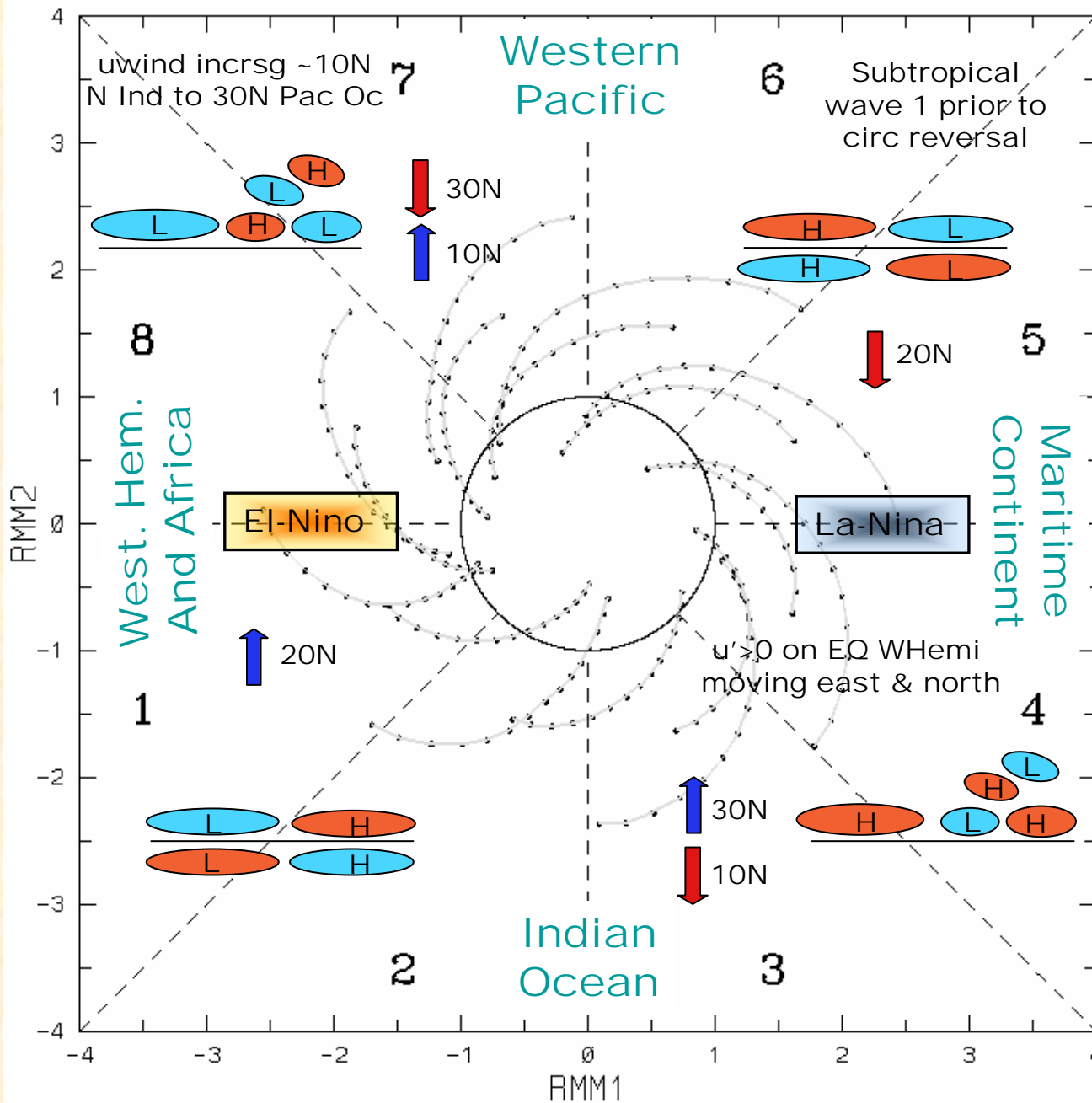


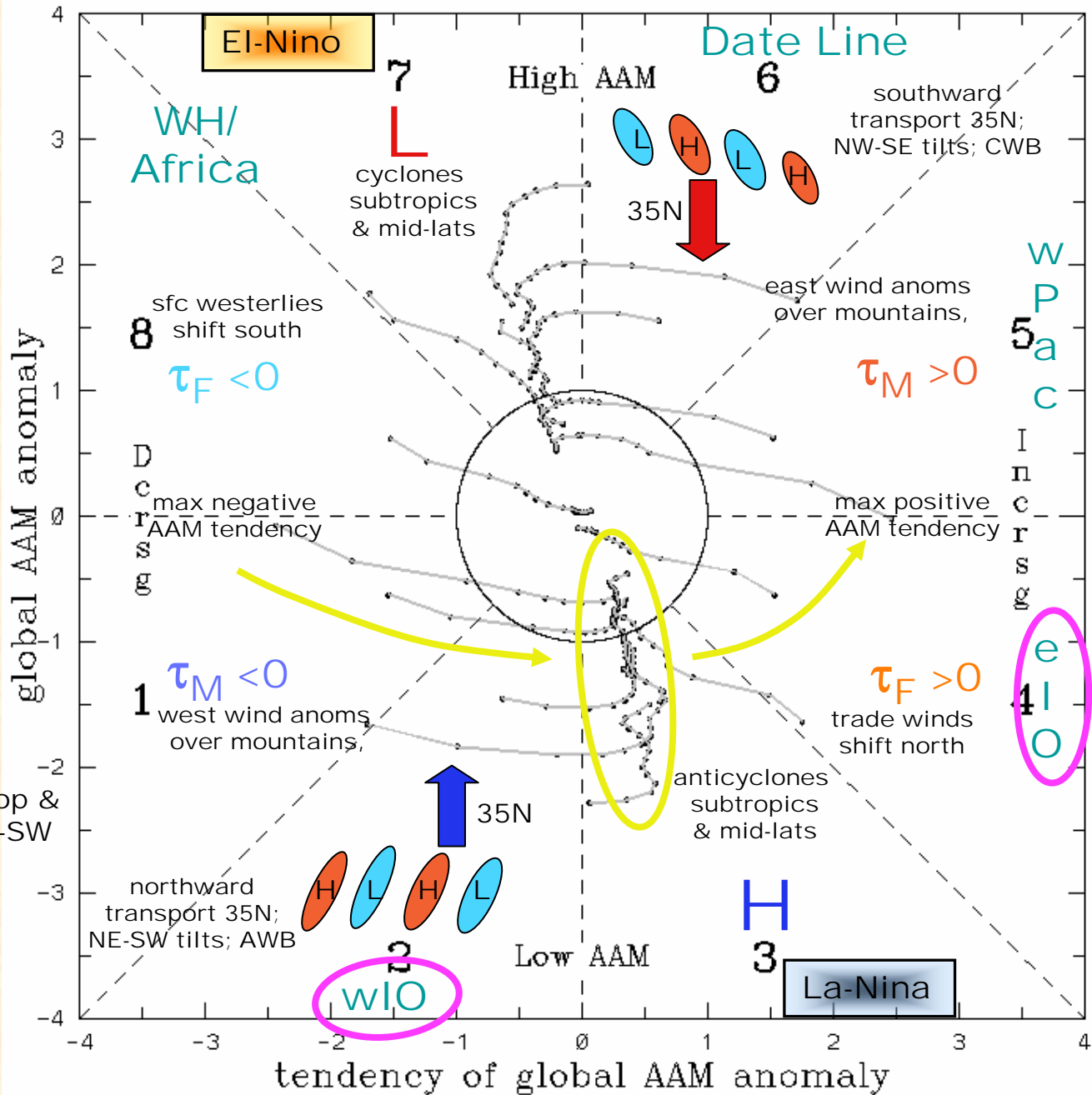
# Indo-Pacific OLR variations

- This viewpoint may relate more to OLR background and less to OLR spectral peak due to MJO
- The global wind oscillation (GWO) monitors the ups and downs of the atmospheric angular momentum
- The seasonal base state, location of mountains and eddy momentum transports across 35N are important components of zonal mean GWO variations.
- Global teleconnection patterns link the GWO orbits to tropical convection over the Indo-Pacific Ocean
- More relevance to forecasting than DYNAMO field project, .....but could get year like 2008-09!

(RMM1, RMM2) phase space

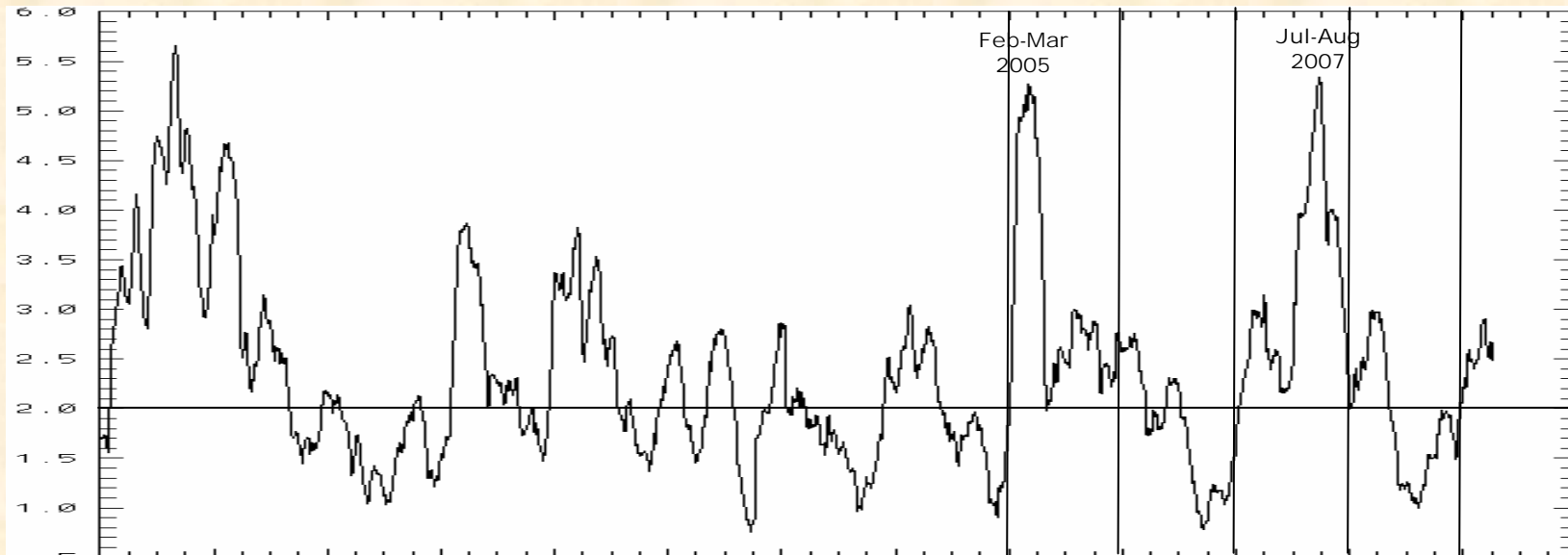


# GWO phase space

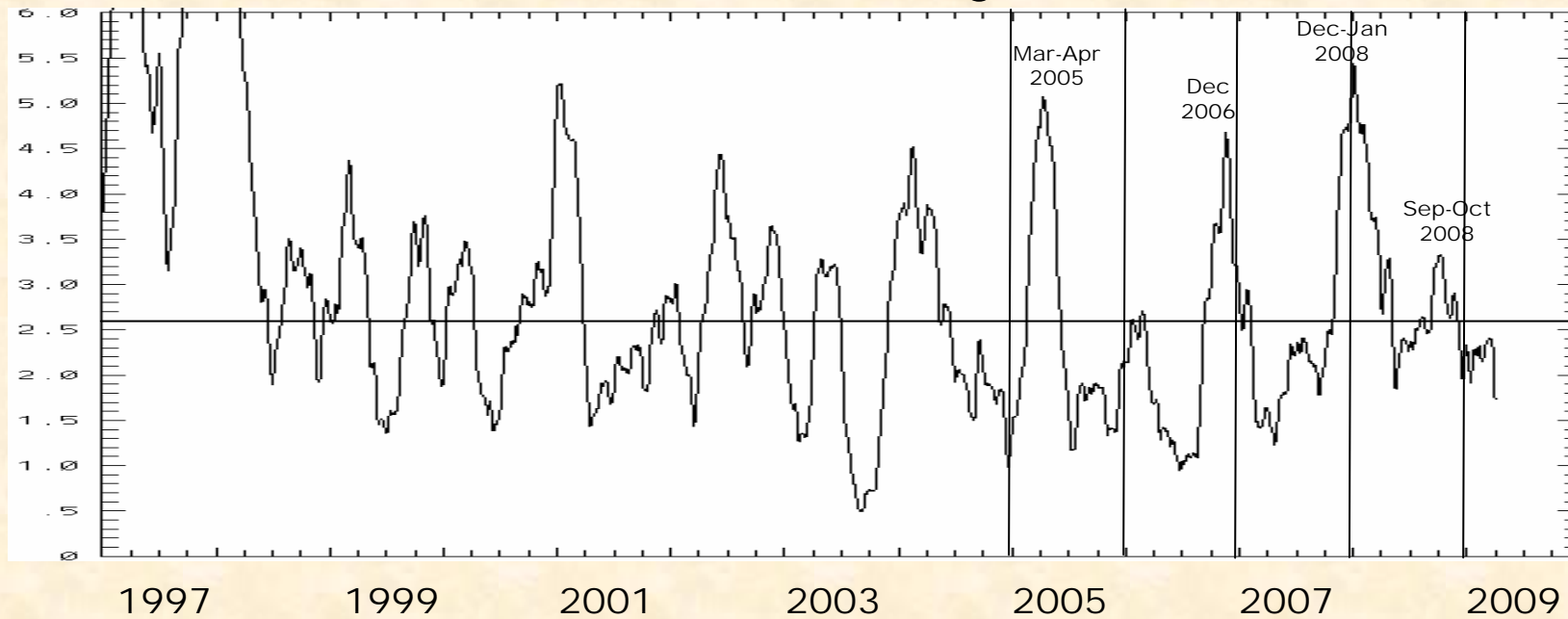


BWPs develop & become NE-SW

# GWO Activity



# MJO Activity

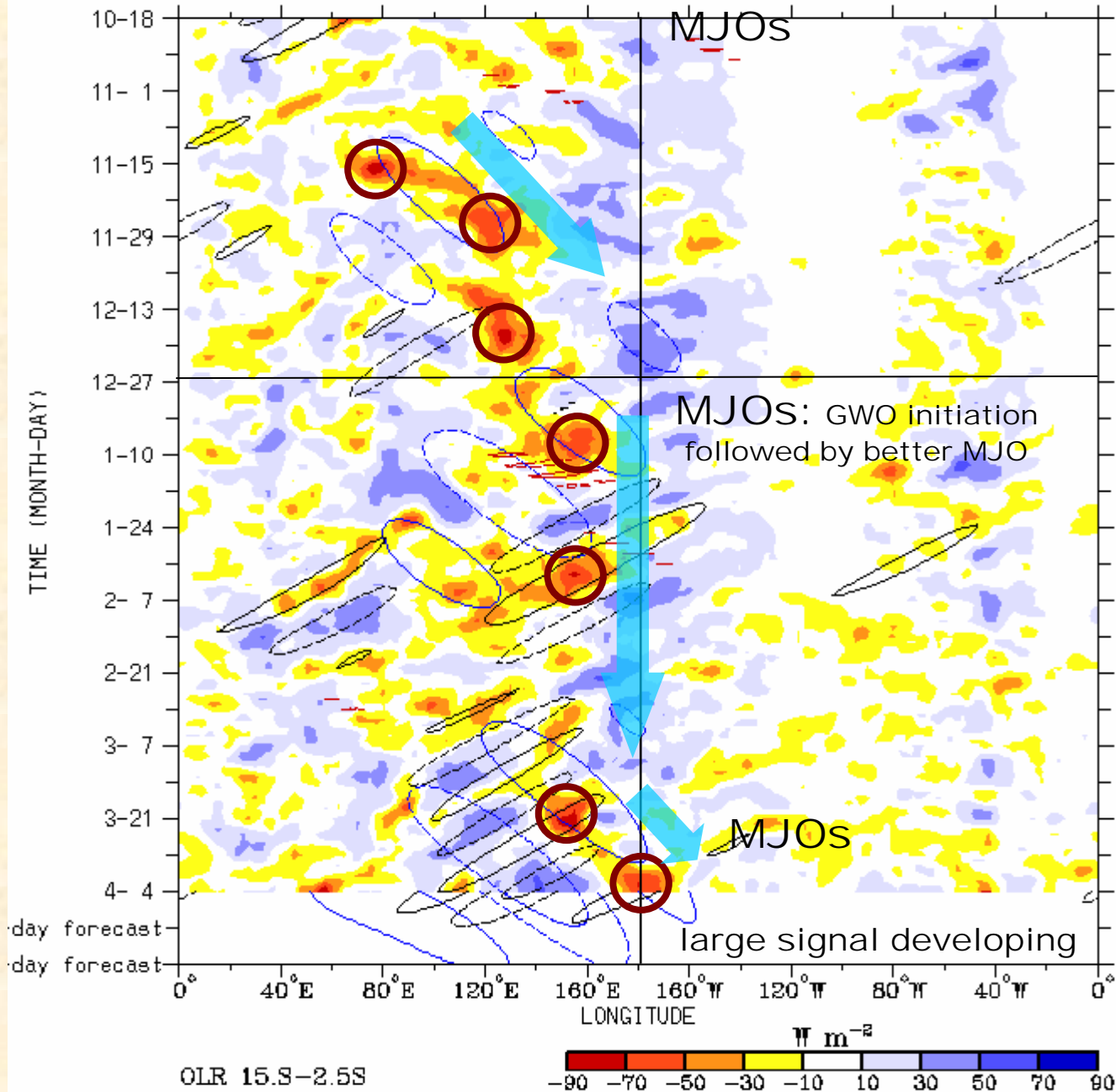


Real-time filtering superimposed upon 3drn OLR Anomalies

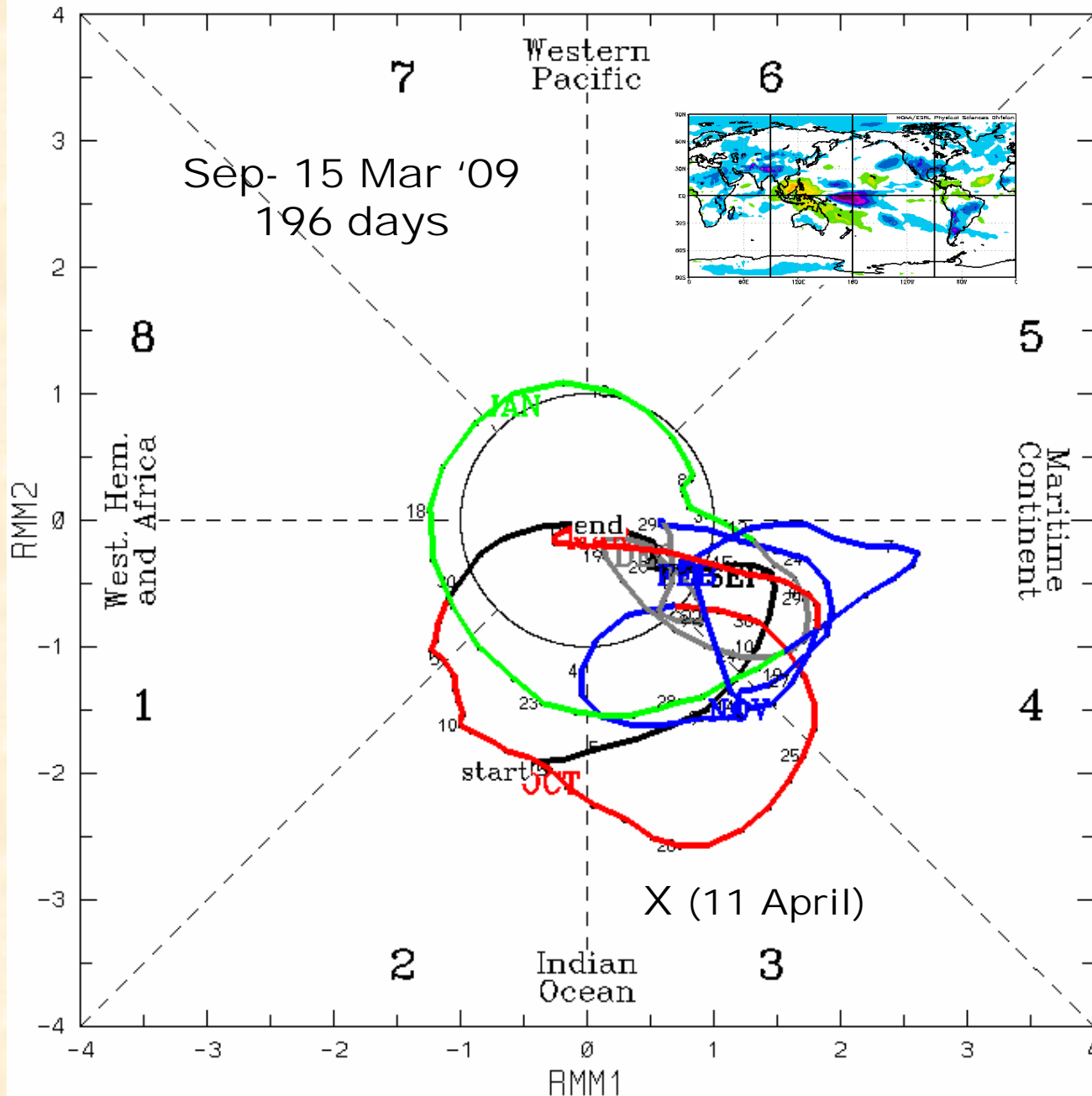
MJO blue CINT 10, ER1 black CINT 10, MRG brown CINT 10

Negative contours solid, positive dashed

2008-10-18 to 2009- 4- 4



(RMM1, RMM2) phase space for 1-Sep-2008 to 15-Mar-2009



## MJO\_totanom Phase Space Signals Sep-Mar 2009

ENSO produces:

- persistence in phases 3-4
- truncated MJO

GWO produces:

irregular variations  
betwn phases 3 & 4

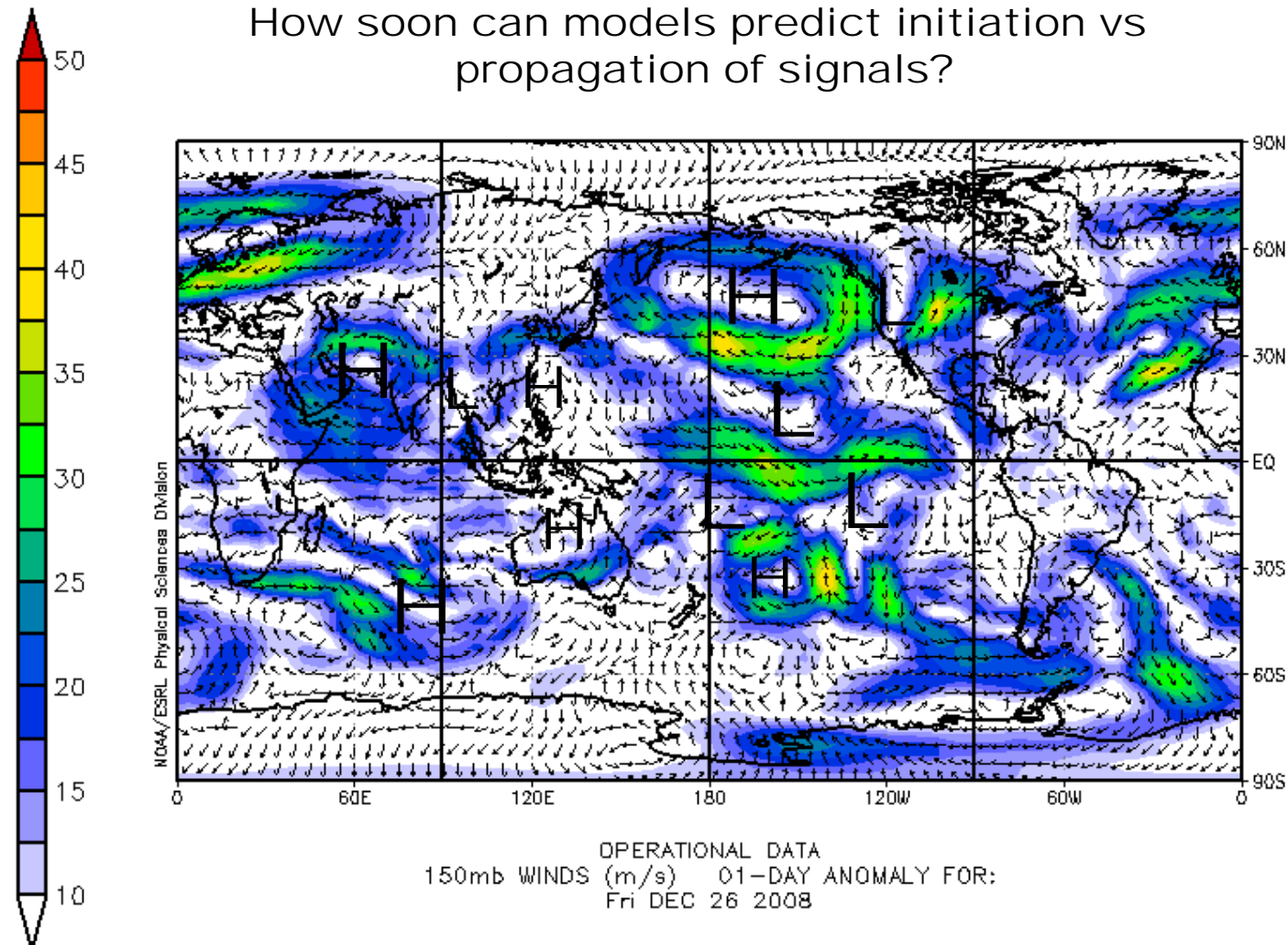
active MJOs:

1 Sep - 25 Oct '08  
20 Dec - 5 Feb '09  
05 Mar - present

# 26 December 2008

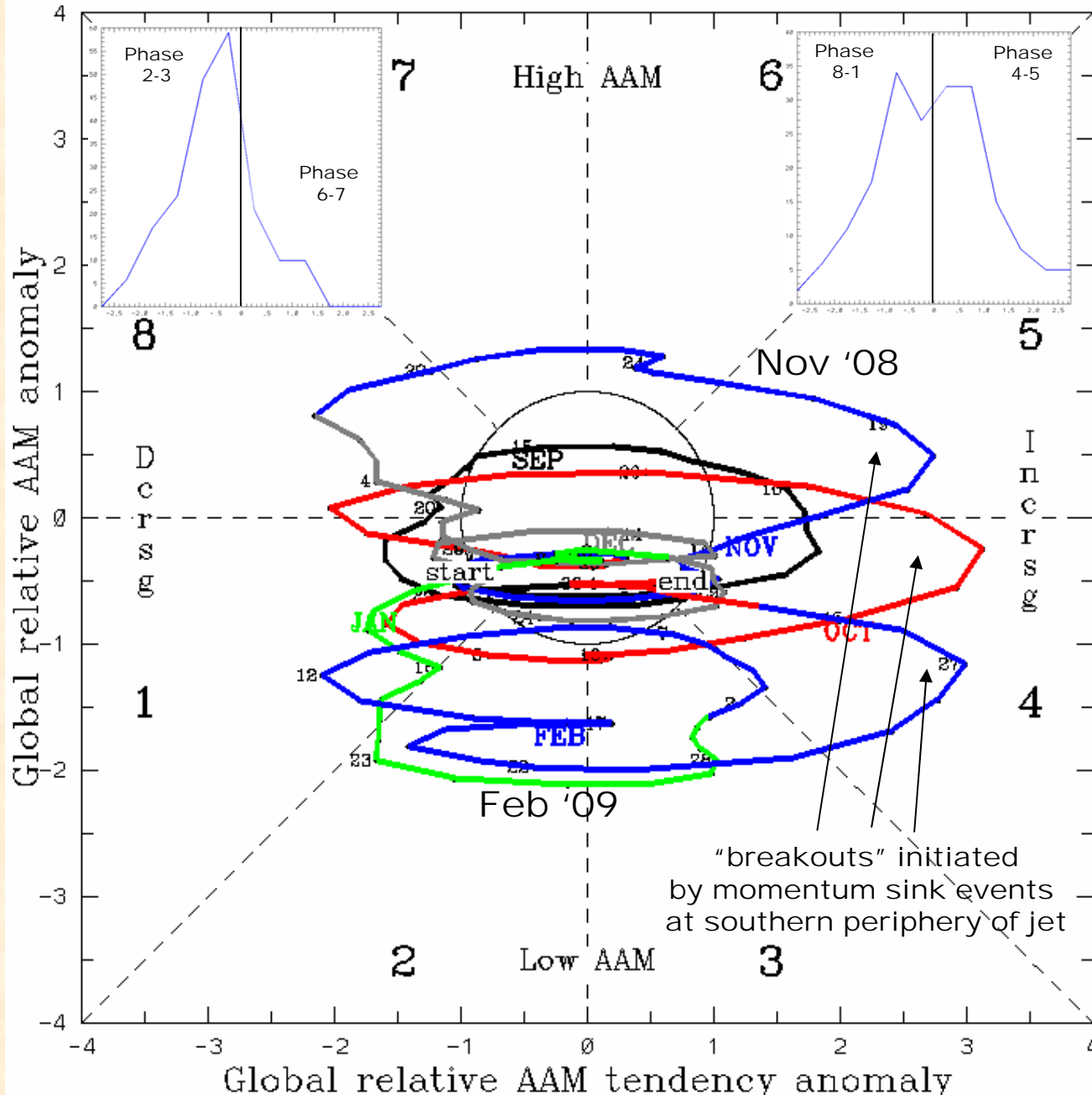
## Key date for MJO development

How soon can models predict initiation vs propagation of signals?



(NCEP Operational climatology data: 1985-1996, smoothed with 5-day running mean)

# GWO phase space for 1-Sep-2008 to 7-Mar-2009



## GWO Phase Space Signals Sep-Mar 2009

ENSO produces:

Difference in centroid of Nov 08 versus Feb 09 orbits

GWO produces:

25-30 dy "cycles" phase 1/2  $\Leftrightarrow$  4

MJO is present:

1 Sep - 25 Oct 08 (couples with GWO)  
 20 Dec - 5 Feb 09 (forced by GWO?)  
 05 Mar - present (forced by GWO?)

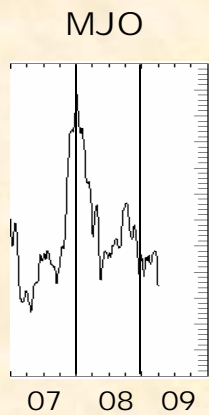
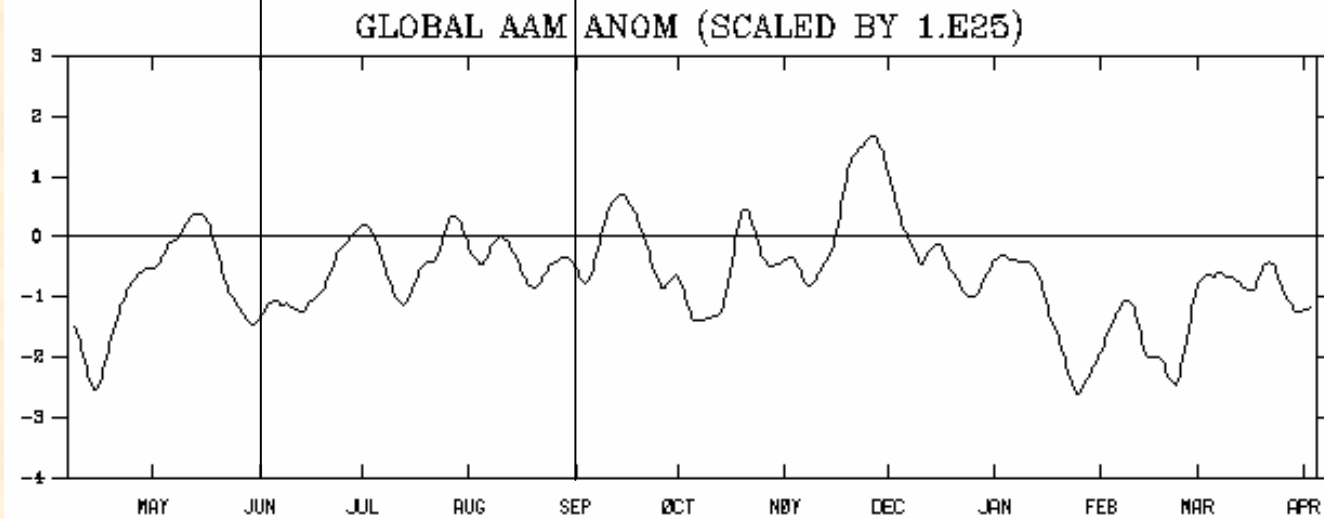
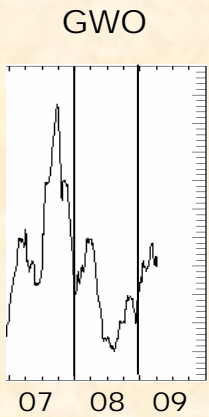
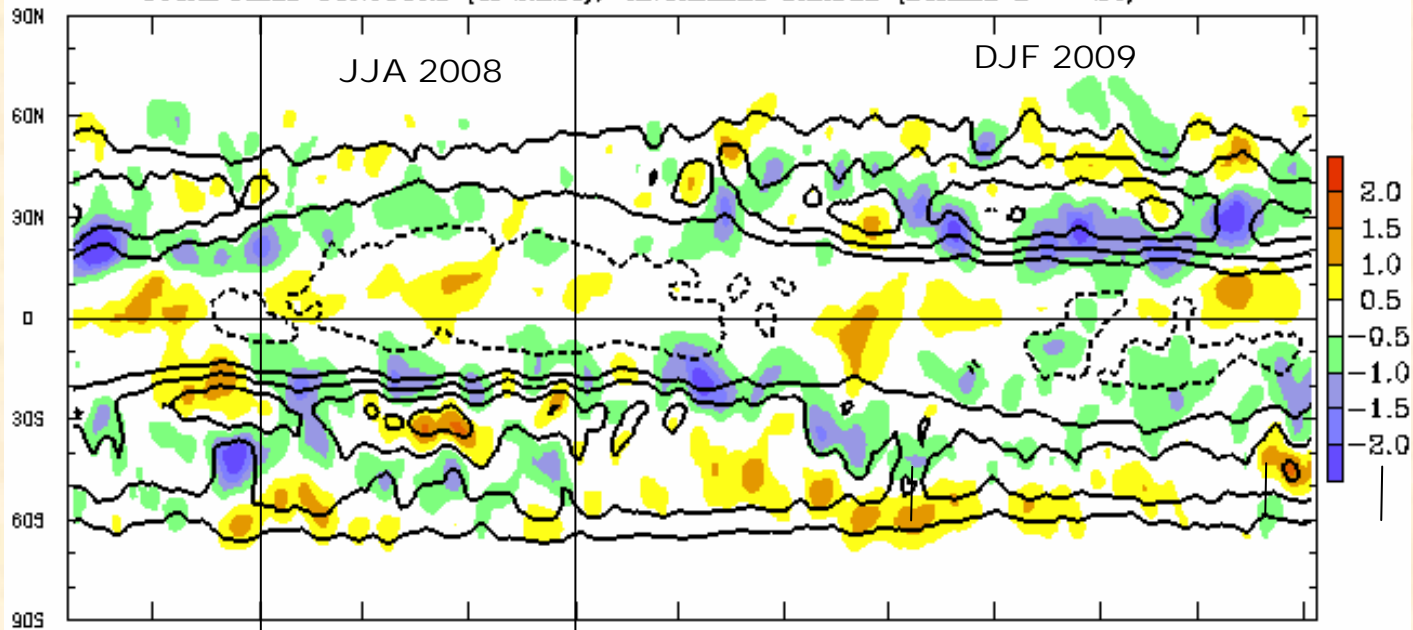


# VERTICAL AND ZONAL INTEGRAL OF RELATIVE ATMOSPHERIC ANGULAR MOMENTUM

FROM REANALYSIS U WIND, SIGMA LEVEL DATA

TOTAL FIELD CONTOURS (CI 2.E24), ANOMALIES SHADED (SCALED B 24)

+  
↑  
-  
↓  
- +  
eddies torques



BASE PERIOD 1/68-12/97