



EASCOF-7

Ulaanbaatar, 5-7 Nov 2019



ENSO outlook for 2019/2020 winter

Ben Tian

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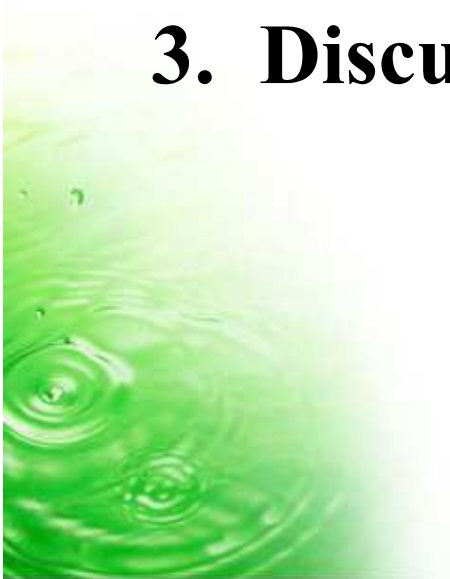
Beijing Climate Center (BCC), CMA
November 6, 2019, Ulaanbaatar, Mongolia





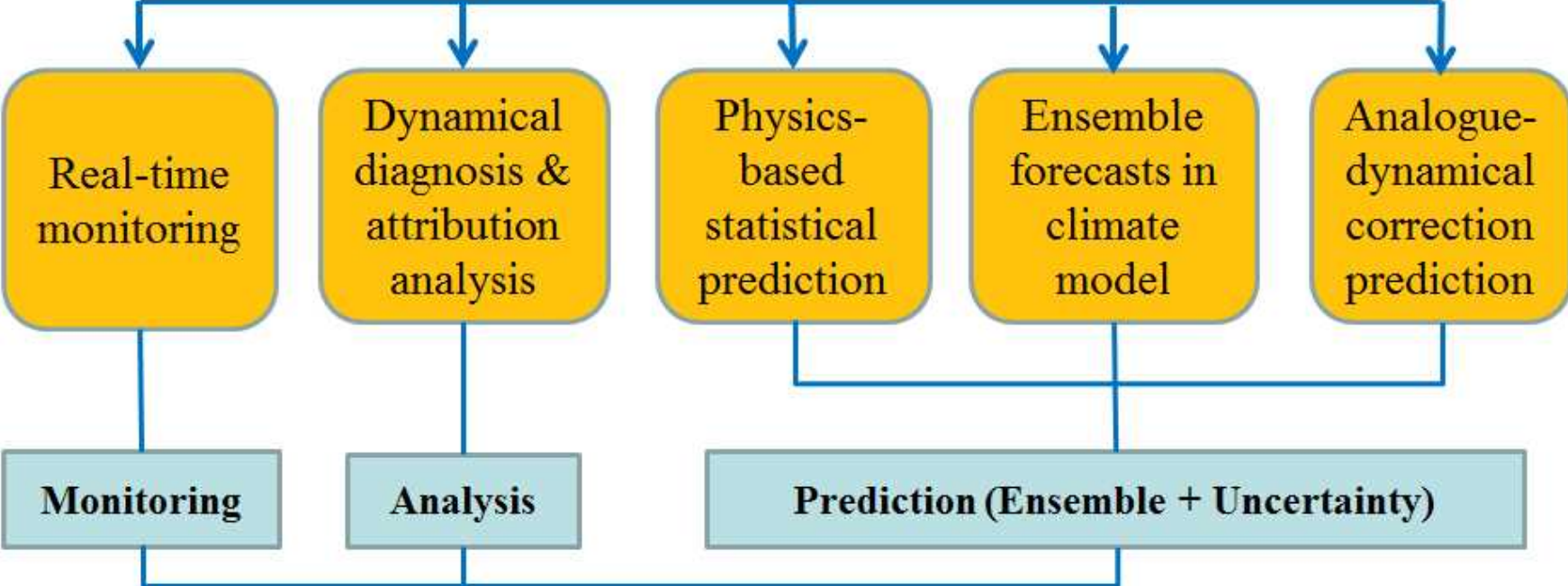
Outlines

- 1. A review of ENSO Prediction in past spring**
- 2. Outlook for ENSO in 2019/2020 winter**
- 3. Discussion**





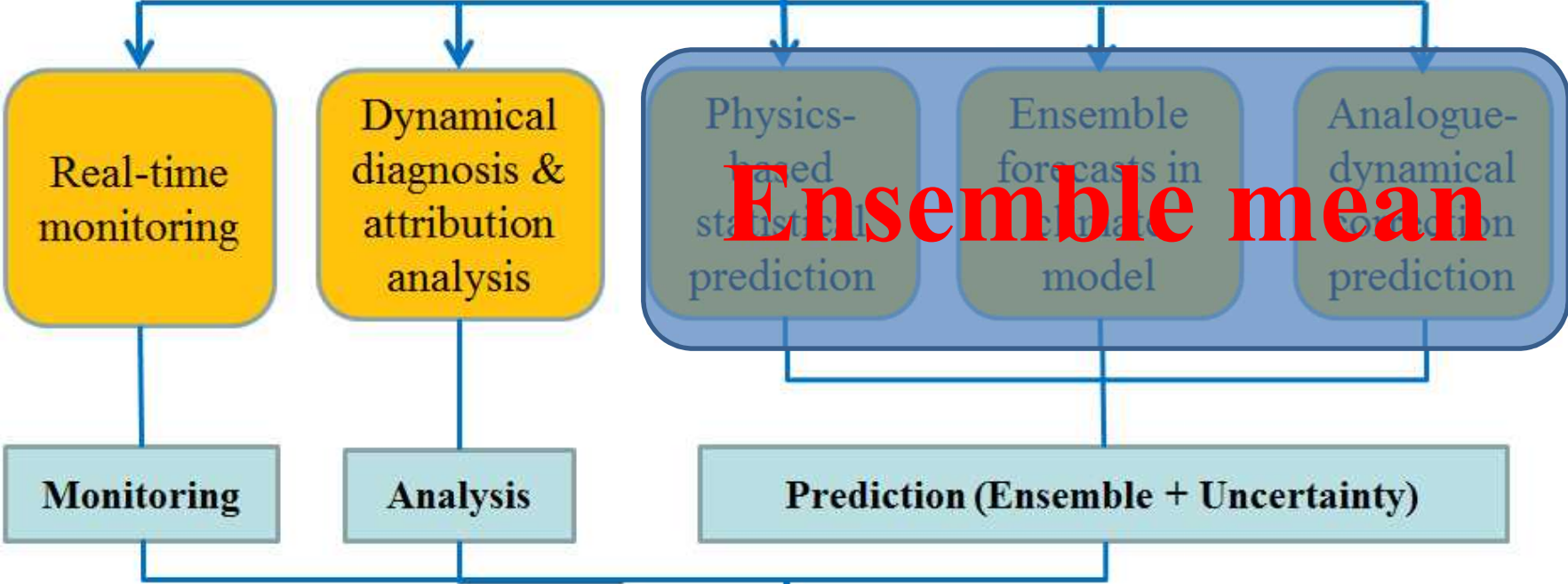
System of ENSO Monitoring, Analysis and Prediction (SEMAP2.1)



Operational Products → Application for ENSO Prediction



System of ENSO Monitoring, Analysis and Prediction (SEMAP2.1)



Ensemble mean

Operational Products → Application for ENSO Prediction



Comparison of all prediction methods

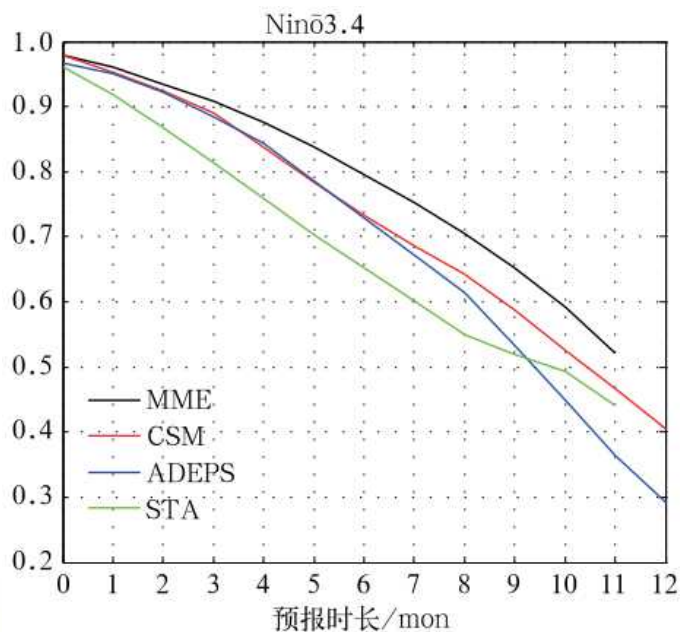


Fig. 3 Temporal anomaly correlation coefficients of Niño3.4 index prediction by SEMAP2.0 during 1996–2015 for BCC_CSM1.1m (red line), ADEPS (blue line), statistical prediction model (STA, green line), and their ensemble mean (MME, black line), respectively

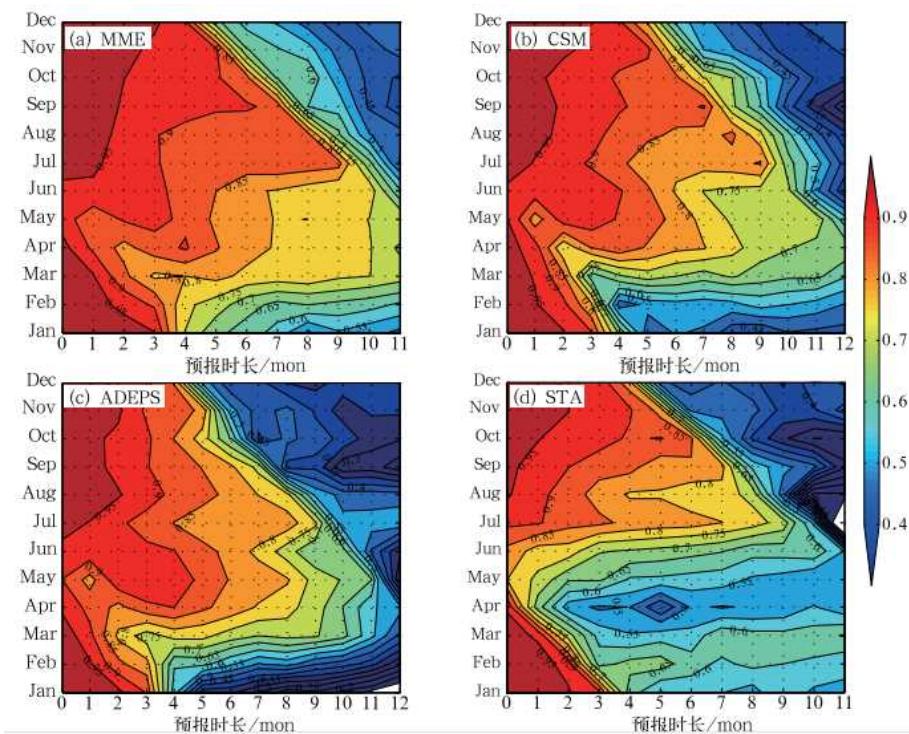


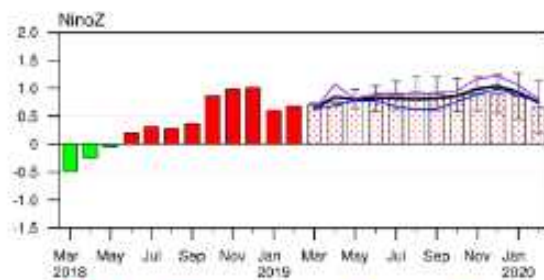
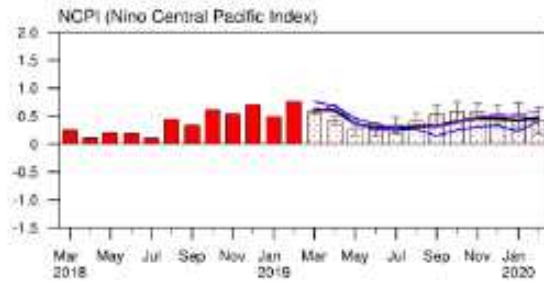
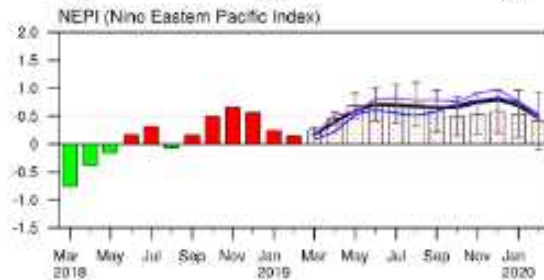
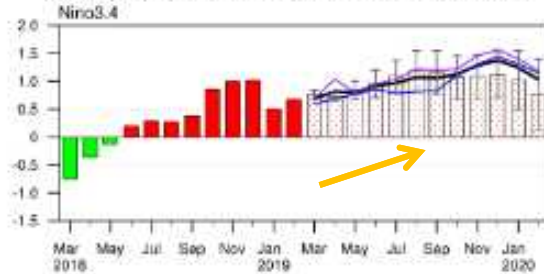
Fig. 4 Seasonal dependence of temporal anomaly correlation coefficients of Niño3.4 index prediction by SEMAP2.0 during 1996–2015 for BCC_CSM1.1m (b), ADEPS (c), statistical prediction model (STA, d), and their ensemble mean (MME, a), respectively (Where x-axis is forecast months and y-axis the initial calendar months)



ENSO prediction made in Mar 2019

ENSO SST Indices (K): BCC SEMAP2.0 forecast

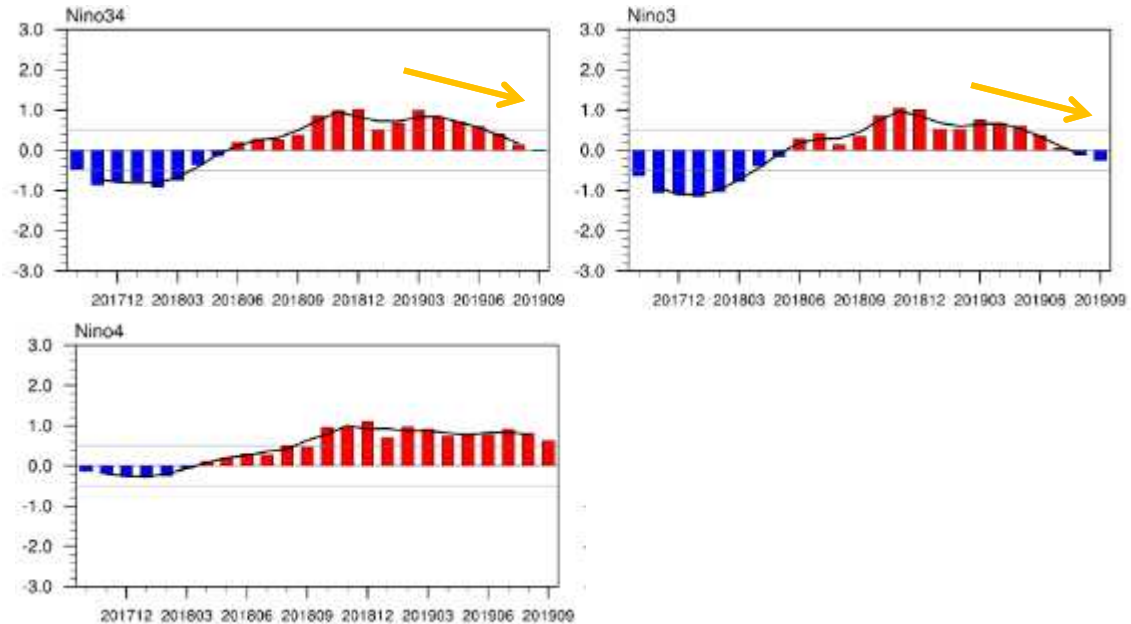
Monitor (OISST): 201803-201902; Forecast: 201903-202002



■ >0 ■ <0 — MME — static — ADEPS-2
 >0 <0 BCC-GSM1.1m ensemble mean

In March, our results then indicated that there would be *an El Nino event* peaking at the end of the year.

A review of 6-mon-lead prediction

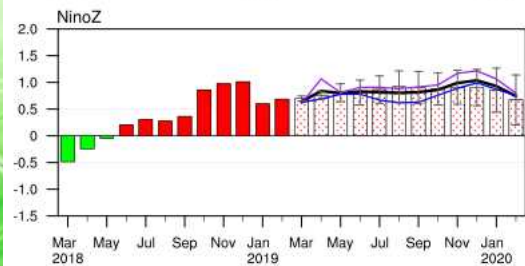
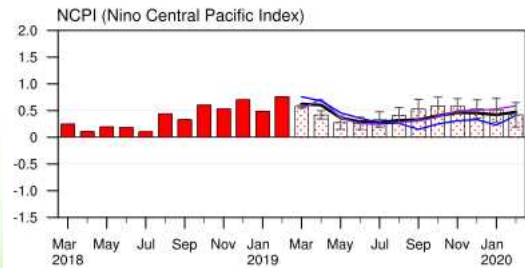
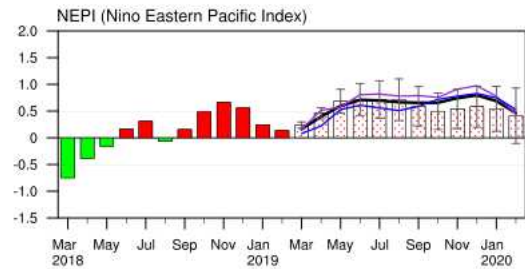
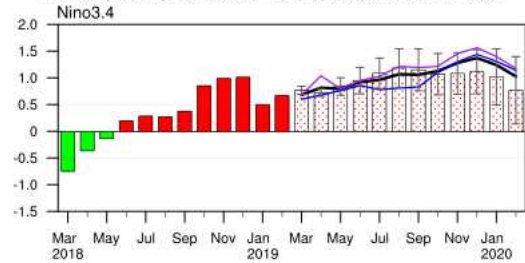


■ Contrasting boreal spring-autumn trend between Predict. and Obs.





ENSO SST Indices (K): BCC SEMAP2.0 forecast
Monitor (OISST): 201803-201902; Forecast: 201903-202002

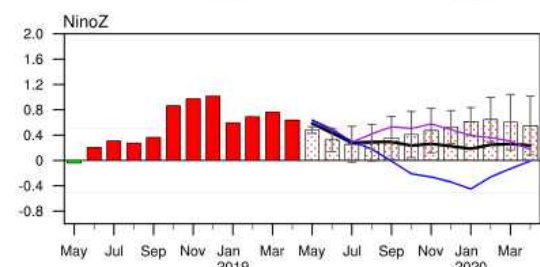
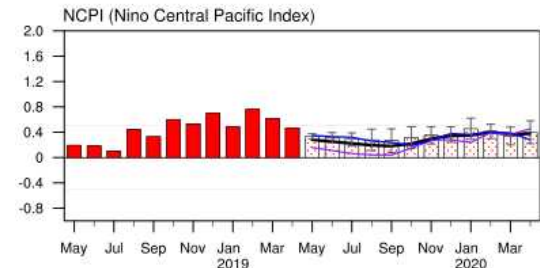
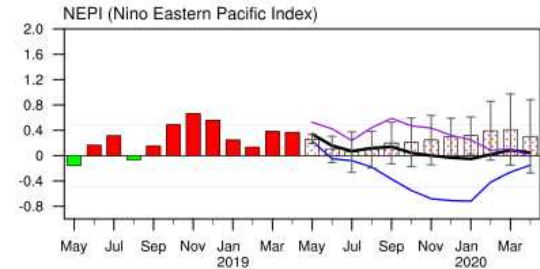
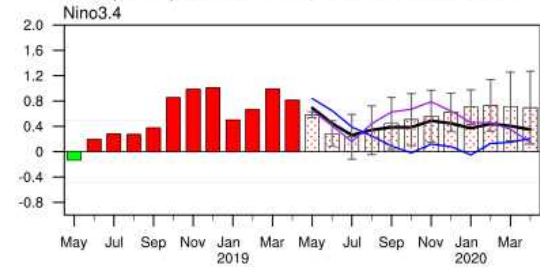


■ >0 ■ <0 — MME — statis. — ADEPS-2
 >0 <0 BCC-CSM1.1m ensemble mean

←
Starts in Mar

Starts in May
→

ENSO SST Indices (K): BCC SEMAP2.0 forecast
Monitor (OISST): 201805-201904; Forecast: 201905-202004



■ >0 ■ <0 — MME — statis. — ADEPS-2
 >0 <0 BCC-CSM1.1m ensemble mean





The evolution of ENSO-related air-sea variables

U-stress

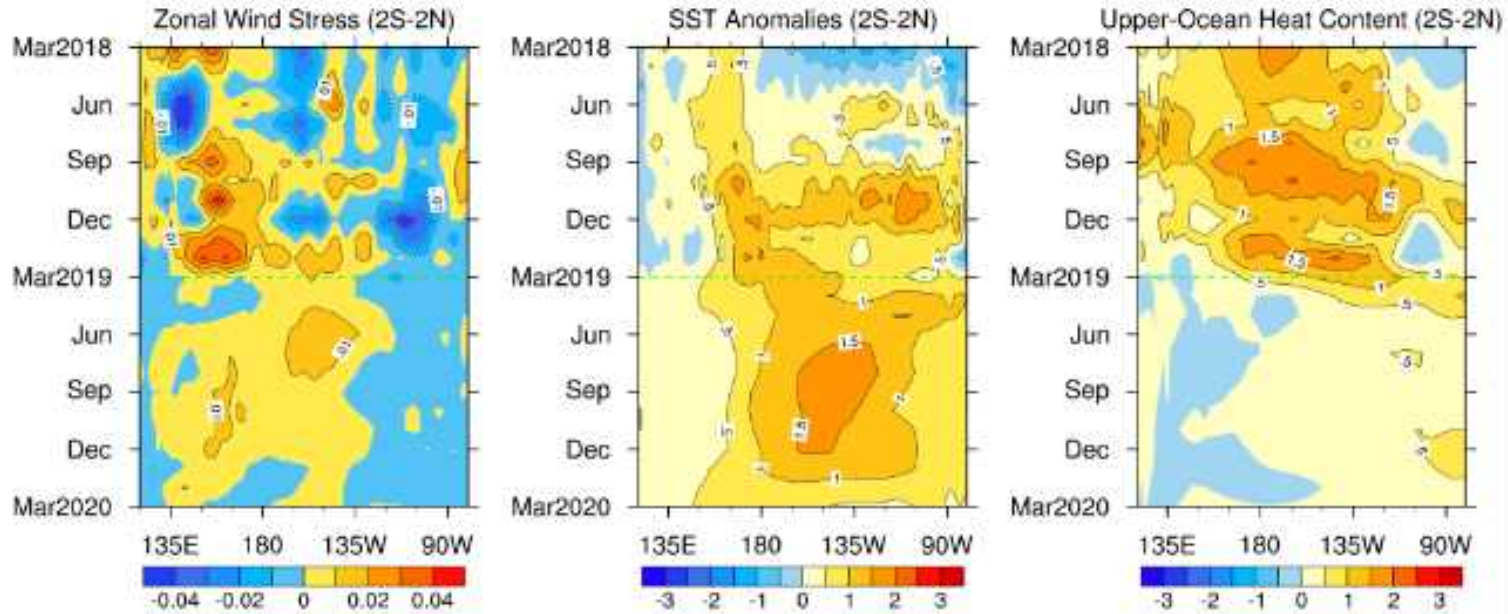
SSTA

Heat content

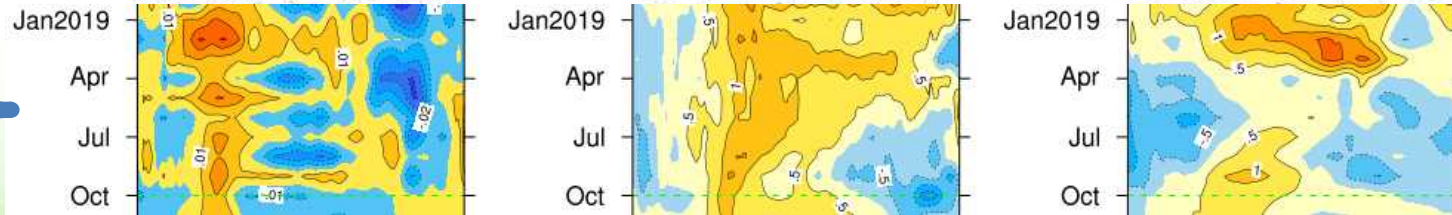
ENSO evolutions at Equator: BCC_CSM1.1m forecast

Monitor : 201803-201902; Forecast: 201903-202003

Mar



Obs.



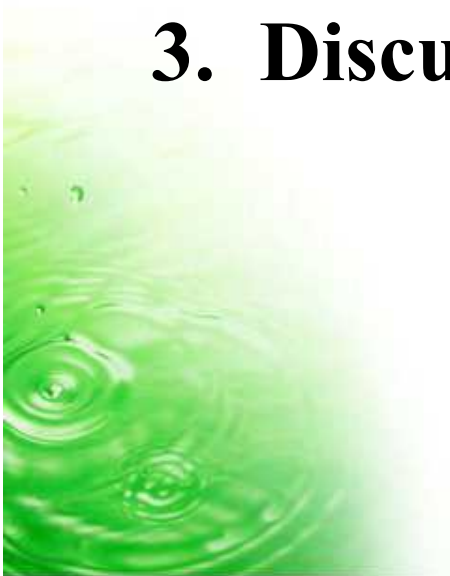
➤ The preceding signals used in March prediction just disappeared soon after March.





Outlines

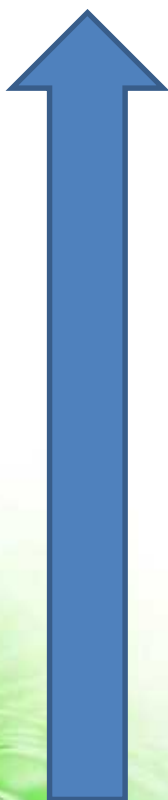
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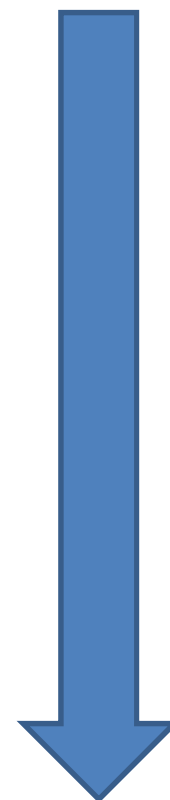


Tropical SSTA

Monitoring

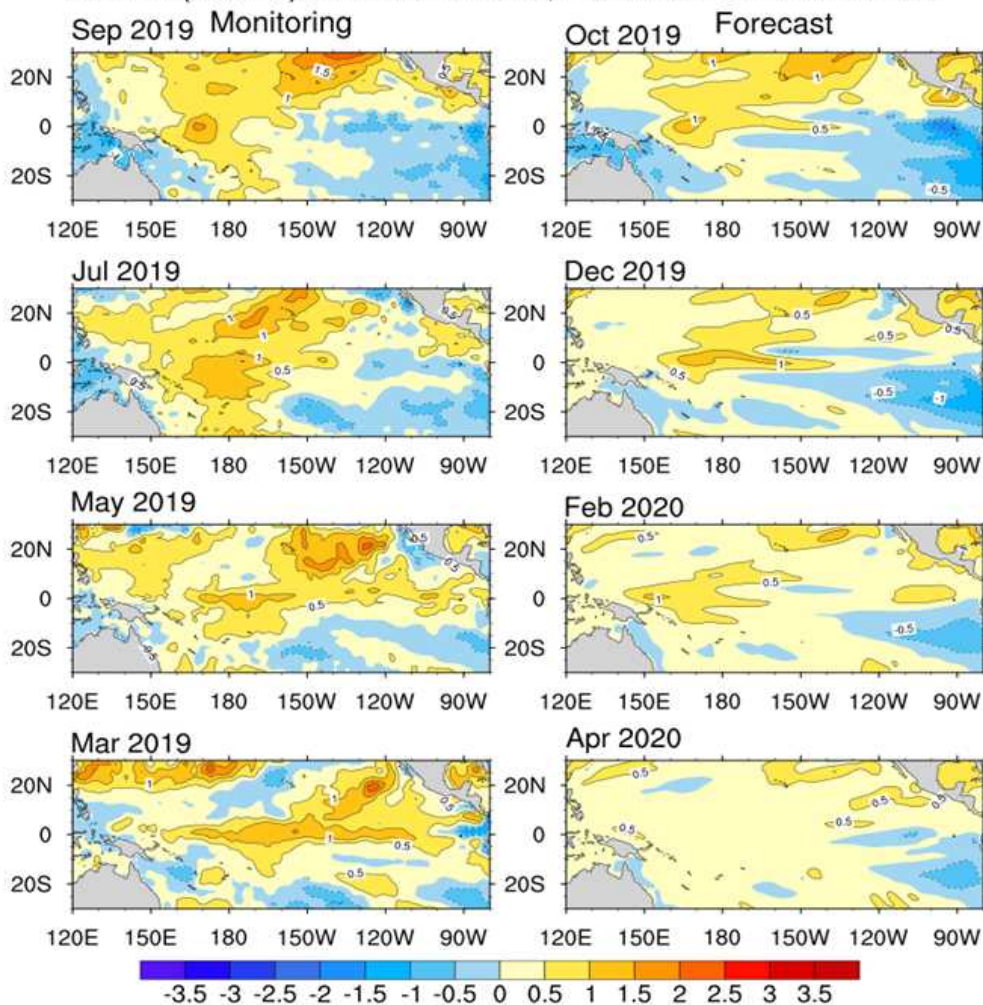


Forecast



Tropical Pacific SSTA (K): BCC_CSM1.1m forecast

Monitor (OISST): 201903-201909; Forecast: 201910-202004





The evolution of ENSO-related air-sea variables

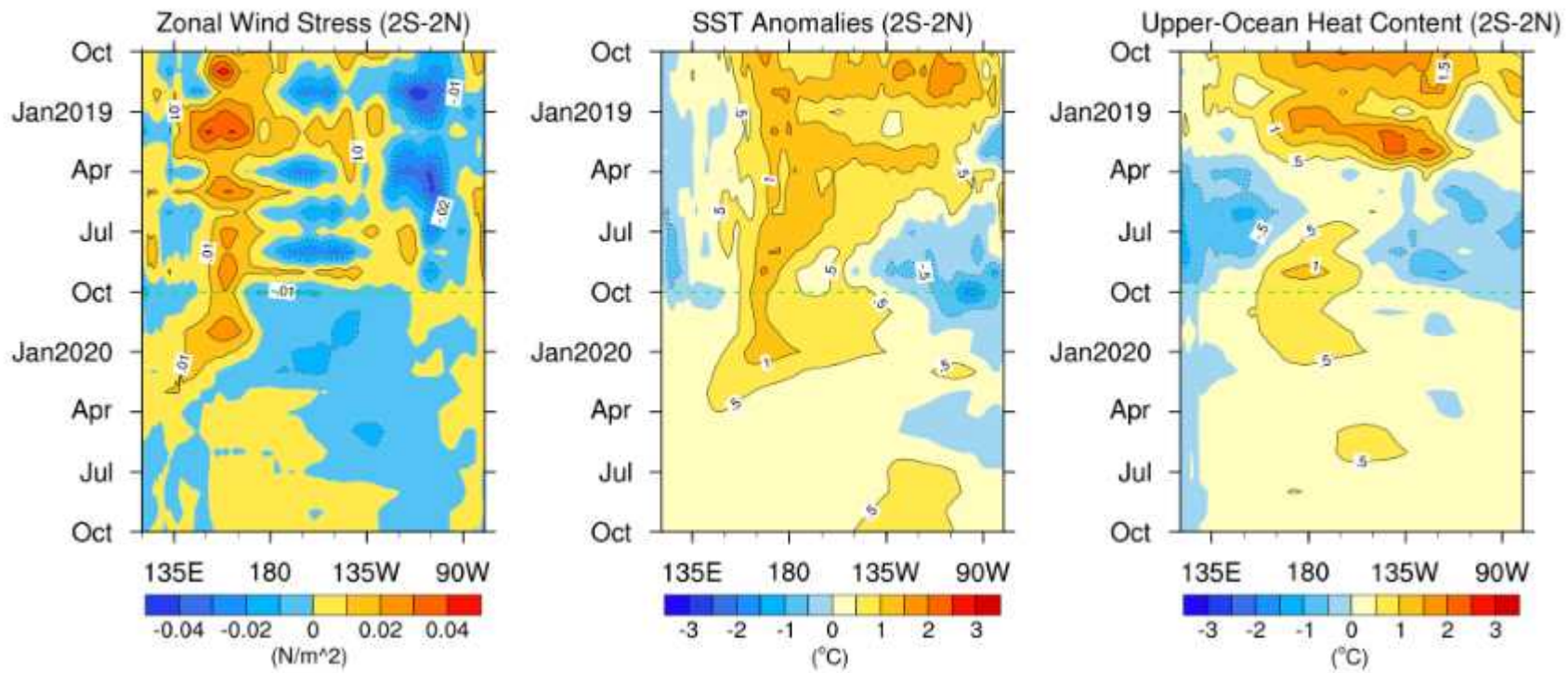
U-stress

SSTA

Heat content

ENSO evolutions at Equator: BCC_CSM1.1m forecast

Monitor : 201810-201909; Forecast: 201910-202010

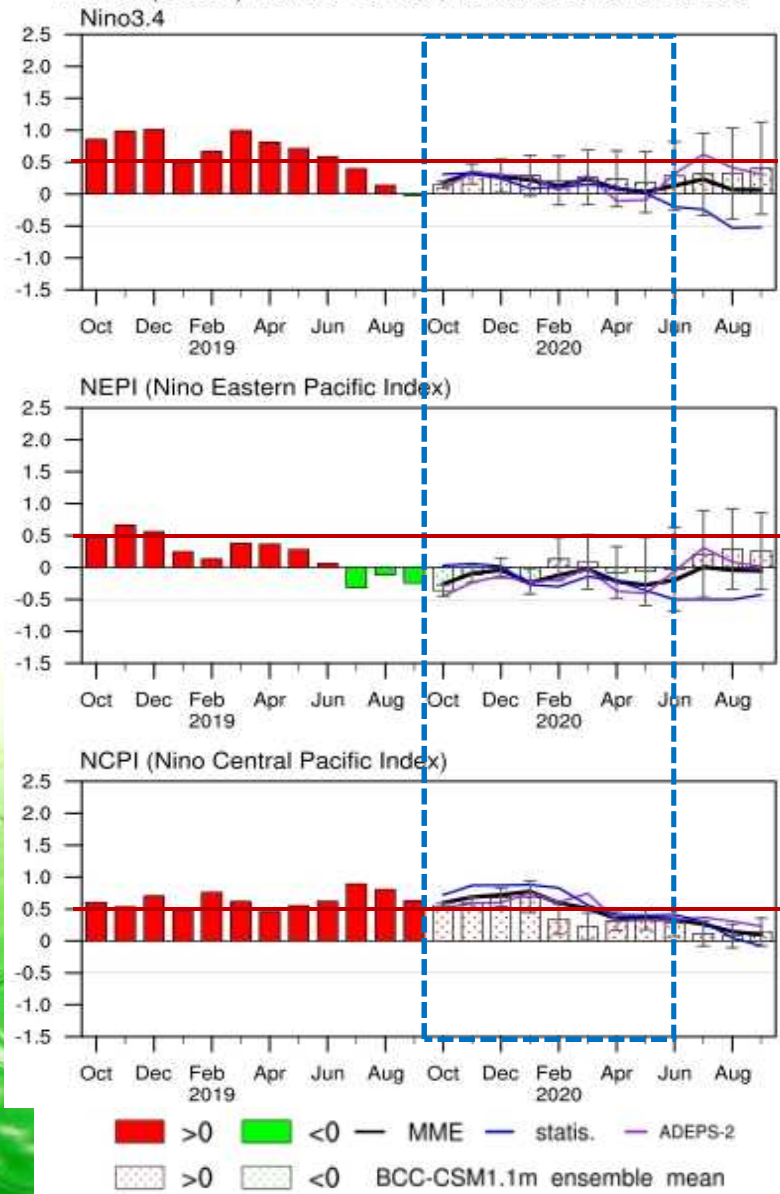




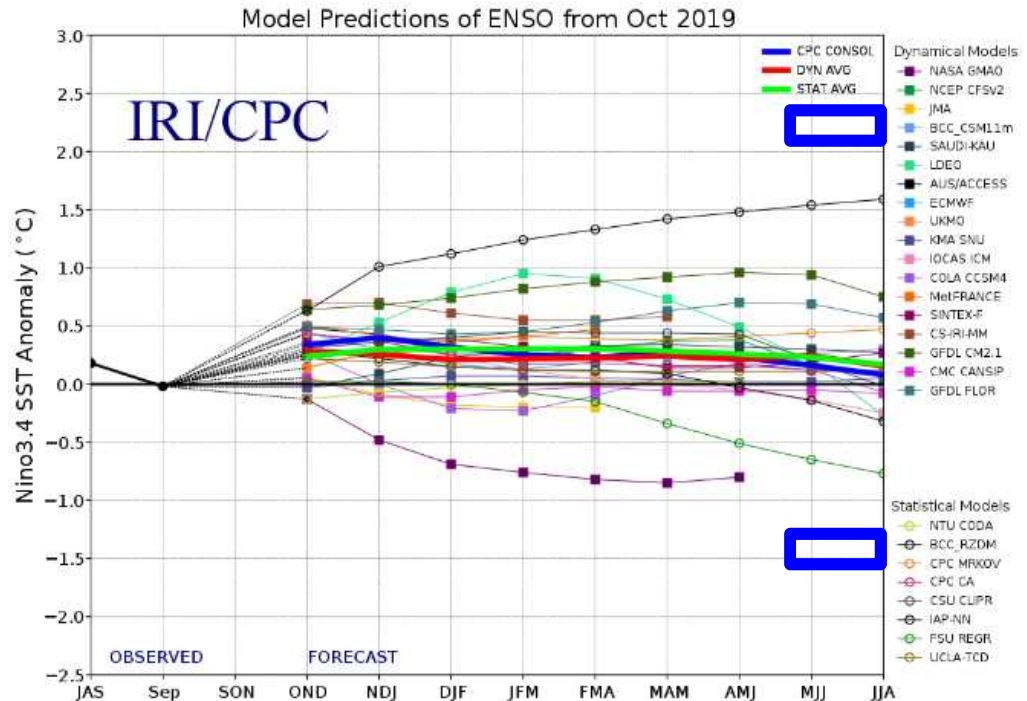
Latest predictions

Starts in Oct 2019

CPC SEMAP2.0 forecast
Forecast: 201910-202009



➤ A neutral state might continue for another two seasons in tropical central-eastern Pacific.





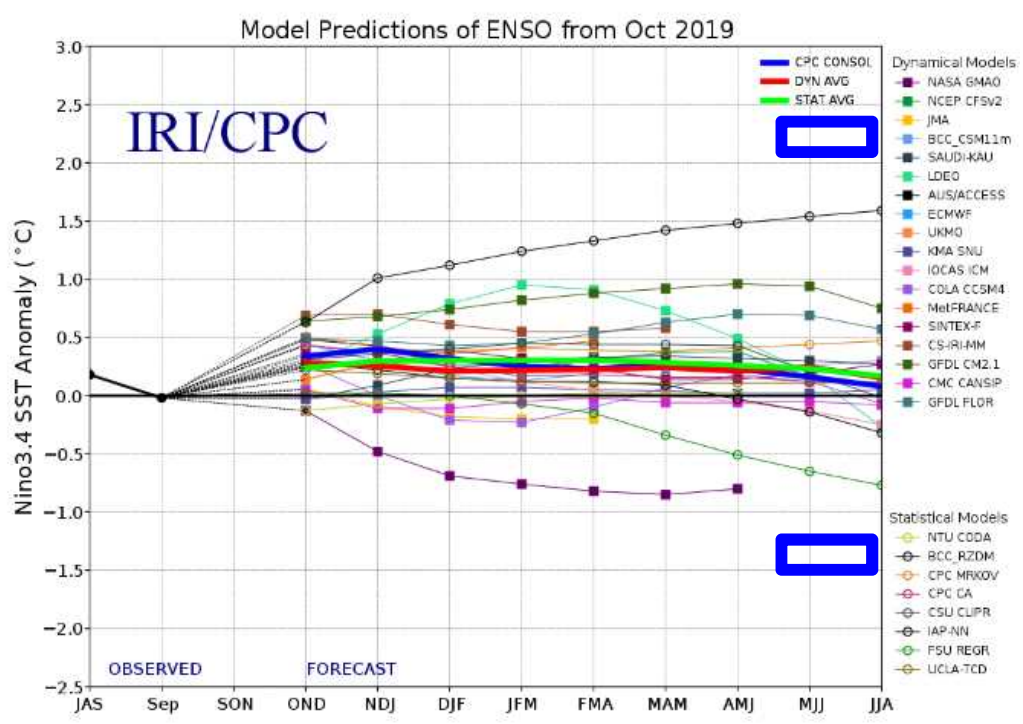
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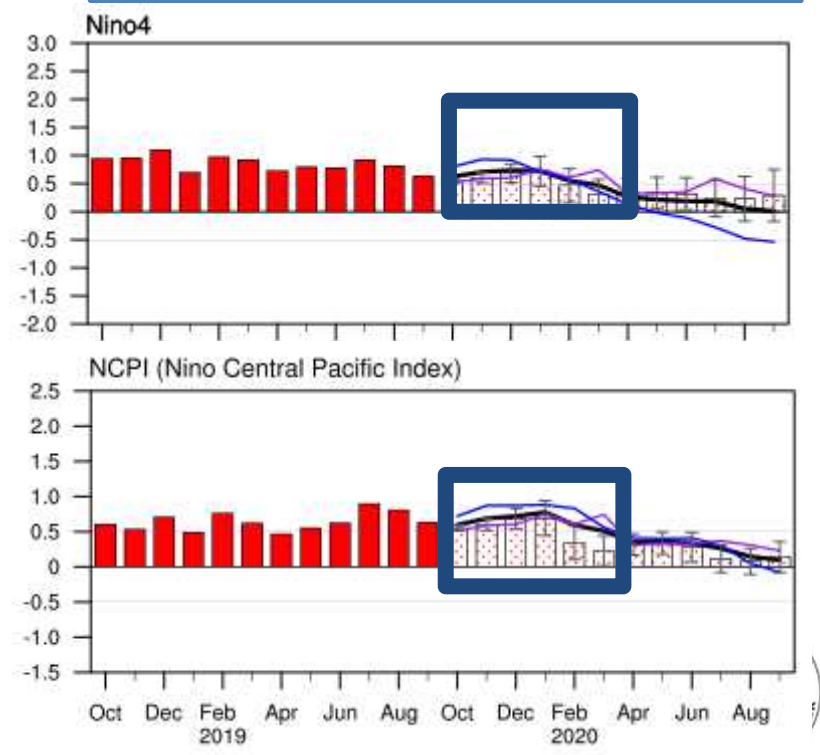


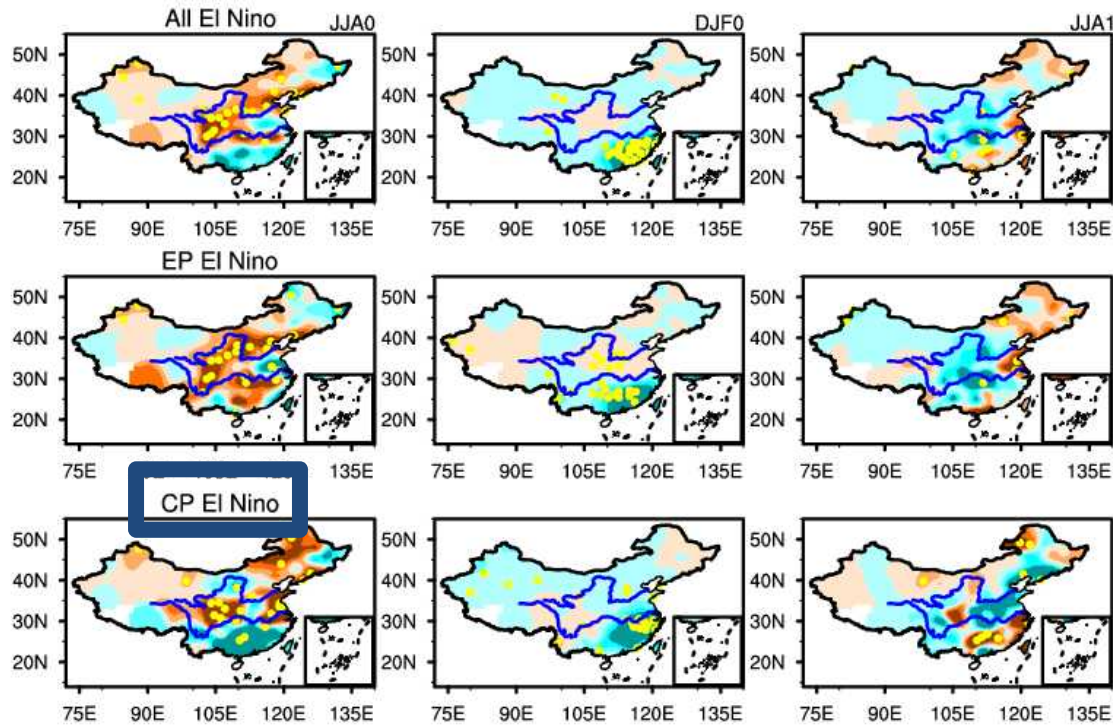


■ A neutral state will persist though positive SSTAs could be seen in tropical Central Pacific during the coming winter. Thus, note the potential influence of CP SSTA in winter on following summer climate.



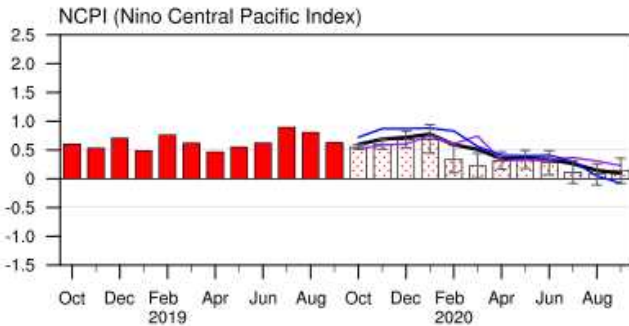
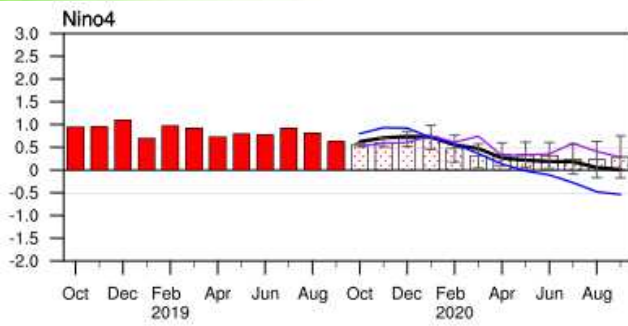
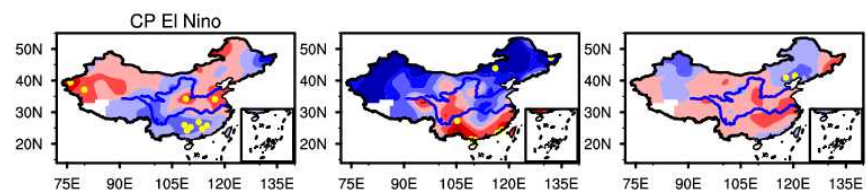
Results from BCC





Based on **composites** of multiple ENSO events, relating **precipitation** and **air temperature** over **China** is considered.

JJA0 **DJF** **JJA1**





Thank You for your time!

