

METEOROLOGY IN THE SOVIET ARCTIC, 1920-45

[Summarised from *Meteorologicheskie issledovaniya v sovetskoy arktike za 25 let (1920-45)* [Meteorological research in the Soviet Arctic during 25 years (1920-45)] by Ye. I. Tikhomirov. *Izvestiya Vsesoyuznogo Geograficheskogo Obshchestva* [*News of the All-Union Geographical Society*] (Leningrad), Tom 77, No. 6, 1945, p. 322-27.]

In 1917 there were six regularly working meteorological stations in the Russian Arctic, but only that at Malye Karmakuly, on the south-west coast of Novaya Zemlya, had been by 1917 working for more than 4 years. This station had been built for the first International Polar Year of 1882-83, and started regular observations in 1896. The creation in 1920 of the Northern Scientific Industrial Expedition [Severnaya Nauchno-Promyslovaya Ekspeditsiya] (which later became, after another change of name, the Arctic Institute [Vsesoyuzny Arkticheski Institut, later Arkticheski Nauchno-Issledovatel'ski Institut]) led to the establishment of more stations, principally in the Kara Sea and Bering Strait areas. Two stations were manned in Zemlya Frantsa-Iosifa [Franz Josef Land] north of lat. 80° N., at Bukhta Tikhaya from 1929 and Ostrov Rudol'fa from 1932. A demand for yet more stations was created by the increasing number of merchant ships crossing the Kara Sea to and from the rivers Ob' and Yenisey; by the voyage of the *Sibiryakov* in 1932 which demonstrated the possibility of sailing the whole length of the Northern Sea Route in one season; and by the creation in the same year of the Chief Administration of the Northern Sea Route [Glavsevmorput'] the primary purpose of which was to develop the whole of this route for shipping. More stations were therefore built, but not all were constantly manned, and during the ensuing years the number in operation varied between 45 and 77. The latter figure was the number round 1941, and the distribution was then as follows: Kara Sea 36, Laptev Sea 16, East Siberian Sea 9, Chukchi Sea and Bering Strait 16.¹ The observations of these stations were augmented by observations from expedition ships, merchant ships and icebreakers. Starting in 1938 winter observations in the open sea were obtained from ships forced to winter in the ice and from patrol boats. In 1934 aircraft on ice reconnaissance started to contribute useful meteorological information.

The collected observations from all these sources provided material for a number of papers on meteorology. Before the 1930's there was only one work to which reference could be made.² This, although compiled by the best authorities, was inevitably inadequate, and sometimes inaccurate in its deductions, because the data on which it was based were meagre. The first important climatic work based on the new material was the production of five climatic maps

¹ These figures are for polar stations, since all polar stations do meteorological work. Ya. Ya. Gakkel' gives the total number of polar stations in operation in 1945 as 77 (*Za chetvert' veka* [For a quarter of a century], Moscow, Leningrad, 1945, p. 63); A. F. Laktionov gives 62 as the number operating in 1945 actually on the Northern Sea Route (*Izvestiya Vsesoyuznogo Geograficheskogo Obshchestva* [*News of the All-Union Geographical Society*], Tom 77, No. 6, 1945, p. 342); so it seems likely that this subdivision by seas does not imply that all the stations in each group are actually on the coast.—T.E.A.

² *Kratkie svedeniya po meteorologii i okeanografii Karskogo i Sibirskogo morey* [Short account of the meteorology and oceanography of the Kara and Siberian Seas], 1919.

of the Arctic, on the scale 1:10,000,000, for Vol. 1 of the *Bolshoy Sovetski Atlas Mira* [Great Soviet Atlas of the World] (Moscow, 1937): in particular there was a rearrangement of January isotherms showing among other things that there was a new "Pole of Cold" at Oymekon.† In 1936 a series of publications entitled *Materialy po klimatologii polyarnykh oblastey SSSR* [Material on the climatology of the polar regions of the U.S.S.R.] was inaugurated. Up to 1945 sixteen numbers had been published (as volumes of the *Trudy Arkticheskogo Instituta* [Transactions of the Arctic Institute]), giving fairly detailed climatic descriptions, by regions, of the whole of the Soviet arctic coastline and of the off-lying islands. This series, which was completed by Ye. A. Leont'yeva's monograph *Klimat sovetskoy arktiki* [Climate of the Soviet Arctic], throws light on the theory that the Arctic is warming up, and on the phenomenon, observed at some points in the Arctic, of a rise in temperature in the middle of the winter.

Results of work during this period tend to confirm previously known or surmised facts. Of particular interest perhaps is the fact that the film of cold air over the Arctic, whose existence has long been known, reaches maximum thickness in the eastern sector of the Soviet Arctic in summer, while in the western sector it may reach maximum thickness in winter. Synoptic work on the basis of the data provided by polar stations has led to the formulation of new theories on the circulation of the atmosphere in polar regions. It is study of this point which is most important in working out long-term weather, and ice, forecasts.

TERENCE ARMSTRONG

HYDROLOGICAL WORK IN THE SOVIET ARCTIC, 1920-45

[Summarised from *Gidrologicheskie issledovaniya v sovetskoy arktike za 25 let (1920-45)* [Hydrological research in the Soviet Arctic during 25 years (1920-45)] by K. A. Gomoyunov. *Izvestiya Vsesoyuznogo Geograficheskogo Obshchestva* [News of the All-Union Geographical Society] (Leningrad), Tom 77, No. 6, 1945, p. 328-40.]

Marine Hydrology

In 1920 hydrological work in the Soviet Arctic was resumed for the first time since the revolution. The Northern Scientific Industrial Expedition [Severnaya Nauchno-Promyslovaya Ekspeditsiya] and its successor the Institute for the Study of the North [Institut po Izucheniya Severa] organised work in the Barents Sea, along the coast of Novaya Zemlya and as far north as Zemlya Frantsa-Iosifa [Franz Josef Land] between 1920 and 1927.†† In 1928 the voyages of the icebreakers *Krasin* and *Malygin* in search of Nobile's expedition provided an opportunity for V. A. Berezkin on the one and V. Yu. Vize on the other to study the hydrology of the north part of the Barents Sea.² Thenceforward, so-called "complex" expeditions (those on which scientific work in a number of different fields was undertaken) were sent out with increasing frequency, and hydrological work was done on almost all of these. In 1930 work was done in the region of Zemlya Frantsa-Iosifa and in the northern part of the Kara Sea.³ Both areas were covered again in 1931.⁴

† Lat. 63° 30' N., long. 143° E. It was previously at Verkhoyansk.—T.E.A.

†† For notes see p. 359-60.