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HYDROMETEOROLOGICAL SERVICING OF THE FISHING  
INDUSTRY IN THE BARENTS SEA AND THE ATLANTIC OCEAN  
by F. S. Tersiyev and A. N. Ryykonen  
- USSR -

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HYDROMETEOROLOGICAL SERVICING OF THE FISHING  
INDUSTRY IN THE BARENTS SEA AND THE ATLANTIC OCEAN

- USSR

Following is a translation of an article by F. S. Terziyev and A. N. Riykonen in the Russian-language periodical *Meteorologiya i Gidrologiya* (Meteorology and Hydrology), No 8, Moscow, Aug 1962, pages 39-41.

The fishing industry of the Murmansk sovnrarkhoz [economic council] is supplying a considerable part of the entire fish production of the Soviet Union. Striving to increase the fish catch, the seamen of the Murmansk basin have considerably expanded the fishing area during the last years. New fishing regions have been discovered and are being exploited.

In connection with this development, there is an increase in volume of hydrometeorological services to the fishing industry, performed by the Murmansk UGMS [Office of Hydrometeorological Service = OHS]. Up to 1948, the Barents Sea was the main and practically the only fishing basin; at present, however, hundreds of vessels of the Murmansk fishing fleet, as well as the vessels of other sovnrarkhozes, are operating in the Barents Sea, Norwegian Sea, Greenland Sea, in the regions of Newfoundland, Flemishcap, and other regions of the Atlantic Ocean. Under these conditions, the hydrometeorological servicing from Murmansk alone became practically impossible because of great distances from fishing regions. It became necessary to organize a specialized hydrometeorological servicing of the fishing fleet directly on the fishing grounds.

The organization of the herring expedition operating off the shores of Iceland in 1950, marks the beginning of the hydrometeorological servicing of vessels directly on the sea. These services were performed by a forecasting meteorologist and a radio operator located on the flagship (base).

Later, the region of herring fishing in the Norway Sea has expanded, the requirements of hydrometeorological servicing have increased, and there are at present floating synoptical groups composed

of 2-4 forecasting meteorologists and 3-5 radio operators. Since 1959, oceanologists-forecasters have been included in the synoptical groups.

Systematical hydroemeteorological servicing of fishing vessels operating in the regions of Newfoundland, Flemishcap and Labrador had been started in 1958. Of great importance for the servicing of the fishing fleet is the ice survey which was started by the OHS in 1959.

Thus, at present the servicing of the fishing fleet in the coastal regions and the Barents Sea is conducted by the weather bureau from Murmansk. The servicing of the herring fleet in the Norway Sea and the trawling fleet in the regions of Newfoundland and Flemishcap is performed by the operating synoptical groups located on the flagships or bases, where the leaders of the expedition are usually housed.

Hydrometeorological servicing of the fishing industry can only then be successfully carried out, if the conditions under which the fleet operates are well known and if there is a systematic contact between the fisherman and the workers of the Hydrometeorological Service.

For this purpose, there is established at the Murmansk OHS a continuous relation and cooperation between the workers of the forecasting service, the observatory, the network section, the fishermen of the trawling and herring fleets, the scientific workers of the Polar Institute of the Fishing Economy and Oceanography (PINRO), etc. This makes it possible to be aware of the current problems of fishermen, to know and to better satisfy their needs.

The problems of the disposition of the trawling fleet are usually decided at the fishing council attended by the directors of fleets, fishing organizations, sovmarkhozes, city and oblast Party organizations, captains of the vessels, representatives of the scientific organizations of fishing industry, and the representatives of Hydrometeorological Service. The forecasting meteorologists present here the periodical and monthly forecasts, the oceanologists report on the state of water conditions (according to the data of expeditional observations conducted by the vessels of the Hydrometeorological Service, the fishing industry, and other organizations), give forecasts of water temperature and ice edge situation. Staff members of PINRO present reports on the state of feeding medium, fish migration routes and its presumable greatest concentrations. After the exchange of opinions, the decision is made concerning the disposition of the fleet, various problems of the work of expeditions, the operation of naval stations, etc.

Participation of the workers of Hydrometeorological Service in the work of the fishing councils and conferences, continuous consultations and close business contact with the fishermen - those are the basic forms of the active cooperation in servicing the fishing fleet.

The OHS keeps working on a number of scientific research tasks in the field of synoptics and hydrological forecasts, aiming at the improvement of the quality of services rendered to the fishing industry. Such scientific works include: "Forecast of strong winds at the Murman coast for the natural synoptic period"; "Fogs of the Barents Sea"; "Storms of the Norway Sea"; "Diving Cyclones of the Barents Sea"; "Storms of the Great Newfoundland Bank"; "Forecast of water temperature on the main sections of the Barents Sea"; "Heat regime of the waters of the Barents Sea in relation with the character of the distribution of air-water temperature isanomalies", etc.

Some research and expeditional tasks are being undertaken in cooperation with the scientific research organizations of the fishing industry.

The OHS is publishing, jointly with the sovmarkhoz, a monthly hydrometeorological and fishery bulletin (circulation 900 copies), which is distributed to the fishing vessels.

The catch of bottom fish has increased considerably in the last years in the regions of Newfoundland and Flemishcap. This is a year-round fishing. Servicing of the fleets operating in these regions is done, as mentioned above by synoptical groups situated on the flagships and equipped with radio receivers, radio teletypes and wire facsimile.

These synoptical groups are compiling and analyzing daily three basic synoptical weather charts, three circle-charts, as well as charts AT850, AT700, AT500, and OT 1000<sup>500</sup>(according to morning data).

In addition, received by wire facsimile are: the charts of baric topography according to the data of 0 hour; the charts of the future situation of the baric field and fronts; analysis of ground charts, etc.

Every day at 20:00 hours a weather forecast is compiled for the 24-hour period, and at 8:30 hours -- forecasts for a day in the fishing regions, the sites of floating bases and at the passage from Newfoundland to Iceland. At 20:00 hours information is sent to the captain of the flagship on the expected weather during the next 24-hour period and on the icing conditions, and at 9:00 -- on the expected weather that day. At 12:00 information is given to all

captains of vessels about the expected weather during the 24-hour period and the survey of ice conditions in the northwestern part of the Atlantic Ocean.

Storm warnings about the dangerous phenomena (wind 6 points and over, fog, icing of vessels) are compiled, as the threat arises.

The synoptical group is receiving from the radio meteorological centers of the USA and Canada ice surveys over the North Atlantic, as well as the data on ice conditions in the regions of Newfoundland Bank, St. Lawrence Bay, along the coast of Greenland and Labrador. Ice charts are received by phototelegraph. Using these materials, as well as the data obtained from our vessels, the oceanologists of a synoptical group compile information regarding the situation of ice edge in the edge in the fishing squares, the location of icebergs, the border of packing ice, and (tentatively) about ice drifts depending on synoptical conditions.

Simultaneously with weather forecasts, prognostications of rough sea and swell are compiled. For this purpose, charts of actual wave disturbances, received by phototelegraphy, are used.

Information on ice conditions and the state of sea is transmitted to all captains of vessels, and 2-3 times a week are reported at the fishing councils.

Hydrological servicing of the fishing vessels, operating in the regions of Newfoundland and Labrador, was enthusiastically acclaimed by the fishermen. Ice formation service is particularly needed the February-June period, when icing conditions are most dangerous. Let us take an example. Due to the propagation of large swell from the east and northeast, the floating base "Severodvinsk" could not start unloading the vessels at the ice edge. The anchorages at the southern and eastern coasts of Newfoundland were jammed by floating pack-ice. Waiting for the clearing of ice from this region would result in demurrage of vessels and short-take of fish. The oceanologists gave advice on the foreseeable time, when the ice will be cleared from the Bell Island region. Arriving there, the "Severodvinsk" could successfully unload the vessels.

A complicated and responsible task is the hydrometeorological servicing of the fleet which does the drift-fishing of herring in the Norwegian Sea. No other type of fishing is that much dependent on wind and sea swell, as the catch of herring by drift nets in the open sea.

The hydrometeorological servicing is complicated here by the fact that this fishing region, situated on the path of cyclones, is not sufficiently provided with hydrometeorological data.

Each stormy day (and they are many) causes a state of tension among the fishermen. Storm coming without warning often causes the loss of nets and other fishing equipment worth millions of rubles.

For the servicing of fishing vessels in the Norwegian Sea, the synoptical groups are situated on the floating bases "Pechenga", "Pamyati Kirova", "Atlantika", and "Antarktika".

At these bases, there are special cabins equipped with radio receivers and radio teletypes; in addition, the "Pamyati Kirova" and the "Pechenga" have the wire facsimile. There are also working and living cabins. The synoptical group at the fisheries is compiling weather forecasts for 24-hour period and for a day as well as storm warnings (similar to the described above). A region of 2,000 to 3,000 miles radius is interpreted on the synoptical charts.

The floating bases also receive data from the prospecting and fishing vessels which are equipped with naval stations. Some 8--10 fishing boats which do not have naval stations send the meteorological information 4 times a day by open letter.

The operating hydrometeorological servicing of the fishing fleet is being conducted in the following order: at 7:00 the forecaster on duty gives consultation to the chief of the expedition and the captain of the floating base (on the basis of a map with the data of 6:00) concerning the fishing regions; at 14:30 consultation is provided by microphone to the captains of vessels (according to a map with data of 12:00) concerning the development of synoptic processes and the weather to be expected during the next 24 hours. At 15:30 and 1:30 mutual consultation is conducted with forecasting meteorologists of other operating groups which happen to be in this region. At 16:30 consultation is provided to the chief of the expedition according to the map with data of 15:00. At 2:00 information is sent to the captains of vessels (according to the map with data of 0:00) regarding the weather to be expected in the morning and next day.

For the fishing regions, anchorages of the floating bases, and for passages to the Nordcap, the weather forecasts are compiled on the following schedule: at 17:00 -- for 24-hour period (from 19:00 to 19:00); and at 22:00 -- for day and night; at 2:00 -- for morning and day, and at 10:00 -- more accurate forecast for the day.

If the increase of the wind up to points and over was not indicated in the forecast, or its beginning was not sufficiently accurate-it indicated, then the storm warnings are forwarded. They are broadcast to the fleet immediately at any time of day or night.

The fishing regions, for which weather forecasts are compiled, and the time of forecast transmission are determined by the chief of the expedition. The forecasting meteorologists keep the weather journal with records of forecasts, storm warnings, and weather information obtained from vessels. Monthly surveys of synoptical processes and weather within the serviced region are compiled; they are very valuable material for young meteorologists.

In each synoptical group there is an oceanologists-forecaster whose duties include daily compilation and transmission to the vessels the forecasts of wave disturbances and swell, compilation and transmission of a chart of water temperature distribution, information to the captains on the heat regime of water masses, etc. Basic data for all this are the observations of the naval stations, as well as deep-water expeditional observations received from the vessels.

After the return from the sea, the work of synoptical groups is discussed in the presence of the chief of OHS with representatives of the serviced organization participating.

The experience in servicing the herring expeditions operating in the open sea has shown that the fishing fleet can be better serviced, if a single hydrometeorological bureau is created, instead of several small synoptical groups which are now attached to the staffs of various expeditions (Murmansk, Kaliningrad, Lithuanian), fishing in the Norwegian Sea. Such a bureau should be located on a special vessel able to make expeditional observations; it should be equipped with high-speed radio teletype and wire facsimile apparatus and staffed with skilled meteorologists and oceanologists.

Naval observations are of particularly great importance for the servicing on the sea. The network of naval observations of the Murmansk OHS lists about one hundred naval stations. The quality of information of naval stations is being checked by the communication control point, by naval inspectors, by the weather bureau and the synoptical groups which are analyzing the work of naval stations by means of microphone directly at the fishing grounds, on the sea.

Over 50 vessels are equipped with long-distance stations. The long-distance stations are installed by the ship repair establishments of the fishing industry with consultation of the naval inspector.

Naval stations are provided with instruments by the steamship organizations themselves. The OHS solely controls the presence and good condition of these instruments and checks their operation.

Inspection of the naval stations is made at least three times a year. When the vessel enters the port, it is usually visited by the inspector.

The measures undertaken have made it possible to attain a fully satisfactory operation of the naval stations, to obtain extensive material on the open sea, and, what is most important, to alleviate considerably the work of meteorologists-forecasters in hydrometeorological servicing of the fishing industry.

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