P41. MODELING STORM SURGES AND WAVE CLIMATE IN THE WHITE AND BARENTS SEAS

Anastasia Korablina¹, Victor Arkhipkin¹, Sergey Dobrolyubov¹, Stanislav Myslenkov¹

¹Lomonosov Moscow State University, Russia
jacksparrow91@bk.ru

Russian priority - the study of storm surges and wave climate in the Arctic seas due to the active development of offshore oil and gas. Researching the formation of storm surge and wave are necessary for the design and construction of facilities in the coastal zone, as well as for the safety of navigation. An inactive port ensues considerable economic losses. It is important to study the variability of storm surges, wave climate in the past and forecast the future. Consequently, this information would be used for planning the development of the Arctic in accordance with the development programme 2020. Mathematical modeling is used to analyze the characteristics of storm surges and wave climate formation from 1979 to 2010 in the White and Barents Seas. Calculation of storm surge heights in the seas is performed using model AdCirc on an unstructured grid with a 20 km pitch in the Barents Sea and 100 m in the White Sea. The model AdCirc used data of wind field reanalysis CFSv2. The simulation of storm surge was conducted with/without pressure, sea state, tides. A non-linear interaction of the surge and tide during the phase of destruction storm surge was detected. Calculation of the wave climate performed using SWAN spectral wave model on unstructured grids. Spatial resolution is 500 m-5 km for the White Sea and 10-20 km for the Barents Sea. NCEP/CFSR (~0.3°) input wind forcing was used. The storminess of the White Sea tends to increase from 1979 to 1991, and then decrease to minimum at 2000 and increase again till 2010.