

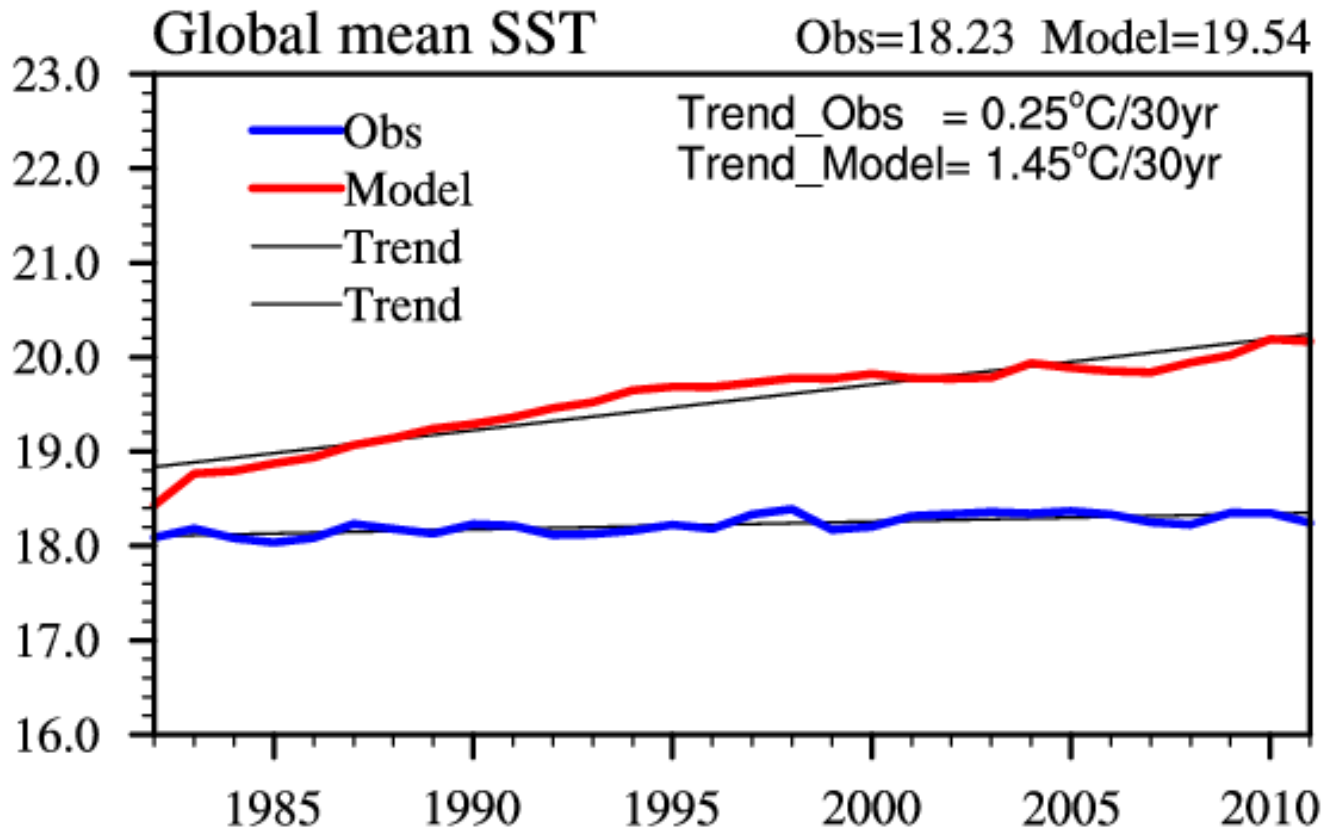
# 一步法海氣耦合模式氣候場修正 對模式長期積分之影響評估

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# CWB 1-tier Coupled Model (CWB/CFS1T1)

- Atmospheric Model : CWB GFS model : T119L40
- Ocean Model : GFDL MOM3 model
- Coupled once per day



**Li and Hogan (1999):** A realistic simulation of both the seasonal cycle and the interannual variation may be achieved when a realistic annual-mean state is reproduced.

### Heat Flux Correction Method:

step	processes		target
1	Atmospheric Model	10 year	Correct annual mean zonal wind stress in tropics
2	Coupled Model +Tropical zonal wind stress correction term	10 year	Correct annual mean SST field
3	Coupled model + SST and wind stress correction terms	30 year	

## 實驗版本

<b><i>Control</i></b>	CWB/CFS1T1
<b><i>Exp</i></b>	CWB/CFS1T1 + heat flux correction
積分時間	30年 free run
診斷項目	climatology, ENSO, MJO (王斌、李天明教授提供)

## OBS : 校驗所使用的觀測資料

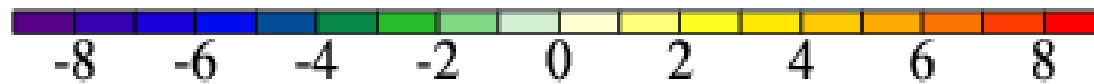
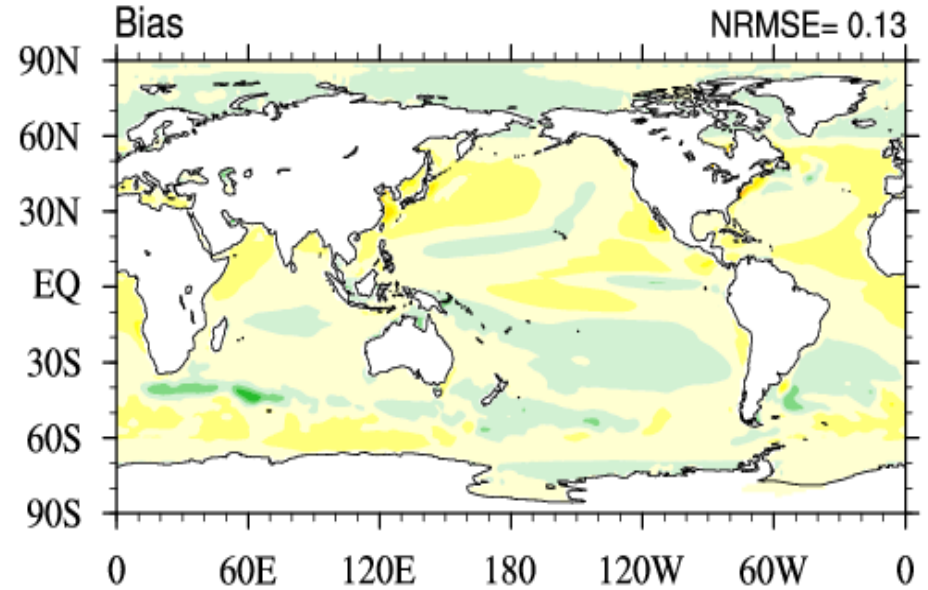
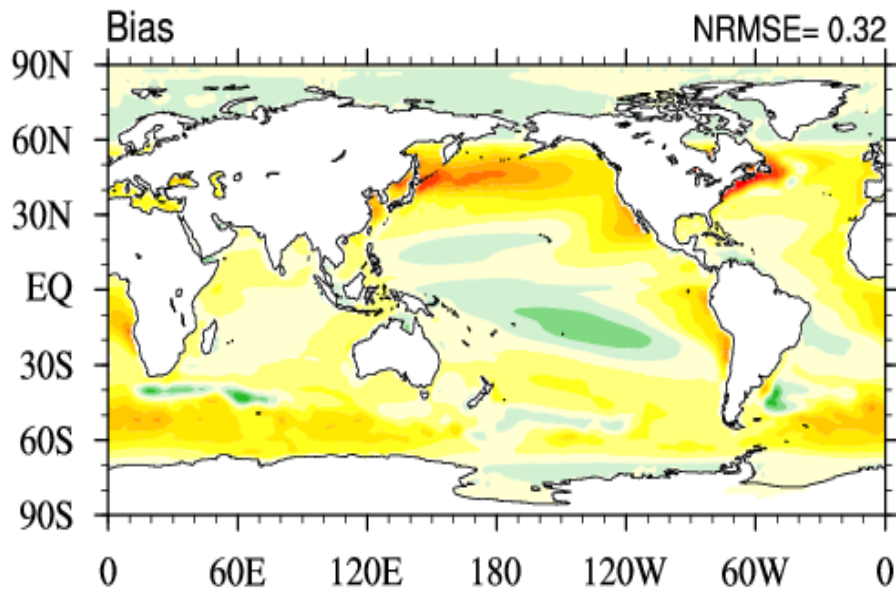
變數		資料來源
SST	海面溫度	OISSTv2 data
Precip	降水	GPCP precipitation data
T2m	2米溫度	CFSR data
Wind	風場	CFSR data
OT	海水溫度	BMRC ocean data

*Climatology*  
*(30 year averaged)*

# SST Bias

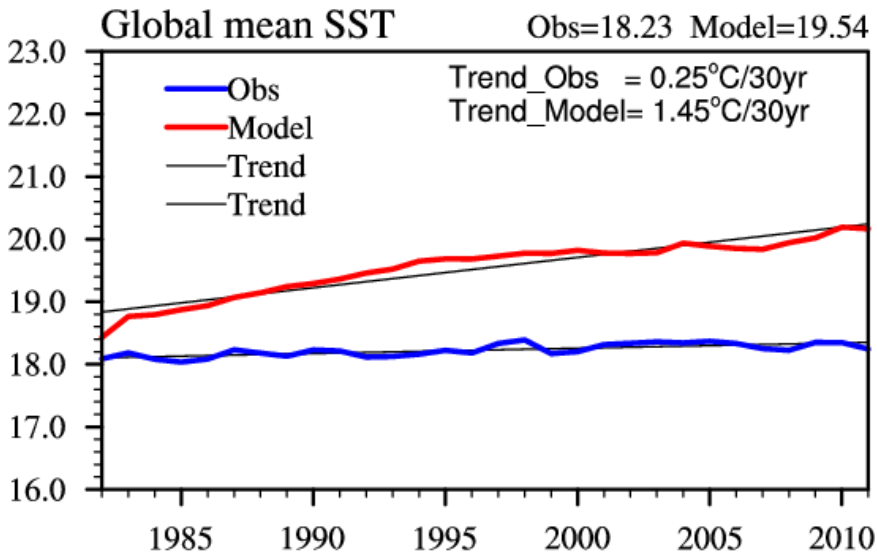
*Control*

*Exp*

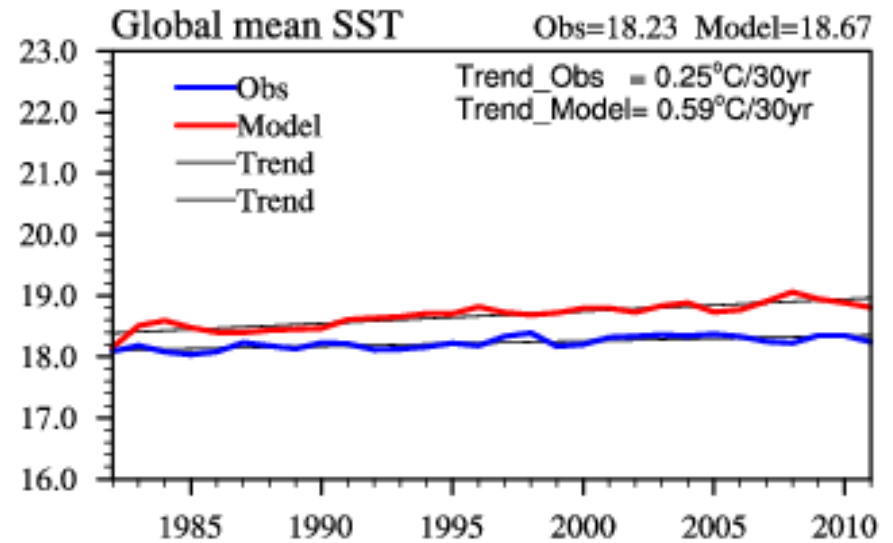


# Global Mean SST

*Control*



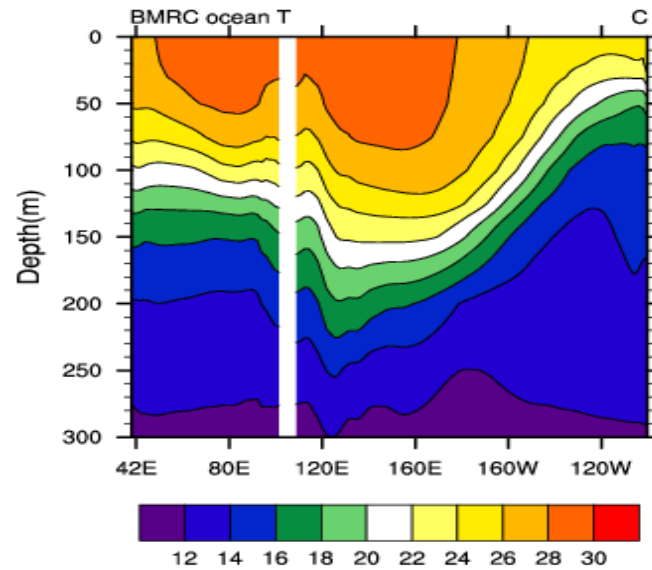
*Exp*



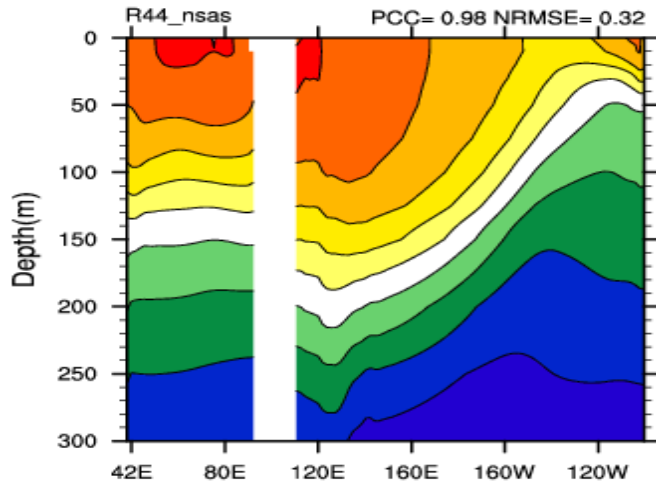


# Ocean Temperature

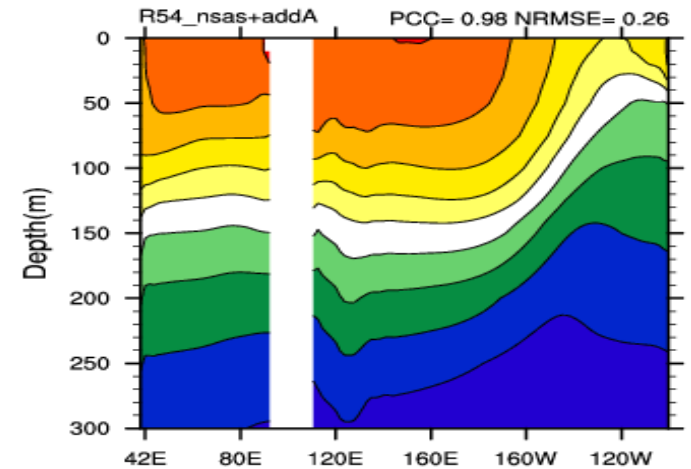
*Obs*



*Control*



*Exp*

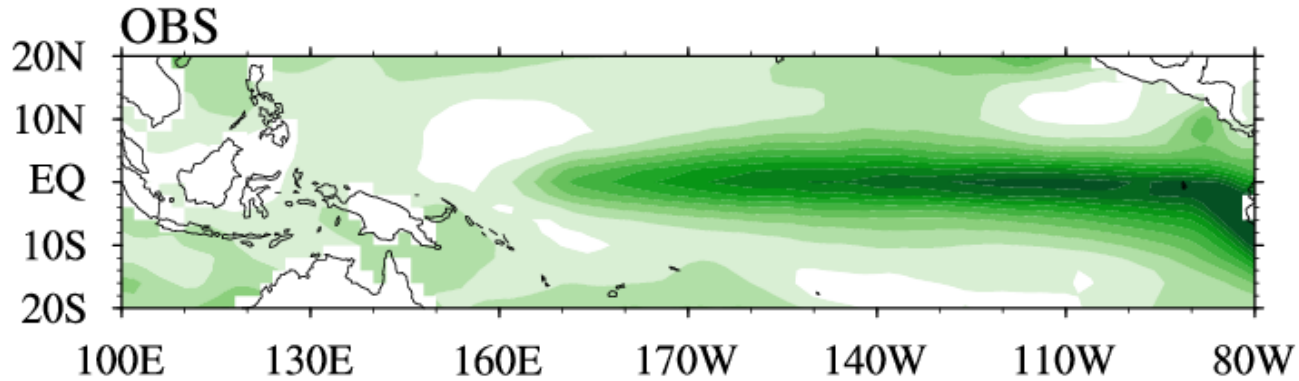


*ENSO*

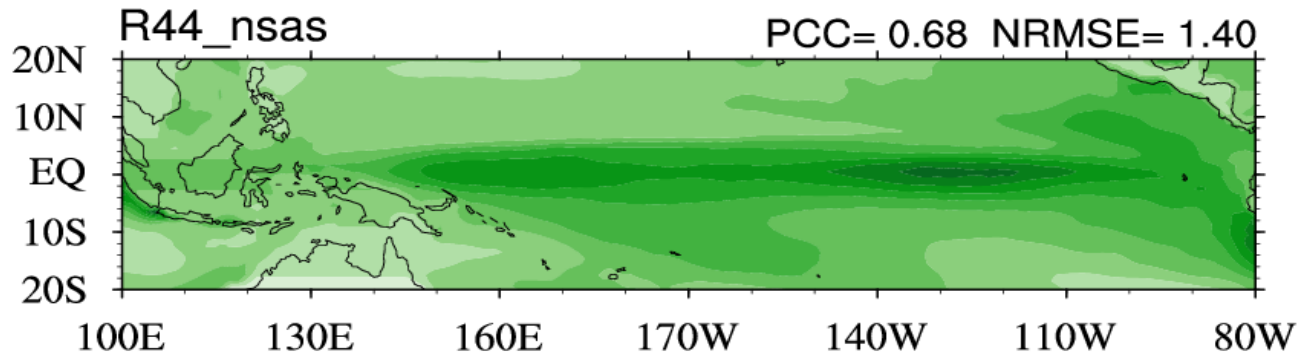
*(El Niño / Southern Oscillation)*

# Standard Deviation of SST

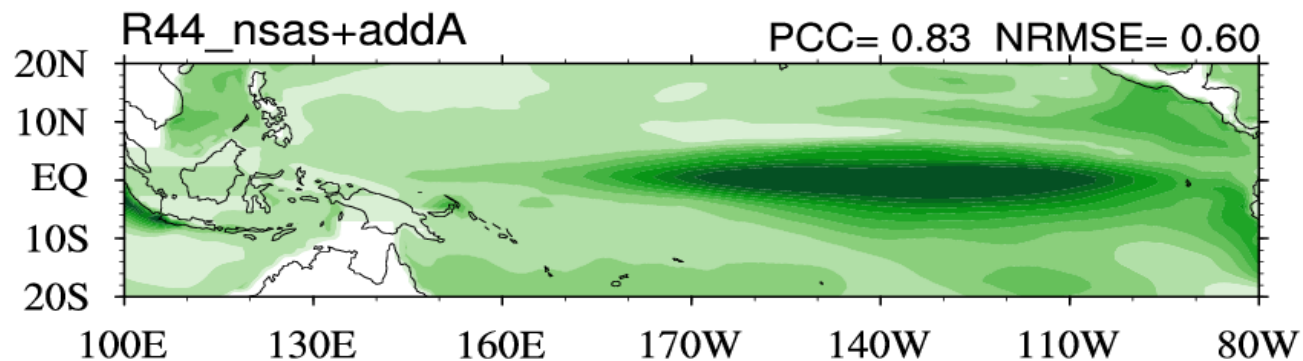
*Obs*



*Control*



*Exp*



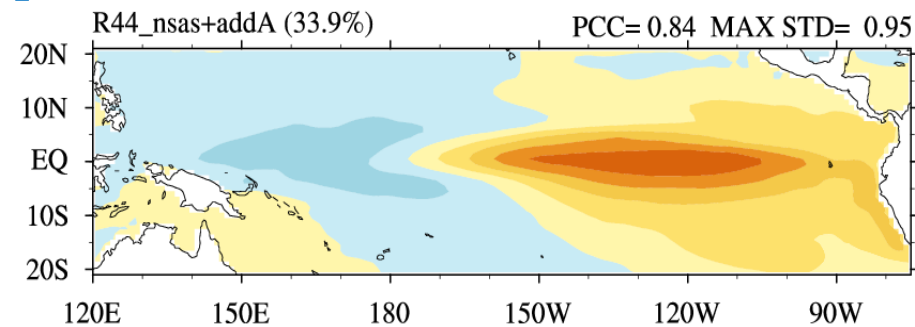
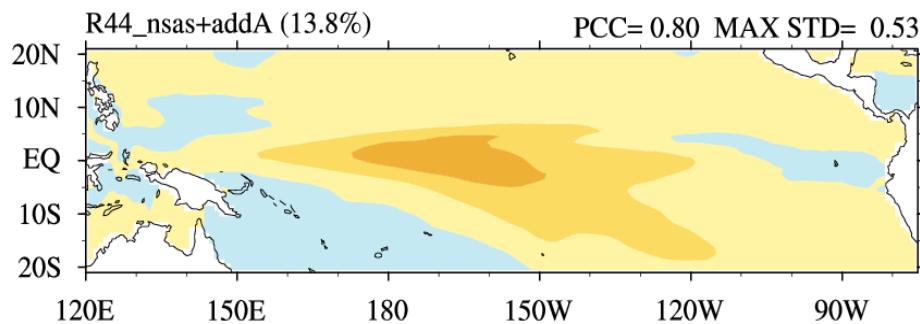
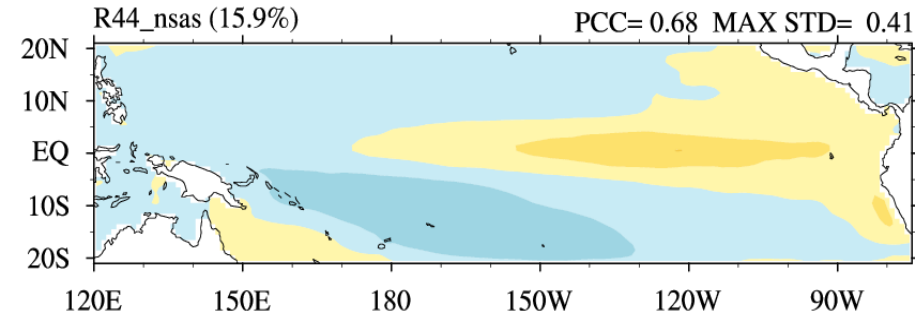
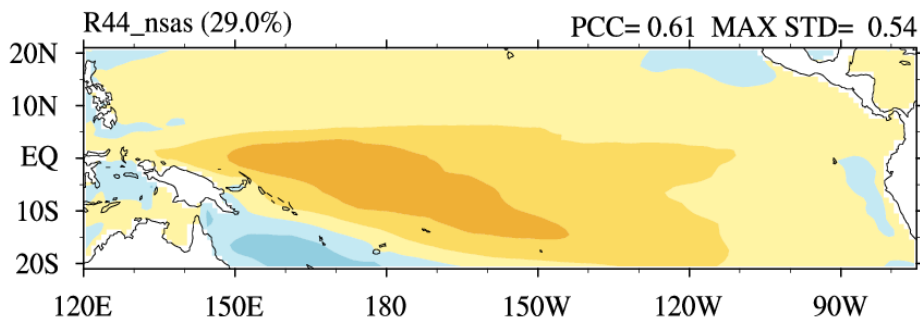
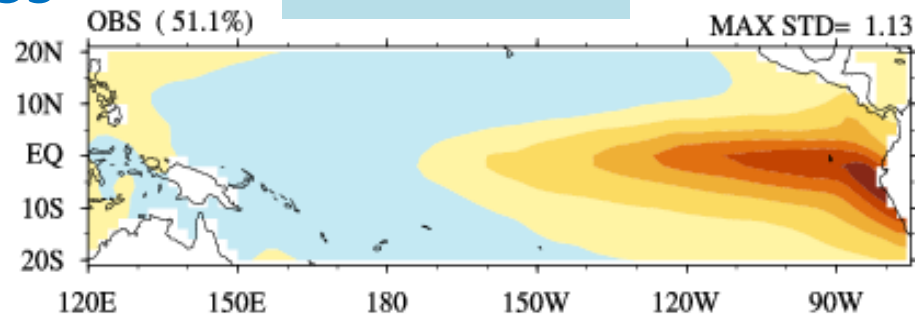
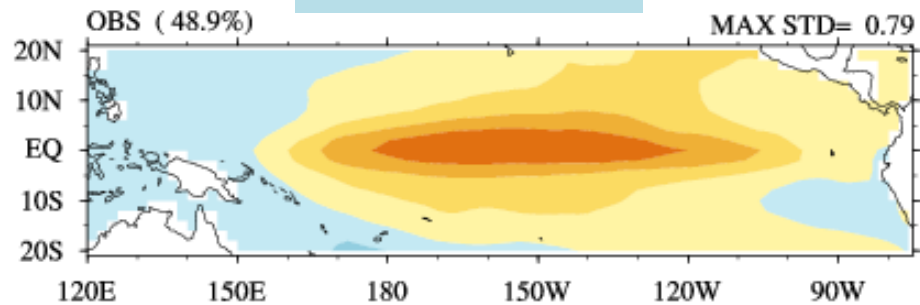
# CP-ENSO

*Obs*

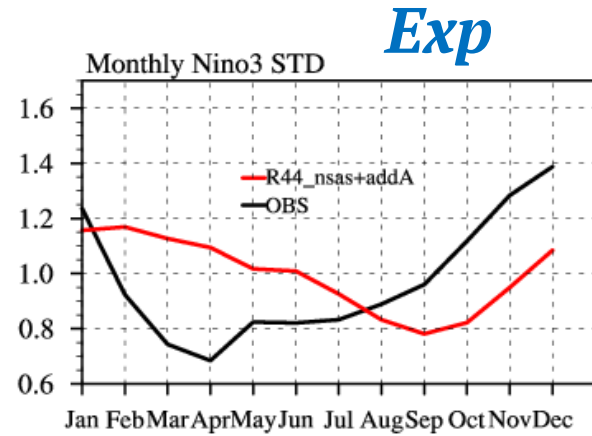
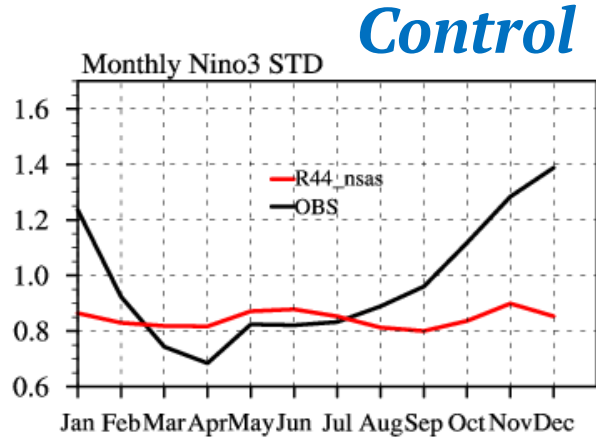
# EP-ENSO

*Control*

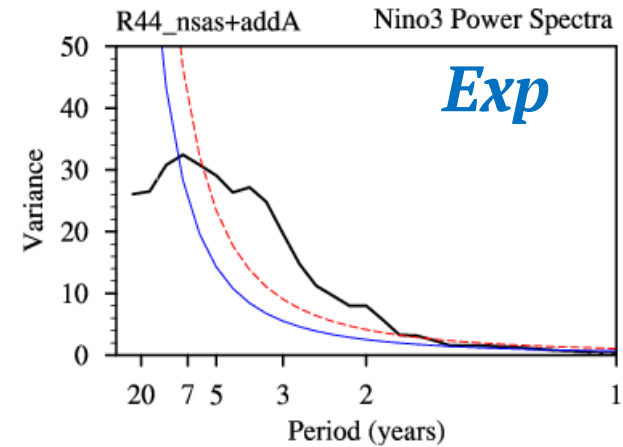
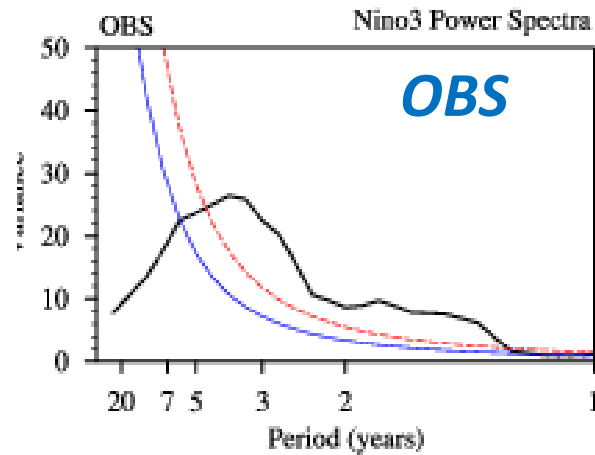
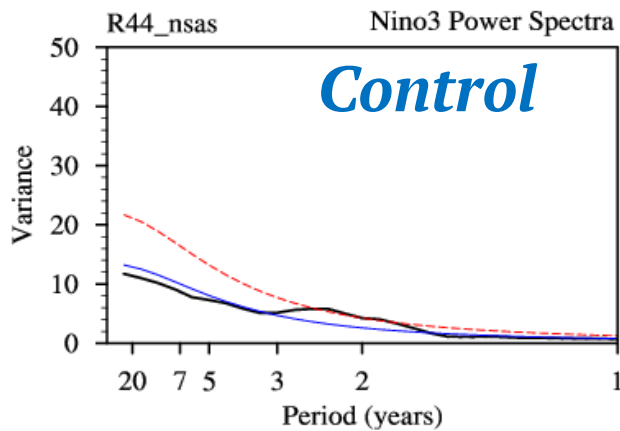
*Exp*



# Monthly NINO3 SSTA Standard Deviation



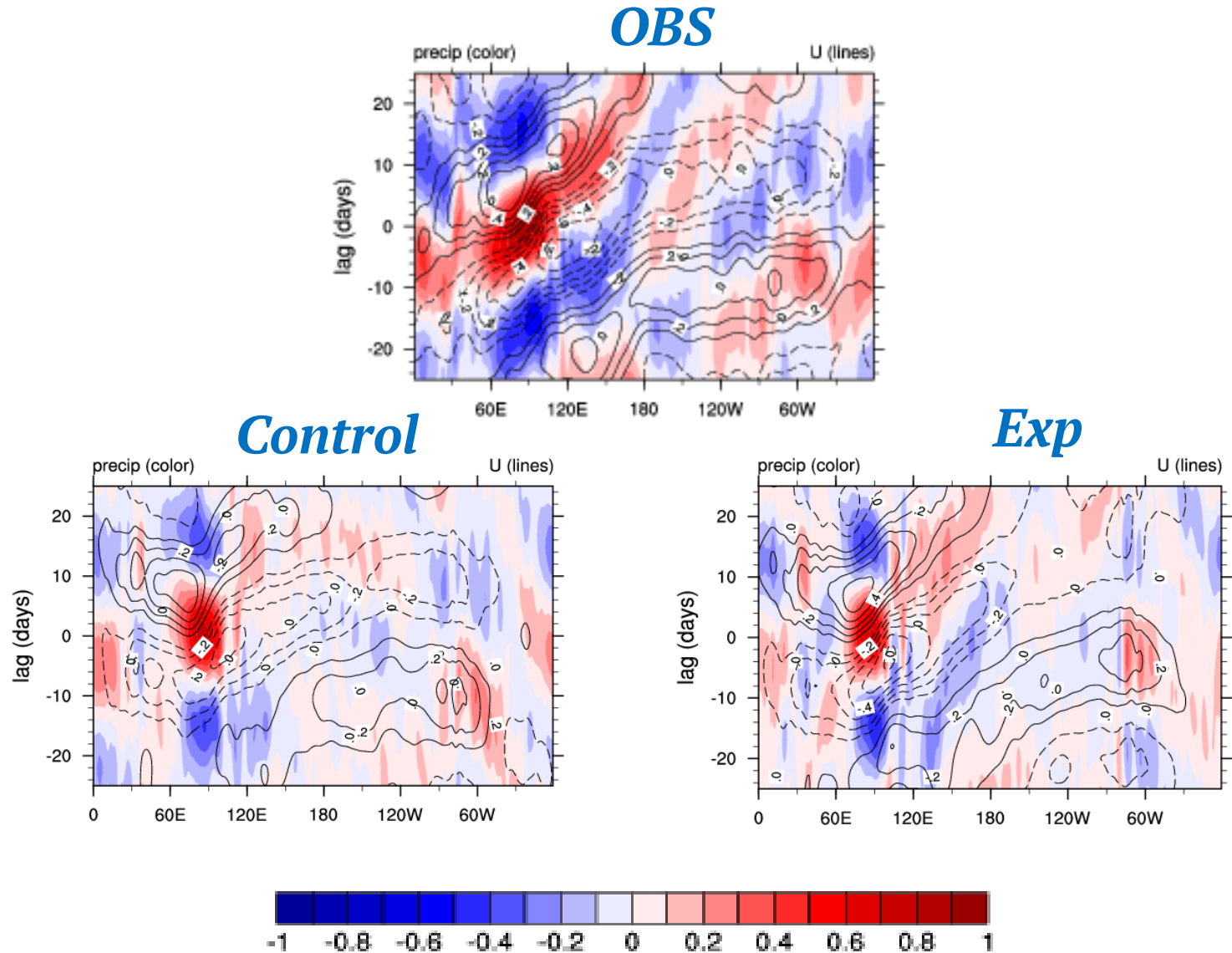
## NINO3 Power Spectra



*MJO*

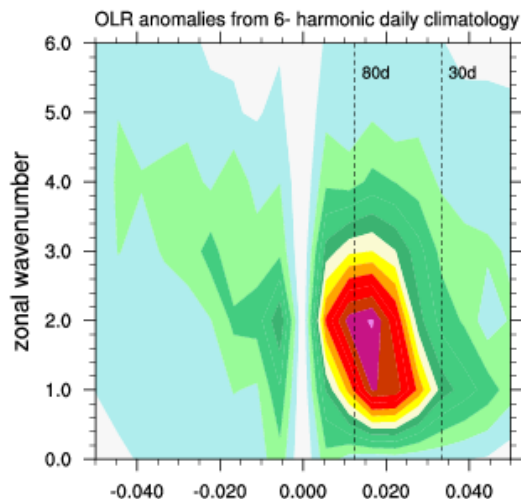
*(Madden-Julian Oscillation)*

# Lag Correlation Diagram for Winter Cases

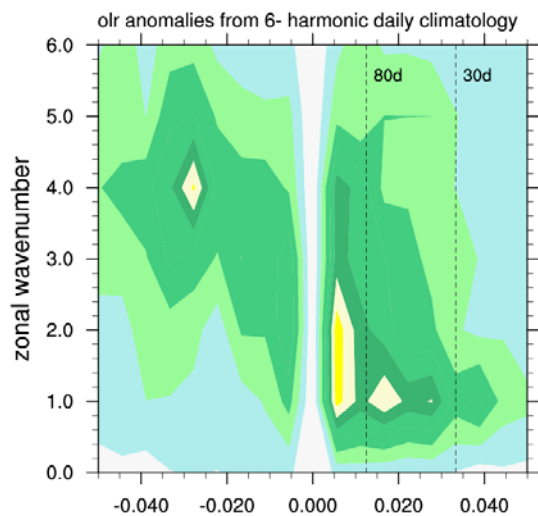


# Wavenumber-Frequency Spectra for Winter Cases

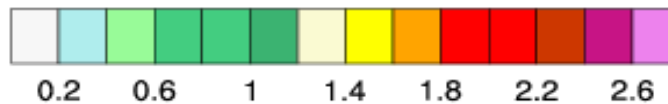
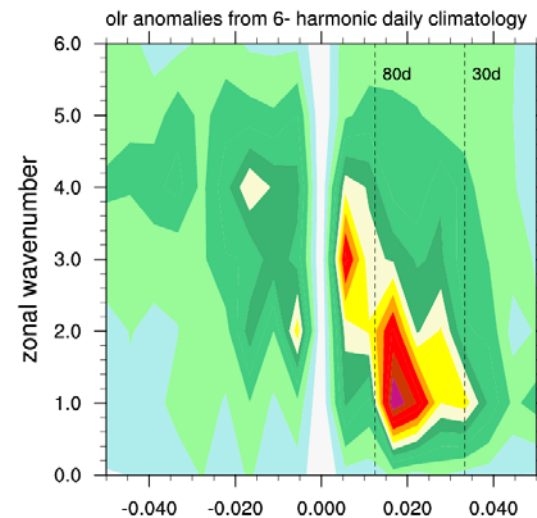
*OBS*



*Control*



*Exp*





# 結論

- 本研究使用一步法海氣耦合模式評估加入heat flux correction修正氣候偏差對模式模擬ENSO及MJO之影響。
- 測試結果顯示加入heat flux correction修正氣候偏差後對ENSO與MJO之預報均有明顯改進。
- 結果顯示氣候值的修正對一步法海氣耦合模式之預報影響甚大，未來需要更積極改進。
- Heat Flux Correction方法可改善模式預報，未來可考慮應用於模式。