


Seasonal Outlook for Summer 2018 over Japan



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JMA Seasonal EPS (upgraded in June 2015)

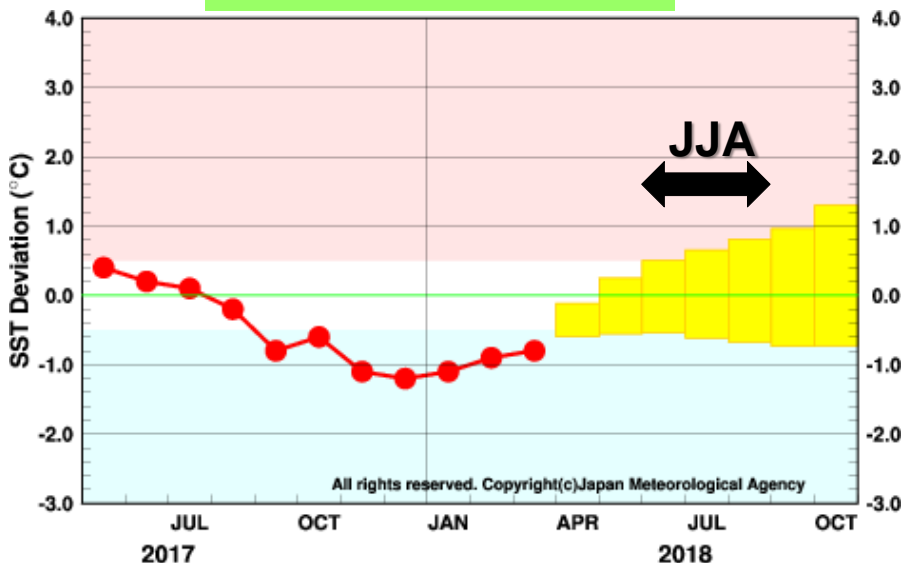
Model	<p>CGCM (MRI/JMA-CGCM2)</p> <ul style="list-style-type: none"> ● Atmospheric component Resolution: Horizontal; about 110 km, Vertical; 60 vertical levels (<u>T_L159 L60</u>) ● Oceanic component Resolution: Horizontal; 1.0° lon., 0.3–0.5° lat. Vertical levels; 52 + bottom boundary layer Sea ice model is employed.
Ensemble size	•Size: 51 (13 BGMs & 4 initial days with 5-day LAF)
Frequency of forecast issuance	Once a month (around 20th of every month)

◆ In this presentation, the latest initial (Apr. 2018) are illustrated.

El Niño Outlook (Last updated: 10 April 2018)

<http://ds.data.jma.go.jp/gmd/tcc/tcc/products/elniño/outlook.html>

NINO.3 SST index



YEAR	MONTH	mean period	El Niño	ENSO neutral	La Niña
2018	FEB	DEC2017-APR2018	0	0	100
	MAR	JAN2018-MAY2018	10	0	90
	APR	FEB2018-JUN2018	0	60	40
	MAY	MAR2018-JUL2018	10	80	10
	JUN	APR2018-AUG2018	10	80	10
	JUL	MAY2018-SEP2018	10	80	10
	AUG	JUN2018-OCT2018	20	70	10

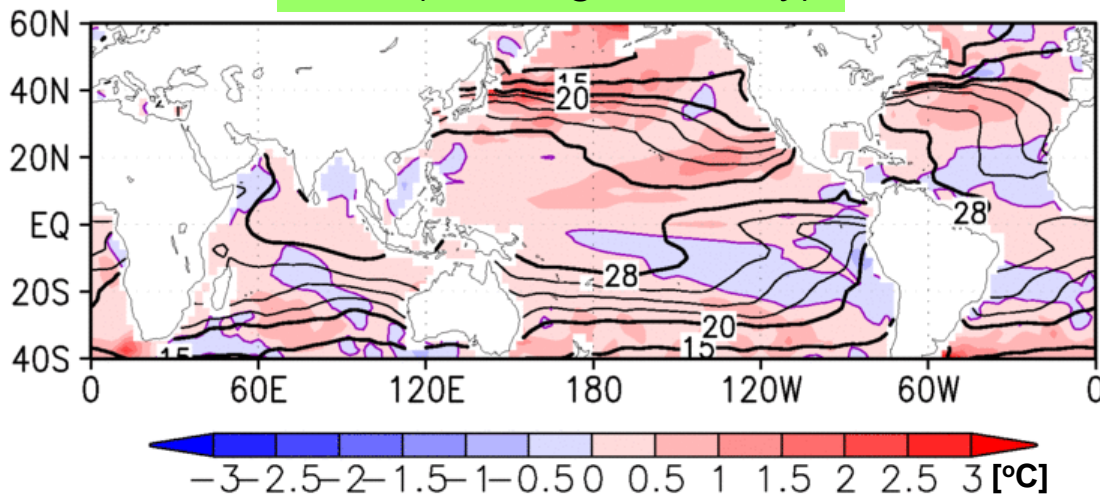
According to the El Niño Outlook issued on 10 April 2018,

- It is considered that La Niña conditions continue in the equatorial Pacific.
- It is likely that La Niña conditions will end in boreal spring (90%).
- ENSO-neutral conditions are likely during boreal summer (70%).

Sea Surface Temperature for JJA 2018

Ensemble mean

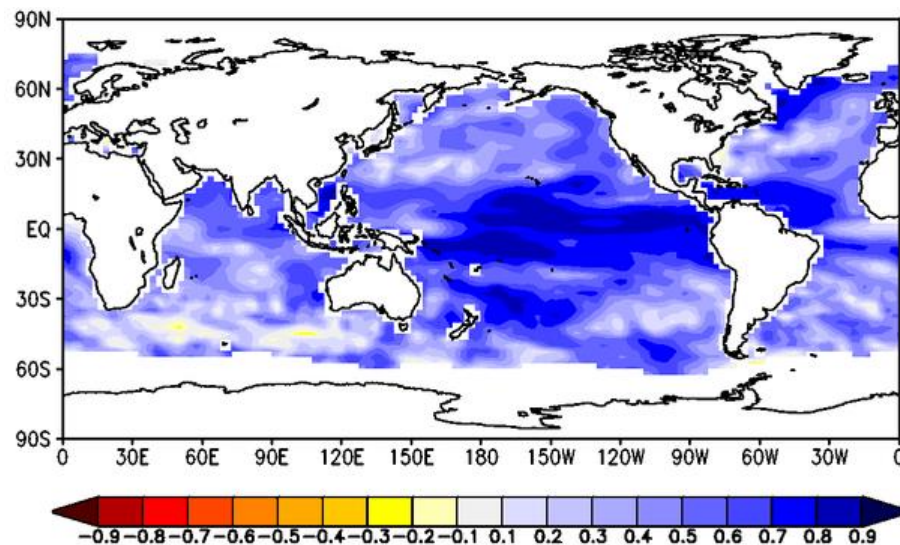
SST (shading: anomaly)



Anomaly correlation coefficient (ACC) for SST (JJA; initial: Apr.)
Blue: positive correlation

Based on 10-member hindcast for 1981-2010

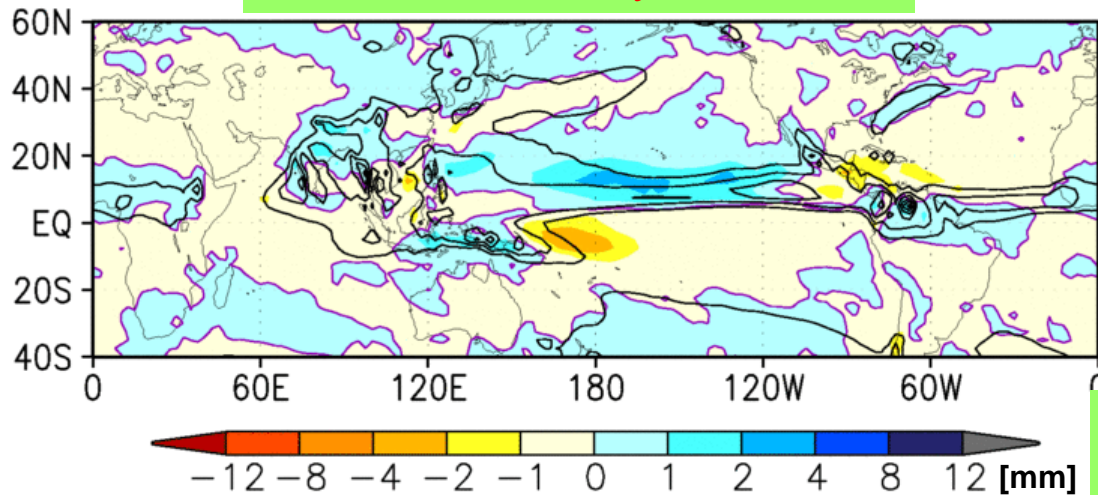
- In the eastern Pacific, ENSO-neutral conditions are likely.
- Above normal almost over the tropical North Pacific



Precipitation for JJA 2018

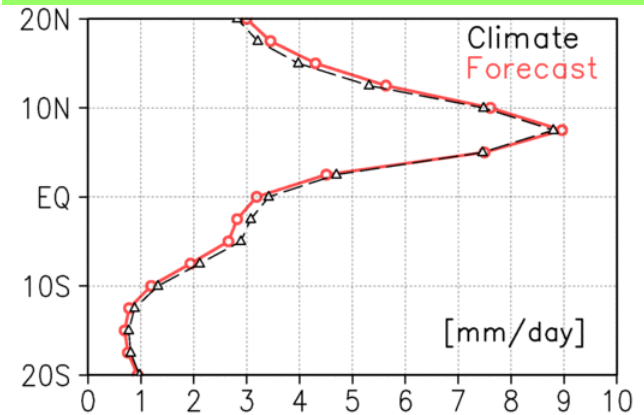
Precipitation

Blue: wet, red: dry anomalies



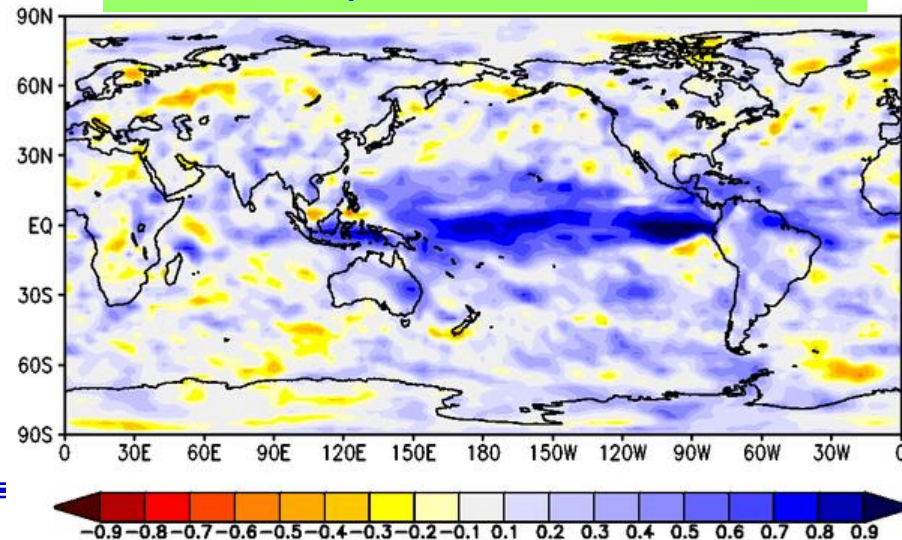
Zonal Mean

Red: forecast, black: normal



ACC for precip. (JJA; initial: Apr.)

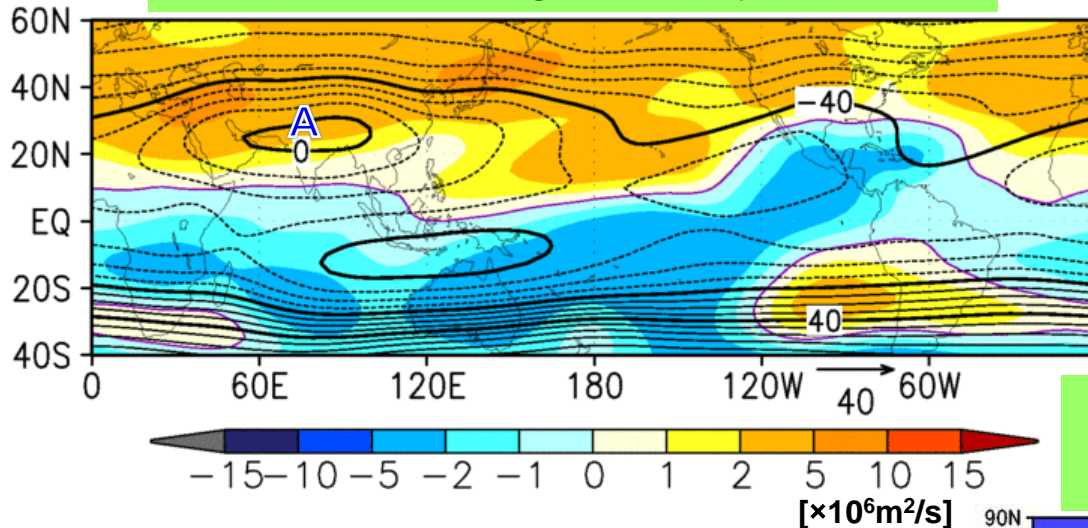
Blue: positive correlation



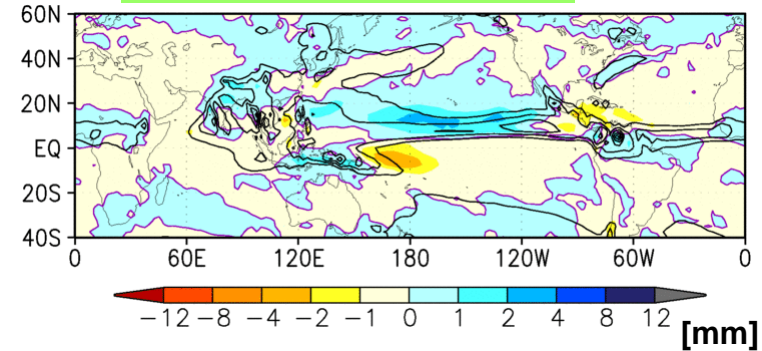
- Positive (wet) anomalies from around the Philippines to the North Pacific (10-20N), indicating **WNPM may be more active than normal**
- The general distribution shows a little northward shift.

Upper Troposphere for JJA 2018

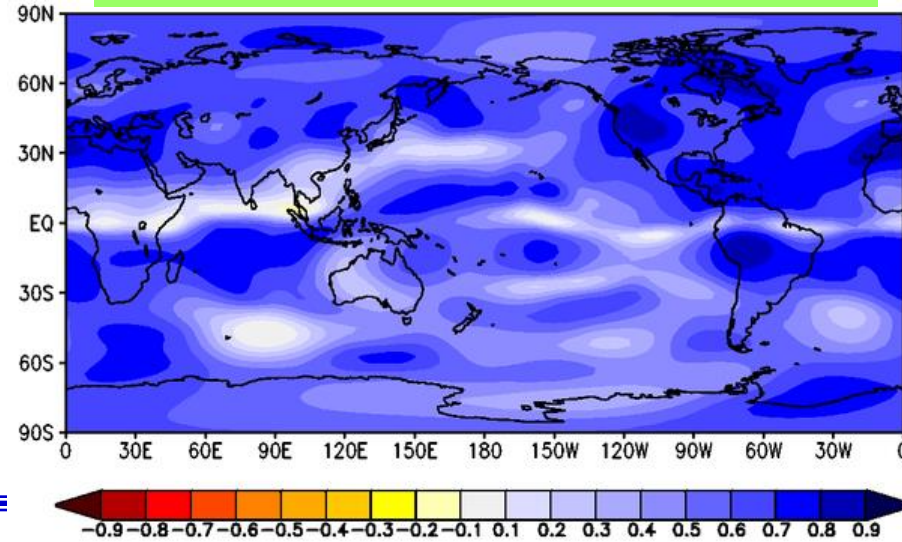
Stream function at 200hPa (PSI200)
(shading: anomaly)



Precipitation
(shading: anomaly)



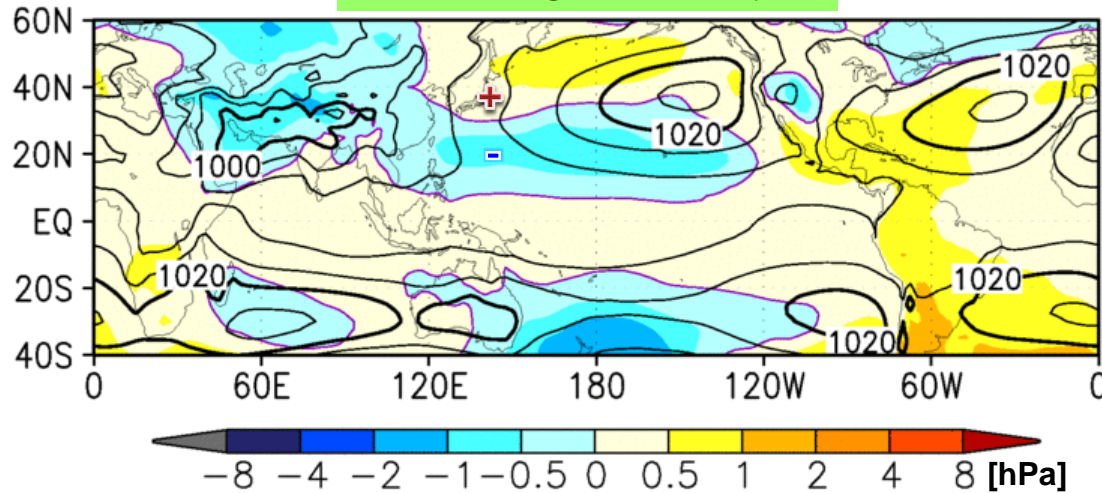
ACC for PSI200 (JJA; initial: Apr.)
Blue: positive correlation



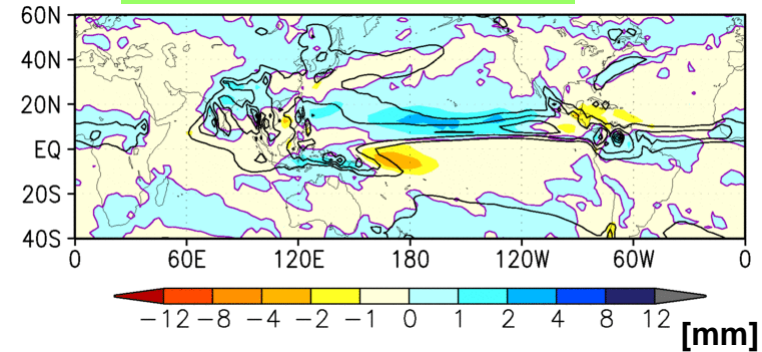
- **The Tibetan High** is stronger than normal in its northern part, and extends toward East Asia.
- **The Asian jet stream** shifts northward.

Lower Troposphere for JJA 2018

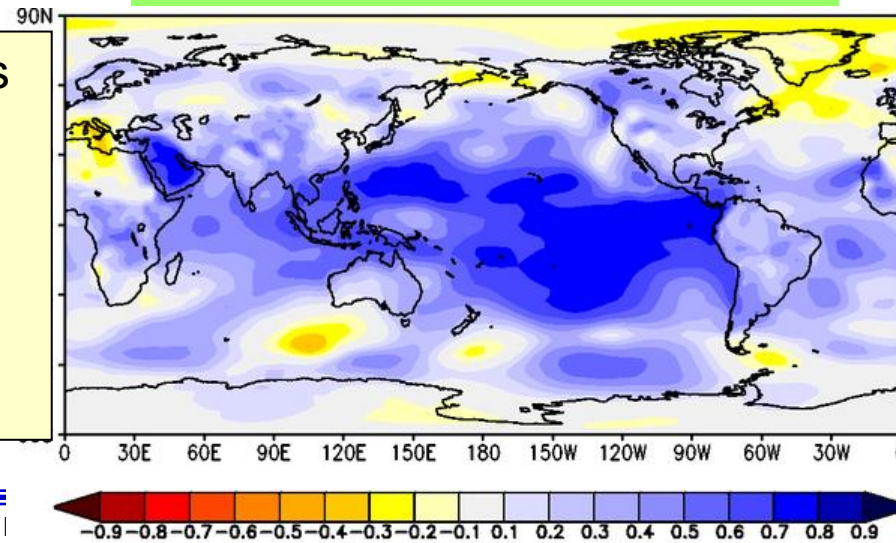
Sea level pressure
(shading: anomaly)



Precipitation
(shading: anomaly)



ACC for SLP (JJA; initial: Apr.)
Blue: positive correlation

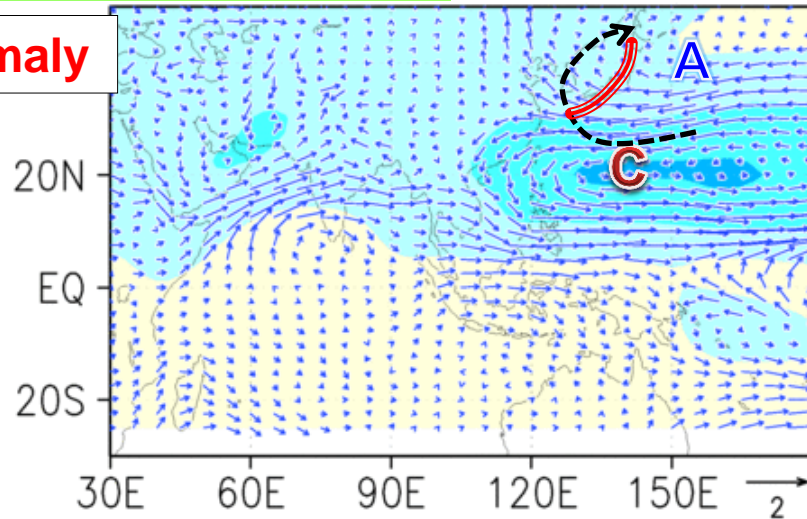


- **PJ pattern** with negative/positive anomalies to the east of the Philippines and over Japan, as a response to the active convection to the east of the Philippines.
- **The monsoon trough** shifts northward.
- **The Pacific High** extends northward.

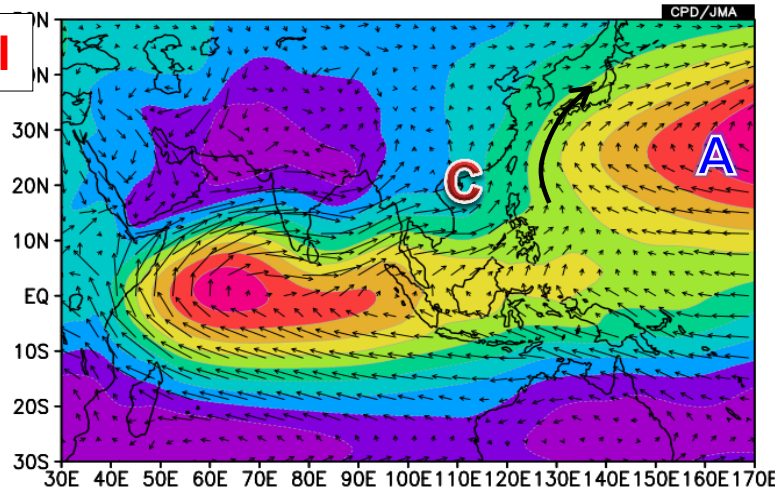
Climate in Japan for JJA 2018

850hPa wind / PSI850

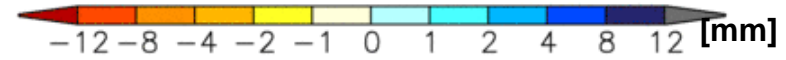
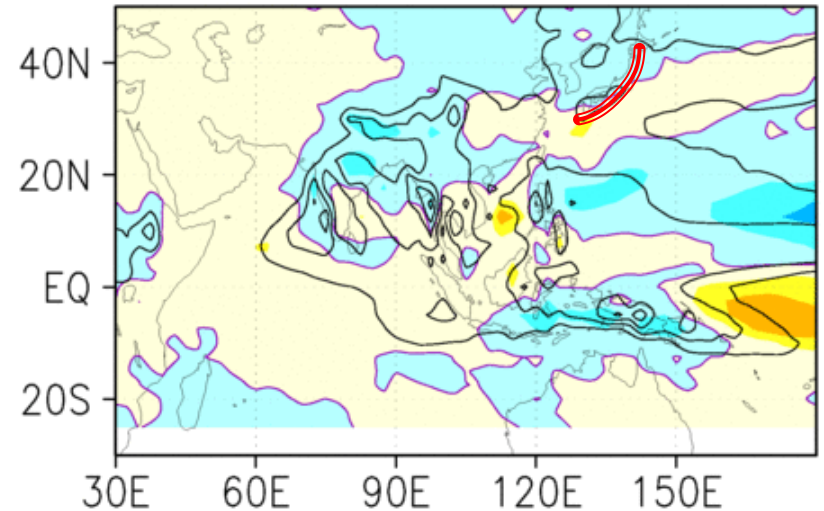
Anomaly



Normal

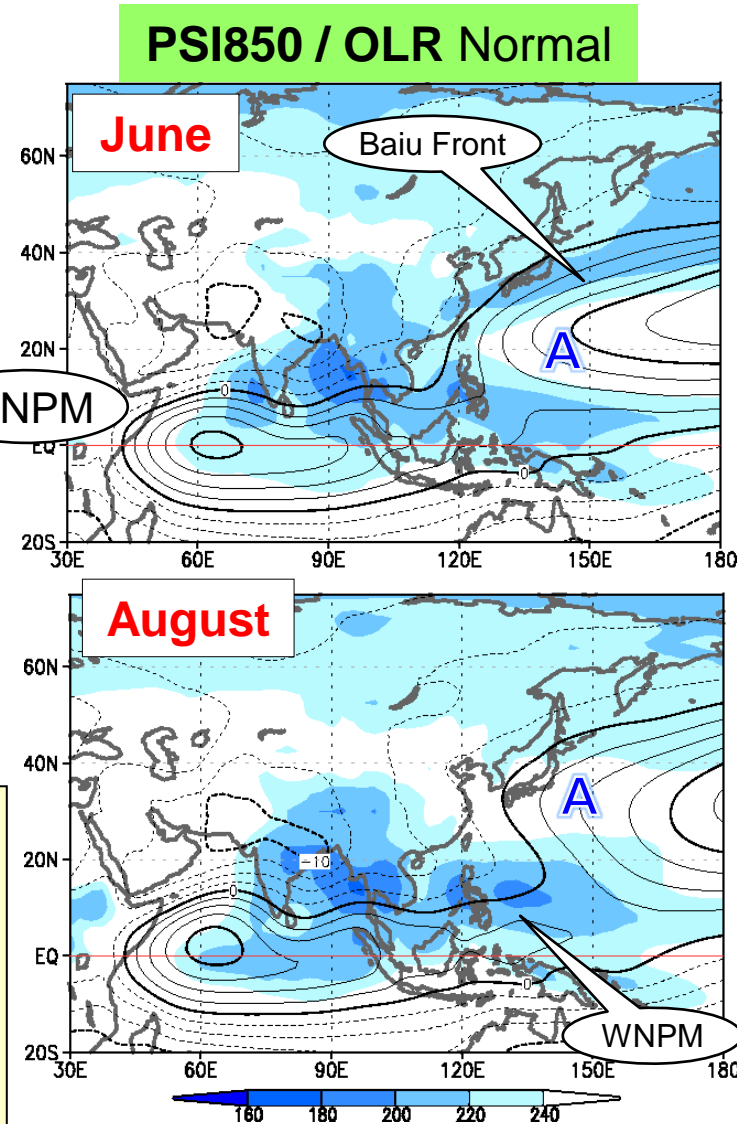
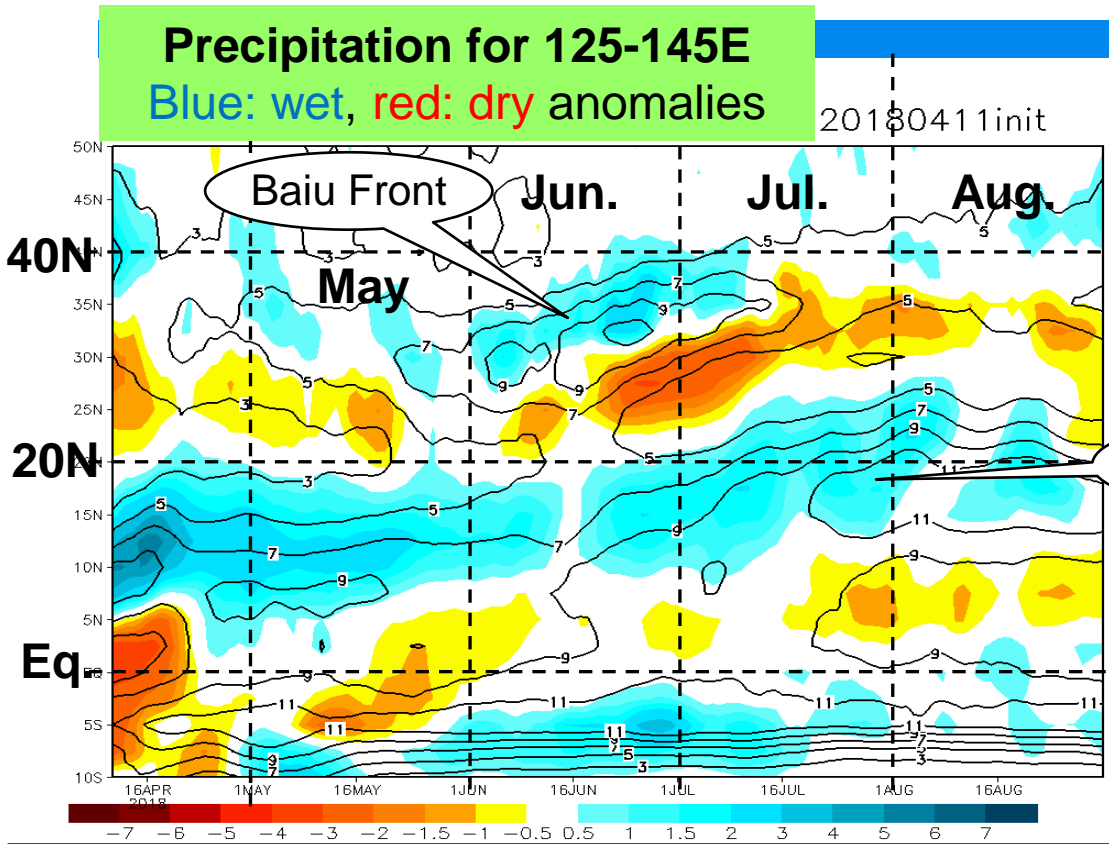


Precipitation (shading: anomaly)



- The northward extension of the Pacific High over Japan may bring drier conditions in its southern part of the country.
- Moist air could possibly flow over northern Japan along the periphery of the high.

Seasonal Progress of the East Asia Monsoon

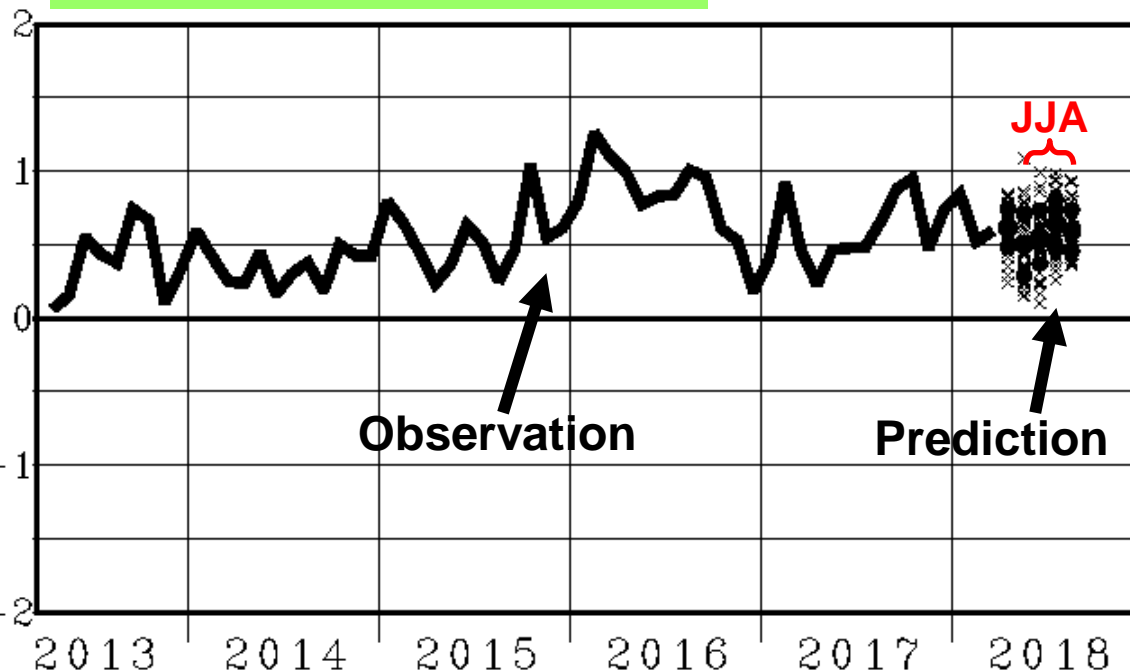


- Precipitation during the rainy season is expected to be near normal over Japan.
- But the seasonal progress of WNPM/Baiu-front is forecasted to be earlier than normal.
- In midsummer, sunny and drier condition may be expected to the south of 35N.

Tropospheric Temperature for JJA 2018

Tropospheric temperature
300-850 hPa, 30-90N

30N-90N



- Overall temperatures in the troposphere are higher than normal (about +0.6 deg.) in association with the prevailing long-term increasing trend.

- It is likely to increase the chance of above-normal temperatures.

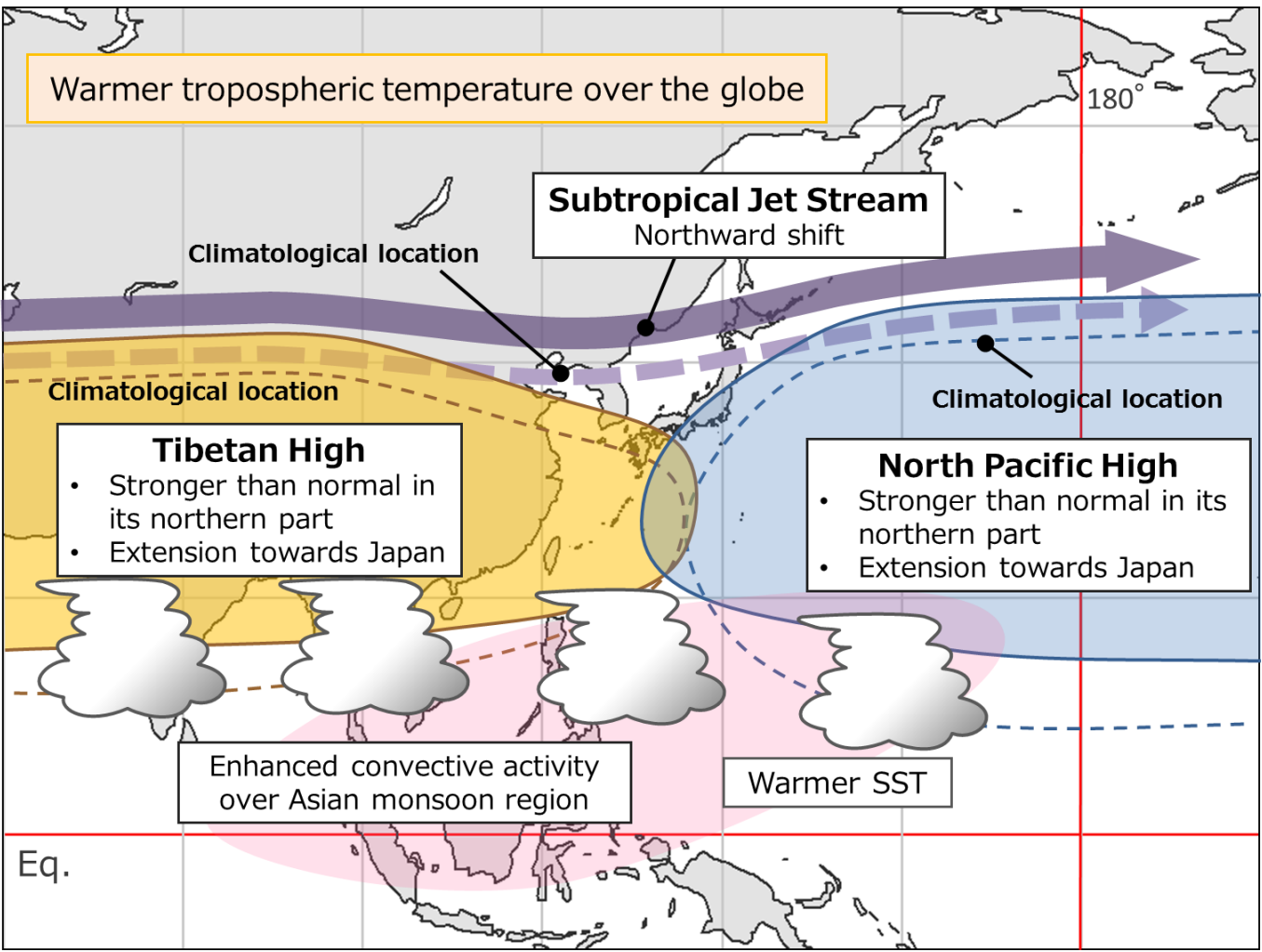
Black line : observed anomalies

Black dots(center) : predictions (ensemble mean)

x : predictions (51 ensemble member)

**ACC for 3-month mean
(JJA; initial: Apr.): +0.66**

Summary: East Asian Circulation for JJA 2018

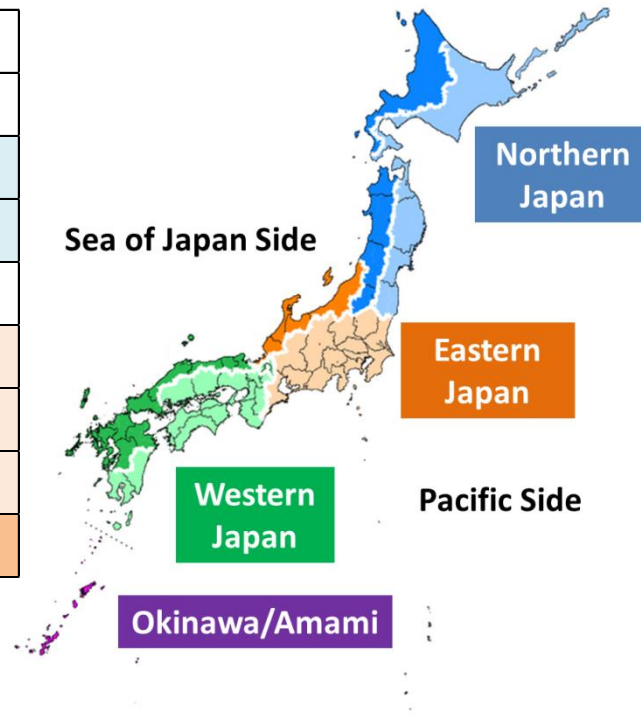


- Prevailing warming trend
- Warm SST around the western North Pacific
- Active convection over the Asian monsoon region
- The enhanced Tibetan High, and its extension towards Japan
- PJ pattern, and the extension of the Pacific High towards Japan

Outlook for JJA 2018 over Japan

Category		Temperature			Precipitation		
		-	0	+	-	0	+
Northern Japan	Sea of Japan side	20	40	40	30	30	40
	Pacific side	20	40	40	30	30	40
Eastern Japan	Sea of Japan side	20	30	50	30	40	30
	Pacific side	20	30	50	40	30	30
Western Japan	Sea of Japan side	20	30	50	40	30	30
	Pacific side	20	30	50	40	30	30
Okinawa/Amami		20	30	50	40	40	20

Category –: Below Normal, 0: Near Normal, +: Above Normal



- **Temperatures** are expected to be **above normal** all over Japan.
- **Precipitation** is expected to be **below normal tendencies in Okinawa/Amami**.
- Precipitation during rainy season (June – July) is expected to be near normal, but the seasonal progress may be earlier than normal.
As a result, in midsummer sunny/drier weather is expected in eastern/western Japan.



Thank you

