## Presentation Information

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**Abstract:**

As human systems become increasingly urbanized, there is a pressing need to understand the functioning of urban ecosystems. Cities cover only 1-2% of Earth's surface, but they are important biogeochemical hotspots, consuming large inputs of energy, food, water, and other materials and exporting pollution downstream and downwind.

One of the major intellectual transformations needed to understand urban ecosystems is the integration of humans into our conceptualization of biogeochemical cycling. To further our understanding of these interactions, we have undertaken a large study of urban households. Households are valuable units of ecological study in cities because (1) cumulatively, household fluxes are an important component of total urban fluxes of macroelements such as carbon, nitrogen, and phosphorus (C, N, and P); (2) many household fluxes are flexible; and (3) understanding household choices could inform policies intended to reduce consumption of resources or production of pollutants.

Our goal was to analyze both macroelement fluxes and the underlying human motivations for consumption behaviors related to these fluxes. Our conceptual boundary for a household included the physical property (we limited our study to owner-occupied, single-family detached households), plus all personal transportation, including air travel, by household occupants. To collect data, we mailed 15,000 surveys to households located on an urban-to-exurban gradient in the Minneapolis-St. Paul metropolitan area, Minnesota, with an overall response rate of 22% (3,300). Household vegetation was sampled for a subset of 400 households. Macroelement fluxes for each household in our database will be calculated with our Household Flux Calculator.

This presentation will focus on the distribution of fluxes among households, which we predict will be highly skewed, with a small fraction of households having disproportionately high fluxes. We will present results on key component fluxes (e.g. vehicle transportation, energy for heating and cooling, food, and airline travel) as well as total household fluxes.