



Seasonal Outlook for summer 2012 over Japan

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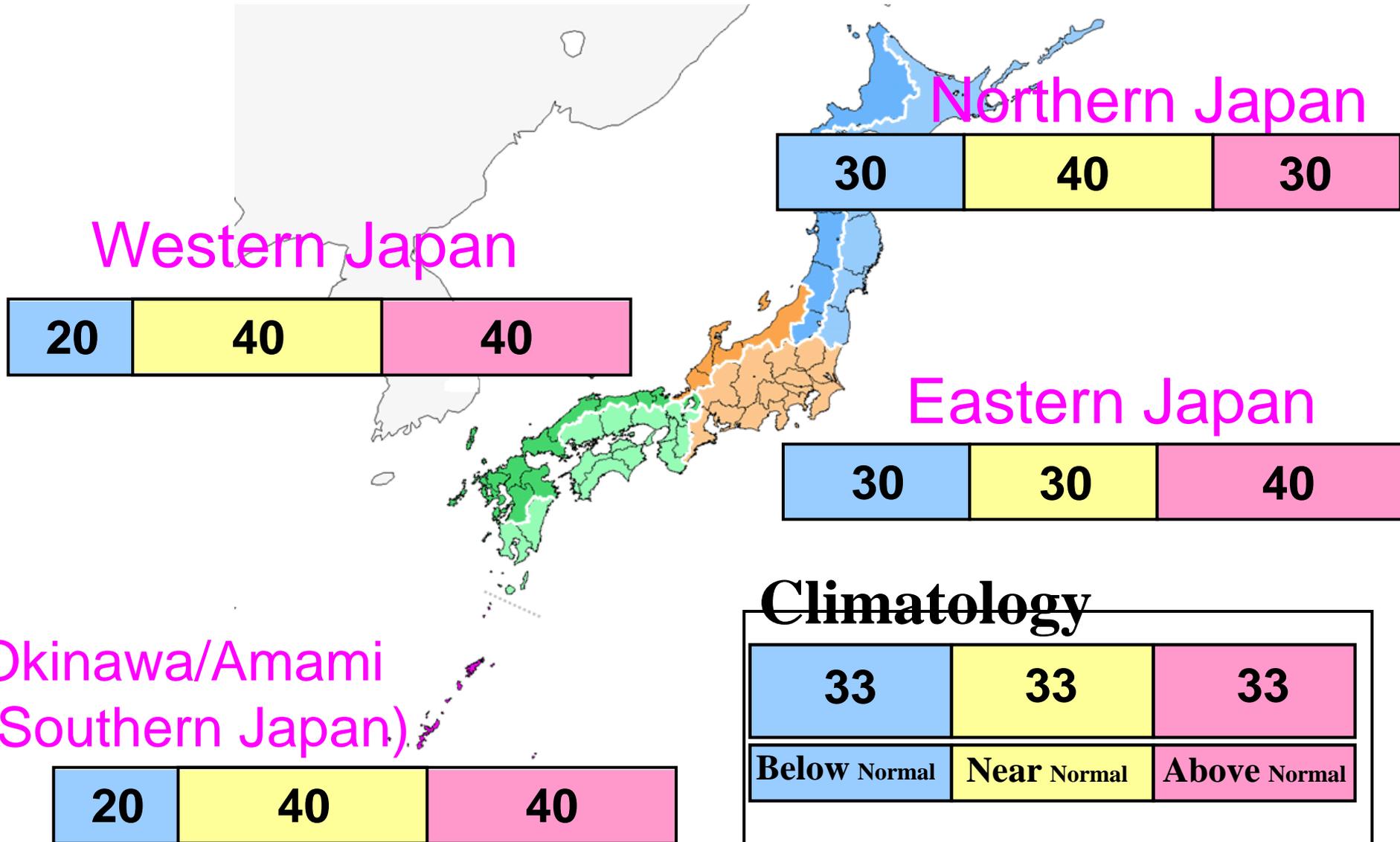


Outline

- Part I Long-term Trends for Japan
 - Part II Oceanic Condition and Outlook
 - Part III Numerical Prediction
- Summary



Probability of seasonal mean temperature for summer (June – August) 2012





Probability of seasonal mean precipitation for summer (June – August) 2012



Western Japan



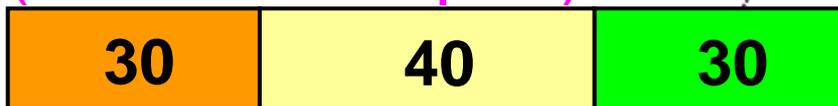
Northern Japan



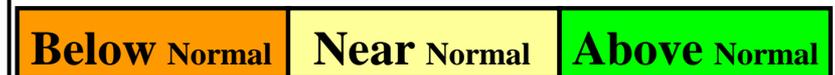
Eastern Japan



Okinawa/Amami
(Southern Japan)



Climatology





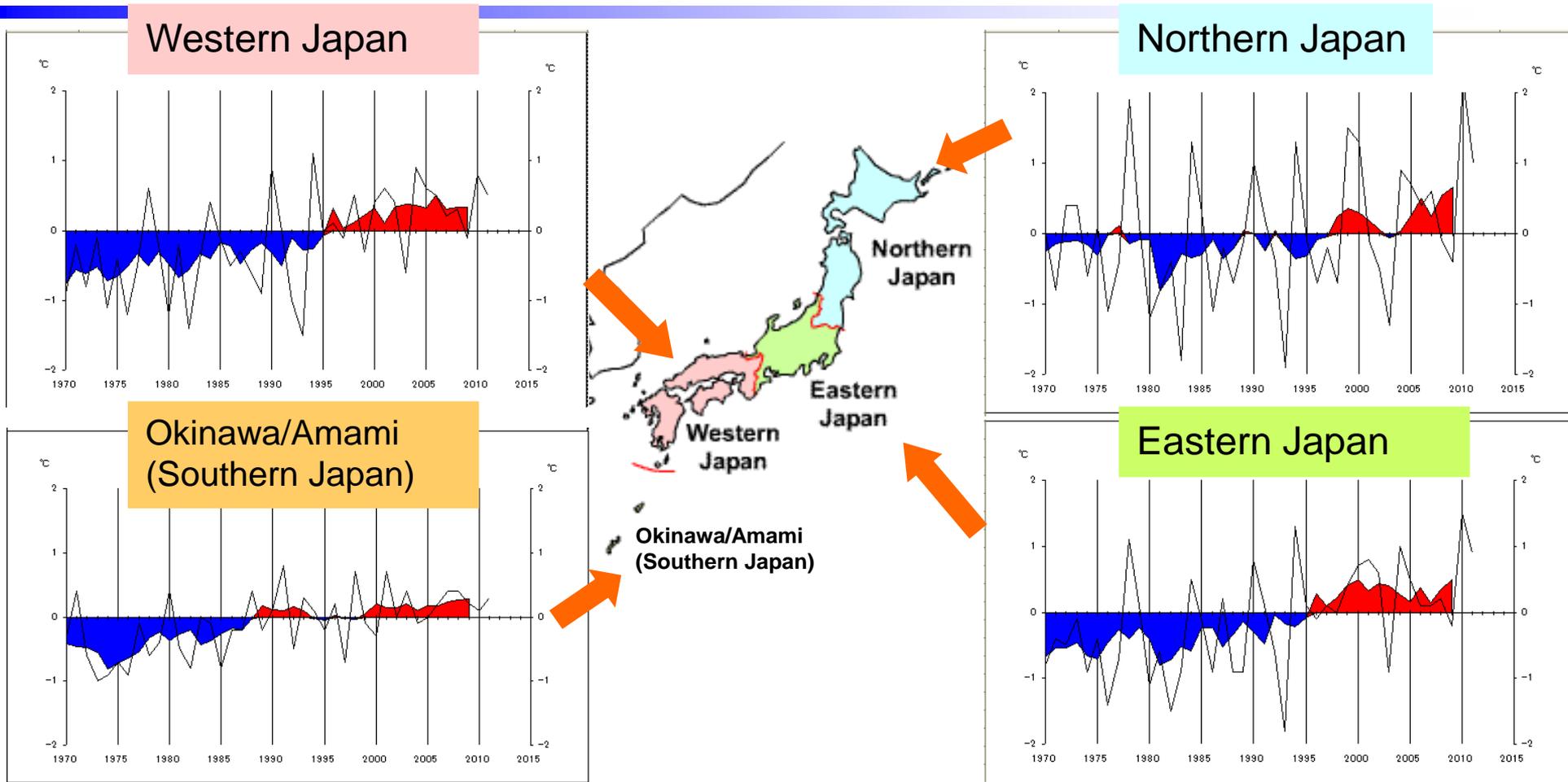
Part I

Long-term Trends for Japan



Long-term Trends

Summertime Area-averaged Temperature



Long-term upward trends are clear in the summertime temperatures over Japan except for the Northern Japan. In the Northern Japan, it has large inter-annual variability though it tends to be above normal in recent years.



Part II

Oceanic Condition and Outlook



Oceanic Condition and Outlook (1)

Statement of ENSO outlook

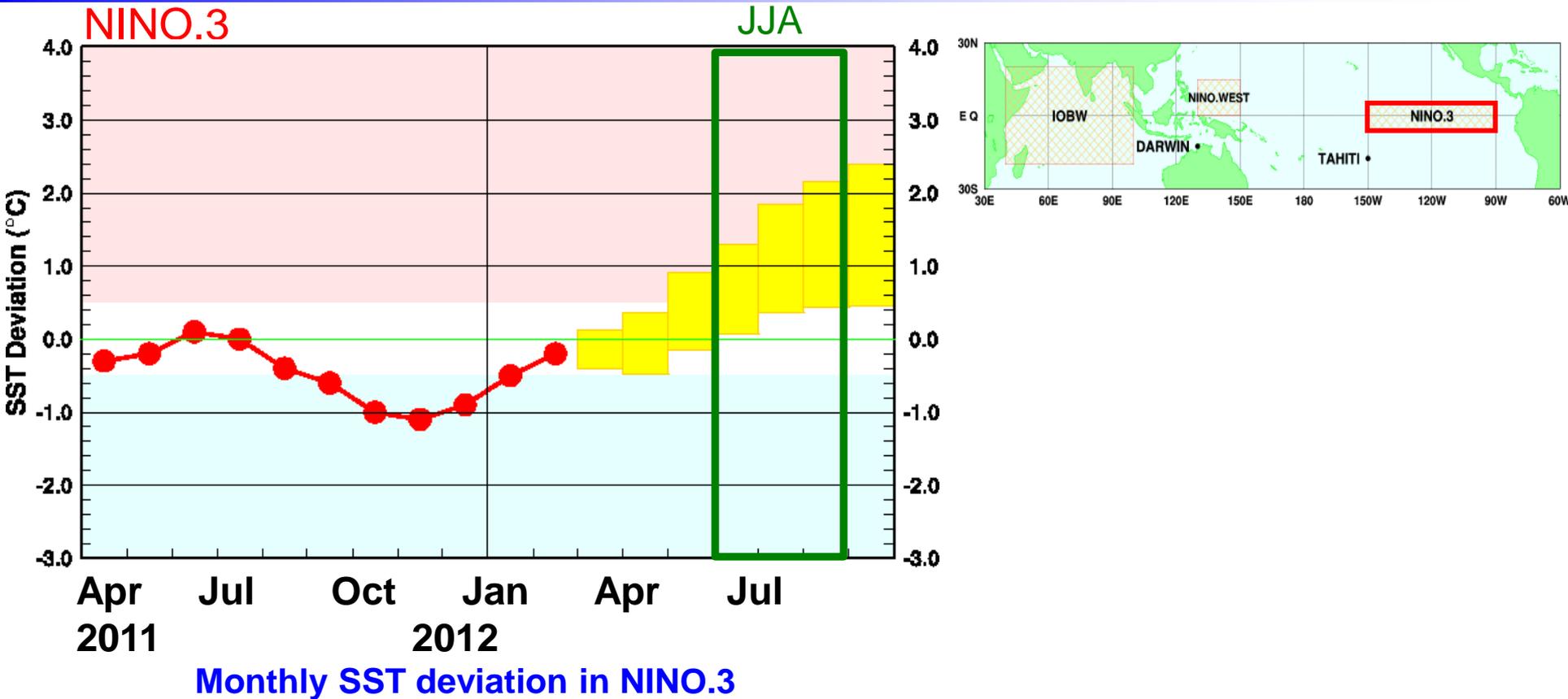
Issued in 9 March 2012

- La Niña conditions are likely to have decayed .
- It is likely that **neutral conditions** will continue from the northern hemisphere spring to summer.



Oceanic Condition and Outlook (2)

NINO.3 SST forecast



- La Niña conditions are likely to have decayed
- NINO.3 SST will be normal in spring and will transition to above normal in summer

Uncertainty of the latter half of the prediction is large.

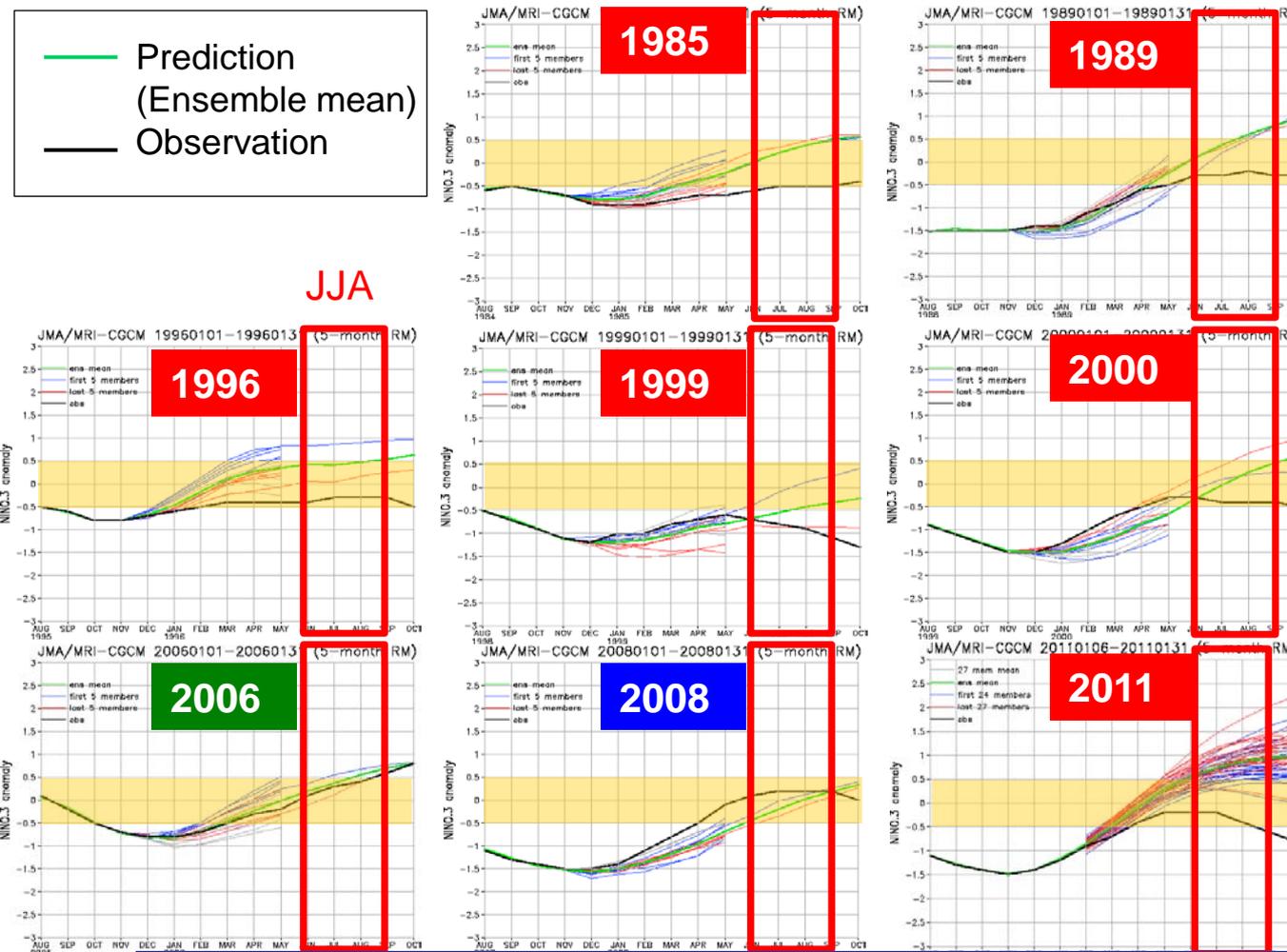


Oceanic Condition and Outlook (3)

Hindcast (prediction of NINO3 SST)

In case of La Niña in spring (end stage of La Niña)

— Prediction
(Ensemble mean)
— Observation



- Prediction skill of El Niño/La Niña condition is relatively low at the end stage of La Niña conditions in spring.
- JMA's model tends to decay La Niña conditions more quickly than observations.

6 of 8: more quickly decay
1 of 8: reasonable
1 of 8: more slowly decay

➔ Uncertainty in the prediction should be considered.



Part III

Numerical Prediction

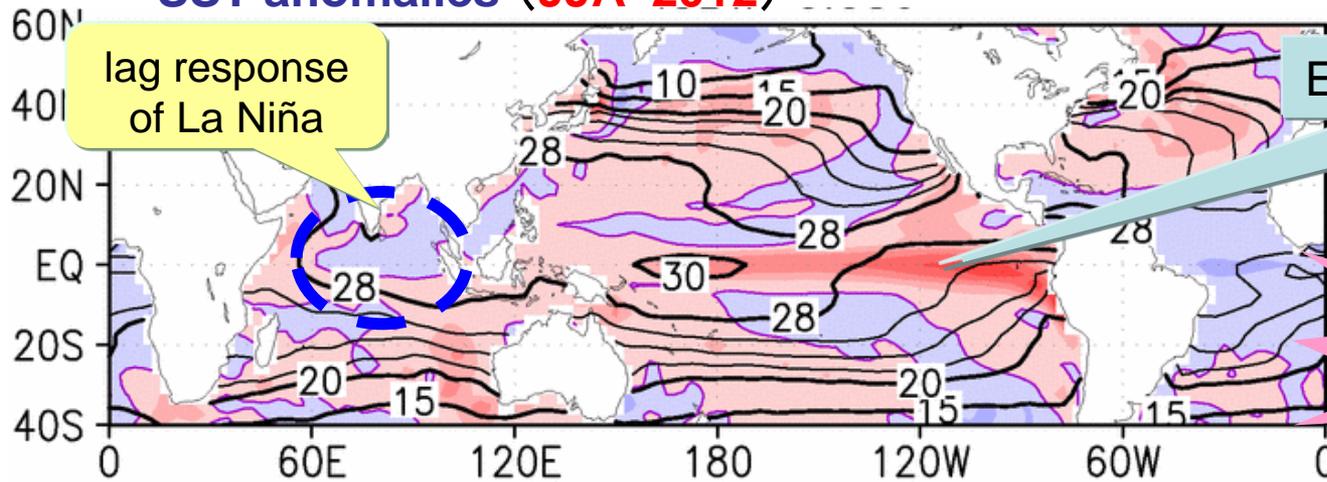


Numerical Prediction (1)

SST & Precipitation

initial date: 7 March 2012

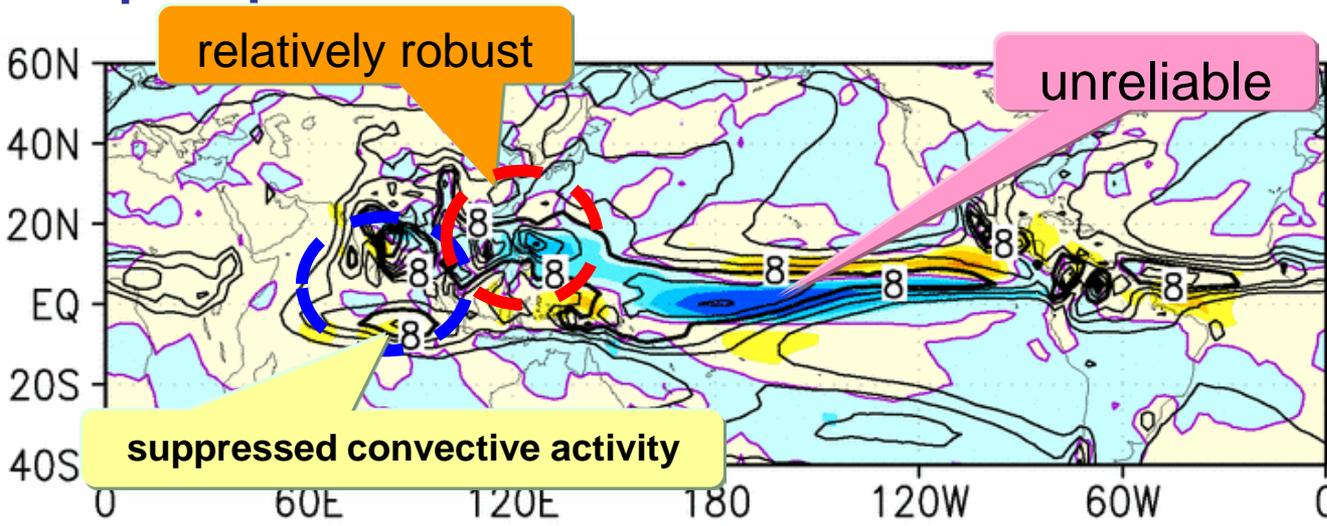
SST anomalies (JJA 2012)



El Niño-like SST pattern

unreliable

precipitation anomalies (JJA 2012)



relatively robust

unreliable

suppressed convective activity

Above-normal precipitation over the tropical Pacific and the Philippines are predicted.



Numerical Prediction (2)

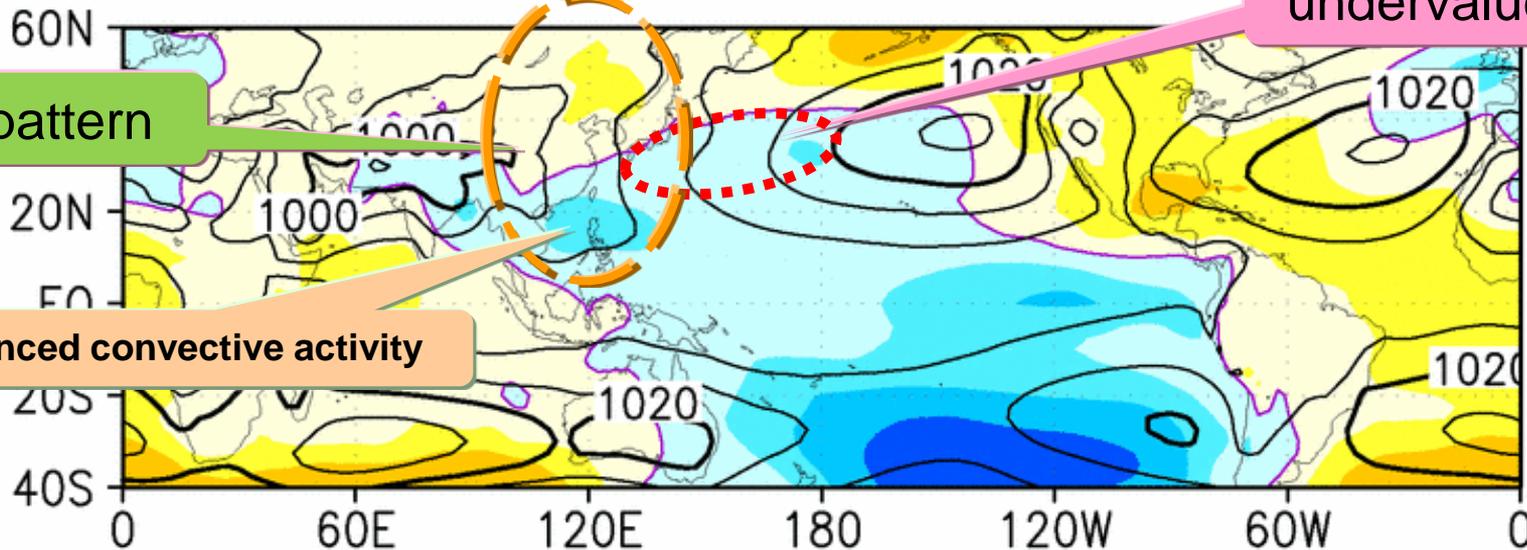
SLP & Temperature at 850hPa

Sea Level Pressure Anomalies (JJA 2012)

undervalue

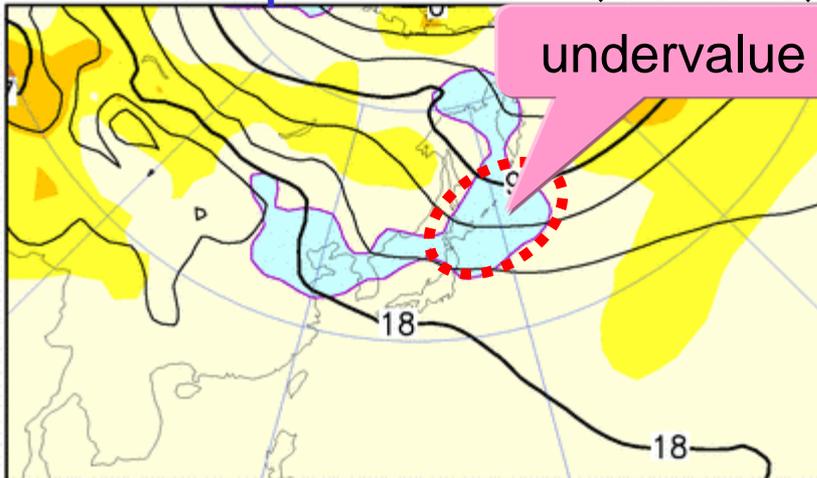
PJ pattern

enhanced convective activity



850hPa Temp. Anomalies (JJA 2012)

undervalue



- Extension of the North Pacific high : Normal
- Tibetan high : Normal

Circulation pattern around Japan will be almost normal in this summer.



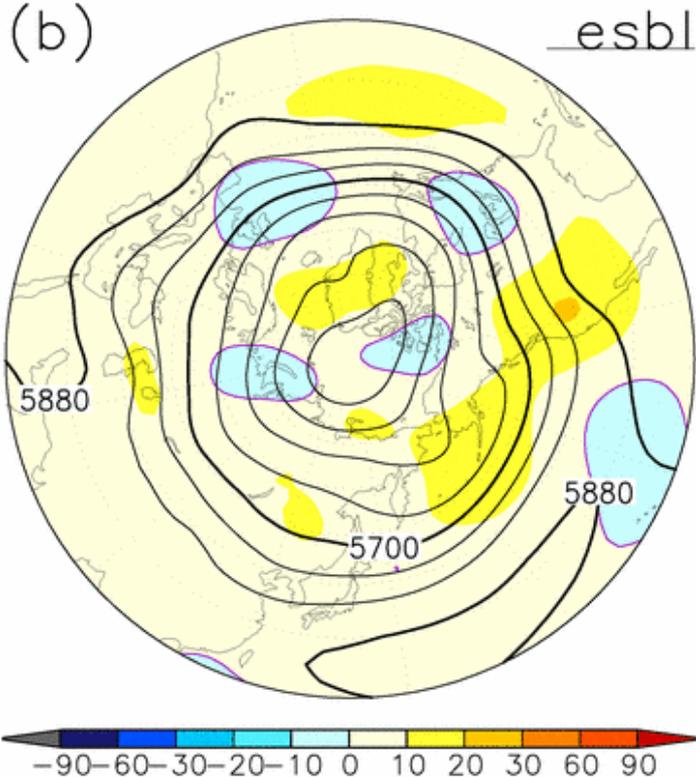
Numerical Prediction (3)

500 hPa Height and Thickness temp.

500hPa Height Forecast and Anomalies

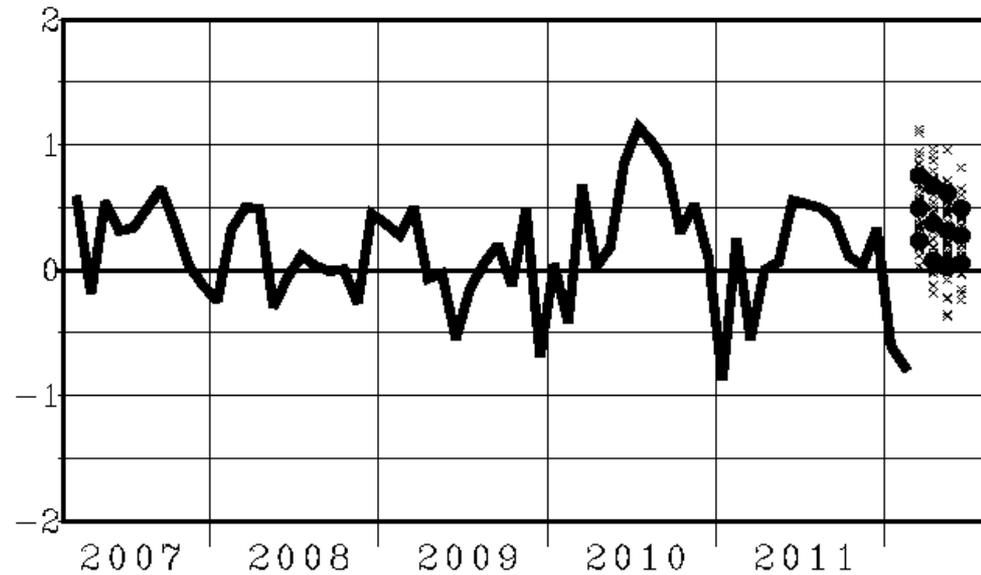
init: 2012/03/07/00[1.1]

from: 2012/6- (m345)



Tropospheric thickness temperature averaged over the mid-latitudes of the Northern Hemisphere

(300-850hPa) 30N-50N



➤ This summer-averaged temperature tends to be above normal in Japan.



Summary

Long-term trends

- Warm trends over Japan except for Northern part.

Oceanic Prediction

- Neutral ENSO conditions.

Atmospheric Prediction

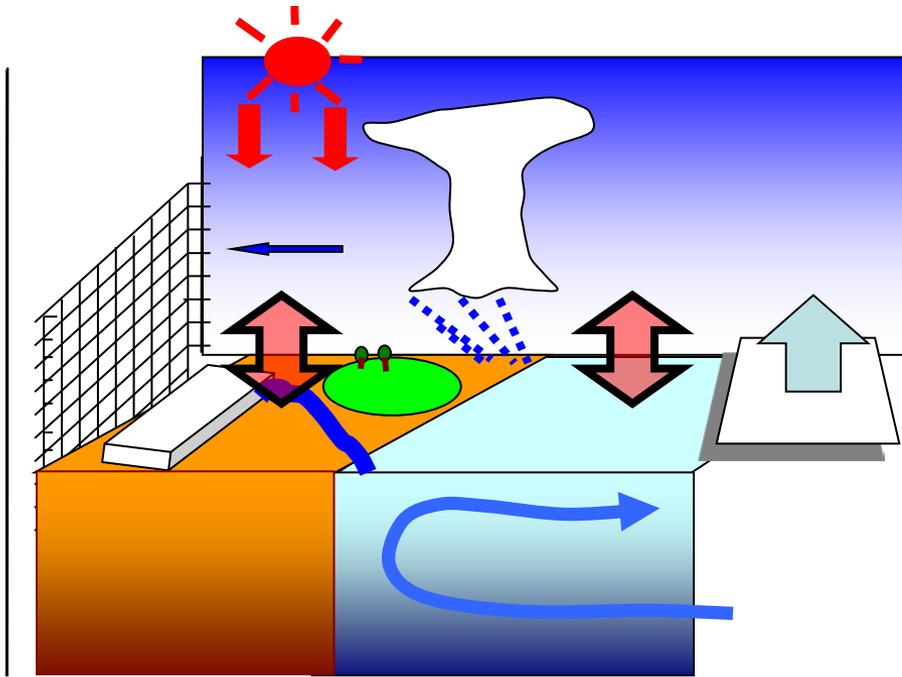
- The characteristics of atmospheric circulations around Japan, strength of the North Pacific high and the Tibetan high are expected to be almost normal.
- Positive anomalies of 500hPa height, over most of the Northern Hemisphere.
- Positive anomalies of tropospheric thickness temperature



Thank you.



Outline of the EPS for seasonal forecast



CGCM: JMA/MRI-CGCM

AGCM: JMA-GSM based on JMA/MRI unified model

- TL95: 1.875 deg ~ 180km
- L40: model top = 0.4hPa
- Land: SiB
- Sea ice: climatology
- Initial condition: JRA-25/JCDAS
- Initial perturbation: BGM (TRO, NH)

OGCM: MRI.COM

- 1.0deg in lon. X 0.3-1.0 deg in lat.
- 75N-75S, 0-360E
- L50
- Initial condition: MOVE/MRI-COM-G
- Initial perturbation: driven with BGM (TRO) of AGCM

ENSEMBLE: BGM&LAF

- Combination of BGM and LAF
- 9 members for each initial date
- Size: 51 (ENSO forecast: 30)
- Once a month



Oceanic Condition and Outlook (4)

NINO3 SST predictions of other centers

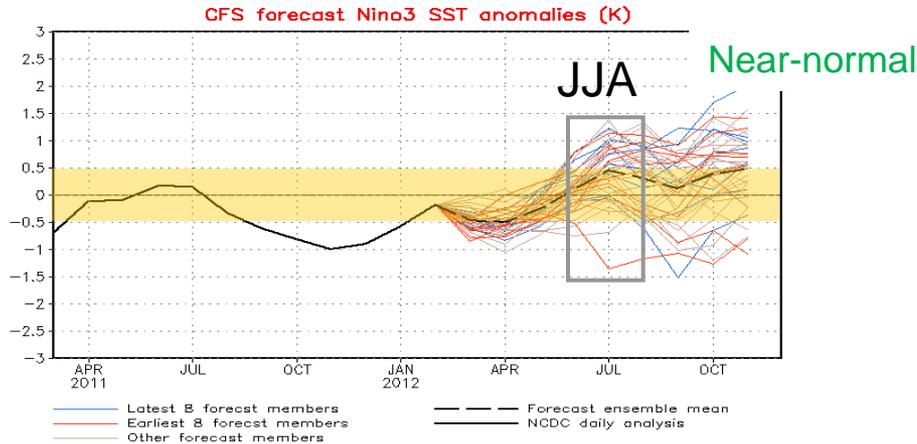
Updated in 8 March 2012

NOAA/CPC

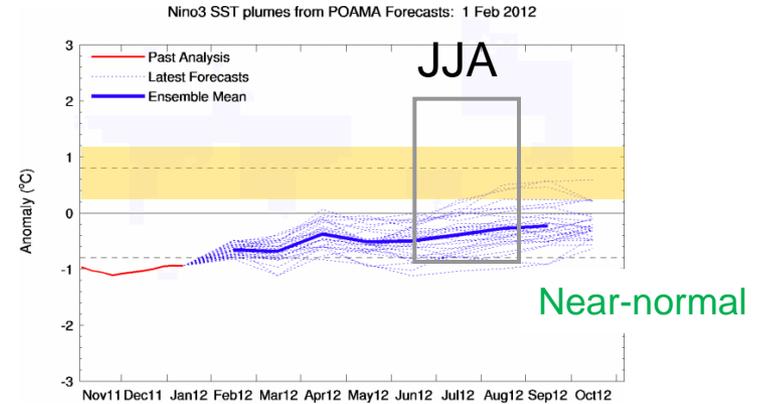


NWS/NCEP/CPC

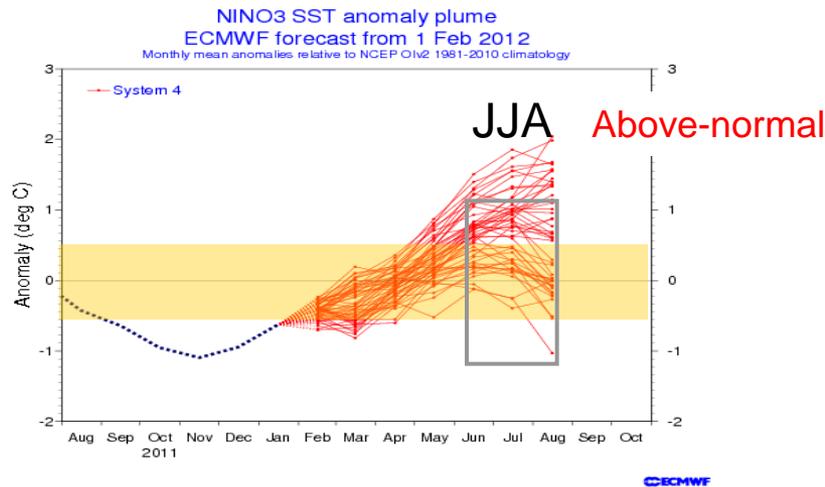
Last update: Thu Mar 1 2012
Initial conditions: 19Feb2012-29Feb2012



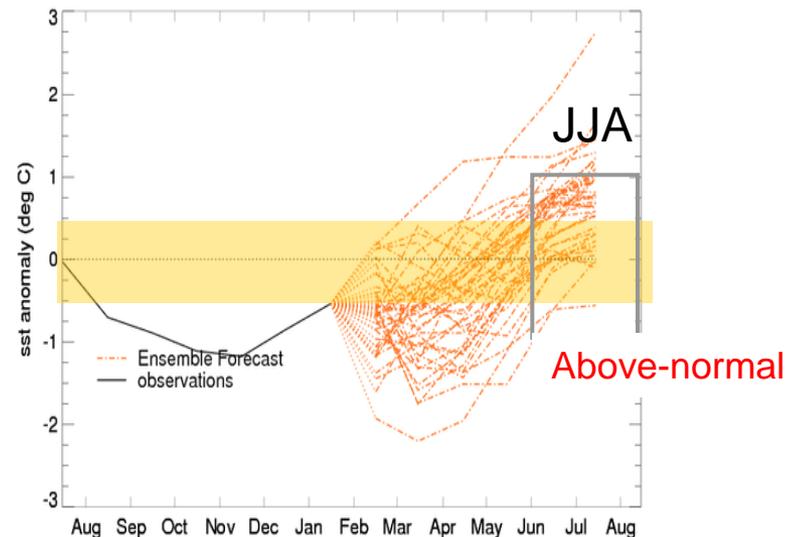
AUS/BoM



ECMWF



UKMet

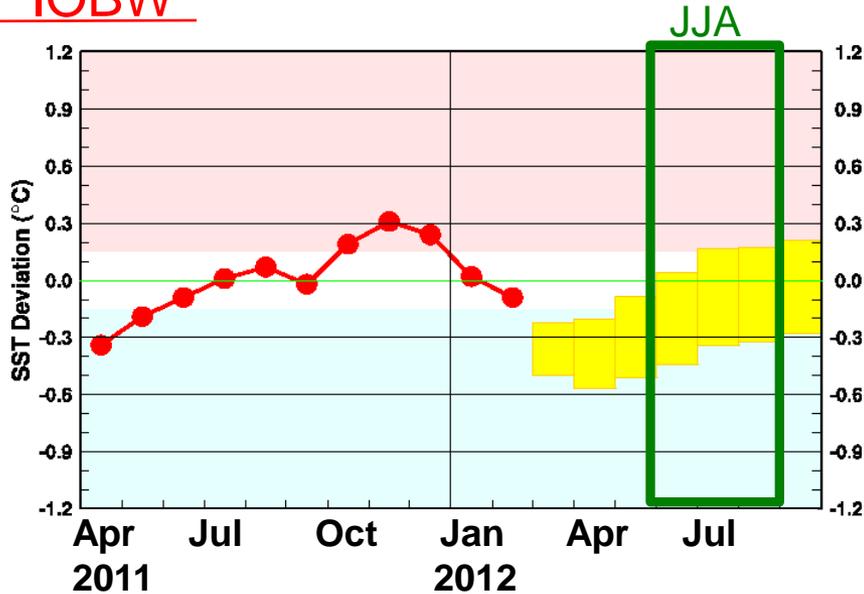




Oceanic Condition and Outlook (4)

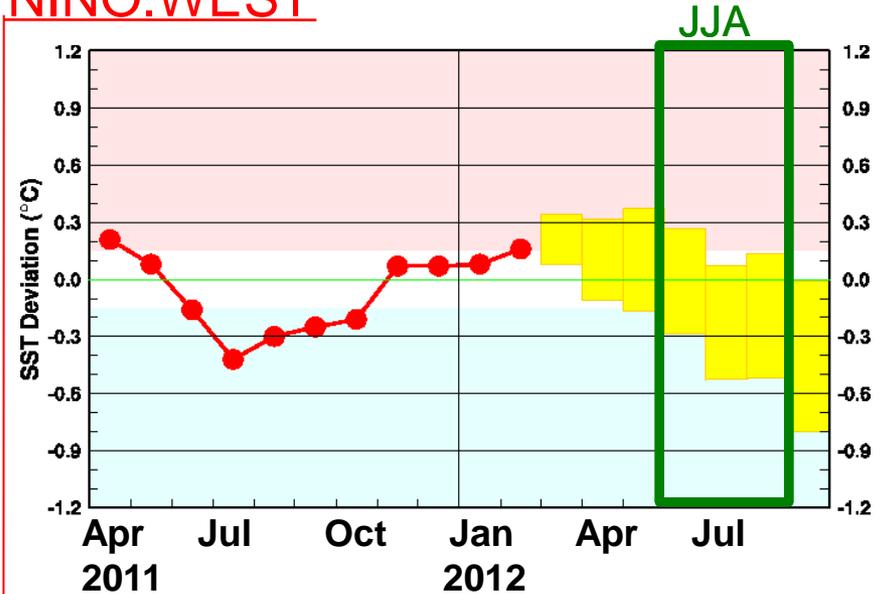
NINO.WEST and IOBW SST forecast

IOBW



- Tropical Indian Ocean (IOBW) region SST would be normal or below-normal.

NINO.WEST



- NINO.WEST SST would close to neutral conditions in JJA.



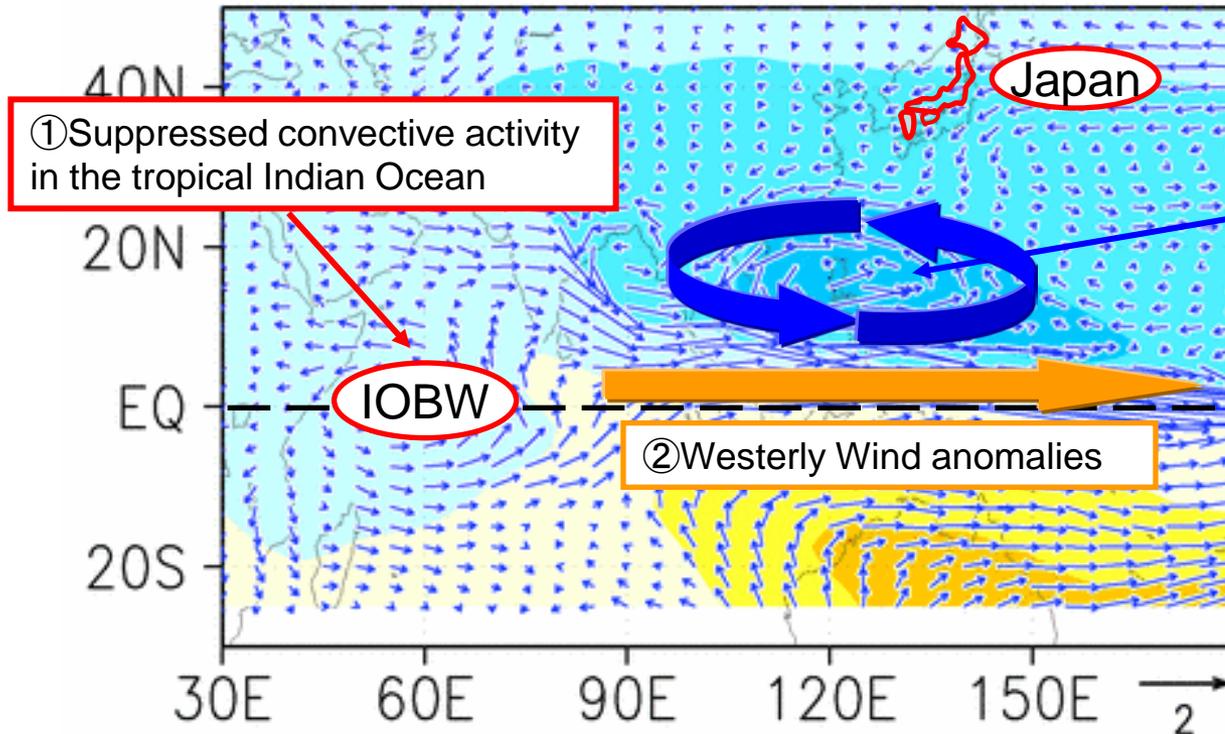
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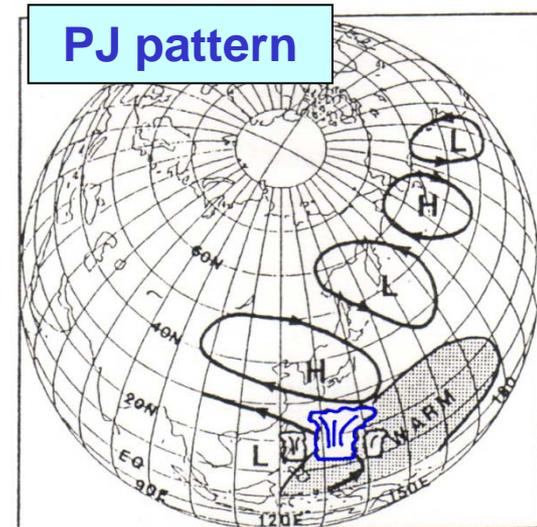
Numerical Prediction (1)

Wind & Stream Function

850hPa Wind and Stream Function Anomalies



Nitta (1987)



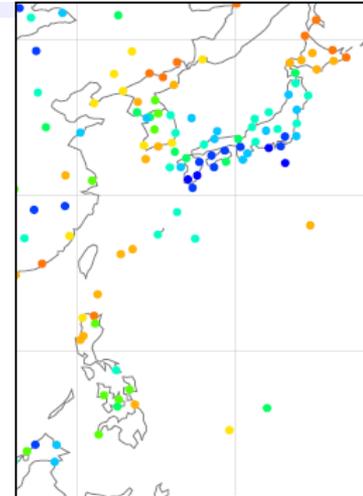
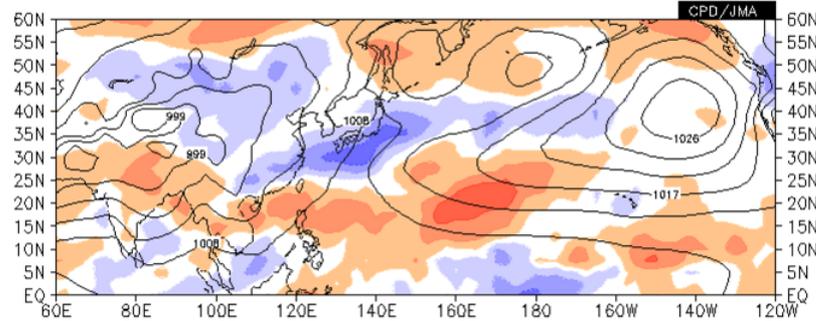


Pacific-Japan pattern

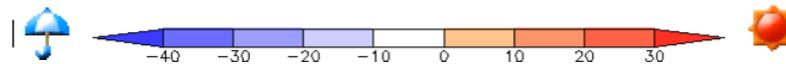
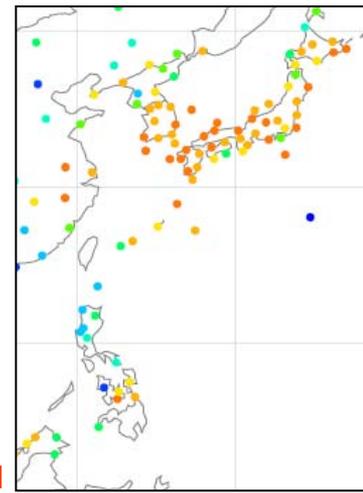
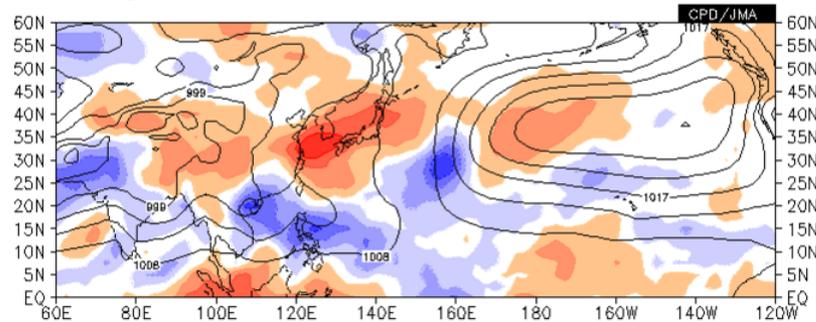
Precipitation Ratio (CLIMAT)

Contour: SLP
Shade: OLR anomaly

July 1993

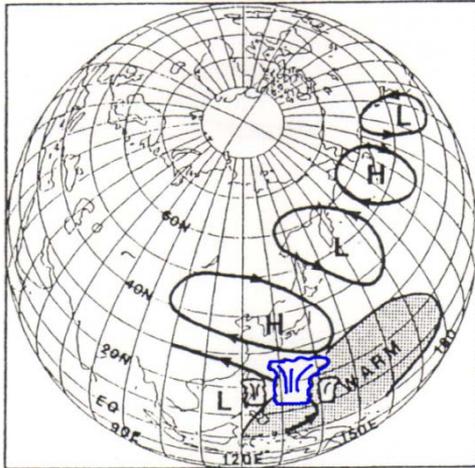
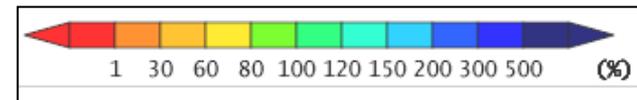


July 1994



Below-Normal

Above-Normal



(Nitta, 1987)

The summer climate of East Asia is known to be deep relation with the convective activity around the Philippines through the propagation of the Rossby wave.

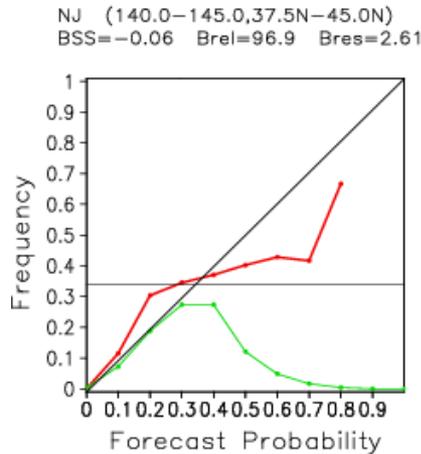


Numerical Prediction (7)

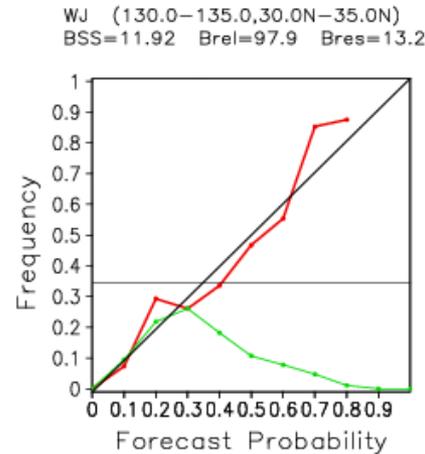
Skill of the Numerical Guidance

Reliability Diagram for temperature

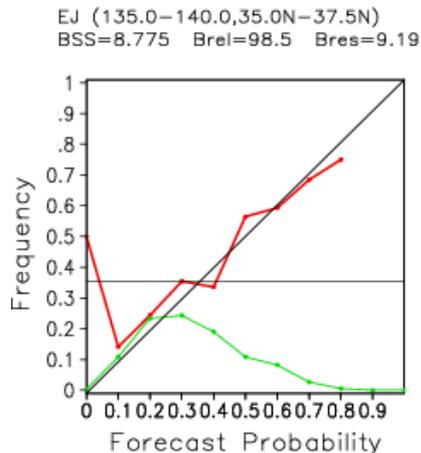
Northern Japan



Western Japan



Eastern Japan



Southern Japan

