



Delayed impact of the Indian Ocean On East Asian Climate

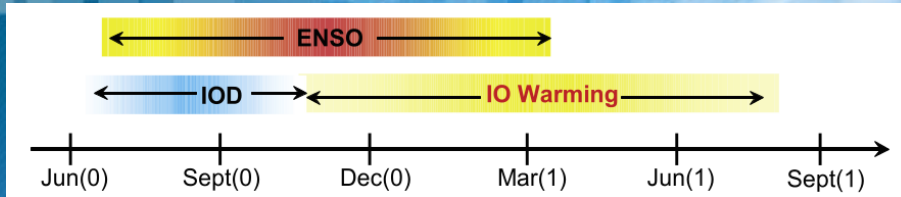
Jong-Seong Kug and Sunyong Kim

School of Environmental Science and Engineering, Pohang University of Science and
Technology (POSTECH)

jskug1@gmail.com

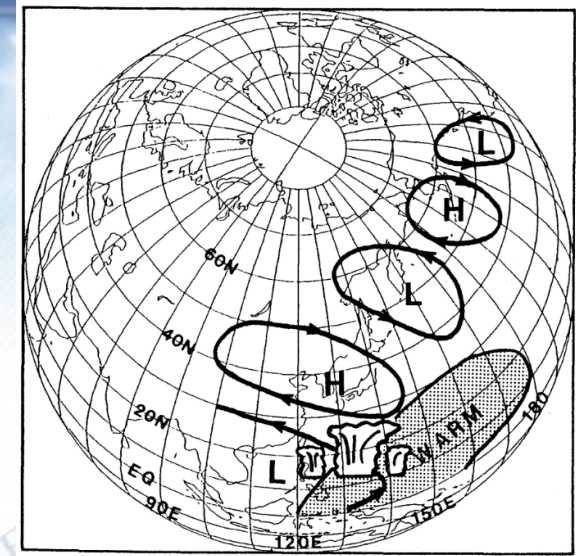
POSTECH

Indian Ocean Capacitor Effects

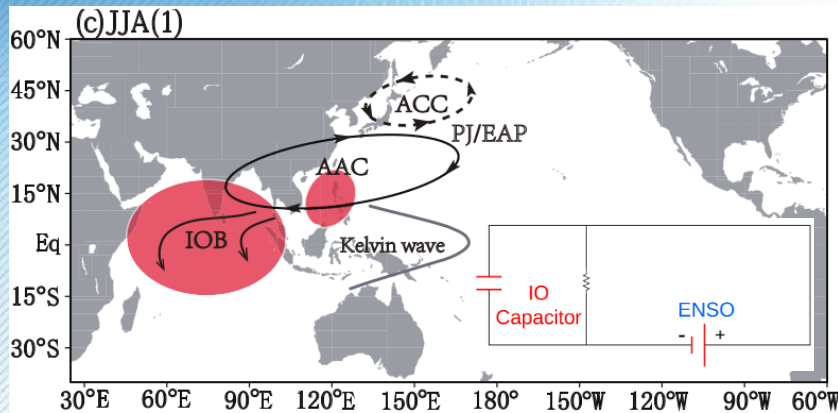


Schott et al. (2009)

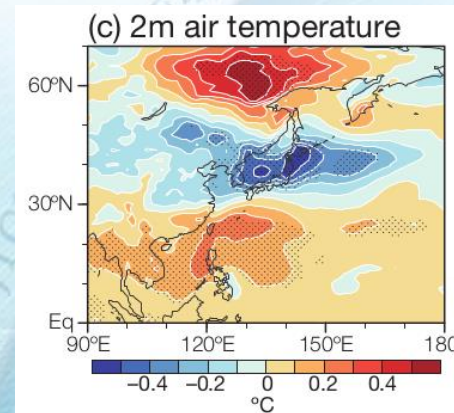
IPOC mode



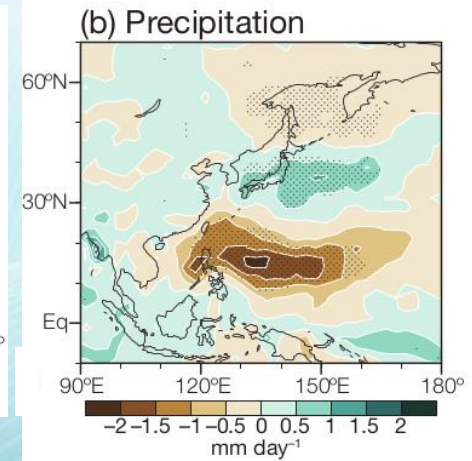
Nitta (1987)



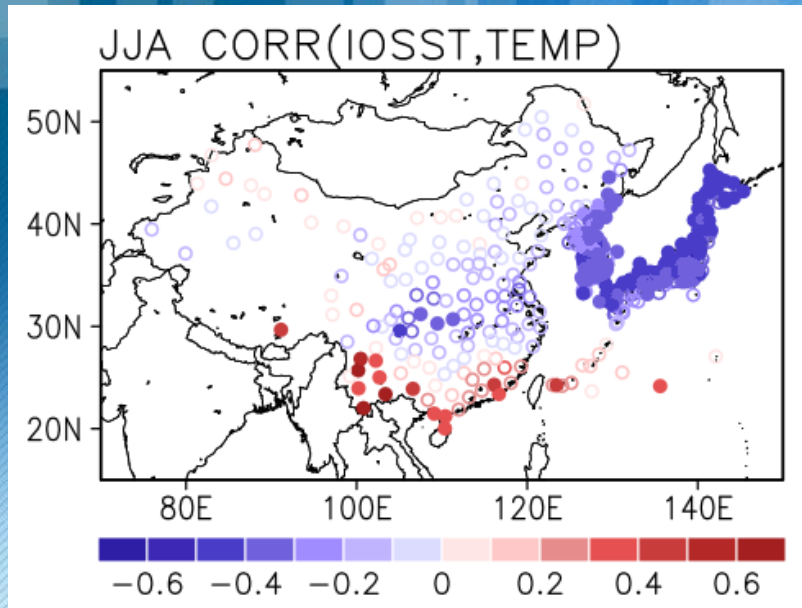
Xie et al. (2016)



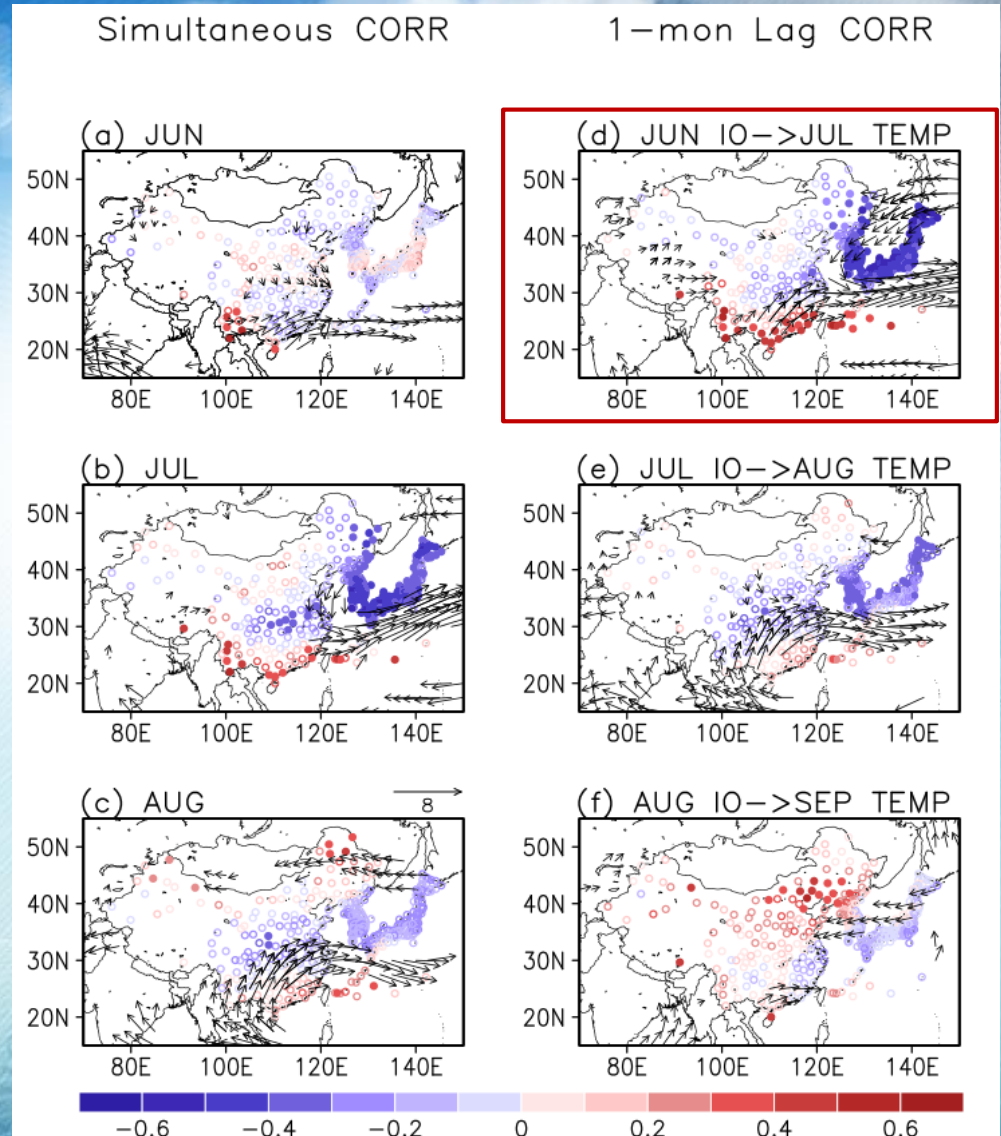
Xie et al. (2016)



Relation between IO and East Asia

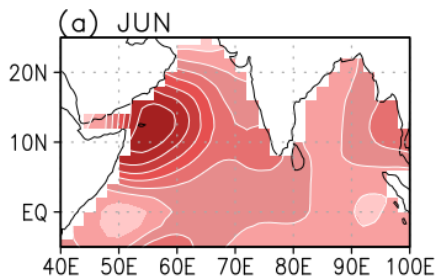


Why July?
Why 1-month delay?

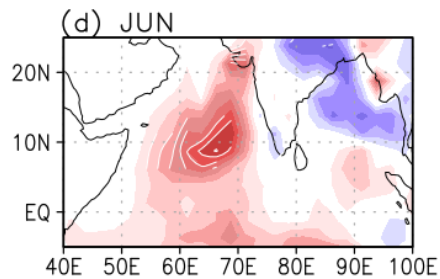


Precipitation response to IOSST

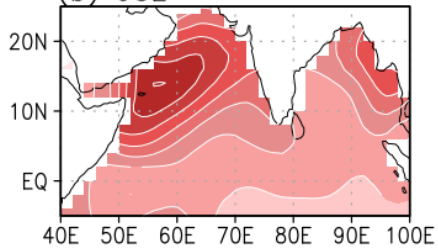
REGR(IO,SST)



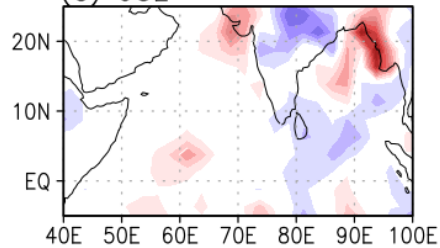
REGR(IO,PRCP)



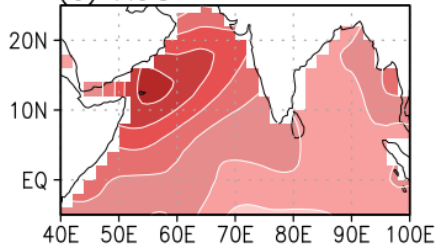
(b) JUL



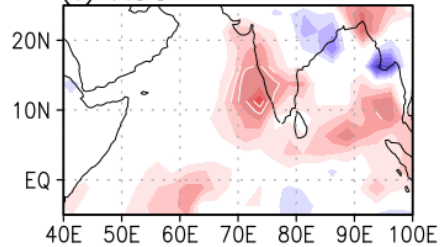
(e) JUL



(c) AUG



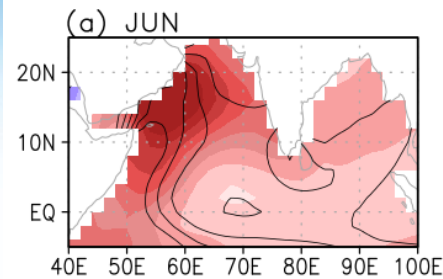
(f) AUG



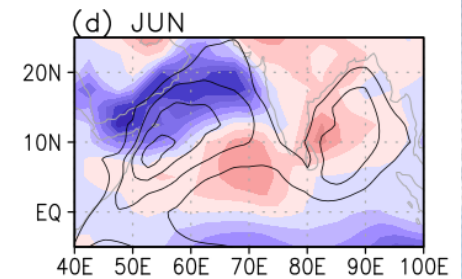
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-9 -6 -3 0 3 6 9

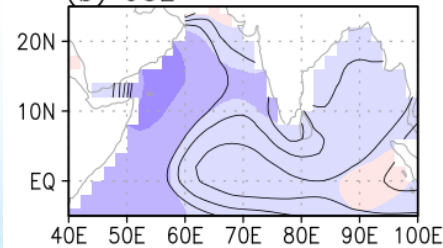
SST climatology



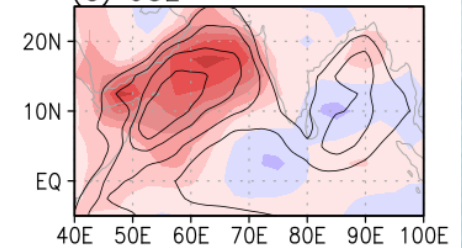
Wind Speed climatology



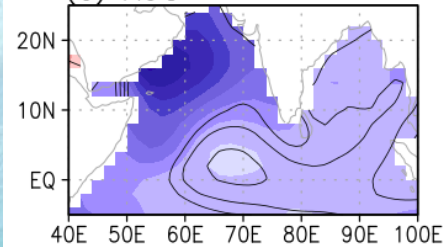
(b) JUL



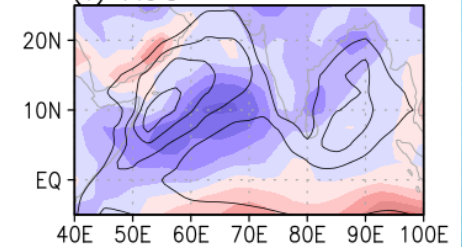
(e) JUL



(c) AUG



(f) AUG



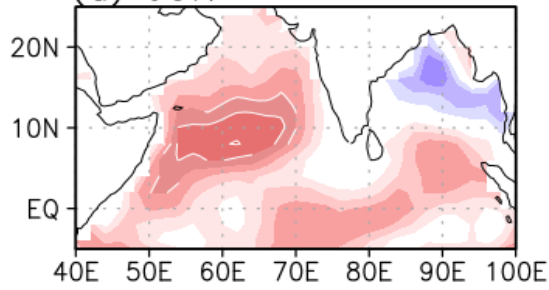
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-1.6 -0.8 0 0.8 1.6

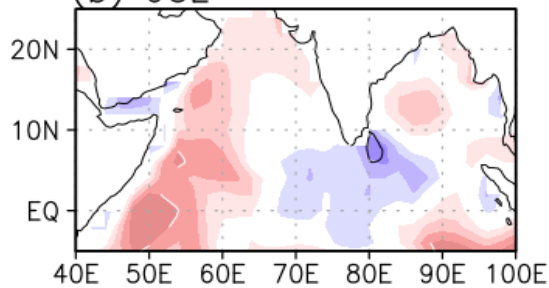
Seasonal dependency of SST-PRCP relationship

CORR(SST,PRCP)

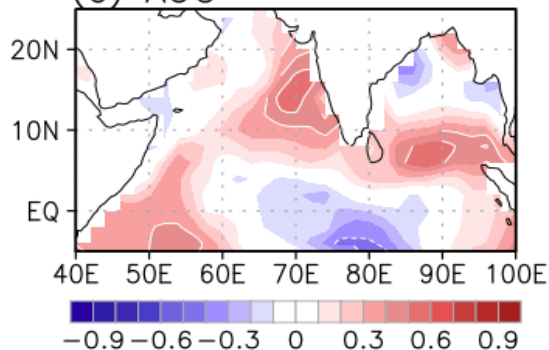
(a) JUN



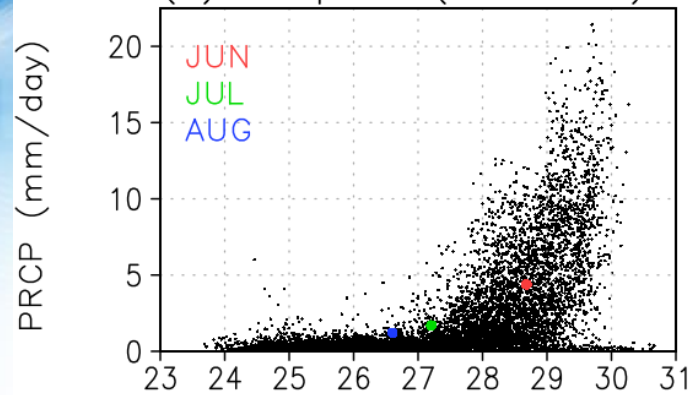
(b) JUL



(c) AUG



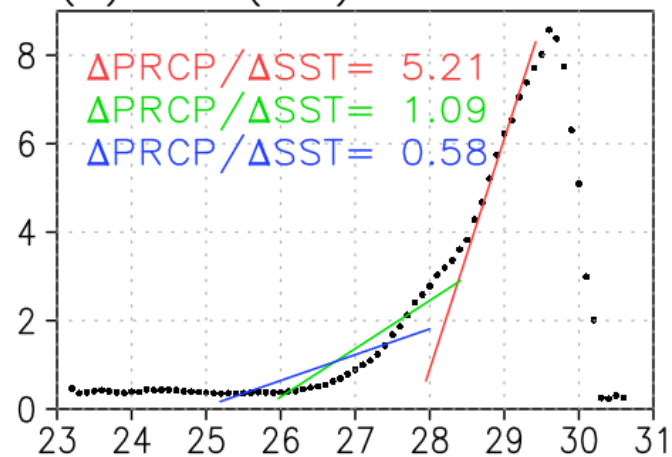
(a) Gridpoint (JUN–AUG)



DNDFGDGDSA

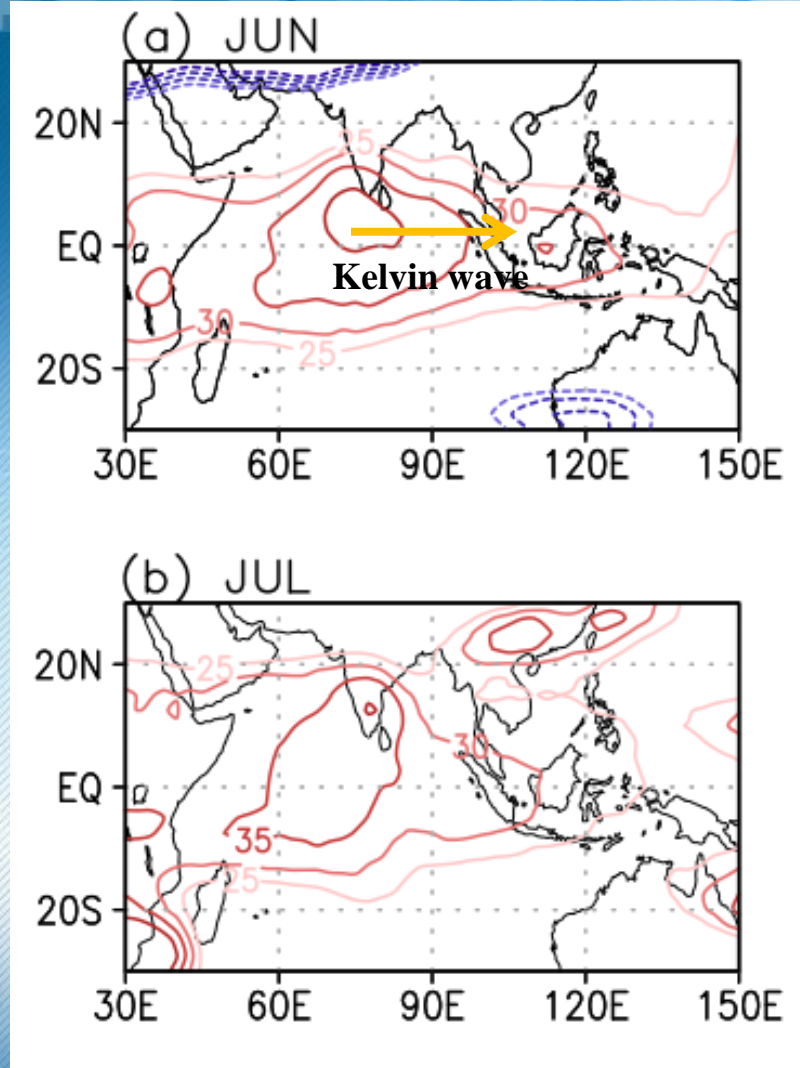
S

(b) Bin (JJA)

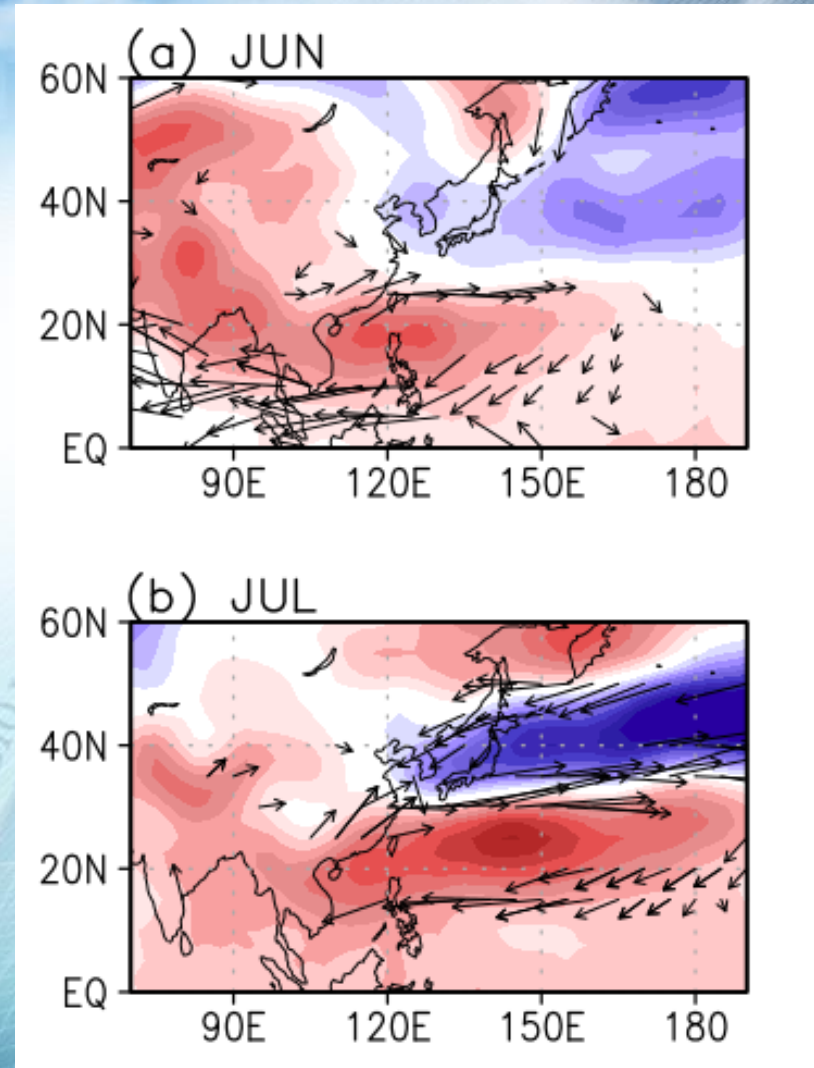


IO SST-induced teleconnection

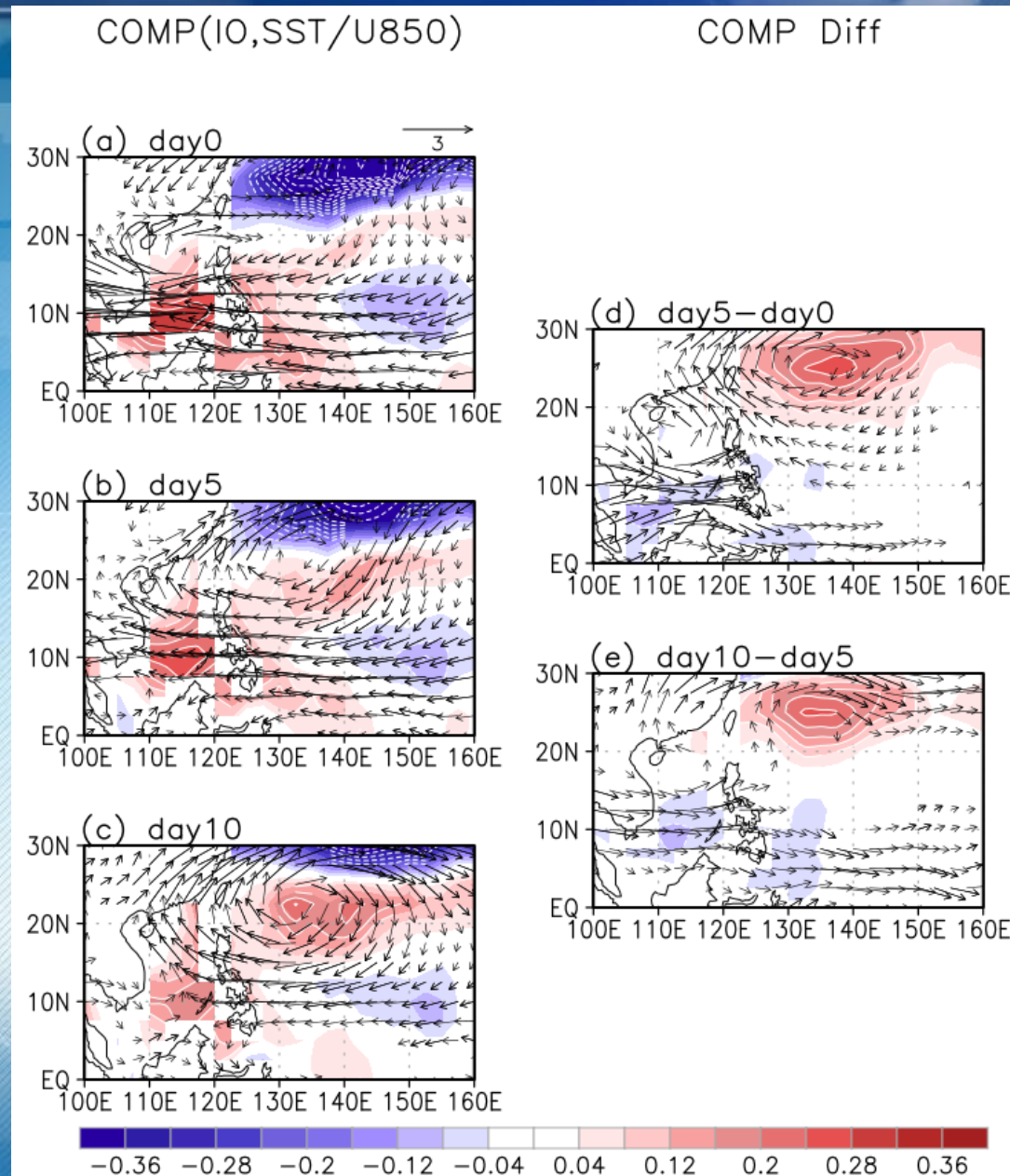
Atmospheric Thickness



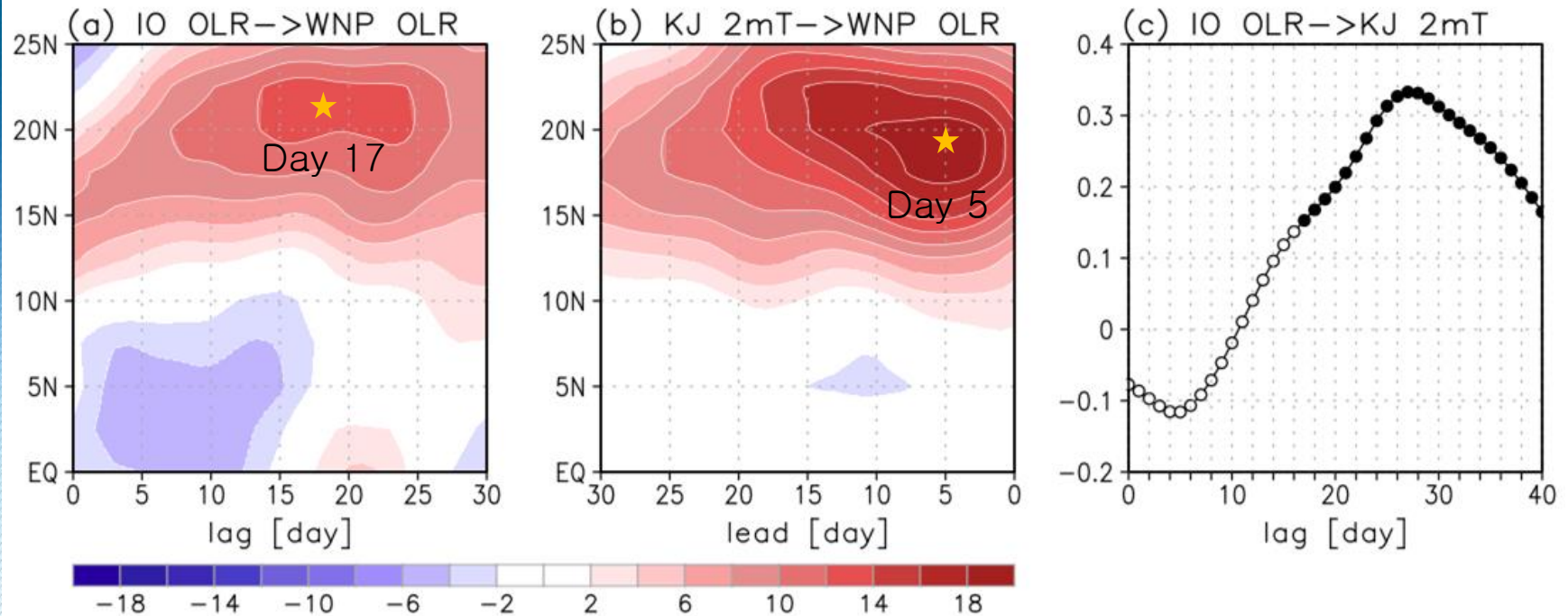
850hPa GPH



Local air-sea interaction in WNP



Local air-sea interaction in WNP



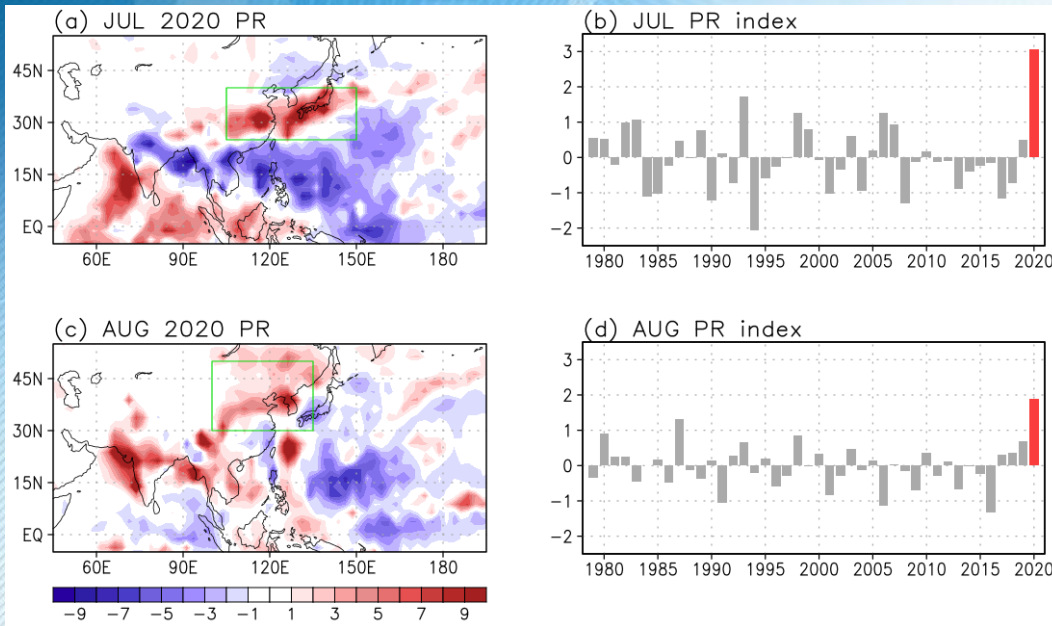
2020년 동아시아 여름 강수

동아시아 여름 (7, 8월) 강수 예측인자 분석

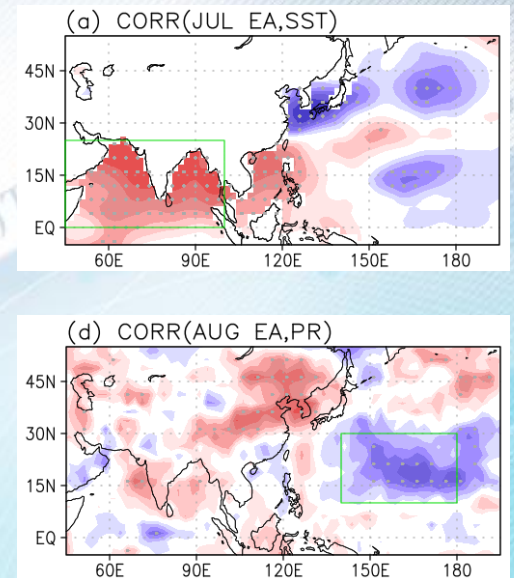
2020년 강수 분포

동아시아 강수 예측인자

7월



8월

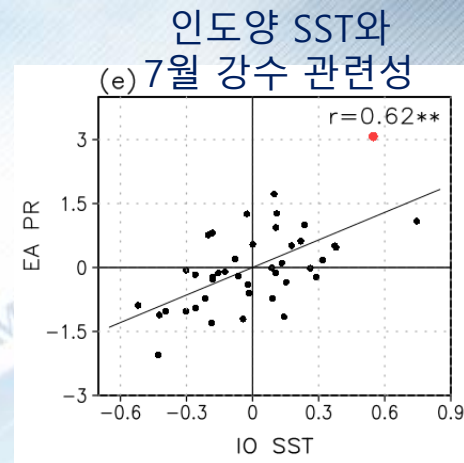
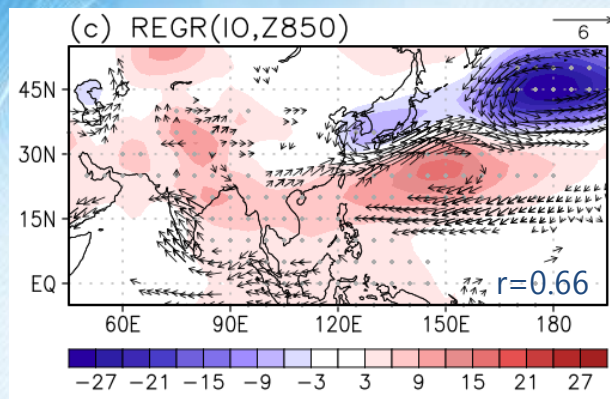
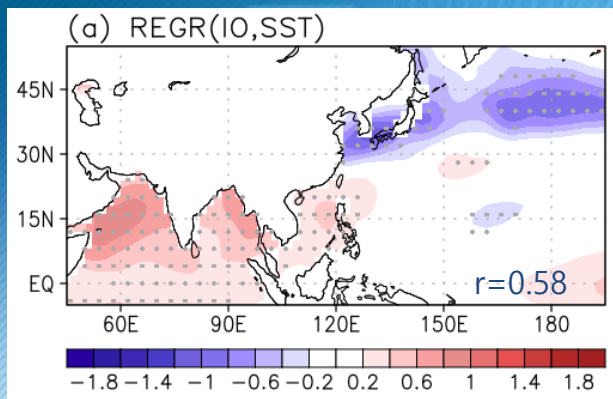


- 2020년 동아시아 강한 여름 강수 발생
- 월별 예측인자 분석: 7월 인도양 SST, 8월 WNP 강수
- 동아시아 7, 8월 강수 발생에 작용하는 forcing과 메커니즘 다름

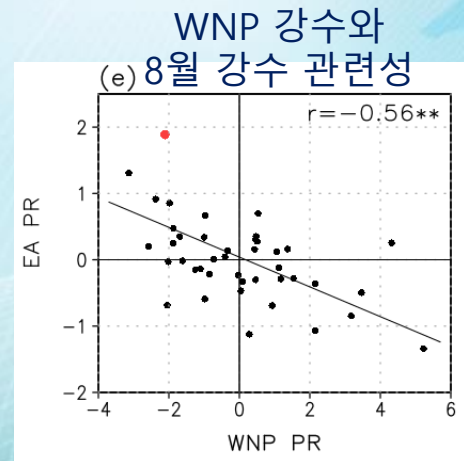
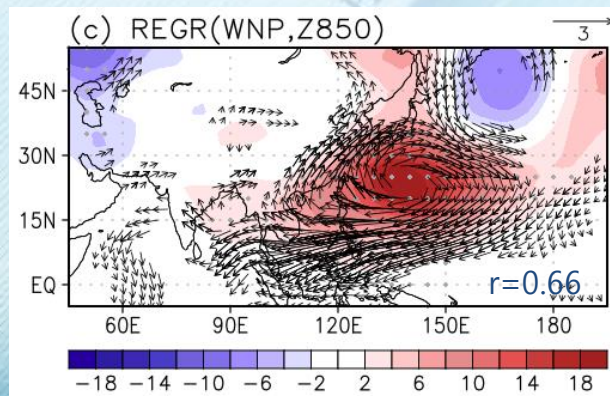
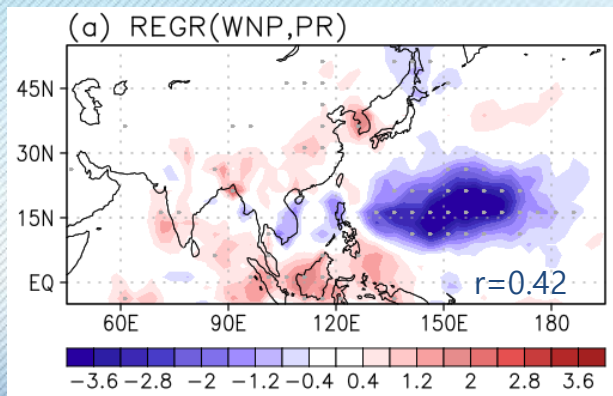
2020 동아시아 여름 강수 발생 역학

동아시아 여름 (7, 8월) 강수 발생 역학 분석

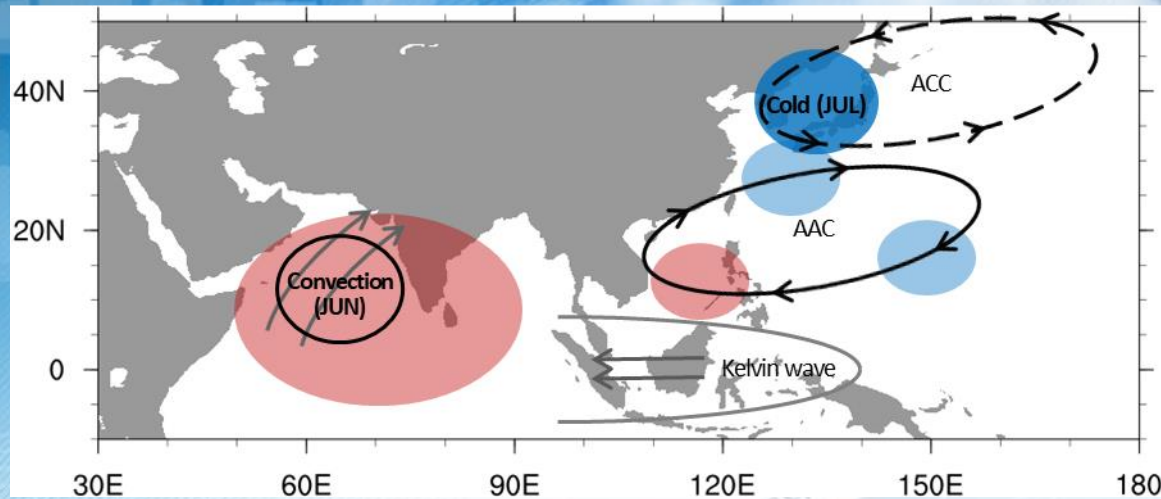
인도양 SST 관련 7월 패턴



WNP 강수 관련 8월 패턴



Summary



- **Strong SST-PRCP relationship** in the IO only during **JUN** due to strengthening monsoons
- **IO SST warming** -> **WNP anticyclone** (IPOC mode) -> **northeastward shift** (local air-sea interaction) -> **Korea-Japan cooling** (PJ pattern)
- **IO SST warming (JUN)** may lead to **Korea-Japan cooling (JUL)** with **1-month lag**

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Thank You

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