ENSO outlook

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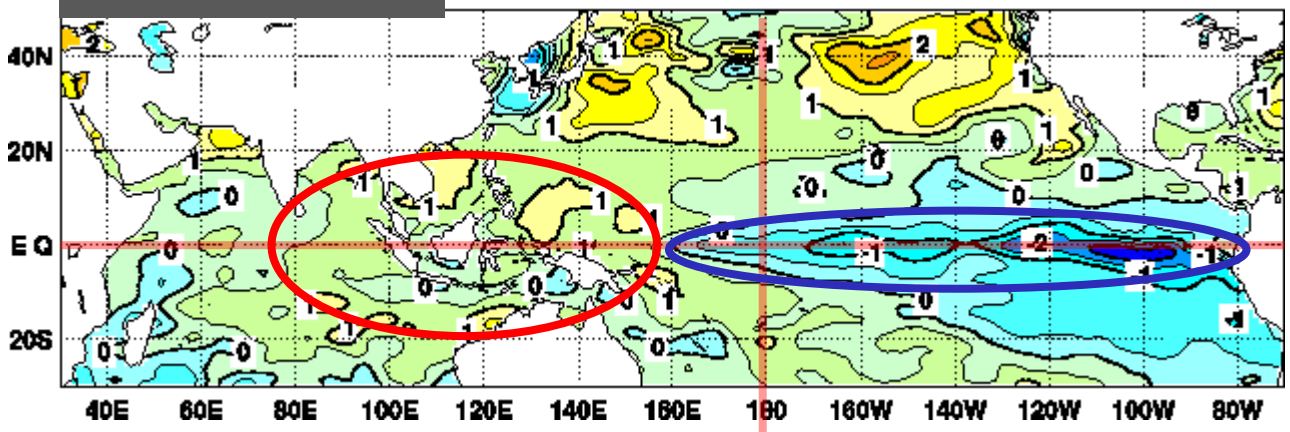
Outline

- ENSO current conditions
- ENSO outlook
- Summary

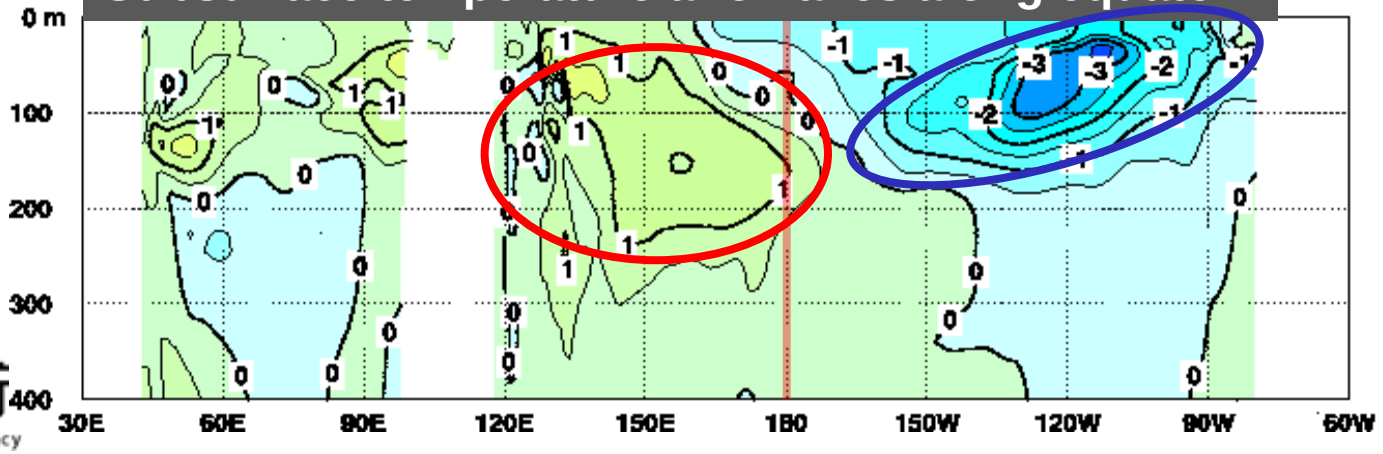
SST and Subsurface Temperature anomalies (Sep. 2020)

- In the equatorial Pacific, SSTs and subsurface temperatures were above normal in the western part and below normal in the central and eastern parts.
- In the tropical Indian Ocean, SSTs were above normal in the central and eastern parts.

SST anomalies



Subsurface temperature anomalies along equator



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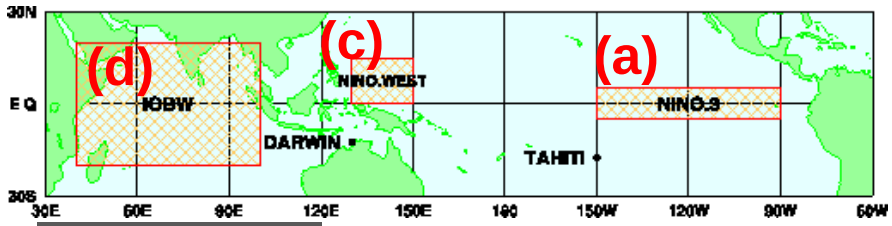
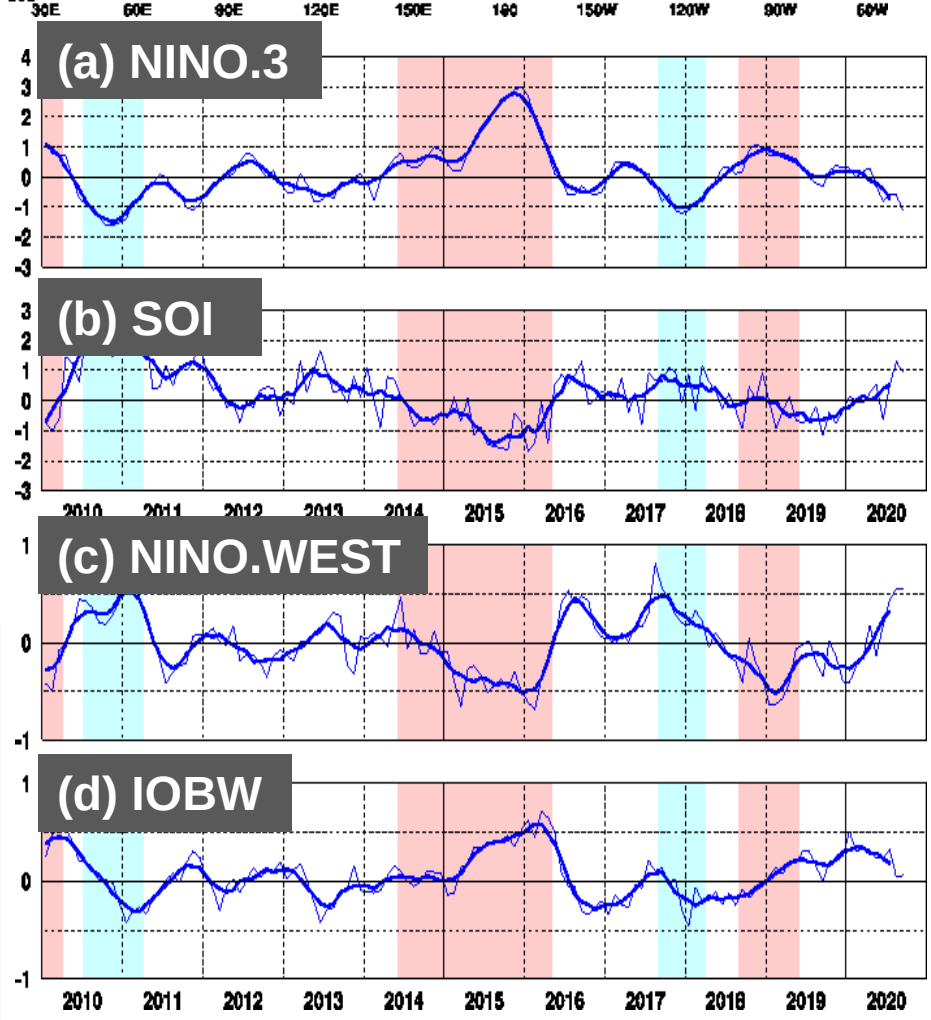
El Niño Monitoring Indices (Sep. 2020)

- The NINO.3 SST was below normal with a deviation of -1.1ºC. The 5-month mean deviation for July was -0.7ºC.

- The Southern Oscillation Index (SOI) value was +1.0.
- The area-averaged SST in the tropical western Pacific (NINO.WEST) region was above normal.
- The area-averaged SST in the tropical Indian Ocean (IOBW) region was near normal.



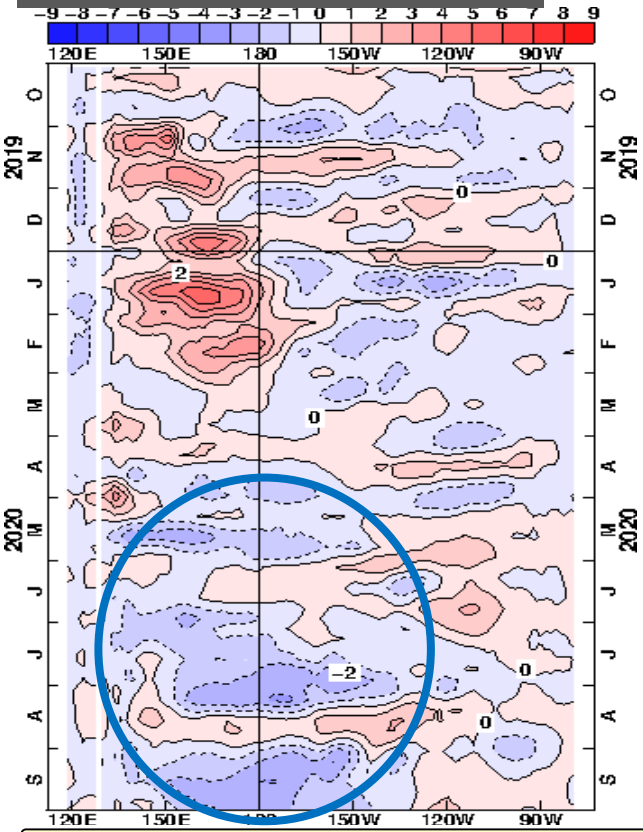


The definition of El Niño (La Niña) is such that the 5-month running mean of NINO.3 SST deviation continues +0.5ºC(-0.5ºC) or higher (lower) for 6 consecutive months or longer.
The SST baseline for NINO.3 is defined as an average over the sliding 30-year period.
The SST baselines for NINO.WEST and IOBW are defined as linear extrapolations with respect to a sliding 30-year period.

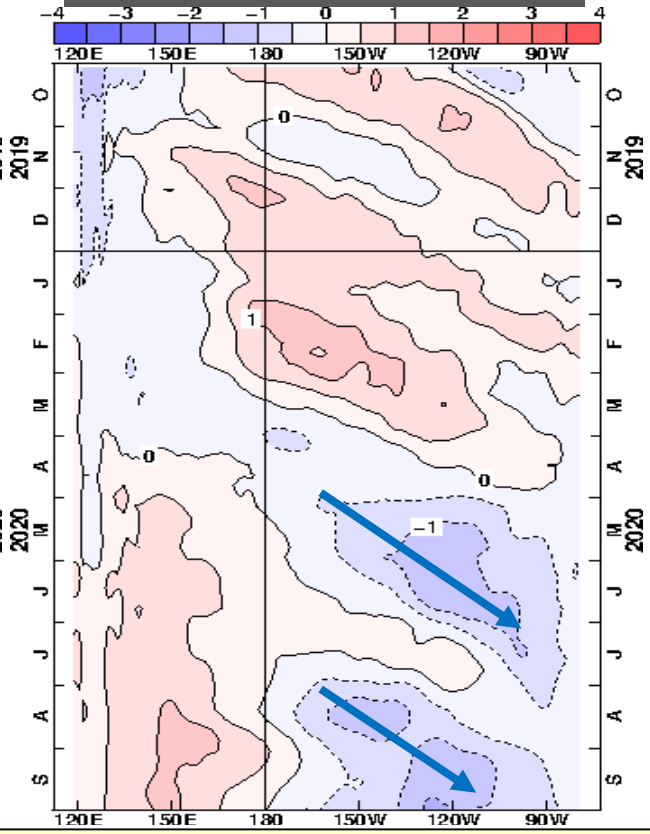
Wind stress, OHC, SST anomalies in the equatorial Pacific

- Easterly wind stress anomalies were observed in the western and central parts since late spring.
- Negative OHC anomalies migrated eastward.
- SSTs have been below normal in the central and eastern parts since summer.

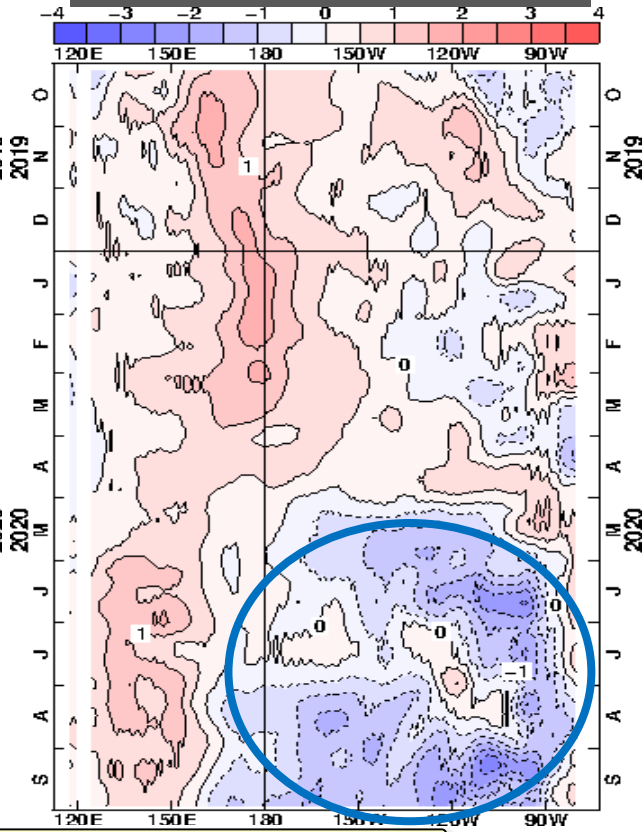
Zonal wind stress anomalies (0.01N/m^2)



OHC anomalies (ºC)



SST anomalies (ºC)

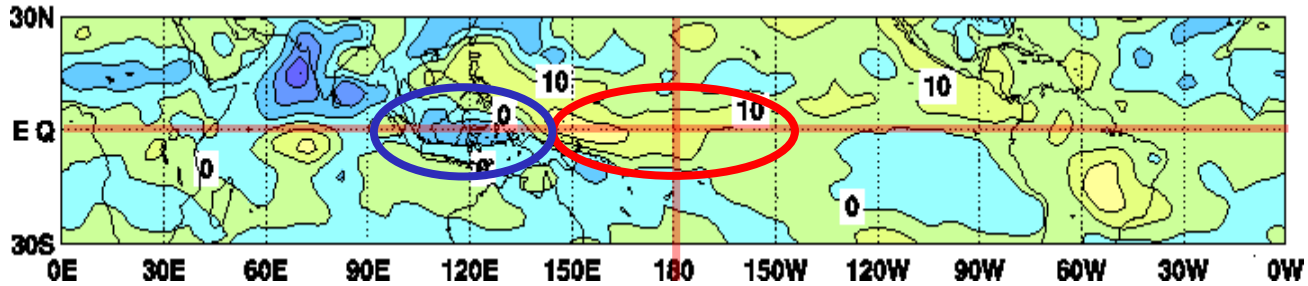


OHC (ocean heat content) is water temperature vertically averaged from the surface to 300m depth.

Atmospheric conditions (Sep. 2020)

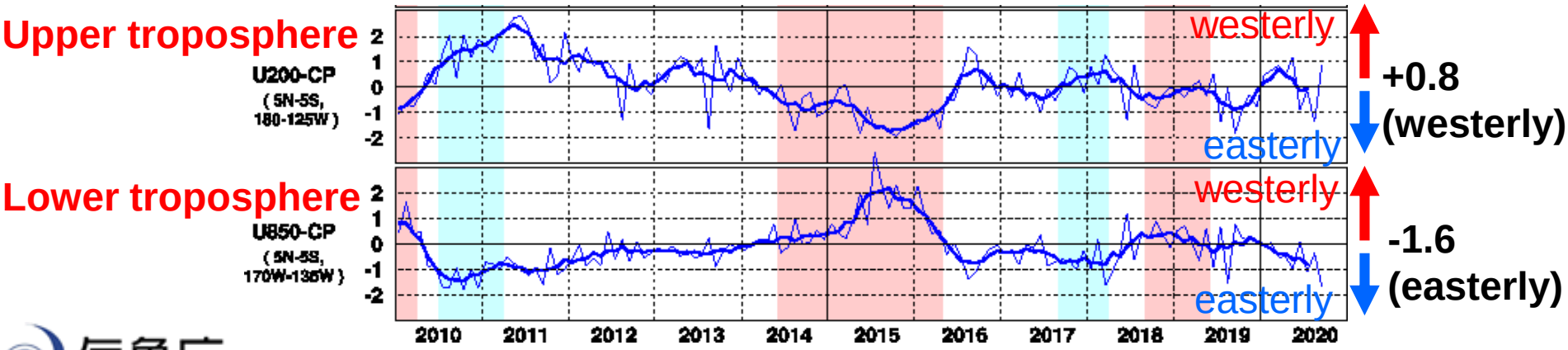
- Atmospheric convective activity near the date line over the equatorial Pacific was below normal.
- Easterly winds in the lower troposphere over the central equatorial Pacific were stronger than normal.

OLR anomalies (W/m²)



Blue: more active
Yellow: less active

Zonal wind indices in the central equatorial Pacific



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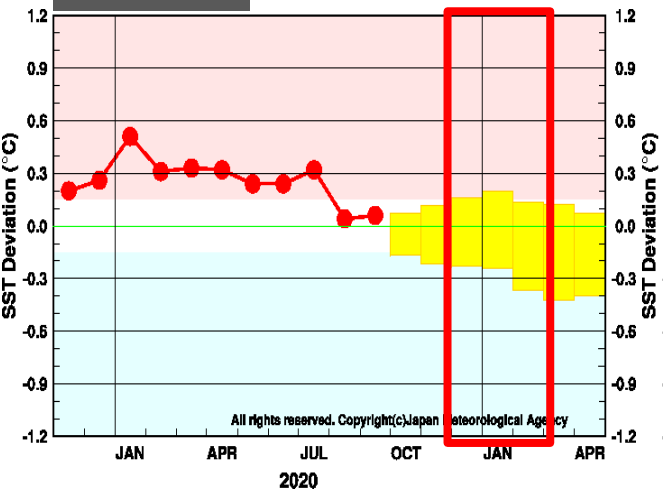
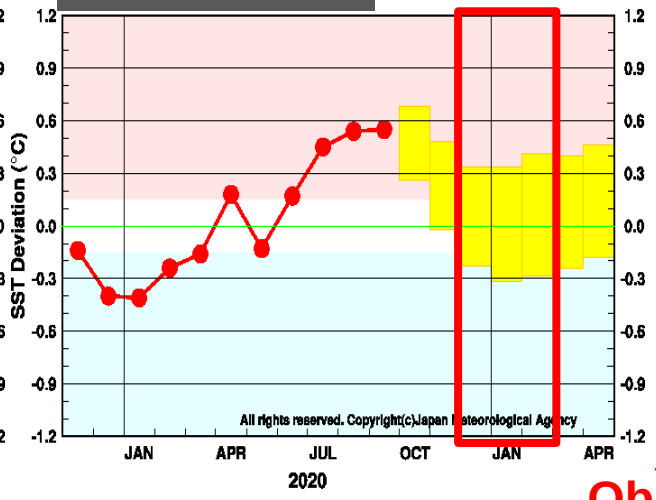
Model Predictions of ENSO monitoring indices (IC: Oct. 2020)

- The NINO.3 SST is likely to be below normal until boreal winter.
- The NINO.WEST SST is likely to be above or near normal until boreal winter.
- The IOBW SST is likely to be near or below normal until boreal winter.

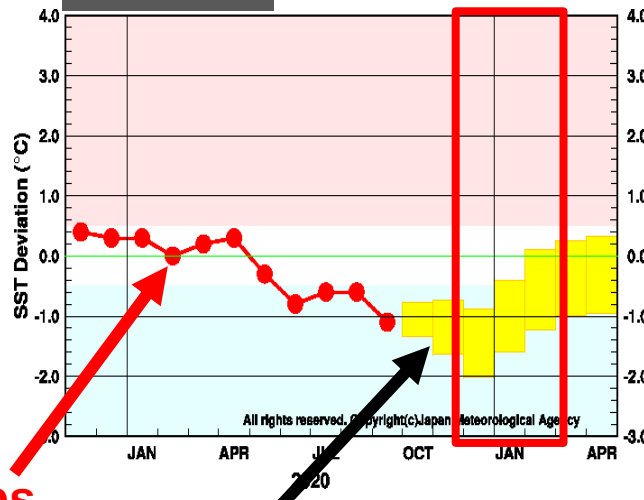
IOBW



NINO.WEST

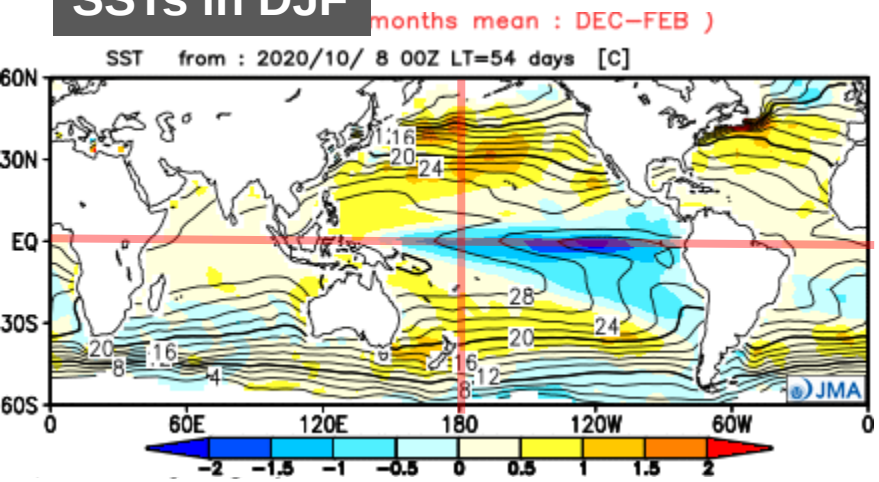


NINO.3

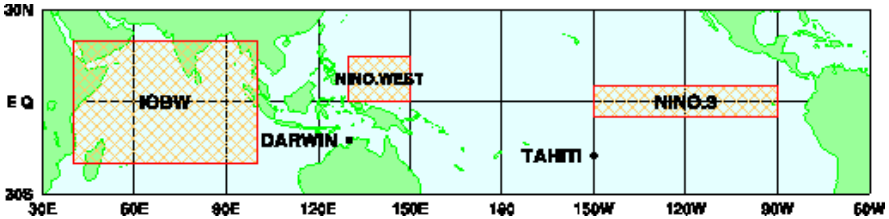


Obs.

SSTs in DJF



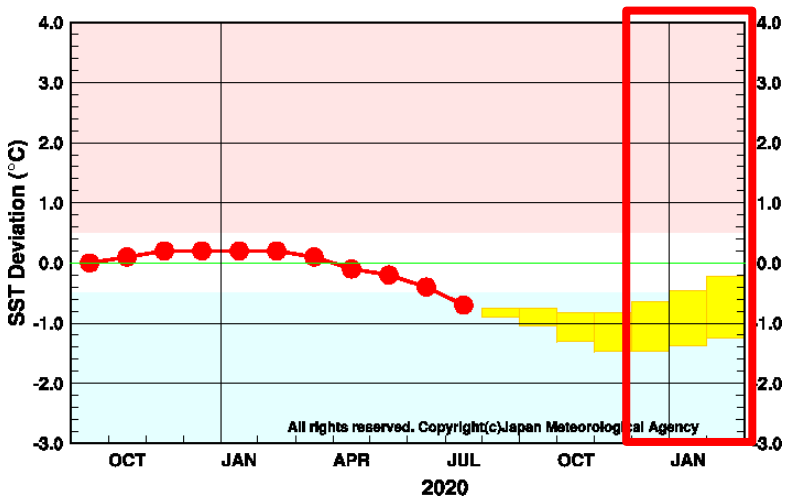
Each box denotes the range where the SST deviation will be included with the probability of 70%.



ENSO Outlook (IC: Oct. 2020)

- The model predicts that 5-month running mean of NINO.3 SST will be below normal until boreal winter.
- There is a probability of 90% that the five-month running mean NINO.3 SST will be -0.5ºC or lower until early boreal winter.
- La Niña conditions are likely (90%) to continue until boreal winter.

5-month running mean of NINO.3 SST



ENSO forecast probabilities

YEAR	MONTH	mean period	El Niño	ENSO neutral	La Niña
2020	AUG	JUN2020–OCT2020	10		90
	SEP	JUL2020–NOV2020	10		90
	OCT	**AUG2020–DEC2020**	10		90
	NOV	**SEP2020–JAN2021**	10		90
	DEC	**OCT2020–FEB2021**	10		90
2021	**JAN**	**NOV2020–MAR2021**		20	80
	FEB	**DEC2020–APR2021**		30	70

Red, yellow and blue bars indicate probabilities that the five-month running mean of the NINO.3 SST deviation from the latest sliding 30-year mean will be +0.5˚ C or above (El Niño), between +0.4 and -0.4˚ C (ENSO-neutral) and -0.5˚ C or below (La Niña), respectively. Regular text indicates past months, and bold text indicates current and future months.

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Summary

- It is considered that La Niña conditions are present in the equatorial Pacific.
- La Niña conditions are likely (90%) to continue until boreal winter.

Current condition

- ✓ Common features of past La Niña events observed in September:
  - ➢ JMA's monthly ENSO Monitoring Index (NINO.3) : -1.1ºC
  - ➢ Negative SSTA & OHCA in the central and eastern equatorial Pacific
  - ➢ Below normal atmospheric convections near the date line
  - ➢ Stronger than normal easterly winds over the central equatorial Pacific

Model Predictions

- ✓ The NINO.3 SST will be below normal until boreal winter.

El Nino Outlook on the TCC website

El Nino Outlook on the TCC website will be updated on 10 Nov. 2020.
Please check http://ds.data.jma.go.jp/tcc/tcc/products/elnino/outlook.html

El Niño Outlook (October 2020 - April 2021)

Last Updated: **9 October 2020**
(Next update will be on 10 November 2020)

- **It is considered that La Niña conditions are present in the equatorial Pacific.**
- **They are likely (90%) to continue until boreal winter.**

[El Niño / La Niña]

In September 2020, the NINO.3 SST was below normal with a deviation of -1.1°C (Table and Fig.3). SSTs in the equatorial Pacific were above normal in the western part and below normal in the central and eastern parts (Fig.4 and Fig.6). Subsurface temperatures were above normal in the western part and below normal in the central and eastern parts (Fig.5 and Fig.7). Atmospheric convective activity near the date line over the equatorial Pacific was below normal, and easterly winds in the lower troposphere (i.e., trade winds) over the central equatorial Pacific were stronger than normal (Fig.8, Fig.9, Fig.10). These oceanic and atmospheric conditions indicate common features of past La Niña events. It is considered that La Niña conditions are present in the equatorial Pacific.

The subsurface cold waters, observed in the central and eastern equatorial Pacific in September, are expected to maintain colder-than-normal SST conditions in the eastern part. JMA's El Niño prediction model suggests that the NINO.3 SST will be below normal until boreal winter (Fig.11). In conclusion, La Niña conditions are likely (90%) to continue until boreal winter (Fig.1 and Fig.2).

Thank you