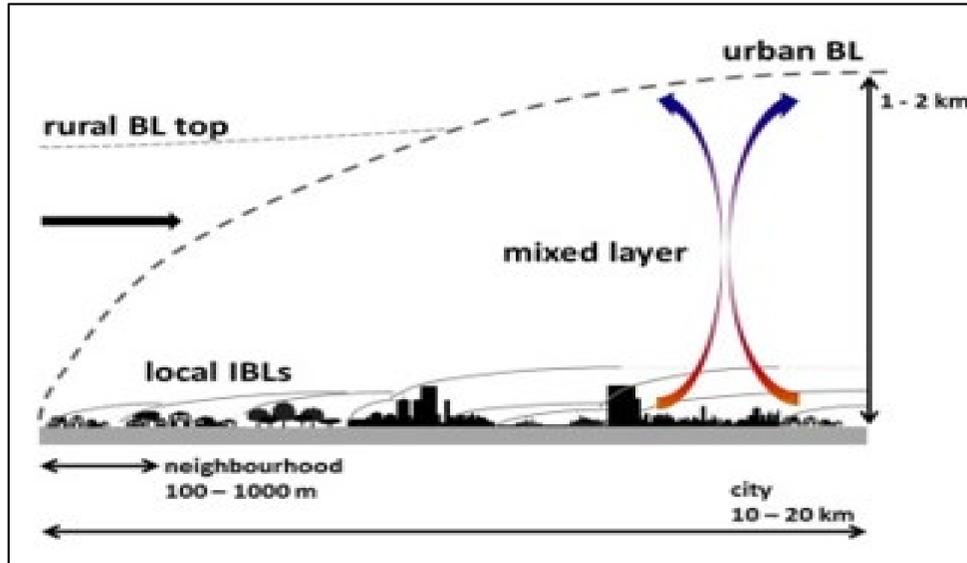




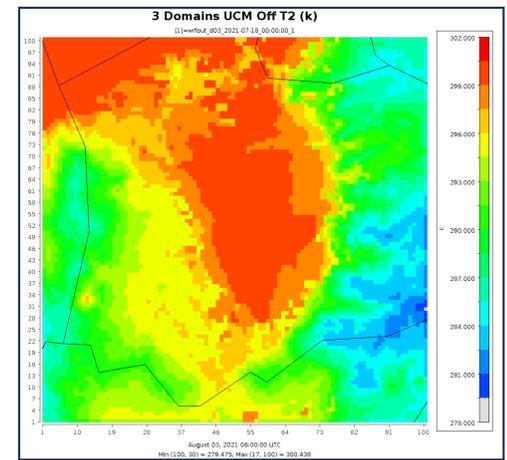
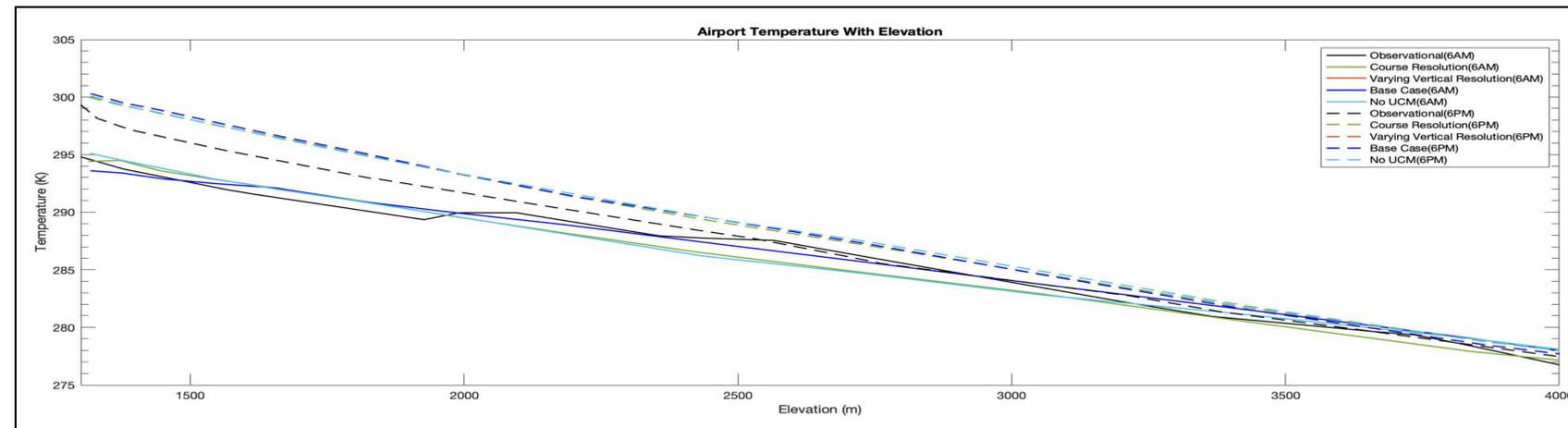
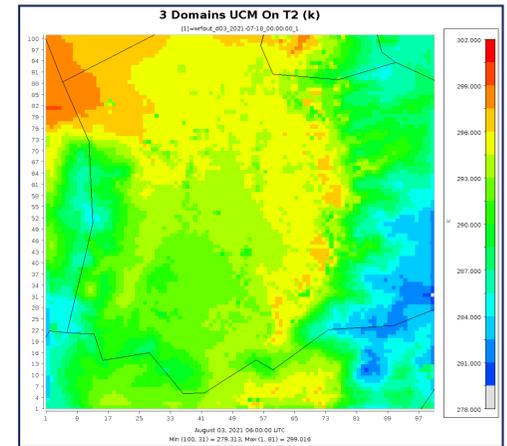
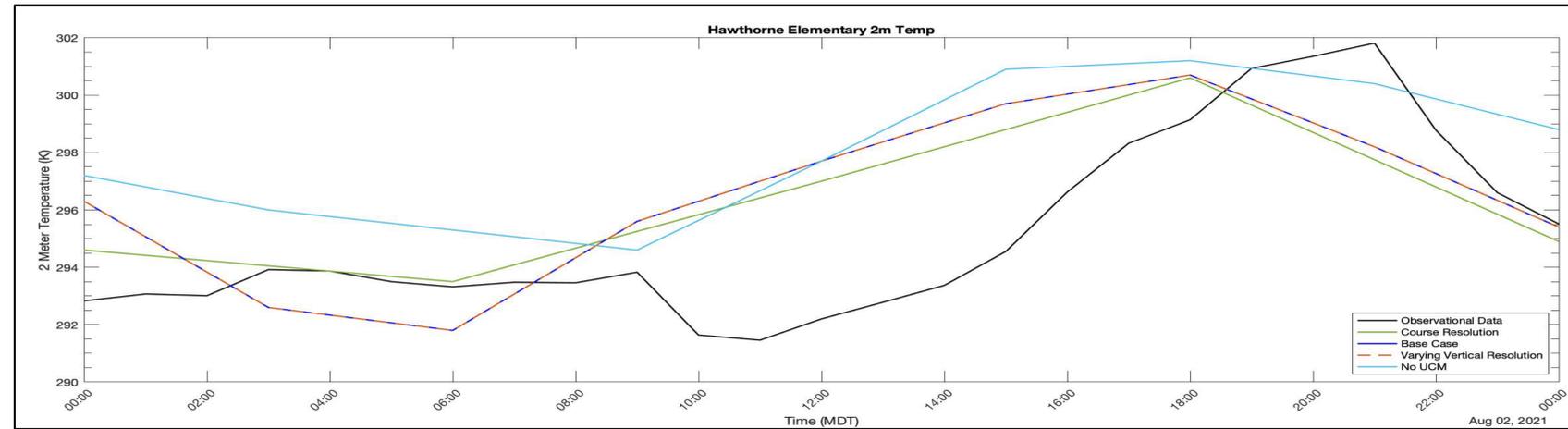
# Sensitivity of a GSLA Urban Canopy Model to Mesh Resolution

**Background:** The increasing urbanization of the greater Salt Lake City Area (GSLA) has contributed to the development of an urban canopy over the GSLA, which affects meteorological conditions such as temperature, humidity, and wind speed.

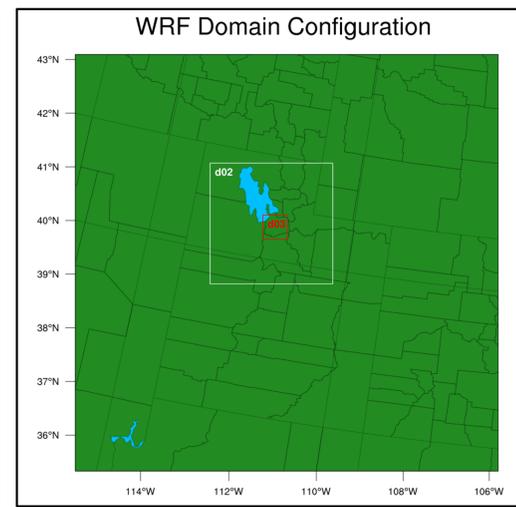


**Objective:** Evaluate impacts of using an Urban Canopy Model (UCM) to predict GSLA meteorological temperatures, and sensitivity of UCM results to different computational mesh resolutions.

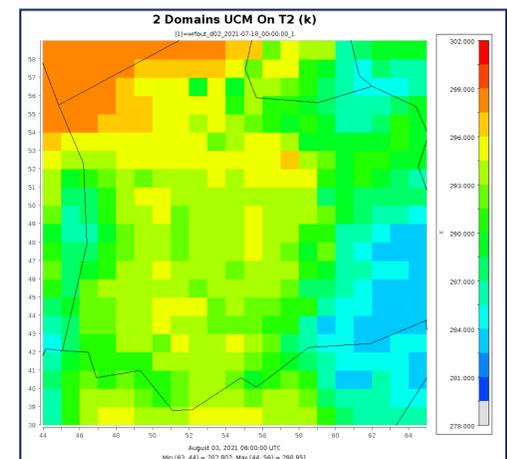
**Approach:** A Weather Research and Forecasting (WRF) model was used to predict meteorological conditions in the GSLA. A baseline case was run which included the use of a single-layer UCM. Comparative cases were run to examine the effects of grid resolution, varying domain height, and the lack of a UCM. Simulation results are compared to each other and to ground measurements from GSLA locations and atmospheric (elevation) measurements taken at the Salt Lake City Airport.



- Simulations:**
- Base case: UCM, 3 domains with an inner domain resolution of 500m
  - No UCM: Same parameters as the base case without the use of a UCM
  - Coarse resolution: UCM, 2 domains with an inner domain resolution of 2500m
  - Vertical resolution: Same parameters as base case but decreased domain height for inner domains



- Results:**
- 2-m temperatures lower with UCM than without
  - Coarse resolution provides similar overall results
  - Vertical resolution had no effect on temperatures
  - Simulations agree with observed trends, but appear to be shifted up



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