

This manuscript aims at testing uncertainty of land cover and urbanization impacts on surface meteorological conditions and air quality using the NASA NU-WRF experiments. Using simulations with three different land cover datasets, the authors show that the discrepancies among these three land cover data could cause noticeable differences in soil moisture, surface fluxes, boundary layer height, temperature and winds, and how they in turn influence dust emission and air quality (O₃, NO₂, PM_{2.5}). The authors also evaluated the impacts of urbanization on these meteorological and air quality variables. I completely agree with the authors that it is highly important to assess the impacts of inconsistency among different ancillary datasets on uncertainty of the model simulations. This study serves as a good example that demonstrates this point. I recommend for publication with minor revision considering address these points:

- a. Since the results are based on 5-day simulations, are the differences between the simulations forced by different land cover data significant relative to the internal variability of the model? I would recommend that the authors to indicate the ranges of the random errors within each experiments and compare them to the differences caused by different land cover datasets in all the relevant figures.
- b. Fig. 2: Does this baseline simulation based on E_USGS data represents the best case scenario? It would be helpful to add evaluations of the PDF of the NB and NGE for simulations with MODIS and UMD land cover data.
- a. The entire urbane impact discussion is based on one line in Table 4. Are the urban impacts on surface conditions significantly different from other land cover? Are the differences showing in this table caused by the local effects or the gradients between the urban and surrounding land cover?