

# OBLO

## The Oceanic Boundary Layer Observatory

NOWERI  
Norwegian Offshore Wind Energy Infrastructure



# NOWERI - process so far

- Pre-project: 2010-2012
  - T1 report: Identification of possible suppliers and cost estimates
  - T2 report: Instrumentation
  - T3 report: Potential sites and cost estimates of O&M
  - T4 report: Business plan
  - Cost: 3 MNOK (0.4 Mill. EUR)
- Final agreement: end of 2012
  - Two separate subprojects:
    - 42 MNOK (5.6 Mill. EUR) FLEXWT (**NTNU**, Sintef Energy, IFE)
    - 21 MNOK (2.8 Mill. EUR) OBLO (**UoB**, CMR)
  - with a joint management structure

# Organization of OBLO

- Host Institution: University of Bergen
- In cooperation with Christian Michelsen Research
- Project Leader: Professor Joachim Reuder
  - Professor in experimental meteorology at the geophysical institute
  - Joachim.Reuder@gfi.uib.no



# University of Bergen, GFI

- Joachim Reuder is leader of WP1 in NORCOWE
- Main goal: Improve understanding of the marine atmospheric boundary layer (MABL) and the oceanic mixing layer (OML)
- WP1: Met/Ocean data
  - Measurements of ocean and atmosphere
  - Collection and interpretation of data
  - Data storage and management
- Some ongoing measurement activities:
  - Scanning wind lidar measurements at Sola airport
  - Use of SUMO – mini-drones that can be used to gather data in windparks

# Christian Michelsen Research

- Host institution for NORCOWE
  - As NOWITECH: part of the Norwegian centres for environment-friendly energy research (FME)
- In WP1 responsible for
  - Coordination of measurement activities and international field campaign
  - Data storage and management, data conversion tool
- In WP2 responsible for (with GexCon)
  - Development of CMR Wind
  - Investigation of CFD modal reduction for wind farm layout assessment



# Research possibilities

- Flexible and mobile instrumentation for met/ocean data
- Improve characterization and understanding of marine atmospheric boundary layer
- Improve understanding of MABL's interaction with windfarms/wind turbines
- Temperature profile: investigate atmospheric stability
- One set of instruments for continuous/semi-continuous measurements
- One identical back-up set to minimize data gaps



# Met/Ocean Parameters to be measured

- Profiles of main meteorological parameters (temperature, humidity, wind)
- Turbulent fluxes of momentum, heat and moisture measured from buoy (NORCOWE instruments)
- Integral turbulence parameters (scintillometer)
- Droplet concentrations (sea-spray)
- Radiation fluxes
- Ocean wave spectra (height, direction, frequency)
- Ocean state (profiles of temperature, salinity, current; turbulent exchange)

*Negotiations with Vestvind/BKK to obtain the instruments bought for Havsul*