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## 6B.2: Investigating the Impacts of Urban Areas on Regional and Global Climate Using the Global Model CCAM

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**Wednesday, August 08, 2018**

**10:15 AM - 10:30 AM**

📍 *City College of New York - SH - 304*

The impacts of urban areas on the global and regional climate have been assessed using the global conformal-cubic atmospheric model CCAM including a modified town energy budget (TEB) urban canopy parameterization at 50 km resolution globally. Simulations for current climate, using sea surface temperatures (SSTs) and sea ice concentrations (SICs) as forcing, with and without urban areas were conducted in order to identify the impacts of global urbanization on different climate variables. The robustness of these impacts were subsequently tested using statistical methods as well as additional simulations with different land-use and urban datasets. In addition, simulations for the end of the 21<sup>st</sup> century with RCP8.5 scenario were conducted using bias-corrected SST and SIC projections from the global climate model ACCESS1.0.

The evaluation of the simulated urban effects indicates realistic local urban effects (such as higher daily minimum temperatures). In regions with large fractions of urban land-use, some regional changes are also noted. Globally, some effects remote from the main urban areas appeared, suggesting an impact of urban areas on the global circulation. Finally, under projected warming it is noted that the daily maximum temperatures increase less than the daily minimum temperatures in urban areas; this leads to a decrease in diurnal temperature range in the urbanized regions.

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