



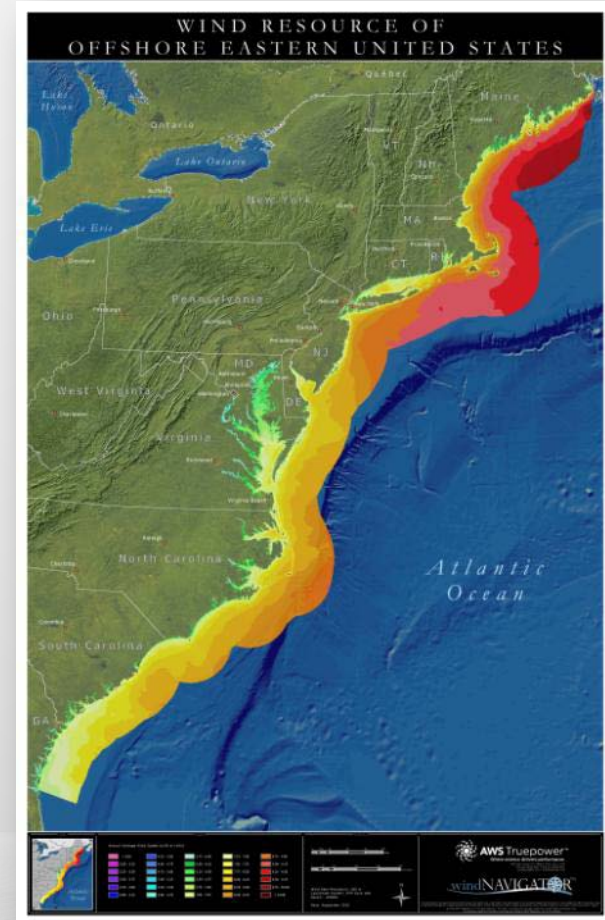
Windpower 2012, June 6, 2012

The Role of Public-Private-Academic Collaboration to Prioritize Met-Ocean Data Needs For Offshore Wind Energy

Bruce Bailey, President/CEO

Overview

- Introduction
- Identifying Data Assets
- Identifying Gaps
- Propose/Implement Solutions
- Collaboration & Outreach
- Current Project Status & Next Steps



Introduction: Removing Market Barriers

The U.S. Department of Energy is leading the development of a national public-private collaborative campaign to address offshore energy resource assessment and design condition needs.



Introduction: Project Goals

Title: National Offshore Wind Energy Resource & Design Data Campaign
(DOE Contract No: DE-EE-0005372)

Assess and Catalog National Dataset and Capabilities

Identify Gaps in Data, Modeling Capabilities and Needed Research

Evaluate Wind System Design & Operation Standards

Recommend Near- and Long-Term Measurement Strategies

Establish an Infrastructure for Industry Collaboration & Outreach

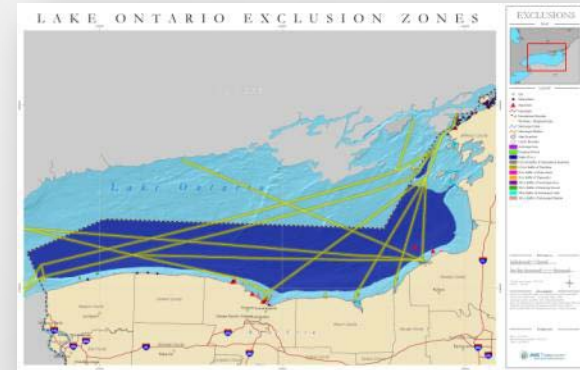
Project Participants: NREL and DTU-RISØ



Applicability to Different Project Phases

1. Siting

- Feasibility Studies
- Exclusion Area Definition
- Project Boundary Definition



2. Assessment, Design & Permitting

- Resource and Energy Projections
- Met-Ocean Design Conditions
- Geophysical Studies
- Turbine Suitability
- Foundation and BOS Design
- Risk Assessment



Applicability to Different Project Phases

3. Construction, Certification & Commissioning

- Financing
- Insurance
- Installation
- Interconnection
- Verification and Certification



4. Operations

- O&M Plan Development
- Production & Sea State Forecasting
- Accessibility, Navigation, Safety



5. Decommissioning



Assess Existing Knowledge Assets

Initial Task: *Identify and Catalog Existing Met-Ocean Datasets and Sources*

- Identify Key Organizations and Networks
- Assess Quality and Relevance
- Compile Metadata

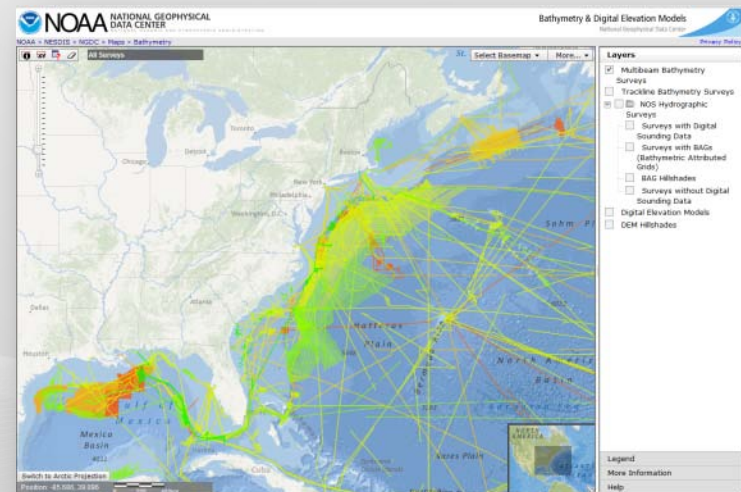
Sources:

Regional Alliances

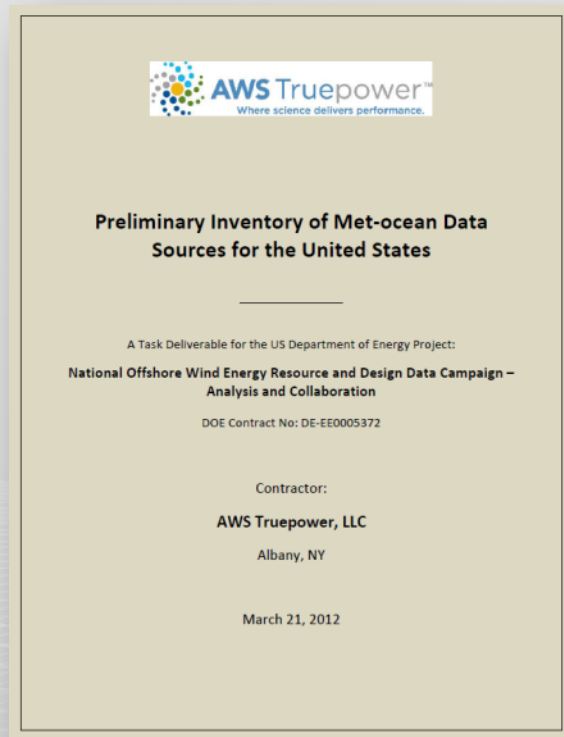
Government Agencies

Universities and Private Research

Commercial Providers



Initial Catalog of Data Sources and Input from Various Groups



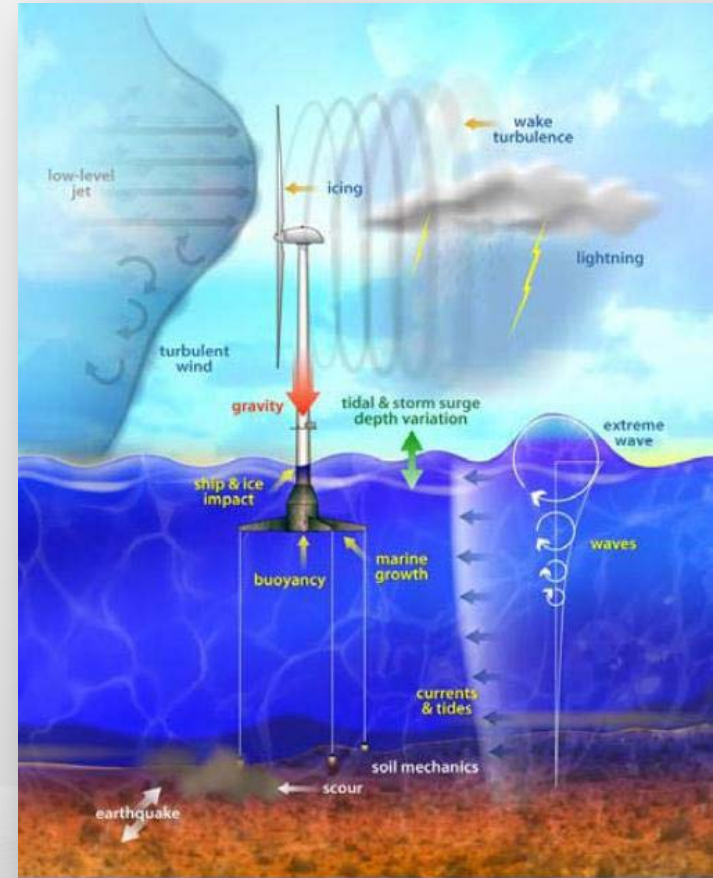
The U.S. Integrated Ocean Observing System (IOOS) is a partnership of 17 federal agencies and 11 regional associations, and has a program office within NOAA.



Identifying Data Gaps

ATMOSPHERE

- WIND
 - MEANS, DIST., EXTREMES
 - SHEAR, VEER, TURBULENCE
- ATMOSPHERIC STATE
 - T, P, RH, PRECIP, SOLAR
 - STABILITY, LOW LEVEL JETS
- CLIMATOLOGY
 - ICING
 - LIGHTNING



Source: NREL



Identifying Data Gaps (cont'd)

SURFACE-SUBSURFACE

- WATER STATE & PROPERTIES
 - WATER TEMPERATURE
 - SALINITY
- HYDROGRAPHIC
 - WAVE HT, DIR, FREQ
 - CURRENT PROFILES
- BIOLOGIC
 - MARINE GROWTH
- GEOLOGIC
 - BOTTOM SOIL TYPE

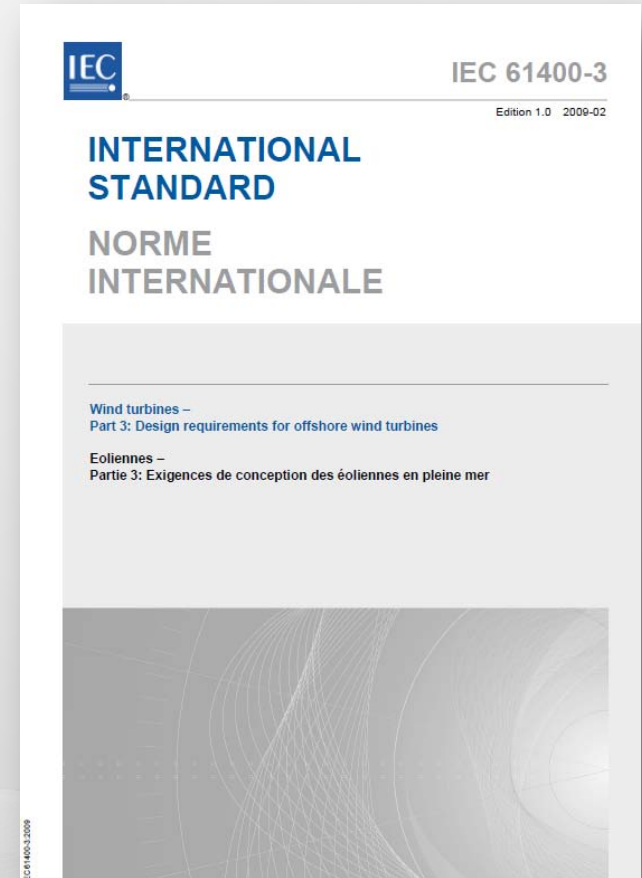


Prior DOE efforts to assess data gaps will serve as excellent foundation



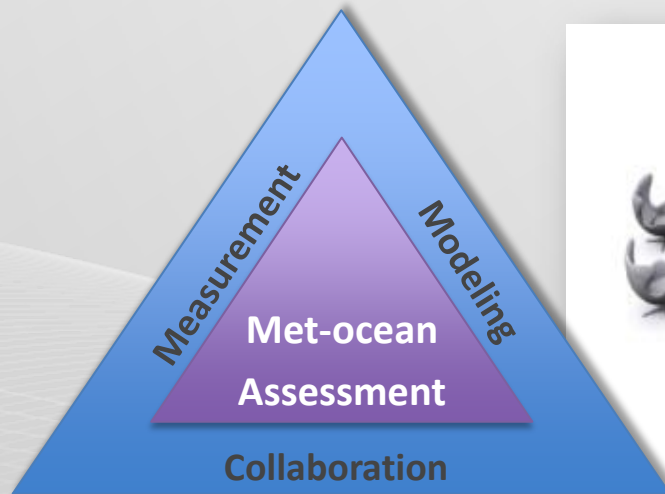
Unifying US and International Standards

- Review of existing & pending standards
- IEC, API, GL, DNV, ABS
- Type Certification
- Focus on influence of met-ocean conditions on turbine designs
- Context of applicable standards on extreme conditions found in US waters



Working Together: Industry-Wide Collaboration

- Consensus Building on Needs and Solutions
- Coordination with National and Regional Groups with Overlapping Goals
- Dedicated Web Site for Inventory of Offshore Met-Ocean Data Sources



Down the Road: Planning for Data Gathering, Model Validation and Research

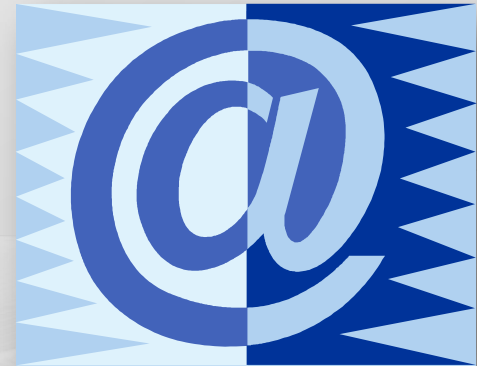
Approaches To Investigate:

- Leverage Measurement Activities With Other Programs
- Recommend New, Targeted Initiatives
- Roadmap For Long-Term Sustained Improvements in Knowledge



Current Project Status and Next Steps

- Met-Ocean Data Source Cataloging Nearly Complete
 - *reviewed by Federal agencies and regional IOOS orgs*
- Website Under Development
 - *portal to access met-ocean metadata*
 - *project forum and informational resource*
- Data Gaps Assessment Underway
 - *build upon DOE's prior efforts*





If interested in receiving more information
about this met-ocean project, contact:

bbailey@awstruepower.com

THANK YOU

