

EGU2020-8111

<https://doi.org/10.5194/egusphere-egu2020-8111>

EGU General Assembly 2020

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## Wind waves modeling in the polar low weather conditions

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Arctic storms pose a great danger to developing commercial and passenger shipping, coastal infrastructure, and also for oil production from offshore platforms. This is primarily due to high waves and extreme winds. Such episodes of adverse weather conditions due to their rapid development are poorly predicted by modern models. For this purpose, the representation of the event of polar low is studied in the wave model WAVEWATCH III.

Wind waves were simulated under conditions of polar depression on ice-free water. To simulate wind waves under conditions of polar depression, the Barents Sea was selected, where, according to the data of [1, 2], a large number of polar hurricanes are observed. Among the identified polar hurricanes, for example, in [3], a hurricane that took place on 05.02.2009, observed at coordinates 69 N 40 E is chosen. The preliminary results in the wave model are obtained without the ice influence consideration. The developed model was configured using the CFSR wind reanalysis data. The resulting distribution of significant wave heights is obtained. Then, to consider the attenuation by sea ice, the reanalysis data of the Arctic System Reanalysis Version 2 (ASRv2), which is based on Polar WRF with a resolution of 15 km for the Arctic region, is used. Modeling the destruction of ice by waves during an intense arctic storm will be implemented using WW3 models with an IS2 module.

The work is supported by RFBR grant 18-05-60299.

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**How to cite:** Kuznetsova, A., Poplavsky, E., Rusakov, N., and Troitskaya, Y.: Wind waves modeling in the polar low weather conditions, EGU General Assembly 2020, Online, 4–8 May 2020, EGU2020-8111, <https://doi.org/10.5194/egusphere-egu2020-8111>, 2020

