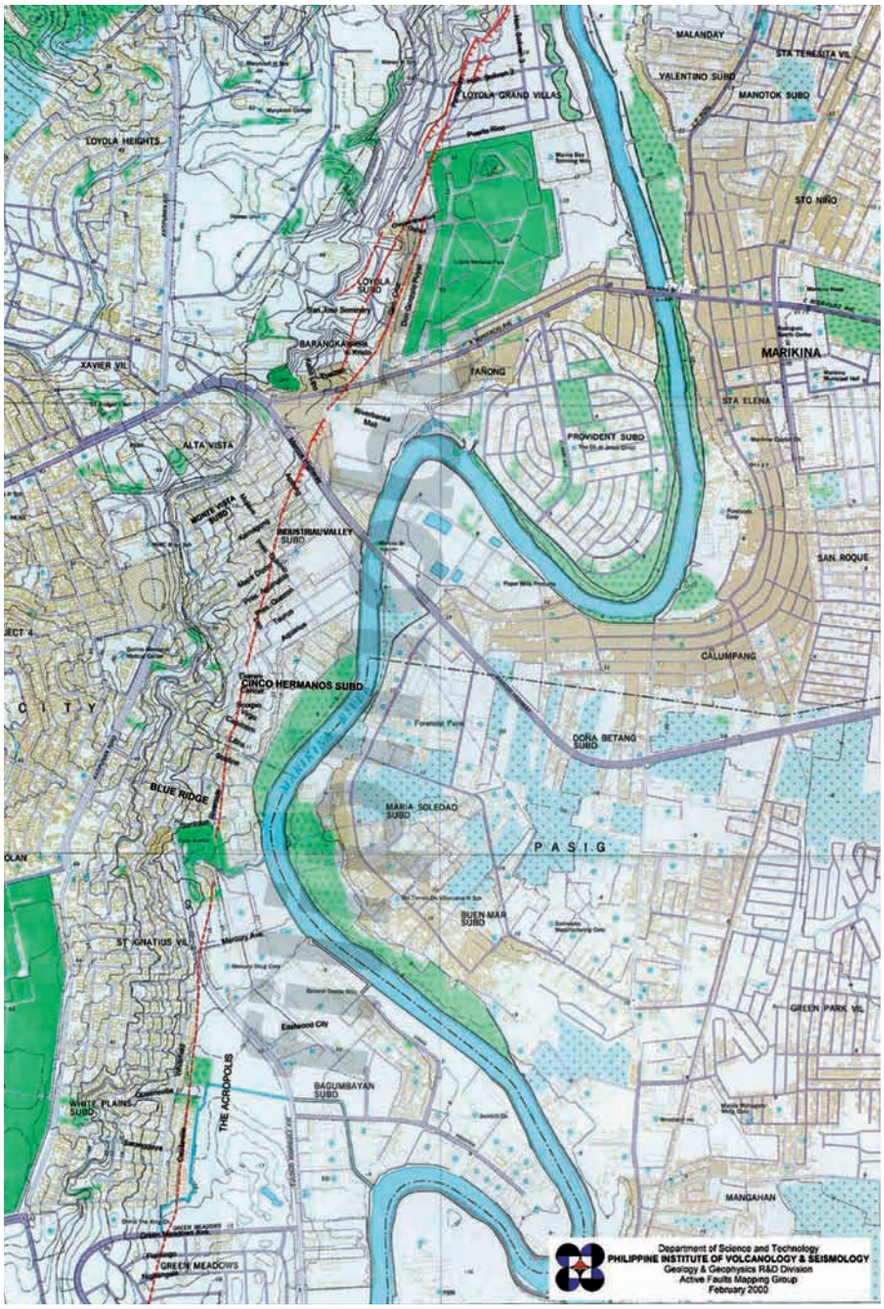
The monitoring system is also supported by Phivolcs volcano observatories whenever additional data are needed.

The Phivolcs monitoring system was further enhanced through the two-phased grant of the Government of Japan, dubbed the Improvement of the Earthquake Monitoring Network in the Philippines. It upgraded the earthquake monitoring instruments in the existing earthquake and volcano stations, and was followed by the Establishment of 30 remote satellite-telemetered unmanned stations.

/www.sxc.hu

When fault-finding becomes life-saving

Mapping active faults help people prepare for earthquakes



Marikina Map West Valley Fault Line

By GEORGE ROBERT VALENCIA III
S&T Media Service, *STII*

Fault-finding may be one of the best preparations for disaster-preparedness. This is, of course, true in the context of seismology.

Fault-finding, or technically active faults mapping, is incorporated in DOST-Phivolcs' Active Faults Mapping and Paleoseismology Program that was initiated after the 16 July 1990 Luzon Earthquake when the country veritably realized the importance of earthquake preparedness.

Mr. Jeffrey S. Perez, a geologist at DOST-Phivolcs' Geology and Geophysics Research and Development Division, explains that the identification and assessment of fault zones are vital in the study of earthquakes. Fault zones are the break, fracture, fissure or zone of weakness in the earth which indicates movement or displacement that occurred and may happen anytime.

Meanwhile, active faults mapping, as the name suggests, pertains to the location, verification, assessment, and plotting of active faults in maps. According to Mr. Perez, this methodology becomes important because it is along active faults that more

Fault-finding may be one of the best preparations for disaster-preparedness. This is, of course, true in the context of seismology.

Fault-finding, or technically active faults mapping, is incorporated in DOST-Phivolcs' Active Faults Mapping and Paleoseismology Program that was initiated after the 16 July 1990 Luzon Earthquake when the country veritably realized the importance of earthquake preparedness.

Mr. Jeffrey S. Perez, a geologist at DOST-Phivolcs' Geology and Geophysics Research and Development Division, explains that the identification and assessment of fault zones are vital in the study of earthquakes. Fault zones are the break, fracture, fissure or zone of weakness in the earth which indicates movement or displacement that occurred and may happen anytime.

next page

Meanwhile, active faults mapping, as the name suggests, pertains to the location, verification, assessment, and plotting of active faults in maps. According to Mr. Perez, this methodology becomes important because it is along active faults that more earthquakes are likely to occur and where severe ground shaking may result.

Historical records also show that the country's past major earthquakes had epicenters near the Philippine Fault Zone (PFZ)—the country's longest and most active fault—and other major active faults in the country.

How geologists do it

To locate and map active faults, geologists go back to historical records of earthquakes as these may indicate the presence of an active fault in a particular place. According to Perez, the main method used by geologists in identifying the location of an active fault is by studying aerial photographs.

Aerial photographs of specific places are converted into three-dimensional (3D) images to enable geologists to effectively recognize geomorphic (earth) features and tectonic (forces or conditions in earth that cause movement of its crust) landforms that were formed because of fault movement. Examples of these tectonic landforms, according to Perez, are fault scarps (step-like feature on earth's crust), sag ponds,

Fault-finding may be one of the best preparations for disaster-preparedness. This is, of course, true in the context of seismology.

Fault-finding, or technically active faults mapping, is incorporated in DOST-Phivolcs' Active Faults Mapping and Paleoseismology Program that was initiated after the 16 July 1990 Luzon Earthquake when the country veritably realized the importance of earthquake preparedness.

Mr. Jeffrey S. Perez, a geologist at DOST-Phivolcs' Geology and Geophysics Research and Development Division, explains that the identification and assessment of fault zones are vital in the study of earthquakes. Fault zones are the break, fracture, fissure or zone of weakness in the earth which indicates movement or displacement that occurred and may happen anytime.

Meanwhile, active faults mapping, as the name suggests, pertains to the location, verification, assessment, and plotting of active faults in maps. According to Mr. Perez, this methodology becomes important because it is along active faults that more earthquakes are likely to occur and where severe ground shaking may result.

Historical records also show that the country's past major earthquakes had epicenters near the Philippine Fault Zone (PFZ)—the country's longest and most active fault—and other major active faults in the country.

How geologists do it

To locate and map active faults, geologists go back to historical records of earthquakes as these may indicate the presence of an active fault in a particular place. According to Perez, the main method used by geologists in identifying the location of an active fault is by studying aerial photographs.

Aerial photographs of specific places are converted into three-dimensional (3D) images to enable geologists to effectively recognize geomorphic (earth) features and tectonic (forces or conditions in earth that cause movement of its crust) landforms that were formed because of fault movement. Examples of these tectonic landforms, according to Perez, are fault scarps (step-like feature on earth's crust), sag ponds, offset streams, pressure ridges, and tectonic bulges, among others.

After spotting and interpreting the said characteristics, geologists then do field verification by visiting and closely examining the identified active faults in a certain location. Next is the method formally called paleoseismology which generates several essential information to geologists, such as the location of the fault; how and how often does it move (recurrence period of 'surface-rupturing' earthquakes); and how big is the earthquake generated when it moves.

Major findings: the Big One and PFZ

Paleoseismology and fault mapping efforts of DOST-Phivolcs' across the Philippines led to important findings like a major earthquake in the Valley Fault System (VFS), another major active fault in the country aside from the PFZ. Previously referred to as the 'Marikina Fault', the VFS comprises West and East portions that extend from Bulacan to Cavite-Laguna area.

Based on previous paleoseismological studies, according to Mr. Perez, the West Valley Fault has moved four times for the past 1,600 years, while its latest movement occurred about 200 years ago. Mr. Perez explains that another movement would generate a maximum credible earthquake magnitude 7.2, which would be felt in Metro Manila as strong ground shaking as high as Intensity VIII (very destructive) to Intensity IX (devastating) based on the Phivolcs' Earthquake Intensity Scale (PEIS), and could seriously impact poorly built, very old, substandard, or unreinforced buildings.

Furthermore, paleoseismological studies conducted across the PFZ seem to indicate that its fault segments in Luzon and Mindanao are capable of generating larger magnitude earthquakes compared its other segments (those in the Visayas regions, for instance).

Large-scale active fault maps

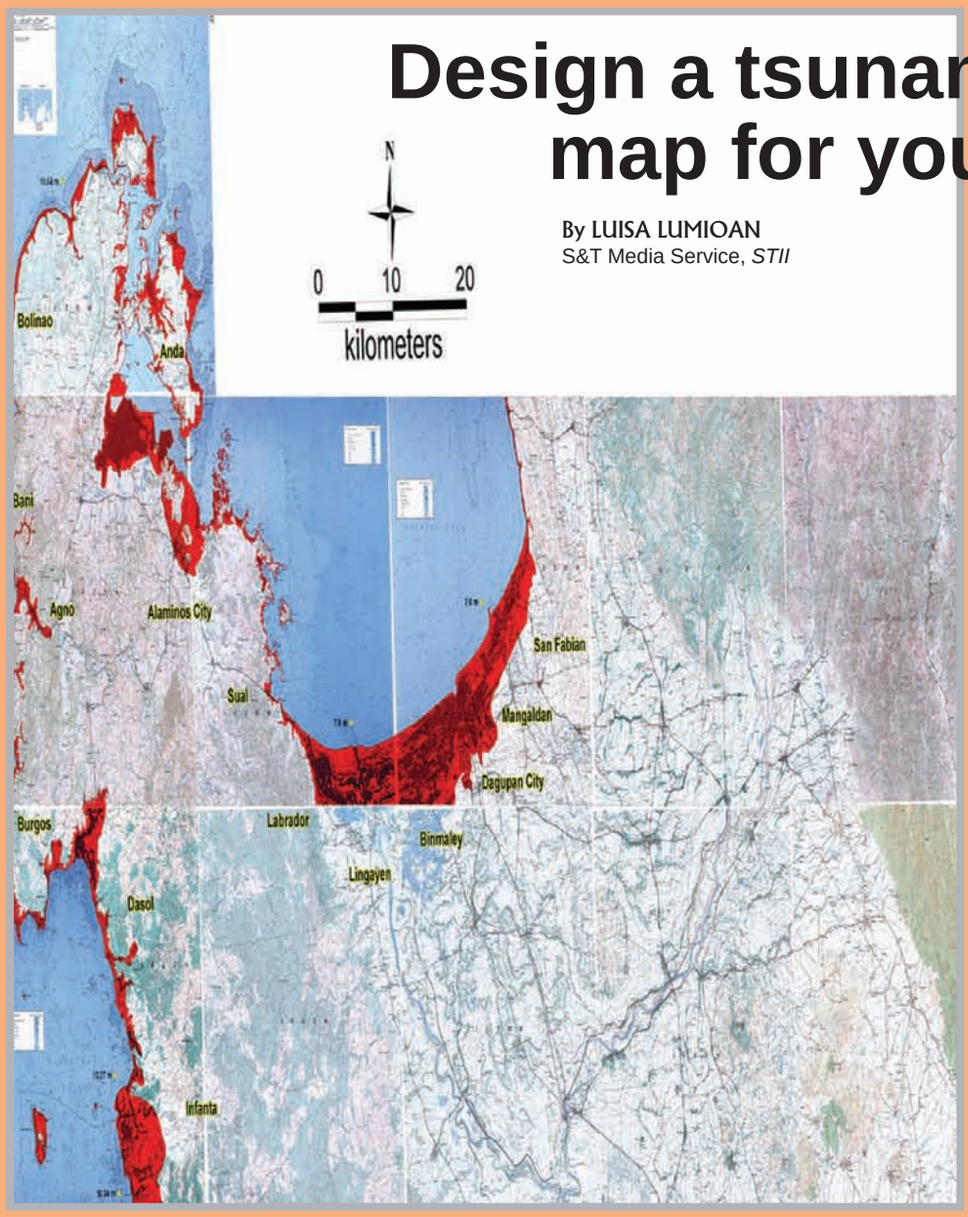
DOST-Phivolcs' Geology and Geophysics Research and Development Division, through its collaboration with foreign scientific organizations, has been relentless in its mapping and characterization of the country's active faults. Today, large-scale maps—ones that have scales of 1:50,000 to 1:5,000 from the initial 1:1,000,000 to 1:250,000—are already available for several of the country's active faults.

"This means that active faults maps are now detailed to the point that faults (in these maps) can be easily identified," explains Mr. Perez. "One can even see faults cutting across specific streets (points to an active fault map of NCR where Bonifacio Global City is located)—a huge difference compared with merely seeing fault marks cutting across a small scale regional map."

DOST-Phivolcs maps have also been integrated in Geographic Information System platform shared by planners, administrators, policy-makers and the general public for systematic archiving and other important uses. Moreover, the large-scale active faults maps have found their way in the National Structural Code of the Philippines—the 'bible' of structural engineers. One recommendation in the Code, presently implemented by local government units, is the prohibition of buildings and other human structures within five meters on both sides of a known active fault, to ensure safe construction of buildings in communities.

Design a tsunami evacuation map for your community

By LUISA LUMIOAN
S&T Media Service, *STII*



A tsunami evacuation map shows areas identified as safe and areas that are within the hazard zones. This kind of map provides information on how to evacuate to the identified safe areas. The following steps must be followed in order to design a tsunami evacuation map specific for a community.

Step 1—Acquire a tsunami hazard map and a detailed community map

a. Regional tsunami hazard maps for are available online at phivolcs.dost.gov.ph.

b. Update the community map by verifying road systems, houses, and other developments in the area. Determine the population of the area that could be affected by tsunami.

Step 2 –Identify safe evacuation areas

a. This is where people should go in case of a tsunami. This should be any location that is not likely to be affected, based on the available tsunami hazard map. The following are the possible basis for selection of the site:

a. Site is outside identified tsunami hazard zone

b. Site can be reached by foot within the shortest possible time

The total area of the site can hold an entire community or certain percentage of population of the community if several sites are selected; and

c. Site can be easily identified by residents, for example a prominent hill, a school, an open park among others

Step 3—Identify recommended evacuation routes

The tsunami evacuation map should show the best routes (safest, shortest/fastest way) for people to use in case of emergencies.

Consideration must be given to possible damages from strong earthquakes such as collapsed bridges, buildings, power lines and landslides, which may block routes and cause hazardous conditions. The following are some characteristics of ideal evacuation routes:

Wide streets

If possible, no bridges

Away from landslide-prone areas

Limited overhead power lines and similar hazards

While in the process of designing the plan, it is best to walk along the routes to identify hazards and check on ground conditions that may not be obvious on maps.

Step 4—Hold small workshop for community leaders to finalize map

Create draft/working map with tsunami flooding zone, identified evacuation areas and evacuation routes.

Organize a small group workshop with community leaders to discuss the draft map and seek comments and inputs to improve the map.

Step 5—Develop complete version of the map

Finalize map out of inputs from the group workshop.

Evacuation maps should be simple and easy to read and should include essential information only such as (a) tsunami hazard zones; (b) safe evacuation areas; (c) recommended evacuation routes; and (d) local landmarks to help people orient themselves on the map.

Making your community tsunami-ready

BY LUISA LUMIOAN
S&T Media Service, *STII*

An archipelago situated in the Pacific Ring of Fire, the Philippines cannot escape the possibility of a tsunami occurring.

Tsunami is a series of sea waves commonly generated by under the sea earthquakes and whose heights could be greater than 5 meters.

Tsunamis may be generated from distant locations, such as those coming from other countries bordering the Pacific Ocean. Travel time for tsunamis generated in distant locations is longer—from one to 24 hours, and will generally give enough time for warning from the Pacific Tsunami Warning Center (PTWC) and Northwest Pacific Tsunami Advisory Center (NPTAC).

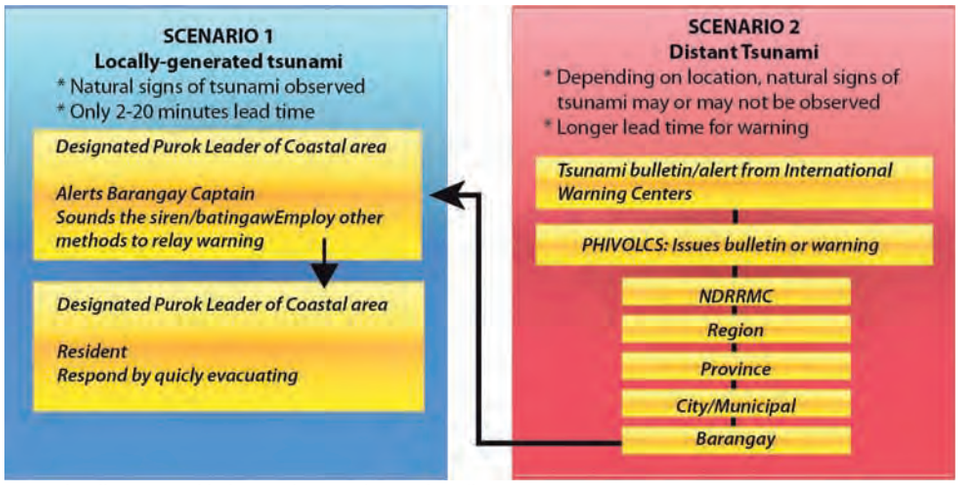
However, locally generated tsunamis can occur within very short time, with first waves reaching the nearest shoreline from the epicenter in two to 5 minutes after the main earthquake, before any official warnings can be transmitted from the national level to the community level.

Thus, tsunami preparedness in the community level is very important as there is not sufficient time from the national level in case of near-shore or locally generated tsunamis.

Positive community response to a crisis can save more lives especially if all sectors in the community have a role to play in its disaster risk mitigation efforts.

The following are the simplest steps that can be undertaken to make your community tsunami-ready.

Increase awareness on basic tsunami information. Introduce the key concepts and basic information such as natural signs of an impending tsunami to a capable team or core group of people within the community who will be the prime advocates of tsunami preparedness. The core group will lead the community in the preparation of tsunami evacuation plan.



Sample diagram of information and warning flow

Tsunami hazard and risk mapping.

A tsunami hazard map shows areas that can be affected by tsunamis. Most often, this kind of map is generated by experts and specialists after careful study of the area. Hazard maps serve to educate and prepare the public, and are used as tools to assist emergency responders to plan evacuations.

Tsunami evacuation planning.

A tsunami evacuation map shows safe areas and hazard zones. This kind of map provides information on how to evacuate to the identified safe areas. The essential information provided in this map are: a) areas threatened by tsunami flooding; b) location of designated "safe areas" where people should gather in case of tsunami; c) recommended routes to the safe area for people to follow which are normally indicated as arrows; and d) other significant information such as landmarks for people to identify locations. (see Design a tsunami evacuation map for your community).

Educating the community. After preparing the tsunami evacuation map, another series of information dissemination about tsunami evacuation plan should be conducted. There are three main activities under this: (a) community information campaigns; (b) putting up signage in strategic locations and (c) conduct of tsunami drills.

Establishing tsunami warning system

Identify key offices and officials that will be part of the communication flow for information and warning

Identify existing equipment (telephone, SMS, fax, 2 way radio, sirens, bell, megaphone and others) available in each identified various points to finally reach the community. Some areas have opted to use indigenous or locally available equipment such as batingaw or church bells for warning residents of the community

Identify appropriate warning system scheme and establish final warning system procedure for the community

Install additional equipment for warning system

Establish final flow chart of information test warning and communication system.

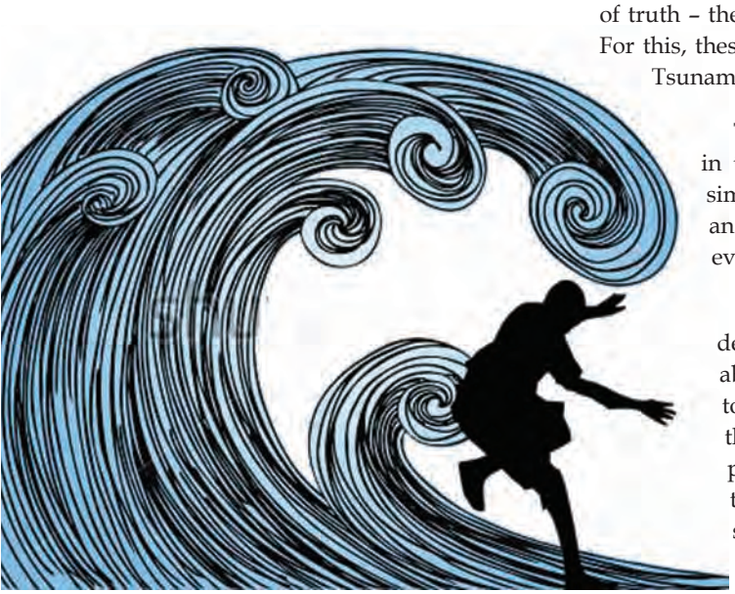
Identify tsunami mitigation measures.

Non-structural

- Information campaigns (in schools, in community)
- Tsunami hazard maps
- Tsunami evacuation plans
- Tsunami warning and information signage
- Tsunami marker
- Land use planning
- Preservation of mangrove area
- Coastal zoning
- Structural
- Construction of sea walls, breakers, tsunami platforms and towers
- Construction of additional alternate/access roads from the coastal community to facilitate faster evacuation.

Hop on a *tsunami* drill!

By LUISA LUMIOAN
S&T Media Service, *STII*



Residents of coastal communities that are high-risk for tsunamis need to know what to do when the moment of truth – the coming of a tsunami – comes. For this, these communities need to have a Tsunami Evacuation Plan.

Tsunami drills can be conducted in three ways: table top exercise, simple walk-through exercise, and community-wide tsunami evacuation drill.

A tabletop exercise is designed to test the theoretical ability of a group to respond to a situation. Participants in this exercise gather and discuss problems and procedures in the context of an emergency scenario.

A simple walk-through exercise tests how fast a crowd from the coast could move to the identified evacuation area.

A community-wide tsunami drill aims to mobilize close to 100 percent of the community's population and involves preparation and use of various resources from the community. This drill involves the simulation of tsunami warning.

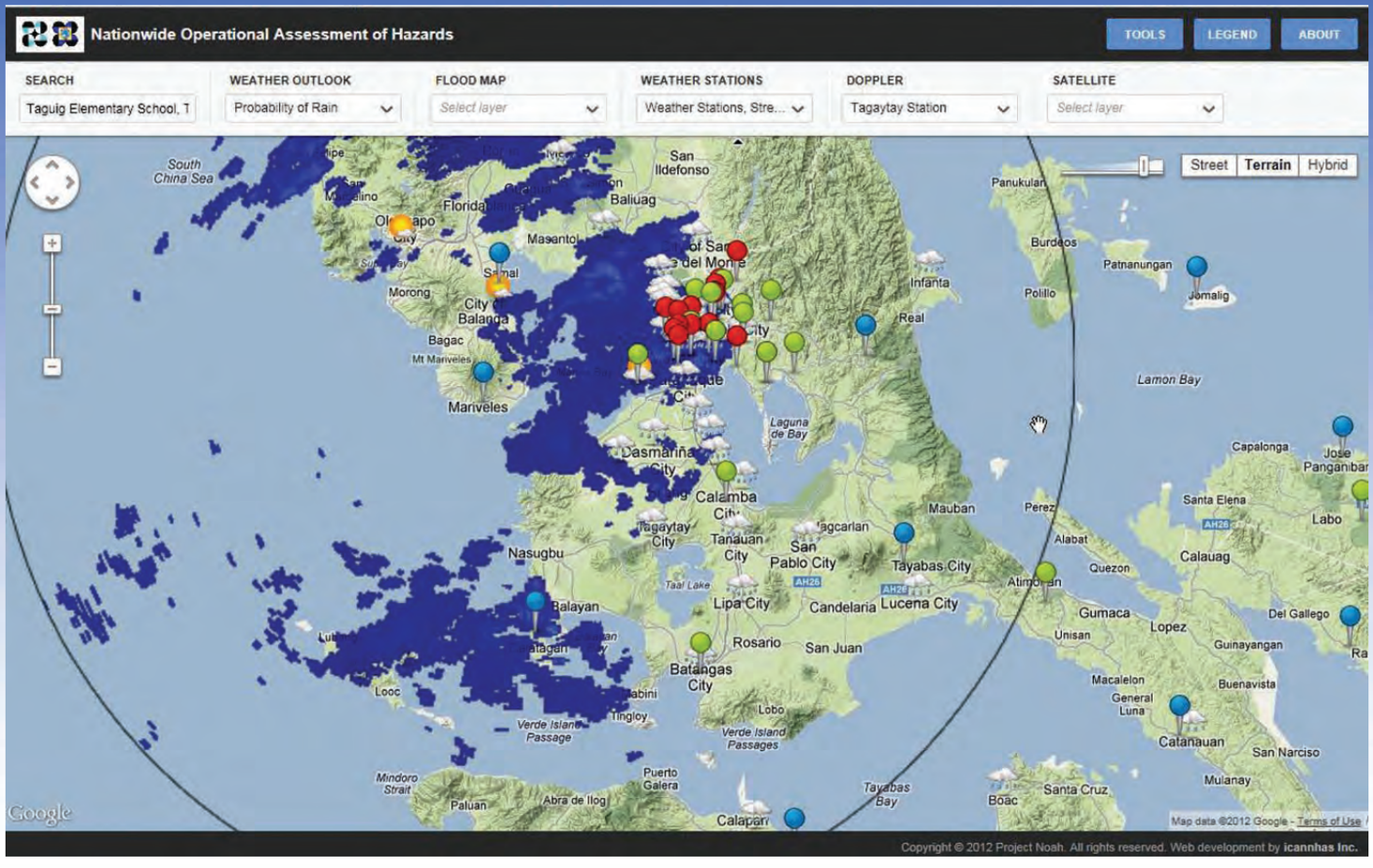
The drill is a test of how tsunami warning from coastal sitio/purok and barangay can be relayed to the residents to evacuate in case of a tsunami generated by a local earthquake. It also involves the relay of tsunami information and warning from authorities in the national level to the regional and provincial levels, down to the barangay level. It includes the actual evacuation of residents to the designated evacuated sites in case of a tsunami generated from outside the Philippines.

A tsunami drill has the following phases:

ALARM PHASE	One minute of siren/bell ringing which signals a strong earthquake
REACTION	Duck, cover and hold during the siren (earthquake)
EVACUATION	After the siren, residents quickly move out of their houses to go to the designated tsunami evacuation area using the shortest and safest route possible
ASSEMBLY PHASE	Once in the evacuation site, families must stay together
HEADCOUNT PHASE	Designated marshals of the puroks/sitios (assigned kagawads, barangay tanods, police) must start headcount of their residents to ensure that all are accounted for
DRILL TERMINATION	The drill master must inform the participants that the drill has ended and that all can go back to their homes
POST-DRILL EVALUATION	All key officials and key players involved in the conduct of the tsunami drill will convene immediately after the end of the drill to evaluate the activity, to identify the positive aspects as well as areas that needed to be improved

Project NOAH

DOST to launch nationwide disaster mitigation program



THE DEPARTMENT of Science and Technology is set to put into place a nationwide disaster mitigation system that will help key agencies and personalities make informed decisions to save lives and properties.

Called NOAH or the National Operational Assessment of Hazards and Risks, the program is designed to serve as sentinel that will address the serious challenges brought by extreme hazard events.

"The NOAH Project will enable the government to address the serious challenges brought by extreme hazard events," DOST Secretary Mario Montejo said. "We will apply advanced S&T tools, such as enhanced vulnerability maps and a shortened six-hour monitoring and warning system for communication along the major river basins."

NOAH will have seven components that will address major needs in various disaster situations. These include Hydromet sensors development, DREAM-Lidar, FloodNET, Hazards information media, Landslide hazards mapping, Doppler system development, and Storm surge inundation mapping.

With the DOST on the lead, NOAH brings together experts from 21 institutions in close collaboration, including DOST's PAGASA, PHIVOLCS, Advanced Science and technology Institute, and Science and Technology Information Institute; Department of Interior and Local Government; University of the Philippines National Institute of Geological Sciences and Department

In a country frequently visited by typhoons, tsunamis, earthquakes and volcanic eruptions, some of them highly-destructive, the NOAH project comes as helpful as Noah's ark in biblical times. Natural hazards inflict loss of lives and costly damage to property, with economic losses amounting to billions of pesos each year. Moreover, the continued development in the lowlands and the rapid growth of the population contribute to the damage to infrastructure and human losses.

"This project is so far the most advanced measure implemented by the government in disaster mitigation," added Sec. Montejo.

NOAH was formally launched in Marikina City on 06 July 2012. *(Framelia V. Anonas, S&T Media Service)*

Mahar Lagmay, a next generation scientist

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

"We should make (program on disasters) repetitive so that disaster preparedness will be inculcated in people's minds. If we stop doing it, then that's the time disaster happens."

He can be considered as the next generation scientist in the field of geology who is equipped with the technical knowledge and a knack in simplifying scientific jargons and terms understandable by the majority of people who need to be enlightened on scientific phenomena.

In addition to this, his understanding of technology and how it can help in providing better solutions to the pressing problems in disaster preparedness has driven him to collaborate with the Department of Science and Technology to take on the challenges in delivering a timely and effective disaster preparedness program down to the level of the communities.

He is Dr. Alfredo Mahar Francisco Lagmay or simply Mahar to those who have seen or heard him speak during news programs, the country's young gun in the field of disaster preparedness.

Mahar is currently a professor at the UP Diliman National Institute of Geological Science. He took his graduate study in Geology (Igneous Petrology) at UP NIGS in 1993 and his post graduate study in Geology (Remote Sensing, Volcanology) at the University of Cambridge in 2001.

He has several international peer reviewed published works and research experience in international universities and institutions such as in Stanford University, Universidad National Autonoma de Mexico, Russian Academy of Science, Institute Geophysique du Globe, University of Clermont-Ferrand, France, and Geologisches Department, Universitat Bonn.

Tectonic activities in the metro

Currently, Dr. Lagmay is doing several researches on the country's tectonic activities that will yield vital information in preparing for future disasters in Metro Manila.

According to his studies, the CAMANAVA, along with some areas in

next page

DOST IV-A , Agham to set up biogas plant for chicken droppings

By ADELIA M. GUEVARRA
S&T Media Service, *DOST IV-A*

BIOGAS PLANTS fired up by a novel fuel will soon be widely used in Rizal Province. This develops as DOST IV-A through Rizal S&T Director Fernando E. Ablaza partners with Agham through Representative Angelo Palmones in designing a digester with chicken droppings as material charge.

Methane, produced by chicken droppings and other animal wastes, is one of the major causes of the greenhouse effect. Methanation or the generation of biogas from biomass fermentation is seen to be highly-beneficial for specific purposes.

With this in sight, OIC Emelita P. Bagsit of the Office of the Regional Director of DOST IV-A with Mayor Danny V. Toreja and experts, reviewed the operations of some 44 digester units in Ibaan to check the viability of Agham representative Angelo Palmones' proposed a biogas digester project.

All units were found working 99 percent, most of which were under the communal system of piped-in methane gas for cooking and lighting needs. Ablaza expressed confidence that the new design for chicken droppings will work just as well.

The design is targeting to service the poultry industry of Rizal. To ensure compatibility of digester design and material charge, Ablaza redrew the mixing chamber of the biogas digester to suit the consistency and texture of chicken droppings. He added a system for reducing unwanted biological and chemical components of the droppings prior to their disposal. He also added a filtration procedure for the recovered gas to increase its combustibility.

Country-wide efforts have been attempted by various quarters to improve use of renewable energy sources such as biogas. Leading a number of such efforts, Ablaza has facilitated construction since 1993 of more than 300 units all over the country worth nearly PhP27M in investments. These collectively supply 762,000 metric tons of biogas annually, enough to fuel cooking and lighting needs of 2,285 families with six members for one year.

The annual supply of biogas is equivalent to Php17M in potential fuel savings, assuming that all units are 40% efficient (optimum efficiency in tropical areas) in fuel generation.

MAHAR LAGMAY . . . from page 51

Guiguinto, Marilao and Meycauayan in Bulacan and cities in the south such as Muntinlupa and Las Piñas in Metro Manila, Biñan in Laguna, and Dasmariñas City and the municipality of Rosario in Cavite are subsiding to a rate of 5.5 cm per year due to the excessive ground water expansion. If this activity persists, Metro Manila will be flooded heavily in the coming years.

Presently, Dr. Lagmay and his team of young experts are working on a high resolution national 3D hazard map under the Nationwide Operational Assessment of Hazard program (NOAH), a comprehensive government initiative that aims to forecast and prepare the community on the possible hazards that may occur before and during calamities.

According to Dr. Lagmay, the 3D map is designed at a ratio of 1:500,000 to capture the actual landscape of the provinces so that people from the communities will be able to identify their localities and appreciate the warnings that the government is issuing.

He said, "People from the communities would like to see the actual appearance of their streets so they could relate to what we are telling them. When they see their barangay and the possible scenario during typhoons, they would respond immediately."

The 3D map will use Light Detection and Ranging (LIDAR) technology, an optical remote sensing technology which has various applications in geomatics, archaeology, geography, geology, geomorphology, seismology, forestry, remote sensing and atmospheric physics.

The 3D map can be used in simulating weather disturbances in the country.

Aside from the simulation, the program will also integrate data from local sensors, Doppler radars, weather and flood modeling and landslide sensors to the 3D map to provide real time data on current weather situation in the country. "As you can see the cloud formations from the monitor, you would know the areas that has rain in real time," explained Dr. Lagmay.

He declared that the Philippines will be the first country in South East Asia to adopt the technology which the United Kingdom has been using for 15 years now. "We have nothing to worry about since the British government is helping us out in putting up this technology."

When asked about the accuracy of the NOAH program, Dr. Lagmay explained that the system has worked perfectly in UK, and with little adjustment it should also work for the Philippines.

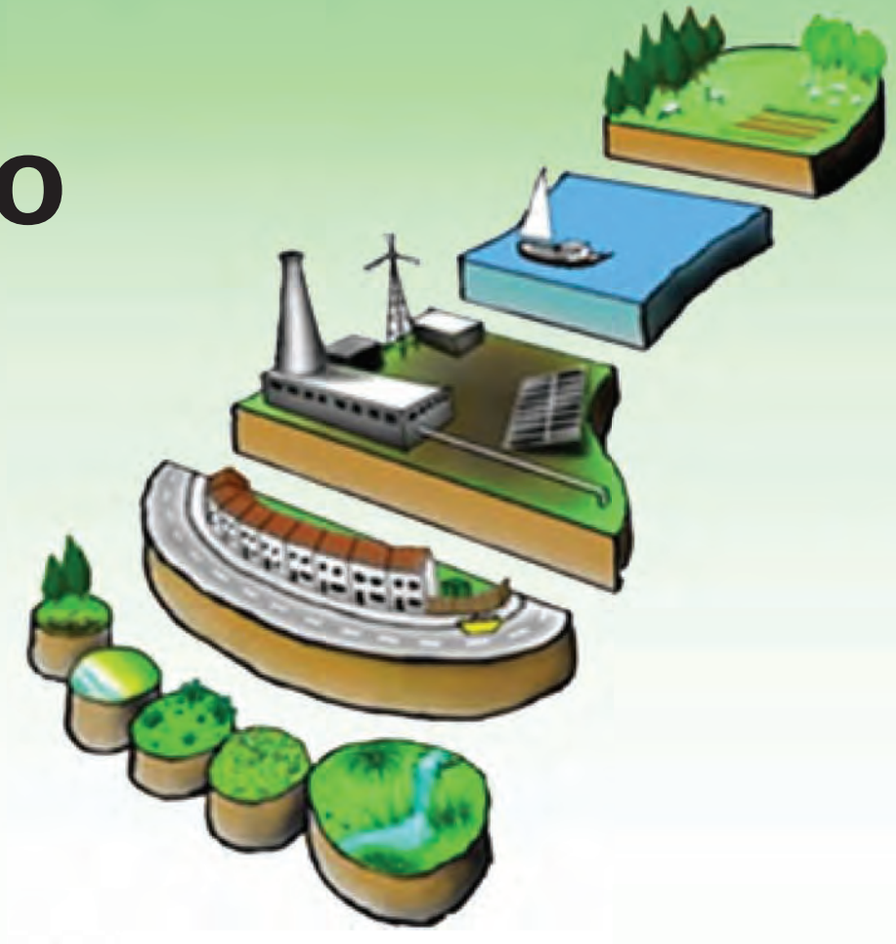
The program, according to him, will also feature a weather channel which airs regular weather programming on TV.

"The data generated through the NOAH will be available to every medium, from television, up to the internet so that the public has the power to decide on when and how to respond to disasters," he said.

He also said that the program on disasters should be repetitive. "We should make this repetitive so that disaster preparedness will be inculcated in people's minds, if we stop doing it, then that's the time disaster happens," Dr. Lagmay added.

Following ecological footprints around the metro

It would take a land area of about five hectares to produce all the resources consumed by an average Juan in Metro Manila



By MARIA JUDITH L. SABLAN
S&T Media Center, *STII*

Ever wondered how much of nature is needed to support your lifestyle in a year?

A 1998 local study tracked eco-footprints of city households and found out that it would take a land area of about five hectares to produce all the resources consumed by an average Juan in Metro Manila.

The full study, authored by Michael Serafico, Marilen Espinoza, Leah Perlas, and Celeste C. Tanchoco of the Department of Science and Technology's Food and Nutrition Research Institute (DOST-FNRI) was published in the June 2012 issue of the Philippine Journal of Science.

The study estimates the ecological footprint of the National Capital Region at 4.66 global hectares (gha) per person, twice the global average of 2.1 gha per person. An ecological footprint is the amount of land needed to produce the resources needed by an average person in a certain area. Measuring your footprint gives an idea of how much land, air, and water resources are needed to support the lifestyle of your choice within a year.

Translated to ecological footprint, the 4.66 gha means that a person living in NCR uses an area as large as the campus of the University of the East in Caloocan City to produce the resources he/she consumes. If this consumption patterns continue, NCR would be dependent on the resources of nearby regions, or worse, neighboring countries, to support its dwellers.

Food, among the categories of goods, registered the highest consumption.

Among the 16 cities and one municipality in NCR surveyed, Quezon City consumed the greatest amount of products and services, according to the study. All NCR cities consumed outside their sustainable limits except Mandaluyong City, in which residents use only necessary amount to support their lifestyle and keep the remaining resources growing for consumption of future generation.

DOST exec gets international ICT award for BPO initiative

By ROY ESPIRITU
S&T Media Service, *ICTO*

MONCHITO IBRAHIM, deputy executive director of Information and Communications Technology Office of the Department of Science and Technology (DOST-ICTO) recently received the ICT Contributor of the Year award at the recently concluded International ICT Awards.

Mr. Ibrahim was cited for his work in government, primarily in the implementation of the Philippine Cyber Corridor Initiative which aims to make the Philippines the global hub for IT-BPO services. He was also instrumental in sustaining the development of the Philippine cyberservices industry that helped the country gain its current status of being second in global market share next to India. He also led marketing initiatives in promoting the Philippine IT-BPO brand worldwide, resulting in the country being awarded "Outstanding Destination of the Year" in 2007 and 2009.

Ibrahim was also active in organizing 32 regional ICT councils to help sustain regional ICT development projects. These councils helped establish and develop the country's current Next Wave Cities, or alternative destinations for IT-BPO other than the established IT hubs of Metro Manila, Cebu and Clark, which currently account for 26 percent of the country's IT-BPO output.

"We are very proud of Mon's accomplishments and are glad that he continues his good work in advancing ICT development in the country as a major driving force in DOST-ICTO," DOST-ICTO Executive Director Louis Casambre remarked on Ibrahim's award.

The International ICT Awards is organized by the Canadian Chamber of Commerce of the Philippines (CanCham) and the Business Processing Association of the Philippines (BPAP). Receiving the same recognition at this year's awards were former Philippine Economic Zone Authority (PEZA) Director General Lilia De Lima and former Department of Transportation and Communications (DOTC) Undersecretary Virgilio Peña.

Deputy Executive Director Monchito Ibrahim of Information and Communications Technology Office of the Department of Science and Technology (DOST-ICTO) was recently awarded ICT Contributor of the Year at the recently concluded International ICT Awards for his invaluable involvement in the development of the Philippine IT-BPO industry. (Roy Espiritu, S&T Media Service)

DOST advises Sys admins to review gov't web security

By ROY ESPIRITU
S&T Media Service, *ICTO*

TTHE DEPARTMENT of Science and Technology advises system administrators of government websites to review the security of their respective websites to ensure that homepage defacements, like those that happened to University of the Philippines and the Department of Budget and Management, and more recently the Philippine Atmospheric, Geophysical and Astronomical Services Administration or PAGASA, websites does not happen in the future.

The PAGASA website was vandalized by hackers of still of undetermined origin. The weather bureau's system administrators had the website back online three hours later.

According to Louis Casambre, Executive Director of the Information and Communications Technology Office of the Department of Science and Technology (DOST-ICTO); "The recent defacement of the PAGASA website only illustrates the patent vulnerabilities inherent on some web platforms. We would like to request system administrators of government websites to review their source code for these security flaws. A common vulnerability we have found stems from third party plug-ins used in content management systems (CMS)."

DOST-ICTO is also recommending that government agencies add an extra layer of security to their websites by migrating them to secure server facilities. "The PAGASA website is hosted on its own web servers as well as those of a third party provider and were not hosted on DOST's secure servers," Undersecretary Casambre added.

Homepage defacements are nothing new to government websites, as it happens around the globe. DOST Secretary Mario G. Montejo reiterated , "Government websites are potential high-profile targets for local and foreign hackers. Thus, government system administrators must take the extra effort to ensure that their servers are safe from cyber vandalism."

The DOST-ICTO was tasked to oversee DOST's internal efforts on website security.

Commenting on the efforts, Undersecretary Casambre said, "We have taken definitive action to migrate all DOST websites to secure server facilities when these defacements started almost three weeks ago. It is unfortunate however that the PAGASA website was hacked so soon. In light of this new development, we are looking at accelerating our on-going efforts."

Hacking of foreign websites must be stopped - DOST

By ROY ESPIRITU
S&T Media Service, *ICTO*

THE RASH of defaced foreign websites allegedly carried out by local hacker groups is neither sanctioned nor condoned by the Philippine Government, and must be stopped at the soonest. This is the statement issued by officials from the Department of Science and Technology's Information and Communications Technology Office (DOST-ICTO).

"We understand the concern of our local hacker community on this issue. However, exchanges such as this one will not benefit anyone and could possibly lead to bigger problems in the future for the Philippines and China and escalate the already tense situation at Panatag Shoal," explained Louis Casambre, Executive Director of DOST-ICTO.

Attempts at distributed denial of service (DDOS) from foreign origins on the gov.ph domain were detected recently and promptly blocked by government IT administrators. As a result, access to several government websites were blocked or deliberately delayed arising from the DDOS attacks.

What sparked this series of online vandalism was the defacement of the University of the Philippines website by hackers sympathetic to China's claims on what is known internationally as Scarborough Shoal, a triangle-shaped chain of reefs and islands 220 kilometers off Palauig, Zambales known for the richness of its fishing grounds of its surrounding areas. This sparked a series of retaliations committed by rival hacker groups promoting the cause of Philippine sovereignty on the disputed area against a number of China-based websites.

DOST Secretary Mario Montejo expressed his displeasure on the hacker attacks. "These skirmishes in cyberspace are unsanctioned by either government and are largely outbursts of public sentiment by private citizens from either country regarding the current situation. It is our job in government to seek diplomatic solutions to these issues and not let them get out of hand," Montejo said.

IT experts concur that the hacking of the UP website exposed the vulnerability of certain government sites, prompting renewed calls for tighter, more stringent online security standards.

Casambre noted that along with the cybercrime bill currently undergoing legislative review at both chambers of Congress, the DOST-ICTO is working closely with the Office of the President in drafting an Executive Order to establish a top-level body to spearhead government's efforts on cybercrime and cybersecurity. "The creation of this body will strengthen the necessary coordination and implementation of uniform security standards in government," he added.

Pochero mix makes fiesta more festive

By ALLAN ACE ACLAN
S&T Media Service, *STII*

FILIPINOS ARE fond of fiestas, and, in occasions like this, food is an important feature. Most often, pochero is part of the menu. But sometimes, this dish is hard to prepare because of the many ingredients needed to make it tasty.

With the Instant Pochero Mix developed by local scientists from the Department of Science and Technology's Food and Nutrition Research Institute, preparing pochero will be just a breeze.

This food mix is a bottled, ready-to-eat combination of cabbage, garbanzos, sweet potatoes, saba bananas, Baguio beans, spices, and seasoning in tomato sauce. It can readily be added to cooked beef, pork or chicken to quickly whip up a delectable pochero dish for the family and guests.

With the convenience it offers, this food mix can be promoted as a mainstream Filipino product in the export and local markets. Its ready-to-eat feature can cut cooking time significantly, giving people more time to enjoy the merry spirit of fiestas or the quality time together at home.

Developed in 2004 by Joyce R. Tobias and Wenefrida Lainez, the Pochero Food Mix not only responds to the call for more convenient food items in the ethnic food category but will also help farmers in the country. Entrepreneurs wanting to explore opportunities in this product may contact DOST's Technicom Secretariat at Rm 212 DOST Central Office, Gen. Santos Ave, Bicutan, Taguig City 1631, or email technicom@dost.gov.ph or dost.technicom@gmail.com, or call (632) 837-2943.

Plywood testing to ensure quality standard

By APPLE JOY C. MARTIN
S&T Media Service, *FPRDI*

PLYWOOD, A structural material consisting of layers of veneers glued tightly together, is one of the most widely used wood products in the world. Introduced in the Philippines in the 1950s, it is a construction material most of us grew up with. But did you know that before it can be distributed in the market, plywood products must first be tested and stamped with the Philippine Standard or PS mark?

The DOST's Forest Products Research and Development Institute (FPRDI) hosts the only plywood testing laboratory in the country accredited by the Department of Trade and Industry's Bureau of Product Standards (BPS). Required by the BPS under Philippine National Standards 196:2000, the tests determine the thickness, moisture content, and bond quality of the plywood.

"Plywood samples submitted by BPS are subjected to tests depending on their type," explained Engr. Juanito P. Jimenez Jr., Senior Science Research Specialist and Technical Manager of FPRDI-PTL. "Type 1 or exterior/marine plywood is commonly used in boat making and in construction where outdoor exposure of the plywood is required. The strength of the glue will be ascertained after exposing the specimen to two cycles of boiling and then drying at 63°C for 20 hours," he added.

Known as interior or ordinary plywood, Type 2 plywood is used for indoor applications as partition walls, ceilings, or furniture among others. "Three cycles of soaking in water for four hours and drying at 49°C for 19 hours test the delamination strength of the specimen. The delamination test shows how the glueline will react when exposed to alternate wetting and drying," explained Jimenez. All test results are sent to BPS, which will then issue a Philippine Standard Quality Certification Mark License to qualified manufacturers or Import Commodity Clearance for importers.

Though BPS is FPRDI's main client, Jimenez noted that the Institute also accommodates testing requests from private companies. He stressed that with FPRDI's plywood testing, consumers are assured that the products they buy conform to Philippine standards of quality.

State-of-the-art equipment is used to test the plywood's shear strength.

After subjecting the Type 1 plywood specimens to cycles of boiling, drying, and wet shear testing, a visual reading of wood failure is done to evaluate the glue bond quality.

The FPRDI has been doing research on plywood and other forest-based products for decades now. For inquiries about the Institute's plywood testing services, please call (049) 536-2377/2586 or email *fprdi@dost.gov.ph.*

ANIMAL WELFARE . . . from page 13

which animal welfare advocates deemed inadequate to address all concerns on animal guardianship and treatment.

Among the discussion participants were the Animal Kingdom Foundation, Inc. (AKF), Compassion and Responsibility for Animals (CARA), Human Society International (HSI), the Island Rescue Organization (IRO), and the Philippine Animal Welfare Society (PAWS). Also present were representatives from AGHAM Partylist and the Bureau of Animal Industry of the Department of Agriculture (DA).

All groups in the RTD are unified in their view that the law needs higher fines and more severe punishment for animal offenders. Stipulated under the Animal Welfare Act is the punishment of either imprisonment for six months to two years, or fine of 1000 to 5000 pesos, or both, for violators of any of its provisions, at court's verdict.

Four proposal bills recommending RA 8485's amendment—House Bills (HB) 5849, 4831, 2198 and 6049—were discussed in the RTD. The discussion covered overviews and nuances of four proposed HBs, provision of penalties, contentions among the groups, funding, and documentary and legal requirements.

"Whichever bill is approved is of little importance as long as at the animals are at a better condition at end of the day," remarked Luis M. Buenaflor, Jr., AKF trustee.

The Philippine Animal Welfare Act was signed back in 1998 by former President Fidel V. Ramos and is the first established law in Southeast Asia on the protection and welfare of animals. Its objectives are to "supervise and regulate the establishment and operations of all facilities used for breeding, maintaining, keeping, treating, or training of animals either as objects of trade or as household pets."

According to Cabrera, RA 8485 encompasses all kinds of animals that fly on air, walk on land, and live in water. In essence, she adds, the Animal Welfare Act condemns all "unjustified and unnecessary" forms of cruelty or abuse against all animals.

Dr. Teodulo M. Topacio Jr., National Scientist and member-at-large of the DOST-NRCP, meanwhile, quoted the first lines of a classic children poem during the RTD to creatively convey the imperative of protecting animals: *"All things bright and beautiful, all creatures great and small. All things wise and wonderful, the Lord God made them all."*

AUTOMATED GUIDEWAY . . . from page 8

mechanisms and operation, which include speed, stability, brake distance and power, among others.

"If all goes as planned in the construction of the guideway, we will be able to initiate the testing in October," said Engr. Puerto.

Aside from being locally developed, the DOST's AGTS is environmentally sound as it is non-polluting. It is also reliable because it is fully automated, and safe because the elevated guideway will not get derailed or cause road accidents. The AGT also helps reduce traffic congestion and its economic costs.

Some countries that are reaping benefits from the AGTS technology at present include the United States, Japan, Singapore and Canada.

"If these countries can do it, so can the Philippines," Sec. Montejo said.

The AGTS project is monitored by the DOST's Philippine Council for Industry, Energy and Emerging Technology Research and Development.

PANDAN . . . from page 16

the amount of fresh insights on the development of new indigenous fibers we can get from them," said Engr. Cora Llorico.

Currently, PTRI is manufacturing an eight-meter 80/20 cotton/pandan prototype for Ian. This prototype was showcased at the Intel International Science and Engineering Fair at Pittsburgh, Pennsylvania, USA on May 13-18, 2012.

Committed to continue his research on indigenous fibers for textile manufacture, Ian will take up Bachelor of Science in Agricultural Chemistry majoring in Fiber Technology at the University of the Philippines Los Baños (UPLB).

"With the current efforts of PTRI and other researches of the textile industry, I believe that PTF will soon be not only a Filipino technology but also a global trend. PTF will hopefully be at par with other commercially dominating fabrics… [with] everyone appreciating and using it," foretells Ian.

OL TRAPS . . . from page 6

"In this program, DOST works very closely with the health, education, and local government departments," informed Sec. Montejo. "Each agency has a very important role in the program to significantly reduce the number of dengue cases among our school children."

The program has identified 31 priority areas that will receive the first batch of OL Traps totaling some 435,000 kits nationwide. DOST produced the initial batch of traps and has transferred the production of OL pellets to a private entrepreneur.

DOST, through its National Capital Region office, has also began training teachers who will serve as OL Trap coordinators. Said coordinators learn the procedures of using the OL Trap and preparing monitoring reports. They also learn more about dengue and other anti-dengue initiatives of the government.

"It's not rocket science," said Department of Education Undersecretary Jesus Lorenzo Mateo. "The OL Trap is a very simple technology but is effective in helping decrease dengue cases among schoolchildren."

"We are happy that DOST and the Department of Health is partnering with DepEd in this project," Mateo added. *(Framelia V. Anonas, S&T Media Service)*

DOST, DENR join hands in sustaining the country's greening program. Science Secretary Mario G. Montejo together with DENR Secretary Ramon Paje and Taguig Mayor Lani Cayetano bury the time capsule containing the development plan for the DOST-DENR Clonal Nursery at Zone 10b inside the DOST Compound, Bicutan, Taguig. The groundbreaking ceremony marks the start of a strong partnership in the implementation of the National Greening Program that aims not only to mitigate climate change but also to help in poverty reduction and food security. **(Text: Arjay Escondo; Photo: Henry de Leon; S&T Media Service)**

Guevara takes oath as Acting Usec. Department of Science and Technology Secretary Mario G. Montejo administers the oath of office of Dr. Amelia P. Guevara as acting Undersecretary of DOST. Dr. Guevara is concurrently the executive director of Philippine Council for Industry, Energy and Emerging Technology Research and Development (PCIEERD) of DOST. She was appointed as acting undersecretary after Dr. Graciano P. Yumul sought early retirement this year. With them is PCIEERD Deputy Executive Director Engr. Raul Sabularse. **(Photo by Gerry Palad)**

New PSHS Main Campus Director takes her oath of office. Ms. Virginia P. Andres, the new Director of the Philippine Science High School (PSHS) – Main Campus in Quezon City, takes her oath of office in a ceremony officiated by DOST Secretary Mario G. Montejo on April 12, 2012. Witnesses were DOST Undersecretary Fortunato T. Dela Peña and PSHS System Executive Director Dr. Josette T. Biyo.

OL Trap turn-over. Department of Science and Technology Regional Office No. XI (DOST XI) Assistant Regional Director Eduardo P. Tesorero turns-over the Ovicidal/Larvicidal Trap (OL-Trap) Kit to DepEd Davao City Assistant Schools Division Superintendent Ma. Antonia P. Diaz with DOH Dengue Program Manager Antonietta Ebol during the launching and orientation of the School-Based OL-Trap Roll-Out on June 13, 2012 at DepEd Division Training Center, Quirino Avenue, Davao City

Greenwood Award goes to Dr. Cuevas. The Department of Science and Technology (DOST), through its advisory body, National Academy of Science and Technology (NAST) honored Dra. Virgina Castillo-Cuevas (middle) as NAST-Hugh Greenwood Environmental Science Awardee for 2012 last April 23, 2012 at Hyatt Hotel and Casino, Ermita, Manila. Dr. Cuevas, professor and scientist at University of the Philippine-Diliman, was recognized for her significant contributions in the development of technologies that help attain agricultural sustainability, particularly the composting technology using *Trichoderma harzianum* Rifai Activator. With her are (L-R) Academician William Torres, NAST President Emil Q. Javier, National Scientist and NAST Vice President Mercedes B. Concepcion and DOST Undersecretary Fortunato T. Dela Peña.

Department of Science and Technology

m OL-TRAP squito

The Mosquito Ovicidal/Larvicidal Trap or mosquito OL Trap is a system used to control the population of the dengue-carrying Aedes mosquitoes.

Developed by the Department of Science and Technology, the Mosquito OL Trap is part of the government's multi-pronged approach in addressing the country's dengue problem

STOP DENGUE NOW!

www.science.ph

DOST DOH DepEd DILG

Juan time

FILIPINO TIME IS ON TIME

@DOST, we offer solutions.

science.ph

science for every Juan

Please visit
www.science.ph
Department of Science and Technology

DOST STARBOOKS

The First Philippine Science Digital Library

Your access to a wealth of science and technology information right at your fingertips.

Science and
Technology
Academic &
Research-
Based
Openly
Operated
Kiosk
Station

Your One-Stop S&T Information System

STARBOOKS contains thousands of digitized science and technology resources in various formats (text and video/audio) placed in specially designed "pods" set in a user-friendly interface.

Who should avail of STARBOOKS?

* Local Government Units
* Non-Government Organization
* Educational Institutions

How to avail the STARBOOKS?

1. Make a formal request
   (Letter addressed to the STII Director)
2. Ensure compliance to requirements
   (IT and manpower components)
3. Purchase of equipment
4. MoU signing
5. Installation of kiosks
6. Training of focal persons
   (preferably IT and Librarians or both)

For more information, contact:

Department of Science and Technology
SCIENCE AND TECHNOLOGY INFORMATION INSTITUTE
DOST Complex, General Santos Avenue, Bicutan, Taguig City
Tel.No. 837-2191 / 837-7518
www.stii.dost.gov.ph
e-mails: raymundliboro@yahoo.com, rosal624@yahoo.com, lyn_bacani@yahoo.com