LUMEN DE LUMINE

THE NEWSLETTER OF THE MANILA OBSERVATORY

Vol.1 Issue No. 1 I January-June 2018

What's Inside

CAMP²Ex Holds Science Meeting with the Manila Observatory

To kick-start the partnership for the The Cloud, Aerosol and Monsoon Processes Philippines Experiment (CAMP²Ex), Scientists from the National Aeronautics and Space Administration (NASA) and the Naval Research Laboratory (NRL) visited the Manila Observatory for a science meeting in preparation for CAMP²Ex on 02 March 2018.

The meeting was attended by scientists from the Manila Observatory, University of the Philippines Diliman, the Philippine Air Force, and DOST-PAGASA. The talks were mostly about the science of CAMP²Ex.

In addition, Senior Scientist of the Japan Agency for Marine-Earth Science and Technology (JAMSTEC) Dr. Kunio Yoneyama talked about the Years of the Maritime Continent Project. Mr. Ed Fukada of the Joint Typhoon Warning Center led a workshop on tropical cyclone forecasting in the afternoon.

Manila Observatory Executive Director Dr. Gemma Narisma and Air Quality Dynamics and Instrumentation and Technology Development (AQD-ITD) co-heads Dr. Obiminda Cambaliza and Dr. James Simpas are the local counterpart of NASA's Science Team.

CAMP²Ex is an airborne mission of NASA to characterize the role of aerosol particles in modulating the frequency and amount of rainfall in the Philippines during the Southwest Monsoon season.

Coastal Cities At Risk 2 Launched

The Manila Observatory (MO) and the Ateneo de Manila University (ADMU) in partnership with the National Resilience Council (NRC) and with support from the International Development Research Centre (IDRC) launched the second phase of the Coastal Communities at Risk: Investing in Climate and Disaster Resilience (CCaR2) on 23-24 January 2018. The project aims to equip coastal cities in Metro Manila, Iloilo, and Camarines Sur with better understanding of the complexity and dynamics of climate and disaster risk.

Present in the launch were ADMU President Fr. Jose Ramon Villarin, IDRC Senior Program Officer Dr. Melanie Robertson, and MO Executive Director Dr. Gemma Teresa Narisma all gave messages during the launch. Presentations on climate on disaster risk and climate were delivered by representatives of both local and international organizations working on the subject. Representatives from partner local government units were also in the launch.

Climate Cities at Risk team during the launch at Arete, ADMU

Dr. Faye Cruz delivered Dr. Gemma Narisma's message on her behalf. Dr. Narisma's message highlighted the value of CCaR Projects in helping scientists produce "useable" knowledge since the Observatory is getting more involved in exploring the connection between climate change and air quality in the Philippines, including its potential impacts on health, socio-economic vulnerabilities, and disaster risk and resilience.

Ultrafine Soot Particles in Aerosols cause Toxic Problems

The Manila Aerosol Characterization Experiment (MACE) research was conducted to observe and increase public awareness to the potential toxic problems caused by ultrafine soot particles.

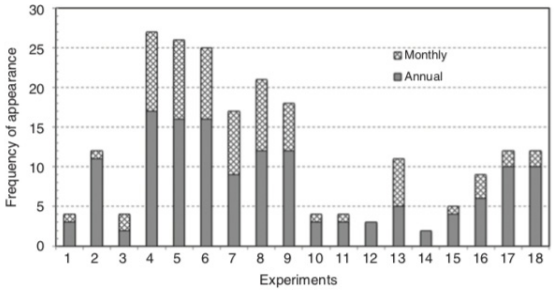
Results of the experiment indicated that the presence of such particles along Taft Avenue has a daily concentration of about 15,000 per cubic meter, which is 10 times more concentrated than those in Western Countries. It is highly likely that the particles found in the air are from metallic additives in lubricating oils, particles produced by combustion, and soot, the main source of which are non-Euro engines, especially diesel-fed public utility vehicles.

Measurement locations: a) ADMU-Katipunan, b) MO c) Taft Avenue, d) MO_UBS with red circle indicating the room (Photos taken by Dr. Thomas Müller and Dr. Wolfram Birmili)

Kecorius, S., Madueño, L., Vallar, E., Alas, H., Betito, G., Birmili, W., Cambaliza, M.O., Catipay, G., Gonzaga-Cayetano, M., Galvez, M.C., Lorenzo, G., Müller, T., Simpas, J.B., Tamayo, E.G., Wiedensohler, A. (2017). Aerosol particle mixing state, refractory particle number size distributions and emission factors in a polluted urban environment: Case study of Metro Manila, Philippines. *Atmospheric Environment, 170*.

Using RCMs in Simulating Climate Extremes in SEA

Rainfall and temperature extremes in Southeast Asia were analyzed using the output of the Southeast Asia Regional Climate Downscaling/ Coordinated Regional Climate Downscaling Experiment Southeast Asia (SEACLID/CORDEX-SEA) project. Multiple simulations were done to determine an optimal model configuration to represent climate over Southeast Asia. The study found that the model was able to capture the climate extremes over Southeast Asia, however, rainfall was more sensitive to the model settings compared to temperature.



The ranking scores of the 18 experiments based on the statistic values of (1) bias, (2) correlation, (3) rmse and (4) ratio of standard deviation between model and observation, for the annual values of the 12 extreme indices (grey) and for the monthly values of TXx, TXn, TNx, TNn, Rx1day and Rx5day (cross-hatched)

Ngo-Duc, T. , Tangang, F. T., Santisirisomboon, J. , Cruz, F. , Trinh-Tuan, L. , Nguyen-Xuan, T. , Phan-Van, T. , Juneng, L. , Narisma, G. , Singhruck, P., Gunawan, D. and Aldrian, E. (2017), Performance evaluation of RegCM4 in simulating extreme rainfall and temperature indices over the CORDEX-Southeast Asia region. *Int. J. Climatol.*, 37: 1634-1647. doi:10.1002/joc.4803.

THE PHILIPPINES AND CLIMATE PREDICTIONS: Informing and Communicating Climate Policy

There is an increasing need for climate change information to guide local and national policy in the Philippines, and there is an increasing volume of climate data available to decision makers from research organizations. And being an agricultural country, there is a demand in climate information to be able to enforce appropriate steps in adapting and mitigating the effects of climate change.

The paper analyzed the current data available to the Philippines and showed how multi-model and multi-method climate projections are being used and communicate to inform climate policy with a focus on the agriculture sector.

© Rappler File Photo

It is then argued that with the richness of data available to the Philippines, it is not being used to its full potential.

Researchers and research organizations are facing the challenge of harnessing the strengths and limitations that are expected in the models they use to produce their data while being able to communicate the information to policy makers. This effort will allow policy makers to make use of the data and inform their decisions.

Daron, J., Macadam, I., Kanamaru, H., Cinco, T. Katzfey, J. Scanell, C., Jones, R., Villafuerte, M., Cruz, F., Narisma, G., Delfino, R.J., Lasco, R., Manalo, J., Ares, E., Solis, A.L., de Guzman, R., Basconcillo, J., Tangang, F. (2018). Providing future climate projections using multiple models and methods: Insights from the Philippines. *Climactic Change, 148*(1-2).

Dr. Narisma and Dr. Cruz Join IPCC Experts Meeting

Last 16-18 May 2018, Manila Observatory Executive Director Dr. Gemma Narisma and Regional Climate Systems Head Dr. Faye Cruz attended the Intergovernmental Panel on Climate Change (IPCC) Experts Meeting on Assessing Climate Information for Regions in Trieste, Italy.

In this gathering of invited scientists and experts, Dr. Narisma did a keynote presentation with Prof. Bruce Hewitson entitled Synthesis of Past Assessments of Regional Information Characteristics to Enhance Usefulness: Shortcomings and Opportunities in Assessing Regional Information. The presentation highlighted the challenges faced by scientists and end-users in translating climate change information to be effectively used in adaptation and mitigation studies, and policy development.

This meeting facilitated the "handshake" between Working Groups I and II (WG I and WG II), which assess the physical science aspect of climate change, and the impacts, adaptation and vulnerability of climate change, respectively. This was a first step towards a coordinated and integrated assessment across working groups, especially at the regional scale, in preparation for the Sixth Assessment Report.

Dr. Gemma Narisma Receives Achievement Award from NRCP

The National Research Council of the Philippines (NCRP) awarded an Outstanding Achievement Award to Manila Observatory Executive Director and Ateneo de Manila University Associate Professor, Dr. Gemma Narisma for the NRCP division of Earth and Space Sciences on 14 March 2018 at the Philippine International Convention Center.

Dr. Narisma was recognized for her "outstanding work and contributions to studies on weather and climate change, particularly well-cited research on land cover change impacts on climate. She was instrumental in the founding of the Southeast Asian Regional Climate initiative that paved the way to the Coordinated Regional Climate Downscaling Experiment for Southeast Asia."

UK Met Office Scientist Shares Research Results on Using Climate Predictions in Informing Resilience Building

Dr. Joseph Daron of the UK Met Office spoke about the conceptual and practical challenges in distilling information from different sources and communicating it to multiple stakeholders in the Manila Observatory on 05 February 2018. His talk focused on his research entitled "Generating and Communicating Future Climate Projections from Multiple Models to Inform Resilience Building in the Philippines," as well as findings of a research collaboration with PAGASA in investigating future changes to typhoon activity in the Philippines.

Finally, he reflected on the broader implications of his work and related Met Office projects and collaborations in other regions and the strategic development of climate services to support efforts in addressing the challenges of climate variability and change.

Manila Observatory Participates in National and International Workshops and Conferences

1. 2018 Cities and Climate Change Science Conference Intergovernmental Panel on Climate Change (IPCC)
   March 2018 I Canada [Dr. Celine Vicente]
2. Tokyo Metropolitan University's Post Monsoon Asian Hydro-Atmosphere Scientific Research and Prediction Invitation (MAHASRI)
   March 2018 I Japan [Dr. Gemma Narisma]
3. Strengthening Resilience in Food and Agriculture
   March 2018 I Vietnam [Dr. Faye Cruz]
4. Best Practice Guidelines for Climate Change Projections and their Applications in ASEAN Countries
   March I Singapore [Dr. Faye Cruz]
5. Bread for the World "Climate Change Adaptation Workshop"
   April 2018 I Palawan [Dr. Julie Dado]
6. SEACLID/CORDEX-SEA Workshop
   May 2018 I Malaysia [Dr. Gemma Narisma, Dr. Faye Cruz, Dr. Julie Dado, Angela Magnaye, and Jenn Tibay]
7. IPCC Experts Meeting on Assessing Regional Climate Information
   May 2018 I Italy [Dr. Gemma Narisma, Dr. Faye Cruz]
8. ADB Regional Training Workshop on Integrating DRM into Urban Planning
   May 2018 I Thailand [Dr. Celine Vicente]

MO Formation

Newly appointed Executive Director Dr. Gemma Narisma gathered the MO Community for a general assembly last 12 January 2018 to discuss the direction of the Observatory in the coming years. With this, she also reminded the community about its Mission, Identity, and Values; Scientific Apostolate; and Institutional Sustainability. In this assembly, the new organizational structure was also discussed along with current projects undertaken and also gave focus on sustainable practices to be strengthened in the Observatory.

Last 19 March 2018, Fr. Victor de Jesus visited the Observatory to celebrate the feast of St. Joseph and the apostolate. He reminded everyone to participate in their specific roles not only to benefit themselves as individuals, but as well as their community and church.

Dr. James Simpas, co-head of the AQD-ITD Laboratory lead the MO community for a spiritual sharing on 21 May 2018. In this occasion, he shared his spiritual thoughts on the Observatory's shared mission entitled "Ang Langit, Ang Impyerno, at ang MO."

On-going Research

Air Quality, Climate, and Society

Building Urban Resilience: A Systems Approach to analyzing social and Personal Health risks of Jeepney Commuters and Drivers to PM2.5 in Metro Manila, Philippines

Atmosphere Observations and Field Campaigns

1. Cloud and Aerosol Monsoonal Processes Philippines Experiment (CAMP^{2}Ex)
2. Metro Manila Automated Weather Station (AWS) project
3. 7SEAS, Aerosol Robotic Network (Aeronet)

Climate Change Science

1. DOST- PCIEERD- CORDEX SEA
   - Analysis of the influence of sea surface temperature representation in downscaled regional climate using the SEACLID/ CORDEX-Southeast Asia simulations
   - Multitemporal and Extremes Analysis of Modeled Climatology over the Philippines in the SEA CORDEX Domain
   - Detecting Tropical Cyclones in a Downscaled Regional Climate Model for CORDEX-SEA
2. SEACLID/CORDEX Southeast Asia Phase II: High-resolution Analysis of Climate Extremes over Key areas in Southeast Asia

Disaster, Risk, and Resilience

1. ADB TA 8572: Action on Climate Change on South Asia
2. Coastal Cities at Risk 2: Investing in Climate and Disaster Resilience

Earth and Upper Atmosphere Science

1. Focal Mechanism Research
2. Geometric algebra approach to quake focal mechanism
3. GPS Measurement of precipitable water vapor
4. Radiowave propagation in the ionosphere using the IRI 2012 model
5. Equatorial electrojet modeling using MAGDAS magnetometers
6. InSAR satellite measurement of post-seismic crustal deformation

Lumen de Lumine (Light from Light) re-echoes the ancient Apostolic Credo confessing aloud the belief in Christ. This also represents the physical sun that enables the Manila Observatory to find its way in this world of sense and delve into the knowledge of its mysteries, and so does the Divine Son of God that enables us to find our way in the spiritual world. Fr. dela Costa reiterated this in the Observatory's 100th anniversary; with the serene and imperturbable faith, "all the paths of knowledge, wherever they may wind…lead in the end to that Love that draws all men, all creation, to itself."