CASE STUDY 3A

TRAINING A NEW GENERATION OF PROFESSIONALS TO USE CLIMATE INFORMATION IN PUBLIC HEALTH DECISION-MAKING

Capacity-building

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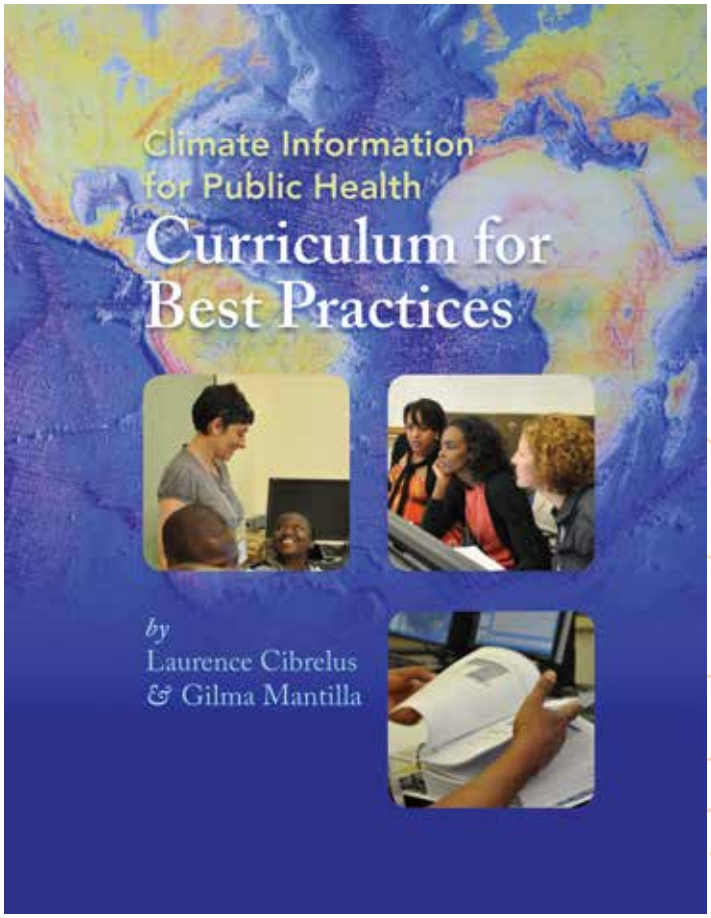
CONTEXT

A key component of climate variability and climate change adaptation is the training of a new generation of leaders to understand the role that climate plays in driving disease burden and impacting economic growth *(1)*. Such capacity-building helps to strengthen and improve decisions made in the public health sector to minimize the impacts of environmental change. To this end, several initiatives have been developed to train young climate and health researchers and practitioners to understand, access, explore, model and translate climate information to inform public health decision-making.

Figure 3.2 *Climate information for public health: A curriculum for best practices*
http://iri.columbia.edu/docs/publications/2010-12%20RPT-SI2010_Curriculum.pdf



NEW APPROACHES

Following on from the International Research Institute for Climate and Society (IRI) publication, *Climate information for public health: A curriculum for best practices (2)*, several international and regional climate and public health schools and side events emerged in Brazil, Colombia, Ecuador, Ethiopia, Italy (International Centre for Theoretical Physics, ICTP), Jamaica (Third International Conference on Climate Services, ICCS3) and Uruguay. Financial support was provided by several donors including ICTP, the WMO, IRI, Southern Common Market's (MERCOSUR) Intergovernmental Commission for Environmental Health and Labour, Inter-American Institute for Global Change Research (IAI), Pan American Health Organization (PAHO) and Oswaldo Cruz Foundation (FIOCRUZ). Hosting at locations such as ICTP permits pan-global participation and the efficiencies afforded by the dedicated training facilities and infrastructure. Additionally, organizing regional activities bring together a wide spectrum of participant expertise and occupations, allowing networks and partnerships to be formed that amplify the legacy of such events. Training activities are usually run over a two-week period and are broadly structured as follows:

1. Fundamentals of climate and public health interactions
2. Tools to analyse climate, environmental and public health data
3. Environmental epidemiology
4. Statistical and dynamical disease modelling
5. Development of participant projects

The objective of the first module is to understand the value of applied public health surveillance and to identify opportunities where climate data can enhance surveillance quality. A practical introduction to climate observations and model output databases is given, exposing participants to the many accessible online data repositories (e.g. IRI Data Library, KNMI Climate Explorer). The second module introduces the concepts of remote sensing and provides information on how to retrieve data on environmental factors using remotely-sensed products, available through the IRI Data Library. The operational use of these products by United Nations agencies and ministries of health in Africa, Asia and Latin America is also demonstrated *(3)*. The third module introduces the concepts of disease risk related to environmental aspects, presents statistical techniques to explore potentially harmful thresholds, time lags and other associations between environmental factors and disease incidence over time, and explores spatial patterns of disease and environmental risk factors, using the statistical software 'R'. The fourth module focuses on predictive models for vector-borne diseases, such as malaria and dengue, based on a spatio-temporal statistical modelling approach and dynamic, process-based mathematical disease models.

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Figure 3.3 Description of the domains addressed in a Climate Information for Public Health training and their associated competency statements.

DOMAIN	COMPETENCY STATEMENT
1. Basic concepts in public health and climate	Understand the basic frameworks for public health analyses, the factors that drive the climate system and the range of methods used to capture public health and climate information.
2. Methods and tools for analyzing climate and public health data	Analyze in space and time the relationship between climate and public health data using appropriate statistics, methods and tools.
3. Use of climate information in decision-making for climate-sensitive diseases	Apply climate information to enhance public health surveillance, early warning, prevention and control of climate-sensitive public health issues.
4. Computer and information technology	Use computers and relevant software for applications in climate information for public health.
5. Communication in public health and climate	Develop effective communication means and tools for public health and climate information.
6. Collaborating, mentoring and training on climate information for public health	Advise, train and collaborate with public health and climate and weather professionals using relevant platforms, mechanisms and partnerships.

Figure 3.4 Students learning how to use software and tools to analyse climate and health data. Photo credit: Brian Kahn.

ACKNOWLEDGEMENTS

BENEFITS AND LESSONS

One of the main objectives is to train young PhD students, climate scientists and public health practitioners from developing countries to work in data-scarce environments. Participants are exposed to the many freely available online data repositories and are invited to integrate disease datasets relevant to their own country. They are shown how to use and develop state-of-the-art modelling tools for handling climate and disease data at different temporal and spatial scales. Participants are also provided with climate and environmental datasets that could be used to develop in-country predictive models as part of early warning systems for disease risk. Feedback received during the course helps ensure the quality of future climate and public health schools.

These training schools play a vital role in building capacity to incorporate climate information into public health decision-making. The ultimate goal is to create experts who can be a link between providers and users of climate information, in order to effectively translate and communicate climate information for public health action.

Several research projects and publications have emerged from these training activities, using data made available or organized during the courses, or applying techniques learned *(4)*. Alumni stay connected through a web-based platform. They have also created various mechanisms to transfer their climate and public health knowledge at global and local levels. By involving alumni in the design and dissemination of course materials and by creating online resources, it is hoped that a wider audience can be reached *(5)*.

Figure 3.5 Group photo of training course faculty and participants. Photo credit: Brian Kahn.