



Universität Stuttgart

Dr.-Sc.
Andrew
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LIKE

Open Science Course

Seminar 4: Communications Strategies

10 November 2020



Today's discussion

Cover page photo by [Jason Rosewell](#) on [Unsplash](#)

Recap:
**The LIKE Open
Science Course**

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The story so far

- What's open science?
- How do we make our science open?
- Can I just make it open?

The story so far

- What's open science?
- How do we make our science open?
- Can I just make it open?

Self-study 3: What was your experience of making your work open?

Course outline

Seminar	Self-study	Assignment
1. <u>Introducing open science</u>	1. <u>Background reading</u>	
2. <u>Guiding principles</u>	2. <u>Is your group's work FAIR?</u>	
3. <u>Open science and intellectual property</u>	3. <u>Implementing open science</u>	
4. <u>Communicating your science</u>	4. <u>Communications strategies</u>	1. <u>Implementation case study</u>
5. <u>What are data management plans and why do they matter?</u>	5. <u>Draft a data management plan</u>	
Workshop: <u>Open science in LIKE</u>	6. <u>Revise data management plan</u>	2. <u>Data management plan</u>

Introduction

2

If no-one knows you did it,
you didn't do it.

Our goals for today

Learn how to promote your work by crafting and executing a communications strategy

- Why do we communicate?
- How do we communicate?
- What do we communicate?



Who's here?

Andy Clifton



IEA Wind Task 32
Operating Agent



Nikola Vasiljevic



Special Consultant for
Digitalization



And you



Please introduce yourselves!

**Telling people
about your work**

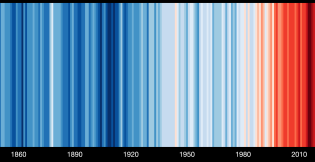
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Why do we communicate?

Effective communications make a difference

They make you aware

Global temperature change (1850-2019)



Annual average temperatures for the globe. Image by Ed Hawkins (University of Reading). Used under CC BY 4.0 license.

They make you care



Photo by [Mika Baumeister](#) on [Unsplash](#)

They make you act

Piktogramme Hygienetipps

	Regelmäßig Hände waschen		Hände gründlich waschen
	Hände aus dem Gesicht fernhalten		Richtig husten und niesen
	Abstand halten		Wunden schützen
	Auf ein sauberes Zuhause achten		Mit Lebensmitteln hygienisch umgehen
	Wäsche heiß waschen		Regelmäßig lüften

 [infektionsschutz.de](#)
Wissen, was schützt.

 BY-NC-ND

German Federal Centre for Health Education (BZgA)

Getting started

Figure out why you are communicating:

- Who's the audience?
- What do you want them to do?
- How does your communication help?

Work out how to achieve that goal:

- Inform
- Persuade
- Provoke

Choose your media

Tell your story

Wind energy in need of further development

DTU
EDUCATION RESEARCH INNOVATION COLLABORATION

Technical University of Denmark · News · Wind energy in need of further development

Wind energy in need of further development

News Release: NREL Publishes Science Journal Article Posing Three Challenges to Wind Energy Potential

Oct. 10, 2019

Wind energy researchers from the U.S. Department of Energy's National Renewable Energy Laboratory (NREL) are among a team of authors inviting the scientific community to address three challenges that will drive the innovation needed for wind to become one of the world's primary sources of low-cost electricity generation.

Their call to action appeared in a [new journal article](#) published in Science.

"People think that because wind turbines have worked for decades, there's no room for improvement. And yet, there's so much more to be done," said NREL Research Fellow & article co-author Paul Veers. "Wind energy has the potential to be a primary source of cost energy for the world, but we won't get there on a business-as-usual trajectory. We need scientists and researchers worldwide to join us in addressing wind's research

RESEARCH

REVIEW SUMMARY

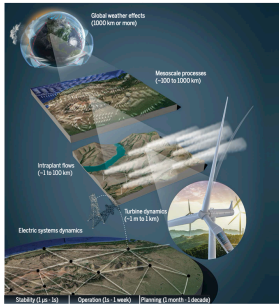
RENEWABLE ENERGY

Grand challenges in the science of wind energy

Paul Veers*, Katherine Dyles*, Eric Lantz*, Stephan Barth, Carlo L. Bottasso, Ola Carlson, Andrew Clifton, Johnny Green, Peter Green, Hannele Holttinen, Daniel Laird, Ville Lehtonen, Julie K. Lundquist, James Maxwell, Melinda Marquez, Charles Menewese, Patrick Moriarty, Xavier Mundula, Michael Muskat, Jonathan Naughton, Lucy Pao, Joshua Paquette, Joachim Peinke, Amy Robertson, Javier Sanz Rodriguez, Anna Maria Sempreviva, J. Charles Smith, Alden Tiedt, Ryan Wiser

BACKGROUND: A growing global population and an increasing demand for energy services are expected to result in substantially greater deployment of clean energy sources. Wind energy is already playing a role as a mainstream source of electricity, driven by decades of scientific discovery and technology development.

Additional research and exploration of design options are needed to drive innovation to meet future demand and functionality. The growing scale and deployment expansion will, however, push the technology into areas of both scientific and engineering uncertainty. This Review explores grand challenges in wind energy re-



The cascade of scales underlying wind energy scientific grand challenges. Length scales from weather systems at a global level down to the boundary layer of a wind turbine airfoil and time scales from seasonal fluctuations in weather to subsecond dynamic control and balancing of electrical generation and demand must be understood and managed.

Veers et al., *Science* **366**, 943 (2019) 25 October 2019

search that must be addressed to enable wind energy to supply one-third to one-half, or even more, of the world's electricity needs.

ADVANCES: Drawing from a recent international workshop, we identify three grand challenges in wind energy research that require further progress from the scientific community: (i) improved understanding of the physics of atmospheric flow in the critical zone of wind power plant operation, (ii) materials and system dynamics of individual wind turbines, and (iii) optimization and control of fleets of wind turbines working synergistically within the larger electric grid system. These grand challenges are interrelated, so progress in each domain must build on concurrent advances in the other two. Characterizing the wind power plant operating zone in the atmosphere will be essential to designing the next generation of ever-larger wind turbines and achieving dynamic control of the machines. Enhanced forecasting of the nature of the atmospheric inflow will subsequently enable control of the plant in the manner necessary for grid support. These wind energy science challenges bridge previously separable geospatial and temporal scales that extend from the physics of the atmosphere to flexible aerodynamic and mechanical systems more than 200 m in diameter and, ultimately, to the electrical integration with and support for a continent-sized grid system.

ON OUR WEBSITE

Read the full article at <http://dx.doi.org/10.1126/science.aaa2027>

OUTLOOK: Meeting the grand research challenges in wind energy science will enable the wind power plant of the future to supply many of the anticipated electricity system needs at a low cost. The interdependence of the grand challenges requires expansion of integrated and cross-disciplinary research efforts. Methods for handling and streamlining exchange of vast quantities of information across many disciplines (both experimental and computational) will also be crucial to enabling successful integrated research. Moreover, research in fields related to computational and data science will support the research community in seeking to further integrative models and data across scales and disciplines.

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TOMORROW'S EARTH
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NREL publishes journal article on three challenges in wind power innovation

Staff | October 11, 2019

Wind energy researchers from the U.S. Department of Energy's National Renewable Energy Laboratory (NREL) are among a team of authors inviting the scientific community to address three challenges that will drive the innovation needed for wind to become one of the world's primary sources of low-cost electricity generation.

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"People think that because wind turbines have worked for decades, there's no room for improvement. And yet, there's so much more to be done," said NREL Research Fellow and article co-author Paul Veers. "Wind energy has the potential to be a primary source of low-cost energy for the world, but we won't get there on a business-as-usual trajectory. We need scientists and researchers worldwide to join us in addressing wind's research challenges."

NREL convened more than 70 wind experts representing 15 countries to discuss a future electricity system where wind serves the global demand for clean energy. Based on this workshop, article lead authors Veers, NREL Group Research Fellow & article co-author Paul Veers, NREL Group Research Fellow & article co-author Paul Veers, NREL Group Research Fellow & article co-author Paul Veers identified three "grand challenges" in wind energy that require further progress from the scientific community.

First grand challenge: Improved understanding of the wind resource and flow in the region of the atmosphere where wind power plants operate

Second grand challenge: Materials and system dynamics of individual wind turbines

Third grand challenge: Optimization and control of fleets of wind turbines working synergistically within the larger electric grid system

These grand challenges are interrelated, so progress in each domain must build on concurrent advances in the other two. Characterizing the wind power plant operating zone in the atmosphere will be essential to designing the next generation of ever-larger wind turbines and achieving dynamic control of the machines. Enhanced forecasting of the nature of the atmospheric inflow will subsequently enable control of the plant in the manner necessary for grid support. These wind energy science challenges bridge previously separable geospatial and temporal scales that extend from the physics of the atmosphere to flexible aerodynamic and mechanical systems more than 200 m in diameter and, ultimately, to the electrical integration with and support for a continent-sized grid system.

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Cite this article as: Veers et al., *Science* **366**, aaa2027 (2019). DOI: 10.1126/science.aaa2027

TOMORROW'S EARTH
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1 of 1

Channel - Audience - Message

Apps & mobile devices



Photo by [Ben Kolde](#) on [Unsplash](#)

Audience: Almost anyone
Message: Call to action.

Conferences & Webinars



Photo by [Chris Montgomery](#) on [Unsplash](#)

Audience: Already interested
Message: Insight & understanding.

Print*

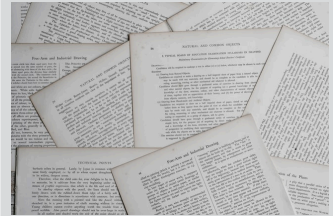


Photo by [Annie Spratt](#) on [Unsplash](#)

Audience: *Really* interested
Message: Actionable information.

Are there better ways to reach your audience?



Photo by [Sam McGhee](#) on [Unsplash](#)

Closing thoughts

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Seminar summary

You've learned:

- Why we communicate
- Some ways to communicate
- How to structure your communications

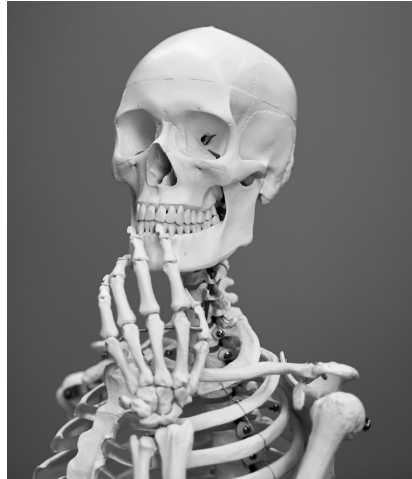


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What to do now

Further reading

- The Birth of Linux: How Linux Got Started. (Linux.com, 2020)
- The open Bike Initiative

Self-study 4: Communicate!

Create and implement a communications strategy for two of your stakeholder groups

- See the guidance on GitHub.

Assignment 1: Implementation Case Study

Prepare a case study about making your work FAIR and communicating it to your stakeholders.

- See the guidance on GitHub.

Seminar 5: data management plans

What are data management plans, and why do they matter?

- See the Seminar materials on GitHub

A what now?

Assignment 1:

Prepare a case study based on your self-study work to describe what was done to make your work FAIR and implement the R5 concepts, and how you communicated your work to your stakeholders. For example...

- Publishing your Master's thesis through your university's data portal and promoting it to stakeholders.
- Promoting results or a first paper from your LIKE PhD through websites like LinkedIn, Xing, or other social media
- Sharing code or other results through GitHub, Zenodo, or some other repository and sharing results with colleagues

Deliverable: Prepare a 5-minute presentation for the workshop.

N.B: These details may be out of date! Always check the [assignment details on GitHub](#).