The Seventh Session of the East Asia winter Climate Outlook Forum

Ulaanbaatar, Mongolia

5-7 November 2019

Executive Summary

The Seventh Session of the East Asia winter Climate Outlook Forum (EASCOF-7) was held in Ulaanbaatar, Mongolia from 5 to 7 November 2019. This Forum was joined by long-range forecasters and climate experts from the China Meteorological Administration (CMA), the Japan Meteorological Agency (JMA), the Korea Meteorological Administration (KMA) and the National Agency for Meteorology and Environment Monitoring of Mongolia (NAMEM). Participants shared knowledge about seasonal prediction and discussed seasonal outlook for the winter 2019/2020.

It was summarized that the upcoming East Asia Winter Monsoon likely to be weaker than normal.

1. Introduction

In line with 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 held since 2013, hosted alternately by NAMEM, JMA and KMA. The EASCOF-7 was held in Ulaanbaatar, Mongolia from 5 to 7 November 2019, attended by more than 50 long-range forecasters, researchers and experts from CMA, JMA, KMA, NAMEM, and National University of Mongolia. The forum covered main seasonal topics, including the recent climate phenomena in East Asia, services of long-range forecasts in East Asia, research and development of climate variations related to the East Asia Winter Monsoon, ENSO activity and outlook, and seasonal climate outlook for the winter 2019/2020, by using statistical and dynamical models. It served as a good opportunity to share understanding of climate events and research results related to seasonal prediction on the EAWM, as well as discussing seasonal climate outlook for the winter 2019/2020.

2. Overview of 2019 Summer Climate

CMA: Average temperature in summer over China was 21.5℃, 0.6℃ more than the normal, ranked 9th since 1961. Hot wave days (Tmax≥35℃) was 14.4, 5.2 days more than the normal, and ranked 4th since 1961.

Average total precipitation amount in summer over China was 336.7 mm, 3.5% more than the normal. More (20%-30%) precipitation in Northeast, middle of Northwest of China, less (20%-

50%) in the middle and lower reaches of the Yangtze river.

JMA: Seasonal mean temperatures were above normal in northern and eastern Japan, and Okinawa/Amami. Seasonal precipitation amounts were significantly above normal on the Pacific side of western Japan and in Okinawa/Amami. In particular, western Japan often experienced heavy rains.

The Baiu (a cloudy and rainy period of early summer in Japan) onsets from western Japan (with the exception of the southern Kyusyu region) to the Okinawa region were later than normal, especially the onsets in western Japan (with the exception of the southern Kyusyu region) were the latest since 1951. The Baiu withdrawals from eastern Japan (with the exception of the Hokuriku region) to the Okinawa region were also later than normal because of the substantial delay of northward migration of the stationary front.

KMA: Summer temperature over the South Korea was 24.1℃, 0.5℃ higher than the climatological mean value but was 1.3℃ lower than the summer temperature in 2018. Temperature during early summer (June~early July) showed large temporal variability due to frequent influence of upper level trough which induced favorable condition for cold air inflow to the Korean Peninsula. Heat wave affected the Korean Peninsula during mid-July~mid-August with the development of Tibetan high and WNPSH, resulting in above-normal (+1.1℃) August temperature.

Summer precipitation over the South Korea was 496.8mm, which was less than 70% of the climatological mean value. Changma (also known as Meiyu or Baiu) front was located mostly over southern part of the Korean Peninsula during Changma period due to frequent development of upper level trough over the East Asia, making large regional difference of precipitation amount.

NAMEM: Mean temperature over Mongolia is 17.4ºC, which is 0.9ºC near normal (1981-2010) average. The June, July and August temperature anomalies were 1.3ºC, 0.7ºC and 0.7ºC respectively.

The summer total precipitation was 91.0 mm which is near normal and its monthly ratio to normal were 101.3%, 102.7%, and 85.3% for the June, July and August respectively.

Remarkable heat waves occurred in late June and August were well related with upper level ridge which were located over central Asia and Korean Peninsula that compounded stable upper level ridge over entire Mongolia for several days. Especially in later case, maximum temperature exceeded from 1ºC to 6ºC over western and north eastern part of Mongolia.

3. Current Status and Outlook of ENSO

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CMA: According to our predictions that made in October, it's likely that the warm sea surface temperature in tropical eastern Pacific are gradually turning into a neutral state, thus no ENSO

events occuring during the following winter, though some positive SST anomalies would be seen in central tropical Pacific and may have some influence on Asia's climate. Continuous positive SST anomalies in tropical central Pacific need us to further note ENSO-related climate influence over China.

KMA: KMA's ENSO prediction model simulated that the SST anomaly in Nino 3.4 r egion will remain within the range of 0℃~+0.5℃ during 2019/2020 winter, maintaini ng ENSO-neutral condition.

JMA: ENSO-neutral conditions persisted in September and are likely (60%) to continue until boreal winter.

4. Outlook for Winter 2019/20

The East Asia Winter Monsoon for the upcoming 2019/20 winter is expected to be weaker than normal.

CMA: The East Asian Winter Monsoon is weak.

The temperature of most parts of China will be warmer than normal, especially Northeast China, East China, South China and Southwest China. Northwest China will be colder than normal.

The precipitation will be above-normal in most parts of China, such as most parts of South China and West China, below normal in Northeast China.

JMA: In upper circulation fields, wave trains are expected from the mid-latitude of the Eurasia continent to around Japan with anticyclonic anomalies over the Arabian Peninsula and in and around Japan, in association with the active convections over the western part of the Indian Ocean. Therefore, the subtropical jet stream is expected to shift northward around Japan, suggesting the weaker-than-normal winter monsoon around Japan.

Furthermore, the tropospheric temperature is predicted to be above normal mainly due to the recent warming trend.

As a result, seasonal mean temperatures are expected to be above-normal tendencies in any regions of Japan. Seasonal snowfall amounts for the Sea of Japan side are expected to be below-normal tendencies.

KMA: KMA's seasonal prediction model (GloSea5) using October initial condition predicted that the East Asian Winter Monsoon and accompanying northwesterly wind toward the Korean Peninsula will be weaker than normal during coming winter season, resulting in above-normal temperature and precipitation in the South Korea.

Arctic sea ice extent over Barents/Kara Sea is still less than normal, making favorable condition for intermittent cold air outbreak to the Korean Peninsula, although mean temperature is expected to be near/above-normal owing to weak East Asian Winter Monsoon and higher-than-normal sea surface temperature over the western Pacific.

The winter precipitation over the South Korea is expected to be near normal with possibility of

regional variability due to local geographical effect.

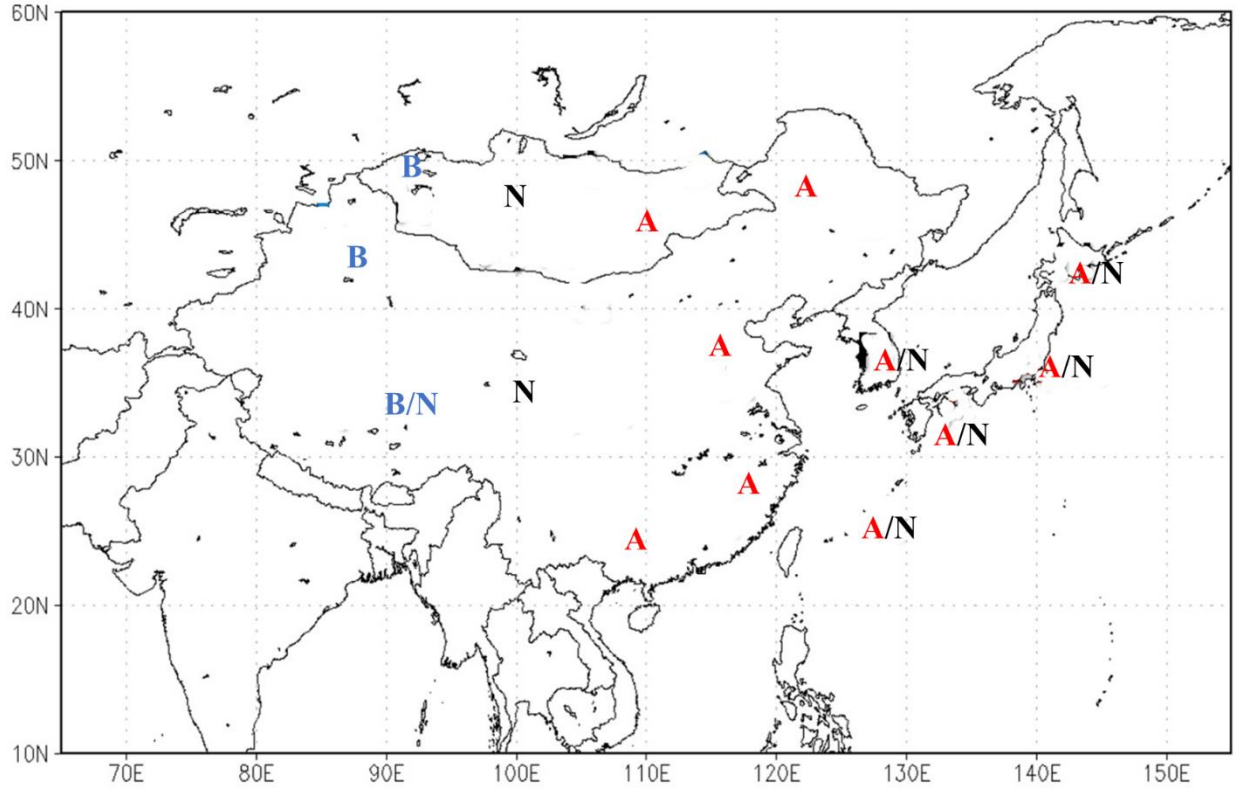
NAMEM: Siberian high is weaker than normal in beginning of winter and getting slightly stronger until boreal winter.

Therefore, temperature is below normal in west northern Mongolia, above normal in east southern part of Mongolia and near normal rest of Mongolia.

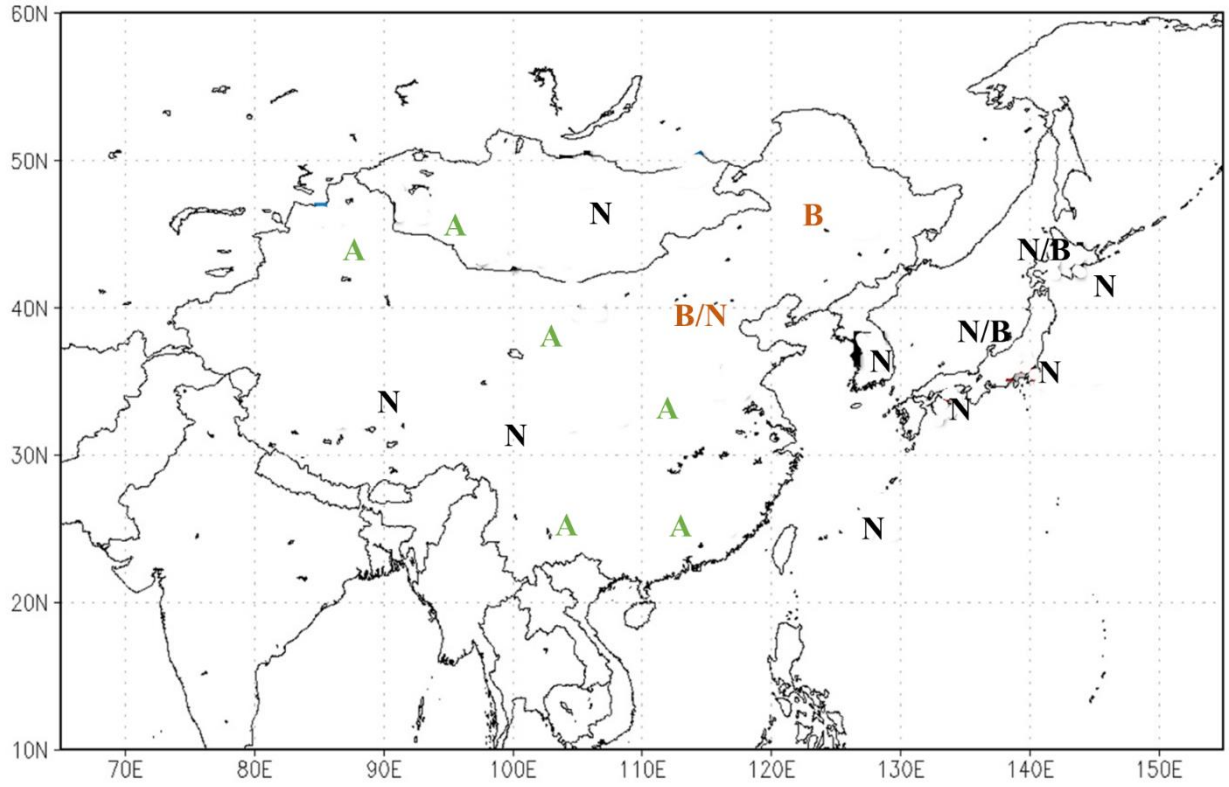
Precipitation most part of Mongolia expected to be near normal and above normal in western south of Mongolia.

Summarized prediction

Temperature



Precipitation



The designations employed in this report do not imply the expression of any opinion whatsoever on concerning the legal status of any country, territory, city or area, or of its authorities, or concerning the delimitation of its frontiers or boundaries.

5. Other Issues

5.1. All materials from the EASCOF-7 such as presentations, summary, and a list of participants will be available on the dedicated website.

5.2. As a WMO sub-regional COF, activities of the EASCOF-7 will be reported to the WMO by the NAMEM as soon as possible after the circulation to all participants.

5.3. The date and place of the EASCOF-8: The session was pleased to note that Japan will host the EASCOF-8 in October or November 2020. The time and venue will be determined later on.