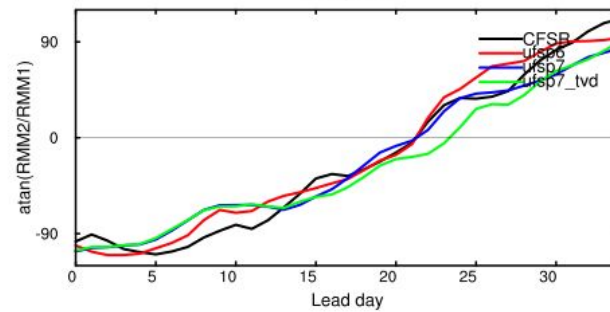
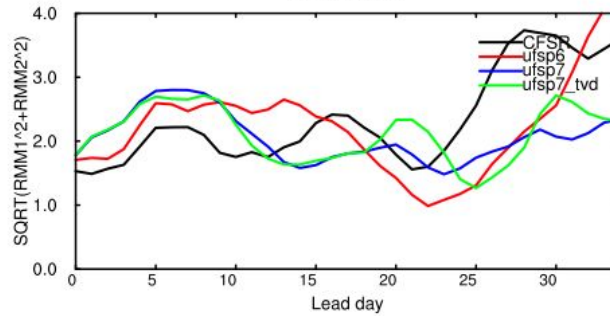
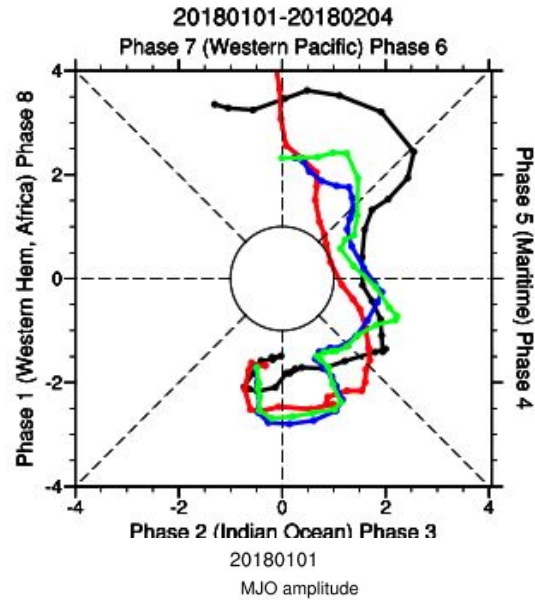


# Diagnostics on MJO and jet stream for TVD scheme test

- Case: 20180101& 2018115
  - UFSP6:GFSv16 physics, ICs: CFSR atm, CPC ocn and ice, CFS forcing wave. ran by Jiande)
  - UFSP7:NOAH MP+ updated physics, ICs: GEFSR atm, CPC ocn and ice, GEFSR forcing wave
  - UFSP7\_TVD: NOAH MP+ updated physics+TVD, ICs: GEFSR atm, CPC ocn and ice, GEFSR forcing wave
  - All models are on C384L127 resolution
- Reference: CFSR

# **20180101 case**

# MJO



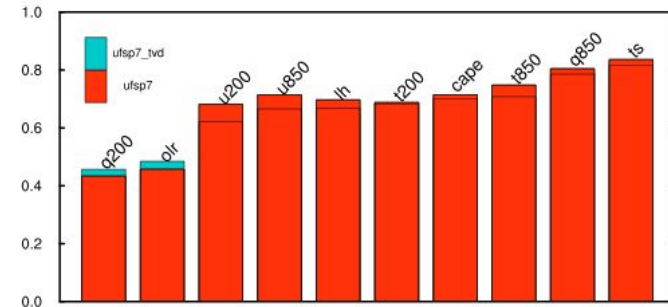
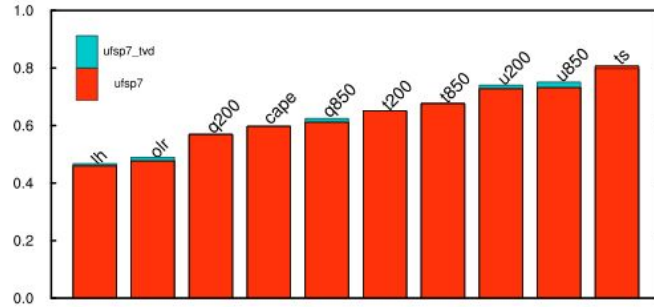
- P7 and P7\_TVD perform similar
- Both P7 versions show weaker MJO after ~10 days but stronger MJO ~19-24 days than P6.

# PAC Skill (Tropics)

(20S-20N, 60E-160W)

(20S-20N, 160W-0)

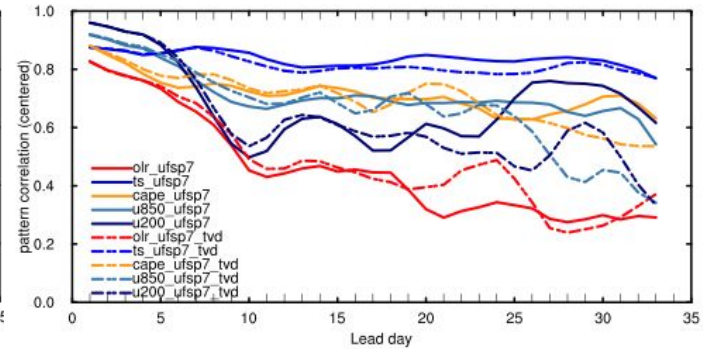
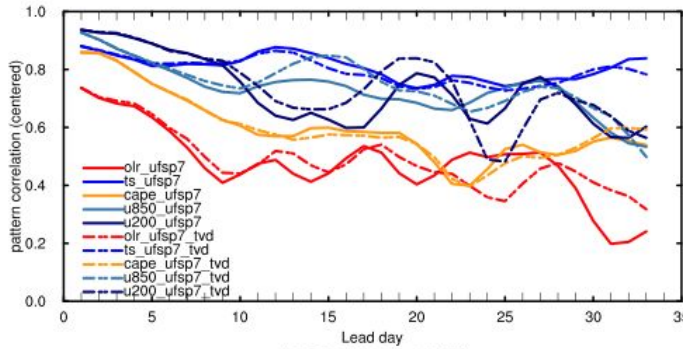
35-day avg



(20S-20N,60E-160W)

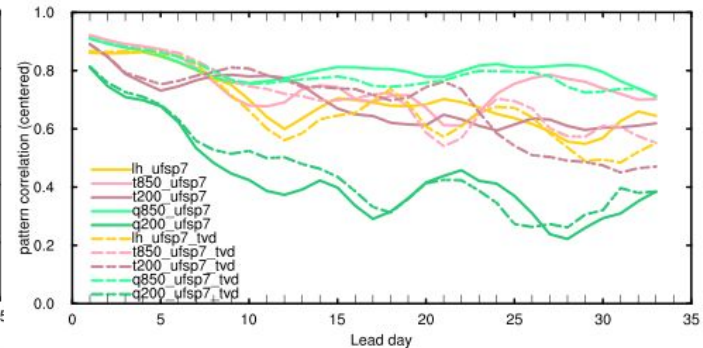
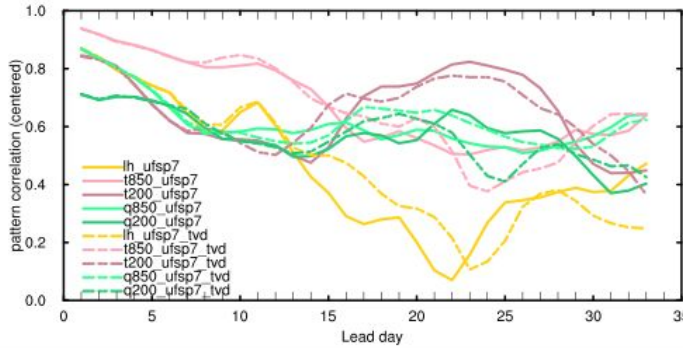
(20S-20N,160W-0)

Day-to-day



(20S-20N,60E-160W)

(20S-20N,160W-0)

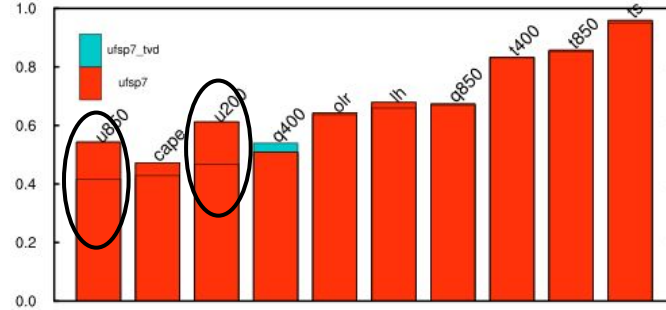
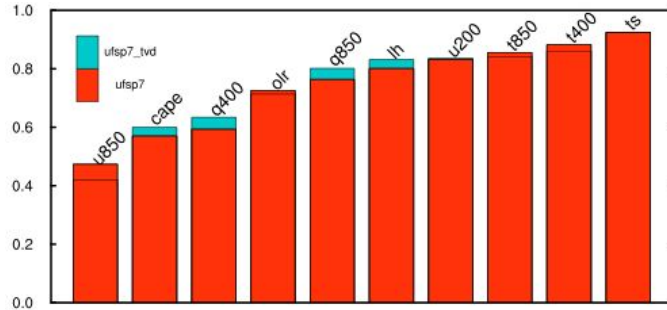


# PAC Skill (NH mid-high Latitude)

(30-90N, 60E-160W)

(30-90N, 160W-0)

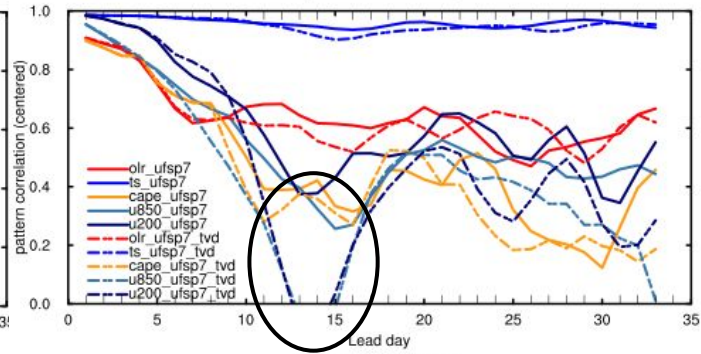
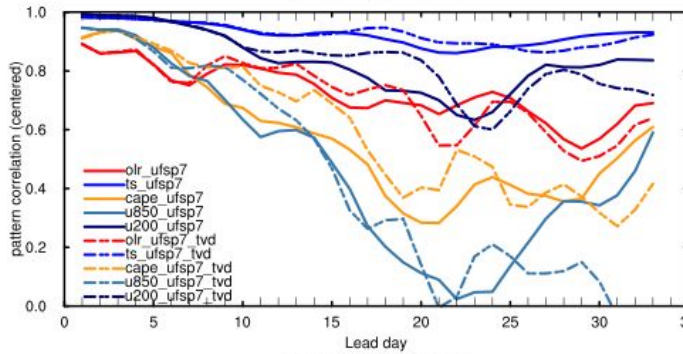
35-day avg



(30-90N, 60E-160W)

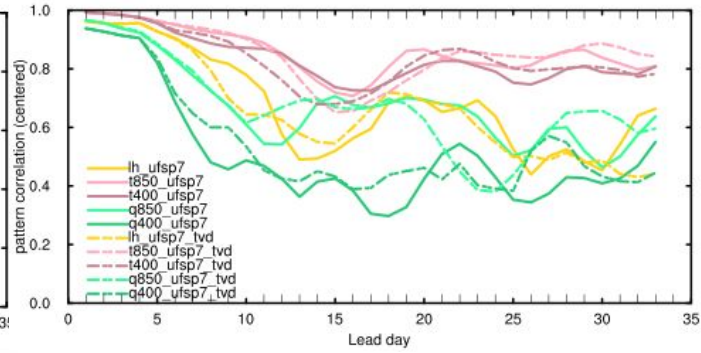
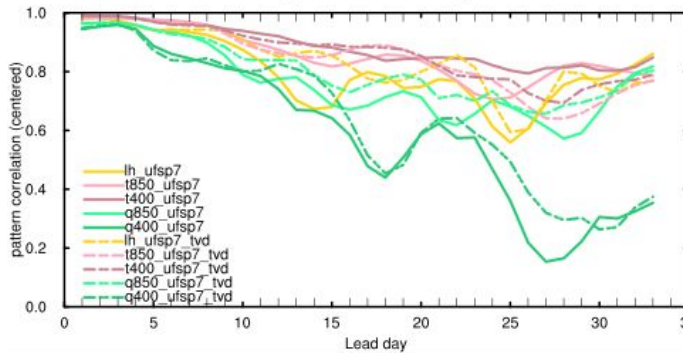
(30-90N, 160W-0)

Day-to-day



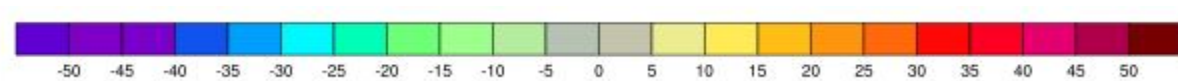
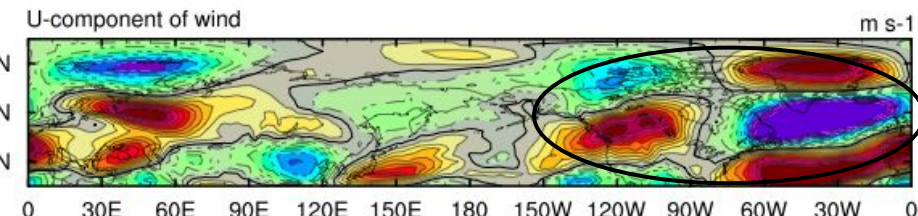
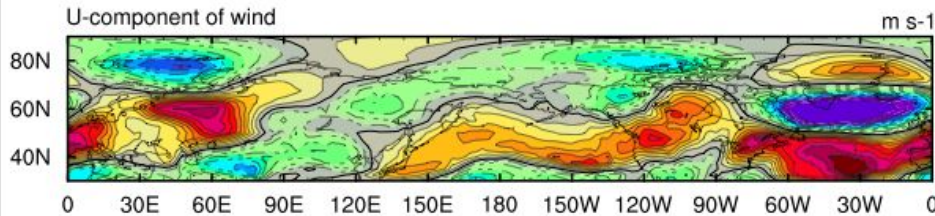
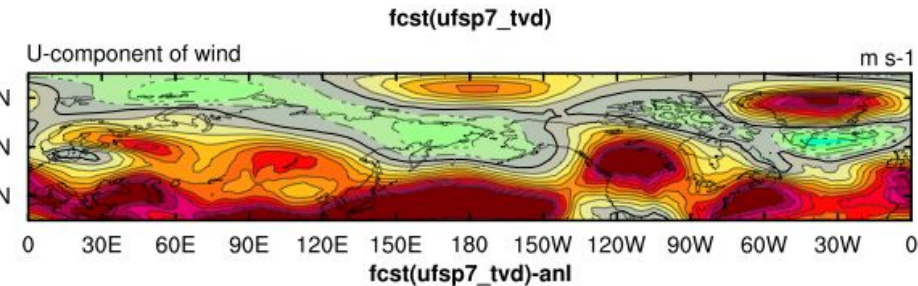
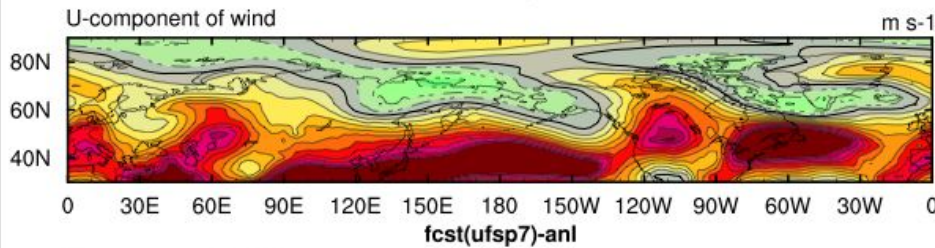
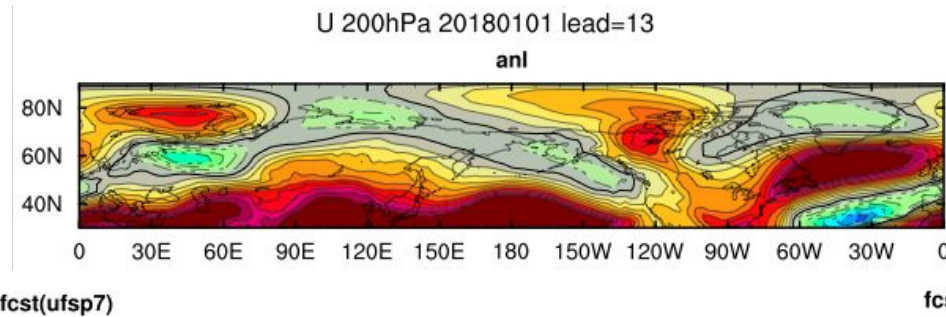
(30-90N, 60E-160W)

(30-90N, 160W-0)



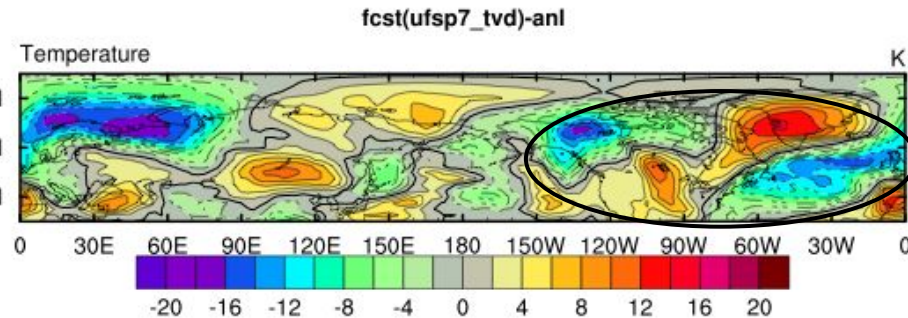
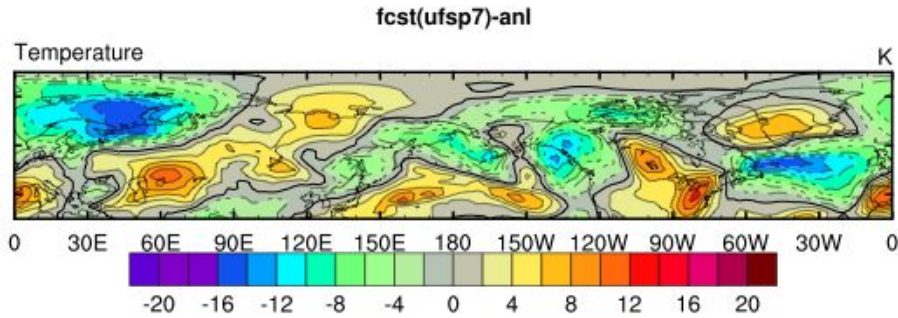
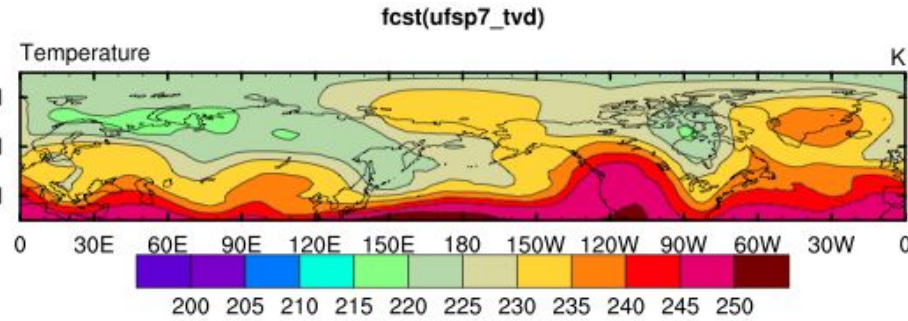
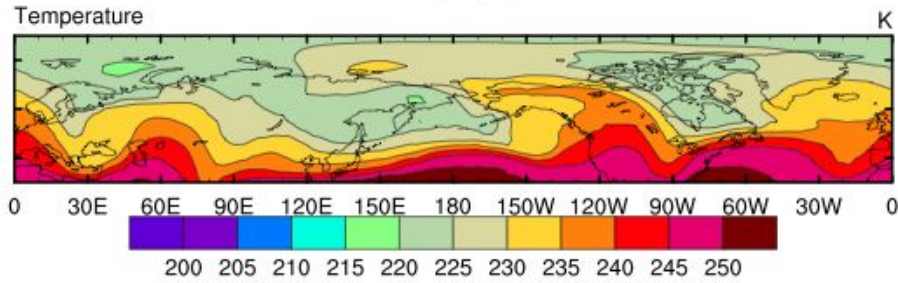
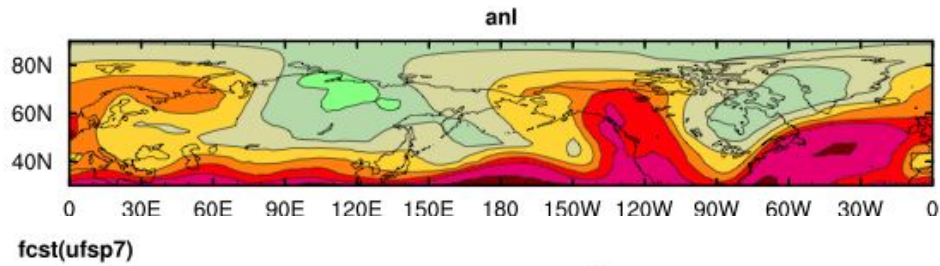


# U200 (mid-high lat)



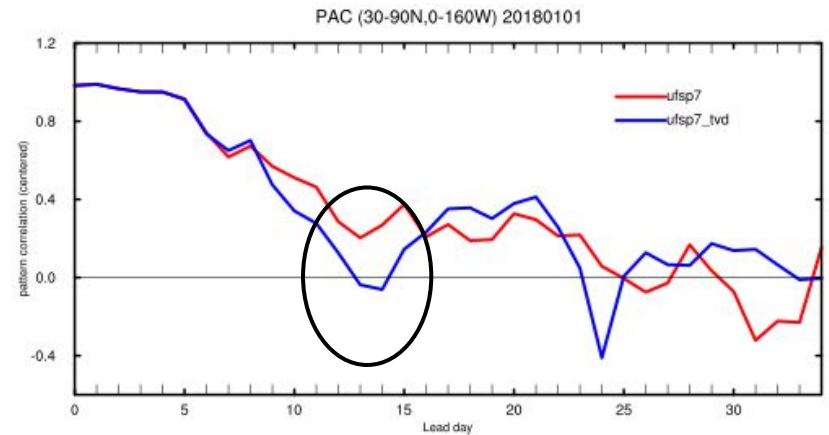
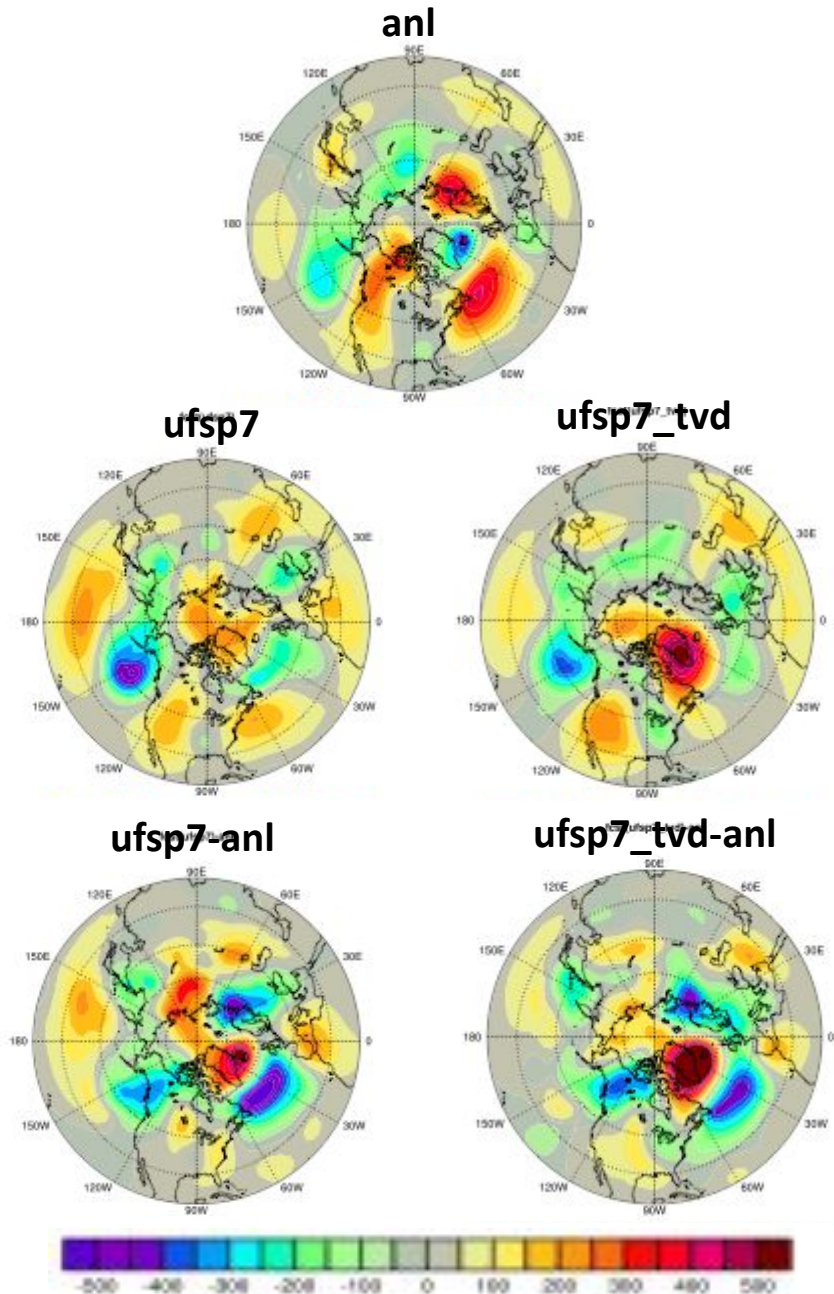
# T400

T 400hPa 20180101 lead=13





# H500 Anomaly (lead=13)

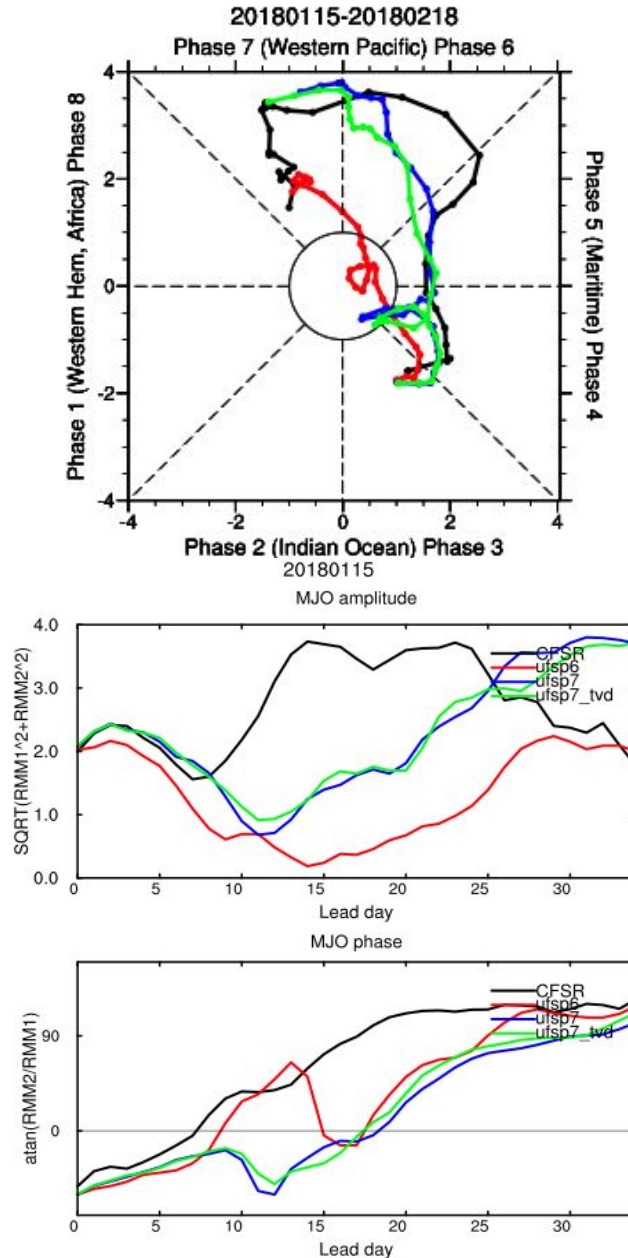


- Smoothed daily climatology calculated from NCEP reanalysis 1979-2000 (using 4 harmonics)
- Consistent with the U200 PC drop over east Pacific-Atlantic ocean at lead day 13-14 for ufsp7\_tvd



**20180115 case**

# MJO



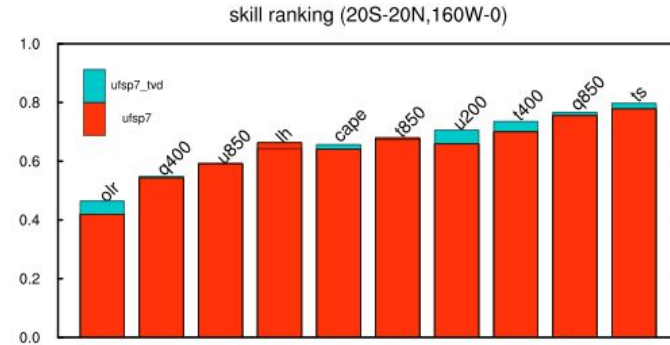
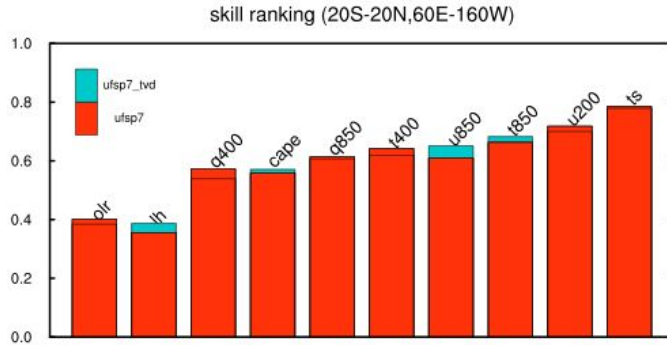
- P7 and P7\_TVD perform similar
- P7 and P6 has weaker MJO bias but P7s are better than P6.

# PAC Skill (Tropics)

(20S-20N, 60E-160W)

(20S-20N, 160W-0)

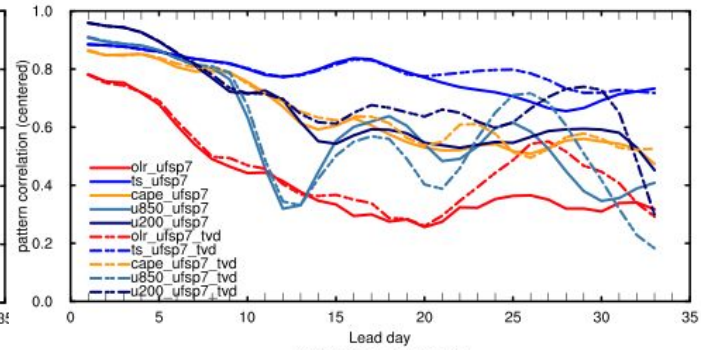
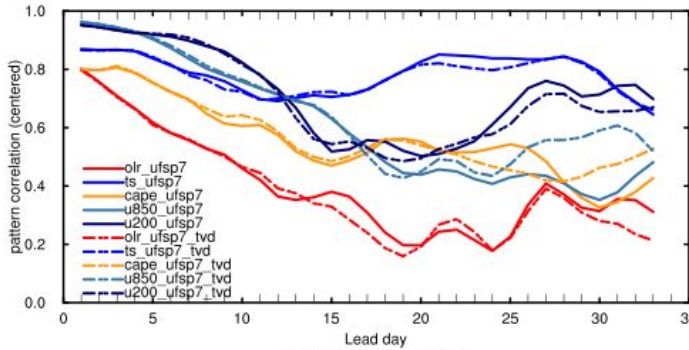
35-day avg



(20S-20N,60E-160W)

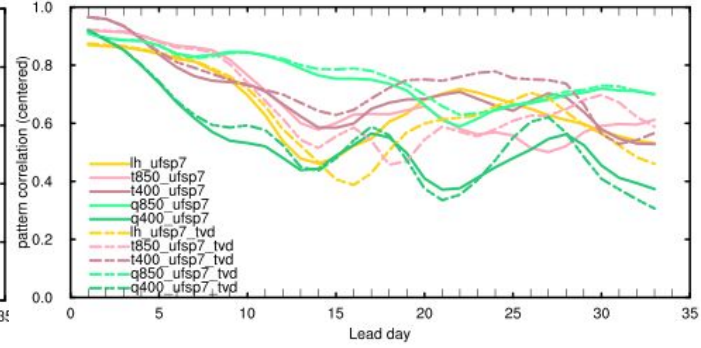
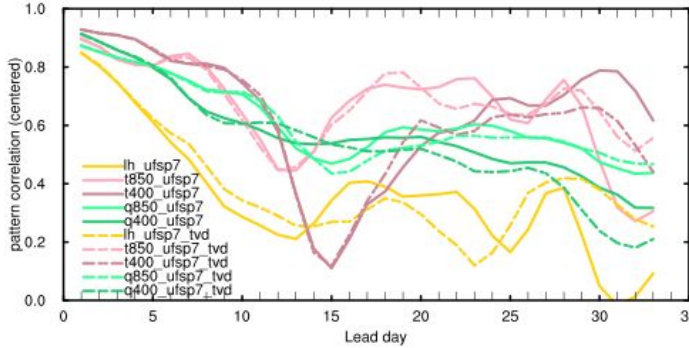
(20S-20N,160W-0)

Day-to-day



(20S-20N,60E-160W)

(20S-20N,160W-0)



# PAC Skill (NH mid-high Latitude)

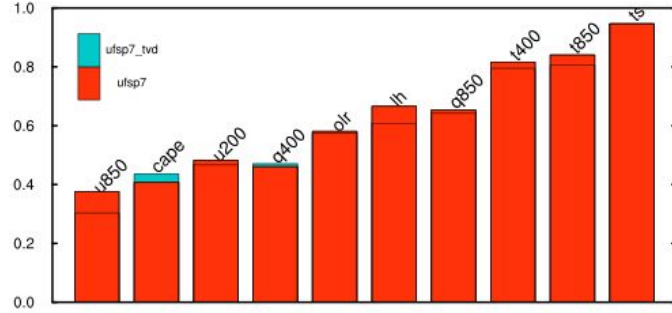
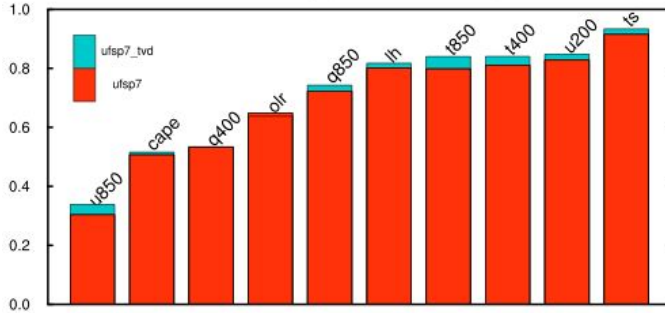
(30-90N, 60E-160W)

(30-90N, 160W-0)

35-day avg

skill ranking (30-90N,60E-160W)

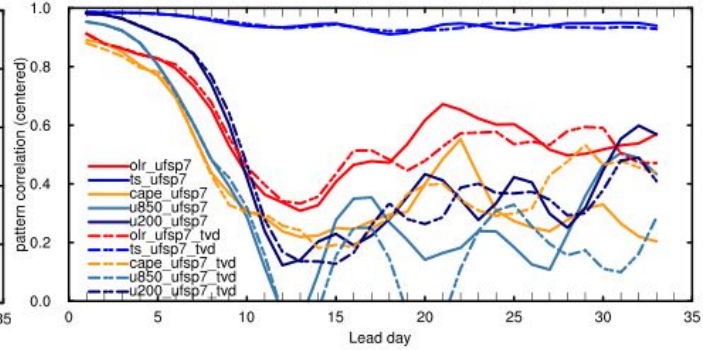
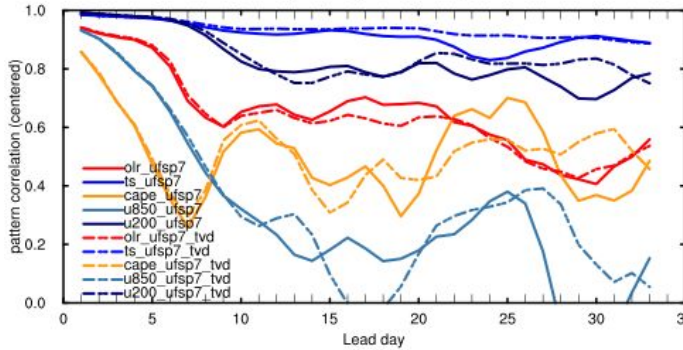
skill ranking (30-90N,160W-0)



Day-to-day

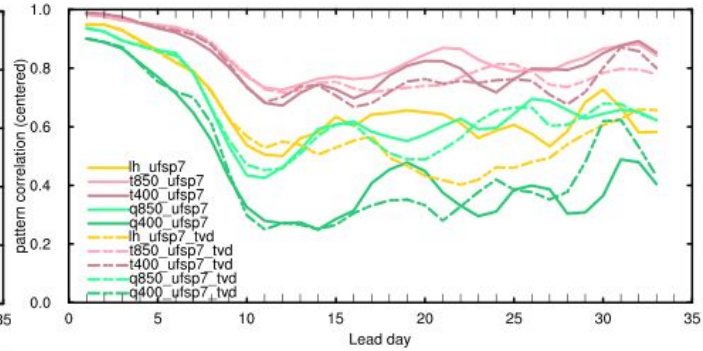
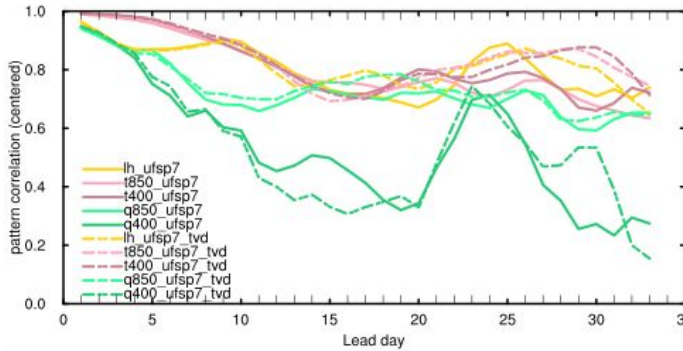
(30-90N,60E-160W)

(30-90N,160W-0)



(30-90N,60E-160W)

(30-90N,160W-0)





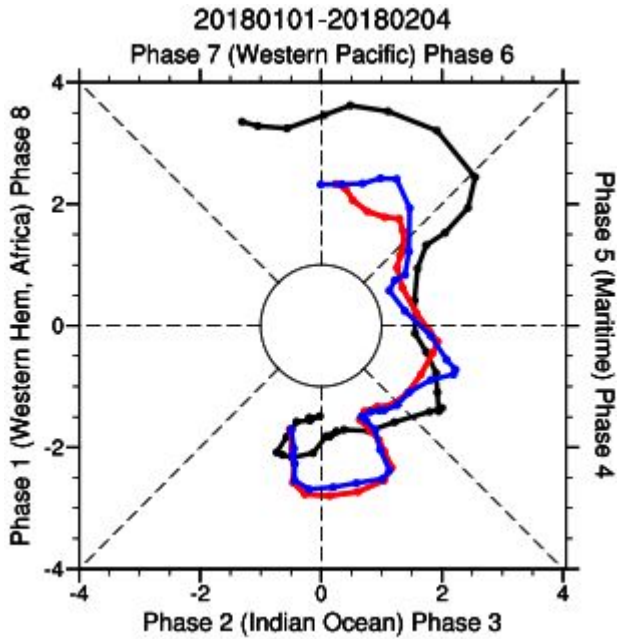
# Next

U200-->grad\_H200-->grad\_T400 and below-->T400  
and below-->cld\_cov(convective) 400 and below

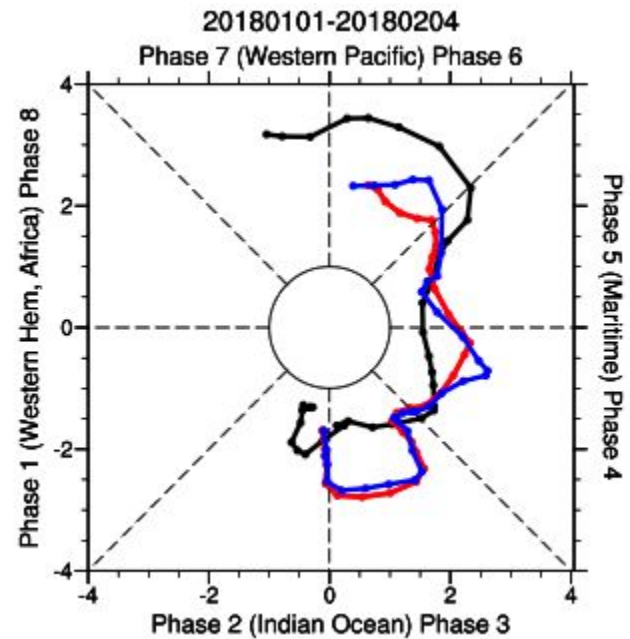
**20180101 case**  
**CFSR vs. GEFSRR**

# MJO

against CFSR



against GEFSRR



— ufsp7

— ufsp7\_tvd

# PAC Skill (NH mid-high Latitude)

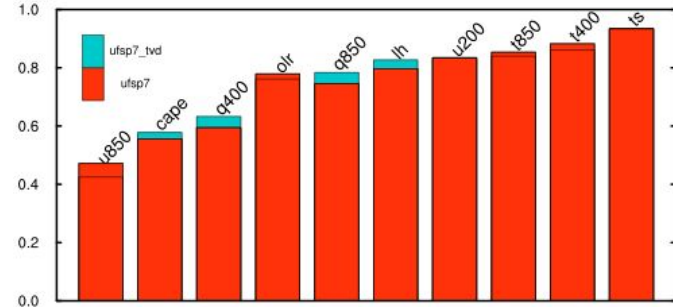
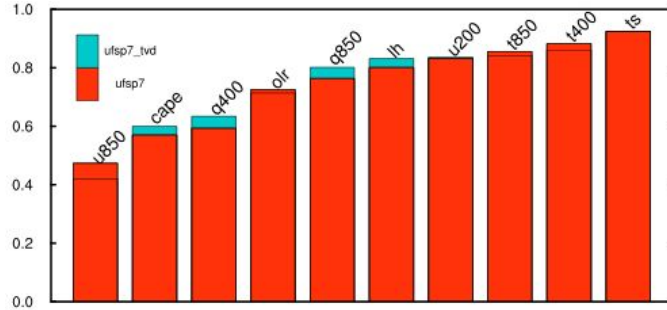
(30-90N, 60E-160W)

against CFSR

against GEFSRR

skill ranking (30-90N,60E-160W)

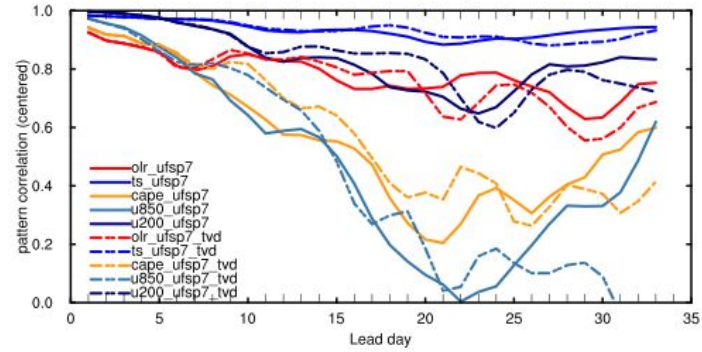
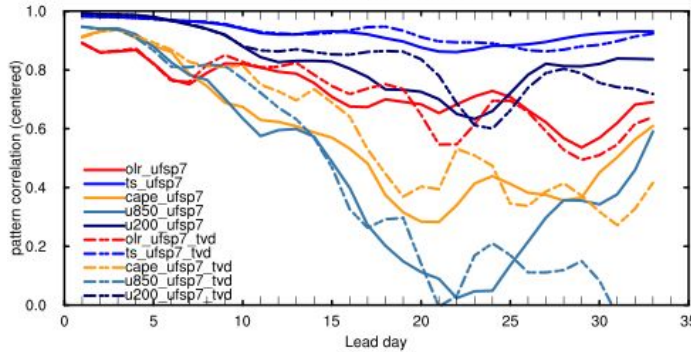
35-day avg



(30-90N,60E-160W)

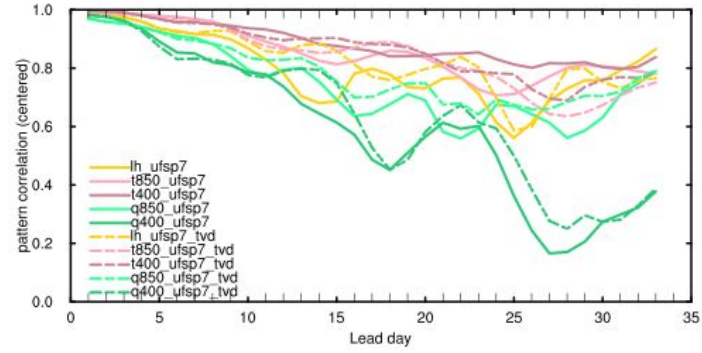
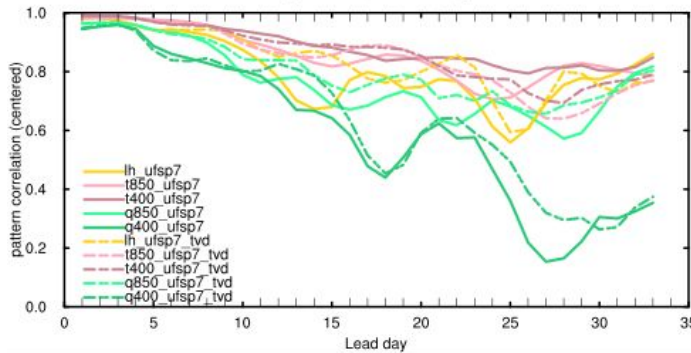
(30-90N,60E-160W)

Day-to-day



(30-90N,60E-160W)

(30-90N,60E-160W)





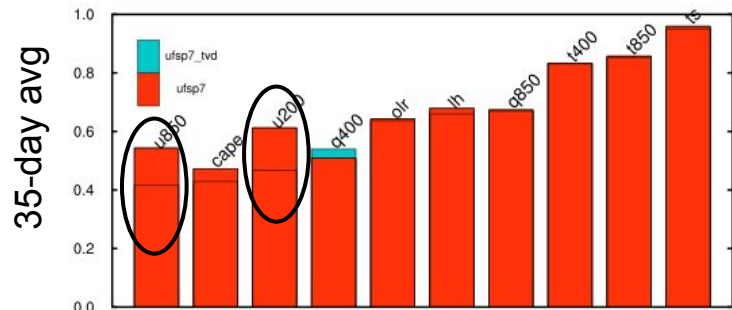
# PAC Skill (NH mid-high Latitude)

(30-90N, 160W-0)

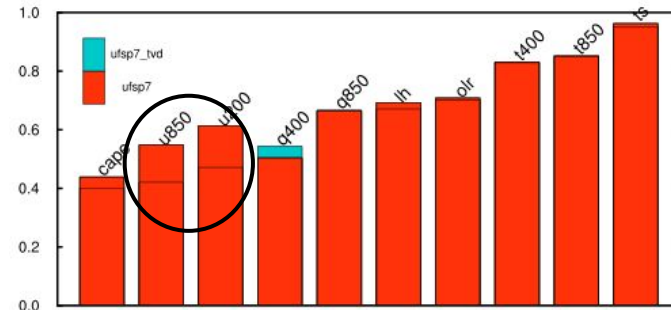
against CFSR

against GEFSRR

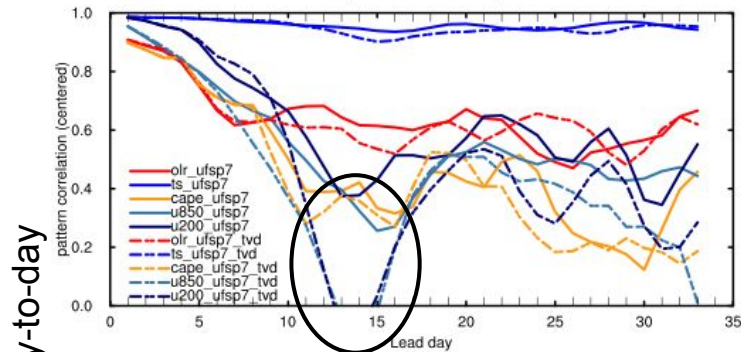
skill ranking (30-90N,160W-0)



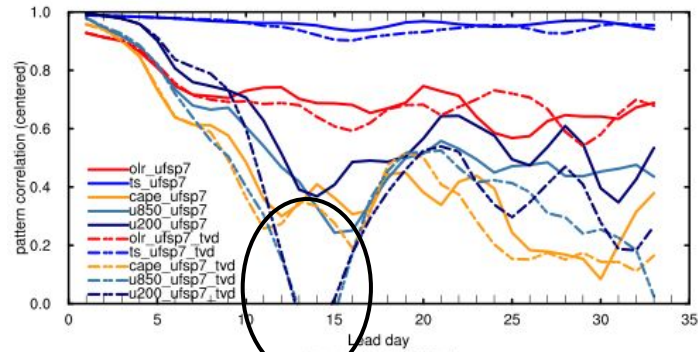
(30-90N,160W-0)



(30-90N,160W-0)



(30-90N,160W-0)



(30-90N,160W-0)

