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Title Climatic fluctuations of sea ice cover anomalies and anomalies ocean surface temperature in the Nordic Seas and Barents sea.

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Theme OTHER - Topics relevant to Arctic Observing

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Poster title (brief) Climatic fluctuations of sea ice cover anomalies and anomalies ocean surface temperature in the Nordic Seas and Barents sea, its structure and statistical models.

Abstract - text box

The structure of interannual and seasonal fluctuations of the ice cover anomalies and anomalies of the ocean surface temperature (SST) is investigated. A continuing decrease of the ice cover and an increase of SST have been confirmed. A connection between cyclic fluctuations of the ice cover, global climatic indicators and astrophysical characteristics with periods of 22, 9-11 and 5-7 years was found. It was found that cyclic oscillations in the high-frequency part of the spectrum, i.e. with periods of less than 3 years, are caused by atmospheric circulation and the interaction between the ocean and the atmosphere. Statistical models were developed for ice cover and ocean SST (model reliability is on average 90% and efficiency is 18%). Astrophysical factors for the first time were used as predictors for the models. Also, for the first time, numerical estimates of the contribution of factors forming the interannual variability of the ice cover (prehistory of the Atlantic waters and ice cover (about 35% of the total dispersion), Arctic Oscillation index (about 17%), Earth nutation (15%), the distance from the Earth to the Sun (10%) and heat balance (about 13%) were obtained; the numerical estimates of main predictors for SST are: Atlantic waters 35%, air temperature 30%, distance from the Earth to the Sun 10% and atmospheric circulation 25%. For the first time, the obtained statistical equations allow to predict for several years forward.