

**P40 A method of aggregating heterogeneous subgrid land cover input data for multi-scale urban parameterization**

**Shaffer, Stephen R.**, Mohamed Moustaooui, Alex Mahalov, and Benjamin Ruddell,  
*Arizona State University*

A method for representing grid-scale heterogeneous development density for urban climate models from probability density functions of sub-grid resolution observed data is proposed. Derived values are evaluated in relation to normalized Shannon Entropy to provide guidance in assessing model input data. Urban fraction for dominant and mosaic urban class contributions are estimated by combining analysis of 30-meter resolution National Land Cover Database 2006 data products for continuous impervious surface area and categorical land cover. The method aims at reducing model error through improvement of urban parameterization and representation of observations employed as input data. The multi-scale variation of parameter values are demonstrated for several methods of utilizing input. The method provides multi-scale and spatial guidance for determining where parameterization schemes may be misrepresenting heterogeneity of input data, along with motivation for employing mosaic techniques based upon assessment of input data. The proposed method has wider potential for geographic application, and complements data products which focus on characterizing central business districts. The method enables obtaining urban fraction dependent upon resolution and class partition scheme, based upon improved parameterization of observed data, which provides one means of influencing simulation prediction at various aggregated grid scales.