

The Third Session of the East Asia winter Climate Outlook Forum

3-5 November 2015, Seoul, the Republic of Korea

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Executive summary

The third session of the East Asia winter Climate Outlook Forum (EASCOF-3) was held in Seoul, the Republic of Korea from 3 to 5 November 2015. Long-range forecasters and climate experts from China Meteorological Administration (CMA), Japan Meteorological Agency (JMA), National Agency for Meteorology and Environment Monitoring of Mongolia (NAMEM), Korea Meteorological Administration (KMA) and APEC Climate Center (APCC) participating in the Forum discussed outlook for winter 2015/2016 and summarized that the coming East Asian winter monsoon is likely to be weaker than normal.

1. Introduction

In the agreement at the Thirteenth Session of the Joint Meeting for Seasonal Prediction of the East Asian Winter Monsoon (EAWM), the East Asia winter Climate Outlook Forum (EASCOF) was established as a WMO sub-regional COF. The EASCOF has been run since 2013, hosted alternately by NAMEM, JMA and KMA. The EASCOF-3 was held in Seoul, the Republic of Korea from 3 to 5 November 2015. More than 50 long-range forecasters, researchers and experts from CMA, JMA, NAMEM, KMA and APCC attended this forum

which covered main seasonal topics including recent climate phenomena over the East Asia, the East Asian winter Monsoon variability, ENSO outlook and seasonal outlooks for 2015/2016 winter using statistical and dynamical models.

2. Overview of 2015 Summer Climate

During the 2015 summer, the spatial rainfall pattern in East Asia was characterized by above normal in the southern East Asia along Mei-Yu/Baiu front extending from South China to west Japan and below normal in the northern East Asia including the Korean peninsula. Anomalous western North Pacific subtropical High (WNPSH) activities might attribute to the lower position of frontal rain band. The WNPSH was zonally extended rather than meridional direction caused by the suppressed convection activity over the tropical western Pacific in association with an El Niño event.

CMA: China experienced below-normal rainfall and above-normal temperature in summer, 2015. The summer mean precipitation was 297.6mm over China, which was 8.5% below normal (325.2mm). The rainfall anomaly pattern shows dipole mode (wet in South China and dry in North China). North China experienced light-moderate-severe drought from June to August. The summer mean surface air temperature over China was 21.2°C, with 0.3°C above normal (20.9°C), but the temperature was below than normal around Yangtze valley because of consecutive rainy days. In summer, extremes of High Temperature (HT) days, Consecutive High Temperature (CHT) days were observed in some stations.

Meiyu period in 2015 was longer than normal and the Meiyu rainfall was above normal. There are three typical Meiyu regions in China. The Meiyu period (5.27~7.26) of South of Yangtze River region is 30 days longer than normal and Meiyu rainfall is 86% above than normal. The Meiyu period (6.14~7.27) of Yangtze River valley is 14 days longer than normal and Meiyu rainfall is 36% above than normal. The Meiyu period (6.24~7.25) of Jianghuai valley is 7 days longer than normal and Meiyu rainfall is 47% above than normal. During the post-Meiyu period, the rainy season of North China (7.23~8.17) is 6 days shorter than normal. In summer and autumn, the typhoon activities usually follow northwest routines and bring heavy rainfall to southeast China.

JMA: Seasonal mean temperature was significantly above normal in Okinawa/Amami, and above and below normal in northern and western Japan, respectively. Seasonal precipitation ratio was significantly above normal in the Pacific side of western Japan and Okinawa/Amami.

KMA: South Korea experienced near-normal temperature and below-normal rainfall in 2015. The summer mean temperature over South Korea was 23.7°C, which was almost the same as normal (+0.1°C) and the summer mean precipitation (387mm) ratio to normal (723mm) was 54%, which was recorded as the 3rd lowest rainfall since 1973.

2015 Changma period (6.24~7.29) was almost the same as normal, however, the Changma rainfall was below normal because the North Pacific High was zonally extended rather than meridional direction. During the post-Changma period, the rainfall front was not able to be activated because of weak North Pacific high and typhoon activities.

NAMEM: In 2015 summer, mean temperature of Mongolia was 18.5°C, which was above normal (+1.2°C), especially northern and central part of the country. Summer precipitation was near normal at 121.5mm.

Stationary warm anticyclone persisted for more than 5 days in the westerly wind belt occurred 4~5 times during JJA. Therefore, precipitation was below normal in central and eastern part of Mongolia. June precipitation in the central part of the country (agricultural region) was 21% of normal, which was the driest on record since 1961.

3. Current status and outlook of ENSO

Current Status

The Nino3.4 SST anomaly is remarkably above normal with a deviation of +2.4°C for September. The positive SST anomalies appear in the equatorial central-eastern Pacific and negative anomalies in the tropical western Pacific.

ENSO outlook

Based on the dynamical and statistical methods, El Nino will keep increasing and reach its peak during boreal winter 2015/16. It may continue through the spring of 2016 and most likely forming an extremely strong El Niño event.

4. Outlook for winter 2015/16

The East Asian winter monsoon for this coming 2015/16 winter is expected to be weaker than normal by the influence of the El Niño event.

CMA: The 2015/16 East Asia winter monsoon is likely to be weaker than normal, but the intra-seasonal variation is expected to be strong. Air temperatures in winter may be warmer than normal in most China, especially over north-central China. However, Northeast China may be slightly colder than normal. Winter precipitation will be below normal over most northern parts of China, and more precipitation tends to occur over most southern parts of China and northeast China.

Sea surface temperature anomaly (SSTA) over the tropical eastern Pacific is one of the most important external-forcing factors for the climate prediction in this winter. A strong El Niño event is developing and will reach its peak in the coming winter. It has exerted significant impacts on the Asia climate anomaly during the past months. And in the following winter, it will induce an anomalous low-level anticyclone around the Philippines, as well as an intensified northwestern Pacific subtropical high with its high ridge extending more westward and southward. The other two important factors are the SSTA dipole mode over the tropical Indian Ocean (TIOD) in autumn and the Sea Ice concentration (SIC) over the Arctic in September. The strong positive TIOD may intensify the India-Burma trough in winter, causing more moisture flux from the Bay of Bengal to southern and southwestern China. After removing the linear trend of the SIC, the slightly less SIC over the Barents-Kara Sea would bring uncertainty of the strength of Siberia High in winter.

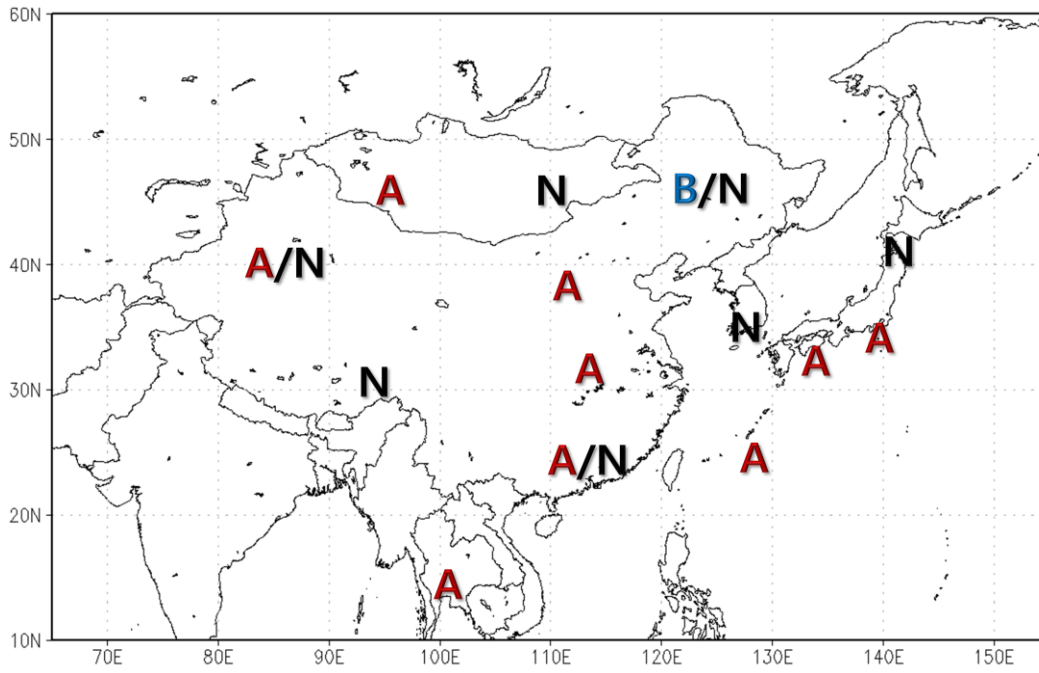
JMA: A subtropical jet stream is expected to shift southward over the Eurasian continent, in association with inactive convections over the Maritime continent. Accordingly, southwesterly anomalies of the upper flow are expected around west of Japan, which would enhance the activity of low pressure around the region. Therefore, north-westerly monsoon is expected to be near-normal in northern Japan and to be weaker than normal in eastern and western Japan and Okinawa/Amami. As a result, outlook for winter over Japan is as follows: Temperatures are expected to be above-normal in eastern and western Japan and Okinawa/Amami and to be near-normal range in northern Japan. Cold season precipitation amounts are expected to be above-normal on the Pacific side of eastern and western Japan and Okinawa/Amami, and to be near- or above-normal on the Sea of Japan side of western Japan, and to be near-normal range over the northern Japan.

KMA: The 2015/16 East Asia winter monsoon is likely to be near normal, but the intra-seasonal variation is expected to be very strong. According to the majority of international climate outlook models, the 2015/16 El Niño is likely to reach strong intensity with EP type, potentially placing this El Niño event among the four strongest events since 1950 (1972/73, 1982/83, 1997/98). Predicted fields from the KMA's GloSea5 and the WMO LC-LRFMME show warmer-than-normal winter 2015/16 by response of strong El Niño. However, more snow-cover over the Eurasian continent, its fast progress, and little sea-ice over the Laptev Sea in the fall are statistically contributing to below-normal temperature for early winter. In addition, severe winters across East Asia are associated with anomalous warmth in the Barents-Kara Sea region. Thus, temperature variation for East Asia is likely to be large in this winter.

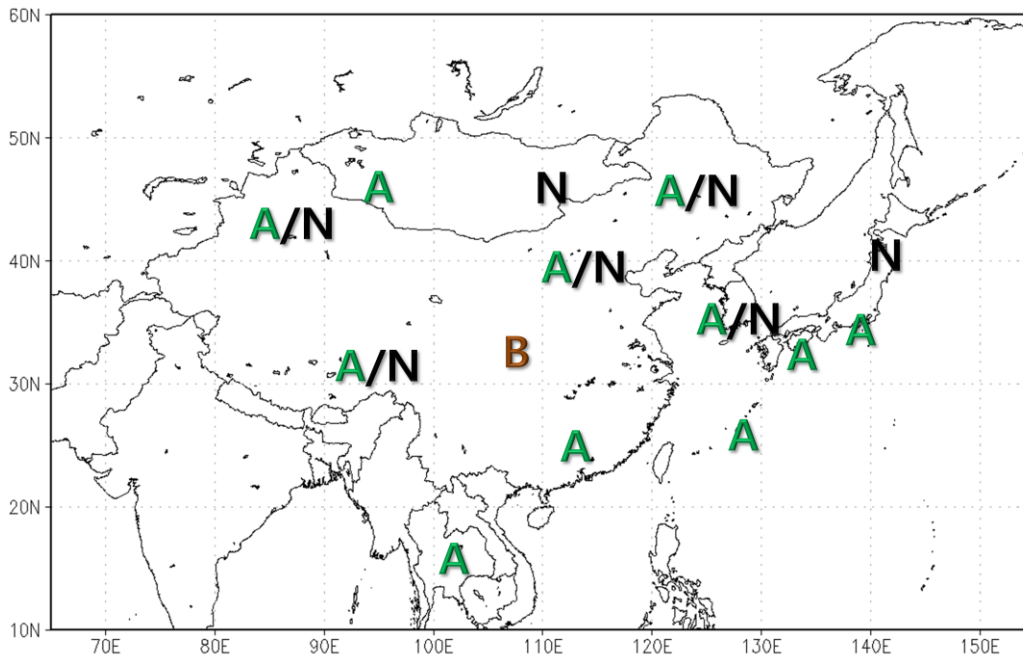
NAMEM: Considering all statistics and global model output, 2015/2016 winter outlook is issued in a subjective manner. Temperature is expected to be above and near normal and precipitation is near and above normal almost whole country.

Summarized prediction

Temperature



Precipitation



5. Other issues

5.1. All EASCOF-3 materials such as presentations, summary and participants list are available on the dedicated website.

5.2. As a WMO sub-regional COF, this EASCOF-3 activity will be reported to the WMO by the KMA as soon as possible after circulation to all participants.

5.3. Date and place of the EASCOF-4: The session was pleased to note that Mongolia would host the EASCOF-4 in early November 2016. The time and venue will be determined later on.

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