

# TCS, MJO AND YOTC

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MRI/JMA

Special Thanks to **Mio Matsueda**

# OUTLINE

- TC Genesis in 2004
- Forecast of Nargis by JMA  
Ensemble Dataset
- Utilization of TIGGE  
Database

# OUTLINE

- ~~TC Genesis in **2004**~~ → • **TC Genesis in 2008**
- ~~Forecast of **Nargis** by JMA Ensemble Dataset~~ → • **Forecast of TC Genesis in 2008 by JMA Ensemble Dataset**
- Utilization of TIGGE Database

# TC GENESIS OVER WVP IN 2008

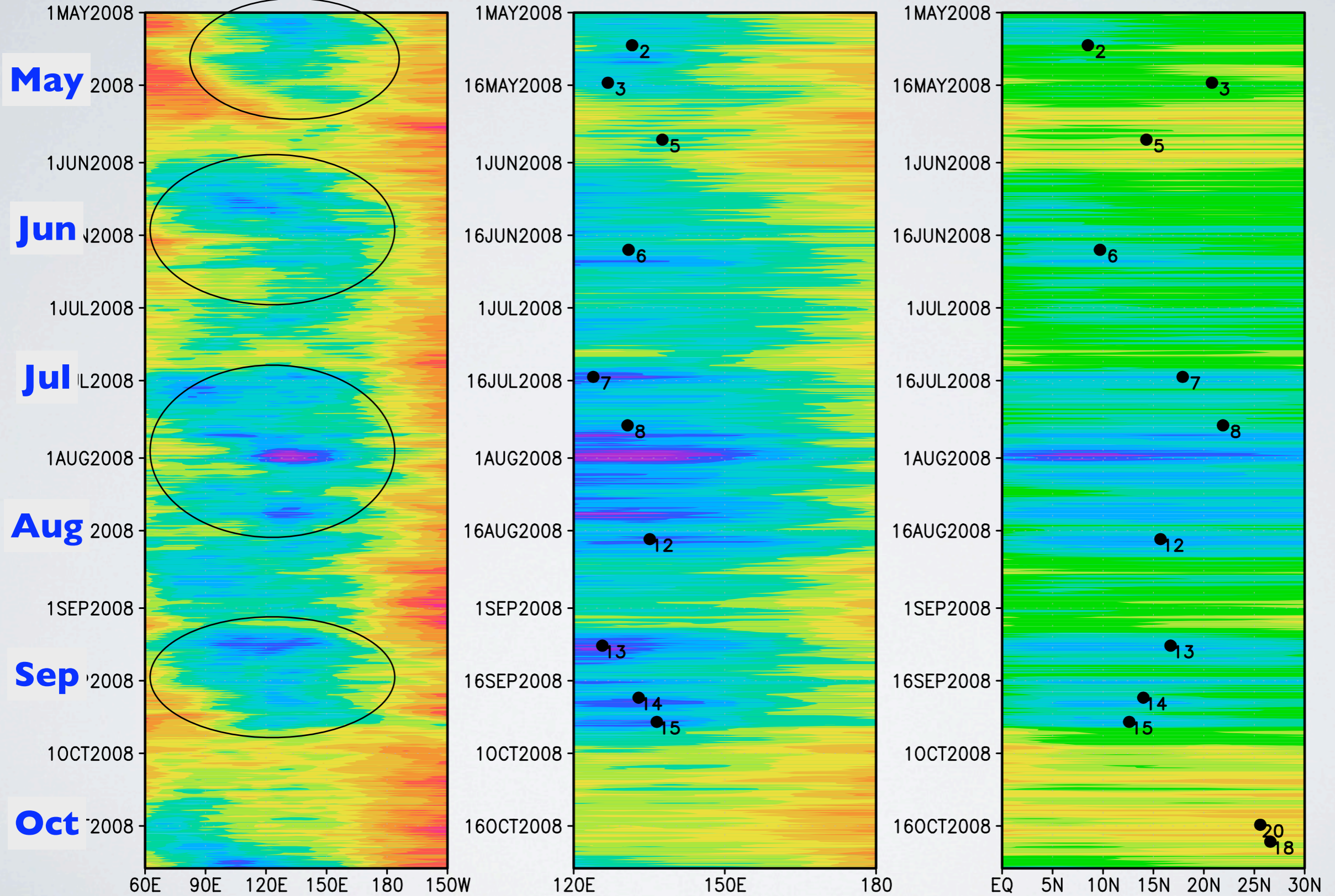
- May - Oct. in 2008 over the western North Pacific
- JMA Analysis (JCDAS) Data Used

# TC GENESIS OVER WVP IN 2008

Chi200 T-Lo EQ

T-Lo 15N

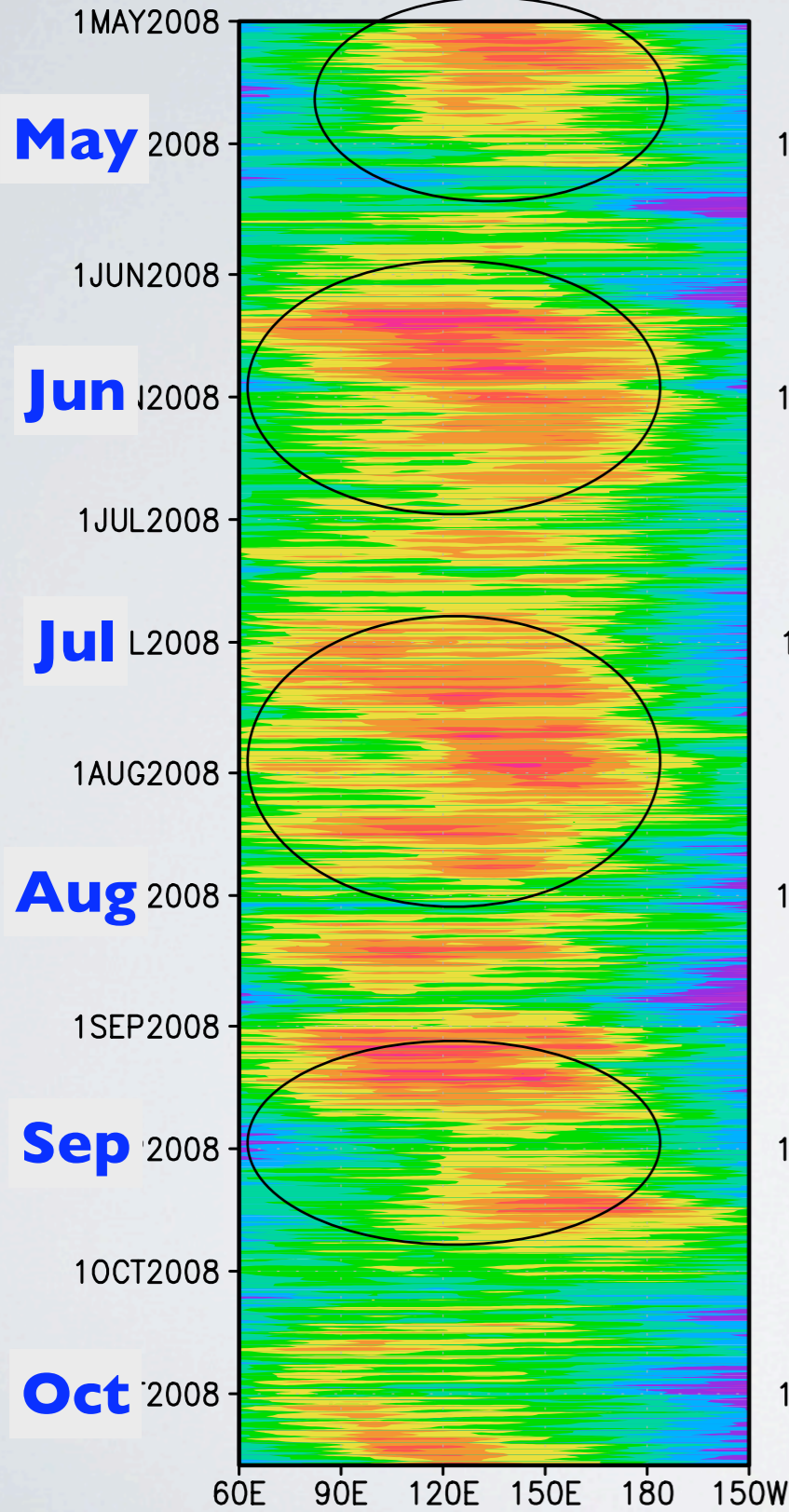
T-La 120E-180



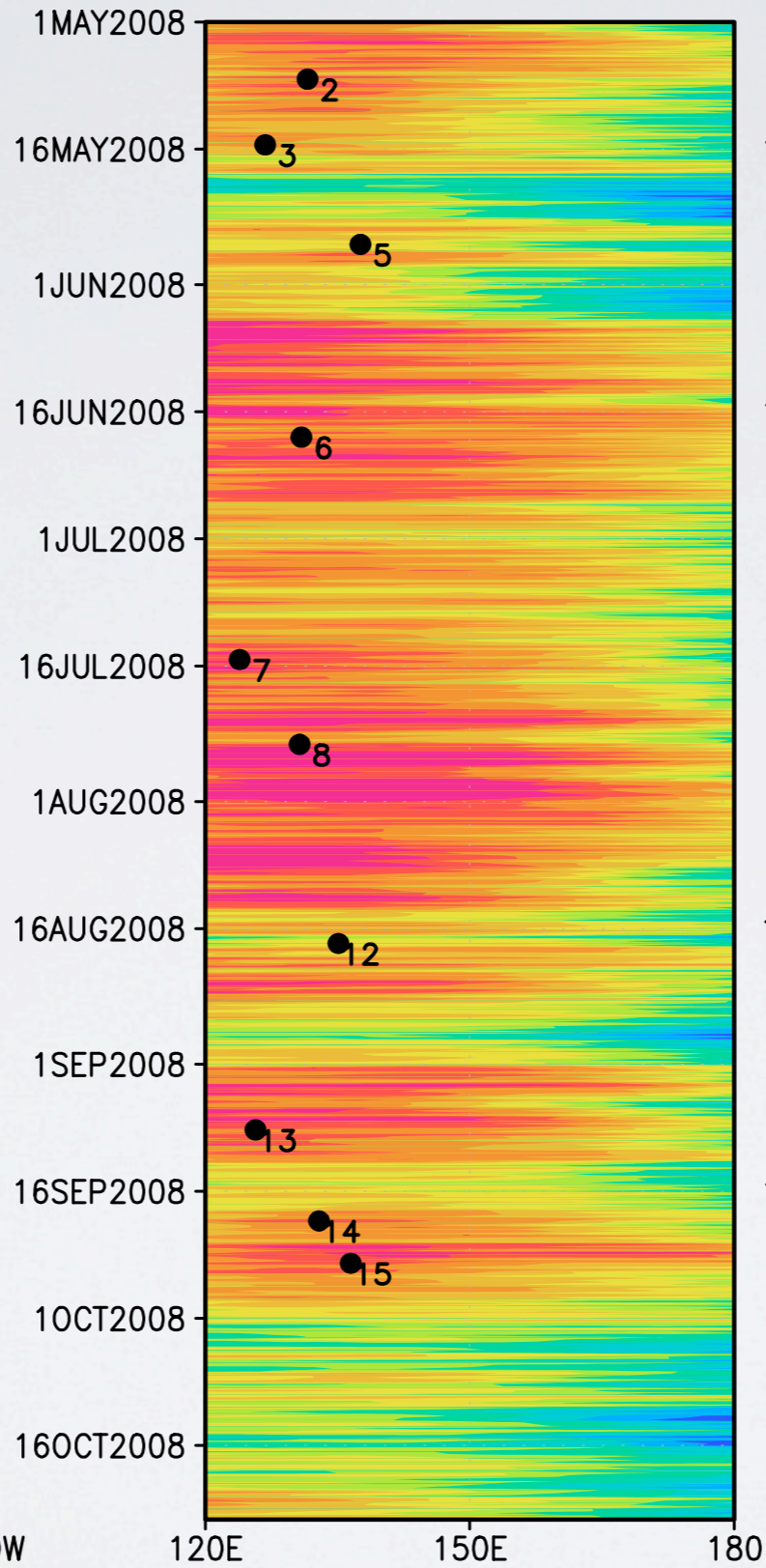
-40 -35 -30 -25 -20 -15 -10 -5 0 5 10

# TC GENESIS OVER WVP IN 2008

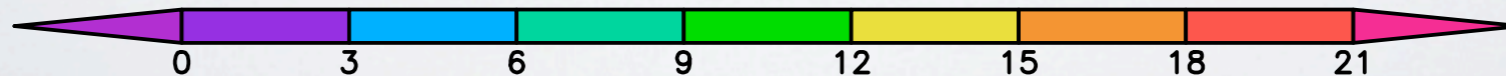
Chi850 T-Lo EQ



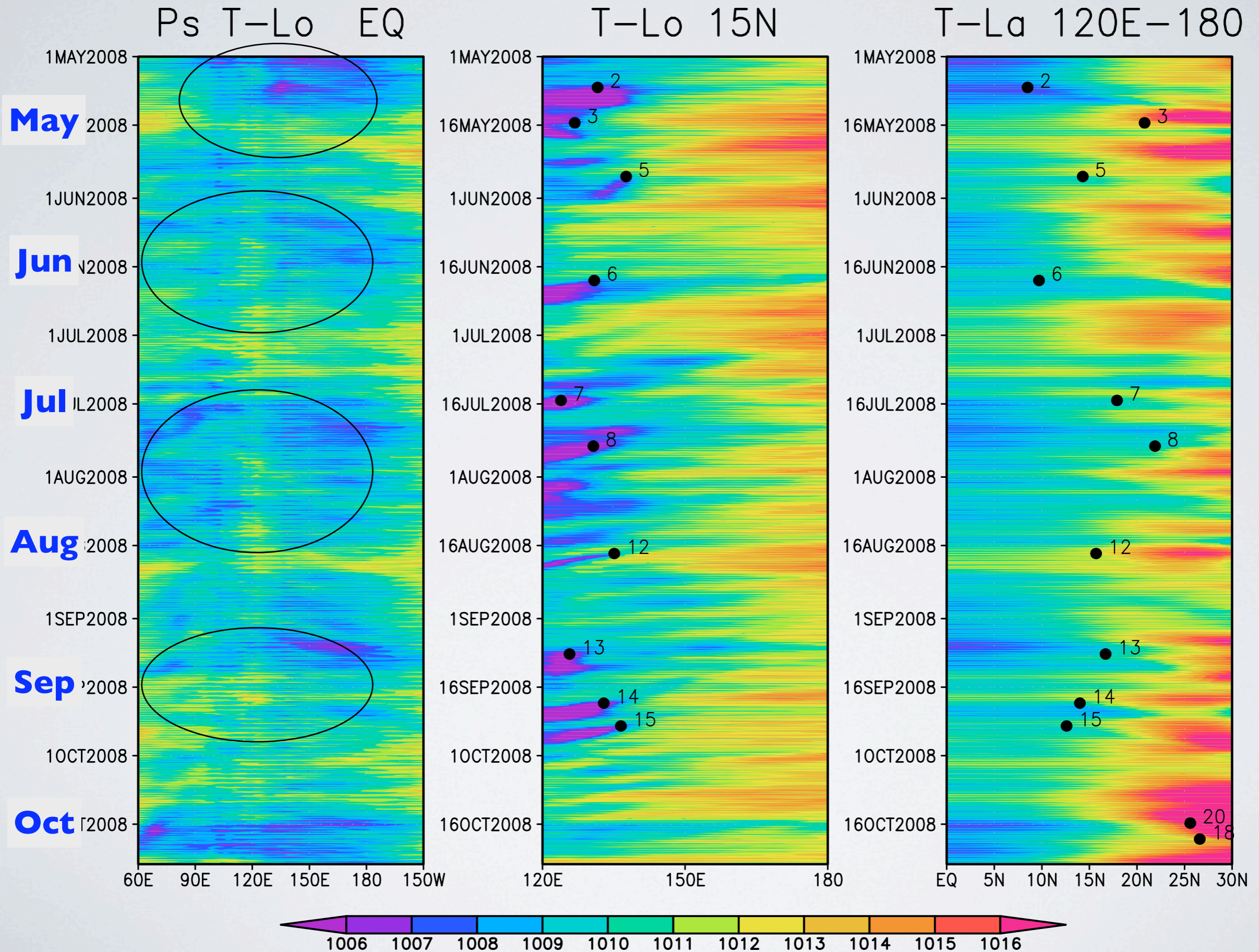
T-Lo 15N



T-La 120E-180



# TC GENESIS OVER WVP IN 2008



# TC GENESIS OVER WVP IN 2008

- May - Oct. in 2008 over the western North Pacific
- JMA Analysis (JCDAS) Data Used
- Several MJOs in the period.
- TC genesis longitude: westward than climatology
- TC genesis timing: in conjunction with MJO, is not clear.



# Forecast of TC Genesis in 2008

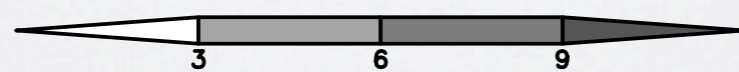
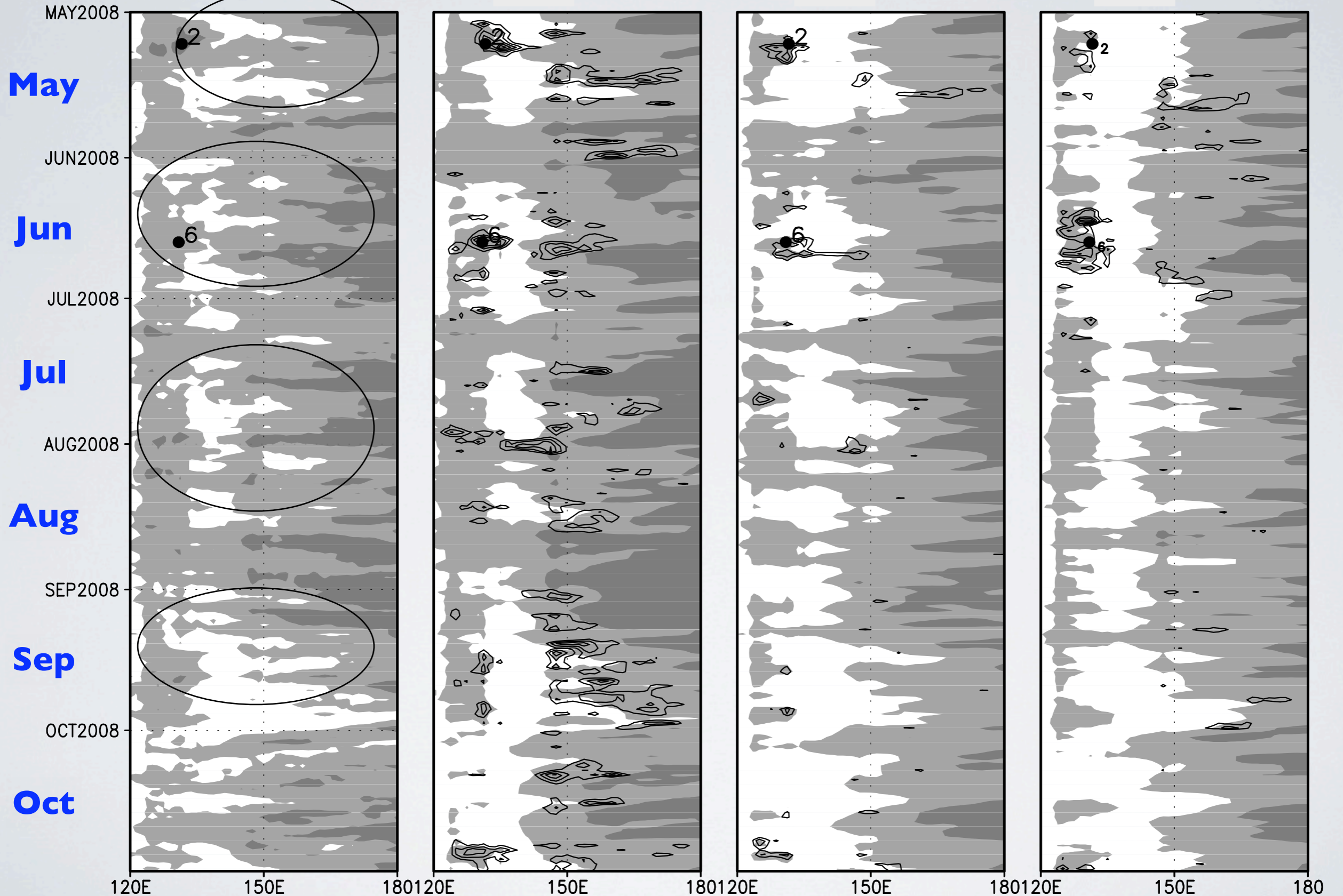
- TIGGE Database
- Surface Wind Speed Data in the JMA Ensemble Forecast Dataset (51 members) Used
- Ensemble Mean and Spread with the Same Forecast Time (1Day, 2Day, up to 9Day) Computed

Us 5N-5S 2008

FC **3Dy** EnM,SP

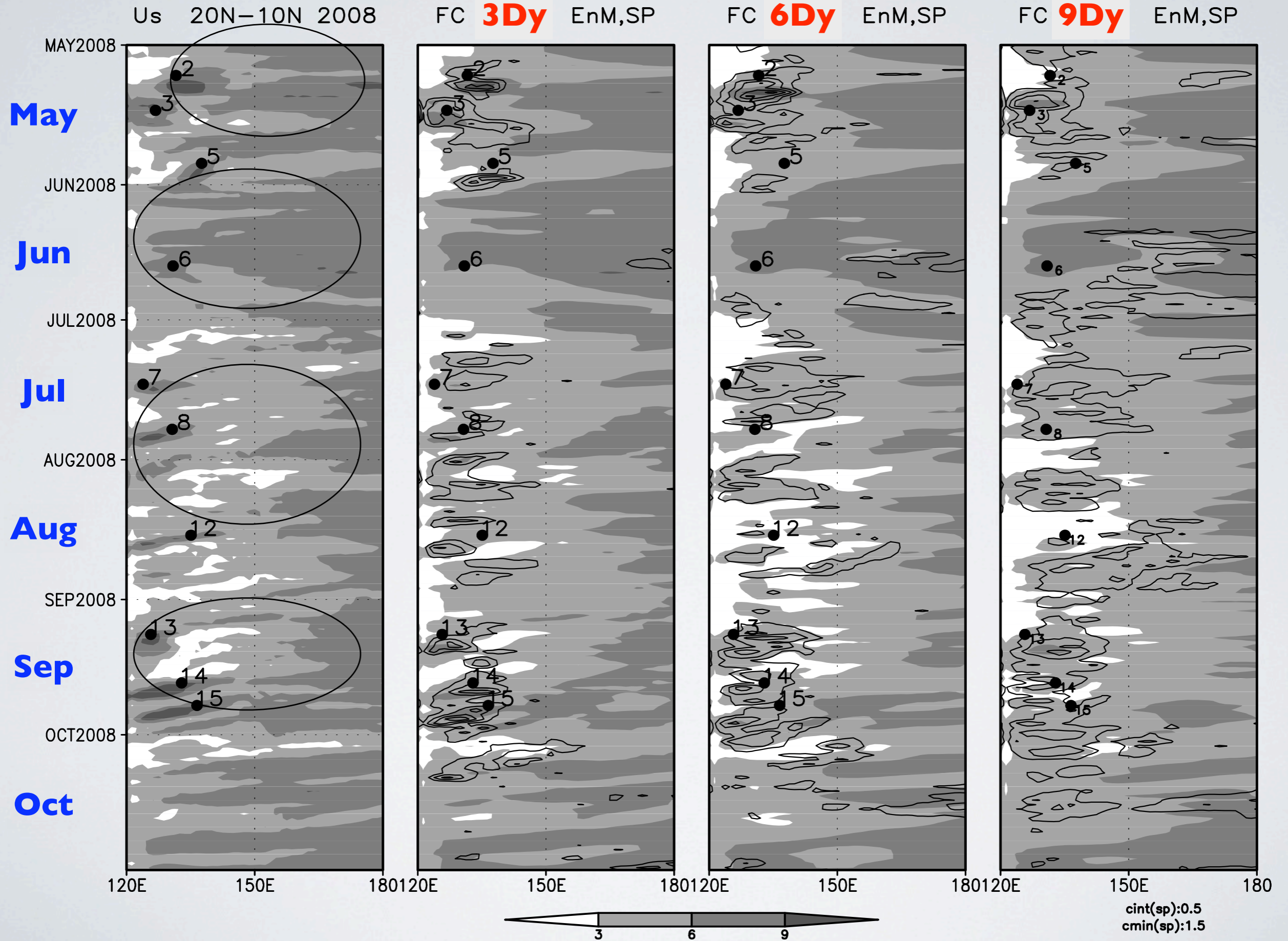
FC **6Dy** EnM,SP

FC **9Dy** EnM,SP



cint(sp):0.15  
cmin(sp):1.1

# JMA Forecast of TC Genesis in 2008 15N

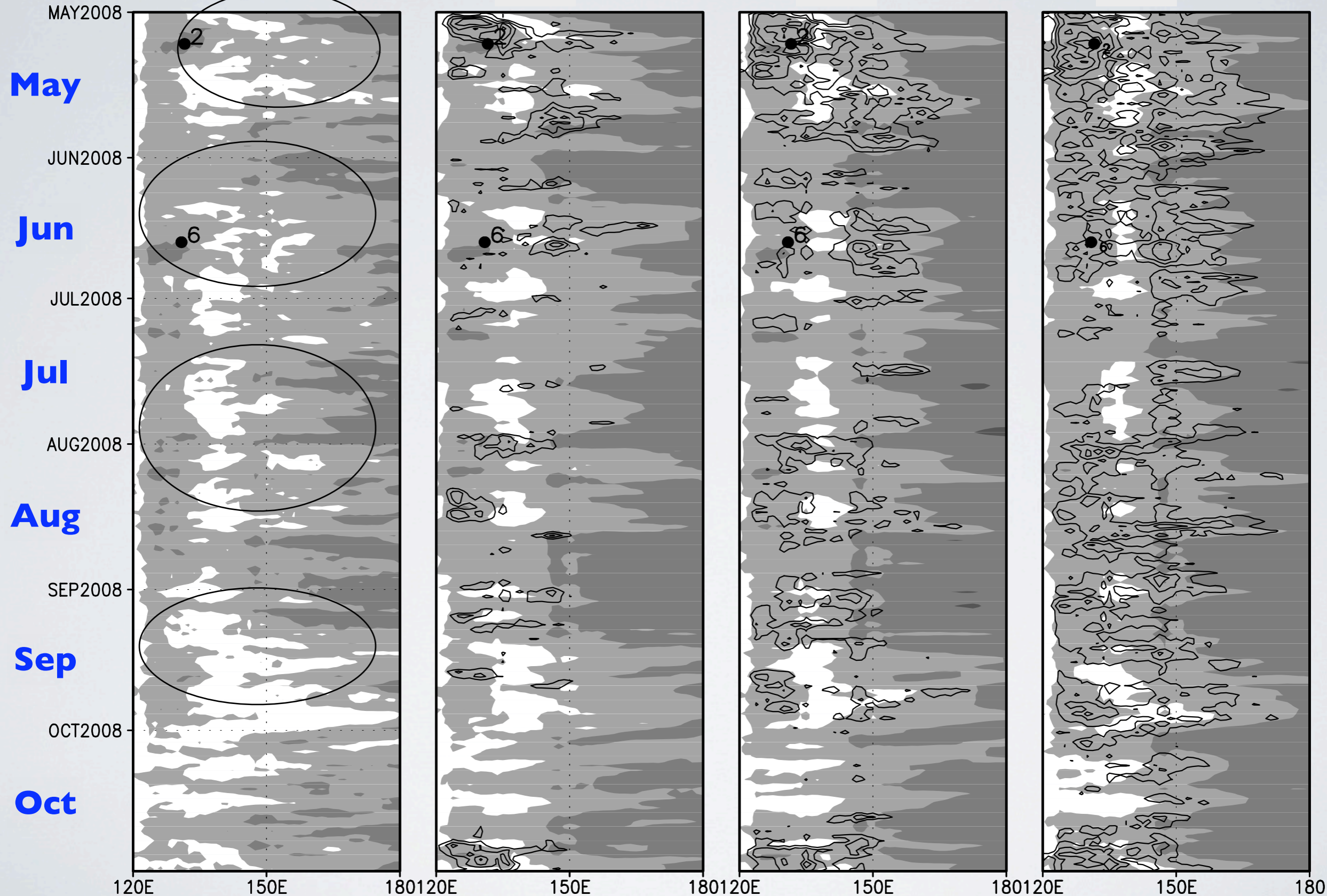


Us 5N-5S 2008

FC **3Dy** EnM,SP

FC **6Dy** EnM,SP

FC **9Dy** EnM,SP



May

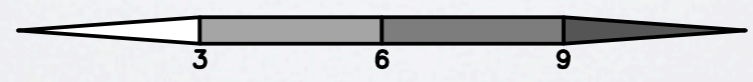
Jun

Jul

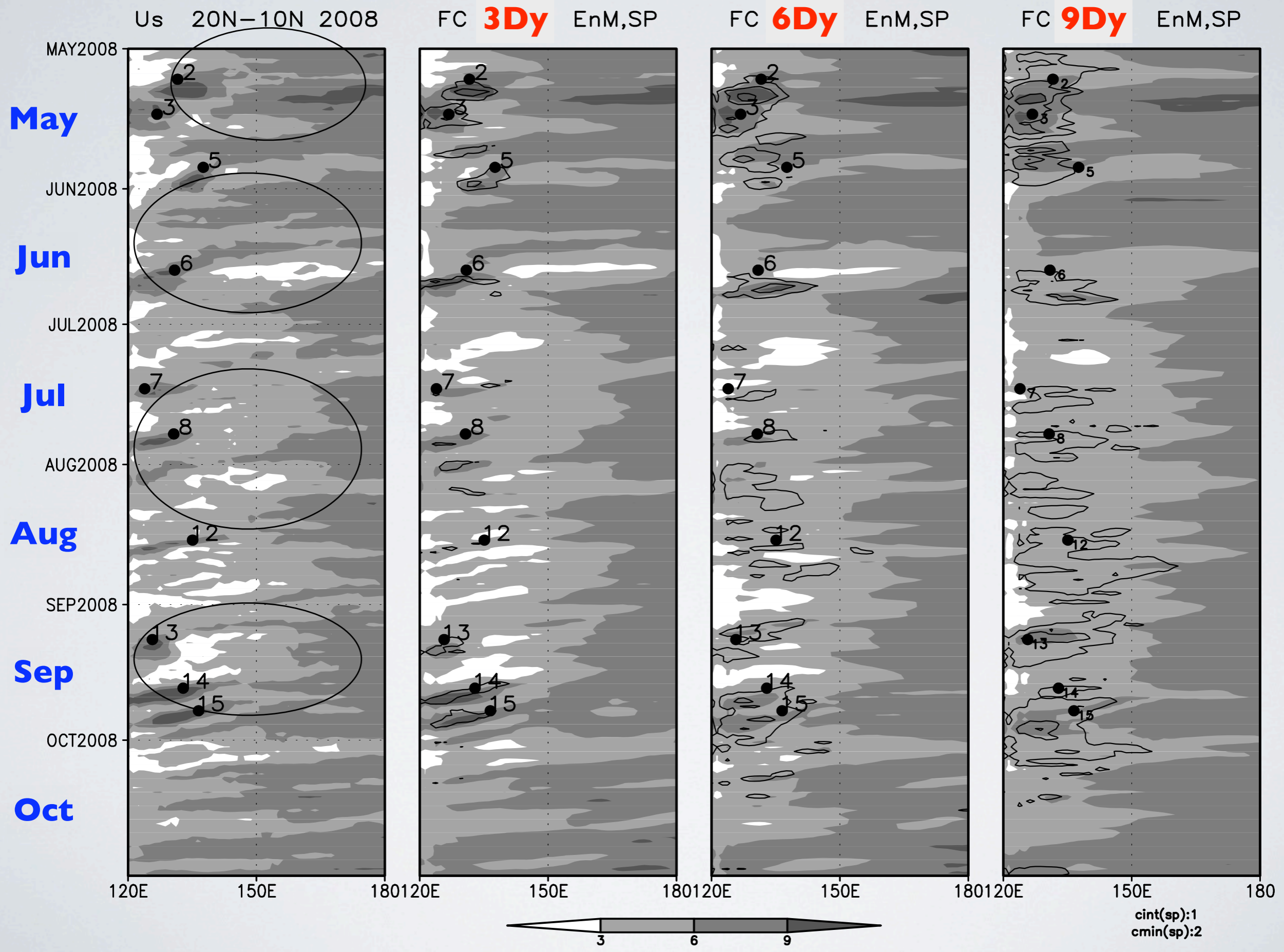
Aug

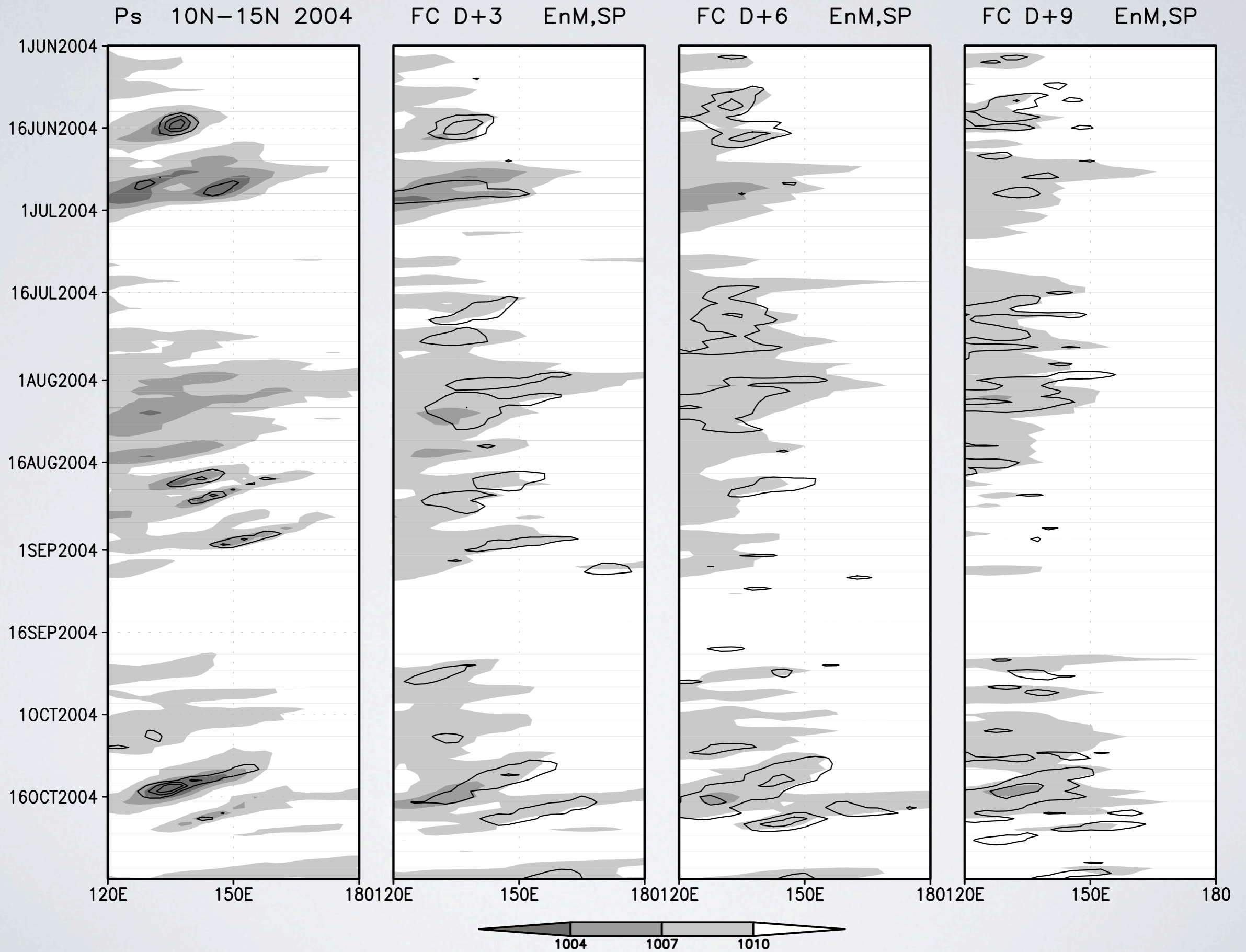
Sep

Oct



cint(sp):0.25  
cmin(sp):1.25





# Forecast of TC Genesis in 2008

- TIGGE Database
- Surface Wind Speed Data in the JMA Ensemble Forecast Dataset (51 members) Used
- Ensemble Mean and Spread Computed and Aligned with the Same Forecast Time (1-Day, 2-Day, up to 9-Day)
- Both Ensemble Mean and Spread shows signals of TC genesis.
- For Ensemble Mean, Equatorial Westerlies and Trade Wind Enhancements are identified.
- For Ensemble Spread, Large Values are observed near the TC genesis period, even in 9-Day Forecast.

# ON-GOING WORK

- Illustrate Probability Density Function of Surface Wind from All Members ( $\sim 300$ ) in TIGGE Ensemble Datasets
- Toward Constructing a Warning System for High-Impact Weather Events by detecting the Possible Occurrence of Extreme Surface Wind at a Certain Location



# PDF OF WIND SPEED IN TIGGE

## Percentile

Season:

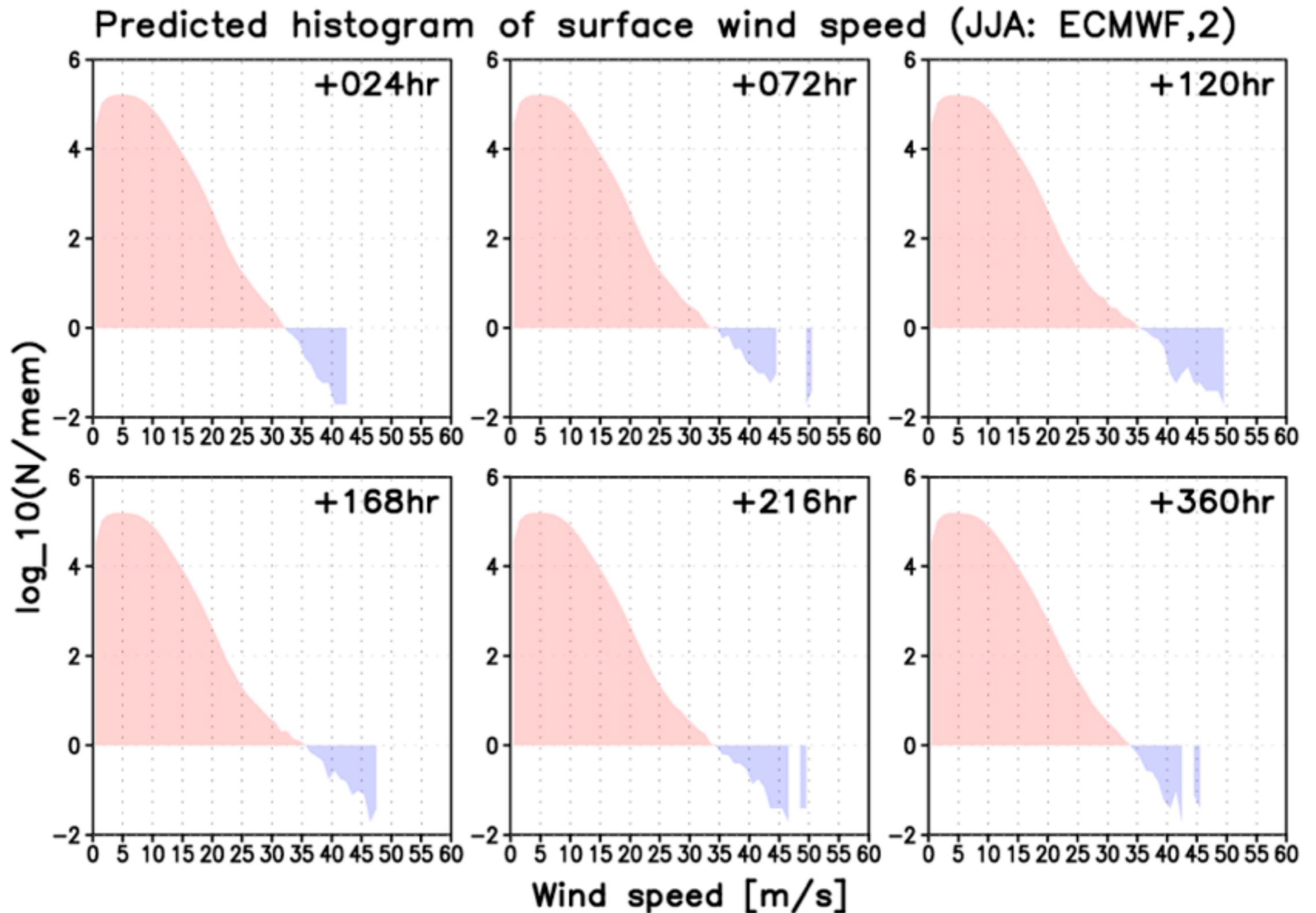
- DJF
- MAM
- JJA
- SON

Component:

- WIND
- VORT

Center:

ECMWF(5.1) ▾



(Courtesy of Mio Matsueda)

# PDF OF WIND SPEED IN TIGGE

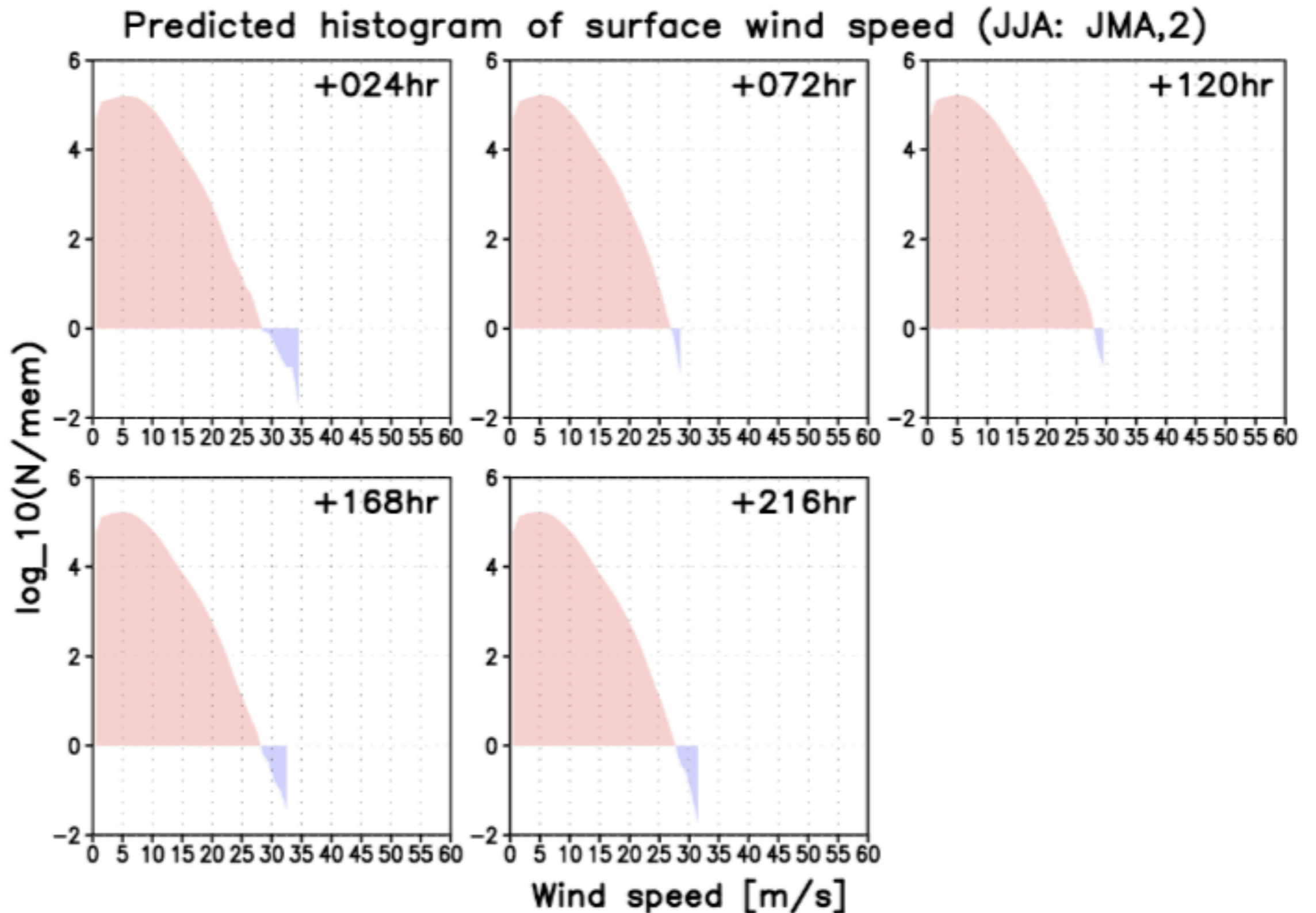
## Percentile

Season:

- DJF
- MAM
- JJA
- SON

Component:

- BOM(33)
- CMA(15)
- CMC(21)
- CPTEC(15)
- ECMWF(51)
- JMA(51)
- KMA(17)
- NCEP(21)
- UKMET(24)



(Courtesy of Mio Matsueda)