

ON THE LATE OCCURRENCE OF DRIFT ICE RETREAT FROM
THE HOKKAIDO COAST IN THE 1992/93 SEA ICE SEASON
(ABSTRACT)

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The 1992/93 sea ice season in the Sea of Okhotsk was characterized by the record-breaking late appearance and late disappearance of drift ice off the Hokkaido coast. The 1992/93 winter season was rather warm and the arrival of drift ice off the Hokkaido coast was a few weeks later than normal. The averaged amount of drift ice in sight at Kitamiesashi, Omu, Mombetsu, and Abashiri was half of normal. Nevertheless the last dates of drift ice* at the four observatories were all in early May, about a month later than normal, breaking records at three of the observatories. So we tried to clarify why the last dates of drift ice were so delayed while sea ice was not abundant in the southern part of the Sea of Okhotsk this year.

For this purpose we selected the years when sea ice extent was predominant in the southern part of the Sea of Okhotsk at the end of March and compared their ice conditions in April in past years with those of this year. The selected years were 1973, 78, 79, 81, 83, 86, 88 (seven years).

In all seven years, the ice edge in the southern part of the Sea of Okhotsk moved eastward gradually away from Sakhalin and the Hokkaido coast, while the sea ice extent was reduced rapidly. But this year the ice edge adhered to Sakhalin and the Hokkaido coast.

The principal cause of this phenomenon seems to be that easterly to northerly wind prevailed in the southern part of the Sea of Okhotsk since the passage of depressions near Hokkaido was displaced to the south compared to normal years. The effect is not only to prevent sea ice from moving north-eastward from the Hokkaido coast, but also to inhibit sea ice melting due to advection of cold air. Besides, the sea ice became hummocky along the eastern coast of Sakhalin due to the strong easterly to northerly wind in early April and its thickness increased. It was confirmed by the increase of the brightness of the GMS satellite image that the sea ice along the eastern coast of Sakhalin rapidly increased in thickness due to strong wind. This thickened sea ice drifted toward the Hokkaido coast, and did not melt easily, which caused the late disappearance of drift ice off the Hokkaido coast.

Finally, we could not forecast the sea ice distribution well this April. We would like to develop our skill in forecasting sea ice movement in this type of weather pattern in the future.

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* The last date of drift ice is defined as the date when drift ice is observed last in the season at the coastal observatory.