P R O G R A M M E

7-7:45- Registration

National Anthem

Welcome Messages - ***Chancellor Michael L. Tan, Ph.D.***
- *Prof. Lenore dela Cruz*
  Director, Office of Extension Coordination

Opening Remarks – Dean Joefe B. Santarita, Ph.D.

8:00-9:45 Plenary Session -

Keynote : Alfredo Mahar Francisco A. Lagmay, Ph.D
"Building resilient communities through probabilistic risk assessment"

Open Discussion
Strengthening Inter-College Ties and Collaboration

9:45-10:00

Snacks

Session 1- 10a.m. 12.noon

1A. Tri-College Ph.D. Philippine Studies Program- Individual Papers
(Venue-GT-TACC Auditorium)

The Challenge Towards Resilient Cities:
Study of Selected Emerging Urban Districts (eUDS) in the Philippines
- MarotFlores,Ph.D.

Innovative Peace Building Strategies of Civil Society
-Ma. Cecilia T. Medina, Ph.D.

Disaster and disciplines: a DRRM handbook for academic institutions
-Ferdinand C. Llanes, Ph.D.

1B. Disaster Risk Reduction and Local Development Planning:
Towards Building Sustainable and Disaster Resilient Communities
(Venue-Philippine Hall)

CCA & DRR into Local Development Planning: Towards Building Sustainable and Disaster Resilient Communities
- Dr. Mario R. Delos Reyes

Mainstreaming Climate Change Adaptation and Disaster Resiliency in Urban Design: A Vision for the Philippines in 2050
- Dr. Mark Anthony M. Morales, Ar. Louwie A. Gan

A Strategic Model in Mainstreaming Disaster Risk Reduction (DRR) and Climate Change Adaptation (CCA) in Quezon City Comprehensive Land Use Planning (QC-CLUP), Philippines
-Dr. Tabassam Raza

Analysis of Exposure and Sensitivity Elements of Barangay Tumana, Marikina City as input to Resilient and Sustainable Barangay Development Planning
- Ar. Nicasio B. Espina, Jr. and Dr. Mario R. Delos Reyes

1C. Disasters and Governance I: Public Sector Response- ***(Venue-Japan Hall)***

The Impact of the 2015-16 El Niño in the Philippines
-Erwin A. Alampay and Dennis dela Torre

Responses of Higher Education Institutions to the Mandate in Climate Change
-Jocelyn C. Cuaresma

Shock-Responsive Social Protection Systems: A Case Study of the 4P System as Utilized During Typhoon Yolanda in Leyte
-Gabrielle Smith, Emmanuel M. Luna, Tanya Lone, Zoe Scott and Clare O'Brien

12nn-1:00 p.m.

Lunch

2A. Cultural Resource Management towards a Disasters Resilient Philippines
(Venue-Japan Hall)

Archaeology of Disasters
-Mark Mabanag

Safe and Claimed: An Alternative Perspective regarding the CSSP's Everyday Spaces
-Marco Lagman

Cultural Resource Management/Archaeological Impact Assessment Results and Implications to Our Understanding of Disasters
-Vito Paolo Hernandez

Responses to Earthquakes as Seen in Philippine Archaelogical Records
-Grace Barretto-Tesoro, Ph.D.

Heritage and Gentrification in Manila*(?)*
-Tessa Maria Guazon

2B. Marine Science Institute
(Venue- Philippine Hall)
Anatomy of Storm Surge Yolanda
-Dr.Cesar Villanoy
Sea surface temperature reconstruction from Pujada Bay, Philippines,
and implications of warming seas
-Dr. Caroline Jaraula
Coastal erosion in the Philippines
-Dr. Cherrie Ringor
Land and sea changes in W Bohol triggered by the October 15, 2013 M7.2 earthquake
and their impacts to habitation and coastal resources
-Dr. Fernando Siringan

2C. Law and Disaster
(Venue- GT-TACC Auditorium)
-Prof. Lisa D. Corro (Chancellor, UP Cebu)
-Atty. Lisa Fidelis Cañada (Lecturer, National Defense College of the Philippines)

Snacks

3A. Department of Food Science and Nutrition
College of Home Economics- Food and Disaster
(Venue- Japan Hall)
Relief Operations 101: Food for Disaster Relief
-Rowena Grace O. Rumbaoa-Sanchez
Development of Ready-to-Eat Corn Grit Meals for Emergency Feeding
Professor Alonzo A. Gabriel, PhD
RTE Bihon and Rice for Yolanda Victims
-Abigail T. Rustia and Ma. Patricia V. Azanza, PhD
Development and Preparation of Emergency Food in Undergraduate Lab Exercises
-Ms. Maria Carmela C. Taob

3B. Institute of Environmental Science and Metereology
(Venue- Philippine Hall)
Wind damage and storm surge survey of typhoon Lawin (Haima)
- Dr Leoncio Amadore
Tropical Cyclone-induced rainfall in the Philippines
- Dr Gerry Bagtasa
Resilience of agricultural infrastructures to impacts of climate change—
A review of the Philippine irrigation systems –
Dr Tolentino Moya
Characterizing agricultural droughts in the Philippines
using Earth Observation Satellite data
- Dr. Gay Jane Perez and Dr. Marco Macapagal
An Assessment of Channel Change Effects on Flood Stages in Marikina River
- John Edward Perez

3C. Disasters and Governance II: Public Sector Reform
(Venue- GT-TACC Auditorium)
Towards Establishing a National Agency for Disaster Risk Management:
Assessing Congressional Proposals for Institutional Reform
and Prospects for Change-
Dr.Kristofffer B. Berse
Civic Environmentalism in Integrated Watershed Management:
A Framework for Local Governance and Reducing Flood Risks
- *Maria Faina L. Diola*
Public Service Continuity Planning: Imperative Innovation
in the "Age of New Normal"
-Dr. EbinezerFlorano

Closing Plenary Presentation- 5:00-5:45 p.m.
Learning and Teaching DRRM in General Education at UP
-Dr. Benito M. Pacheco

5:45- 6:00 pm. Closing ceremonies
Some word from UP President-Elect Danilo L. Concepcion

Fellowship-Inter-College Socials

This activity has the generous support of the OEC, UPD and UP College of Law, among others.

IMPORTANT
Please submit accomplished Feedback Form before getting your proof of attendance at 6:00 p.m.

Abstracts and Bio-Notes

Mahar Lagmay, Ph.D.

Dr. Alfredo Mahar Francisco A. Lagmay is an Academician of the National Academy of Science and Technology (NAST) and Professor at the National Institute of Geological Sciences, University of the Philippines. He is currently the Executive Director of the DOST Nationwide Operational Assessment of Hazards (NOAH, DOST's flagship program for disaster risk reduction and management. He received his Bachelor's and Master's degrees from the University of the Philippines and holds a Ph.D. degree in Earth Sciences from the University of Cambridge (2001). He was a visiting scientist at the Geophysics Department of Stanford University from April 2006 to March 2007. His work is focused on volcano-tectonics, fluid dynamics of volcanic flows, remote sensing, and Permanent Scatterer Interferometry of faulted regions. Upon receiving his Ph.D., he returned to the Philippines and has been involved in numerous research efforts related to natural hazards. He lectures on Philippine Disasters by virtue of having hands-on experience in search-and-rescue and forensic analyses of major Philippine catastrophes. These include the lethal Mindoro, Iloilo, Pampanga floods, Guinsaugon landslide, Mayon lahars, and the Ondoy, Pedring/Quiel, Sendong, Habagat, Pablo and Yolanda disasters. He is a recipient of the Presidential citation for search and rescue work in Guinsaugon and the 2008 Outstanding Research Award for advanced science and technology in the Philippines for innovative applications of space technology. He was also awarded the 2008 and 2011 University Scientist awards, the 2012 New Media digital heroes award and the 2012 Cyberpress best IT product of the year for development of the Project NOAH website and mobile tools. On June 20, 2013 he was presented with the Professional Regulation Commission (PRC) Outstanding Professional of the Year Award in the field of Geology for his accomplishments. In the same year, he received the 2013 Outstanding Filipino award (TOFIL), an honor given by the Junior Chamber International (JCI) Senate Philippines to Filipino men and women whose exemplary achievements are worthy of emulation. In 2014 and 2015, RED Alert, a radio program that he anchors, was recognized by numerous awarding bodies including the Catholic Mass Media Award (CMMA), Philippine Quill Awards and the Hildegarde awards. He also received in 2015, on behalf of the development team of the ARKO mobile app, the World Summit Award (WSA) for best mobile app for m-inclusion and empowerment. Also in the same year of 2015, Dr. Lagmay has also been awarded with the Plinius Medal by the European Geosciences Union or EGU for outstanding achievements in interdisciplinary natural-hazard research and natural-disaster engagement in the Philippines. He is also the first Asian to receive such an honor. With his wide range of experience and expertise in Geology and disaster science, he continues to serve the Filipino people by conducting work in areas stricken by disaster. His most recent work covered the 2013 Bohol Earthquake and the 2013 Yolanda/Haiyan Supertyphoon. A consultant for World Bank and USAID, Dr. Lagmay is a leading international scientific expert on natural hazards. He has published more than 50 peer-reviewed journal articles, mostly in international ISI journals. Also an editor and regular reviewer of scientific manuscripts in world-class journals, he maintains a reputable status in his field of expertise in the international scientific community.

Benito M. Pacheco, Ph.D.

A professor at the Institute of Civil Engineering, College of Engineering, Pacheco earned his BS (cum laude) and MS in Civil Engineering from UPD in 1980 and 1984, respectively. Under a Monbusho scholarship, he later obtained his PhD in Civil Engineering from the University of Tokyo, Japan in 1987.

Prior to his appointment as Vice Chancellor for Research and Development, he served as the first director of the newly transformed Institute of Civil Engineering.
He is a registered or accredited Civil Engineer/Structural Engineer/Professional Engineer in the Philippines, New York (USA), ASEAN and the Asia-Pacific Economic Cooperation (APEC), having practiced civil, structural and disaster risk management engineering in the Philippines, Japan and the USA.

He served as track head for the research on Environment and Infrastructure by the 8-university consortium in Engineering Research and Development for Technology (ERDT).

Pacheco's research interests and professional practice are concerned with systems, infrastructure, buildings, bridges and sites. He has been working directly on the effects of earthquake, strong wind and fire. He has also coordinated studies on flood risk and landslide risk.

In 2010, Pacheco was chosen as one of the 100 Outstanding Alumni Engineers of the Century by the UP Alumni Engineers. In the same year, the Professional Regulation Commission of the Philippines bestowed on him the Most Outstanding Civil Engineer of the Year award.—*Bino C. Gamba* (excerpted from http://www.upd.edu.ph/~updinfo/jun11/articles/Dr_Pacheco_vcrd.html)

The Challenge Towards Resilient Cities: Study of Selected Emerging Urban Districts (eUDS) in the Philippines
Marot Nelmida-Flores, Ph.D.

In 21st century Philippines, the traditional marketplace, downtown area and commercial centers are slowly giving way to new spaces of consumption and production now known as emerging urban districts (EUDs), as part of urban development. These EUDs are located in urban centers and have become alternative sites against the old central business districts

which suffer from urban decay and congestion, pollution and other concomitant sociological problems such as crime and prostitution.

The study looks into the EUDs of Binondo District in Manila, Dagupan City in Pangasinan and Iloilo City in Iloilo and if these cities are resilient amidst the inevitability of developmental engineering. City or Urban Resilience is used here to relate to disaster-preparedness not only in terms of natural calamities such as earthquakes, fires and floods but also include the stresses that threaten the economic, social and cultural life of the city.

The challenge towards resilient cities is viewed as a call not only to urban planners but also to government policy makers on denationalization, property developers and investment companies as well as vendors, consumers, and the ordinary Filipino who are all stakeholders, because life is absolutely paramount.

Keywords: Marketplace, EUD, City Resilience, Urban Development, Denationalization

Innovative Peace Building Strategies of Civil Society

Maria Cecilia T. Medina, PhD
Asian Center, University of the Philippines

Zamboanga City has been marked by poverty, armed conflict and violence for many years. The study analyzed the strategies of civil society in relation to peace building taking the Zamboanga Basilan Integrated Development Alliance (ZABIDA), a consortium of four non governmental organizations as a case in point. Utilizing a qualitative research design and the functionalist framework of Paffenholz and Spurk (2006) the initiatives of the consortium covered the protection of internally displaced persons (IDPs) during and after the 2013 MNLF-Government War. It also included the monitoring for accountability, advocacy and public communication, socialization, building community, intermediation and facilitation between citizen and state as well as service delivery in line with the framework of Paffenholz and Spurk (2006) during and after the conflict. ZABIDA continued to actively promoting peace and inclusive development by engaging communities, schools, other non-government actors and the state to address the root causes of conflict. Its efforts in the building of a peace constituency, fostering social cohesion, and governance initiatives helped empower various sectors and rebuild communities.

Keywords: Civil Society, Peace building, Zamboanga Basilan Integrated Development Alliance (ZABIDA), Zamboanga Siege

Disaster and disciplines: a DRRM handbook for academic institutions

Ferdinand C. Llanes, PhD

What difference does an inter-disciplinary effort make in building a DRRM program?--a training course and a handbook for academic institutions. Between 2011 and 2014, the UP System—through the Padayon public service office--made possible the organization and mobilization of various academic disciplines to develop a holistic disaster response and mitigation program. The office and UP academic experts have instituted a training course—conducted in at least 2 campuses—and produced a compendium of DRRM training materials for academic units. Come now the upcoming publication of a DRRM handbook for academic institutions, making various UP expertise and DRRM experience available to schools and universities as guideposts for their own DRRM preparations. The idea is to provide a ready reference for DRRM in a university setting, making use of expertise from relevant academic disciplines. It provides both the basic principles and practical guidelines for taking action. Implicitly, the handbook is expected to stimulate a culture of disaster preparedness and capacity-building and recovery. The book is based on experiences by UP academic units or by UP academic personnel involved in DRRM beyond UP campuses or in communities in various parts of the country.

(Ferdinand C. Llanes was director of Padayon public service office in 2013-14 and initiated a DRRM training course and now the publication of a DRRM handbook for academic institutions.)

Disaster Risk Reduction and Local Development Planning:
Towards Building Sustainable and Disaster Resilient Communities

CONVENOR

Mario R. Delos Reyes/UP-SURP

ABSTRACT

The Philippines ranked first in the list of Global Climate Risk Index 2015 as the most affected country in 2013. In terms of extreme weather events, the country will most likely be remembered by Typhoon Yolanda (International name: Haiyan), which struck in November 2013.Learning from past experiences and continually confronting typhoons, storm surge and floods, communities need to be prepared for such occurrences, especially among informal settlers that live in disaster prone areas. Studies indicate more frequent typhoons, monsoon rains, and floods: vulnerability of human settlements especially the marginalized informal settlement families; insecurity of land tenure and housing; and the need for localization of national policies and inter-agency collaboration for disaster risk reduction and management. Strengthening the community organizations and policy formulation

were identified, as well as, strategies to build the community's resilience and disaster preparedness, prioritizing land tenure issues, settlement development, protection of high risk disaster prone areas, social enterprise, environmental management, and physical planning.

The presentations explore some of the emerging issues that cities/municipalities in the developing world like the Philippines confront as they begin to develop plans and strategies to adapt to the effects of disasters. The emphasis is more on informal settlement communities/families. Sustaining and improving housing and human settlements in the face of disaster should become an important lens for cities/municipalities as they look to the future. DRRM will impose large costs on many LGUs, particularly low-lying coastal cities. While the bulk of these resources will need to come from government and private sources, donors have an important role to play in supporting the science and the development of effective practices and methodologies to employ in policy and program formulation.

Institute of Environmental Science and Meteorology Panel

Dr Gerry Bagtasa is an Associate Professor in Atmospheric Science/ Meteorology at IESM. He received his PhD from Chiba University, Japan.

Dr Leoncio Amadore is a Professorial Lecturer in Atmospheric Science/ Meteorology at IESM; former Administrator of PAGASA. He received his PhD from then Dept of Meteorology and Oceanography (now part of IESM) at UPD.

Dr Tolentino Moya is a Professor at IESM specializing on environmental hydrology. Dr Moya received his PhD from Cornell University.

Dr Gay Perez is an Associate Professor at IESM specializing on remote sensing and atmospheric science. Dr Perez received her PhD from NIP in UPD. [Mr Marco Macapagal is the co-author of Dr Perez's paper presentation and may end up being the presenter. Mr Macapagal is pursuing MS on Environmental Science at IESM, whose research is on drought. He is one of the Senior Research Associates under the Predictions for the Environment and Application of Remote Sensing, PEARS Laboratory].

Disasters and Governance I: Public Sector Response

The panel discusses the different levels of response of the public sector, including state universities and colleges (SUCs), to pressing challenges brought about by intensifying disasters in the midst of a changing climate. It seeks to answer such questions as: How does the government adjust social protection programs to be responsive to shocks? How does it respond to prolonged impacts of climate change in the middle of an election period? And how do SUCs contribute to the whole-of-society effort in addressing the growing threats of climate change? The papers draw primarily from two recent disasters that hit the Philippines, namely, the 2009 Typhoon Haiyan and the 2015-2016 El Niño episode.

The Impact of the 2015-16 El Niño in the Philippines

Erwin A. Alampay and Dennis dela Torre

The Philippines, is one the Pacific countries that is affected by the El Niño, which occurs every so many years, which leads to extreme weather disturbances, and lead to prolonged droughts and changes in sea surface temperatures among others. The El Niño in 2015, was among the strongest ever recorded, and came at a time when the country was in the middle of an election period. This paper discusses the problems caused by this occurrence, particularly its impact on farmers and fisher folk, the limitations of current systems that are geared more towards regular, non-prolonged environmental events, and not prolonged exposure to fluctuations in the weather and climate. It proposes the need to learn from past El Niños and develop new protocols for such an event (different from preparations for one-off disasters like typhoons and earthquakes), and need to revisit election policies that affect immediate relief from emerging humanitarian crises such as these, which will certainly occur again, and in with greater magnitude.

Responses of Higher Education Institutions to the Mandate in Climate Change

Jocelyn C. Cuaresma

The paper presents an analysis of higher education institutions (HEIs) as an important sector in addressing climate change issues through carrying out their inherent functions of instruction, research and capacity building. The huge amount of resources, expertise and knowledge in the hands of HEIs, particularly state universities and colleges (SUCs) strongly suggest the able fulfilment of their mandate under the Climate Change Act of 2009. A desk analysis of information gathered from websites, government budgets and related resources on 115 SUCs and selected private HEIs show an encouraging amount of responses in terms of integrating climate change issues into curricula, researches, capacity building, community engagement and external linkages, with some HEIs being more accomplished than others. However, efforts remain uncoordinated, and urgency in achieving commitments is absent. Much remains to be accomplished in asserting the role of HEIs in addressing climate change issues and for HEIs themselves to monitor their own pledges to Mother Earth.

Shock-Responsive Social Protection Systems: A Case Study of the 4P System as Utilized During Typhoon Yolanda in Leyte
Gabrielle Smith, Emmanuel M. Luna, Tanya Lone, Zoe Scott and Clare O'Brien

The humanitarian system is under stress and is not able to respond effectively to the increasing number of disasters occurring annually. Alternative approaches need to be explored and assessed for their likely effectiveness in helping individuals and communities to better cope with disasters and shocks. Following Typhoon Yolanda, the Patawid Pamilyang Pilipino Program (4Ps) was scaled up to help victims of the disaster. The study looked at how social protection systems can better scale up in response to shocks in low-income countries, thus minimising the negative impacts of shocks and reducing the need for separate humanitarian responses. The research looked at the factors that enabled social protection systems to be responsive to shocks and to deliver effective shock response. It also looked at the intersection between social protection, humanitarian interventions and disaster risk management, and the opportunities for improving coordination between these sectors

PRESENTER PROFILES

Dr. Erwin Alampay is an Associate Professor at the UP National College of Public Administration and Governance and concurrent Director of NCPAG's Center for Local and Regional Governance. His areas of expertise include active citizenship, e-governance, ICT policies, ICTs for development, systems analysis and voluntary sector management. Dr. Alampay has a PhD in Development Administration and Management from the University of Manchester; an M.A. in Development Studies from the Institute of Social Studies, The Hague; a Master of Public Administration and a BS in Industrial Engineering from the University of the Philippines.

Dr. Jocelyn C. Cuaresma is Associate Professor of the UP National College of Public Administration and Governance. She is currently the College Secretary and Director of Studies. Her research interests includes public fiscal administration, local government finance, public administration theory and development. In addition, she has conducted research in tracking disaster funds, role of higher education in climate change, water privatization and access to water. She is a Fellow of Social Watch Philippines, Inc., a non-government organization involved in advocacy for transparency and accountability in public finance and for the rights of citizens and civil society.

Dr. Emmanuel M. Luna is a professor of Community Development at the College of Social Work and Community Development, University of the Philippines and the Director of the Doctor of Social Development Program. He is a team member of the research "Shock-Responsive Social Protection System" by the Oxford Policy Management" in UK. He is the Co-Editor of the International Journal Disaster Prevention and Management, UK; Board Secretary of the Center for Disaster Preparedness; and a Board member of the Operations Compassion. He is one of the Convenors of the Disaster Risk Reduction Network in the Philippines. Dr. Luna holds a PhD in Urban and Regional Planning.

Disasters and Governance II: Sector Reforms

The panel broadly explores possible areas for reform at the national and local levels in order to reduce the impacts of disasters on the public sector. Specifically, it seeks to answer the following questions: How should government prepare itself to ensure continuity in public service delivery following a disaster? How can civic environmentalism as a framework anchor local flood risk reduction? And how can the Office of Civil Defense as the country's national focal agency for disaster risk management be reorganized to meet its expanded mandates under RA 10121? Collectively, the panel seeks to bring to light the critical role of institutions across all tiers of governance in facilitating the country's shift to whole-of-society disaster risk reduction.

Towards Establishing a National Agency for Disaster Risk Management: Assessing Congressional Proposals for Institutional Reform and Prospects for Change
Kristofffer B. Berse

The enactment of the Philippine Disaster Risk Reduction and Management Act of 2010 (RA 10121) ushered in a new era of managing disasters in the country, one that signals a paradigm shift from reactive response to proactive risk reduction. At the center of this policy reform is the Office of Civil Defense (OCD), which serves de facto as the national focal agency for disaster risk management (DRM) being the implementing arm of the National Disaster Risk Reduction and Management Council. This study looks at the strengths and weaknesses of OCD vis-à-vis its expanded mandate under RA 10121. It also analyzes how recent Congressional proposals for change address the capacity gaps faced by OCD. It ends with a set of recommendations to enhance the organization's strategic, operational and functional capacities with respect to DRM. Opportunities and challenges for meaningful institutional reform under the Duterte Administration are likewise discussed.

Civic Environmentalism in Integrated Watershed Management: A Framework for Local Governance and Reducing Flood Risks
Maria Faina L. Diola

This paper is an exploratory attempt to introduce a framework of governance that sums up how governance institutions may carry out disaster mitigation, while highlighting the significant role of local governance institutions. While espousing Integrated Watershed Management (IWM) as a strategy towards disaster management in general and flood reduction in particular, this paper introduces a framework for governance based on Civic Environmentalism, a concept promoted by proponents of environmental governance. The

underlying principles of civic environmentalism explain how it works: generates local social capacity and mobilizing latent capacity; attracts specific kinds of outside support; and works through certain collaborative processes. This paper adopts the assumption by John (2004) that where this capacity and support are strong and where participants follow the rules of collaborative problem solving, civic environmentalism can be a possible framework in addressing various environmental problems, including disaster prevention. Caselets on watershed management from the Philippine Watershed Management Coalition are used as illustrative examples for tracing possible indicators for Civic Environmentalism.

Public Service Continuity Planning: Imperative Innovation in the "Age of New Normal"
Ebinezer Florano

In the "Age of New Normal" where catastrophic disasters bring havoc to society, Public Administration must innovate to be able to restore normalcy immediately. However, the challenge becomes complicated when the government itself becomes a victim, i.e., the officials and employees are either injured, dead or went missing, building and offices are destroyed, communication lines are cut off, data and records are lost, etc. How, then, should the government prepare itself to provide continuous service in the aftermath of disasters? This paper shall discuss the nature and mechanisms of conducting "Public Sector Continuity Planning." Known as "continuity planning" in the US, it is "simply the good business practice of ensuring the execution of essential functions through all circumstances" (US Homeland Security, 2014). Examples from the US shall be highlighted. Its relevance for a public utility, i.e., MRT3, in the Philippines shall be illustrated.
Presenter Profiles

Dr. Kristoffer Berse is an Assistant Professor and Program Coordinator at the UP National College of Public Administration and Governance. His areas of interest broadly crisscross disaster risk management, climate change adaptation, urban sustainability, inter-local cooperation and policy studies. He has a multi-disciplinary academic background, having earned his PhD (Urban Engineering) and master degrees (Environmental Studies) from the University of Tokyo and his BA (Public Administration) from NCPAG. He has published and presented papers in various forms and fora in and outside the Philippines.

Dr. Maria Faina Lucero-Diola is Assistant Professor and current Director of the Center for Leadership, Citizenship and Democracy at UP-NCPAG. She has worked in the development communication and rural development fields for 34 years and in the field civil society development in Asia for 25 years, having been extensively involved in various capacities in research, strategic planning, project management, monitoring and evaluation, training, donor relations and development communication tasks. Dr. Diola has also worked and was posted overseas in two countries — as visiting researcher at the Fisheries Research Institute in Keelung, Taiwan, and as writer-editor and Specialist in International Relations at the Japan NGO Center for International Cooperation (JANIC) in Tokyo, Japan. She earned her DPA from UP-NCPAG and her BS and MS degrees in Development Communication from UP Los Banos.

Dr. Ebinezer R. Florano is Associate Professor of the University of the Philippines-National College of Public Administration and Governance (U.P.-NCPAG) and Director of its Center for Policy and Executive Development (CPED). Dr. Florano has published papers mainly on Environmental Governance, including climate change adaptation/disaster risk reduction (CCA/DRR). He has presented papers in various international conferences in countries in Asia, North America, and Europe. He is a recipient of International Publication Award, Professorial Chair Grant, and Faculty Grant from the U.P. System and U.P. Diliman.

Cultural Resource Management towards a Disasters Resilient Philippines
Vito Hernandez and Grace Barretto-Tesoro

Archaeological and cultural resources of a nation are finite resources vulnerable to both environmental and social disasters. Thus, they need to be managed. Too, these resources are contextualised within specific geographies and thus valued differently between spaces. And this presents a cultural resource management dilemma: Who holds the best framework for the management of these resources? Where do we begin with the management of these resources? What and how is the best way to manage these resources? Why do need to manage these resources?

It is with thinking that this session challenges cultural resource scientists and practitioners, particularly archaeologists, museologists, heritage architects, geographers, urban and environmental planners and their allied scholars and professionals to go beyond their different disciplinal takes on cultural resources as data. Instead, innovate towards how their looking glasses can contribute to determining possible sustainable, efficient and easily operational mechanisms that can contribute to the conservation of cultural resources in light of and in preparation for disaster. It is hoped that with this challenge accepted these cultural scientists and cultural management practitioners identify common disciplinary undertaking for possible future mutli-disciplinary engagements relevant to nation.

Institute of Environmental Science and Meteorology

Wind Damage and Storm Surge Survey of Typhoon Lawin (Haima)[1,2]
Leoncio A. Amadore, PhD[3,] Robert Z. Quinto[4], Wilfredo H. Tuazon[5]

Typhoon Lawin (Haima) traversed northern Luzon on October 19 and 20, 2016. As a supertyphoon, Public Storm Signal (PSS) # 5 was raised for the first time ever, over the provinces of Isabela, Cagayan, Apayao, Northern Abra and Ilocos Norte. Typhoon Lawin was forecast to attain maximum winds of 225 kph with the possibility of storm surge occurrence at coastal areas. The purpose of this survey is to determine the damage to structures and

vegetation caused by strong winds of the typhoon and to verify the occurrence of storm surges at some coastal areas The results of the survey will serve as input to the typhoon damage scale and storm surge models, currently used by PAGASA. Photos of damage to structures and vegetation taken along the survey route will be shown and analyzed. The process of estimating the maximum wind profile of the typhoon, theoretically and observationally, will be presented. Storm surge occurrence will be verified in terms of the factors favoring its generation. In addition, an insight into how disaster risk reduction (DRR) measures played vital roles in the low casualty and relatively light damage to structures caused by Typhoon Lawin.

Tropical Cyclone-induced rainfall in the Philippines

Gerry Bagtasa,UP-IESM

Tropical cyclone (TC)-induced rainfall in the Philippines was investigated using a combination of groundand satellite observations to produce a blended 64-year precipitation dataset. A total of 1673 TCs were examined using best track data from the Japan Meteorological Agency. Rainfall from 100^0 (~1110km) of TC center was considered as TC-induced rainfall. TC rain contribution is highest in northern Philippines, particularly along the western coast of Luzon (up to 54%), and lowest in the southern islands of Mindanao(6%). The high TC rain contribution is attributed to the enhancement of the Asian Southwest Monsoon by TCs located to the northeast of the Philippines. Interannual variability of rainfall from regions with high TC rain contribution generally follows the variability of TC rain. On the other hand, variability of low TC rain regions is mainly influenced by the ENSO. All regions in the Philippines show increasing trends of 16.9% to 19.3% per decade in TC rain percentage contribution since 2000, despite of no significant increase in TCs that make landfall. This study hypothesizes that this increasing trend is due to changes in the characteristics of TC steering mechanisms and thermodynamic properties east of the Philippines in the past one and a half decades.

[1]The survey was conducted over northern Luzon, October 18 – 25, 2016, under the STRIDE-Storm Chaser Project of PAGASA

[2]Professorial Lecturer III, IESM, CS, UPD
[3]Senior Weather Specialist, PAGASA-DOST
[4]Weather Specialist II, PAGASA-DOST

Resilience of agricultural infrastructures to impacts of climate change—
A review of the Philippine irrigation systems

Tolentino B. Moya
Institute of Environmental Science and Meteorology

Irrigation is a critical infrastructure for food and water security programs of the Philippines. Accordingly, the government has been heavily investing in irrigation development to boost crop yield and to enlarge currently irrigated areas for many years now. However, the Philippine climate has been changing and the climatic variations pose potential threats to the adaptive capacity of the Philippine irrigation systems to shield from the impacts of climate change and variability the sustainability and resilience of the government's food security programs. Climate change is predicted to alter the Philippine water cycle; changing the temporal and geographical patterns of rainfall, evapotranspiration, runoff, and ground water recharge, and particularly in their extremes. Extreme hydro-meteorological events have been occurring more frequently in the country today; strong typhoons with undocumented wind speed and with rainfall of unrecorded amount and intensity are being experienced more often now than before. Spatially and temporally, irrigated agriculture will suffer from either too much or too little water, or both. The planning, design and construction of new irrigation systems and operation and maintenance of existing ones will be seriously affected by these projected temporal and geographical changes in water availability or scarcity or both. The study involves a review and evaluation of regulatory standards for Philippine irrigation infrastructures and the operations and maintenance activities that will support irrigated agriculture performance. The existing Philippine irrigation systems are *intrinsically vulnerable* to the potential impacts of climate change and climate variability.

Characterizing agricultural droughts in the Philippines
using Earth Observation Satellite data

Gay Jane Perez and Marco Macapagal

Agricultural drought is one of the most common recurrent natural hazards, which inflict socioeconomic repercussions in the Philippine archipelago. In this study, we developed the first comprehensive and quantitative assessment of agricultural drought in the Philippines using Earth Observation Satellite data. Drought index maps were created to characterize occurrence, severity, and spatial extent of agricultural droughts, while drought vulnerability map showed areas susceptible to drought events in the country. The proposed agricultural drought index was derived from the Normalized Difference Vegetation Index (NDVI) and Land Surface Temperature (LST) products acquired by MODIS. This metric was evaluated by comparing with other established drought indices, such as Evaporative Stress Index (ESI) and Standardized Precipitation Index (SPI). In addition, agricultural drought vulnerability maps were also produced by utilizing the MODIS evapotranspiration product, TRMM rainfall climatology and ancillary data, including presence of irrigation, soil water holding capacity, and land use system. These products were validated during the 2015-2016 Strong El Niño that caused crop yield reductions and losses in several agricultural areas in the country.