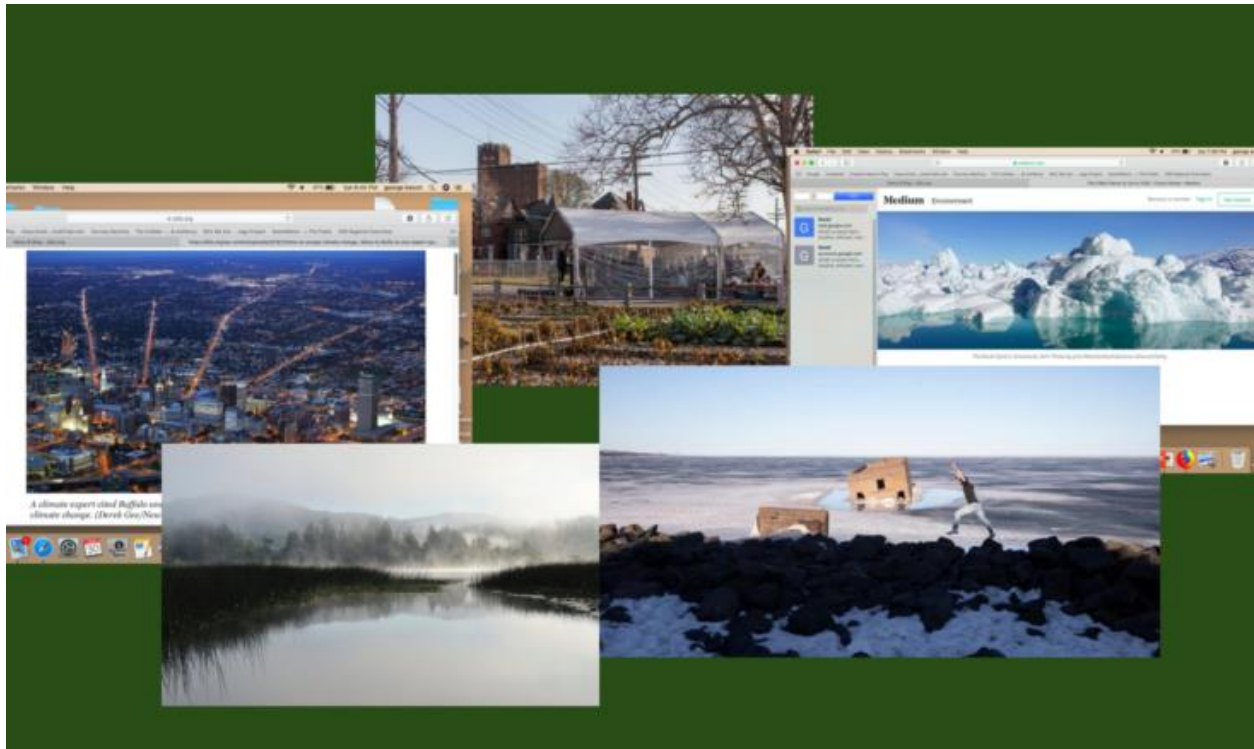


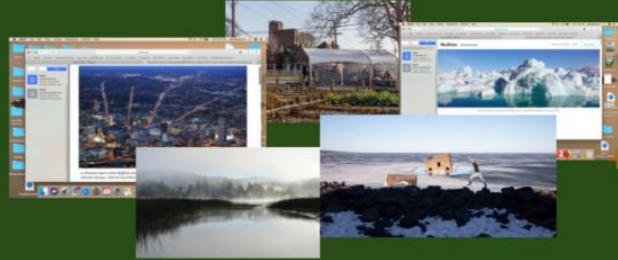
Synergy vs Zero Sum Dynamics Part III-Preparing Buffalo and Western New York For the Effects of Climate Change

By [Allison Leet](#) and [George Besch](#) December 26, 2019



How do we use knowledge of the effects of climate change we are likely to experience and collaboration to facilitate Buffalo and Western New York (WNY) in preparing for those effects? We need to learn more about them, and find our way to authentic collaboration and the synergy that will result in adapting and thriving, not just surviving.

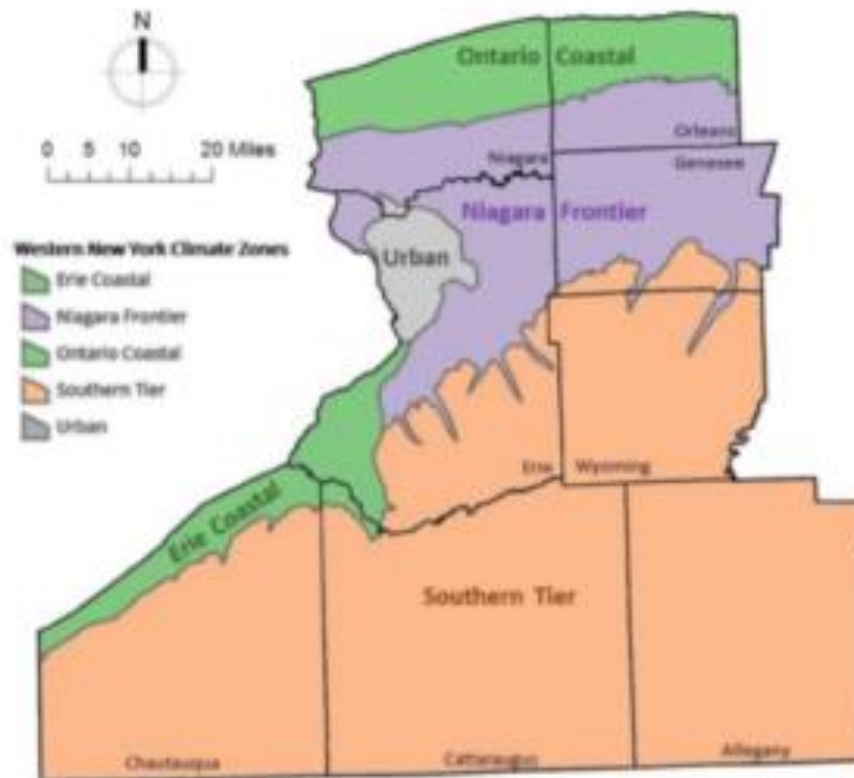
The world recognizes that Buffalo and WNY have the natural and human resources, and the climatic future, to be one of the world's best places to live in a world experiencing more frequent and catastrophic effects from global warming.



What those articles do not point out is that Buffalo and the WNY region will become a better refuge than only what the climate studies indicate because the Designing to Live Sustainably and BSC Department of Geography & Planning *Weathering Change in WNY* project will enable it, and those who move here, to take full advantage of its climatic and resource advantages.

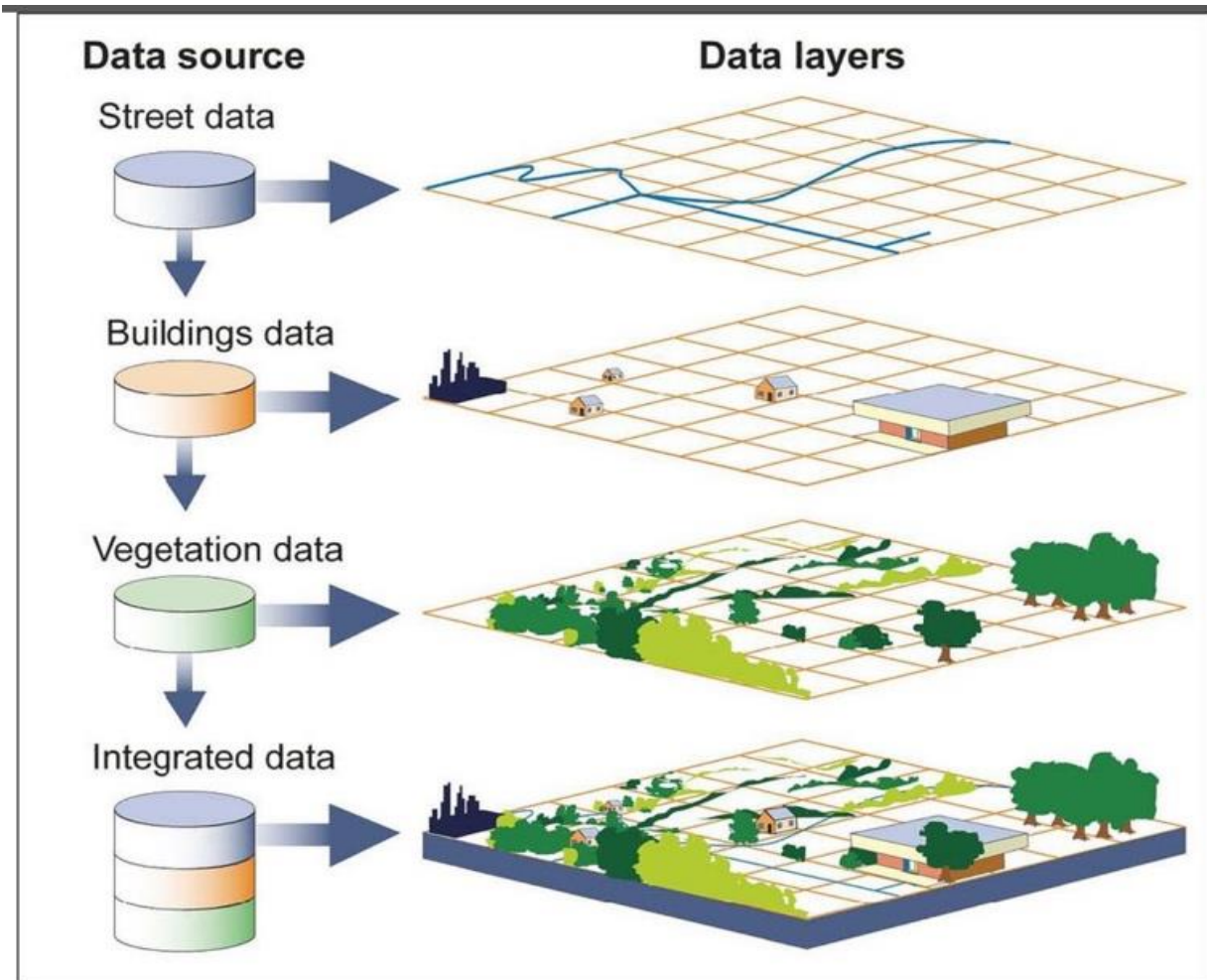
As a climate adaptation leader in Buffalo, non-profit organization Designing to Live Sustainably (D2LS) is pursuing the *Weathering Change in WNY* initiative in partnership with the Buffalo State College Department of Geography & Planning to more-than-sufficiently adapt and become better for its current residents and as a Refuge City. As described in Part II of this series, the large-scale governmental National Oceanic and Atmospheric Association (NOAA) climate models do not display information on a small-enough scale to be useful for regional assessments. WNY lumps in with 13 other states and the District of Columbia to make up the NOAA Northeast Climate Region, from D.C. to Maine. A trends analysis completed as part of *Weathering Change in WNY* indicates that the effects WNY will experience differ substantially from what NOAA projects for its greater Northeast Region, at least as it relates to precipitation and severe weather.

Furthermore, five identified Climate Zones within the WNY region, whose climates differ even more so based on topography, the Niagara Escarpment, City boundary and proximity to the Great Lakes, are identified in the study.



The trends analysis was our first step in understanding local differentials in climate-change-related responses. However, additional work is required to further the initiative. The suggested discrepancy with the NOAA Northeast Region clearly identifies the necessity for downscaling existing climate prediction models. The initial Buffalo State College trends analysis conducted by Dr. Stephen Vermette, Professor in Meteorology, was the precursor to a regional and

metropolitan climate prediction model.



This high-resolution modeling coupled with Geographic Information Systems (GIS) mapping overlays of factors such as depicted in the figure shown above, applying infrastructure, land use and buildings, water resources and vegetation, are crucial to prepare for the effects of the effects of climate change. GIS and data science capabilities are the instrumental basis of our proposal for downscaled climate modeling and GIS mapping, because they can show us where and what to prioritize expenditures, especially on necessary sustainable infrastructure changes, in preparation for direct effects by integrating such data as displayed in the figure. For these results to be the most accurate, it is crucial we are using the

most down-to-scale climate models available, *Weathering Change in WNY* proposes the creation of a WNY regional climate model for use in the GIS analysis.

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Designing to Live Sustainably, with its BSC Department of Geography & Planning partner in Weathering Change in WNY, intends to develop tools that Buffalo and WNY can use to leverage their climatic advantages.

By developing:

- Stakeholder meetings.
- Predictive downscaled modeling.
- GIS mapping techniques for overlaying variables, including but not limited to: infrastructure, land use, water resources and elevation.

Assessing:

- Ways to improve infrastructure and transportation in order to reduce vulnerability of at risk populations and resources.

Identifying:

- Optimum siting of housing, businesses, manufacturing, energy/micro-grids, emergency services, other services, afforestation, agriculture, recreation/sports, and areas best left undeveloped.

And, holding more stakeholder meetings.

All systems of governance in WNY will benefit from integrated environmental management best-practice measures discovered, most importantly infrastructure and development choices. NGOs and not-for-profits will be able to apply them in their social, economic and environmental justice planning work. The results of a down-scaled climate model and GIS overlays can enable us in a few ways listed below.

- **People and Demographics** e.g. vacant lots and blighted property best suited for new development; those best earmarked for green spaces; locations of climate vulnerable populations (elderly, poor, etc.).

- **Physical Infrastructure** e.g. where green infrastructure can and should be prioritized in order to reduce stormwater surges; sites best suited for solar arrays and wind turbines; best choices of building materials; electricity micro grids.
- **Environment** e.g. unbuilt environment that can be preserved to lessen the urban heat island effect, valuable natural resource locations.
- **Agriculture** i.e. climate modeling will show us shifts in agricultural growing zones best suited for a particular genre of agricultural crops, or natural vegetation. Aiding in preparation for the changing growing season, and future crop choices. Best sites for new agricultural businesses.
- **Economy** i.e. identification of locations for new businesses that are best suited to their genre and give the best opportunity for success.
- **Public Health** e.g. facilities, remediation and waste disposal sites that are most vulnerable to severe weather and prioritize their upgrade. Locations of susceptible population to extreme heat.
- **Organized Government services** e.g. Locations to prioritize for emergency services in case of disaster, in-depth analysis tool for further strategic planning.

The technology for down-scaling existing climate prediction models has been tested and proven by Hadley, a London-based company specializing in climate modeling. In 2012 Toronto completed high resolution modeling for its Metropolitan area to better prepare for the effects of climate change. This Toronto study was prompted by a heavy rain storm event that cost the city \$600

million. In a more recent example, AT&T began a collaboration with Argonne National Laboratory to downscale climate model datasets, having determined that cumulative damages to US infrastructure in 2017 totaled \$306 billion.

National as well as international experts and publications have concurred with the bases of forming *Designing to Live Sustainably* in 2009, and the subsequent findings of the *Weathering Change in WNY* study, that Buffalo and WNY have the resources and the climatic future to be one of the best places to live in a world experiencing more frequent and severe effects from global warming.

“ Buffalo has a climatic future that could make it one of the best places to live in a world experiencing more frequent and severe effects from global warming.”

However, the primary focus of the articles generated from outside of WNY are on the City of Buffalo. They point to the advantages Buffalo has because of Lakes Erie and Ontario for their ameliorative effect on our climate. It has, unfortunately, always been true that cities fail to adequately recognize, acknowledge and honor the natural resources that surround them. The importance of the other natural resources that surround Buffalo that are significant to our future are barely mentioned., if at all. They have always been important. But, as those more frequent and sever effects of climate change impact elsewhere affect the supply chain in general, including food, the more important it will be that we have preserved those resources, including the highly rated arable land we still have.

“ Our *Weathering Change in WNY* initiative is for the 8 counties in the region.”

That is why our *Weathering Change in WNY* initiative is for the 8 counties I the region, and why we plan for stakeholder's meetings that reach out and are accessible to the cities, towns, villages, residents and landowners in the region who will be affected by climate change and be interested in preparing for it. We want to know what they are experiencing and what it is they expect will be important for them to know.

The next in this series on Synergy vs Zero Sum Dynamics will be an examination of how Buffalo and the WNY region can make significant inroads into shortening the supply chain. The delivery of goods and services will be affected more-and-more seriously and frequently as the effects of climate change impact elsewhere.

Please see bios for [Allison](#) and [George](#) under Part I