



2017 Advanced Institute on Disaster Risk Reduction with Systems Approach for Slow-Onset Climate Disasters (AI-SOCD)

-- Air Pollution, Sensors, and Big Data

July 10 – 14, 2017
Academia Sinica, Taipei, Taiwan

Call for Participation

Deadline for submission of applications: 8 May 2017

Organized by

- Integrated Research on Disaster Risk International Centre of Excellence-Taipei (IRDR ICoE-Taipei)
 - Academia Sinica
 - International Council for Science Regional Office for Asia and the Pacific (ICSU ROAP)
 - Future Earth
 - Regional Centre for Future Earth in Asia
 - International Global Atmospheric Chemistry Project (IGAC)
 - IGAC Monsoon Asia and Oceania Networking Group (MANGO)
 - Institute for Environment and Development (LESTARI UKM)
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Background of the Advanced Institute

The Sendai Framework for Disaster Risk Reduction 2015-2030 (SFDRR) emphasizes managing the risk of small-scale and large-scale, frequent and infrequent, sudden and slow-onset disasters caused by natural or man-made hazards. It aims to guide the multi-hazard management of disaster risk within and across all sectors. The causes and impacts of disaster events are generally complex; thus, systems thinking and systems approach which can identify complex interactions among different sectors shall be employed to DRR research and practices in order to design and implement effective practices to reduce disaster risks.

One of the most concerned issues in the SFDRR is the extreme climate events posing threats on human societies worldwide. For example, heat waves pose threats on human health immediately and directly, so as climate variability induced air pollution. Drought (a slow-onset climate disaster) associated with high temperature may result in air pollution due to forest fires, peatland fires or duststorms, all are harmful to human health. Large-scale air pollution events can be transported hundreds of kilometres and have significant impacts on many countries, including southeastern countries. Additionally, air pollution, especially aerosols, contributes to the greatest uncertainty to climate change projection; aerosols affect cloud formation, atmospheric radiation, and thus regional climate. Therefore, air pollution per se is one of the major root causes of current climate disasters. Applying systems thinking and systems approach to link environmental monitoring, information technology, and public health researches is essential for the monitoring and detection of such disastrous events which is the foundation for formulating preparedness practices to reduce health risks.

Currently, a set of simple, inexpensive and reliable sensors for PM_{2.5} (a major air pollutant and health concern) has been developed and begun to be applied in the fields. Even ordinary citizens can afford to purchase and have the ability to use this type of sensors. There is a huge potential to distribute these sensors in large quantity with the participation of citizens, i.e. participatory/citizen's science, for detection and monitoring the occurrence and progression of the air pollution disastrous events. However, applications of these sensors and big data interpretation need more multidisciplinary collaboration among scientists from different fields. Since this challenge is urgently needed to be tackled, systems thinking and systems approach shall be applied in facilitating multidisciplinary communication among scientists from different fields for this participatory/citizen's science. Therefore, the 2017 Advanced Institute on Disaster Risk Reduction with Systems Approach for Slow-Onset Climate Disasters (AI-SOCD) focuses on Air Pollution, Sensors, and Big Data.

Objectives

The objective of this AI-SOCD is to provide young to mid-career practitioners, researchers and policy makers in Asia and the Pacific region with enhanced understanding, skills and practical knowledge to apply systems approaches in DRR research focusing on Air Pollution, Sensors, and Big Data. At the end of this training, the participants should have:

- a) *Developed understanding of the concepts, principles and practices of systems approach for DRR research focusing on Air Pollution, Sensors, and Big Data;*
- b) *Developed capacity on application of air pollution (focusing on PM_{2.5}) sensors on environmental monitoring and detection of air pollution events to protect public health and reduce climate disaster risks;*
- c) *Enhanced comprehension of the interpretation of the air pollution monitoring information from big data and environmental health perspectives.*

Location

The AI is mainly organized by Integrated Research on Disaster Risk International Centre of Excellence, Taipei (IRDR ICoE-Taipei), of the Academia Sinica in Taiwan in partnership with ICSU ROAP. It will take place in the city of Taipei at the Academia Sinica. For more information about Taipei City, please visit <http://www.taipeitravel.net/en/>

Target Audience

Approximately 15-20 young to mid-career candidates from academia, practitioner, and policy communities from the Asia and the Pacific region are expected. Participants are encouraged to bring specific issues or research ideas that will be further developed and nurtured based on systems thinking involving multiple disciplines and stakeholders. Participants will be required to apply systems thinking to interact and brainstorm for research topics for air pollution disaster issues.

Training design and implementation

The 2017 AI-SOCD focuses on using ground-based micro-sensors to detect and monitor aerosols in communities where people live and work. This could be used to

detect air pollution events from local to regional scale. Since these sensors can be deployed in large quantity, the linkage of environmental science, IT, and big data analytics are essential, which is the main point of the series of AI-SOCD: using systems approach to link these disciplines. International networks of these micro-sensors could be used to establish a warning system.

The sessions of the AI-SOCD will include lectures by eminent scholars and practitioners in systems approaches and involved disciplines, break-out sessions, hand-on practices, and field visits. The topics to be covered are listed below:

- a) *Concepts, principles and practices of systems approach and systems thinking tools for climate-related DRR research;*
- b) *Cross-sector collaboration with systems approach among scientists from air pollution, sensory technology, and big data analytics;*
- c) *Early detection/warning of climate-variability induced air pollution events with multidisciplinary participatory/citizen's science;*
- d) *Hands-on practices of air pollution sensors;*
- e) *Comprehension of the air pollution monitoring information from big data and environmental health perspectives.*

Hands-on sessions and field monitoring with actual sensors will be arranged so that the participants will have opportunities to practice after lectures and to interact with lecturers while dealing with real-life examples. All participants are required to work in groups conceptualizing an individual or collaborative project, to be presented in plenary session at the conclusion of the Advanced Institute, which may later be submitted for competitive funding (seed grants) to support follow-up research activities. Furthermore, participants are expected to establish an internet networking community to share timely observations of targeted disaster events among different countries for further collaborative DRR research and practices.

A "call-for-proposal" will be announced no later than 3-6 months after this AI-SOCD. The trainees will be invited to submit DRR research proposals followed by a competitive reviewing process. Only limited numbers of proposals will be graded for one year. IRDR ICoE-Taipei and ROAP will review and announce results no later than 3 months after closing of the proposal submission. The grantees will be required to submit a report to IRDR ICoE-Taipei and ROAP no later than 3 months after the end of the executive period.

Applying to Participate

Young to mid-career candidates from academia, practitioner, and policy communities from the Southeast Asia region are expected. Preferably, 2 applicants of the same country from different disciplines are encouraged to team up and apply for participation. Participants may also be asked to form teams during the application selection process. Individuals who are interested to participate in the 2017 AI-KBA should complete the following items no later than 8 May 2017

- a) On-line application sheet (<https://goo.gl/forms/OniFPukKq97jINH2>)
- b) Letter of application
- c) An updated full Curriculum Vitae with publication list

The documents (items b and c) should be submitted by email to ICSU ROAP at secretariat@icsu-asia-pacific.org or via fax at +603-2691 7961 to be received no later than 8 May 2017.

Applications that are not received, in full or in part, by the deadline stipulated above will NOT be considered for participation.

Successful applicants will receive the following:

- Letter of Invitation: A formal letter of invitation from the host organization to participants to help obtain visas to attend the workshop.

※ The organizers will not issue any Guarantee Letter. The organizers will not cover all the incidental costs involved in applying for the visa like travelling to the city / visa office from home base. For Taiwan's Visa, please see: <http://www.boca.gov.tw/np.asp?ctNode=776&mp=2>
- Support for Accommodation: Costs will be covered and accommodation will be provided;
- Travel Costs: International (basic economy class or equivalent by the most direct route of applicants' work address) and local travel costs will be borne by the organizers.

For More Information

Questions about the workshop or this Call for Participations may be directed to ICSU ROAP at secretariat@icsu-asia-pacific.org or visit the website: <http://www.icsu.org/asia-pacific>

ORGANIZERS

	Integrated Research on Disaster Risk (IRDR) Programme
	IRDR International Centre of Excellence-Taipei (ICoE-Taipei)
	Academia Sinica
	International Council for Science Regional Office for Asia and the Pacific (ICSU ROAP)
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