C-CORE 1.17 Convective Downbursts

Convective Downbursts

Challenge

Challenge ID	C-CORE_OFF1.17
Title	**Convective Downbursts**
Challenge originator:	
General Description	
What data/products do you use?	Offshore convective downbursts that are beyond the footprints of land-based radar systems are currently not directly identified via products; however, the existence of convective downbursts may be indirectly inferred by using geostationary and polar-orbiting satellite observations, as well as surface-based observations. Most convective downbursts offshore are not qualified and quantified properly, because, typically, the events are not directly observed.
When do you use this kind of dataset?	Observations of convective downbursts are mostly used by the O&G industry in affected areas during operations. The onset of thee 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, strength of gusts etc, but are mostly used as input to improve operational forecasting. Also, many other data sources do not catch the extremes in the area without these data added to the time series for the point of interest, since data often are averaged and conditions often are mostly benign. The data set is used to assist in (a) qualifying and quantifying the means and convective downbursts and (b) managing risks related to these events, 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?	In the absence of surface-based radar data, in order to qualify and quantify convective downbursts at sea requires (a) vertical wind profile data, (b) satellite imagery and (c) surface wind data, which must be analyzed together. Typically, the spatial and temporal resolution of a and c are inadequate for the identification of historical convective downbursts. Hence warnings are based on modelled data and spotting of convective cells in satellite pictures, 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: Higher temporal and spatial resolution of vertical wind profiles, and surface wind data are needed to verify the occurrences of convective downbursts in the offshore environment.
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	The parameter is not directly available in observations.
Temporal resolution	The parameter is not directly available in observations.
Spatial resolution	The parameter is not directly available in observations.
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	The parameter is not directly available in observations.
Timeliness	Real- time or near-real time
Existing standards	NA

Relevant products

Content by label

There is no content with the specified labels