Tokyo Climate Center, Japan Meteorological Agency

TCC News

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Contents

Sea Ice in the Sea of Okhotsk in the 2014/2015 Winter Season

The maximum sea ice extent in the Sea of Okhotsk for the winter 2014/2015 was the smallest since 1970/1971.

The maximum sea ice extent in the Sea of Okhotsk from February to March 2015 was the smallest since winter 1970/1971 (Figure 1). The seasonal maximum of 0.67 x 10^6 km^2 (less than the normal of 1.17 x 10^6 km^2 based on the 30-year average from 1980/1981 to 2009/2010) was reached on 28 February (Figures 1 and 2). This was the smallest extent since 1970/1971, and was much smaller than the same period's second-smallest value of 0.86 x 10^6 km^2 recorded in 1983/1984. Figure 3 shows the overall trend of maximum sea ice extent from 1971 to 2015. Although values for the Sea of Okhotsk show large interannual variations, there is a long-term downward trend of 0.071 [0.036 – 0.107] x 10^6 km^2 per decade (the numbers in square brackets indicate the two-sided 95% confidence interval), which equates to a loss of 4.5 [2.3 – 6.8]% per decade.

(Keiji Hamada, Office of Marine Prediction)

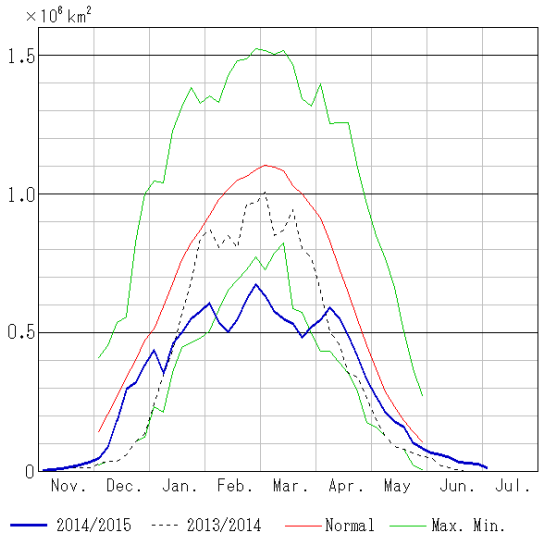


Figure 1 Seasonal variation of sea ice extent at five-day intervals in the Sea of Okhotsk from November 2014 to July 2015.
The normal is the 30-year average from 1980/1981 to 2009/2010)

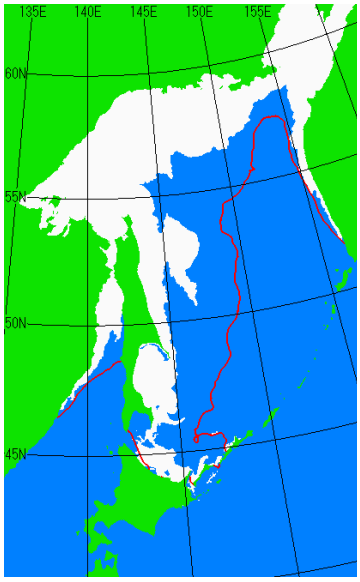


Figure 2 Sea ice situation on 28 February 2015.
The white area shows the observed sea ice extent, and the red line indicates the extent of normal coverage (the 30-year average from 1980/1981 to 2009/2010).

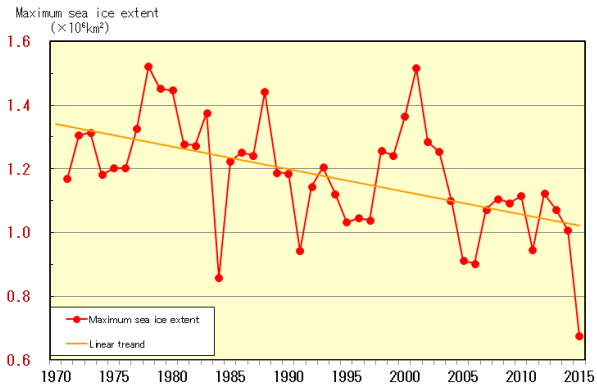


Figure 3 Interannual variation of maximum sea ice extent in the Sea of Okhotsk from 1971 to 2015.
Maximum sea ice extent: the greatest amount of sea ice extent observed during the year

Summary of Kosa (Aeolian dust) Events over Japan in 2015

Characteristics of Kosa events in 2015

Kosa (Aeolian dust) is a meteorological phenomenon in which fine dust is blown up to an altitude of several thousand meters by cyclonic or other wind systems from deserts or cropland in semi-arid areas of the Asian continent, and is transported over long distances by westerly winds, resulting in haze or dustfall in downstream areas. It is often observed between March and May in Japan and makes the sky yellow and hazy. Heavy Kosa can affect transportation by obstructing visibility. A total of 60 JMA meteorological stations (as of 1 August 2015) perform Kosa monitoring. From January to June 2015, the number of days on which meteorological stations in Japan observed the presence of Kosa (referred to here simply as "the number of days") was 18, which was below the 1981 – 2010 normal of 23.1. The number of days in May was almost the same as the normal, but was lower in January, March and April and higher in February and June (Figure 4, left).

The total number of stations observing the presence of Kosa (referred to here simply as "the total number of stations") over the same period was 144, which was also below the normal of 208.3. The total number of stations was lower than the normal in January, March, April and May and higher in February and June (Figure 4, right). Kosa was observed in western Japan from 12 to 13 June 2015. As the phenomenon is rarely observed over the country in mid-June, this occurrence prompted media reports.

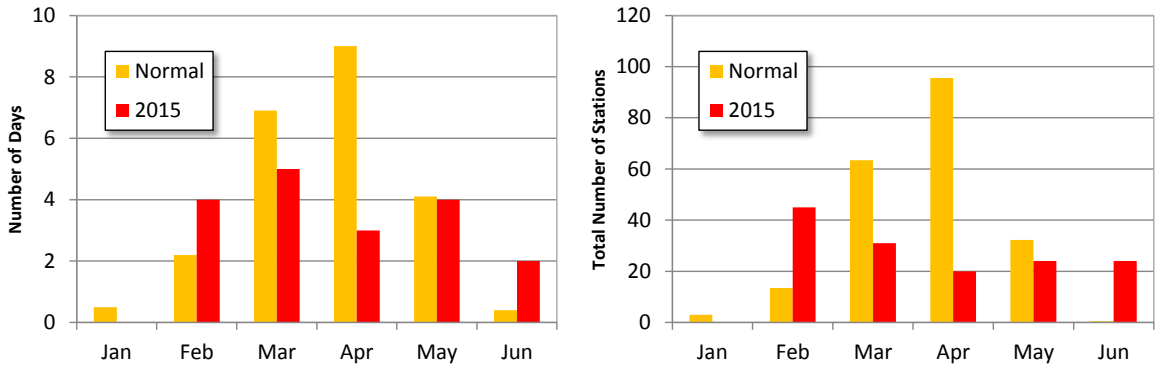


Figure 4 Monthly number of days when meteorological stations in Japan observed Kosa (left), and the monthly total number of stations observing Kosa (right) from January to June 2015

The red and yellow bars show the values for 2015 and the 1981 – 2010 normals, respectively.

Significant Kosa event in late March

Kosa was extensively observed at stations in western Japan and elsewhere from 22 to 23 March 2015 (Figure 5). Due to a large dust storm in an area of the Gobi Desert around 19 March, massive volumes of dust were blown up into the atmosphere and carried over to Japan by upper-air westerly winds.

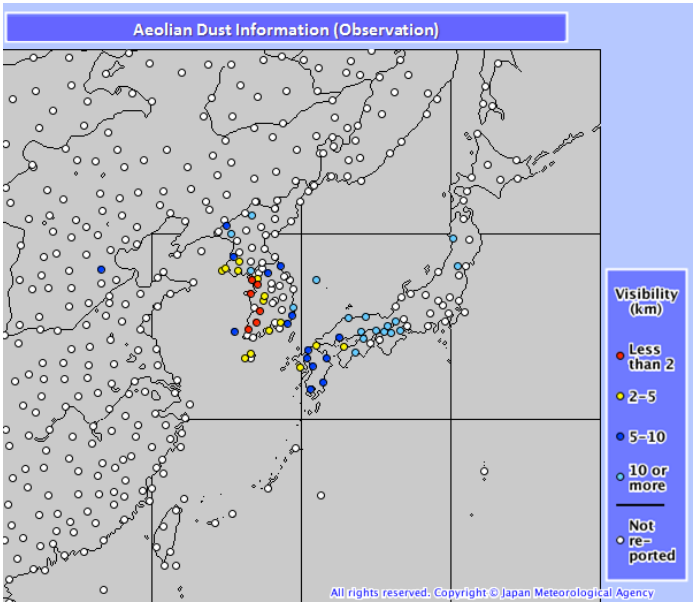


Figure 5 Meteorological stations observing Kosa and minimum visibility on 22 March

Low-pressure systems were located in the area from Primorskii (a federal subject of Russia around Vladivostok) to Hokkaido (the northernmost of Japan's prefectures, its capital is Sapporo) on March 22 as shown by the surface weather chart in Figure 6, and westerly winds around these systems carried the dust to over Japan. Based on results from JMA's Kosa prediction model, the phenomenon was expected to prevail over western Japan on 22 March (Figure 7). In consideration of forecast results and surface observation reports from meteorological stations, JMA released information on the Kosa event to the public on 22 March in order to call attention to potential traffic hazards due to visibility degradation.

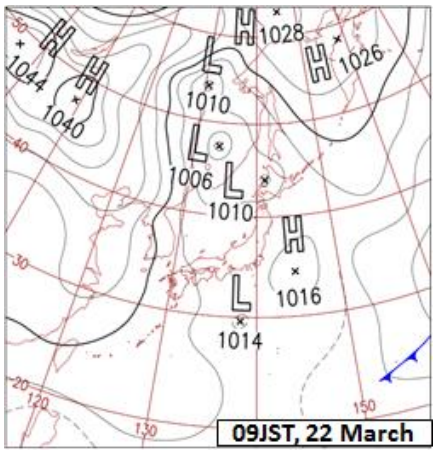


Figure 6
Surface weather analysis chart at 09 JST (00 UTC) 22 March

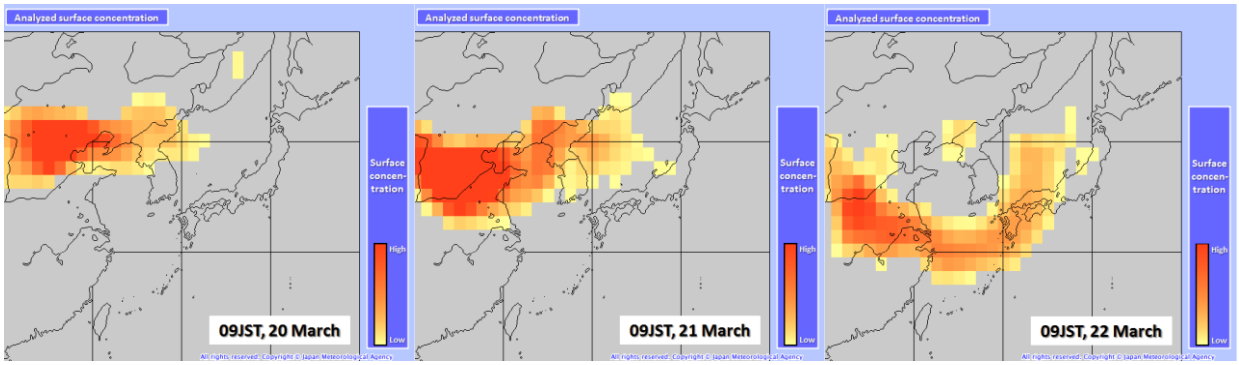


Figure 7 Forecasts of surface dust concentration by JMA's Kosa prediction model at 09 JST (00 UTC) on 20, 21 and 22 March (initial time: 21 JST (12 UTC) on 19 March) The Kosa was expected to reach Japan on 22 March.

JMA launched its Himawari-8 next-generation geostationary meteorological satellite in October 2014. The unit is equipped with a new sensor called the Advanced Himawari Imager (AHI), which can monitor the Earth's surface using 16 visible to infrared bands with finer spatial resolution than ever before, and provides superior capability for Kosa observation. The Kosa in this event showed up clearly in color composite imagery from Himawari-8 during the commissioning phase (Figure 8).

(Nozomu Ohkawara,
Atmospheric Environment Division)

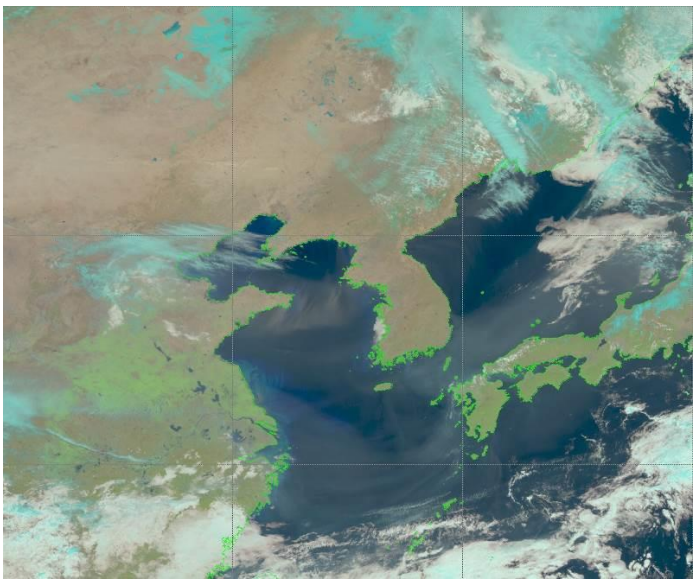


Figure 8 Color composite imagery from Himawari-8 taken at 10 JST (01 UTC) on 22 March during the satellite's commissioning phase
Kosa is clearly visible over the Yellow Sea and near Japan.

TCC contributions to Regional Climate Outlook Forums in Asia

WMO Regional Climate Outlook Forums (RCOFs) bring together national, regional and international climate experts on an operational basis to produce regional climate outlooks based on input from participating NMHSs, regional institutions, Regional Climate Centers and global producers of climate predictions. By providing a platform for countries with similar climatological characteristics to discuss related matters, these forums ensure consistency in terms of access to and interpretation of climate information. In spring 2015, TCC experts participated in two RCOFs and provided information on Southeast Asian summer monsoon prediction to another.

SASCOF-6

The first RCOF was the sixth session of the South Asian Climate Outlook Forum (SASCOF-6) held in Dhaka, Bangladesh, from 21 to 22 April. This forum has been held every year since 2010 to provide a consensus outlook of South Asian monsoon season. The member countries are Afghanistan, Bangladesh, Bhutan, India, Maldives, Myanmar, Nepal, Pakistan and Sri Lanka. The consensus outlook made by global experts is important for these countries to mitigate disasters caused by extreme climates such as heavy rainfall and drought. For this purpose, TCC sends an expert every year to provide a latest South Asian monsoon prediction based on JMA's seasonal ensemble prediction system (EPS) and to contribute to discussions on the consensus outlook. At the 2015 session, a TCC expert gave a presentation on the El Niño conditions and below-normal monsoon rainfall tendency predicted by JMA's seasonal EPS. This prediction was consistent with other model predictions and played an important role to decide the outlook.

FOCRA II

The second RCOF was the 11th session of the Forum on Regional Climate Monitoring, Assessment and Prediction for Regional Association II (FOCRAII) held in Beijing, China, from 11 to 13 May. The event was participated by 90 experts from 25 countries/territories (China, China Hong Kong, China Macao, Comoros, DPR of Korea, Egypt, France, Ghana, Hungarian, Indonesia, Japan, Kazakhstan, Lao PRD, Malaysia, Maldives, Mauritius, Mongolia, Niger, Pakistan, Republic of Korea, Russia, Thailand, Turkey, United Kingdom and United States), took place over six sessions featuring talks by invited lecturers and oral presentations. The TCC participants gave four presentations on seasonal predictions based on JMA's seasonal EPS, external factors influencing atmospheric circulation, climate diagnosis in relation to the previous unseasonable summer, and new TCC products. JMA's latest seasonal predictions thus contributed to discussions on the consensus outlook for the coming summer.

ASEANCOF

In Addition, although TCC expert didn't participate, TCC contributed to a consensus outlook at the fourth session of the ASEAN Climate Outlook Forum (ASEANCOF-4) held in Jakarta, Indonesia from 21 to 22 May by providing information on Southeast Asian summer monsoon prediction based on JMA's seasonal EPS.

(Takashi Yamada, Motoaki Takekawa and Yasushi Mochizuki)

FOCRAII Participants from Japan (left to right) Yasushi MOCHIZUKI, Motoaki TAKEKAWA

Motoaki TAKEKAWA as a session chair at FOCRAII

TCC Experts Visit Sri Lanka

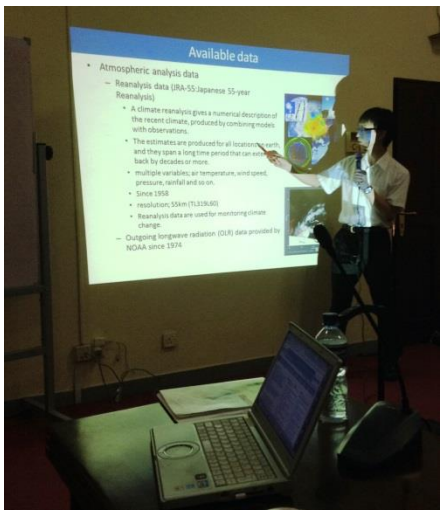
TCC arranges expert visits to NMHSs to support climate services and the effective transfer of technology.

As part of such efforts, TCC experts paid a visit to Sri Lanka's Department of Meteorology (DOM) from 23 to 26 June 2015 to conduct a follow-up seminar regarding the generation of global warming projection information covered at the TCC Training Seminar in 2014 (refer to TCC News No.39 for details of the seminar) and to discuss climate services in Sri Lanka as well as future collaboration between DOM and TCC.

In the presence of around 12 DOM experts, the TCC visitors outlined the generation of global warming projection information using JMA's JRA-55 reanalysis data and 20-km-resolution MRI-AGCM data produced by JMA's Meteorological Research Institute (MRI) under Theme C of the Program for Risk Information on Climate Change (also known as SOUSEI) – an initiative supported by Japan's Ministry of Education, Culture, Sports, Science and Technology (MEXT). Using the same projection data, the attendees then estimated future changes in precipitation and other climate variables relating to the Southwestern monsoon season in Sri Lanka. The TCC visitors also highlighted the basic operation of TCC's Interactive Tool for Analysis of Climate System (iTacs) via practical exercises.

The visit provided outstanding opportunities for attendees to deepen their understanding of global warming projection and to discuss future collaborative work with TCC. TCC will continue to arrange expert visits to NMHSs in Southeast Asia and elsewhere as necessary to assist with operational climate services.

(Atsushi Goto, Tokyo Climate Center)



Any comments or inquiry on this newsletter and/or the TCC website would be much appreciated. Please e-mail to tcc@met.kishou.go.jp.

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