

Advancements in Remote Sensing for Wind Resource Assessment (Focus on Sodar)

Exotic to Mainstream

Larry Letteney
COO, Second Wind Inc.

September 2, 2009



Outline

- Second Wind and Remote Sensing background
- Trends driving remote sensing use
- Sodar coming of age
- Common sodar applications
- Attributes driving rapid sodar growth
- Proof of use in mainstream wind development
- Summary

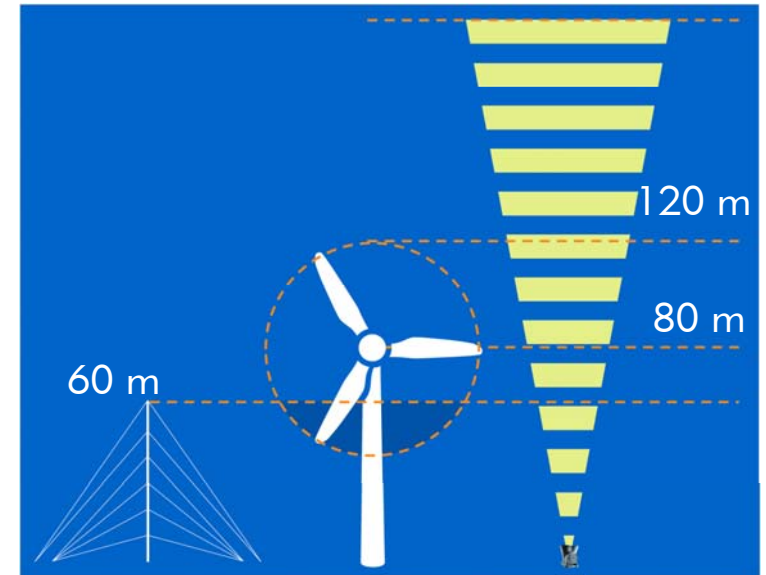
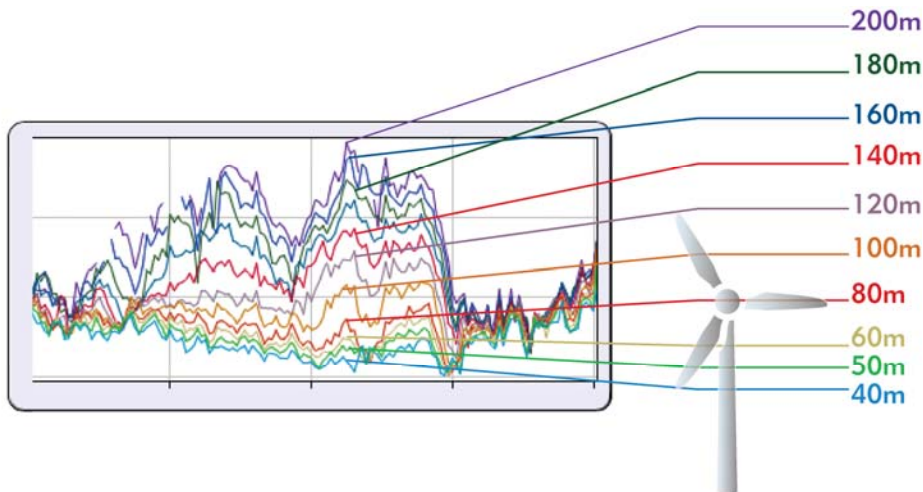
Background

- Second Wind is focused on technologies and services that increase use of wind information in development and assessment
- Participants in the Remote Sensing category
 - » 100% growth in 2008, same expected in 2009
 - » \$10's of millions in new technology investment globally
 - » Over half of new wind developments in North America and the EU are using remote sensing data.



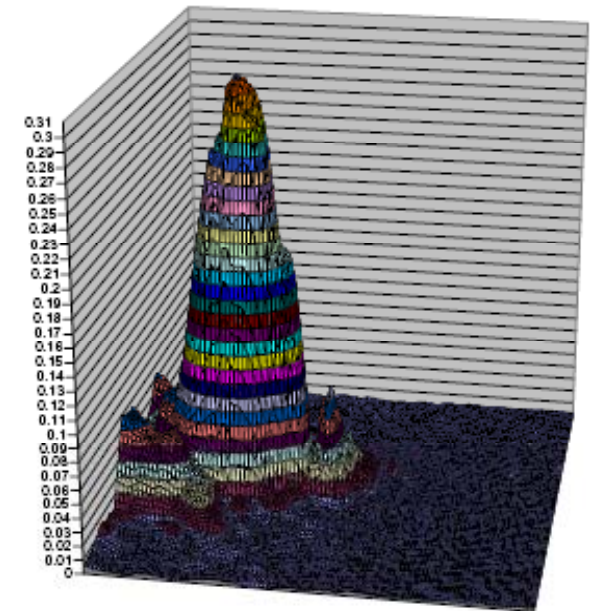
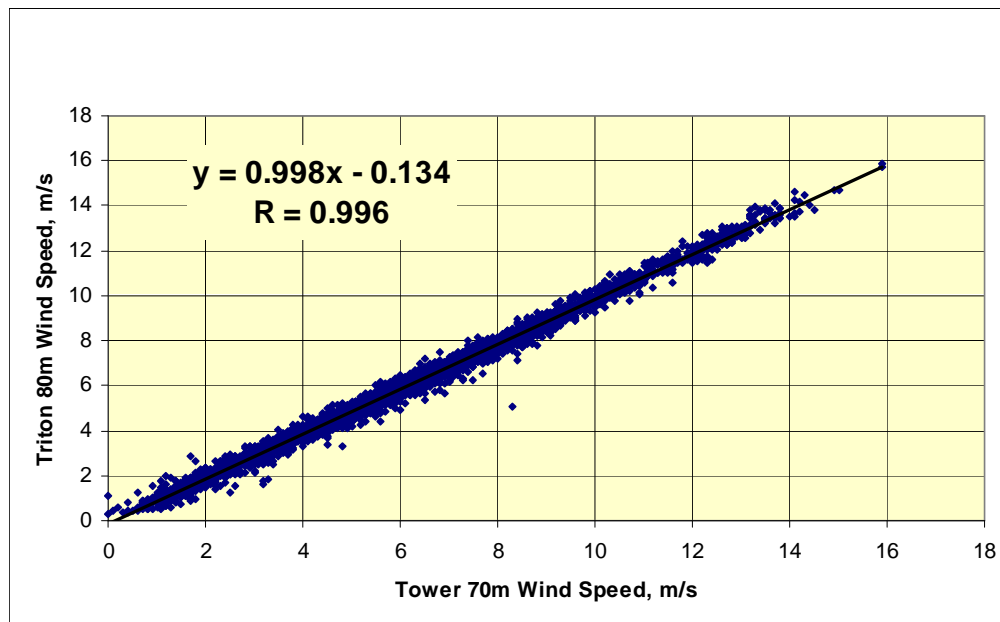
Trends Driving Remote Sensing Use

- Banks require 80m+ data
- Complex sites – shear
- Permitting issues
- Stimulus investment – speed



Sodar Coming of Age

- Clean beams of sound required for quality and volume of data
- Dozens of proof points: Correlation



Common Sodar Applications



- Rapid prospecting



- Tower complement

- Micro-siting



- In lieu of tower

Attributes Driving Rapid Sodar Growth

- Reliability – extended study up-time over 95%
- Autonomous operation – integrated power options, remote data access
- Quality of data – warranted to be above 98% correlation
- Economy – comparable cost or lower to 80M tower installed
 - » Ongoing ownership cost below tower service/relocation
- Bank's Engineers initiative
 - » Major bank's engineers dedicating Sodar specialists
 - » DNV/GEC owns/sells/supports Sodar
 - » Garrad Hassan completing technical review

Proof of Use in Mainstream Wind Development

- Over **200** Sodar serving wind energy applications in 17 countries
- Operating in both Resource Assessment and Operations applications
- Growth rate of over **100%** per year
- 15 of the top 20 US developers operate Sodar
- Also used by
 - » Utilities
 - » Operators
 - » Services companies
 - » Contractors
 - » Consultants
 - » Municipalities
 - » Universities

Summary

- Remote sensing as a category offers the promise of:
 - » More complete wind information
 - » Superior economics to very tall towers
 - » Increased financial certainty
- A new generation of Sodar are currently undergoing rapid adoption by the world's top developers
- 2010 will see remote sensing data become **state of the art** for utility grade wind energy development

Thank You!

Questions + Dialog

Larry Letteney
COO, *Second Wind Inc.*

larry.letteney@secondwind.com

(781) 789-1400 c

(617) 776-8520 o

