TITLE: Investigating the impact of surface heterogeneity on the convective boundary layer over urban areas through coupled large-eddy simulation and remote sensing**PRESENTATION TYPE:** Assigned by Committee (Oral or Poster)**CURRENT SECTION/FOCUS GROUP:** Global Environmental Change (GC)**CURRENT SESSION:** GC14. Regional Climate Impacts 5. Urbanization Dynamics Across a Changing Planet**AUTHORS (FIRST NAME, LAST NAME):** Anthony Dominguez[1], Jan P Kleissl[1], Jeffrey C. Luvall[2]**INSTITUTIONS (ALL):** 1. Mechanical and Aerospace Engineering, University of California, San Diego, La Jolla, CA, United States.
2. NASA Marshall Space Flight Center, Huntsville, AL, United States.
Title of Team:SPONSOR NAME: Jan Kleissl**ABSTRACT BODY:** Large-eddy Simulation (LES) was used to study convective boundary layer (CBL) flow through suburban regions with both large and small scale heterogeneities in surface temperature. Constant remotely sensed surface temperatures were applied at the surface boundary at resolutions of 10 m, 90 m, 200 m, and 1 km. Increasing the surface resolution from 1 km to 200 m had the most significant impact on the mean and turbulent flow characteristics as the larger scale heterogeneities became resolved. While previous studies concluded that scales of heterogeneity much smaller than the CBL inversion height have little impact on the CBL characteristics, we found that further increasing the surface resolution (resolving smaller scale heterogeneities) results in an increase in mean surface heat flux, thermal blending height, and potential temperature profile. The results of this study will help to better inform sub-grid parameterization for meso-scale meteorological models. The simulation tool developed through this study (combining LES and high resolution remotely sensed surface conditions) is a significant step towards future studies on the micro-scale meteorology in urban areas.