

CWB CFS1Tv1 模式改進 測試

吳子榆 劉邦彥 陳建河 莊漢明 林沛練

前言

關於優化CWB 1-tier CFS-v1工作規劃目前進行到第4年

於第1年完成作業版CWB 1-tier CFS-v0大氣模式部分(T319L60)的更換工作

第2年將CWB 1-tier CFS-v0(T319L60+MOM3)升級為MPMD架構(Multiple Program - Multiple Data)，即為CWB 1-tier CFS-v1(後簡稱CWB1T-v1)

第3、4年進行多個物理過程調整測試，並選擇一個海溫長時間積分較接近觀測的設定，繼續後續工作項目並使用校驗分析工具診斷模式。

本報告則是針對模式改進測試提出討論。

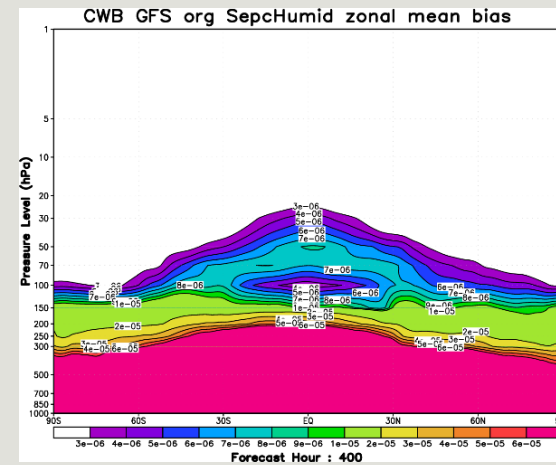
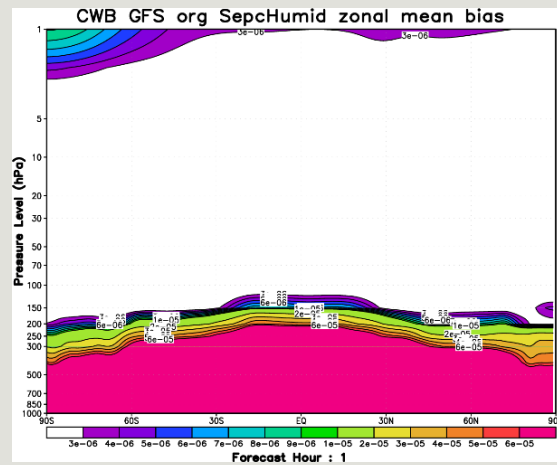
模式改進測試 – q tracers 問題

比濕

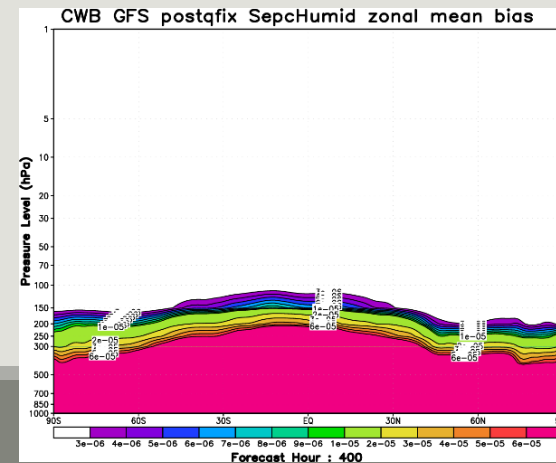
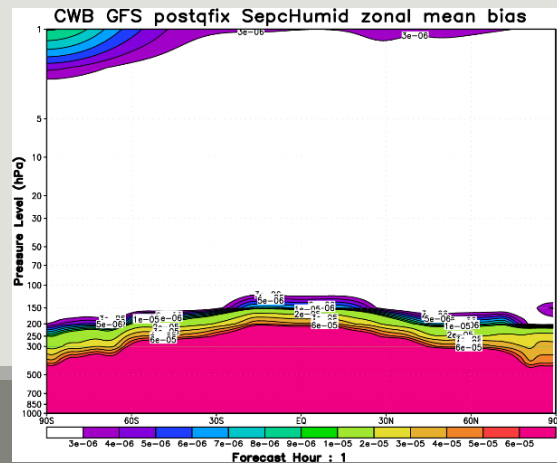
DAY 0

DAY 400

ORG



fix



模式改進測試

模式: CWB GFS T240L60+GFDL MOM3

起因:發現模式高層雲水過高

開啟一連串的水氣場修正:

postq fix(ncld=1, 水氣有借)、tracers用ndsl方法處理(沒有經過波譜轉換)

參數化調整(針對高雲過多低雲過少進行敏感性測試):

Sascnv_n.f90 : xlamde 、 clam

Shlcon.f90 : clam

在diabat.f90加入readclx, 每一次積分都能更換背景場

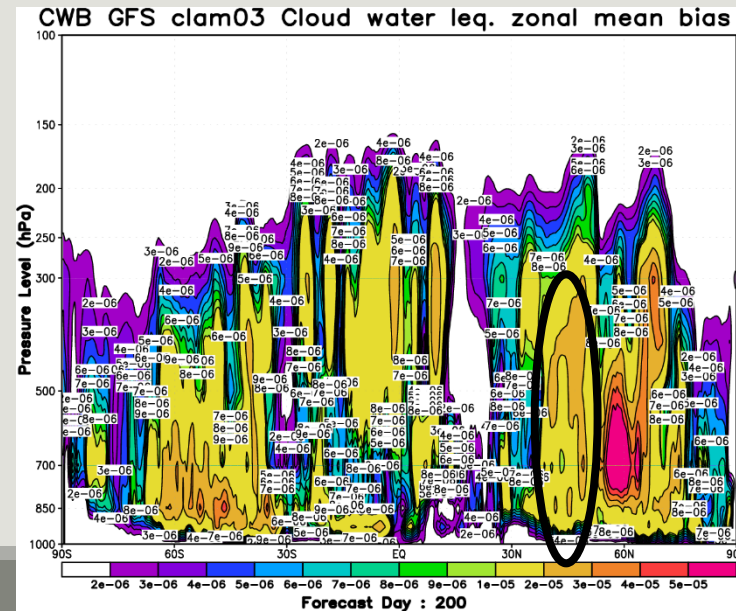
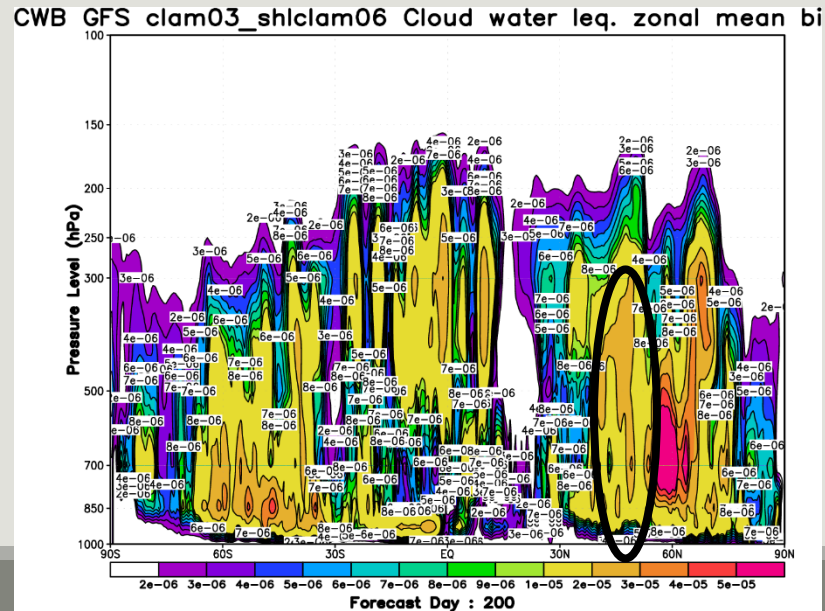
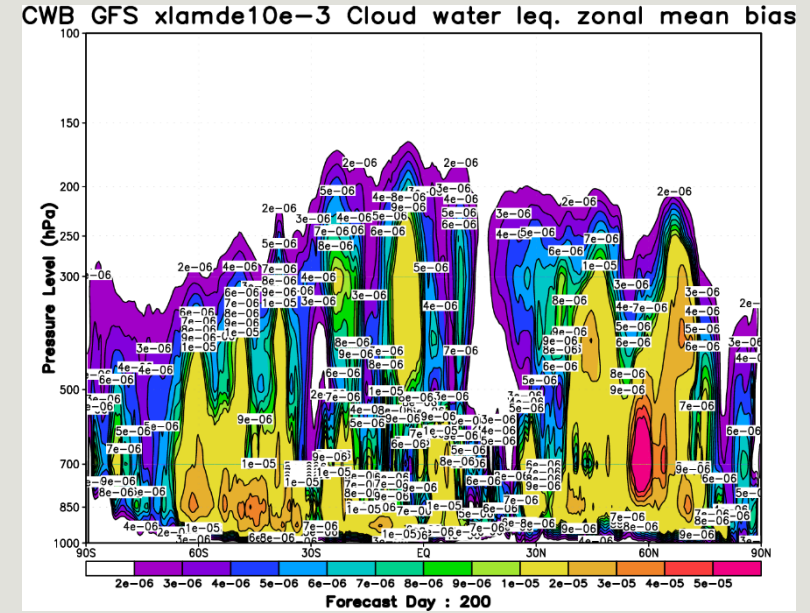
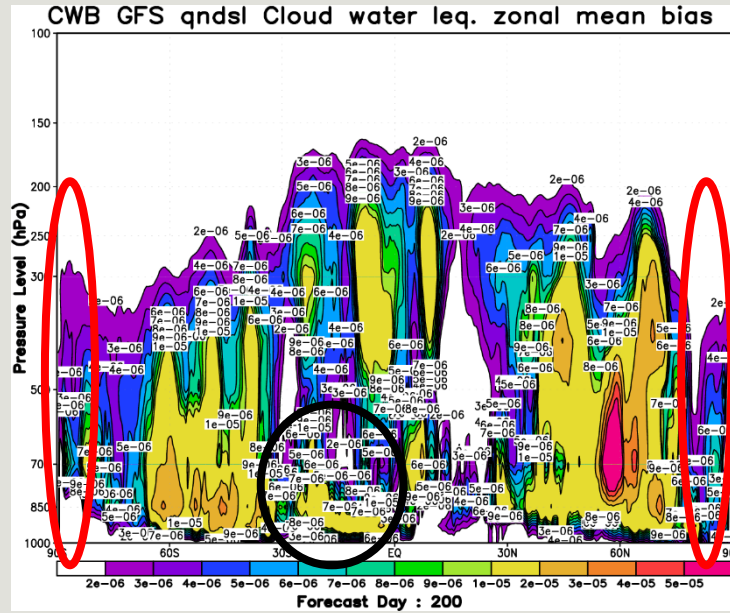
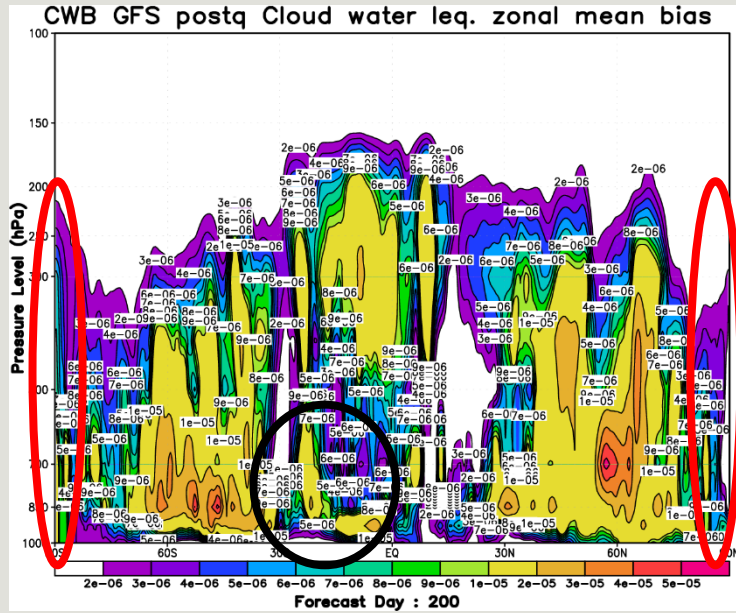
實驗初始時間: 20111112 00Z

實驗介紹

實驗名稱	測試說明
T240_qndsl	對照組
T240_xlamde10e-3	低雲變多， xlamde=10e-4 -> 10e-3(NSAS)
T240_clam03	低雲變多， clam=0.1 -> 0.3(NSAS)
T240_clam03_shlclam06	低雲變多， clam=0.1 -> 0.3(NSAS) clam=0.3 -> 0.6(SHLCON)

DAY:200 雲水

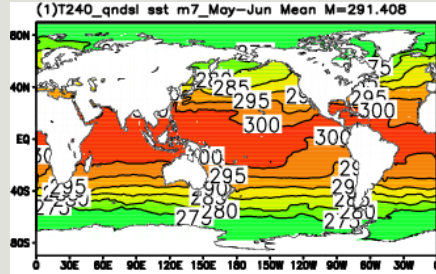
高雲沒有如預期減少，低雲有增加



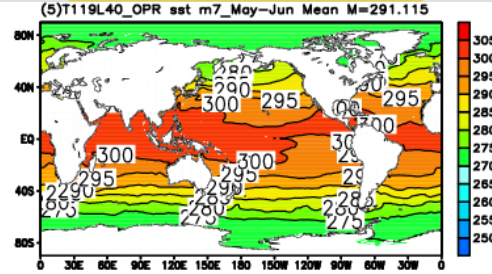
May-Jun

海溫

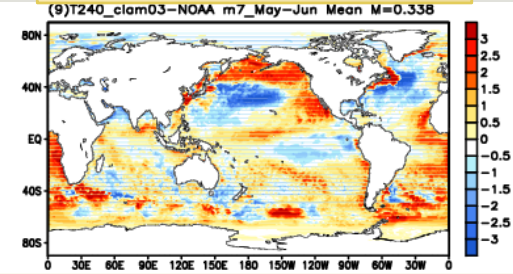
CNTL



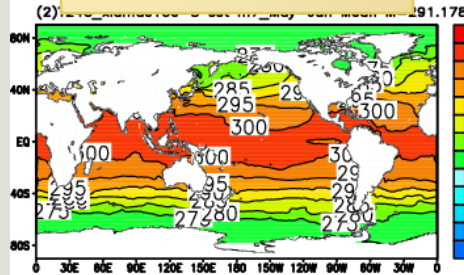
1TierV0



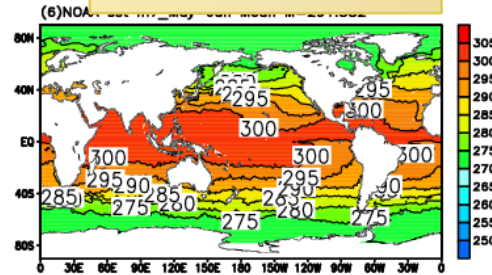
Clam03-OISST



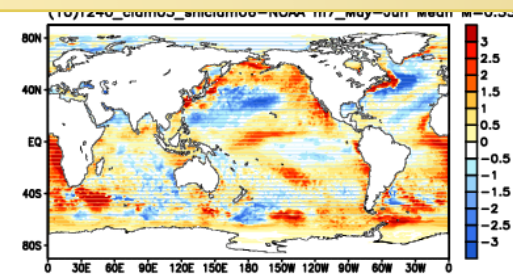
Xlamde10e-3



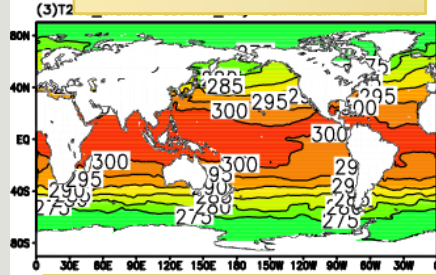
OISST



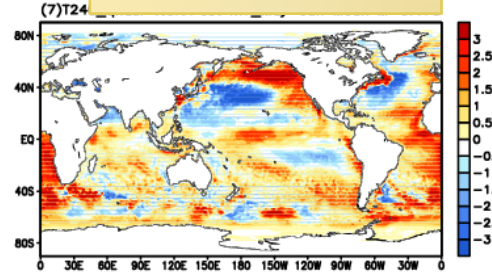
Clam03_shlclam06-OISST



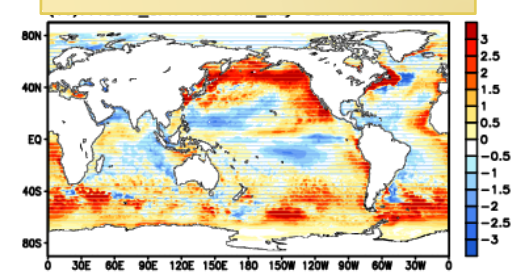
clam03



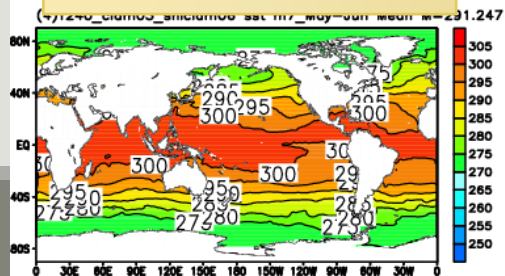
CNTL-OISST



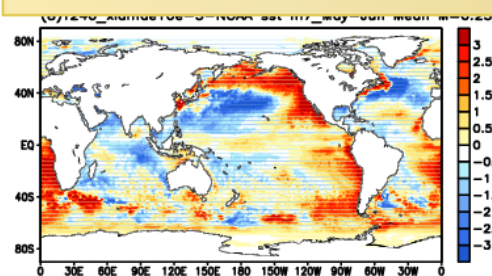
1TierV0-OISST



Clam03_shlclam06



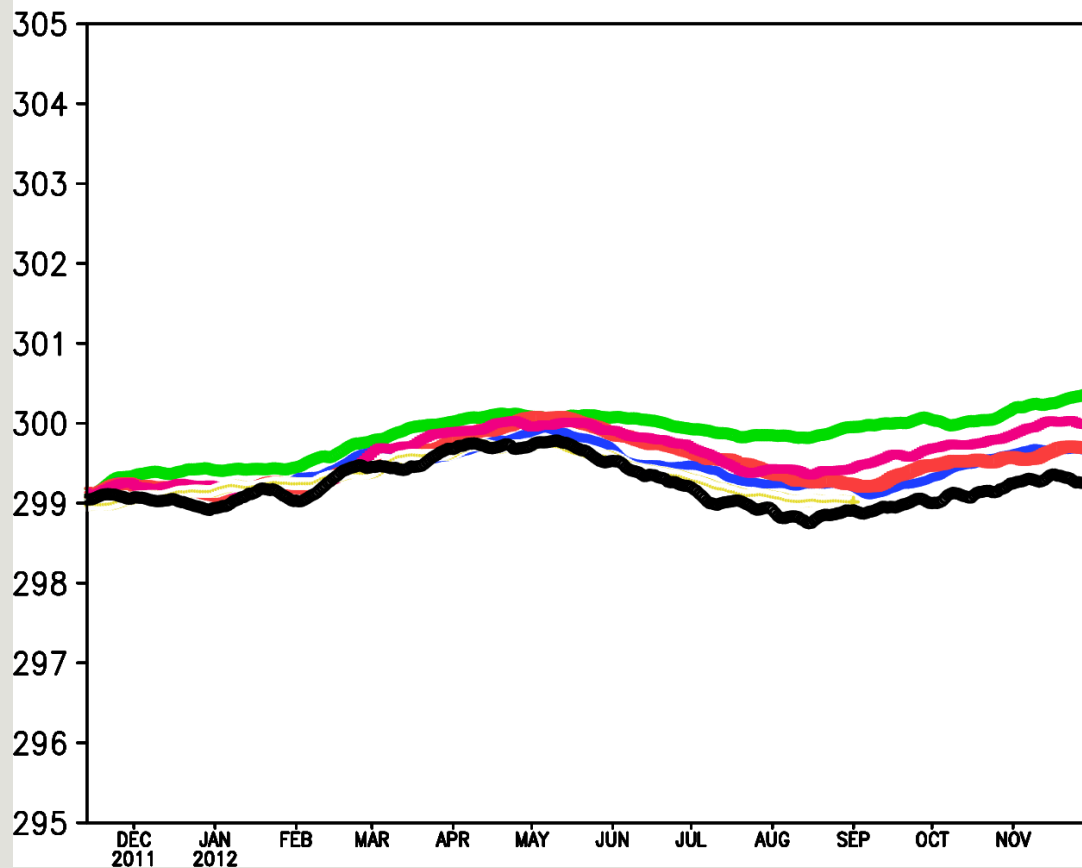
Xlamde10e-3-OISST



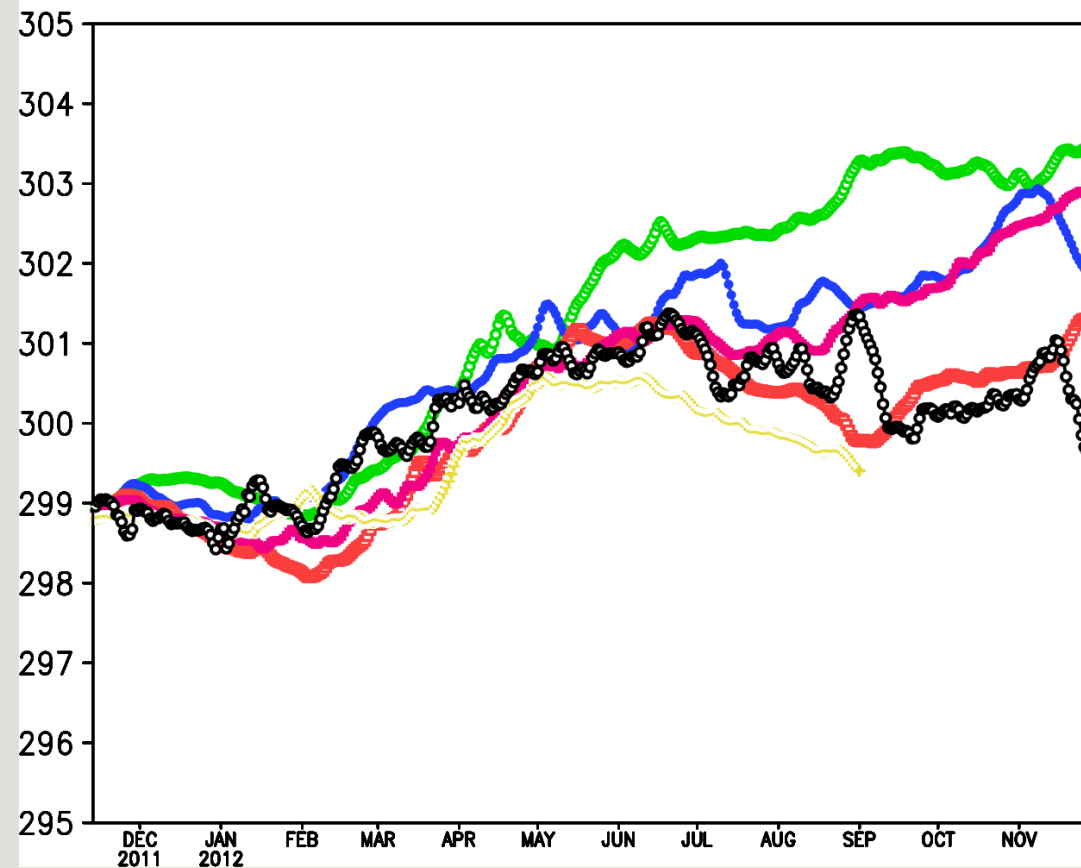
減少夏半球高緯度的暖偏差

T240_qndsl
T240_xlamde10e-3
T240_clam03
T240_clam03_shlclam06
1T1v0

30S-30N SST diff



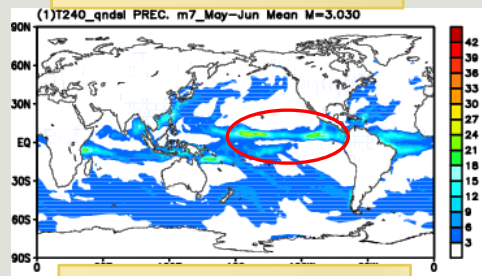
Nino3.4 SST diff



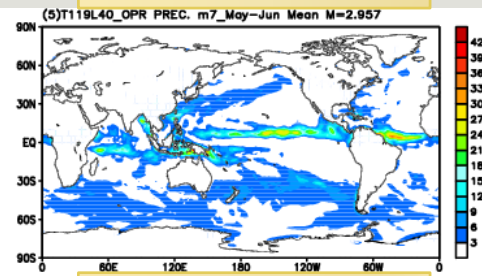
May-Jun

雨量

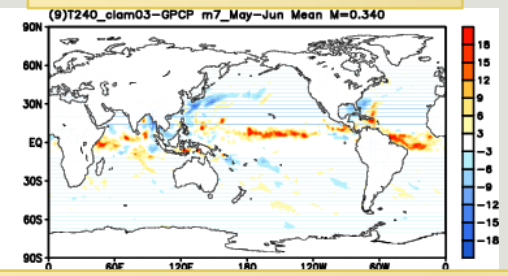
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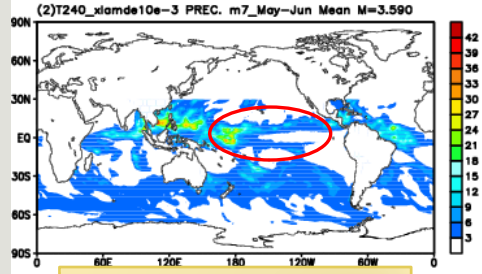
1TierV0



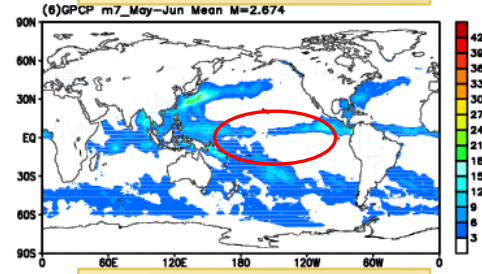
Clam03-GPCP



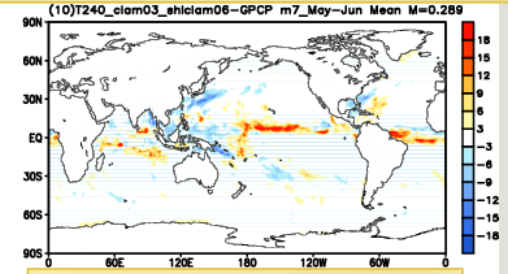
Xlamde10e-3



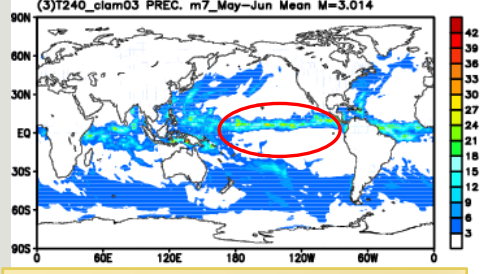
GPCP



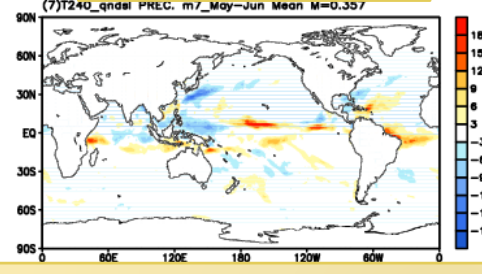
Clam03_shlclam06-GPCP



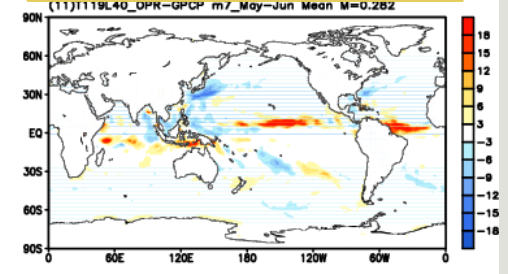
clam03



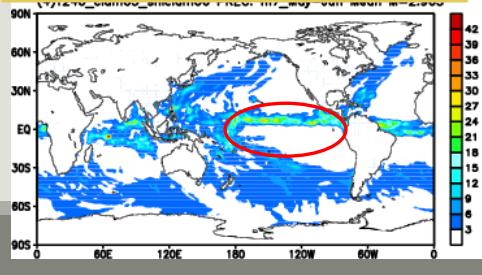
CNTL-GPCP



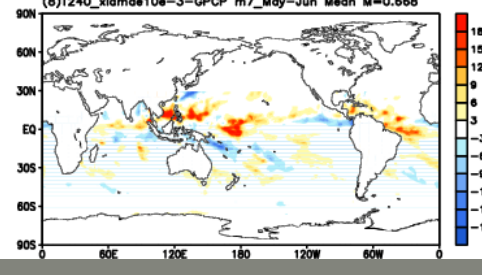
1TierV0-GPCP



Clam03_shlclam06



Xlamde10e-3-GPCP

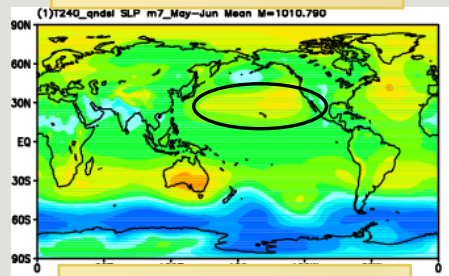


逸入率可改善double ITCZ
降雨分布較接近觀測

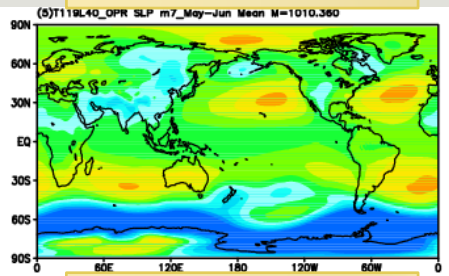
May-Jun

海平面
氣壓

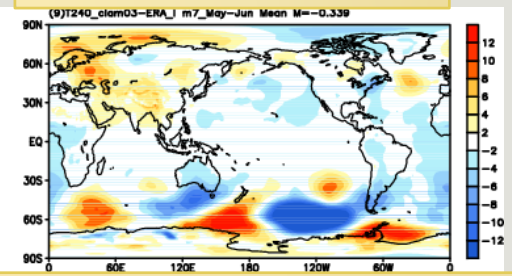
CNTL



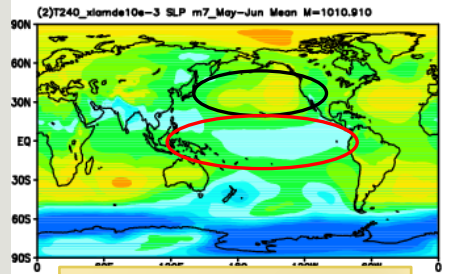
1TierV0



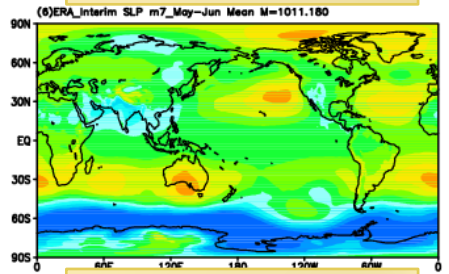
Clam03-NCEP R1



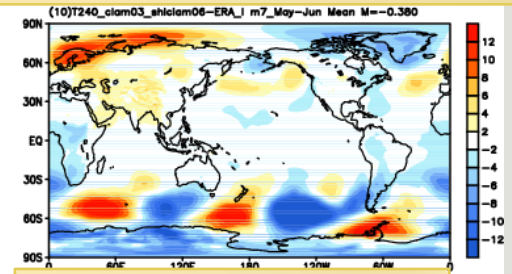
Xlamde10e-3



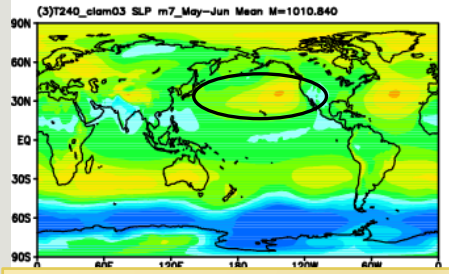
ERA_I



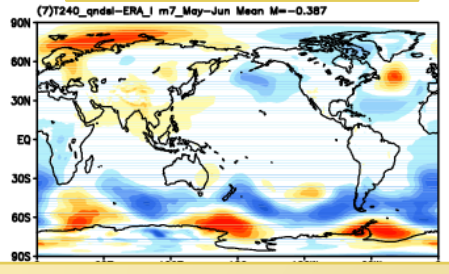
Clam03_shlclam06-NCEP R1



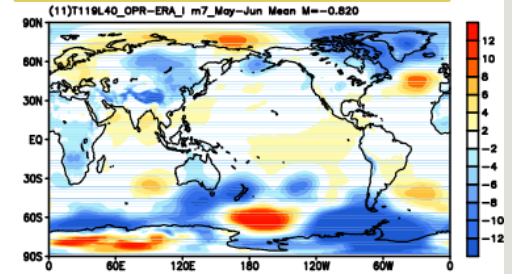
clam03



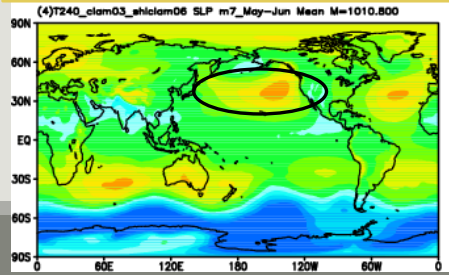
CNTL-NCEP R1



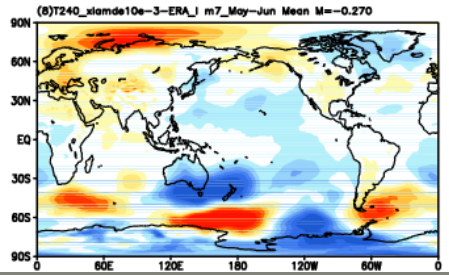
1TierV0-NCEP R1



Clam03_shlclam06



Xlamde10e-3-NCEP R1



結論與未來工作

將大氣模式q tracers換成ndsl方法，處理過程不會有負值出現。

另外調整clam逸入率能有效減緩中高緯地區在夏半球的暖偏差，改進模式降雨不會有double ITCZ，且長時間海溫能穩定並接近觀測值。

將根據這組設定進行最少**10**年的長期積分，並透過夏威夷大學王斌教授實驗室發展的模式校驗工具，進一步分析模式的預報能力及**MJO**模擬能力等等。