

# C-CORE 1.6 Waves observations

## Waves observations

### Challenge

Challenge ID	C-CORE_OFF1.6
Title	<b>Waves observations</b>
Challenge originator:	
General Description	
<b>What data/products do you use?</b>	<p>Real-time and near real-time surface-based observations of wind wave heights, swell wave heights, and significant wave heights from ships and buoys are available from many sources including NOAA (NWSTG), NOAA (MADIS), NOAA (NDBC), UCAR, and numerous other data distribution centers.</p> <p>Operational 0-hour global and/or regional model analyses of significant wave heights are available via many global agencies such as NOAA, ECMWF, CMC, JMA, UKMET, and others.</p>
<b>When do you use this kind of dataset?</b>	<p>These data are used to monitor all day-to-day operations when drilling, surveying etc. To assess current conditions, nowcasting, assess the quality forecast models and plan ahead. Find windows of operability where thresholds apply etc.</p> <p>The aim is to manage risks related to waves, safeguarding lives, protecting assets, and conducting operations. Waves and wave periods are particularly important when moving jack-ups, heavy lifts etc. etc.</p>
<b>What are your actual limitations and do you have a work around?</b>	<p>There are spatial and temporal limitations of real-time and near real-time surface-based and remotely-sensed wave observations. Which means: Data are often not on location. Sensors of different formats, give different parameters, could be shielded, measurements averaged, in "wrong formats" etc.</p> <p>EO observations are have low resolution in time and space, are difficult to access and read, in difficult formats. Quality is often an issue and data are mostly used to get an overview more than treated as an accurate source of observations. Hence ground measurements are used instead.</p> <p>Updates at least hourly, spatial resolution min. 4 km, formats standardized, quality improved and documented.</p>
<b>Needs and expectations on EO data</b>	<p>EO is used for this today, but resolution, update frequency and quality is not always sufficient. Mostly used as assimilation into models. More severe situations (for instance swells) can be detected using these data real time, however the use for point forecasting is limited.</p> <p>Need: Observed time series of high quality (ground-truthed) and with high spatial resolution, especially for coastal areas and emerging O&amp;G areas where demand for such data has been small or non-existent. Both wind waves and swells are important.</p> <p>Specific need: Additional surface-based and remotely sensed observations of wave spectra data (e.g., heights, directions, and periods of wind waves and swell waves).</p>

Challenge classification	
<b>Pre license</b>	2
<b>Exp.</b>	4
<b>Dev.</b>	3
<b>Prod.</b>	4
<b>Decom.</b>	3
<b>Geographic context/ restrictions</b>	Applies to all six Areas of interest, except for the cautionary notes about tropical cyclones, which only applies to South China Sea, West of Ireland, and Myanmar.  Seasonality: Applies to all seasons.
<b>Topographic classification / Offshore classification</b>	Ocean
<b>Activity impacted /concerned</b>	
<b>Technology Urgency</b>	Short term (2-5 years)
<b>Information requirements</b>	
<b>Update frequency</b>	Real-time and near real-time. Hourly or 10 min.  Available today: Depends on source, some sources only 6 or 12 hr, most 3 hourly, few less than 1 hr.
<b>Temporal resolution</b>	Real-time and near real-time. Hourly or 10 min.  Available: Surface-based observation: sub-hourly to less frequently Remotely-sensed satellite observation: sub-daily to less frequently
<b>Spatial resolution</b>	Observation on location or around 4 km  Available: Surface-based observation: varies based on the locations of the ship/buoy observations Remotely-sensed satellite observation: varies based on platform scanning swath size and other parameters
<b>Data quality</b>	The selected sources in this document are selected because they are known to have sufficient quality (after some work around/adaptation). In general separate in-depth verification studies has to be made for each source planned to be used for analysis, and the analysis has to be repeated for each geographical area (since sources might be of sufficient quality in one area but not another).  In general, ground observations and modelled sourced are perceived to be of better quality/higher accuracy than EO.
<b>Data Coverage and extent</b>	Regional and as localized as possible.
<b>Example format</b>	Surface-bases observation: text, CSV and/or netCDF Remotely-sensed satellite observation: text
<b>Timeliness</b>	Real-time or near real-time. Forecasts are normally issued 2 to 4 times per day, but industry requires continuous monitoring of.

<b>Existing standards</b>	Multiple paragraphs in DNV-RP-C205, OTO 2001/010, ISO-19001-1, NORSOK-N-003e2, and NORSOK-N-006u1 contain extensive references to the standard measures of the means of waves.
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# Relevant products

**Content by label**

There is no content with the specified labels