



ISPRS Commission VIII/WG-2
Symposium on
Advances in Geospatial Technologies for Health
La Fonda Hotel
Santa Fe, New Mexico, US
September 12, 13 2011

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WG Co-Chair: **Richard Kiang**, Goddard Space Flight Center, Greenbelt MD, US
Technical Secretary: **Stanley Morain**, University of New Mexico, Albuquerque, NM, US

Symposium Organizing Committee (+WG-2 Officers)

Pietro Ceccato, Columbia University, NY, US
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Jorge Pinzon, Science Applications, Inc. MD, US
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Welcome to Santa Fe, New Mexico!

The International Society for Photogrammetry & Remote Sensing's *Commission VIII (Remote Sensing Applications and Policy), Working Group 2 (Health)* was pleased to convene its first International Symposium on **Advances in Geospatial Technologies for Health** in Santa Fe, New Mexico. The Working Groups was formed in 2008 at the 21st ISPRS Congress in Beijing with the following Mission and Terms of Reference:

Mission: As a new working group in Commission VIII, its members are focused on applications of remote sensing and other Earth observing technologies to understand how the natural environment contributes to environmental (asthma, cholera, meningitis, malaria, yellow fever) and infectious/zoonotic diseases. One of the areas of interest is identifying Earth observing data used to improve models and to enhance surveillance systems, decision support tools, and early warning systems. The working group also aims to reach out to colleagues not only in the scientific community, but also in the health and well-being communities of practice to begin a dialog and share information between these two communities. This mission is supported by the working group's terms of reference and a variety of ISPRS and other related venues and opportunities.

Terms of Reference: Integrate Earth observations products with enhanced predictive modeling capabilities for early warning and surveillance of environmental impacts on human health in cooperation with other international, national, and regional organizations and activities to:

- Take a leadership role in appropriate GEO health tasks in accordance with the 10-year implementation plan;
- Participate in ICSU initiatives including the GeoUnions Health Group and the Science for Health and Well-being (SHWB) initiative;
- Contribute to the ISPRS book series focusing on environmental effects on human health;
- Develop a registry for human health projects and products that use Earth observations and kindred technologies; and,
- Bridge Earth observing communities-of-practice and human health communities-of-practice by including health professionals in ISPRS technical sessions, workshops, and symposia.

At present WG-2 has nearly 60 members, worldwide, and will soon organize its technical activities for the 22nd ISPRS Congress in Melbourne, Australia 25Aug-1Sep 2012. Participants at this symposium include representatives from Belgium, Canada, France, Italy, Japan, Nicaragua, Switzerland, Thailand, and the United States.



Advances in Geospatial Technologies for Health

Sunday, September 11: Hotel and Registration Check-in

Monday, September 12

Welcome: Amy Budge, Chair Commission VIII/WG-2

Topic

Speaker

Session 1: Advances in Environmental Monitoring for Health

Organizer/Moderator: Sue Estes, NASA Marshall Space Flight Center, Huntsville, AL, US

The Global Earth Observation System of Systems (GEOSS) Health Societal Benefit Area: Formation & Plans for a Health & Environment Community of Practice (CoP)	Masami Onoda, GEO Secretariat, Geneva, CH
JAXA's Plans for Health Applications Using EO Data	Tamotsu Igarashi, JAXA Earth Observation Research Centre, JP
Current & Future NASA Sensors for Environmental Observations & Prospects for Health Applications	John Haynes, NASA, Washington, DC, US
CNES Satellite Data & Modeling for Public Health Applications	Murielle LaFaye, Centre National d'Etudes Spatiale, Toulouse, FR

Refreshments Provided

Session 2: New Geo-technologies for Health

Organizer/Moderator: Jorge Pinzon, NASA Goddard Space Flight Center, Greenbelt, MD, US

Ecological Context of Ebola Outbreaks in the African Rainforest Using Hyperion & ALI Sensors	Petya Campbell, Joint Center for Earth Systems Technology, University of Maryland, Baltimore, MD, US
VECTORMAP: A New Resource for Online Mapping of Mosquito, Tick, & Sand fly Species Distribution Data	Desmond Foley, Walter Reed Army Institute of Research, Silver Spring, MD, US
A NASA Geospatial Data Portal to Support the Global Environmental Information System (GEIS) of the Armed Forces Health Surveillance Center (AFHSC)	Jorge Pinzon, NASA Goddard Space Flight Center, Greenbelt, MD, US
Detection of Natural Gas Pipeline Leaks & Their Health Consequences Using Airborne Lidar	Michael Renslow, Renslow Mapping Services, Eugene, OR., US
Satellite Remote Sensing of Animal Feeding Operations: A Novel Approach to Characterizing sources of Environmental Exposures	Beth Feingold, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, US

Lunch Provided

Session 3: Health Science Applications

Organizer/Moderator: Mark Lyles, US Naval War College, Newport, RI, US

Chemical & Environmental Pathology Studies of Particulate Matter: A Medical Geology Perspective	Jose Centeno, Division of Biophysical Toxicology, Joint Pathology Center, Silver Springs MD, US
Responding to the 2010 Nigerian Lead Poisoning Outbreak Linked to Artisanal Gold Processing	Geoffrey Plumlee, Environment & Human Health, US Geological Survey, Denver, CO, US
MODIS Imagery & an Atmospheric Dust Model for Assessing Pollen Phenology & Dispersal	Jeff Luvall, NASA Marshall Space Flight Center, Huntsville, AL, US
Respiratory Health Effects from Particulate Matter Exposure During a 7 Month Deployment to Al Anbar, Iraq	Richard Meehan, National Jewish Health, Denver, CO, US
Microbes & Metals: Middle East Dust Exposure & Potential Acute & Chronic Health Risks	Mark Lyles, US Naval War College, New Port, RI, US
Circular & Connectivity-Ambiguous vs. Non-Circular & Connectivity-Explicit Disease Clusters: Examples from the 2007 British Foot-&-Mouth Disease Epidemic	Ariel Rivas, Center for Global Health, University of New Mexico Health Sciences Center, Albuquerque, NM, US

Refreshments Provided

Session 4: Data Integration & Modeling

Organizer/Moderator: Richard Kiang, NASA, Goddard Space Flight Center, Greenbelt, MD, US

Advanced NASA Data Discovery & Retrieval Systems for Studying Public Health	Steven Kempler, NASA Goddard Space Flight Center, Greenbelt, MD, US
Biosurveillance Planning Informed by Epidemiological Simulation: The Geography of Avian Flu in Nigeria	Jeanne Fair, Los Alamos National Labs, Los Alamos, NM, US
Monitoring Health Risks Due to Flood Inundation with SensorWeb	Lenny Roytman, City College of New York, New York City, NY, US
Current Approaches to Modeling Vector-borne Disease Transmission: A Study in the Tropics	Radina Soebiyanto, UMBC & NASA Goddard Space Flight Center, Greenbelt, MD, US
Mapping & Modeling Neglected Tropical Diseases & Poverty in Brazil & Bolivia	John Malone, Louisiana State University, Baton Rouge, LA, US
Application of Land Data Assimilation Systems to Spatially Explicit Malaria Risk Models for the Peruvian Amazon	Benjamin Zaitchik, Johns Hopkins University, Baltimore, MD, US

Adjourn---No Host Dinner

Tuesday, September 13

Topic	Speaker
Session 5: Real Time & Early Warning Systems	
Organizer/Moderator: John Haynes NASA Headquarters, Washington DC, US	
Ecological Analysis of Mosquito Vectors for Predicting Disease Spread in Pantanal, Brazil	Irene Bosch, Mount Sinai School of Medicine, New York City, NY, US
Using Remotely Sensed Environmental Data for Evaluating Malaria Transmission in Urban Dakar	Vanessa Machault, Université Paul Sabatier, Toulouse, FR
Approach of Tele-epidemiology Applied to Rift Valley Fever in Senegal	Cécile Vignolles, Centre National d'Etudes Spatiale, Toulouse, FR
Earth Observations of Environmental Vibrio in the Chesapeake Bay	Erin Urquhart, Johns Hopkins University, Baltimore, MD, US
Satellite-based Real-time & Early Warning Systems for Monitoring Vector-borne Diseases	Felix Kogan, National Oceanic & Atmospheric Administration, Washington, DC, US
Refreshments Provided	
Session 6: Emerging & Re-emerging Diseases	
Organizers/Moderators: Pietro Ceccato & Yves Tourre, IRI Columbia University, NY, US	
Accounting for the Global Under-reporting of Emerging Infectious Diseases	Ilana Brito, Center for International Earth Science Information Network, Columbia University, NY, US
Avian Flu Modeling in Asia	Marius Gilbert, Université Libre de Bruxelles, Brussels, BE
New Technologies for Emerging Diseases	Andreas Skouloudis, European Commission, Joint Research Centre, Institute for Environment & Sustainability, Ispra, IT
Object-based Swimming Pool Extraction to Support West Nile Virus Control Efforts	Minho Kim, Division of Adult & Community Health, Centers for Disease Control & Prevention, Atlanta, GA, US
MERIT: Climate Information for the Prevention & Control of Meningococcal Meningitis in the Sahel: a Multidisciplinary Partnership	Sylwia Trzaska, International Research Institute for Climate & Society, Columbia University, NY, US
Geography of an Emerging Disease in North America: <i>Trypanosoma cruzi</i> Infection in New Mexico	Marjorie McConnell, Department of Biology University of New Mexico, Albuquerque, NM, US
Lunch Provided	
Session 7: International Health Monitoring Programs	
Organizer/Moderator: Stan Morain, WGVIII/2 Technical Secretary	
Serving Society Through the WMO Sand & Dust Storm Warning Advisory & Assessment System	William Sprigg, Chapman University, Orange, CA, US
The Weather, Climate & Health Program at the National Center for Atmospheric Research	Andrew Monaghan, National Center for Atmospheric Research, Boulder, CO, US
Health & Wellbeing in the Changing Urban Environment: A Systems Analysis Approach	Suzanne Bennett-Johnson, Department of Medical Humanities & Social Sciences, Florida State University College of Medicine Tallahassee, FL, US
System integration of mobile technologies and geospatial decision support systems in public health	Simon Adebola, Centers for Disease Control & Prevention, Atlanta, GA, US
Examining the Links Between Anthropogenic Stressors, Biodiversity & Infectious Diseases	Montira Pongsiri, Office of the Science Advisor, US Environmental Protection Agency, Washington, DC, US
Refreshments Provided	
Session 8: On and Just Beyond the Horizon	
Moderator: Jose Centeno, Joint Pathology Center, Washington, DC	
Medical Geology: An Emerging Discipline at the Interface of Earth Science and Public Health	Jose Centeno, Division of Biophysical Toxicology, Joint Pathology Center, Silver Springs, MD, US
Intersection of Healthcare & Earth Science Technology Geospatial Information Systems	Dale Alverson, Center for Telehealth & Cybermedicine Research, University of New Mexico Health Sciences Center, Albuquerque, NM, US
USAID's Program on Emerging Pandemic Threats	Dennis Carroll, US Agency for International Development, Washington, DC, US
The Transcube Model & Tele-epidemiology	Yves Tourre, Lamont-Doherty Earth Observatory, Columbia University, Palisades, NY, US
Global Change Science Strategy: Implications & Opportunities for Health	Joseph Bunnell, International Coordinator, USGS Reston, VA, US
Symposium Highlights & Future WGVIII/2 Activities Stan Morain, Commission VIII/WG-2 Technical Secretary	
Reception followed by dinner on your own	

Sponsors



National Aeronautics and Space Administration: NASA was the primary sponsor for the symposium, providing financial assistance for student participants and for speakers who would not otherwise have been able to participate. In addition, they provided funds for specific meeting expenses to enhance the quality of presentations, the overall experience of all participants, and partial funding for the symposium proceedings.



Centre National d'Etudes Spatiales: CNES provided a grant that contributed funds to support symposium logistical costs.



Japanese Space Agency: JAXA supported travel and living expenses for its contribution to the symposium.



Environmental Systems Research Institute: Esri provided general support funds for organizing and executing the symposium, and for logistical costs.



The European Commission, Joint Research Center: JRC provided support for travel expenses to European and African speakers.



American Society for Photogrammetry and Remote Sensing: ASPRS provided funds for general symposium logistics, amenities, and symposium proceedings.



Bohannon-Huston Inc.: Provided materials for registration packages and in-kind services.



New Mexico Geographic Information Council: NMGIC provided general funds for symposium organization and materials



Earth Data Analysis Center: EDAC provided in-kind facilities and equipment, conference calling services, and materials for executing the symposium.