C-CORE 1.11 Sea level

Sea level

Challenge

Challenge ID	C-CORE_OFF1.11
Title	**Sea level**
Challenge originator:	
General Description	
What data/products do you use?	Historical sea level heights are available in the form of remotely-sensed satellite observations via DEOS-RADS. Near real-time sea level heights are also available in the form of remotely-sensed satellite observations of sea heights from NOAA (STAR) and DEOS-RADS. Global Sea Level mean based on satellite observations:
When do you use this kind of dataset?	Sea levels data sets area used to assess the most likely interval of the sea surface in the area of interest. The data is crucial where there are chances of strong storm surges, large variations of tidal height, but also where wave heights are likely to add to the sea level. The data are used to qualify and quantify the means and extremes of sea heights. Air gap analysis for jack-up rigs and fixed platforms, seismic survey (to calibrate data), mooring analysis are some uses.
What are your actual limitations and do you have a work around?	The primary limitation of historical and near real-time sea level heights is that the remotely-sensed satellite observations are not continuous. Modelled data of tidal level and pressure effects are used instead, but wind induced effects are not well represented. Hence these are estimated based on wind data, but are not as accurate as measurements. (Also, improved measurements of sea level heights - high frequency, high resolution - will improve modelling of currents.)
Needs and expectations on EO data	EO is used for this today and probably the best source offshore. However resolution could be better. Specific need: Hourly time series of observed sea heights, ideally 19 years.
Challenge classification	
Pre license	1
Exp.	3
Dev.	4
Prod.	4
Decom.	3
Geographic context/ restrictions	Applies to all six areas of interest. Seasonality: Applies to all seasons.
Topographic classification / Offshore classification	Ocean

Activity impacted /concerned	
Technology Urgency	Short term (2-5 years)
Information requirements	
Update frequency	Multiple times per day from polar-orbiting satellites. Sufficient.
Temporal resolution	At least daily. Available: Remotely-sensed satellite observation: sub-daily to less frequently
Spatial resolution	50-10 km. Available: Remotely-sensed satellite observation: varies based on platform scanning swath size and other parameters
Data quality	The selected sources in this document are selected because they are known to have sufficient quality (after some work arounds and adaptations). In general separate indepth 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).
Data Coverage and extent	Regional
Example format	text
Timeliness	Daily, weekly or monthly is sufficient.
Existing standards	Paragraph 11.1 of HSE OTR 2001/010 states: Metocean parameters are required describing wave or sea state heights, wave lengths, periods and direction, current speed and directions, sea level and (if they are likely to cause significant stress ranges) wind speeds. Paragraph 3.15 of ISO 19901-1:2005(E) states: The Mean Sea Level (MSL) is the arithmetic mean of all sea levels measured at hourly intervals over a long period, ideally 19 years. Paragraph 6.7 of NORSOK-N-003e2 states: Characteristic values of individual environmental actions are defined by annual exceedance probabilities. (Note: The sea level thresholds are shown in Table 4 beneath Paragraph 6.7.)

Relevant products

Content by label

There is no content with the specified labels