

1 Scope

All phases of an offshore wind project are reliant upon metocean information to enable sound planning and decision making among a broad range of users. The intent of this document is to provide recommended practices for the collection, assessment, and characterization of metocean conditions for offshore wind facilities (fixed bottom and floating), considering the users' requirements for planning, design, construction, operations, and maintenance (O&M), life extension, repowering, and decommissioning.

The term "metocean" is a syllabic abbreviation of meteorology and oceanography (physical) and refers to the interactions and combined effect of the atmosphere and a particular body of water. This document addresses atmospheric and marine/freshwater conditions including the following:

- Water level fluctuations – historical and seasonal levels, tides, storm surges, seiches, and tsunamis
- Wind conditions – wind speed and direction, turbulence, shear, and veer
- Sea states – waves, swells, currents, and associated spectra
- Atmospheric parameters including temperature, precipitation, icing, and other meteorological conditions
- Physical water parameters including temperature, hardness/alkalinity, salinity, stratification, density driven currents, internal waves, turbidity, and other conditions
- Lake and sea ice characterization
- Marine growth (biofouling)
- And the effects of the morphological conditions of the basin (bathymetry)

This document applies to all bottom-fixed and floating structures that may potentially be installed in U.S. state and federal waters in the continental United States, Hawaii, and Alaska, including inland bodies of water such as the Great Lakes. It applies to both salt and freshwater conditions and applies to any water depth. It covers metocean conditions relevant for all offshore facilities associated with offshore wind energy systems including offshore wind turbines, support structures, offshore substations, cables, met towers, and buoys.

This document addresses normal conditions as well as extreme conditions. Extreme conditions include both cyclonic (i.e., hurricanes and waterspouts) and non-cyclonic conditions. For hurricane conditions, the guideline shall address the methodologies, data sources, and modelling that can be used to assess the unique metocean conditions associated with such events as well as the probability of occurrence and severity. This document also addresses joint conditions of wind, wave, and current occurrence.

The guideline shall address four critical areas in the development of an offshore wind project:

- Data needs
- Data collection
- Numerical modelling / simulation
- Data analysis / interpretation

This document does not address the following areas:

- Environmental loading associated with metocean conditions (covered in the ACP OCRP-1-2022 Recommended Practices Edition 2 (OCRP-1))
- Seabed conditions including scour and seabed mobility
- Corrosion