Introduction to IEA Wind Task 32

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Workshop #8 on Certification of

Lidar-Assisted Control Applications

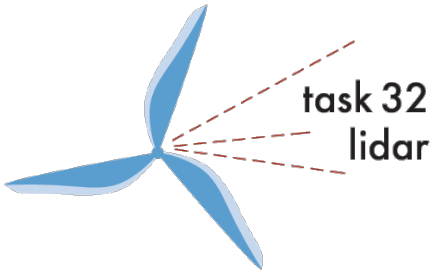
task 32
lidar

iea wind

International Energy Agency Wind

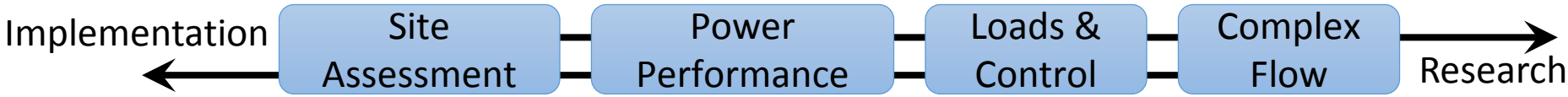
- … is a vehicle for **member countries**
- to **exchange information** on the planning and execution of national large-scale wind system projects and
- **to undertake co-operative R&D projects** called Tasks.

IEA Wind Task 32



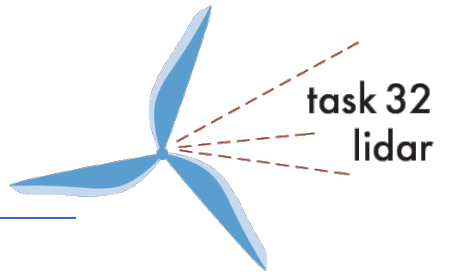
- Initiated 2011
- Phase 1 from 2012-2015
- Phase 2 from 2016-2018
- Currently 12 member countries:

Task Objectives & Expected Results



- Objectives (Current Term: 2016-2018)
  1. Provide international open platform for exchange of experience
  2. Identify and mitigate barriers to the use of lidar for wind energy
- Expected results
  - Tangible outcome from 4 workshop each year
  - Recommended Practices
- Target
  - industry (lidar&OEM)
  - end users
  - research

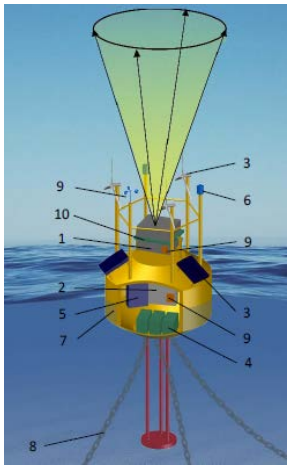
Meeting strategy



- **General meeting**: Yearly meeting of all participants
- **Workshops**: Topical meetings of group of experts
  - 1 to 2 day workshops for each application each year
  - organized and hosted by a Workshop Leader + OA
  - if possible, scheduled around conferences or attached to meetings from relevant working groups
  - will have some tangible outcome: workshop reports, webinars or a suggestion of a working group, etc.

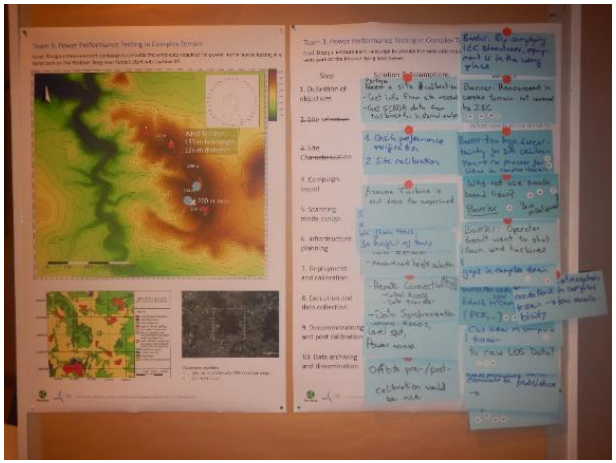
Site Assessment

- Workshop #1 on Floating Lidar Systems, February 2016 in Blyth, UK



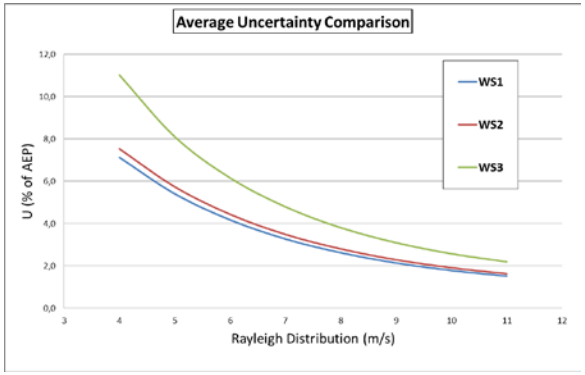
- Recommended Practices on Floating Lidar Systems

- Workshop #7 on Complex Terrain, November 2017 in Stuttgart, Ger.

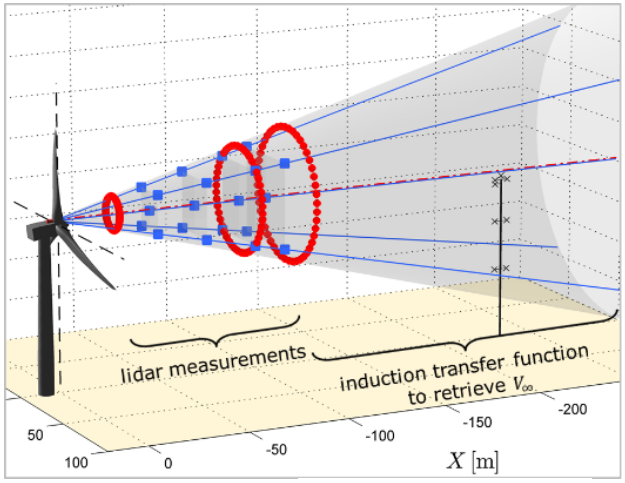


Power Performance

- Round Robin and Workshop #4 on Power Perform Calculation of Uncertainty for Lidar Application Glasgow December 2016



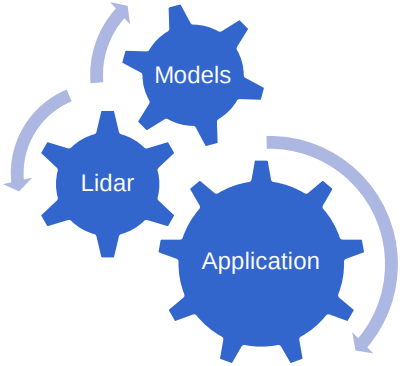
- Workshop #6 on Nacelle lidar for power curve in Copenhagen 2017

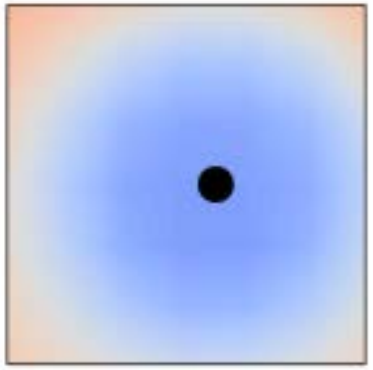


[A. Borraccino]

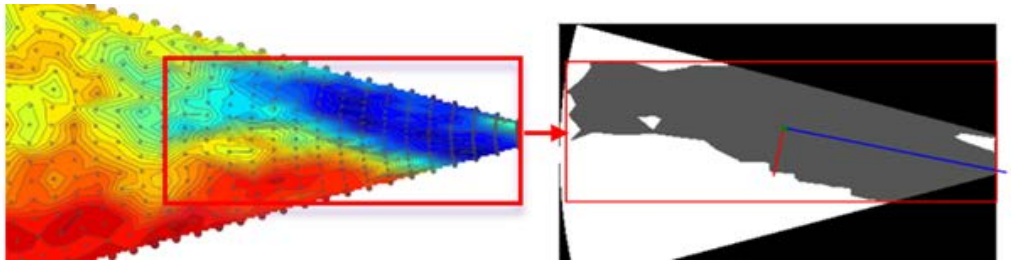
Complex Flow - Synergies with Task 31

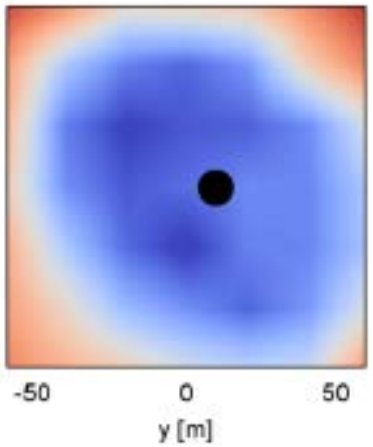
- Combined Workshop #3 on
  Lidar measurements for wake assessment and comparison with wake mode
  October 2016 in Munich





- Workshop #5 on Use cases in wake and complex flow measurements
  June 2017 in Glasgow





Loads and Control

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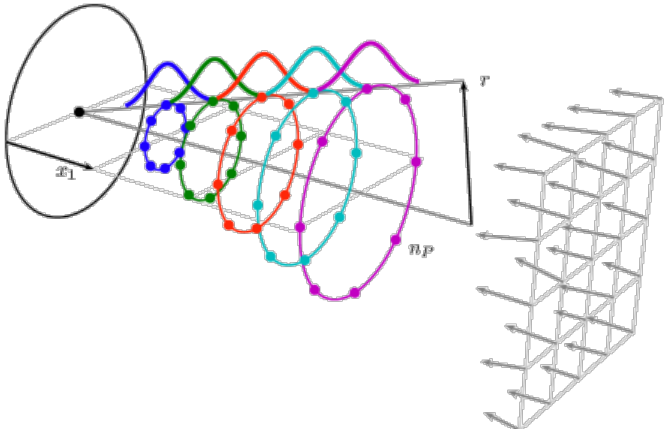
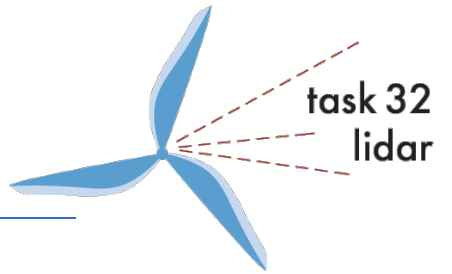
Workshop #2 on

Optimizing Lidar Design for Wind Turbine Control Applications

- July 2016 in Boston

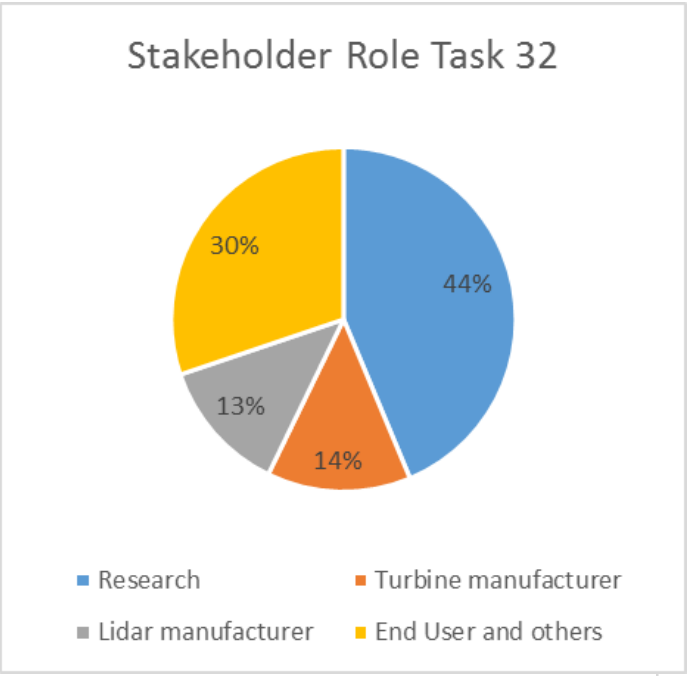


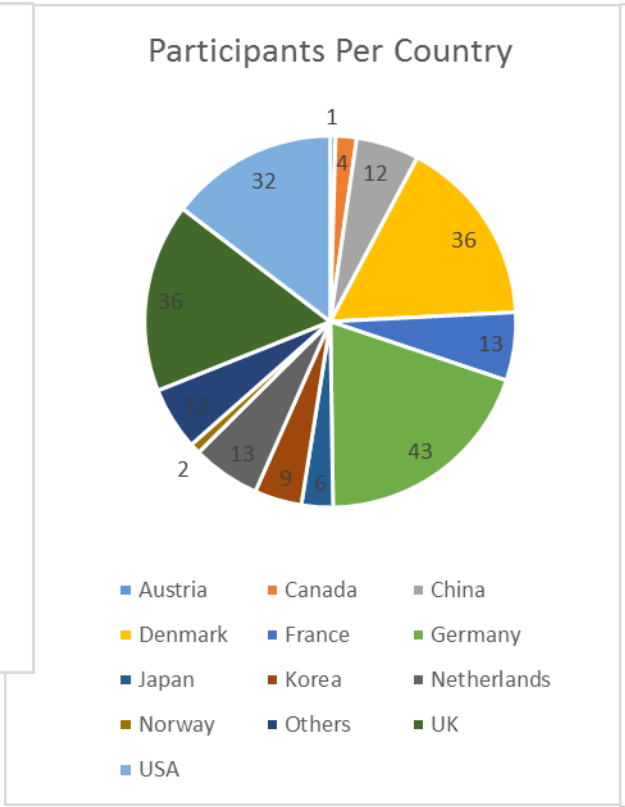
Outreach & Dissemination

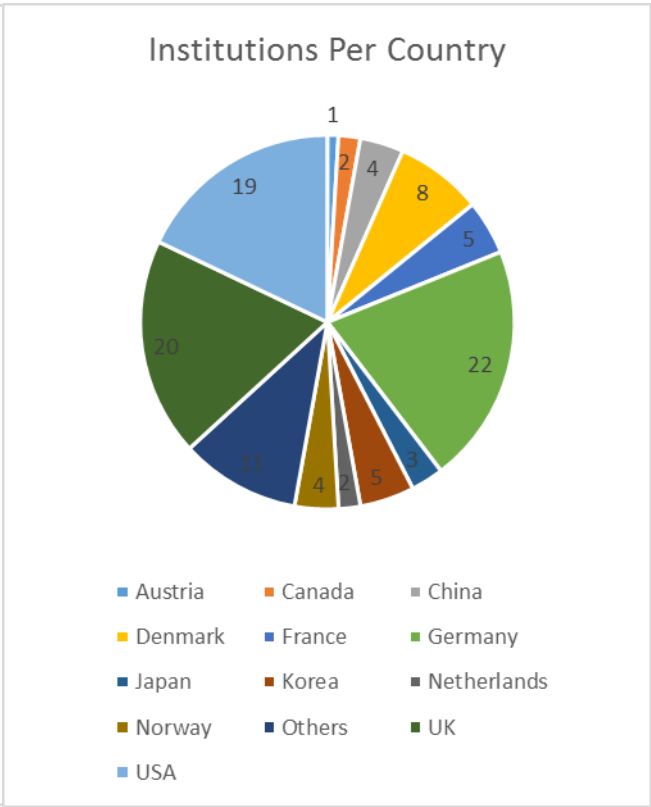


- Website: www.IEAWindTask32.org
- Recommended Practices for Floating LiDAR Systems
- Outcome from the Workshops:
- Advisory Board meetings (minutes on website)
- 4 Newsletter to over 300 persons in mailing list
- Annual report

Participation since 2016







56 % industry participation

219 persons from 106 institutions and 18 countries

Review Paper

- http://www.mdpi.com/2072-4292/10/3/406/pdf

remote sensing

MDPI

Project Report

IEA Wind Task 32: Wind Lidar Identifying and Mitigating Barriers to the Adoption of Wind Lidar

Andrew Clifton [1,*], Peter Clive [2], Julia Gottschall [3], David Schlipf [4], Eric Simley [5], Luke Simmons [6], Detlef Stein [7], Davide Trabucchi [8], Nikola Vasiljevic [9] and Ines Würth [10]

Bankability

- https://community.ieawind.org/publications/rp

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EXPERT GROUP STUDY ON
RECOMMENDED PRACTICES

15. GROUND-BASED VERTICALLY-PROFILING REMOTE SENSING FOR WIND RESOURCE ASSESSMENT

Bankability

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1.7 A note on 'bankability'

Low-uncertainty data is often referred to as 'bankable' data by the wind industry, which implies that it can be used to obtain financing for a wind power plant. However, it should be noted by the reader that 'bankability' is not conferred by using a particular product, instrument, or service provider. Instead, achieving bankability requires two things:

- The level of Annual Energy Production (AEP) considered sufficiently reliable on the basis of the uncertainty analysis is adequate for financial purposes, and
- The resource assessment and related uncertainty analysis upon which this level of production has been predicted is robust, complete, and unbiased. That is, bankability does not require that a specific instrument is used; rather it requires that whatever instrument is used has been operated correctly and that its performance in the circumstances in which it has been operated is adequately understood. Bankability has clear, open, transparent and specific technical requirements relating to project risk and uncertainty. These are described in the Boulder Protocol article 4.1, as submitted to the 59th IEA Wind Topical Expert Meeting.

In this respect, following the recommended practices set out in this document does not confer 'bankability' on the data obtained by a remote sensing device as part of a wind resource assessment. Instead, following the recommended practices helps provide confidence that the deployment and use of the remote sensing device conforms to a widely accepted norm, and that information and experience from one deployment can be transferred to another (see e.g. Clive, 2011, for more discussion of this). Specifically, these recommended practices do the following:

1. Quantify the uncertainty of the RSD against a reference device using a well-defined method.
2. Set out methods and procedures to ensure that the RSD is deployed and used in a way that minimize the uncertainty with the deployment site compared to the verification site.
3. Describe documentation and metadata to be collected that allow maximum data traceability.