INTER-AMERICAN INSTITUTE FOR GLOBAL CHANGE RESEARCH

ADAPTE

Adaptation to the health impacts of air pollution and climate extremes in Latin American cities

Urban areas in Latin America are expected to be increasingly affected by heat waves. Yet we don't know how vulnerable populations are to these and to the interaction of extreme weather and air pollution. ADAPTE provides expertise from the US and Latin America across disciplines for city authorities to better plan for the effects of extreme weather and air pollution episodes.

Goals

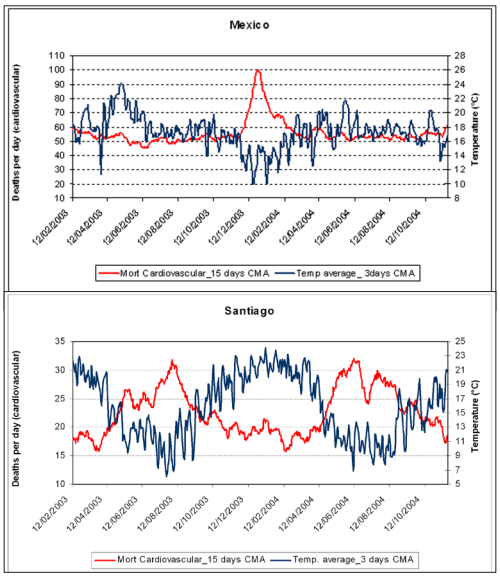
- Quantify exposure: what are the impacts of air pollution and weather on human health?
- Understand vulnerability: how do socio-economic factors affect mortality differences across cities and between neighborhoods?
- Assess adaptation: how do urban populations and authorities respond to hazards?

First results

- Inhabitants of Mexico City, Santiago, Buenos Aires and Bogotá are at high risk from exposure to high levels of pollution. Particles suspended in the air of these cities exceed World Health Organization (WHO) standards by about 90%, and levels of nitrogen oxides exceeded WHO standards by up to 73%.
- How exactly pollution and weather interact to affect human health differs by city and season (e.g., warm or cold). During the warm season, inhabitants of Buenos Aires and Mexico City have the highest risk of respiratory mortality, while in Bogotá, children are most affected during the cold season. Cardiovascular mortality is high for elderly people during the warm season in Bogotá.
- Age and sex, but also income levels determine how susceptible the population is to both hazards. Citizens living in poorer districts of Bogota are more vulnerable. Differences among districts are particularly distinct during the cold season.
- Knowledge of these differences in vulnerability to interacting health threats will help with better prevention planning.

Santiago de Chile - view of a city over which smog stagnates

Black cloud over Bogota, Colombia



Time series: temperature (blue) and cardiovascular mortality (red). The graphs for Mexico City and Santiago show an inverse relation between temperature and the number of deaths per day due to cardiovascular failure.

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Links to other IAI projects

This project integrates with the *Collaborative Research Network* CRN2017 **South American Emissions, Megacities and Climate (SAEMC)**.

Project web page: http://saemc.cmm.uchile.cl//index.php?option=com_content&task=view&id=66&Itemid=68

List of publications: http://iaibr1.iai.int/bs?publications/CRN2017.pdf

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