

Climate Outlook for Winter 2020/21 over KOREA

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Considerate **elements** for winter prediction

**Dynamical
Models**

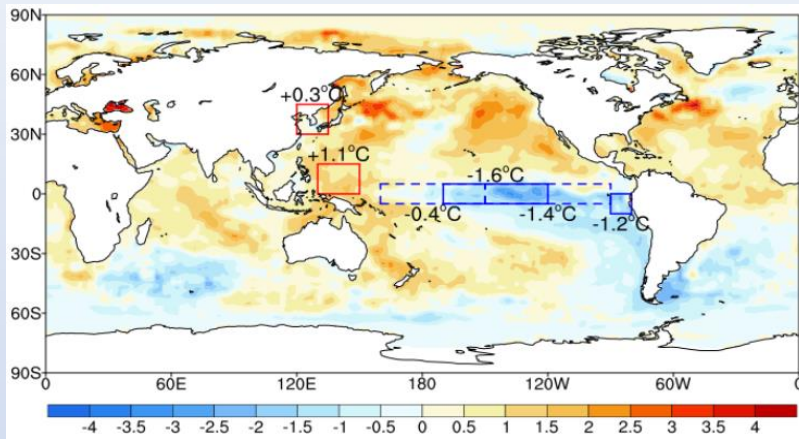
GloSea5,
WMO-LC LRFMME

ENSO

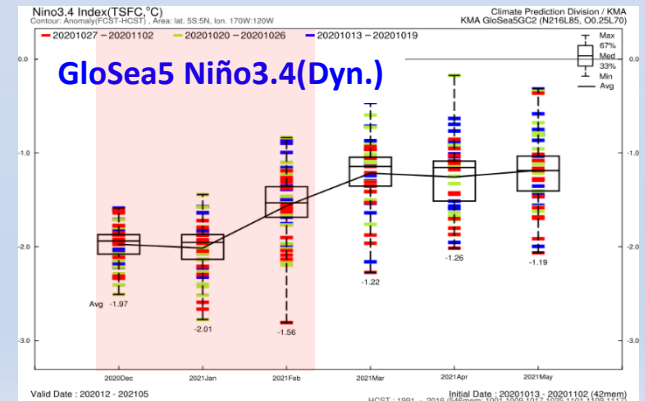
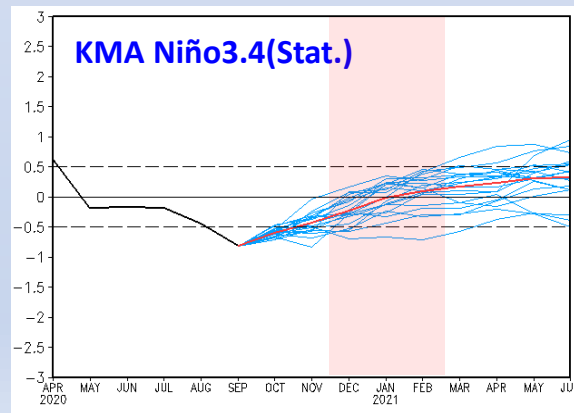
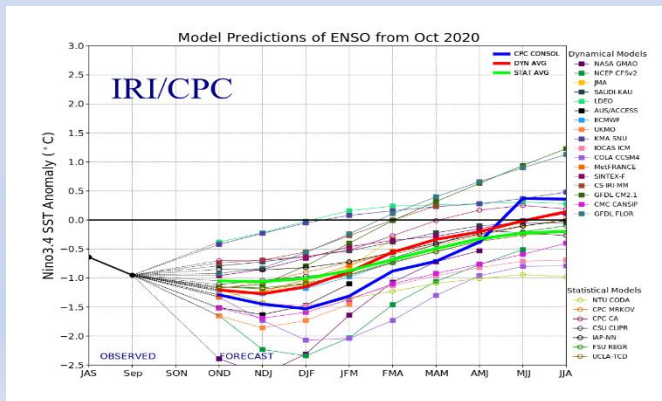
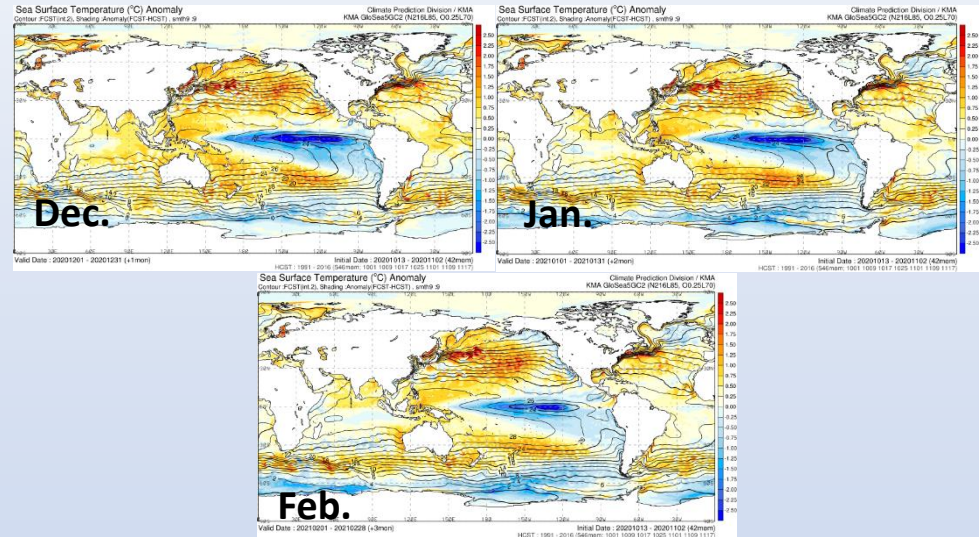
**Sea Ice &
Snow Cover**

Others

ENSO Condition and Prediction

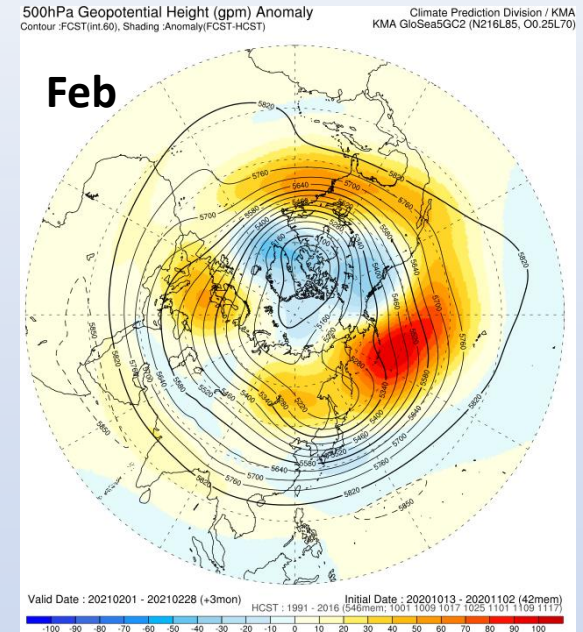
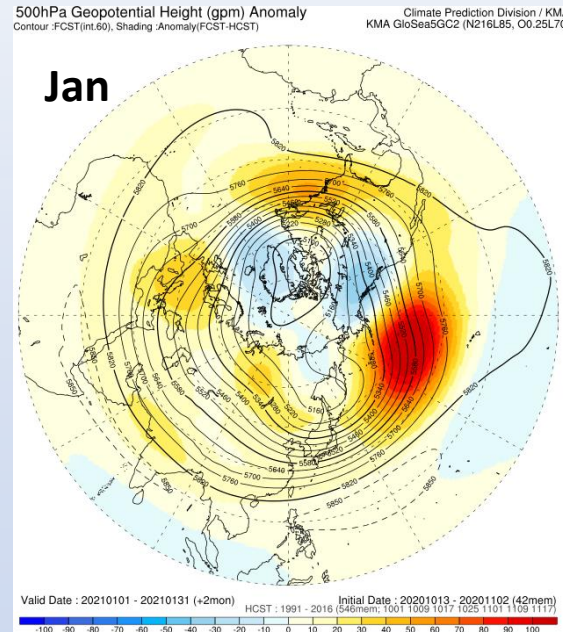
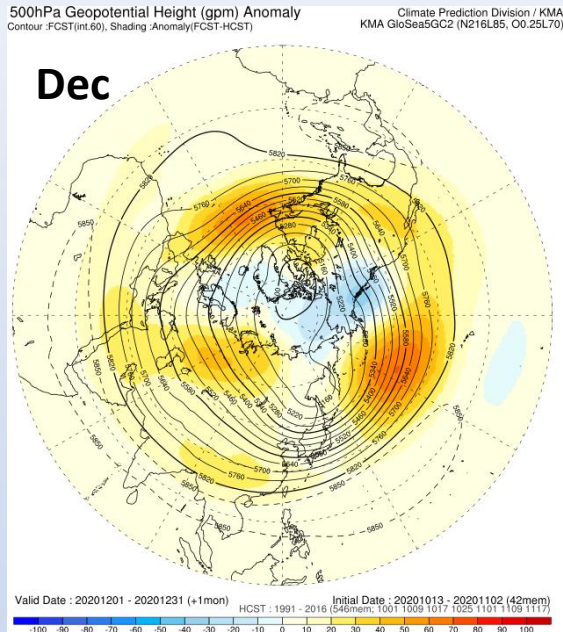


Weekly(10.25. ~ 31.) SST anomaly over Niño3.4

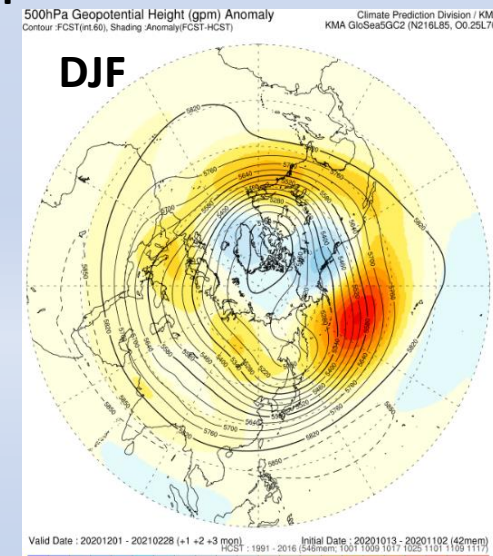


- ▶ Recently Equatorial sea surface temperature of the Niño3.4 region is -1.6°C and La Niña trend is strengthening
- ▶ La Niña trend is expected to be maintained during this winter

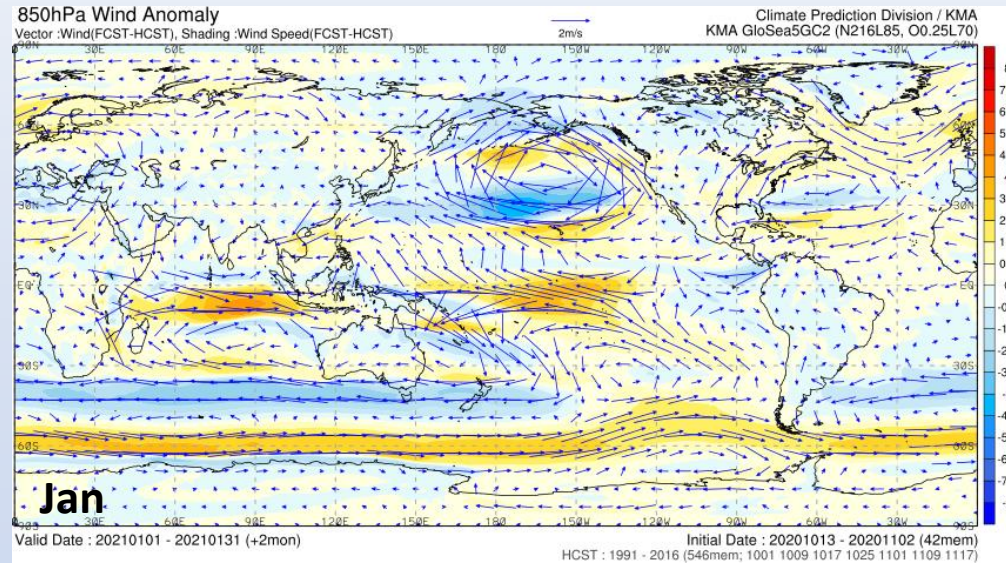
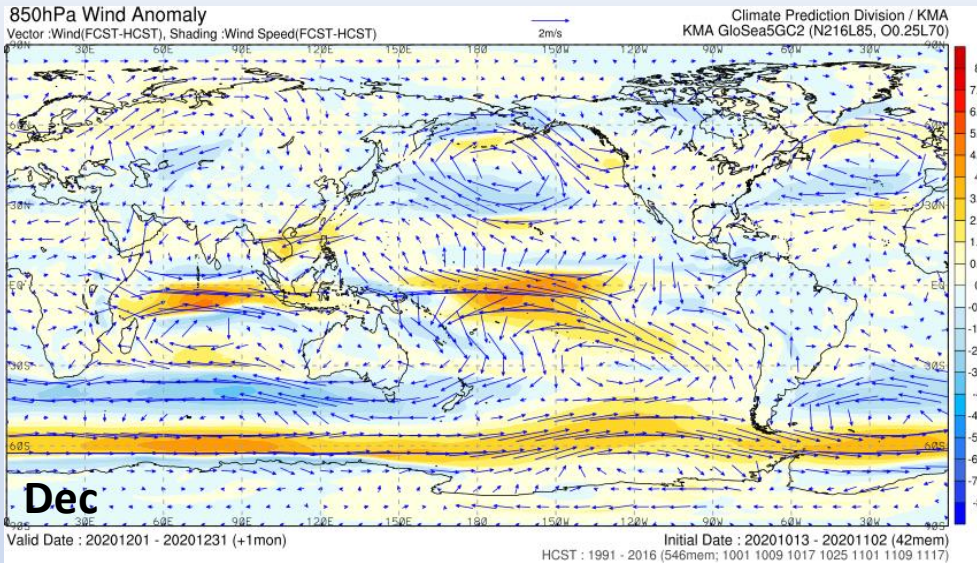
500hPa GPH anomaly(GloSea5_11.2)



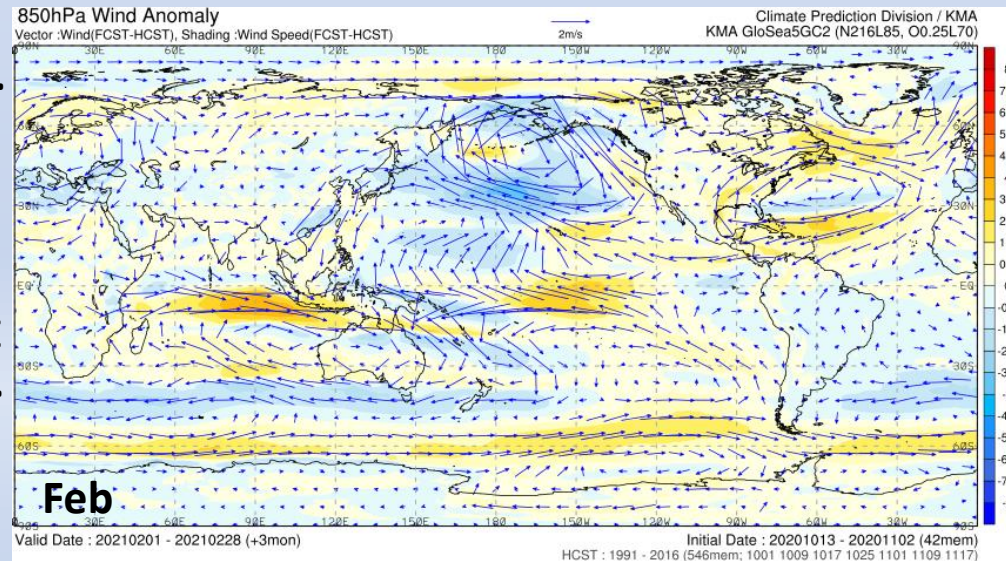
- ▶ Positive anomaly over Ural mountain in December, but It change normal in January
- ▶ Due to the strong positive anomaly from Lake Baikal to the Bering Sea in February, Korea and Japan are expected to be affected by negative anomaly
- ▶ Winter temperature over Korea is expected to be normal, but when the cold Siberian high extends in the early winter, the temperature will drop significantly.



850hPa Wind Anomaly(GloSea5_11.2)

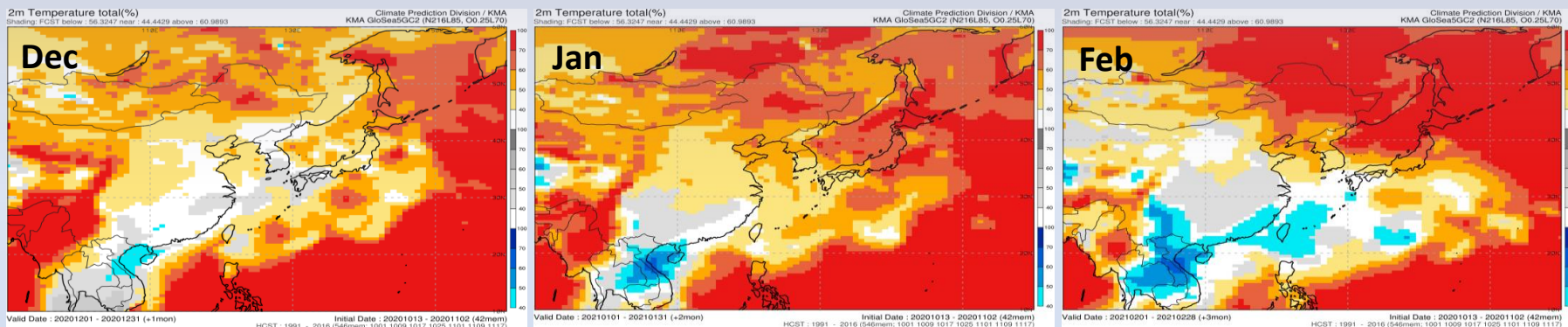


- ▶ In December, Anti-cyclonic anomaly over the Ural Mt. and Bering Sea
- ▶ In January, Anti-cyclonic anomaly over the Ural Mt. is weakened. And Anti-cyclonic anomaly can be seen moving to the east and located near Lake Baikal
- ▶ In February, Korea is expected to be influenced by NE wind due to Anti-cyclonic circulation over Bering Sea.



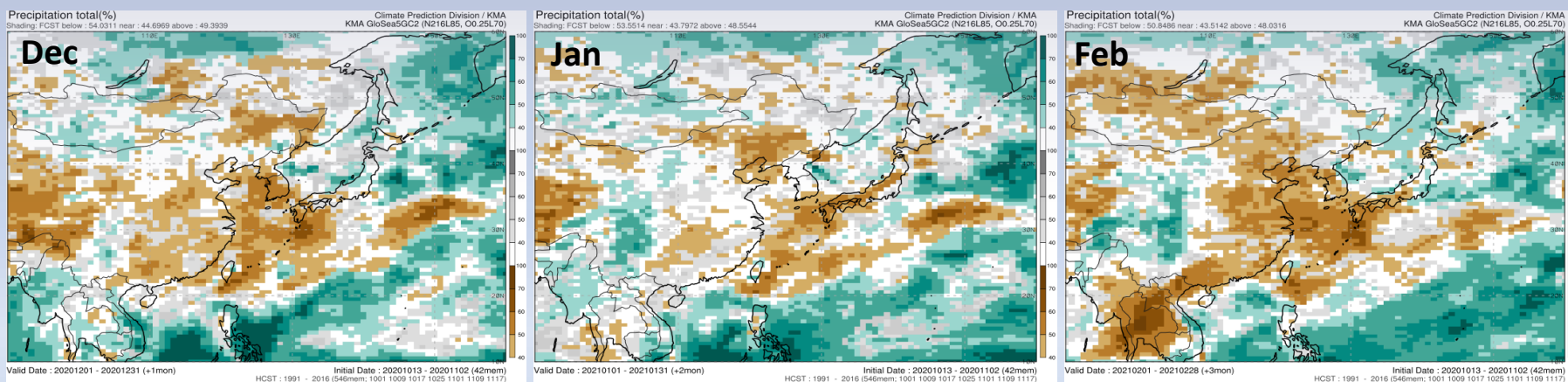
Probabilistic Prediction (GloSea5_11.2)

Probability distribution of Temperature



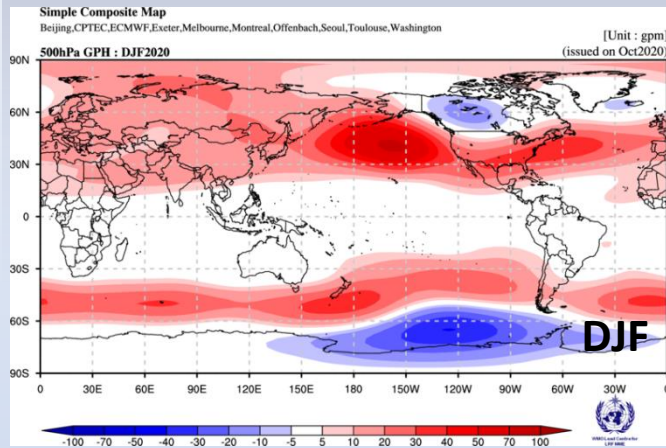
- ▶ Near or above-normal temperature in most East Asian regions and below normal in South-Western region of China

Probability distribution of Precipitation

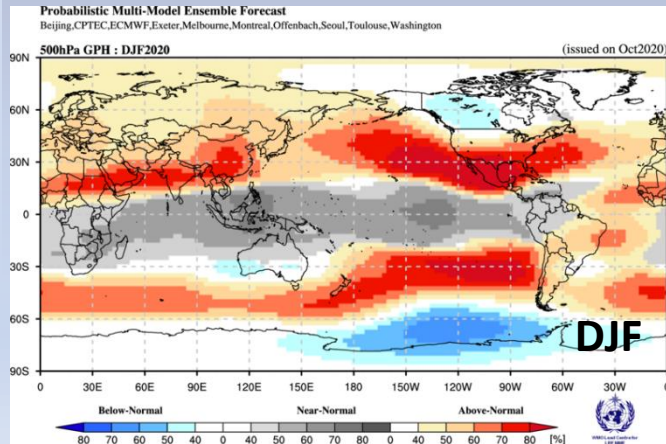
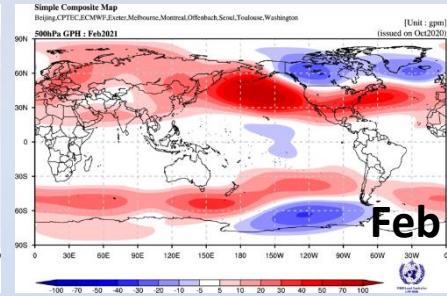
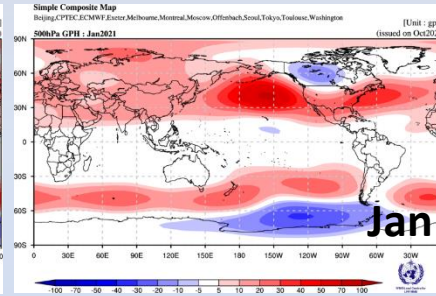
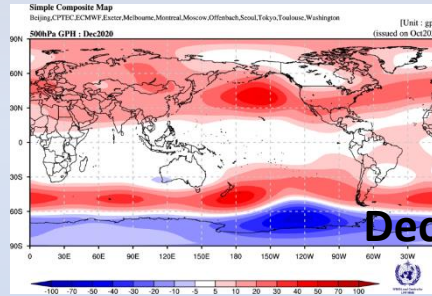


- ▶ Less than normal in North-East region of China

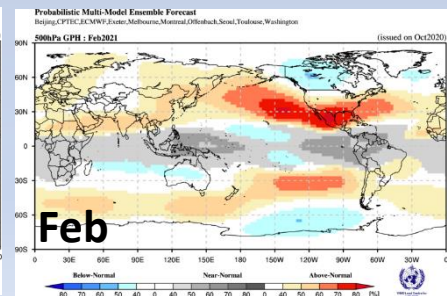
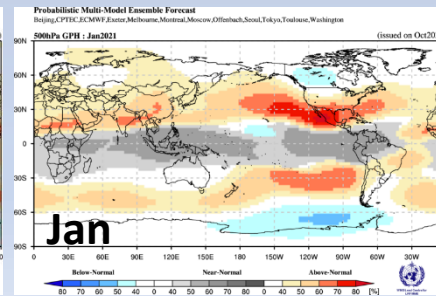
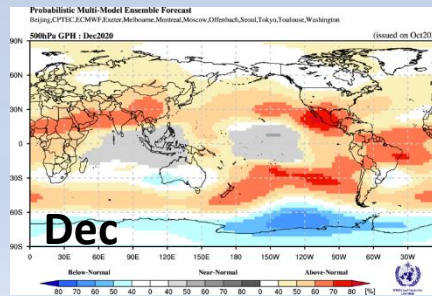
500hPa GPH anomaly (WMO LC-LRFMME)



SCM



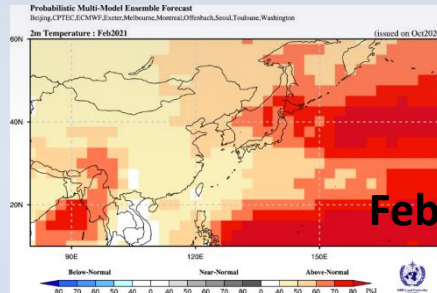
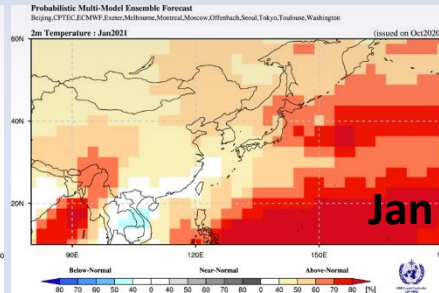
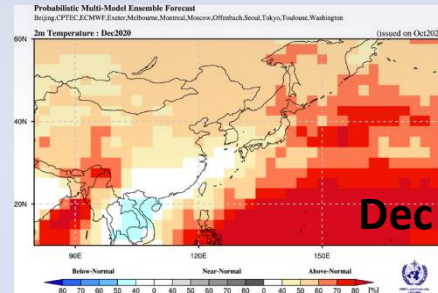
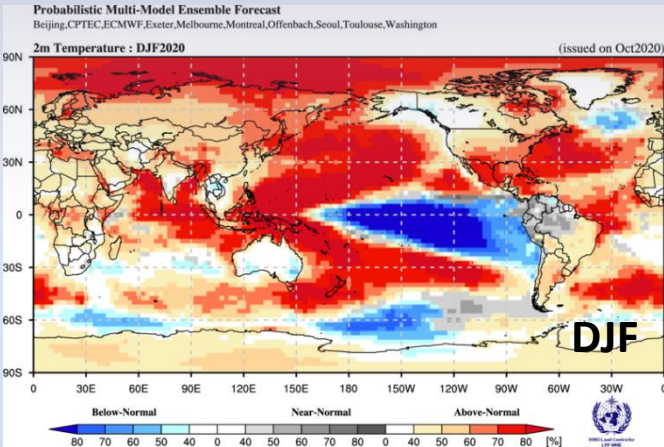
PMME



► In both models, Positive anomaly in most of East Asia, including Korea.

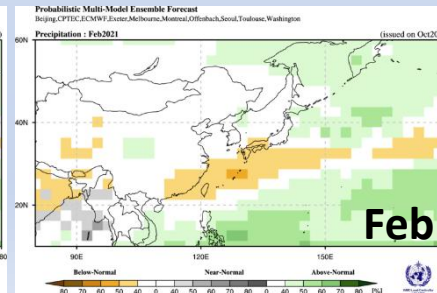
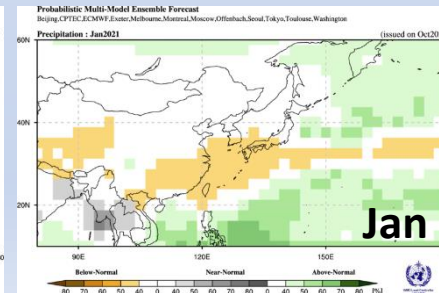
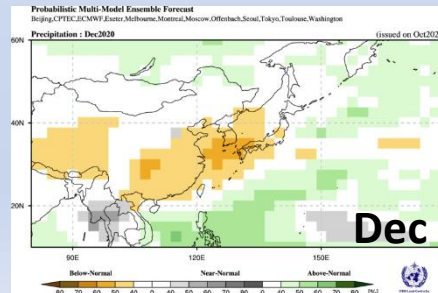
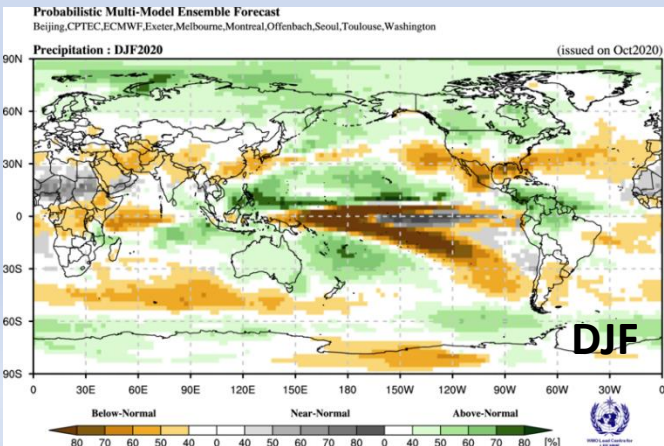
2m Temperature & Precipitation anomaly (WMO LC-LRFMME)

Probability of temperature



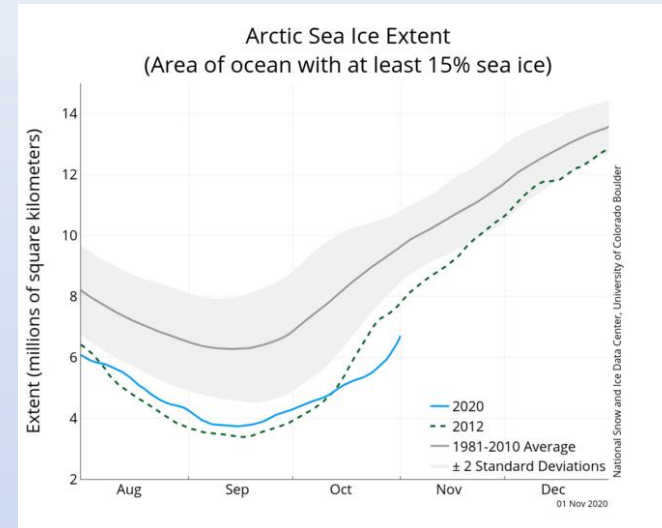
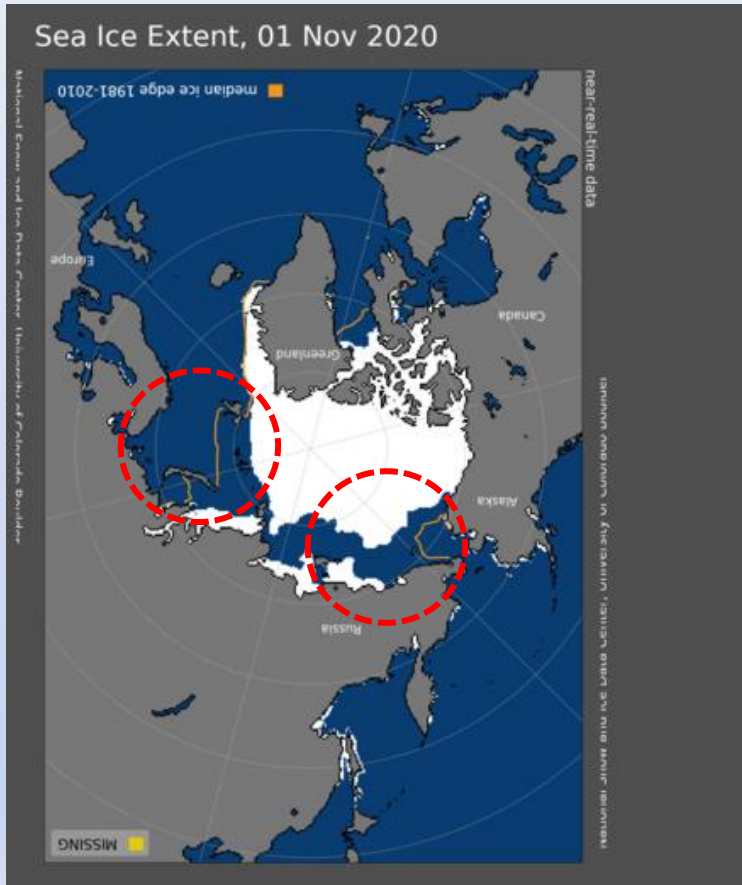
- ▶ Most East Asian regions shows above-normal temperature and lower than normal near India and South-Western China

Probability of precipitation



- ▶ Below normal near South-Western China, Korea, and Japan
- ▶ Near or slightly above normal over other regions

Arctic Sea Ice



Currently, the arctic sea ice extent is less than normal.

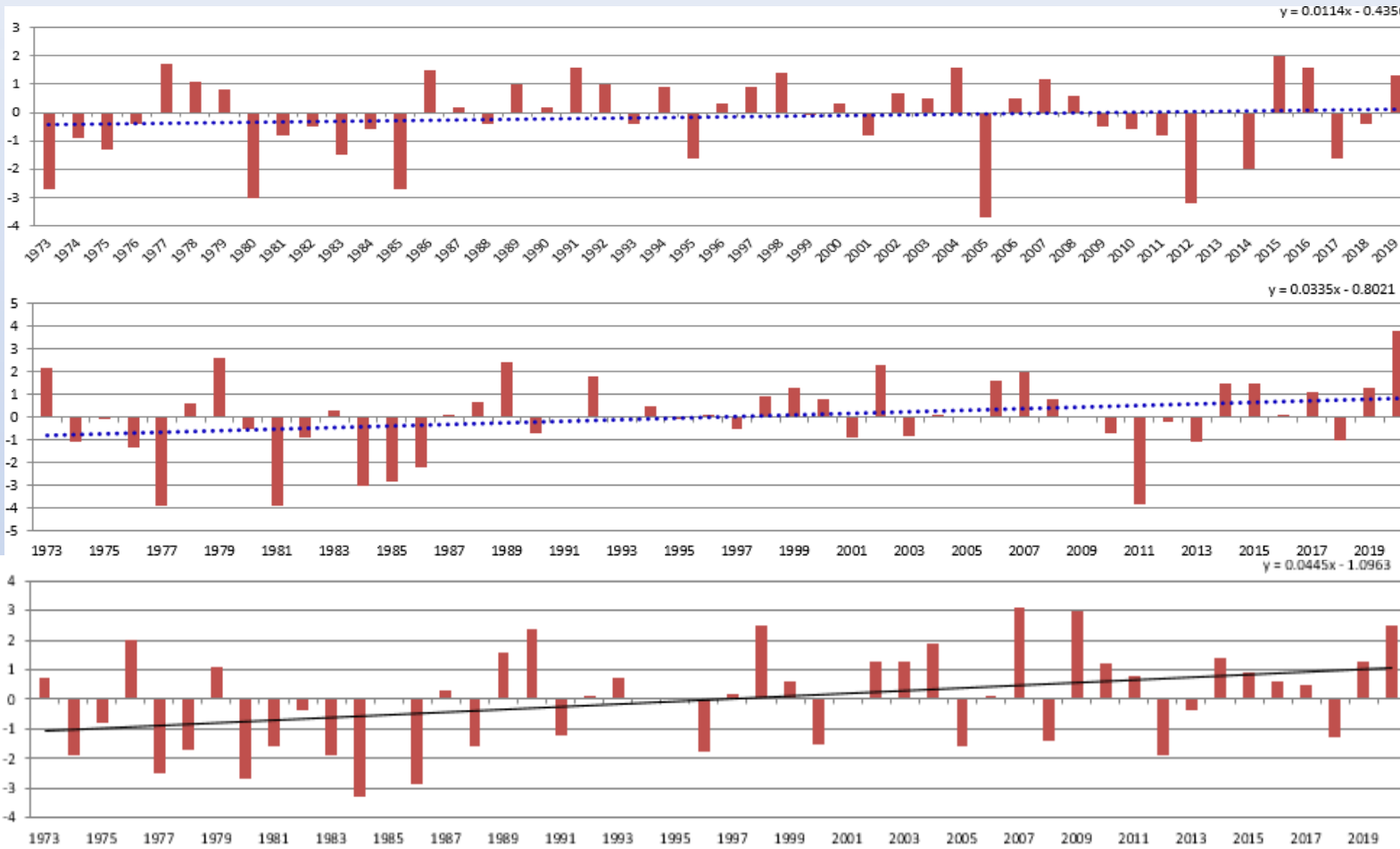
Especially, there are opened sea ice in chukchi and Kara-Barents sea yet.

Less than normal sea ice extent is likely to develop blocking. Ural blocking can bring coldness to East Asia.

Trend of Observed Temperature

Recently monthly mean temperature for December has larger inter-annual variation than the others.

Trend of Mean Temperature over Korea



Dec

0.5°C / 46yr

Jan

1.6°C / 47yr

Feb

2.1°C / 47yr

Since 1973, the temperature of Korea has increasing trend for each month of winter
In Feb, the warming trend was +2.1°C/47yr, which is bigger than other months

Summary

■ Consideration for prediction

- ENSO will be expected to be **La nina** during the coming winter season.
- Most dynamic model results show **above-normal** temperature and **below-normal** precipitation.
- Statistical analyses(**arctic sea ice**) give us a little **below-normal** temperature for early winter.
- **The East Asia Winter monsoon** is predicted to be **near normal, but a little stronger** than normal in **early winter**.

■ 2020/21 winter outlook over KOREA

	Temperature			Precipitation		
	Below Normal	Near normal	Above normal	Below Normal	Near normal	Above normal
Winter	30	40	30	40	40	20

Thank you !!