

2015 CSTE Annual Conference
GIS for Vectorborne Disease Surveillance
Sunday, June 14th 2015
8:00am – 12:00pm

Mapping of disease has been an important tool for epidemiologists ever since John Snow linked cholera cases to the Broad Street water pump by mapping the cases and drinking water pumps in London in 1854. The field of Geographic Information Systems (GIS) has advanced significantly since then, in particular thanks to computers that allow us to store and integrate multiple complex data sources and display them spatially. The intended audience for the workshop includes both epidemiologists with limited and with more extensive experience with GIS. The speakers will provide presentations on a range of GIS projects and will also hold a panel discussion during which the audience can receive specific technical advice from the expert presenters.

Learning objectives

1. Describe the basic concepts of GIS and the value of its use for vector-borne disease surveillance.
2. Describe three different ways GIS can be used by state or local vector-borne disease epidemiologists including strength and limitations of the data sources used.
3. Describe strengths and limitations of open source GIS software and secondary spatial health and environmental data sources available to epidemiologists.

7:00-8:00am Registration

8:00-8:10am Welcome/Housekeeping

8:10-8:50am Introduction to GIS for Vector-Borne Disease Surveillance
Chris DuClos, Florida Department of Health

This presentation will provide a brief overview of Geographic Information Systems, within the context of environmental epidemiology. The presenter will highlight the value of using GIS to analyze and visualize spatial data for vector-borne disease surveillance activities.

8:50-10:05am Spatiotemporal Co-occurrence of Flanders and West Nile Viruses Within Culex Populations in Shelby, Tennessee

Abelardo Moncayo, Tennessee Department of Health

A large dataset of mosquito pools tested for West Nile virus (WNV) and Flanders viruses (FLAV) was queried to understand the spatiotemporal relationship between these two viruses in Shelby County, Tennessee. We found strong evidence of global clustering and spatial autocorrelation using maximum likelihood estimates (MLE) from 2008-2013. Significantly higher levels of WNV were detected in neighborhoods of FLAV Hot Spots. Temporally, FLAV emerges and peaks prior to WNV within each surveillance season in this study.

Spatio-temporal associations between ecological factors, white-tailed deer densities, and tick-borne disease in seven National Park units

Danielle Buttke, National Park Service

This presentation will describe a pilot partnership project between the National Park Service Office of Public Health and the Centers for Disease Control and Prevention Bacterial Vector Borne Disease Branch. The basic applications and plans for a long-term spatio-temporal risk-assessment project evaluating ecological factors, including temperate forest recovery and white-tailed deer densities, and tick density and infection prevalence for several bacterial tick borne diseases will be discussed, and future plans to include climatological factors will be covered.

Utilizing Mapping and Spatial Tools in Vectorborne Disease: The Minnesota Experience

Elizabeth Schiffman, Minnesota Department of Health

GIS software offers a powerful tool for describing and analyzing vectorborne disease data in new and different ways. This presentation will discuss some of the ways the Minnesota Department of Health is utilizing GIS mapping to better understand the dynamics of risk for vectorborne diseases across the state, from creating basic incidence and risk maps to more advanced projects. In particular, it will cover the use of GIS and spatial modeling tools to design and implement an enhanced field work study aimed at understanding the density and distribution of blacklegged tick populations in Minnesota.

10:05-10:20am BREAK

10:20-11:20am Environmental Health GIS Smorgasboard: Remote sensing 101 + Open-source GIS tools + Finding spatial health and environmental data

Micah Hahn, National Center for Atmospheric Research, Centers for Disease Control and Prevention

This session will touch on a variety of topics related to utilizing GIS for environmental health research and program implementation. It will begin with an introduction to remote sensing imagery, a common source of climate and land use data. Next we will discuss options for open-source GIS tools for quickly displaying and sharing spatial data. Finally, we will cover sources of secondary spatial health and environmental data.

11:20-11:50am Panel Discussion

11:50-12:00pm Wrap-up/Closing Remarks