Jeremy Benik

Project presentations – Extra Credit Assignments

The project I found most interesting was Marc’s presentation on “A numerical Analysis of Fire behavior in canyons based on climatology and coupled fire-atmosphere simulations”

This project was conducted to better understand fire behaviors in steep, complex terrain as explosive fire behavior has been observed in this terrain which has led to several firefighter fatalities. To analyze fire behaviors in canyons, a series of WRF-SFIRE forecasts were run and analyzed to determine how fire behaves in complex terrain. These data were then compared to some of the observations collected during the California Canyon Experiment conducted in Salinas California to determine how well the model captured changes in the weather. By using wrfxpy and running a simulation at the same location as the canyon experiment, the results can be better analyzed since there are observations taken at that time and place so we can gain a better understanding of fires in complex terrain.

The results of the experiment were the fire did not spread up the canyon, instead it spread laterally along the canyon. After looking at the wind speed and direction of the simulation, the lateral fire spread makes much more sense as it follows the wind direction. Even with this kind of fire, there was still an impressive plume reaching 2000m.

This was my favorite presentation based on the visuals and how he incorporated observations into the simulation. I thought the graphics were easy to read and understand. My research revolves around comparing the simulation to the observations and adjusting based on the observations and I really liked seeing a similar case applied to a forecast.

Grading on a scale from 0 to 20, I would give it a 15. I found that while there were a lot of graphs, I would’ve liked some more images showing how the simulation wind speeds compare to the observed wind speeds. I also would’ve liked to see adjustments made to the simulation to try to get the fire to propagate up the canyon instead of laterally around the canyon. While this may be asking a lot, creating an idealized simulation and comparing the ROS for both simulations would be really interesting as well.