GEOPOLITICAL ASPECTS OF NATIONAL METEOROLOGICAL OBSERVATIONS SYSTEM REBUILD IN THE ARCTIC REGION

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The article analyzes the existing system of meteorological observations on the territory of the Russian Arctic. The two-fold reduction in the number of weather stations during the economic recession of the 1990s. negatively affected the forecasts quality. Northern Sea Route and extractive sectors security requires up-to-date weather forecasts ice data. The author concludes that the existing system of meteorological observations is dependent on data coming from foreign states and requires the equipment of modern devices for obtaining primary information.

Keywords: Arctic region, forecasting, meteorology, Northern Sea Route

The climate change in the Arctic has opened new opportunities for economic activity in the region. The shrinking of the sea ice allows to increase freight traffic along the Northern Sea Route (NSR) and develop new hydrocarbon fields. At the same time, the new economic reality in the Arctic creates an urgent need to modernize the system of hydro and meteorological observations.

The soviet system of meteorological observation in the Arctic was heavily damaged during 1990-s. The number of meteorological stations was reduced more than twice, which led to incomplete primary data collecting. As a result, the accuracy of meteorological forecasts declined as well as forecasting in general had become ineffective. Russian hydrometeorological services became dependent on data provided by foreign research centers (European Center for Medium-Range Forecasts, The Met Office, etc.) and satellites.

Today, at least 20 civilian meteorological satellites simultaneously monitor the Earth's polar caps. They are US spacecrafts NOAA-16, NOAA-17, NOAA-18. NOAA-19, Terra, Aqua, Aura, Coriolis, Calipso, CloudSat, Canadian Radarsat-2, European Parasol and Metop-A, Chinese Fengyun-1D, Fengyun-3A, Korean COMS-1 and Russian Meteor-M. In accordance with the decision of the World Meteorological Organization (WMO), space satellites transmit the received data in open mode. Thus, commercial and military vessels receive data on ice movement in the Arctic from

Norwegian satellite operator KSAT [1].

Today Russia is working on its own space-based hydro-meteorological monitoring system "Arktika". The spacecrafts will carry out wide range of meteorology, hydrology, agrometeorology, climate monitoring and the environment tasks in the Arctic region. According to Roskosmos, the first launch of the devices of the "Arktika" system is scheduled for 2019 [2].

The current system of primary data collecting in the Russian Arctic consists of a network of hydrometeorological stations and drifting stations, three observatories, three scientific vessels and the research base of the Arctic and Antarctic Research Institute (AARI). Available technical equipment allows providing medium-term forecasts with 70-71% accuracy.

Approved by the Government of the Russian Federation "Strategy of Activities in the Field of Hydrometeorology and in the Adjacent Fields for the Period up to 2030" is aimed at increasing the number of meteorological stations. The document pays special attention to the development of hydrometeorological and heliogeophysical services for the Russian activities in the Arctic.

It is planned to restore the number of hydrometeorological and heliogeophysical observatory stations to the minimum necessary level. This will increase the accuracy of short-term weather forecasts and minimize the consequences of hydrometeorological hazards. Moreover, according to the strategy, automatic meteorological stations will be installed in remote high-altitude areas. Traditional man-operated stations will be equipped with automated meteorological complexes as well. General modernization and updating of technical basis is in plan [3].

As a means to secure national interests of the Russian Federation in high-altitude and polar regions, the Strategy suggests designing and building an ice-class research vessel fitted with modern equipment for oceanographic, geochemical, ice, meteorological and geophysical observations.

The restoration of the system of meteorological observations in Russia takes place not solely within the framework of state programs, but also at the initiative of private companies. For example, in 2015 Rosneft Oil Company announced the installation of an automatic meteorological station on Wrangel Island. Earlier, the company's specialists opened six stations in the seas of the Arctic Ocean. The data collected there is used not only in the extractive activities of Rosneft, but also in climate research programs in the Arctic [4].

Russia takes the eighth-ninth place in the world in terms of the

accuracy of weather forecasts based on the data from space satellites and ground-based meteorological stations. Meanwhile, the ice maps and layer-by-

navigation, they are edited in accordance with the data from the stations of The Federal Service for Hydrometeorology and Environmental Monitoring of Russia (Roshydromet) and analyzed by scientist.

Along with greater economic opportunities shifting climate conditions in the Arctic created new challenges for meteorological services. To make the Northern Sea Route safe and operational it is very important to provide it with precise information on ice masses conditions, natural hazards movement, the layer atmospheric models are based on the images from Canadian, European and even Japanese satellites. Before the purchased images are used in pollution of the Arctic seas, etc. The solution of this problem is impossible without primary data collected by hydrological buoys, research vessels, underwater vehicles and meteorological drones. Setting up a unified system for collecting, analyzing and transmitting meteorological data to oil and gas operators, shipbuilders, shipowners, shippers is an essential component of a safe and effective development of the Arctic region.

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