UGEC-NASA Workshop
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What are the key urban remote sensing/urban modeling and forecasting issues that you represent?

My work generally focuses on intra-urban environmental conditions and the process of urban environmental change with specific interest in drivers of spatial variation with application for urban land use modeling including:

1. Use SLEUTH for the extended NYC metropolitan region.
    a. NY metropolitan region – connected to a climate change and health project
    b. Long Island – connected to an sustainability planning effort
2. Climate and Health project
    a. developed growth scenarios to mimic IPCC – SRES
    b. connection land use change with ozone conc. and climate change
3. Population growth forecasting – fine scale for heat stress analysis

What are the key challenges, missing opportunities, and exciting development in your theme and region?

Key challenges include acquiring fine spatial scale data that enable analysis and development of results relevant for urban policy stakeholders.

There are several interesting opportunities for future application and development in my area of interest. These include:

1. Climate change-related sea level rise and nearshore coastal development (within the 1% flood zone) and changing vulnerability
2. Heat Island expansion analysis – suburban-focused studies
3. IPCC AR5 scenario application
4. CO2 emission conditions – intra-urban analyses will be needed as part of the emerging UNFCCC COP process and understanding of urban carbon domes
5. Urban metabolism – connects to urban form; illustrate where growth will take place and make reference to how and where population will grow.

Why are we not seeing more studies on smaller urban areas?

I actually will respond to this question within two contexts: 1) Smaller areas (i.e. smaller cities) in comparison to larger areas (i.e. larger cities); and 2) Smaller areas vis-a-vis finer spatial scales.

Smaller Cities – there seems to be a bias toward studying larger cities because there typically are more data available, greater amounts of institutional support and memory available within the city, greater amounts of funding agency interest, and a larger body of existing scientific literature with which to connect.

Fine Spatial Scale – there is a lack of data at finer scales for cities – while there is some there it is typically not enough to create opportunities for analytical work. A lack of modeling rigor to illustrate fine spatial scales is another deficit.

What platform/data/access limitations do you currently/frequently encounter?

A lot of the data that I would be interested in using to analyze intra-urban resource use variation (e.g. water use, sewerage flow, energy use, food sales) are not widely available because they are held for privacy and/or security concerns. With respect to SLR impact analysis, high resolution topographic elevation data – i.e., lidar mapping – is not yet widely available, therefore illustrations of flood scenarios are often vague with respect to site specific flood elevations.

How do these limitations affect our ability to monitor, model and forecast urban areas?

One has to development inferential statements regarding these qualities when attempting to model these conditions.

What do you see as missing in terms of case studies and methods?

There are a variety of limitations in different arenas of work.

With respect to UHI analysis a crucial need to develop a meso-scale (i.e. neighborhood scale frame) model to illustrate and predict the relative impact of urban environment metrics (e.g. percent impervious, vegetative cover, tree canopy structure, etc.) on urban heat island conditions.

With respect to SLR and community vulnerability analysis, there is a need for fine-scale case studies that describe the demographic and asset characteristics and adaptation potential of high-risk coastal communities.