

Wind Resource Prediction in a Changing Climate



Johnathan Scofield Senior Business Development Manager



120,000

Megawatts (MW) Assessed



Consulted to half of all North American wind projects that came online in 2014, and 8 of the top 10 projects ranked by size. Assessed resource and energy for over half of all India wind projects in 2014.

43 GW

We provide renewable energy forecasting services to over 43 gigawatts (GW) of capacity.

30+

Years of Experience



Consulted to about a third of all Brazil wind projects that came online in 2014, and half of the top 5 projects ranked by size.

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85%

of our staff is comprised of engineers, meteorologists and environmental specialists.

80+

Number of Countries Where We Worked



Wind Speed Anomaly Map First Quarter 2015

Anomaly maps derived from a custom combination of the CFSR, ERA-Interim, and MERRA reanalysis datasets. The anomalies are calculated as a percent deviation from the 1988 – 2014 mean speed at 100m above ground level for the calendar quarter.





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Wind Speed Anomaly Map Second Quarter 2015



How does considering climate change impact wind resource prediction

- Current Independent Engineering assessment methods acknowledge climate change risk, but uncertainty has yet to impact project bankability
- Typical project finance engagement is 10 years (0.5% uncertainty)
- Higher risk when predicting out 20 25 years (up to 2% uncertainty)



Will climate change impact wind resource prediction in the future

- The application of a higher risk factor for climate change will only come after scientific determination of such risk
- It is possible that rising global temperatures will result in a decline in wind speeds in the mid-latitudes due to decreasing temperature gradients (equator / pole gradient)
- Long-term wind speeds typically not prone to prediction risk as "extreme events" have small to no impact on long-term averages
- Interannual variability (currently characterized by 4% uncertainty) may play a more pronounced role for project bankability if variation becomes more extreme
- While the current private capital market tolerates both interannual variability and the long-term uncertainty of climate change when entering ten year engagements, if either risk increases then alternative funding mechanisms may be required



Additional Questions:

- Contact AWS Truepower: Johnathan Scofield jscofield@awstruepower.com
- Consult: "Wind Resource Assessment: A Practical Guide to Developing a Wind Project"

