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## **The physical conditions of the Barents Sea, a note to fishing vessels.**

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**Abstract:** The physical conditions of the Barents Sea, a note to fishing vessels.

The conditions for fishing in the Barents Sea are excellent. An abundance of fish and well-regulated agreements between Norway and the European Union Countries.

For fishing vessels, there are, however, aspects to be aware of in relation to the physical environment:

- The extreme wave conditions in the area are characterized by large waves, Norsok Standard N003. The fetch giving rise to the largest waves is from the south western direction and it is noted that the waves are longer than in the North Sea. This may influence on the response of vessels to the wave conditions.
- In case of Polar Low pressures, the forecasts are very uncertain and in general vessels should not be in the area of a passing Polar Low Pressure. Meteorologist will issue warnings to fisheries to be prepared to leave the locations of potential tracks of Polar Lows. Very large waves may occur within an hour in case of the most extreme conditions (Orimolade et al., 2016).
- In case of high winds, large waves and low temperatures, sea spray icing may grow very fast and vessels must initiate ice removal procedures to avoid loss of stability (Johansen et al., 2020). A warning occurs prior to dangerous situations as the roll period of the vessel increases when approaching unsafe stability conditions, low GM values. Note that in case of Polar Low pressures, there may be heavy snow following the Polar Low. The snow may easily freeze to ice, hampering the stability of the vessel. The Norwegian Meteorological Institute issues icing warnings to seafarers.
- In case of sea spray icing, the ice will accumulate on the fore part of the vessel and on the bridge, less on the back of the vessel. It should be possible to trim the vessel to ensure an even keel voyage.
- Due to the northern latitude, GPS signals may disappear and back-up navigation tools shall be available.
- In case of distress, the Norwegian Rescue Center; The Joint Rescue Coordination Center (JRCC) in Bodø, Norway, is in charge of search and rescue. The Norwegian Coast guard is normally on duty in the Barents Sea and will assist all vessels in the area.

References:

- Johansen K., Sollid M. P., Gudmestad O. T. (2020). Stability of Vessels in an Ice-free Arctic. *TransNav, the International Journal on Marine Navigation and Safety of Sea Transportation*, Vol. 14, No. 3, doi:10.12716/1001.14.03.19, pp. 663-671.

JRCC, The Joint Rescue Coordination Center, Bodø,  
Norway. <https://www.hovedredningssentralen.no/english/>.

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Norsok Standard N003 (2017). Actions and Actions Effects. Standards Norway, Lysaker, Norway.

Orimolade, A. P., Furevik, B. R., Noer, G., Gudmestad, O. T., Samelson, R. M. (2016). Waves in polar lows. *Journal of Geophysical Research, Oceans*; Volume 121 (8) p. 6470-6481.