

# Analyzing Suitability of Solar Panel Installation on University of Richmond Campus

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# Why we chose this project

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The University of Richmond prides itself on being a green campus, and we already are working on harnessing solar power to make our campus ecologically sustainable. We thought it would be beneficial to analyze the best locations for the further implementation of solar panels to encourage the continuation of renewable energy sources on campus.

# Outline

Using LiDAR data, we constructed a model to address the efficiency of solar panel sites based on suitability in elevation, solar radiation, aspect, and slope.

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# Reasoning

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The most efficient solar panel installation is dependent on the consideration of the following criteria:

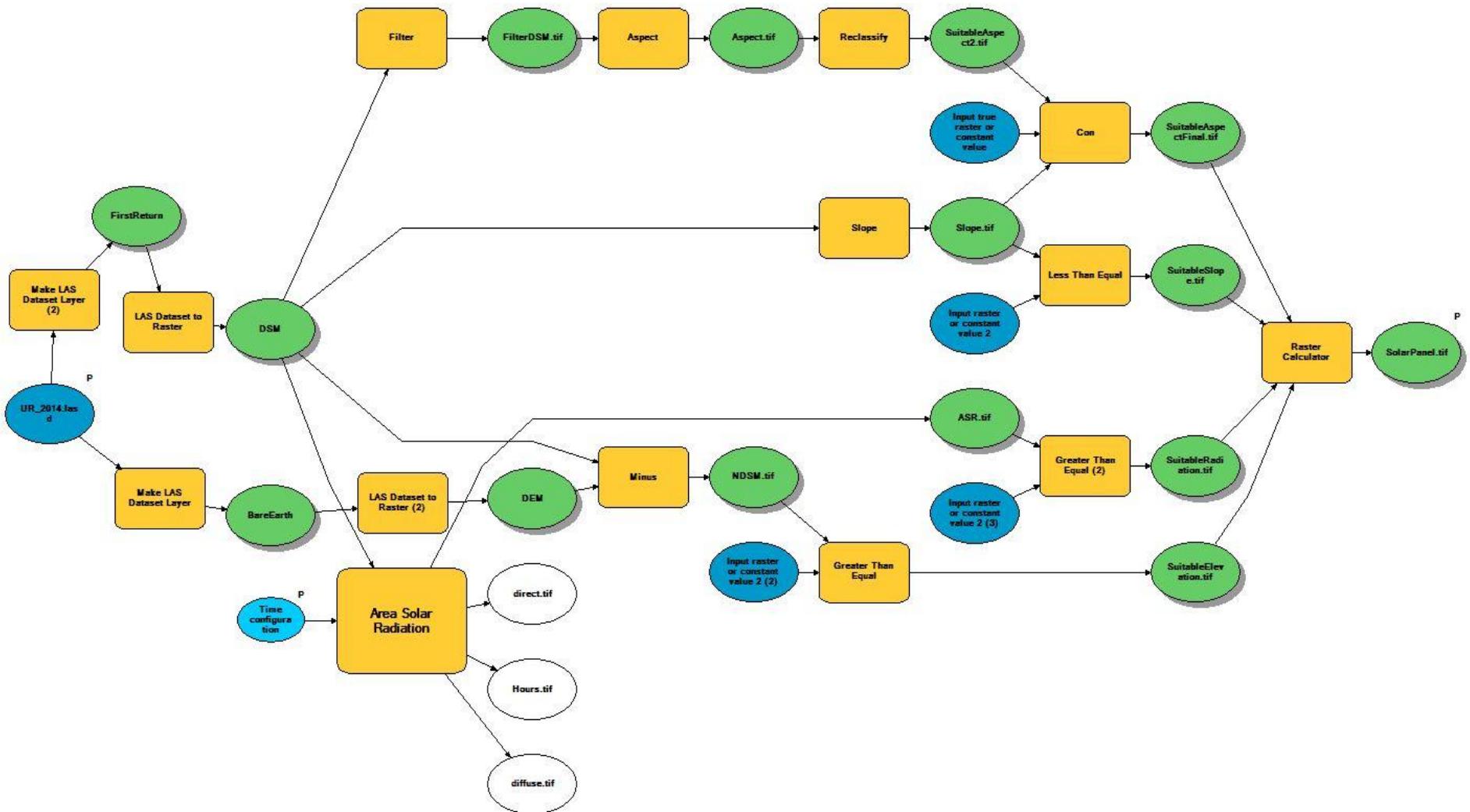
- Elevation: Greater than 5 feet (on a roof of a building)
- Solar Radiation: Greater than 300 KW/m<sup>2</sup>
- Aspect: Facing SW/S/SE
- Slope: Less than 30 degrees

# Data Sources

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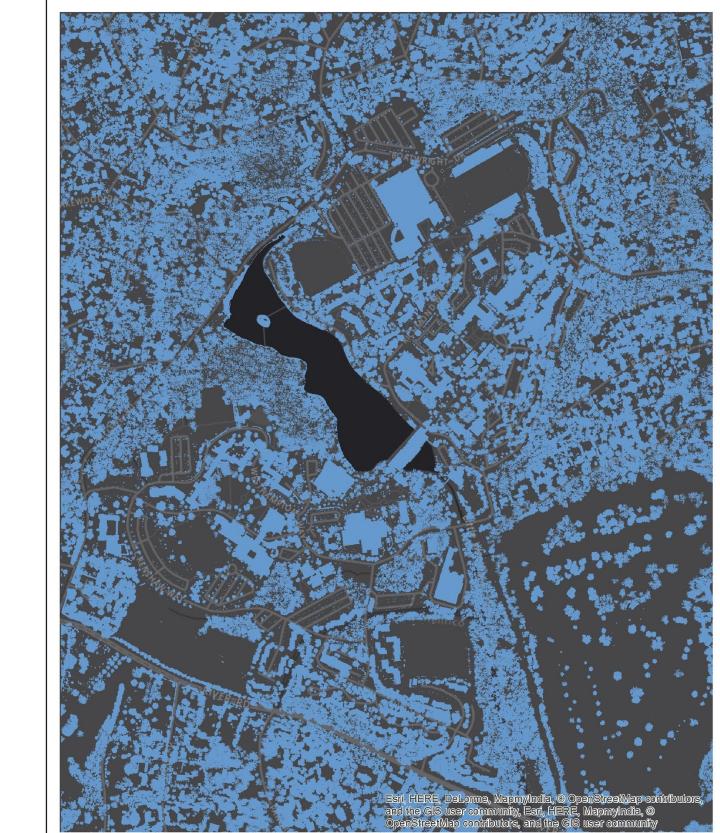
LiDAR data collected 2014 (USGS Post-Sandy - Central Virginia). Average spacing 0.61 meters

Basemap: dark gray canvas



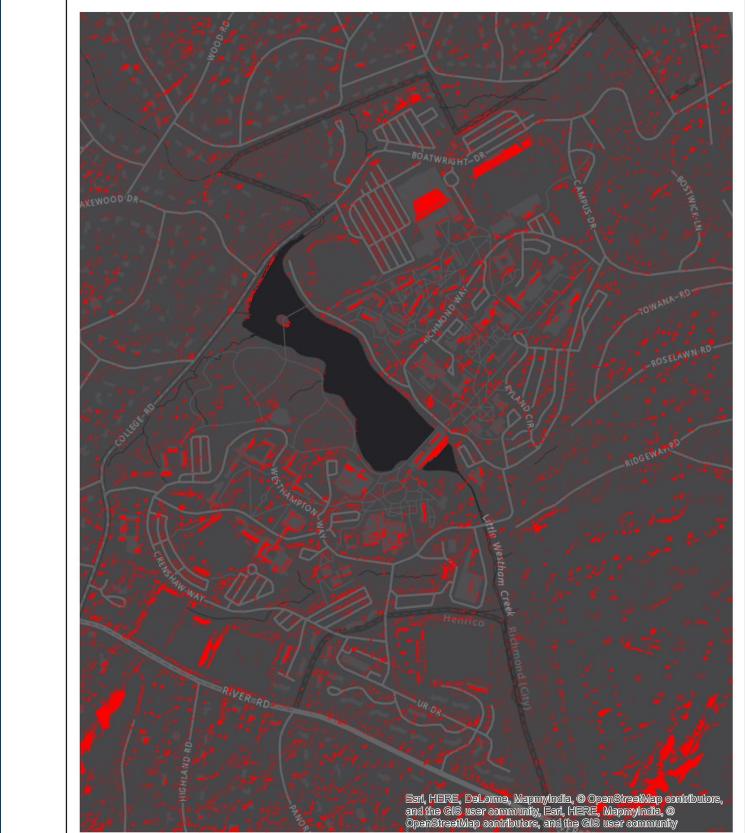
# Elevation

Analyzed suitability of target areas on campus based on whether it was greater than 5 feet (on a roof of a building).



# Solar Radiation

Analyzed suitability of target areas on campus based on whether the area received an excess of 300 KW/m<sup>2</sup> (a measurement of solar radiation).



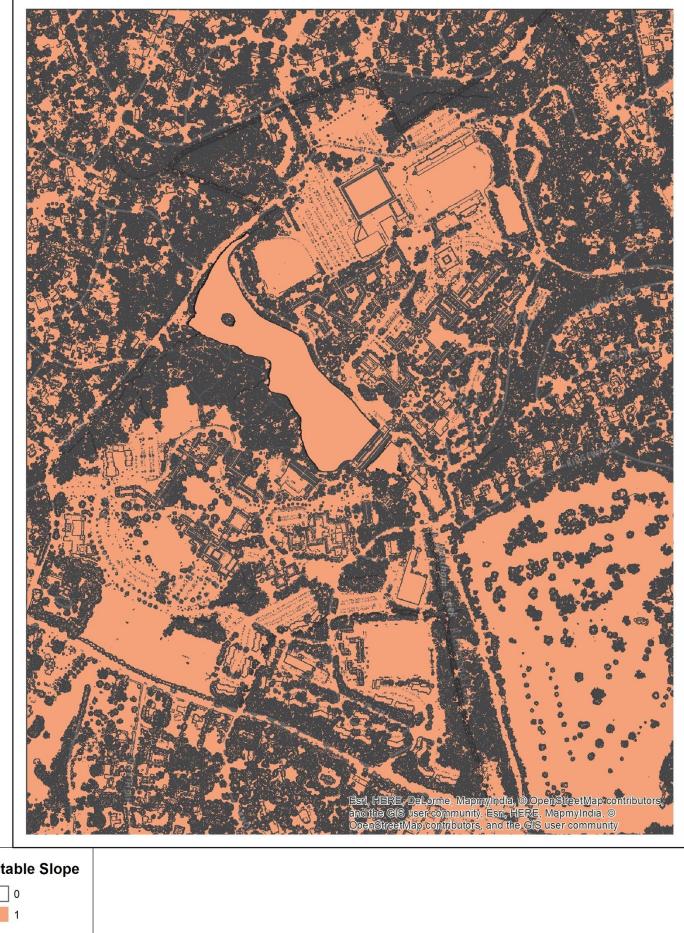
# Aspect

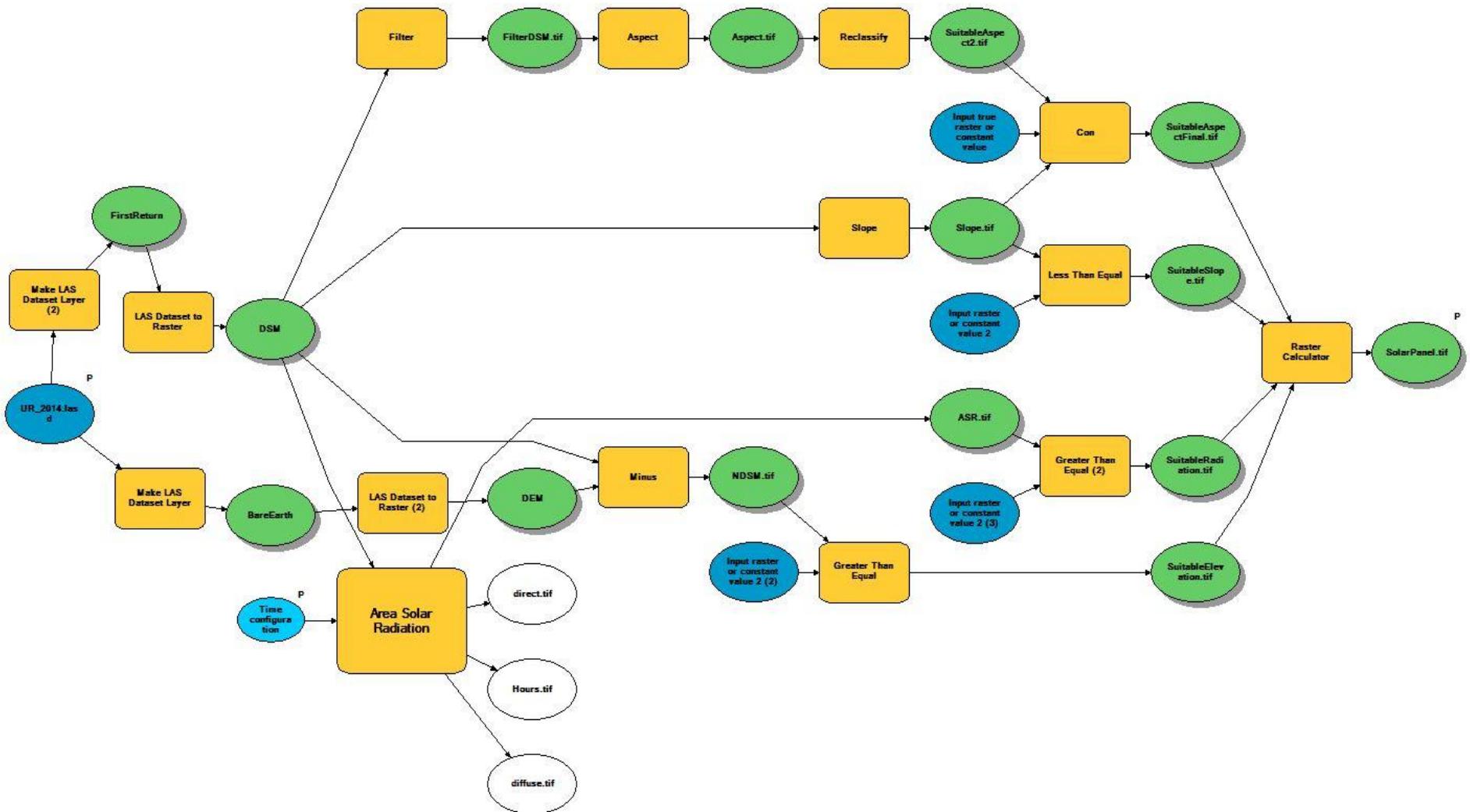
Analyzed suitability of target areas on campus based on the direction the target area was facing. If it was facing SW/S/SE or flat, it was deemed suitable.



# Slope

Analyzed suitability of target areas on campus based on whether or not the slope of the target areas were less than 30 degrees.

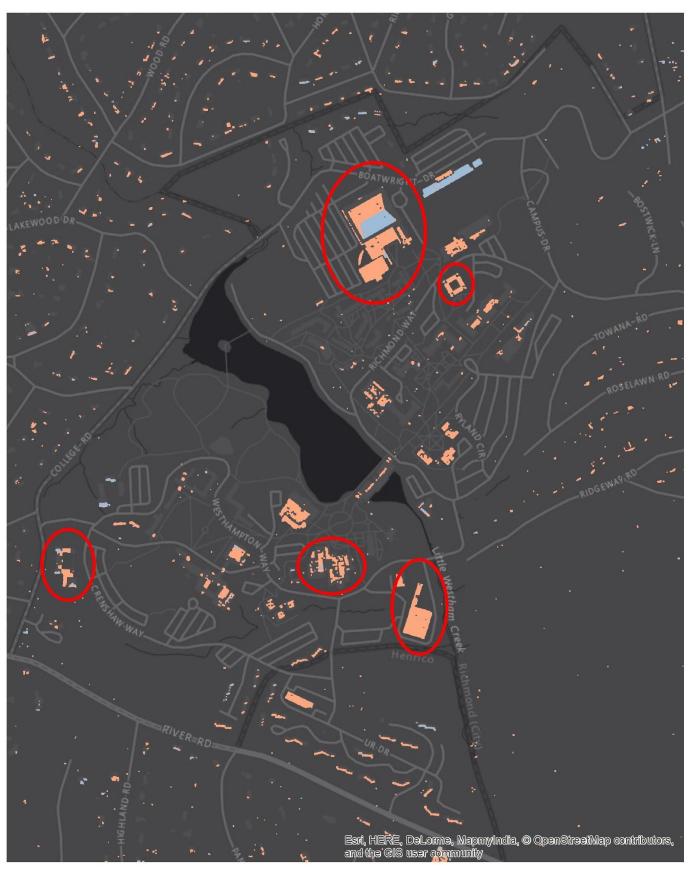




# Final

This map shows suitable sites  
from radiation during the  
summer and winter solstices.





East, HERE, DeLorme, MapmyIndia, © OpenStreetMap contributors,  
and the OSM user community

# Conclusions

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Suitable places for the implementation of additional solar panels: Robins Center, Carole Weinstein International Center, Jepson Alumni Center, Physical Plant, and Gottwald Science Center.

