Climate Information for Public Health Action (CIPHA)

Summer Institute

News from the Ground

May 2009



World Health Organization

In This Issue

Editor Message	*1*
Updates	*2*
Interview	3
Upcoming Training Courses	5
Upcoming Events	5
Recent Publications	6
Related Links	7

From the Editor

Public health is an effort organized by society to protect, promote and restore the people's health. It is the combination of sciences, skills and beliefs directed to the maintenance and improvement of health through collective or social actions. In this context, climate researchers should be considered a part of the public health community.

As a physician, epidemiologist and lately, as climate-health research working within this framework, I have been faced with two interesting challenges. The first is language, not only the difficulty of working outside Spanish, my mother tongue, but the exclusive coded languages developed and used by disciplines (concepts, technical terms, and equations), which often have the potential to confuse outsiders. Interdisciplinary researchers must overcome these barriers in order to develop and work in a common language. A second basic challenge is related to the sociology of science. Often, to grow within their chosen discipline, scientists must follow a set of unwritten rules that govern their discipline. This leads to the view that interdisciplinary research is "soft science" and doesn't count because it does not match to disciplinary traditions or is published in less important journals. The problem, from my perspective, is that interdisciplinary work takes time to build up and for all parties to become familiar with the different approaches and perspectives. It requires mutual trust, respect and open-mindedness that emphasizes complementarities– what individuals from disciplines bring to the project–rather than the gaps in their own disciplines.

So I believe projects must meet a "win-win" condition for all partners to provide the necessary incentive for the extra effort they require. In short, there must be increasing recognition within the scientific community that interdisciplinary work offers a significant contribution not only to the academic world but also to the society in general. The key to fruitful interdisciplinary dialogue requires specialists to define the problems as they see them even while recognizing the limits of the solutions and expertise they can offer. Although the time frames for physical, social and biological sciences can often be very different and difficult to match, true collaboration is possible with persistence, understanding and goodwill. For this reason, I encourage climate and public health researchers and professionals to move toward interdisciplinary effort to protect, promote and restore the people's health from the potential impact that climate variability and climate change could have on them.

Gilma Mantilla

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Updates

As we prepare to welcome the 2009 participants of the Summer Institute 'Climate Information for Public Health' we bring to you the rationale for developing the SI, some updates on the work of our alumni and facilitators as well as recent developments at IRI and its partners across the Earth Institute at Columbia University.

SI Rationale

The Summer Institute, Climate Information for Public Health' was created from the realization that there was a huge gap in policy, resources, knowledge, methodologies, tools and data that could be used by the health community to better manage climate-related risks to improving health outcomes.

Of primary concern it the fact that currently less than 10% of global funding for research is spent on diseases that afflict more than 90% of the world's population – hence the SI focuses on infectious disease – particularly malaria.

Currently, there is a dearth of academic or practitioner text, tools, methodologies and data that can be used to build an appropriate evidence-base of the value of climate information to the health sector – hence the SI institute is building curricula that the participants can use, refine and deliver in their own communities. We are currently working on Module I in our curricular series (I-V): Understanding Climate and Public Health: Basic Concepts. Those of you that wish to get more engaged in curricula development please contact Judy Omumbo (jomumbo@iri.columbia.edu)

In dynamic systems, such as epidemic malaria, it is impossible to understand the system without an understanding of its spatial and temporal context *and new tools are needed.* The Data Library *is* a powerful computational (http://iridl.ldeo.columbia.edu/index.html) engine that can perform analyses of varying complexity using an extensive array of statistical analysis tools. It overcomes the limitations imposed by GIS platforms by being based on a much more general multi-dimensional data model *and forms the basis for the IRI MapRooms and training activities at the SI*. We are currently enhancing the IRI Data Library capabilities to overcome current constraints in data access and management. *For example,* efforts *are underway to enable the D*ata *L*ibrary to 'talk' to platforms such as Google Earth and the WHOs health data ***management*** system 'OPEN Health'.

Access to global information without knowledge of its local relevance or integration with local data and context has little value for real world public health decision-making, thus limiting research capacity to target public health challenges in both countries in the 'South' and in partner institutions in the 'North'. Creating an international network of researchers, public health professionals and communities of practice that share best practices and lessons learned from both developing countries and countries in the north is a means to overcome such limitations.

This implies a dynamic flow of knowledge, which will allow professionals in developing countries to "scan globally and reinvent locally" while at the same time it allows development institutions in the 'North' to become more responsive to demand and knowledge flows in the 'South' CIPHA hopes to play a small role in facilitating such dialogue.

Updates on SI Facilitaros and Alumni

SI 08 and 09 Pietro Ceccato, IRI SI facilitator wins EPA grant to assess user needs from earth observations**.** The project objectives are to identify priority user needs regarding use of Earth observations to monitor physical, chemical, and biological parameters relevant to understanding the connection between environmental change (e.g., ecosystem disruption, climate, deforestation, biodiversity decline) and terrestrial disease emergence or risk.



Pietro Ceccato

Key research questions include: Who are the data users? What data do they currently use? How do they use these data (observations, analyses, models)? What types of data or observations do they need to do their work better? What are the informative sources in the literature to learn about data uses and needs in the area of infectious and emerging diseases? If you are interested in contributing to this effort, please do not hesitate to contact Pietro at: pceccato@iri.columbia.edu.

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SI 08 alum Louise Kelly-Hope – Researcher at Liverpool School of Tropical Medicine, Vector Group continues to use what she learned at the Climate Information for Public Health training course (CIPH), by using environmental data to highlight differences between Anopheles species distributions in Kenya, and helping a PhD student examine climatic factors related to malaria and Anopheles species in Yemen.

Louise has also just returned from Delhi, India where she has established a new collaboration with scientists at the National Institute of Malaria Research, who are interested in using climate and remote sensed data to develop early warning systems and assess the impact of climate change on vector-borne diseases across the country.

SI '08 alum Wendy Marie Thomas is a meteorologist at the American Meteorological Society's Policy Program (AMS), where she is working on several projects to build understanding and interest within the meteorological community to foster still-needed cross-disciplinary partnerships at the government and academic levels. This ramp-up is also intended to galvanize awareness for environment and health activities at the 2010 Annual Meeting in Atlanta, GA—the home of the Centers for Disease Control and Prevention (CDC). The CDC and AMS are already structuring the plenary and paper sessions to include researchers from both fields and from the national and international arenas.

SI 08 Alum Tinni Halidou Sardou , he is a meteorologist at the African Center of Meteorological Applications for Development (ACMAD). He continues to produce a regular bulletin on Climate and Health using IRI's Data Library as a resource. This bulletin is available in English and French. For more info on this please go to http://www.acmad.ne/en/climat/climate_health_mar_09.pdf

ACMAD also **hosts the CIPHA newsletter on its website** – if you would like to do likewise please go ahead!

What's going on at the Earth Institute, Columbia University?

President Bollinger highlights IRI work on Climate and malaria/meningitis at the launch of the new Earth Institute 'Columbia Climate Centre (CCC).

Interview

One major development over the last year has been the fact that the Mailman School of Public Health, Columbia University, New York, has adopted climate as one of its new cross cutting themes in its new strategic plan. Here Masters in Climate and Society student, John-Michael Cross talks to Patrick Kinney who is leading this cross cutting effort.



Patrick Kinney, Director Program in Climate and Health .Mailman School of Public Health. Columbia University

John Michael Cross: So what would you say are the most significant ways that climate change affects public health? – this who interview should be shorter

Patrick Kinney: It really depends on where you're talking about and also whether you're talking about something currently or 50 years in the future, but if I just had to make a blanket statement across all those dimensions, I would say that poor people in developing countries are and will feel the major brunt, of climate change, and it likely will be due to a combination of changes in the patterns of infectious diseases and also agricultural productivity and water supply.. That's saying a lot of things at once, but we don't really know which is going to be the biggest thing.

JMC: So on maybe a shorter timescale, what do you see as the most urgent climate change adaptations for the benefit of public health? Where should adaptation efforts focus over the next 5, 10, 20 years?

PK: Well, again it depends on where you're talking about. For example if we talked about the U.S, I think that from a public health perspective, adaptations are going to start by focusing on reducing vulnerability to heat waves. It's a current risk and

it's clearly going to become a greater risk. I think there's also, for vector-borne diseases, the beginnings of adaptation thinking, particularly related to Dengue fever in the southern part of the U.S. .

JMC: Are you working on any international projects related climate and health right now?

PK: The only international project that I'm doing that has a more direct climate connection is the meningitis work that Madeline Thomson has been spearheading under the MERIT umbrella. I've been getting involved so far fairly peripherally but we've been talking about it now for a while, that it would be helpful to develop some epidemiologic studies looking at the mechanisms for meningitis outbreaks and what they have to do with climate factors like dust and dryness. It's clear that meningitis outbreaks occur in dry dusty periods but it is not known why, from a biological mechanistic perspective, so there's an interesting scientific question there that I'm trying to build some momentum to build to look at.

JMC: I'd like to shift gears a little bit. In your opinion, what are the gaps between the climate community and the health community, and how might we bridge those gaps?

PK: I think, by and large the two communities have not interacted, except in a few rare exceptions like with the work IRI does. But stepping back from that and before I got involved with the IRI, I would say the health community that I know is not all connected to climate community. It's starting to happen more and more, I mean there certainly are some cases, but it is mostly coming from the climate side of things. From the public health side, people have been pretty much happy to keep doing their usual things, and the funding has been pretty strong, so there hasn't been as much motivation to link up. There are a few broadly-thinking health people that have started to do that. So I think **we are just at the beginning of that collaboration**. And really, the IRI is a leader in beginning to break out of those barriers and that's why I find it so attractive to get involved here.

JMC: The problems that do exist, it is due to differences between the tools that are used, language issues, or just that these partnerships don't exist quite yet?

PK: It's mainly that they don't exist, but when they start to happen, I think **the language is a big barrier**. I think the tools can be linked up pretty readily, once people understand the tools from the two sides. That requires developing that ability to understand each other's language, and once that happens, then I think that there's no technical reason that the tools can't link up.

JMC: For the Mailman School of Public Health in general, what is it doing to contribute to the interaction between the climate and health communities?

PK: There have been a few independent initiatives going on for several years at the Mailman school. Then I think very significantly **in the past year** the school got a new Dean, Linda Fried, and she initiated a strategic planning process as soon as she arrived a year ago. That culminated a month or two ago, in a strategic plan, and in that there were three future initiatives that were identified. One of them was climate - health, so that signifies an increasing support, at least institutional support, for climate work, and through that we formed a **program in climate health** that I'm the Director of. We are now in the process of strategizing to what form that program should take. We hope to stimulate coordinated research by getting research grants from what will be hopefully a growing funding plan from the federal government and other sources, which until now has not really been present. And then also developing some educational programs at the master's level, and attracting more doctoral students to work on the real research problems. That is the spectrum of things that we're hoping to be doing at the Mailman school in the next couple of years with this program.

JMC: We talked earlier about building relationships between climate and health communities. At this point, where do you see the relationships with IRI and the Columbia Climate Center (CCC) and where do you see those relationships going?

PK: I think the relationships with the other climate-oriented units of Columbia like IRI and the Climate Center are pretty strong, but are so far pretty much dependent on me, so it's maybe not so strong in that, if I wasn't around it might fall apart pretty rapidly. So I think what we need to do is broaden the interaction beyond just one person, going forward. I think we're in pretty good shape at the moment. It's better than it was. I think the **relationship with IRI and Mailman** is where substantive progress will be made. The challenge is to fund people to be able to work on problems, including students, faculty, and post docs, and to keep identifying people to work on the various interesting projects that we've been thinking about. As that happens, some of them will stay around and strengthen those connections that we were talking about before.

JMC: How would you like to see that interaction play out? What benefit do you see to the organizations working together?

PK: One big benefit for the Mailman in working with the Columbia Climate Center is that it brings to us the climate data and the climate models that we don't necessarily know about and understand how to use appropriately, so we need the climate people who can bring the data and the models to us in a way that makes scientific sense in a way that they understand. What Mailman brings to IRI and the larger CCC is the foundation and the tools of public health, particularly epidemiology and biostatistics which deal with population data, which is probably the most important scale of the approach. In addition, we have the medical center and some of the more mechanistic research at the School of Public Health that brings another dimension to the partnerships, so I think there are definitely benefits in both directions.

JMC: Did you have any other final thoughts, anything else you wanted to share?

PK: I think we covered quite a lot of interesting topics and might be useful to, certainly from the perspective of the program in Climate and Health at Mailman, it would be interesting to do this again next year and then periodically thereafter to gage the progress.

JMC: Great, thank you so much for your time, we really appreciate it.

Upcoming Training Courses

The second multi-disciplinary and multi-cultural training workshop on reducing Plasmodium transmission and malaria burden by integrate vector control, Camerino (Marche Region), Italy, July 6-11 2009

The training event is organized in the frame of the PhD Programme on Malaria and Human Development supported by WHO, Global Malaria Programme, the University of Camerino and the Italian Malaria Network. It is targeted to doctoral candidates (whatever their disciplinary background), working in the field of malaria or who plan to be involved from various perspectives and with different approaches in research and control of poverty-related diseases in their future.

Upcoming Events

The 7th International Conference on the Environment and Sustainable Development in Havana, Cuba, July 6 - 10, 2009

The 7th Conference will encourage exchange among scientists, educators, professionals, entrepreneurs, governmental and non governmental representatives, students, and all those dealing with research, promotion, analysis and knowledge of diverse environmental problems and a more sustainable way of managing and planning the use of natural resources. The Conference will include topics such Eco-Health: Natural Disasters and Climate Change, Risk Assessment to Reduce Disasters and Environmental Education and Action

5th TEPHINET & 3rd AFENET Regional Scientific Conference, Mombasa, Kenya, August 31- September 4 2009.

The Kenya Ministry of Public Health and Sanitation, the Ministry of Medical Services, the African Field Epidemiology Network (AFENET), and the Training Programs in Epidemiology and Public Health Interventions Network (TEPHINET) are co-sponsoring the 5th TEPHINET & 3rd AFENET Regional Scientific Conference. The theme of the conference is "One Health," and the following scientific tracks will address the theme Impact of climate change on health: Emerging and re-emerging diseases; Migration and the spread of communicable disease; Burden of disease (Diarrheal diseases, HIV, TB, Malaria) and Roles of laboratory in public health investigations and interventions.

More info at http://www.afenet.net/french/projects.html

The 5th MIM Pan African Malaria Conference, Nairobi, Kenya, November 2-6, 2009

The Multilateral Initiative on Malaria (MIM is open to all malaria researchers and control experts from malaria endemic countries in Africa, Asia, and Latin America and the Caribbean, as well as malaria researchers, science administrators, and representatives from private foundations, governments and international organizations throughout the world. More information is available at: http://www.mimalaria.org/pamc/ConferenceInformation/tabid/56/Default.aspx

World Climate Conference - 3 (WCC3), Geneva, Switzerland. August 31- September 3, 2009

IRI is working with WHO and the Health and Climate Foundation to develop white papers on gaps and opportunities in the use of climate information in the health sector. If you would like to be involved please contact. Cathy Vaughan at cvaughan@iri.columbia.edu

3rd International MERIT meeting is planned for Niger, 5-9th October, 2009. Local organizing committee, ACMAD and CERMES. More soon.

Recent Publications

Research: Modelling malaria incidence with environmental dependency in a locality of Sudanese savannah area, Mali

Jean Gaudart, Ousmane Toure, Nadine Dessay, Alassane Dicko, Stephane Ranque, Loic Forest, Jacques Demongeot, Ogobara K Doumbo.*Malaria Journal 2009, 8:61 (10 April 2009*)

This paper reports an ambitious attempt to produce a spatially structured model for malaria transmission in Mali, based on remote sensed vegetation indices (NDVI), together with an SIRS type transmission model, calibrated using data from the village of Bancoumana.

Research: Community-based environmental management for malaria control: evidence from a small-scale intervention in Dar es Salaam, Tanzania

Marcia C Castro, Atsuko Tsuruta, Shogo Kanamori, Khadija Kannady, Sixbert Mkude, *Malaria Journal 2009, 8:57 (8 April 2009)*

The successful implementation of environmental management, as part of an integrated vector management framework for malaria control, can be possible if four conditions are observed: political will and commitment, community sensitization and participation, provision of financial resources for initial cleaning and structural repairs, and inter-sectoral collaboration.

Dispatch: Links between Climate, Malaria, and Wetlands in the Amazon Basin

Sarah H. Olson, Ronald Gangnon, Eric Elguero, Laurent Durieux, Jean-François Guégan, Jonathan A. Foley, and Jonathan A. Patz, *EID, Volume 15, Number 4, 2009*

Climate changes are altering patterns of temperature and precipitation, potentially affecting regions of malaria transmission. We show that areas of the Amazon Basin with few wetlands show a variable relationship between precipitation and malaria, while areas with extensive wetlands show a negative relationship with malaria incidence

Mosquito-borne disease and climate change in Australia: time for a reality check

Russell, Richard C, *Australian Journal of Entomology, Volume 48, Number 1, 2009 , pp. 1-7(7)*

Will warming climate increase the risk or prevalence of mosquito-borne disease in Australia, as has been projected in a number of scientific publications and governmental reports? Unfortunately, most of these `predictions' do not adequately consider the current and historical distribution of the vectors and diseases, their local ecology and epidemiology and the impact of societal features and the capacity for public health interventions in Australia. Overall, a strong case can be made that we are unlikely to see significant changes in the distribution of transmission of the exotic pathogens causing malaria and dengue, and while activity of endemic arboviruses such as Murray Valley encephalitis and Ross River viruses may possibly increase in some areas, it is likely to decrease in others.

Seasonal Forecasts, Climatic Change and Human Health

Thomson, Madeleine C.; Garcia-Herrera, Ricardo; Beniston, Martin (Eds.) 2008



This book is now available on line. It includes advances in the empirical understanding of mechanisms, methodologies for modeling future impacts, new partnership developments between the health and climate community along with access to relevant data resources, and education and training.
Online version available

Related Links

http://www.mailman.hs.columbia.edu/ehs/index.html

http://www.acmad.ne/

http://iri.columbia.edu/education/summerinstitute09

http://malariajournal.com

http://www.mimalaria.org/eng/mmac2009.asp

http://climate.columbia.edu/

Please contact cipha@iri.columbia.edu to send your comments or materials to be included in the next CIPHA. **The deadline to send material is July 20th 2009.**