

South Dakota's Wind Classifications



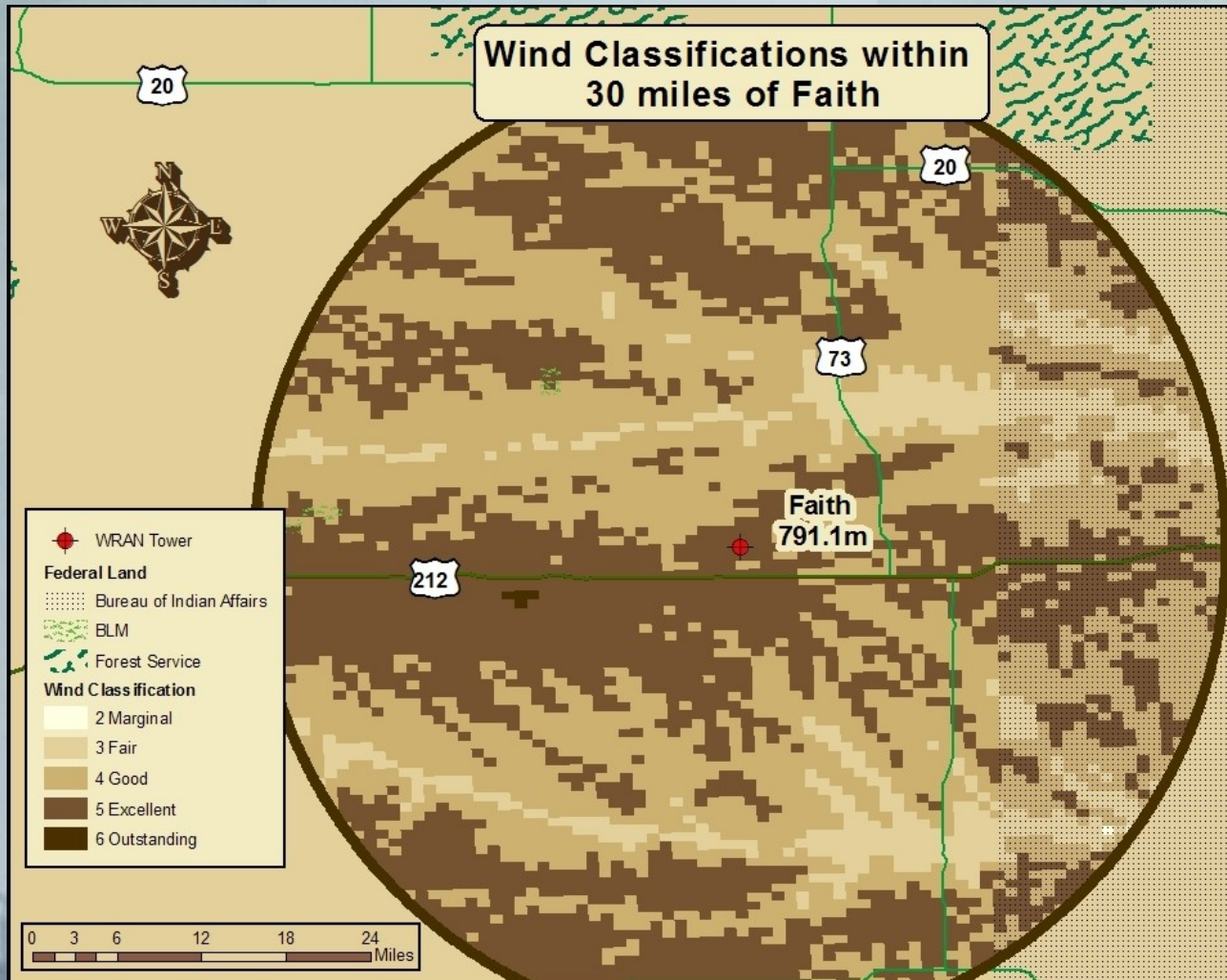
Credit to NREL for their Wind Classification Data

Credit to Microsoft Office Online for the Wind Turbine Template.

Cartographic Designs by Shanon Conley

**South Dakota State University
Electrical Engineering Department
Wind Resource Assessment Network Project
Site: Faith**

**Data collection period:
May 9, 2007 –
May 30, 2007**



Site description:

Elevation: 797.1 m (2592ft)

Latitude: 45° 03' 14" N

Longitude: 102° 15' 49" W

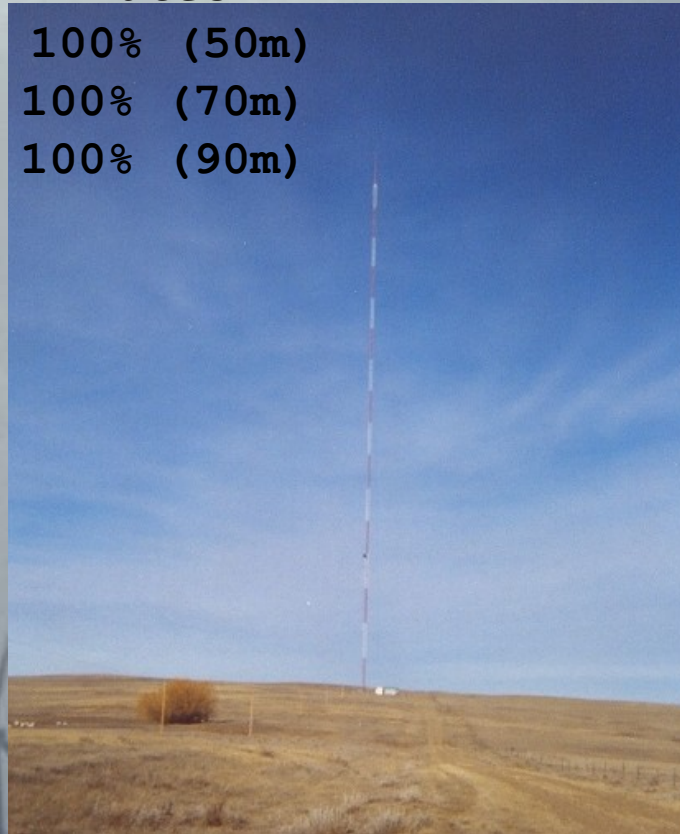
Date of activation: May 9, 2007

Data averaging interval: 10 minutes

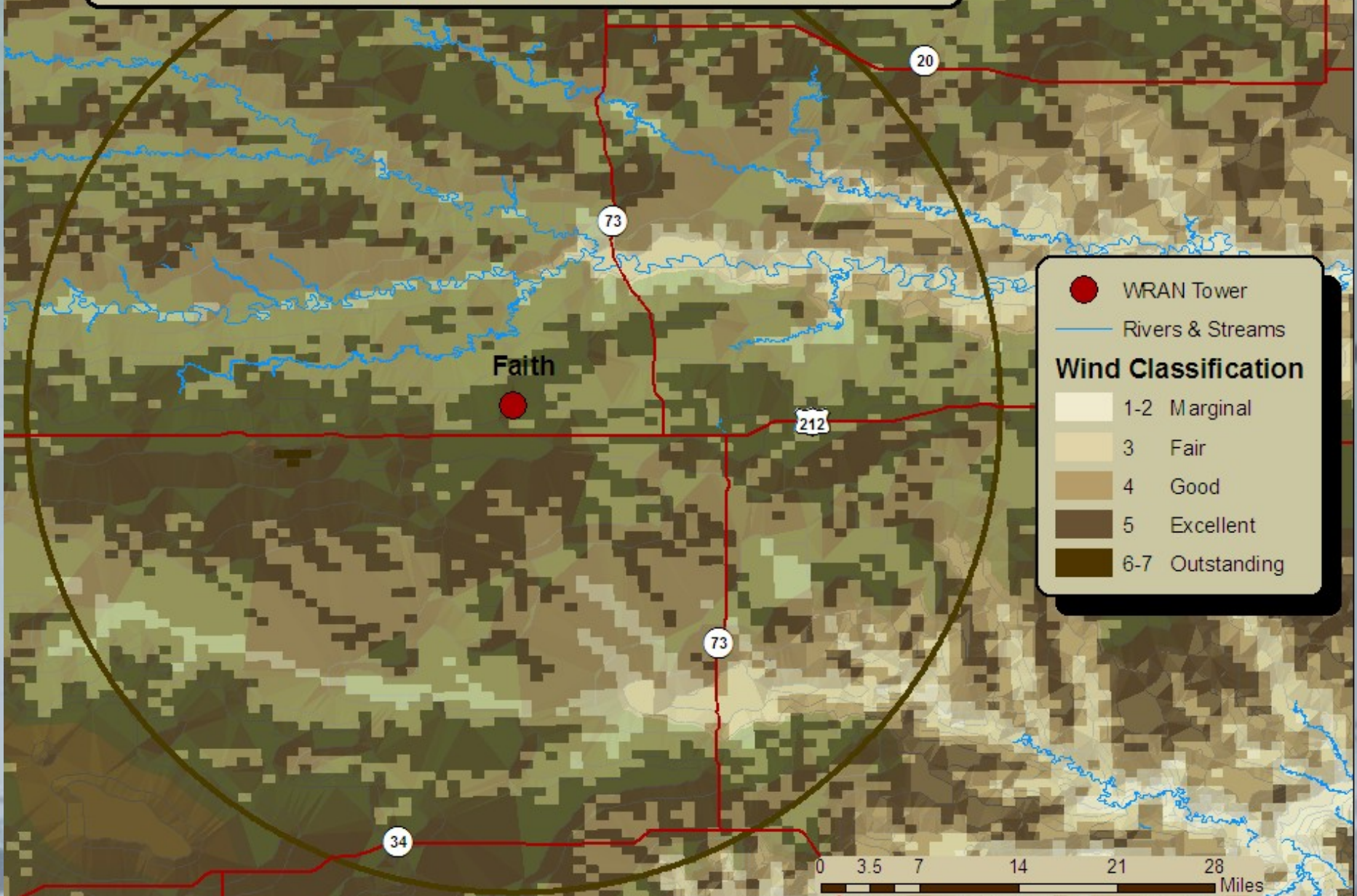
Overall data recovery rate: 100% (50m)

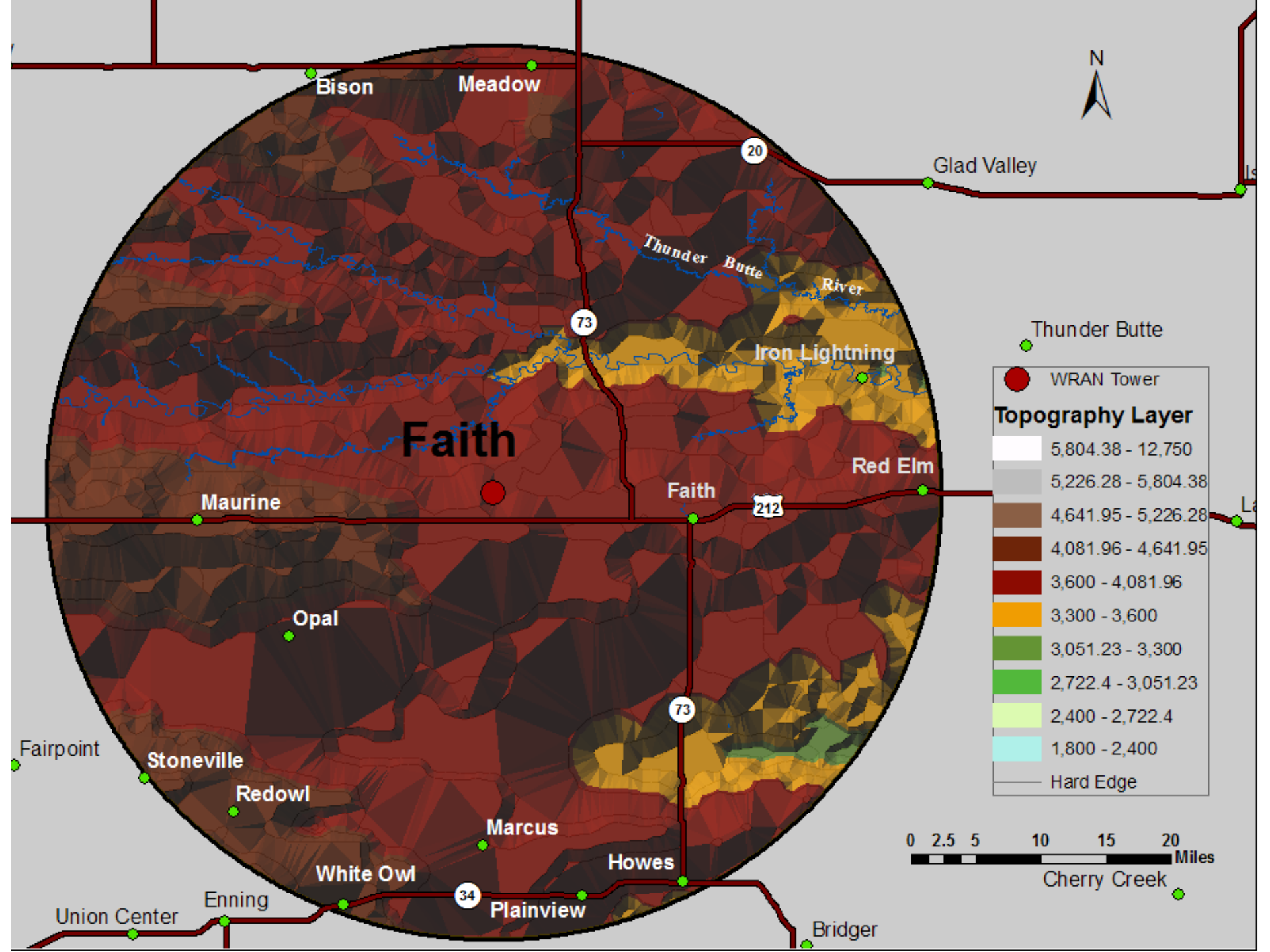
100% (70m)

100% (90m)



NREL's Wind Classification around the Faith Tower

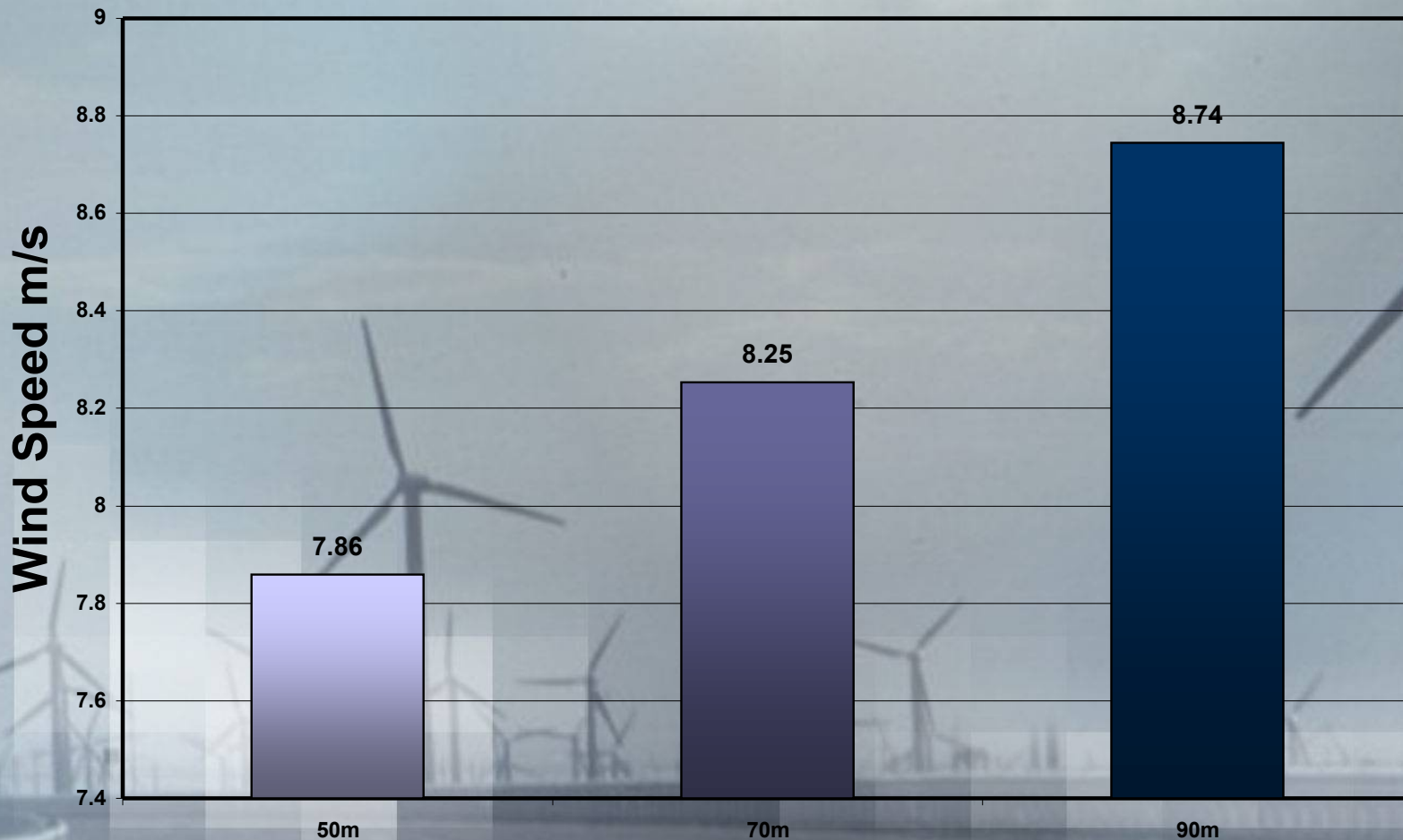




**South Dakota State University
Electrical Engineering Department
Wind Resource Assessment Network Project
Site: Faith**

This slide shows the monthly average wind speed in meters per second at this site, and also the overall average wind speed (in the inset box), at each measurement height. Last updated 6/14/2007

Average Wind Speed for May 9 - June 7, 2007



**South Dakota State University
Electrical Engineering Department
Wind Resource Assessment Network Project
Site: Faith**

Notes for data
interpretation (pg 1/1)

Month	Notes
May 2007 - June 2007	<p>Faith's WRAN tower was activated on May 9th, 2007. All the sensors were working correctly and the Datalogger was storing data every 10 minutes. A problem with the site's ISP caused data not to be emailed to the WRAN Laboratory. The data Memory Card (MMC) was manually replaced with a new MMC, so the data could be analyzed while the ISP problem was being fixed.</p> <p>After analyzing the data, a few sensors were found to have problematic data. The wind vanes at both 70-meters and 90-meters didn't appear to have a full range of motion. A visit to the tower gave proof that both 70 and 90m wind vanes were incapacitated. When creating the final monthly averages the WRAN used the 50-meter wind vane because of its accuracy. The Pyranometer data was also coming in well below normal, however the problem has been corrected.</p>

**South Dakota State University
Electrical Engineering Department
Wind Resource Assessment Network Project
Site: Faith**

This slide shows the expected maximum capacity factor that could be expected from a wind turbine on this site. The capacity factor can be thought of as the percentage of maximum possible energy that the turbine would actually produce, given the variability of the wind resource at the site. This is taken from the initial data collection to 6/14/2007.

Predicted Maximum Capacity Factors

