

# **Eastward propagation of Atmospheric Intraseasonal Oscillations from the Indian Ocean to the Atlantic**

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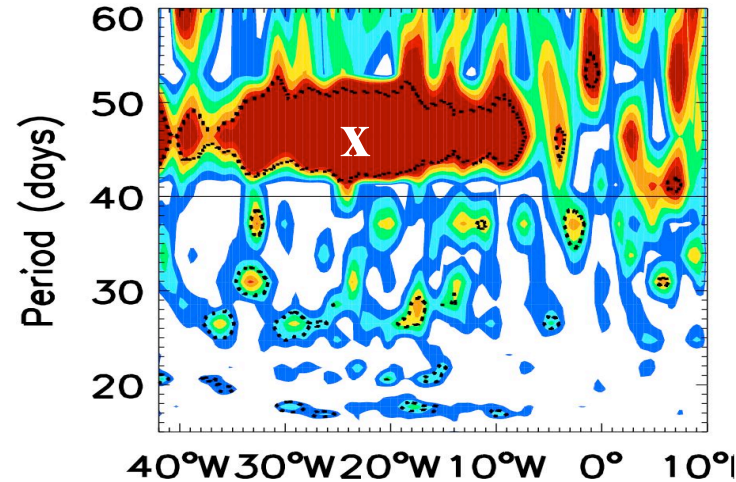
**E. Maloney**

**S. Xie**

**OVWST 2009, May 18-20, Boulder, CO**

# 1. Observations in the EQ Atlantic

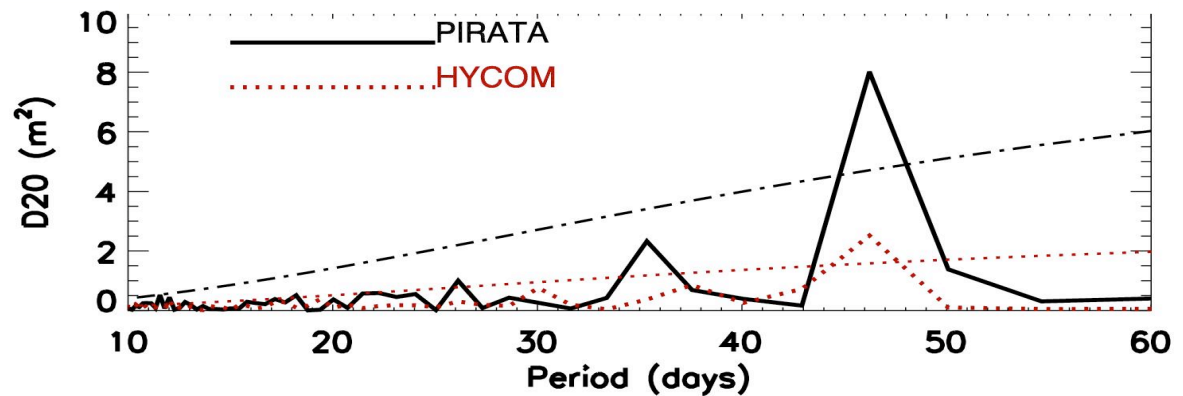
a) Variance spectra:  
AVISO SSHA, 2S-2N, 2002



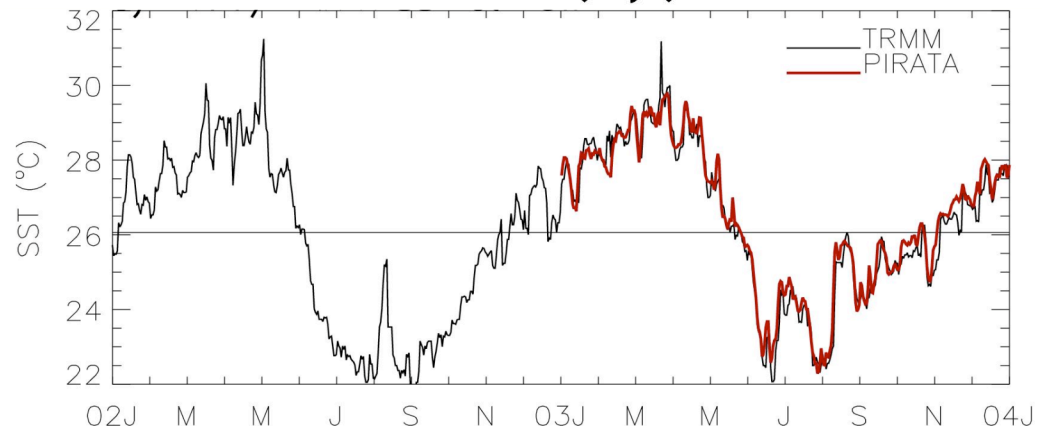
Han et al.  
2008

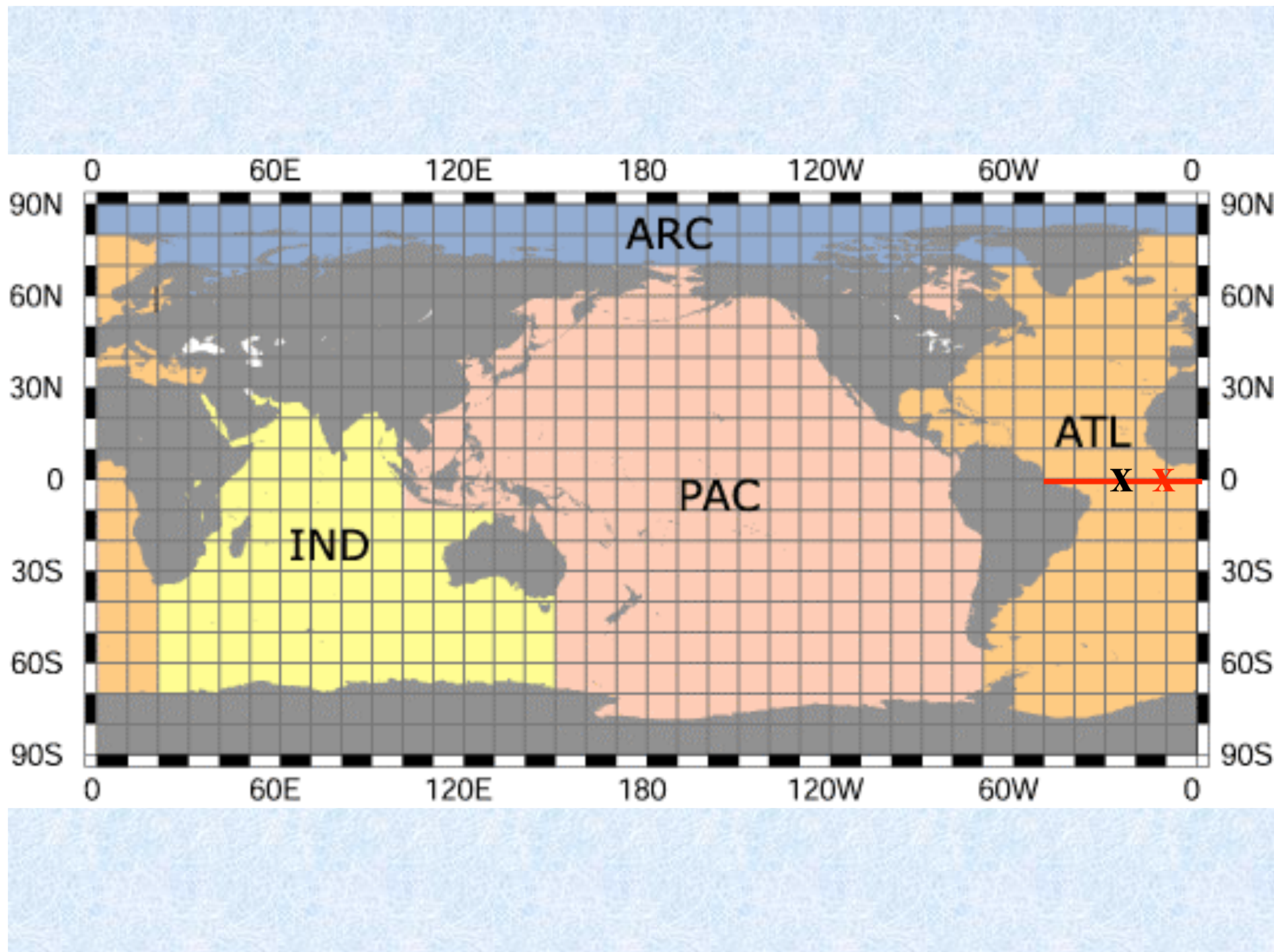
TIWs: peak periods:  
15-40 days, summer-fall

b) Variance spectra:  
PIRATA D20  
at (23W,0N),  
01/01/2002-08/24/2003



c) TRMM/PIRATA  
Observed SST time series  
at (10W, 0N), 2002-03



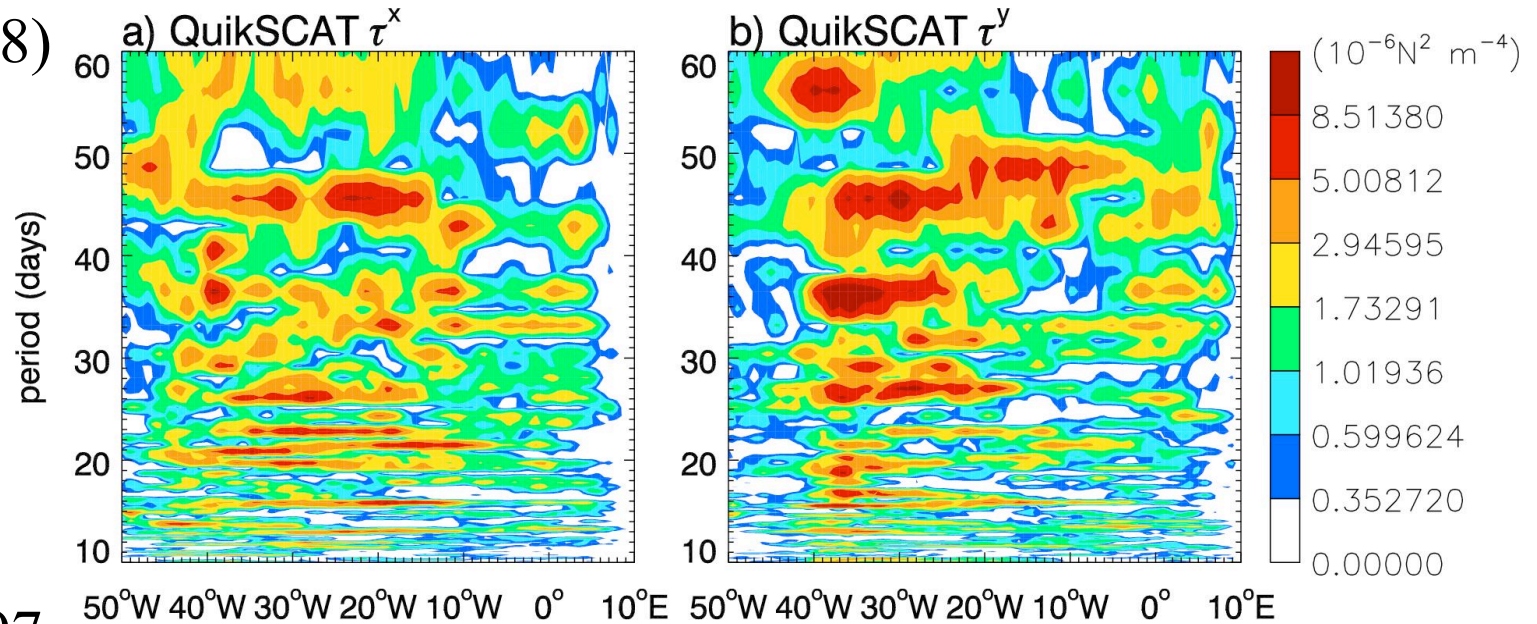




Han et al. (2008)  
JPO:

Forced by  
40-60d winds

Katz, 1994,1997



**What are the causes of the 40-60-day winds?**

Goal: Understand the causes for the  
Intraseasonal winds in the tropical Atlantic  
Ocean; particularly examine the effects of  
the Madden-Julian Oscillation (MJO)



## 2. Datasets and processing

**2000-2006**

**3-day mean QuikSCAT winds ([www.ssmi.com](http://www.ssmi.com));**

**Daily OLR;**

**ERA Interim winds at 10m, 850mb and 200mb;**

**1960-2001**

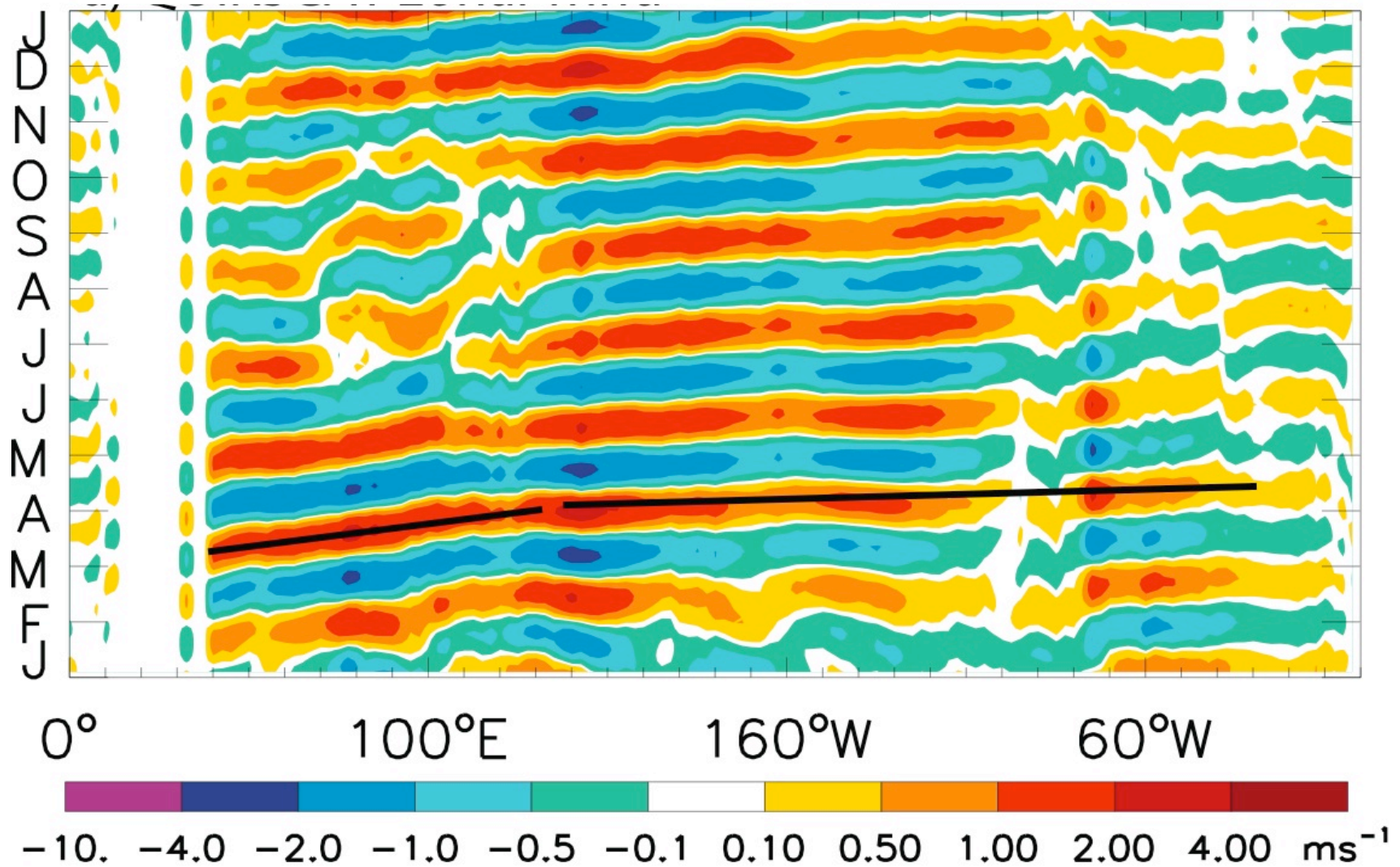
**ERA40 winds**

**Lanczos digital filter: 40-60-day variability;**

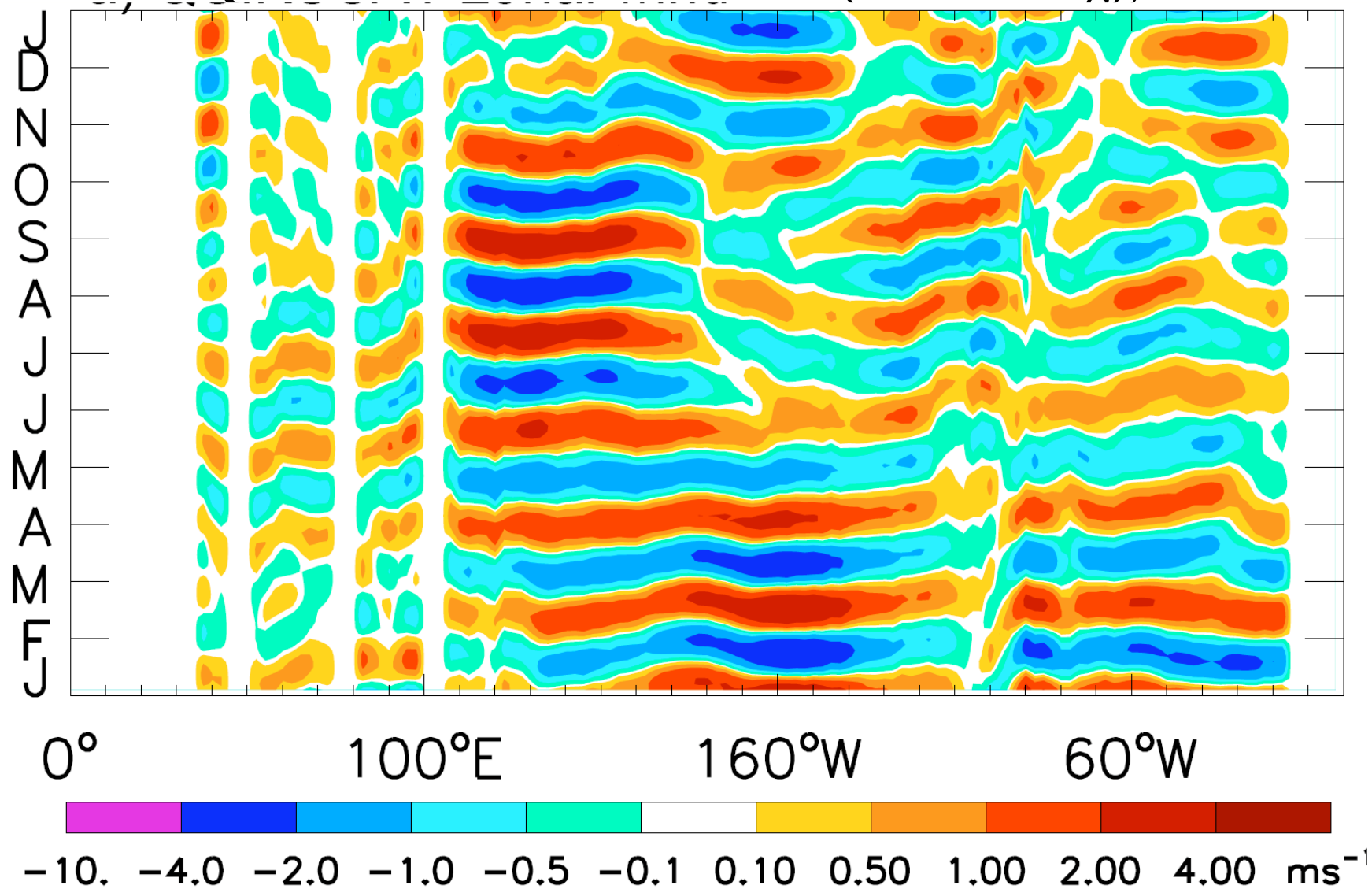
**MJO: filter east wavenumbers 1-3.**

# 3. Results

40-60d QuikSCAT Zonal Wind (15S-15N avg), 2002



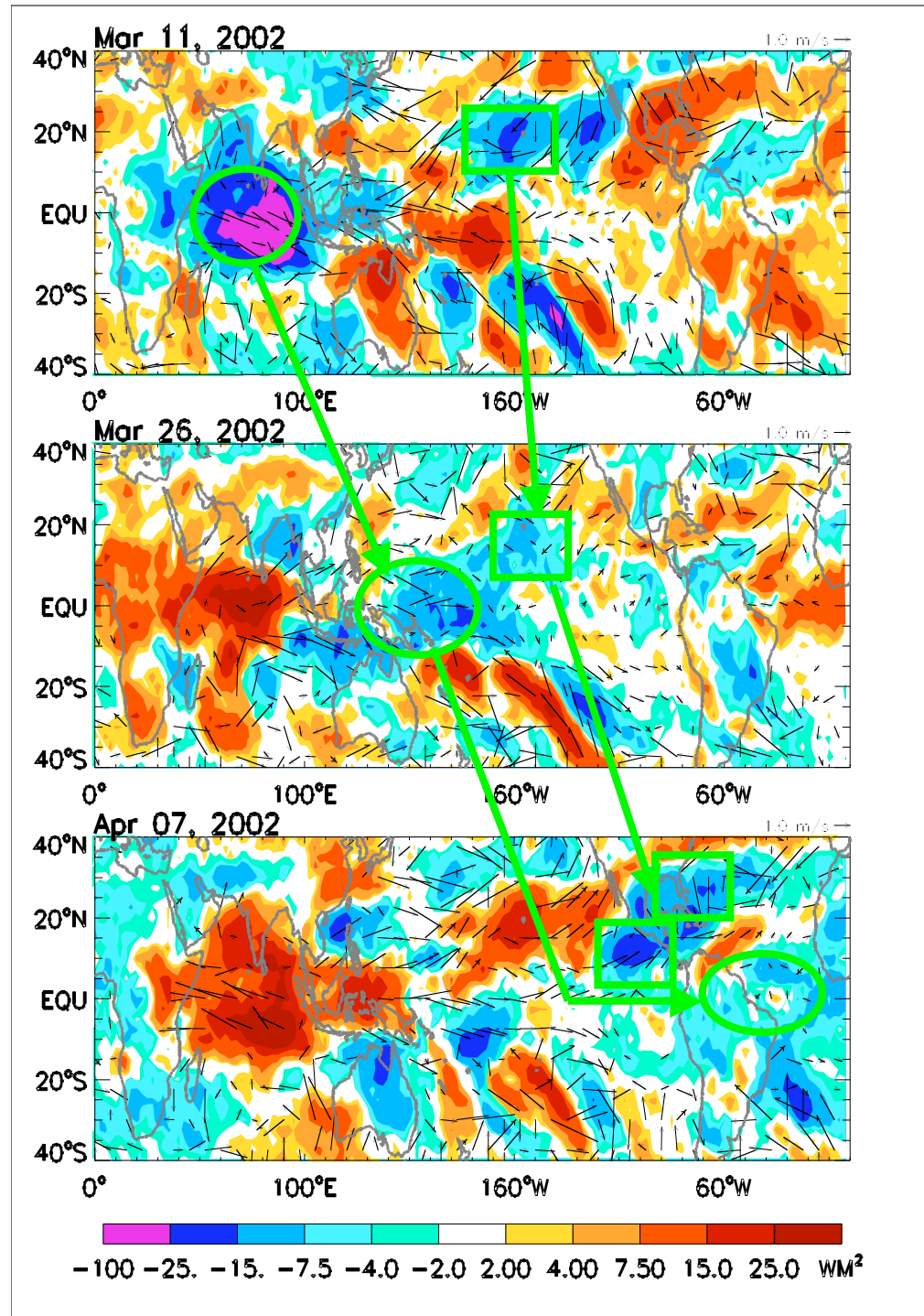
**40-60d QuikSCAT 10m Zonal Wind (5N-25N avg), 2002**



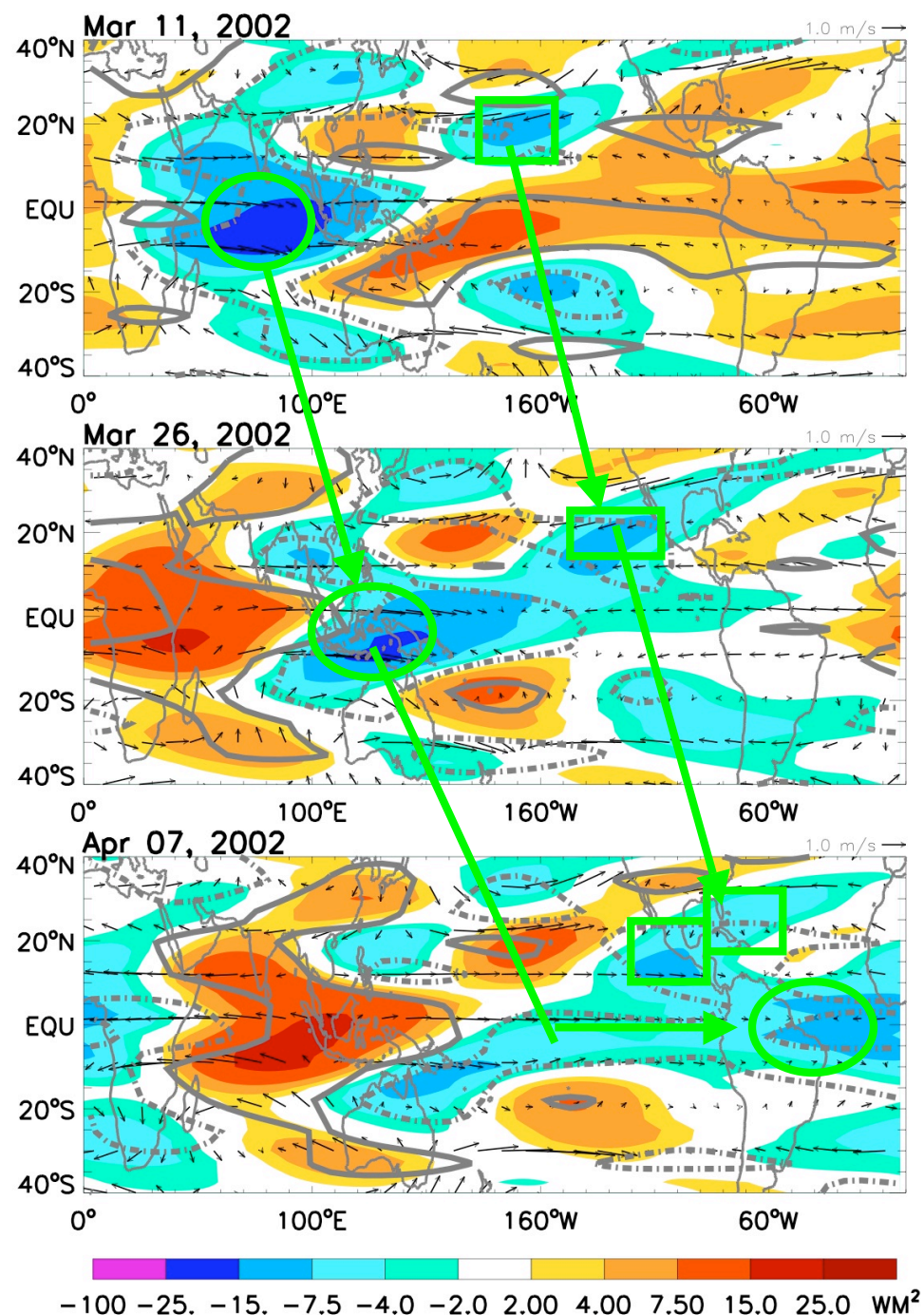


# 40-60-day QuikSCAT Winds and OLR, 2002

- 1) IO
- 2) Central Pacific
- 3) Tropical-  
mid-latitude  
connection

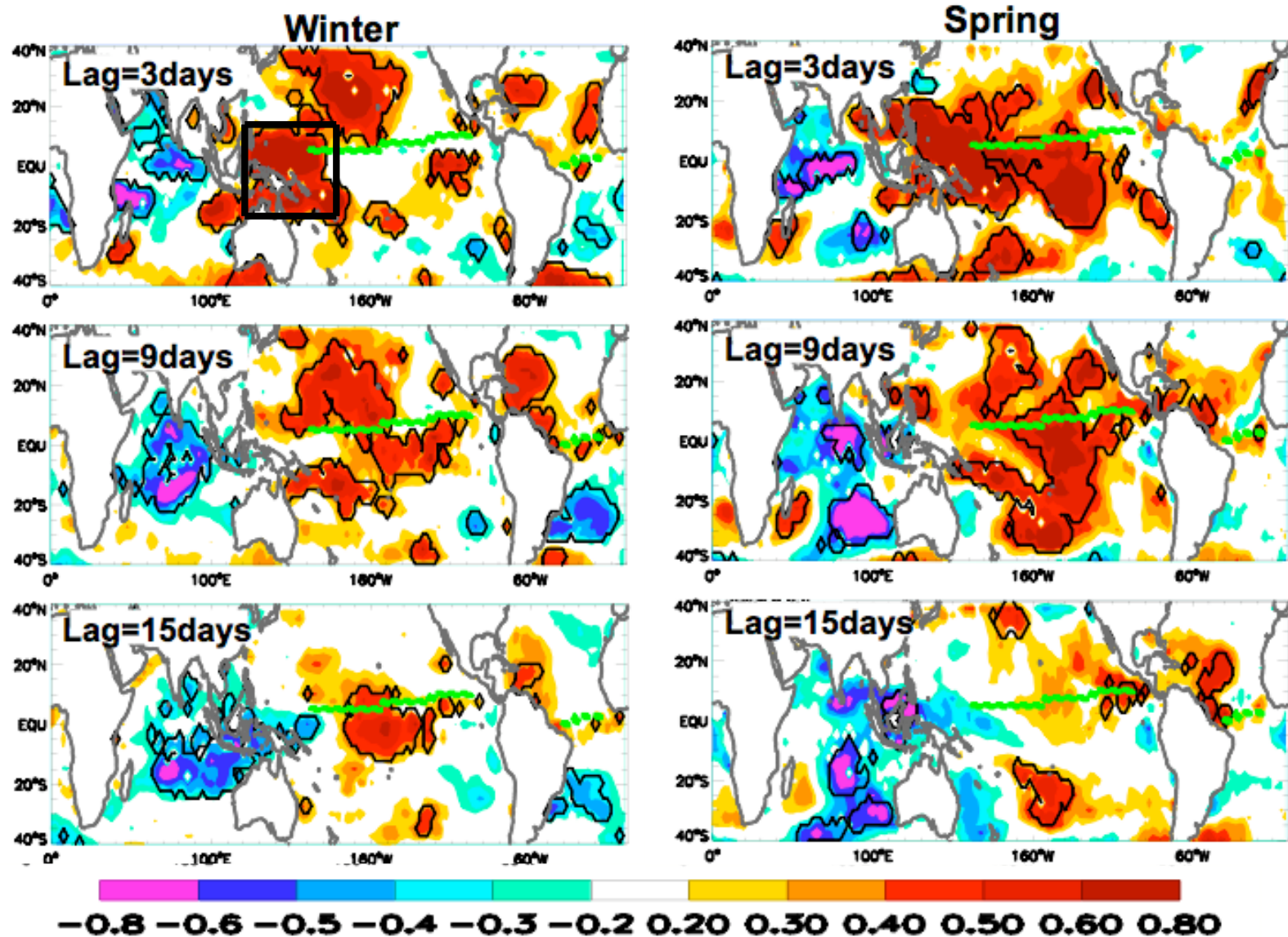


The MJO, 850mb  
40-60d ERA Interim  
wind + OLR,  
wavenumbers 1-3





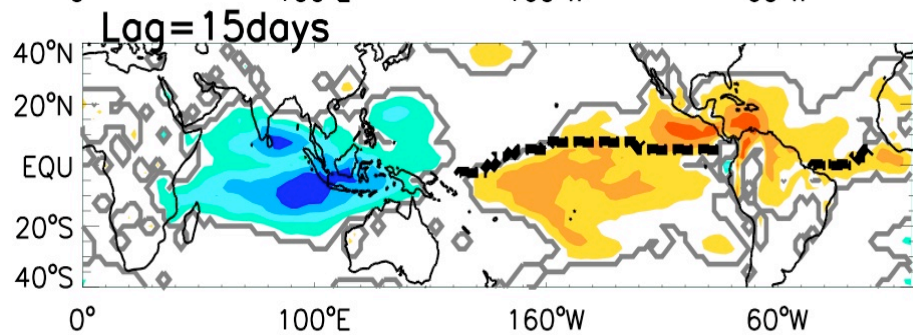
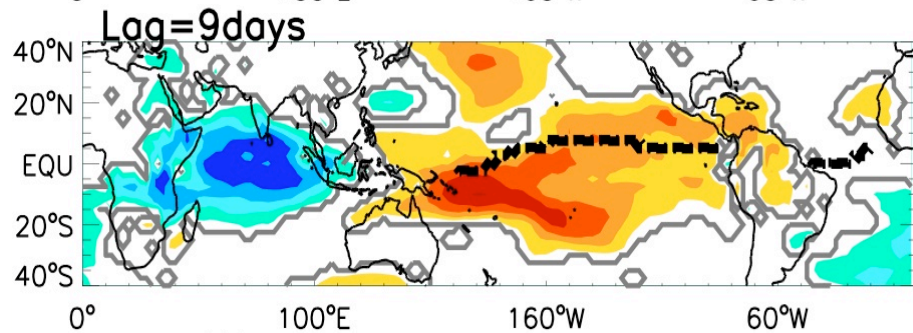
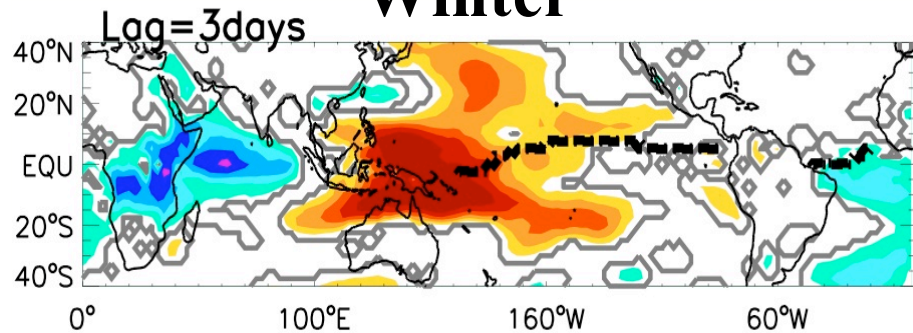
# Correlation map between QuikSCAT Zonal wind index 2000-06 at (15S-15N,120E-160E) and zonal wind at every location



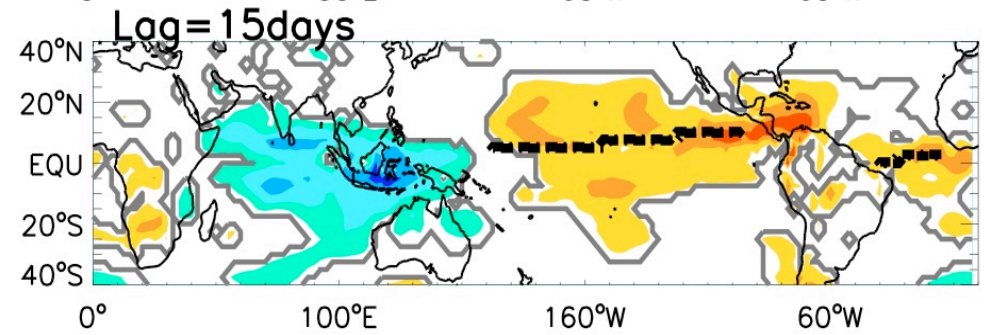
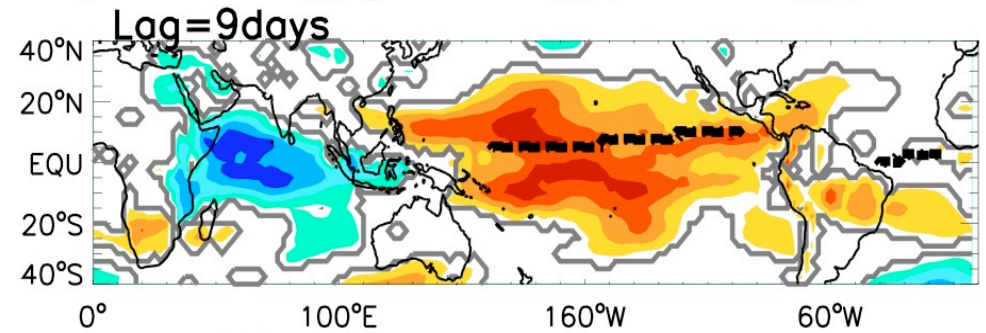
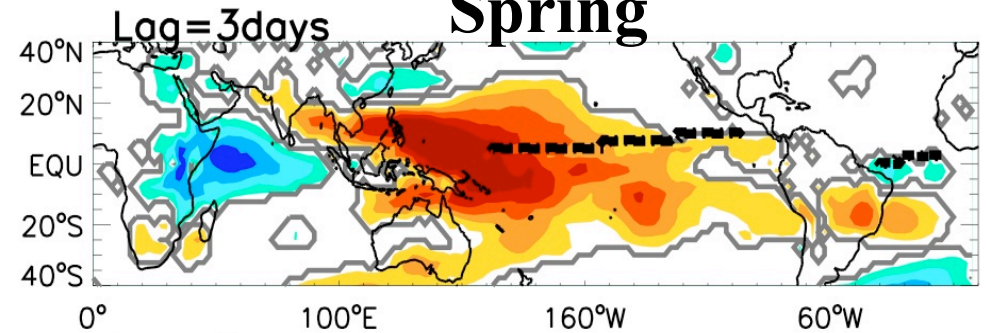


# Correlation map ERA40 wind, 1961-2001

**Winter**

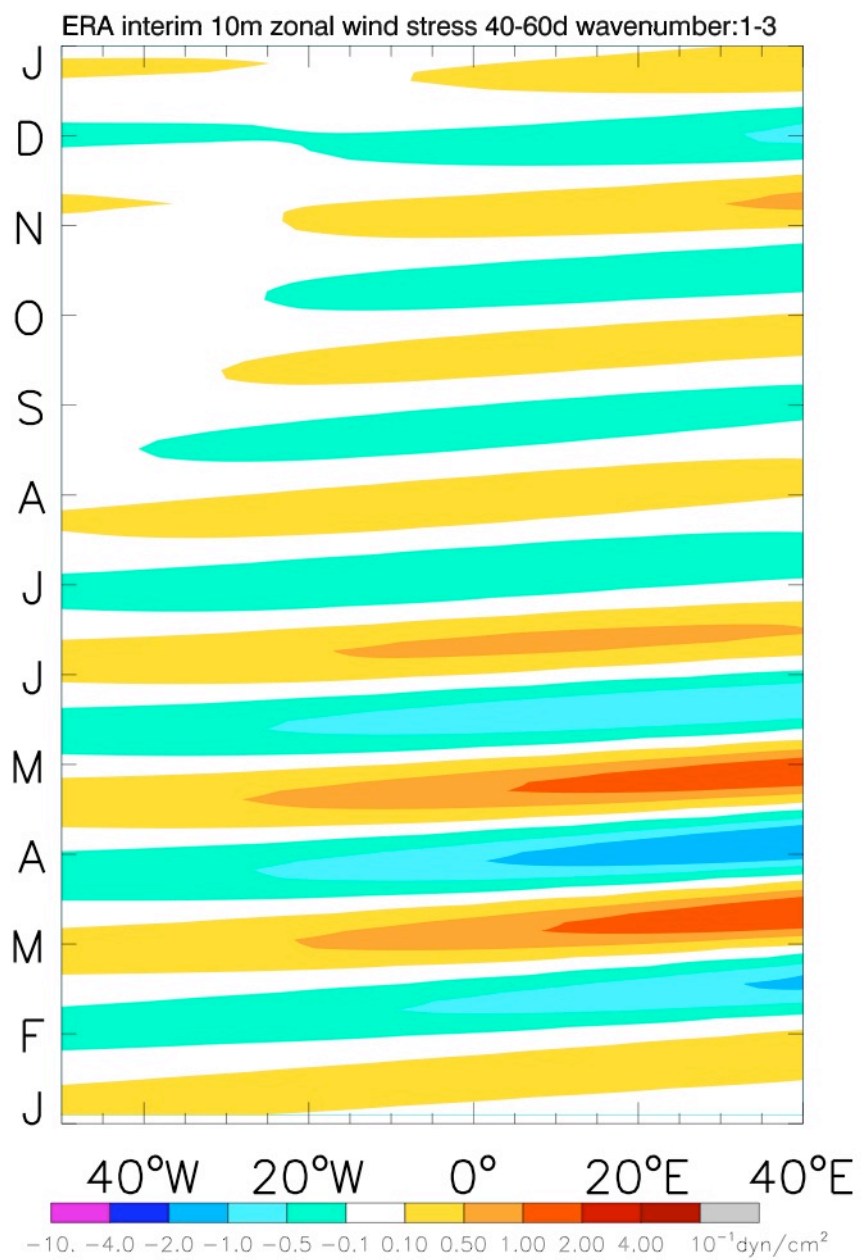
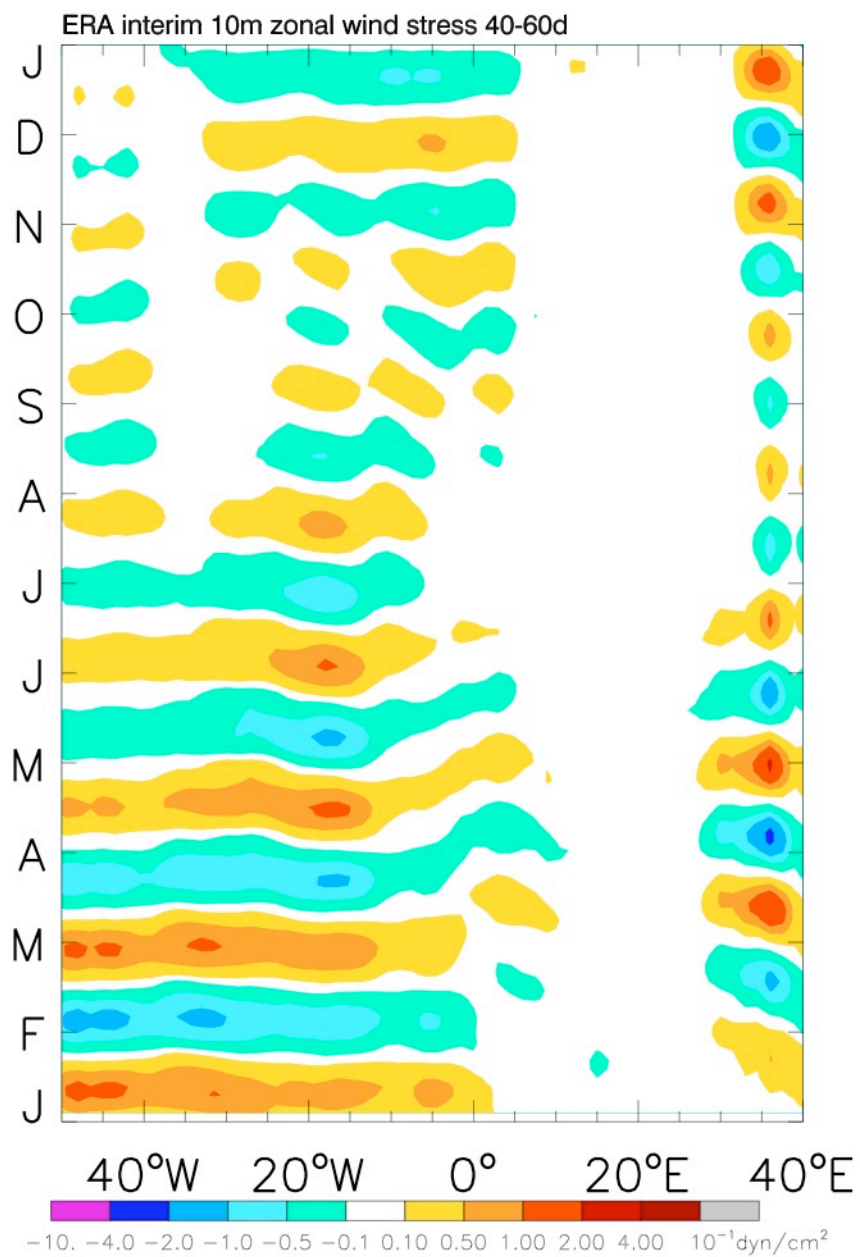


**Spring**

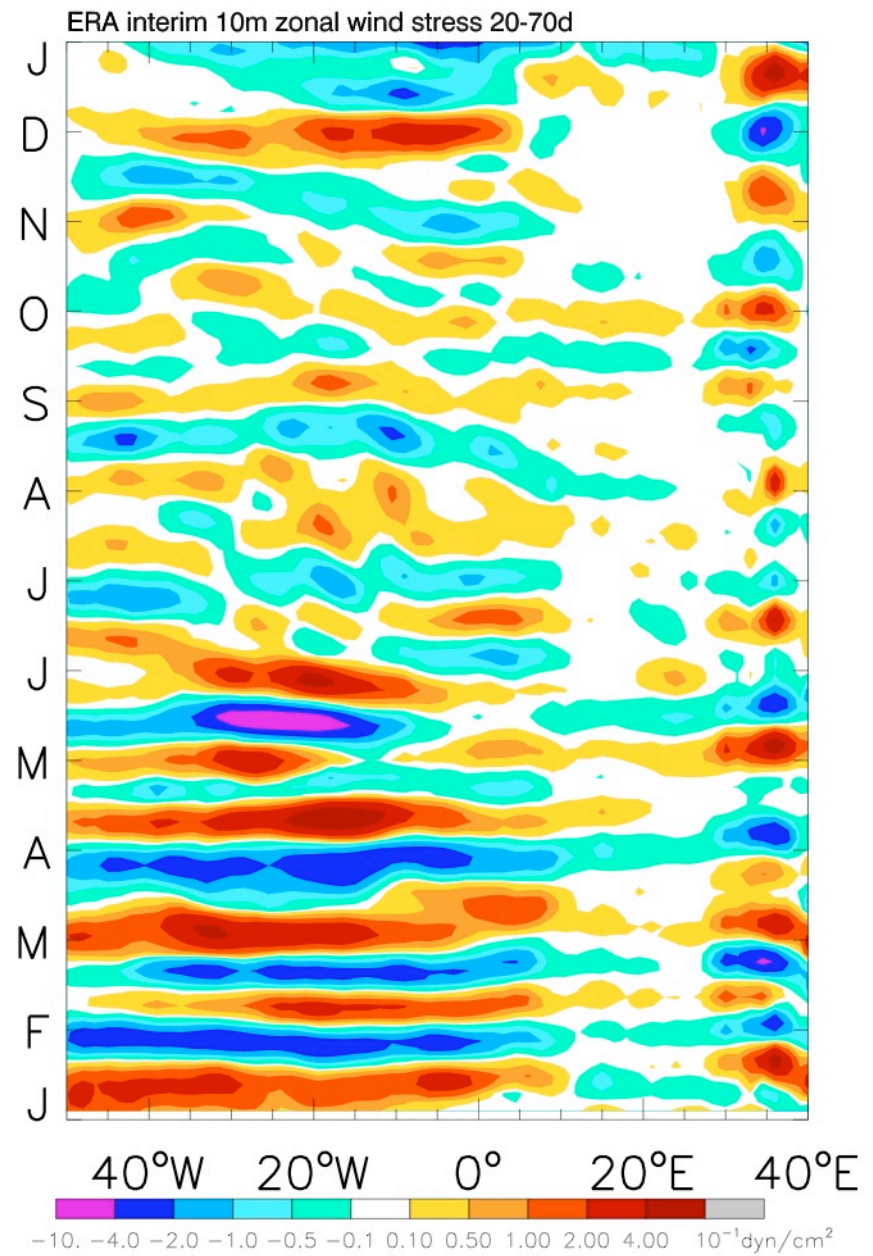
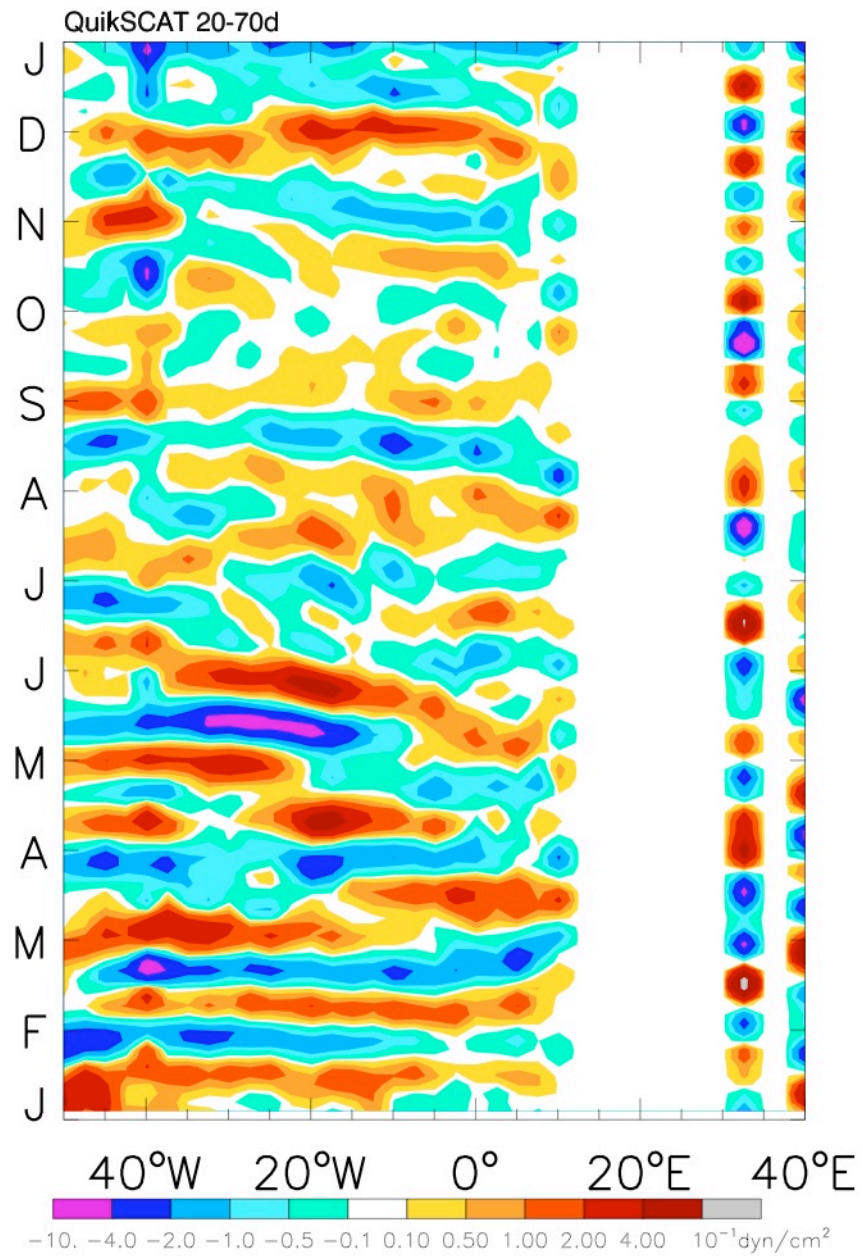


## **4. Summary**

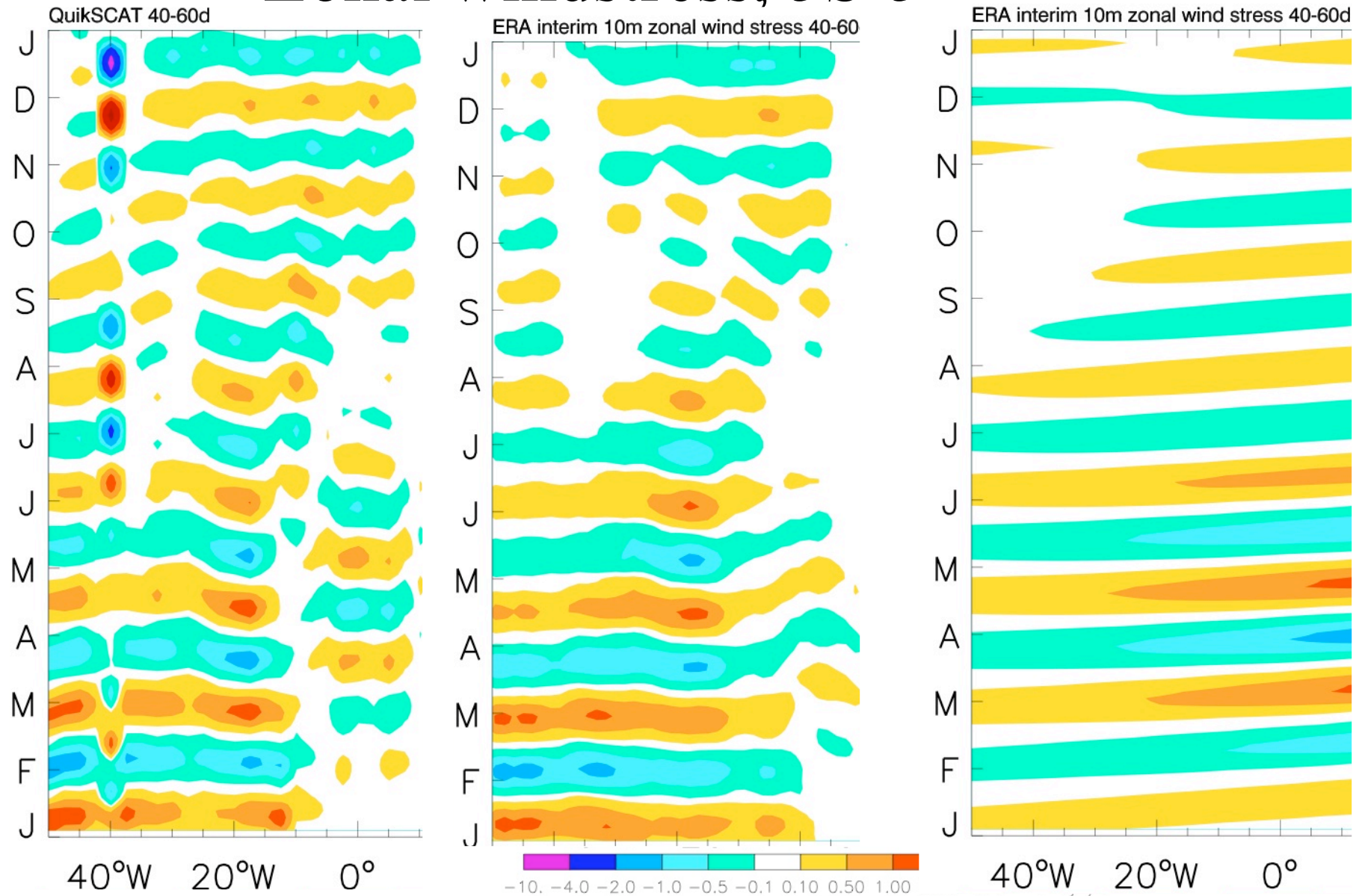
- The observed 40-60-day wind anomalies in the EQ Atlantic during winter and spring of 2002 are likely influenced by the MJO events that originated from the Indian Ocean, although the maximum amplitude of the 40-60-day winds occurs in the subtropical west Atlantic region;**
- The 40-60-day surface winds in the west Pacific propagate eastward along the ITCZ and subsequently enter the Atlantic mainly through Panama and Caribbean Sea, potentially influencing the onset of American monsoon.**







# Zonal windstress, 5S-5N





200mb

