

Theme 6: Special session on the 2015 PanAm/ParaPanAm Games Legacy Dataset Release

Preferred: Oral presentation

**Multi-Criteria Geospatial Analysis for Mapping Social-economic Vulnerability to Air Quality and Heat Stress**

Maham Siddiqui<sup>1</sup>, Qian Li<sup>2</sup>, Dave Henderson<sup>3</sup>, Sharon Jeffers<sup>3</sup>, Melissa MacDonald<sup>3</sup>, and Glenda Saulnier<sup>3</sup>

Coop-student, University of Waterloo<sup>1</sup>; Network Design Unit, Monitoring and Data Services, Meteorological Service of Canada, Environment and Climate Change Canada<sup>2</sup>; Health and Air Quality Services, Prediction Services, Meteorological Service of Canada, Environment and Climate Change Canada<sup>3</sup>

Identification and characterization of vulnerability to air quality and heat stress is a key piece to health related services. The purpose of this study was to apply a GIS-based Multi-Criteria Geospatial Analysis approach to create heat-vulnerability mapping scenarios. Future work would be to apply a similar approach to a project focusing on air quality and health. This approach was developed by the Network Design Unit of the Meteorological Service of Canada, and has been applied to the design of a variety of networks, including weather radar, surface weather and marine. The study identifies and collects indicators of heat stressors, sensitivity and vulnerable populations to extreme heat, and combines these indicators using geoprocessing tools to visualise heat stress and vulnerability in the mapping scenarios. Data was collected from a variety of sources including Environment and Climate Change Canada, Statistics Canada, Environics Analytics, and the Public Health Information Management System (PHIMS). These integrated scenarios could be important sources of information that characterize, interpret and represent a spatial variation or requirements. Results for this study could be used in the design of monitoring sensors and planning services for a big event such as the Pan Am and Parapan Am Games in the future.