C-CORE 1.18 Lightning

Lightning

Challenge

Challenge ID	C-CORE_OFF1.18
Title	**Lightning**
Challenge originator:	
General Description	
What data/products do you use?	Historical surface-based lightning observations are available via ICOADS. Historical remotely-sensed lightning data are available via NASA, as well as proprietary commercial sources WSI (GLN), and Vaisala (GLD360). Near real-time observations of lightning are available from many sources including NOAA (NWSTG), NOAA (MADIS), UCAR, and numerous other data distribution centers, as well as proprietary commercial sources WSI (GLN), and Vaisala (GLD360).
When do you use this kind of dataset?	Observations of lightning are mostly used by the O&G industry during operational tasks. The onset of these events can be sudden and interrupt all kinds of operations on deck, helicopter activity etc as they pose a large threat to personnel onboard rigs and vessels. Historical data are important to assess risk of operations in these areas, frequency of occurrence etc., but are mostly used as input to improve operational forecasting. The data set is used to assist in (a) qualifying and quantifying the means and extremes of lightning and (b) managing risks related to lightning, safeguarding lives, protecting assets, and conducting operations. The data set is used to assess operability in the area, to reduce risk when designing structures and operations, to design strategies to avoid severe conditions.
What are your actual limitations and do you have a work around?	Surface-based observations, surface-based remote network sensors, and remote sensors in orbit collectively provide a healthy coverage pattern for global lightning, although the lightning strike data based on surface-based network sensors is proprietary and very expense for commercial interests to obtain. Hence warnings are based on modelled data, and spotting of convective cells in satellite pictures, and where available lightning sensors. Not too accurate and might lead to downtime when it is not needed.
Needs and expectations on EO data	EO is used for this today, to spot convective cells and try to assess they movement. However, it is hard to assess the wind speed of each individual cell based on satellite data. Also, the direction of movement for each individual cell is often hard to predict. This leads to unnecessary downtime because of warnings. Specific need: Continuous time series of 10m wind speed data in the offshore environment. Specific need: Less expensive (or free) access to detailed lightning strike data, which is currently proprietary and quite expensive for commercial interests to acquire for commercial research.
Challenge classification	
Pre license	1
Exp.	3

Dev.	1
Prod.	3
Decom.	2
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	Historical: Daily and less frequently. Near real-time: Sub-minutely and less frequently.
Temporal resolution	Real time or near real-time, 10 mins. Available: Surface-based observations: Sub-hourly and less frequently. Remotely-sensed surface network observations: Sub-minutely and less frequently. Remotely-sensed satellite observations: Sub-daily and less frequently.
Spatial resolution	Surface-based observations are available based on the location of the ship observation, therefore the spatial resolution varies greatly. Remotely-sensed surface network observations: <1 km and coarser. Remotely-sensed satellite observations: 3 km and coarser.
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	netCDF and CSV
Timeliness	Real- time or near-real time
Existing standards	NA

Relevant products

Content by label

There is no content with the specified labels