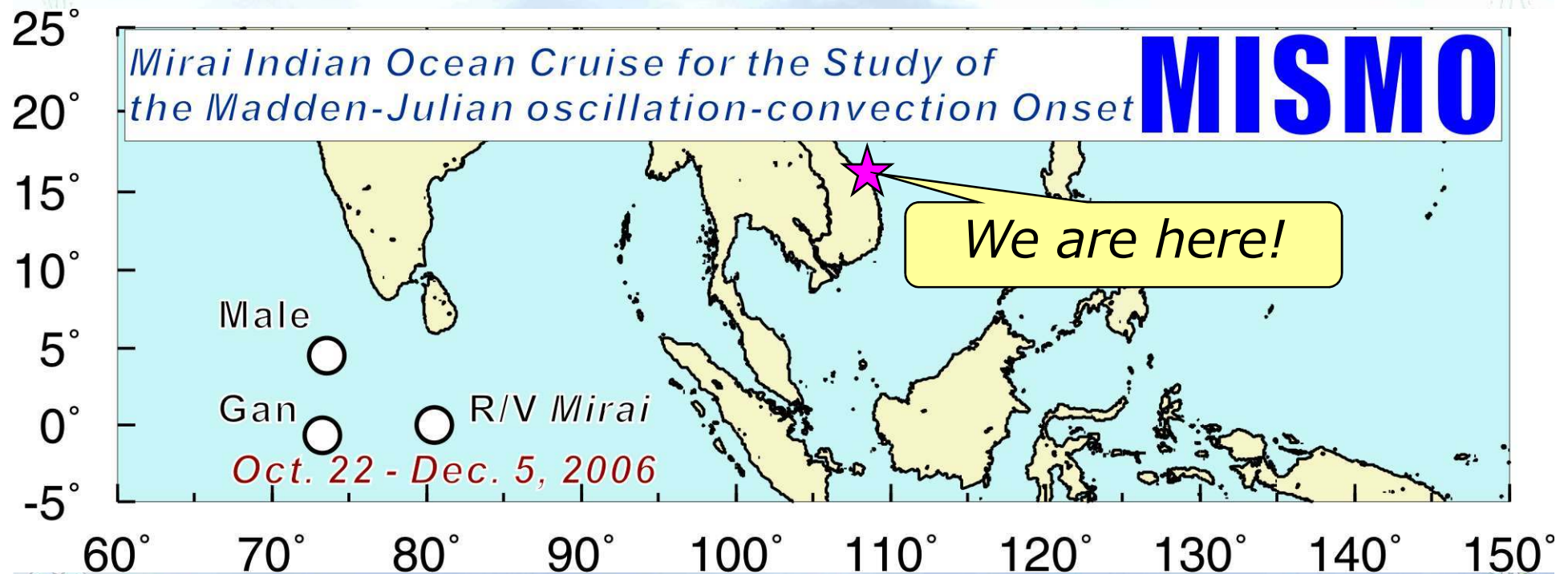


Propagation of the Effect of the Additionally-Assimilated Sondes over the Indian Ocean in an Objective Analysis



Qoosaku MOTEKI

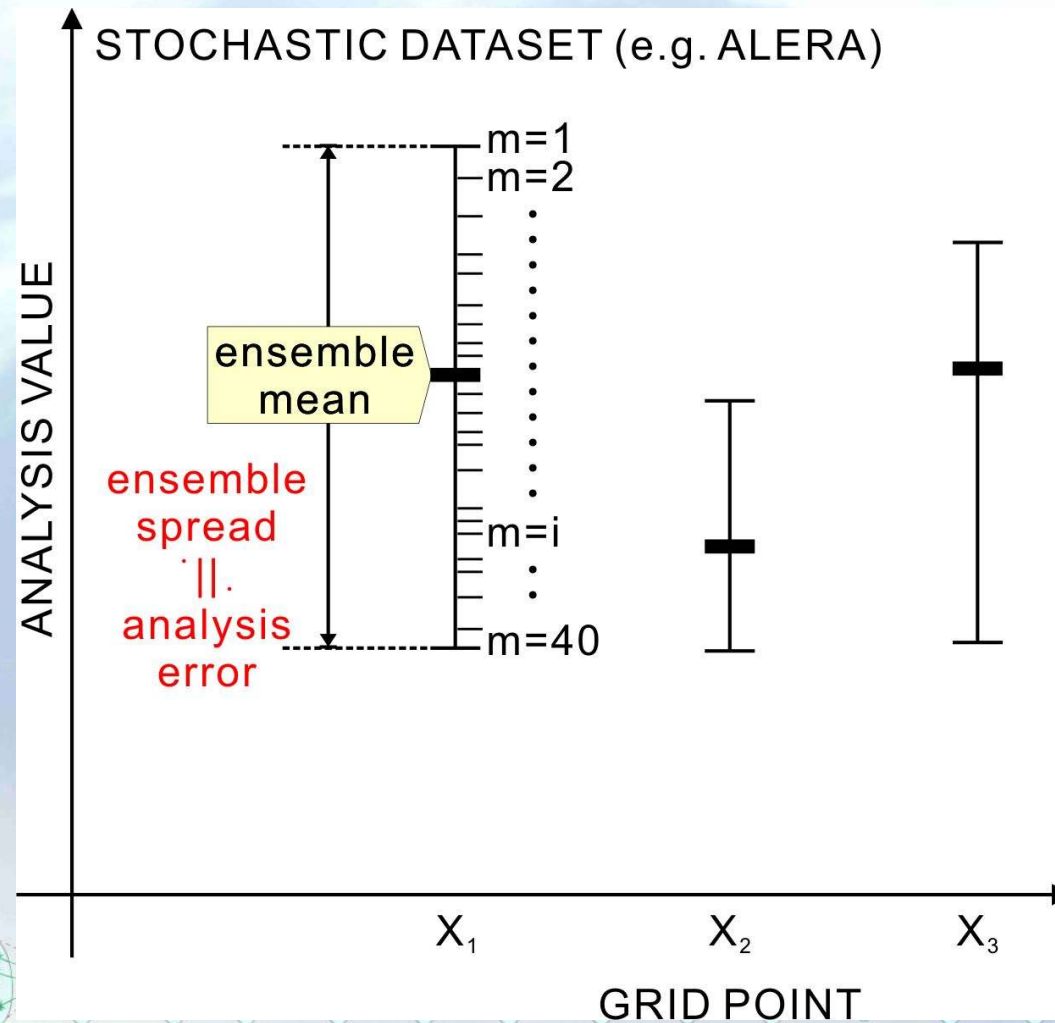
K. Yoneyama · R. Shirooma · M. Katsumata · M. Yoshizaki :
T. Enomoto :
T. Miyoshi :
Maryland
S. Yamane :

JAMSTEC/IORGC
JAMSTEC/ESC
Univ. of
Doshisha Univ

“ALERA” (AFES-LETKF Experimental ReAnalysis)

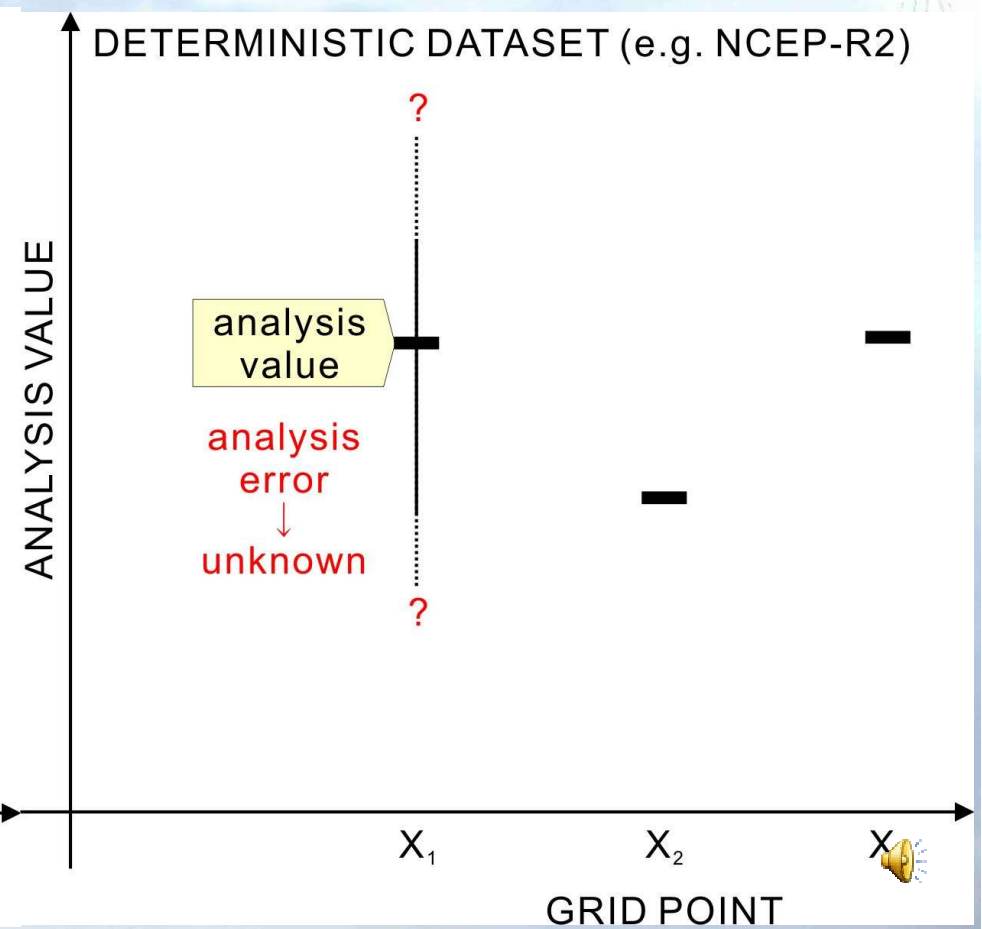
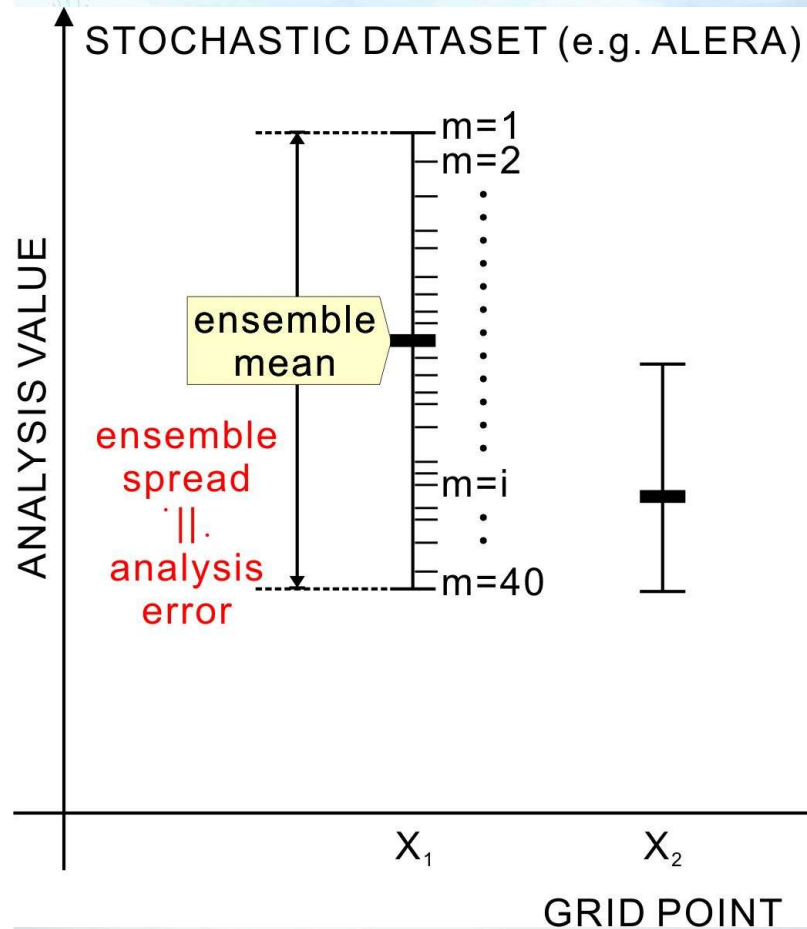
Free download from “<http://www.jamstec.go.jp/esc/afes/dods/alera>”

produced by JMA, JAMSTEC/ESC, and CIS
using an ensemble Kalman filter



ALERA using EnKF (Stochastic Datasets)

The Other Usual Datasets using 3/4DVAR (Deterministic Datasets)

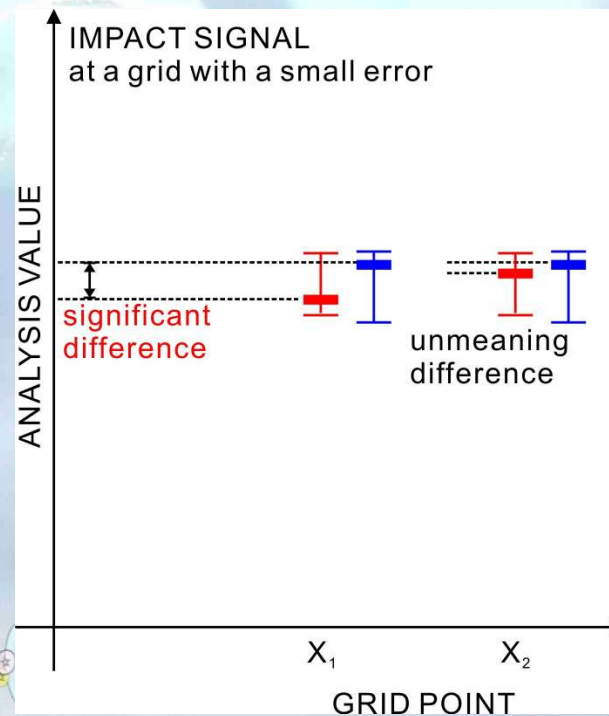
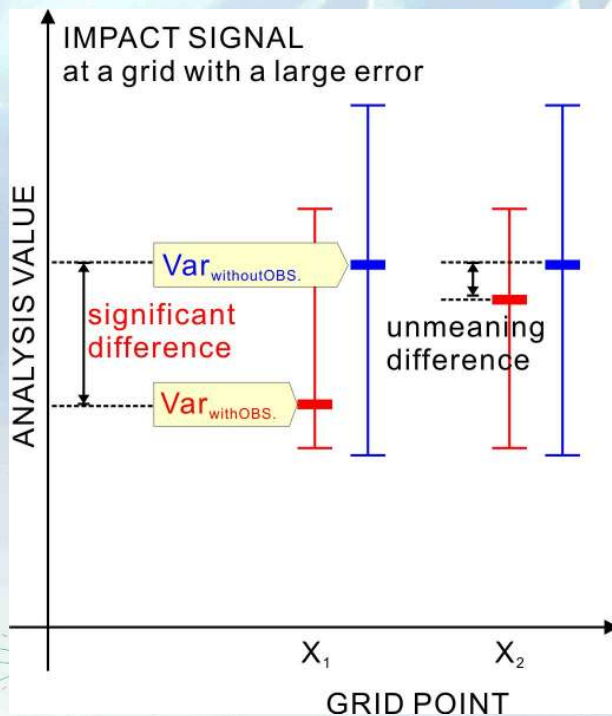


Definition of “reliable” impact signal

(difference between the two datasets with t-test at the 95% confidence level)

$$\text{signal} = \left| \text{var}_{\text{withMISMO}} - \text{var}_{\text{withoutMISMO}} \right|,$$

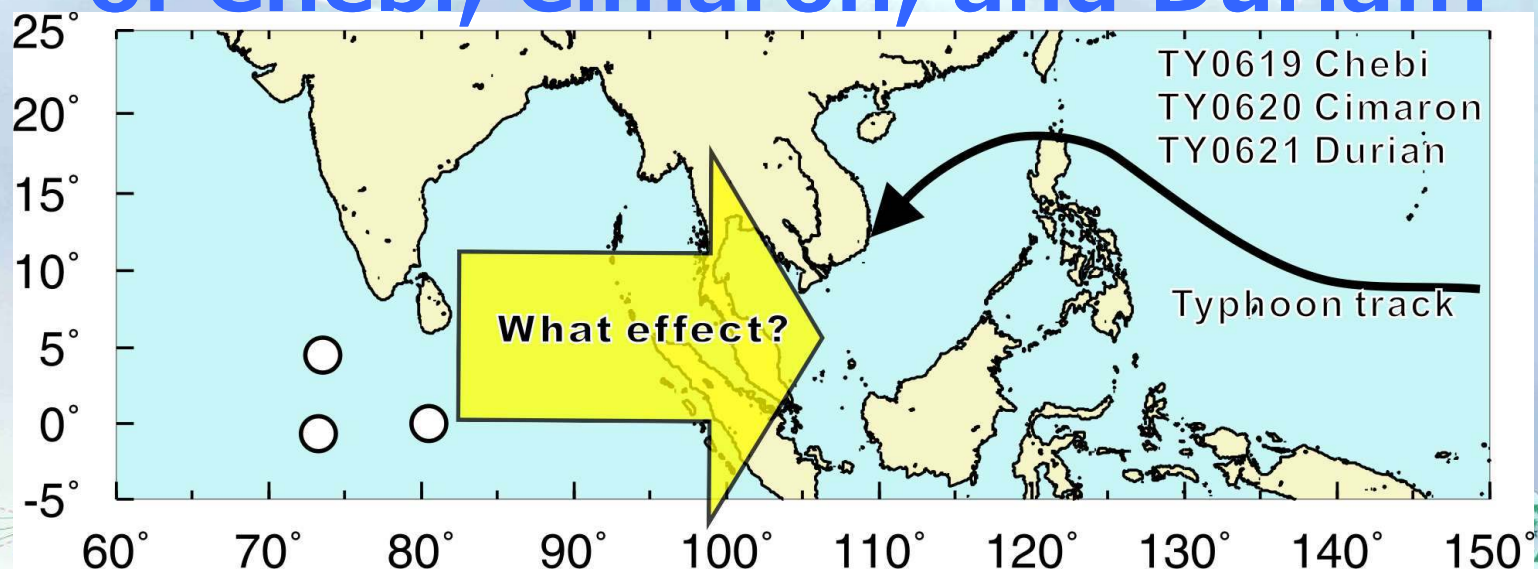
$$\left| \frac{\text{var}_{\text{withMISMO}} - \text{var}_{\text{withoutMISMO}}}{\sqrt{((\text{sprd}_{\text{withMISMO}})^2 + (\text{sprd}_{\text{withoutMISMO}})^2) / (40 - 1)}} \right| > 1.99$$



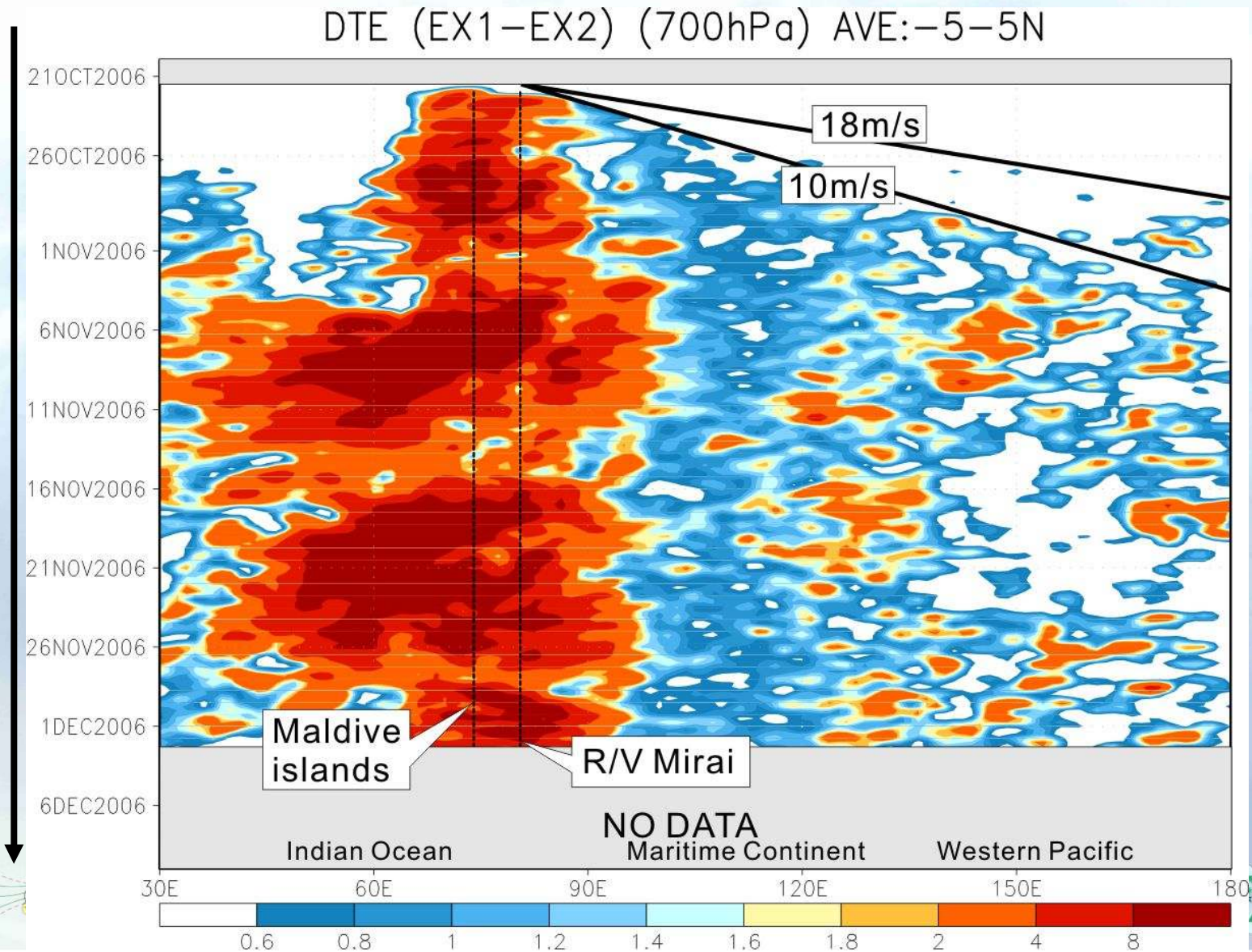
Objective

To describe the propagation of the impact of the additionally-assimilated MISMO sondes.

Are there any impacts on the typhoons of Chebi, Cimaron, and Durian?

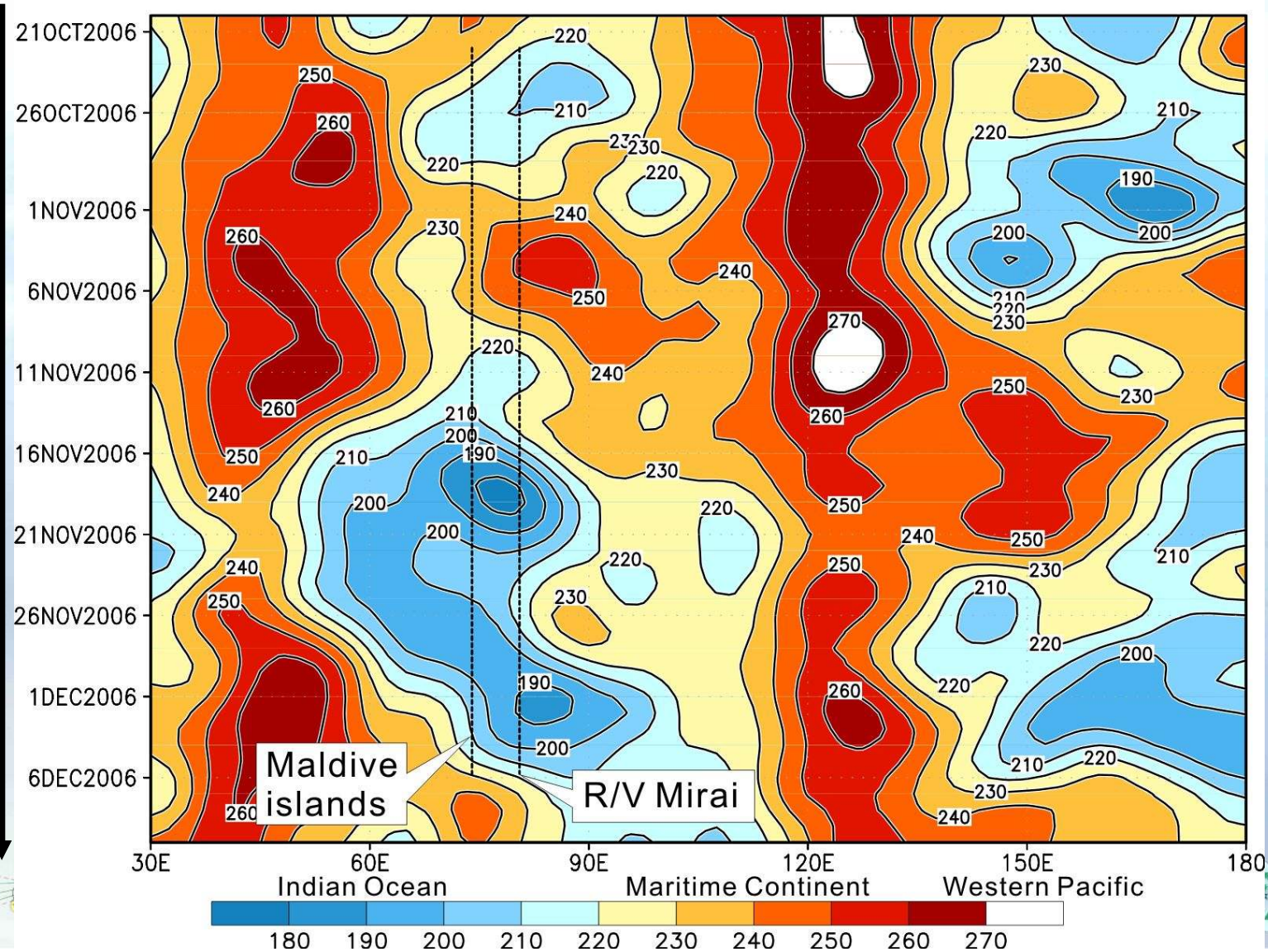


Eastward propagation of impact

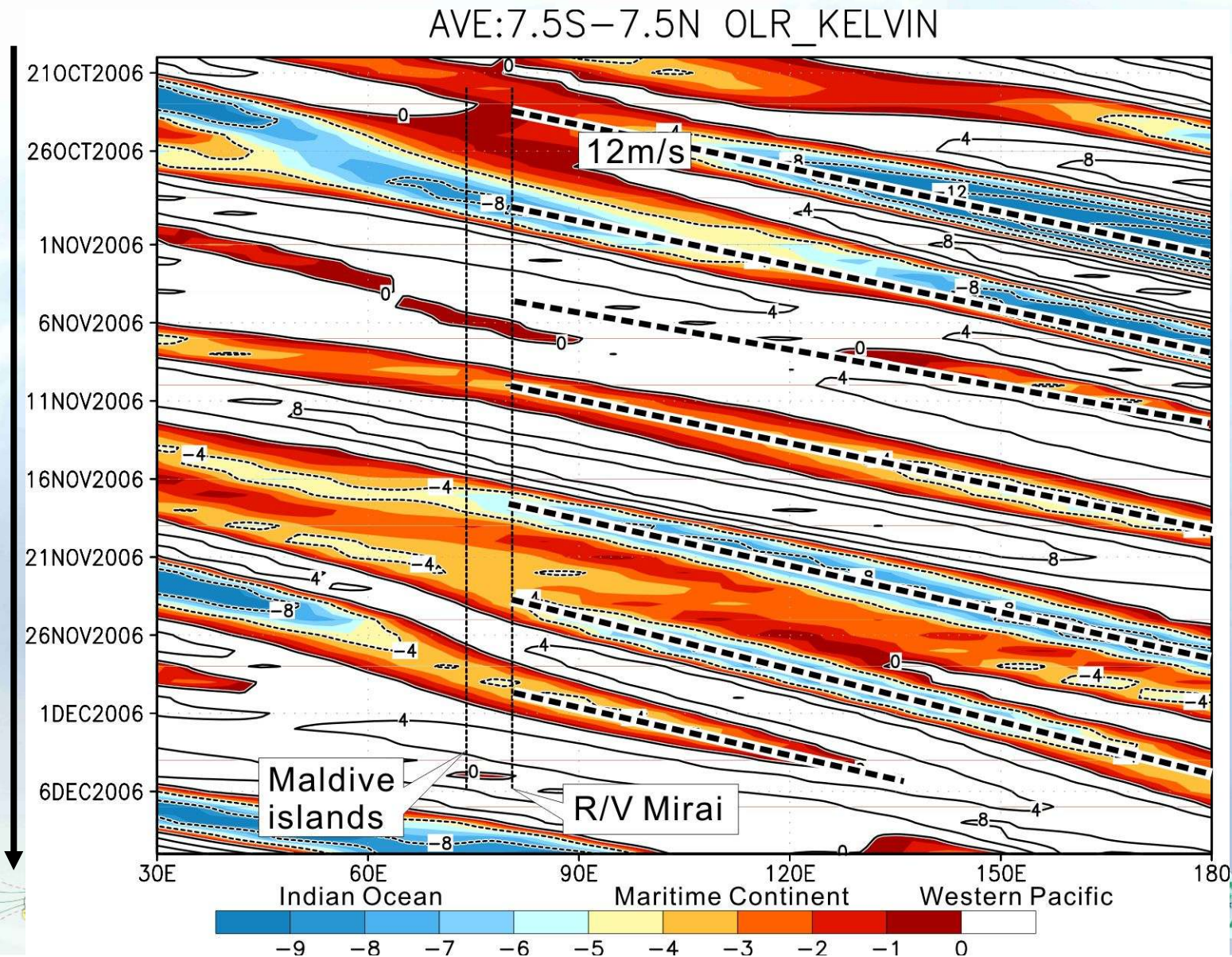


Convective activities during MISMO

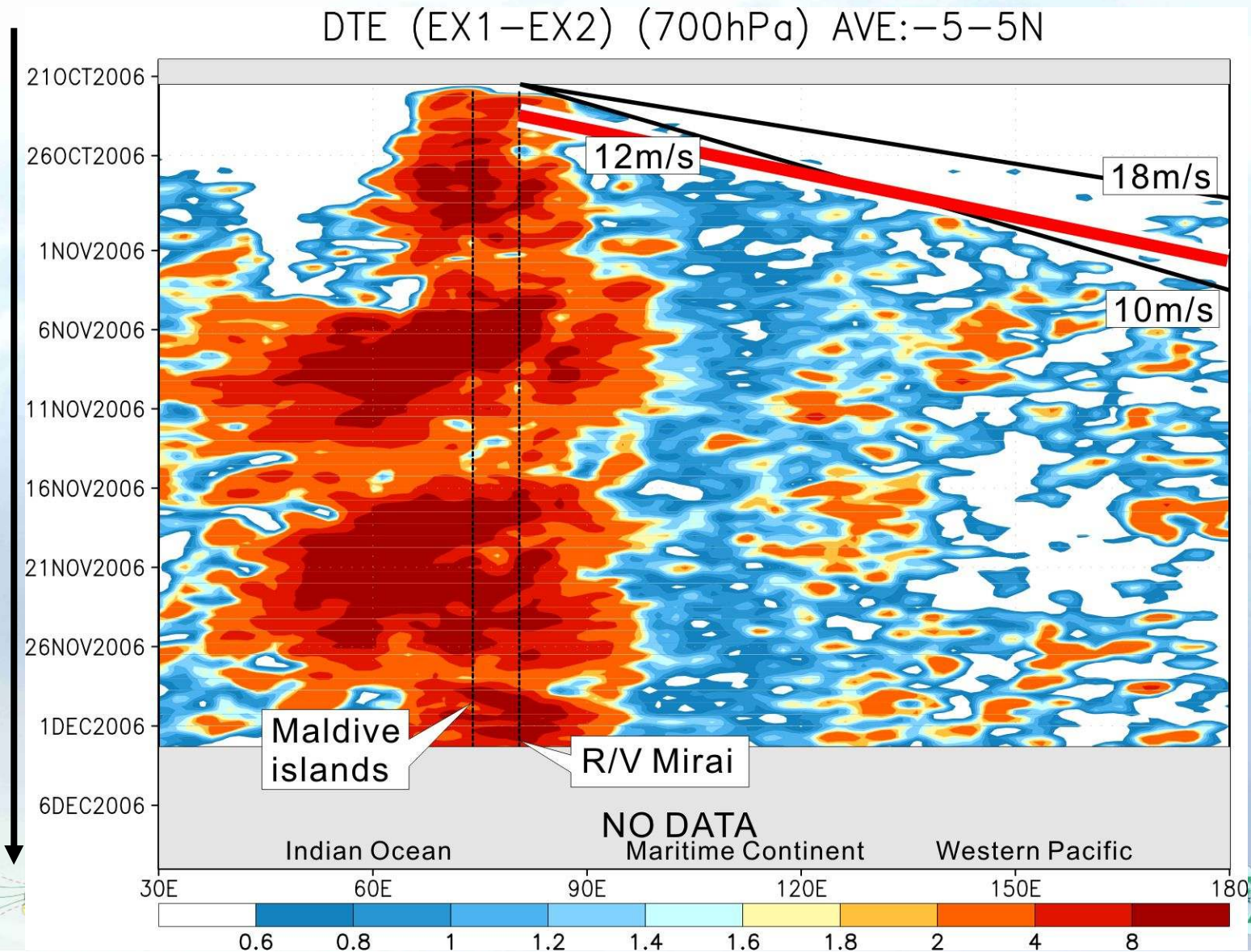
AVE:7.5S–7.5N OLR



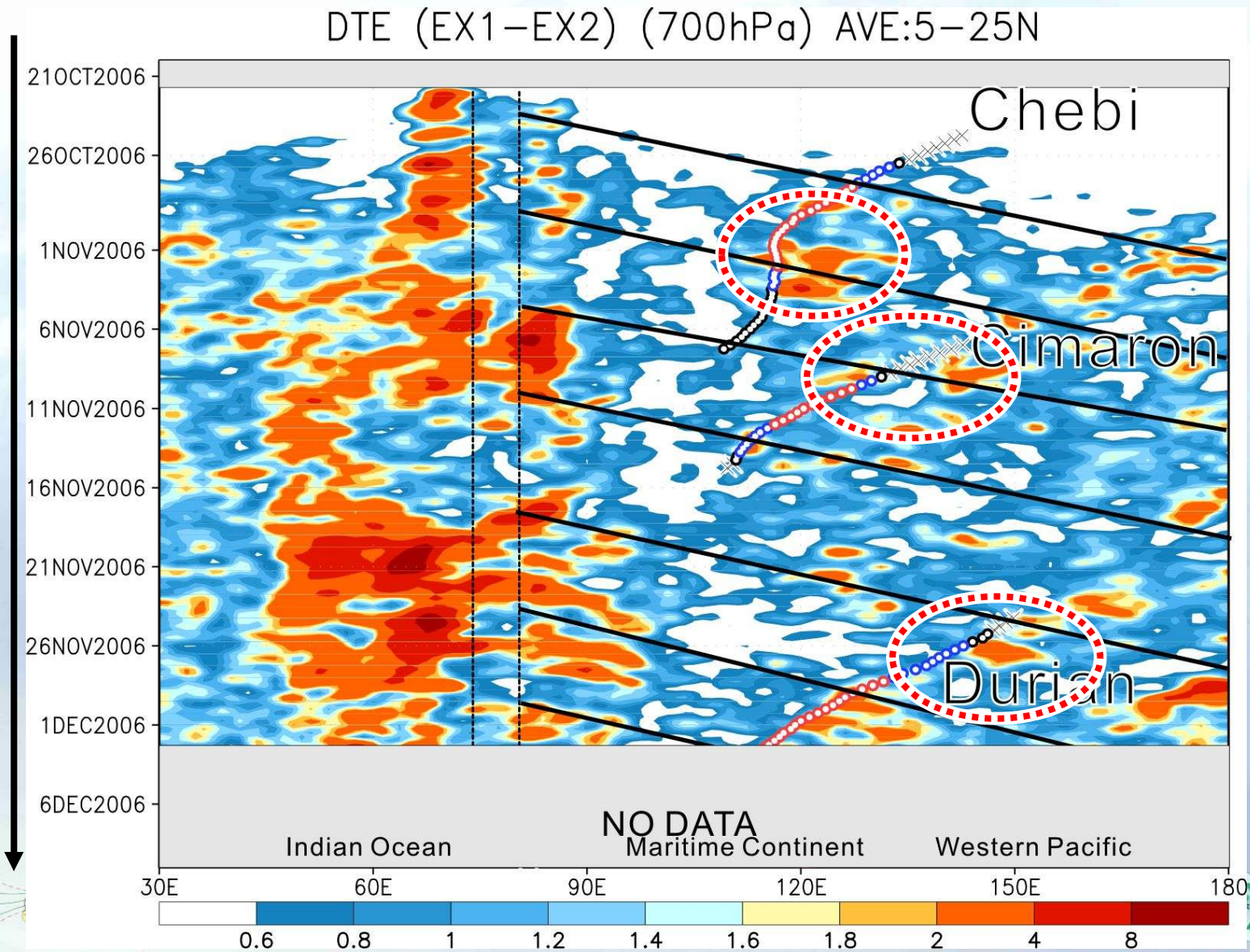
Wavenumber-frequency-filtered OLR



Eastward propagation of impact

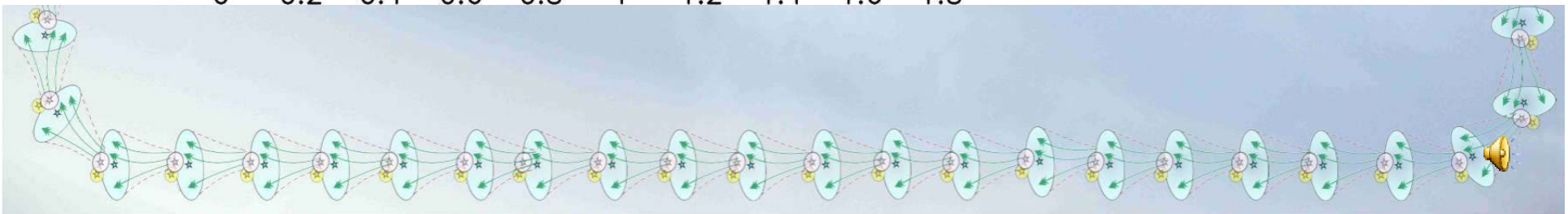
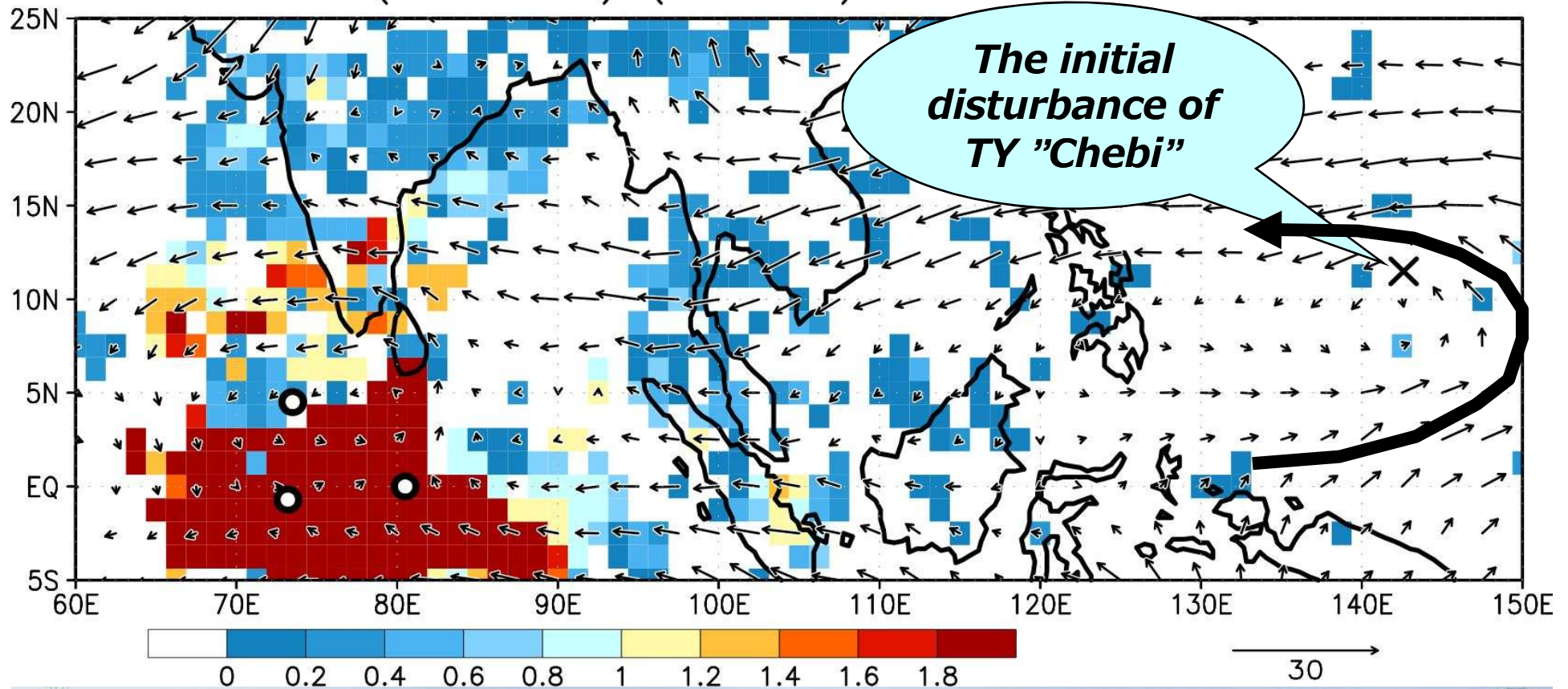


Impact on typhoons

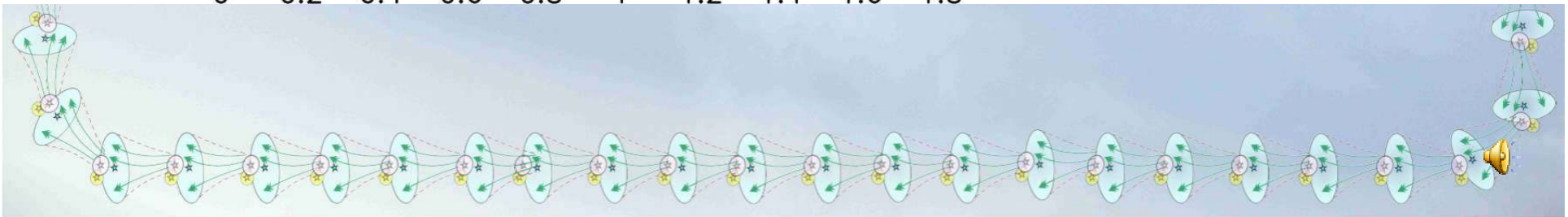
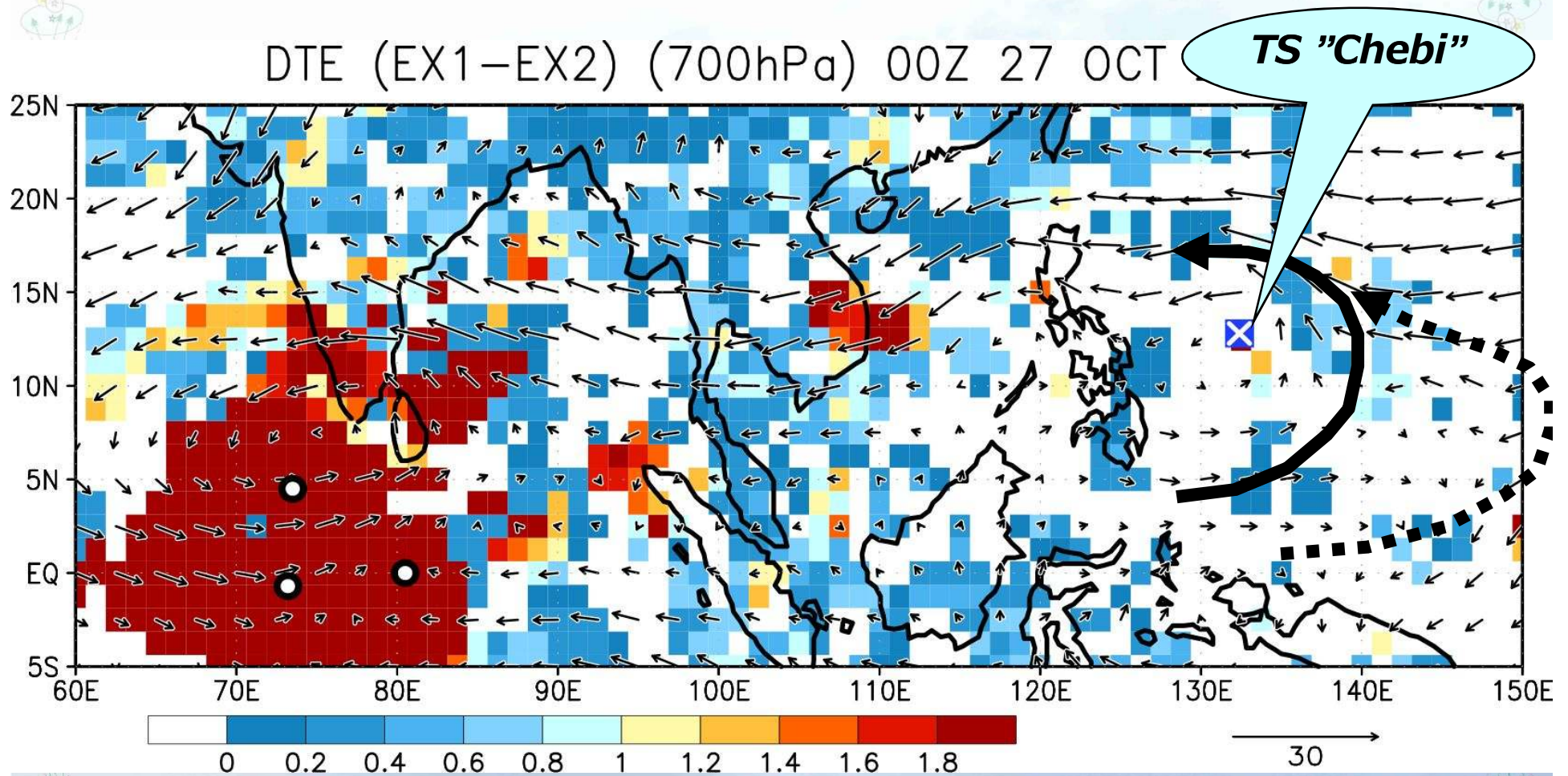


Horizontal distribution of signals

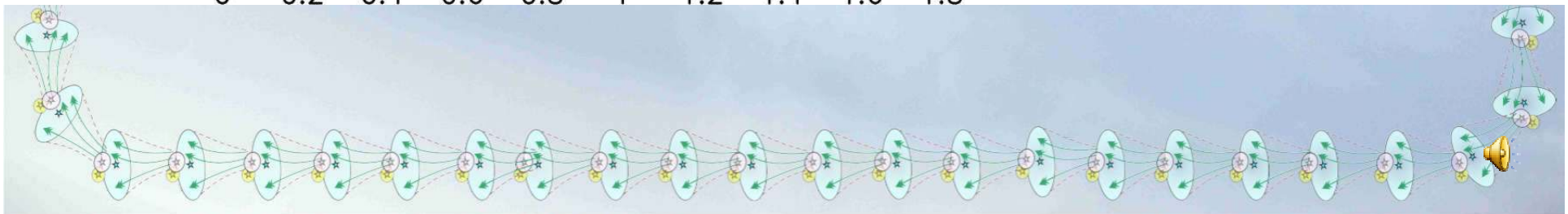
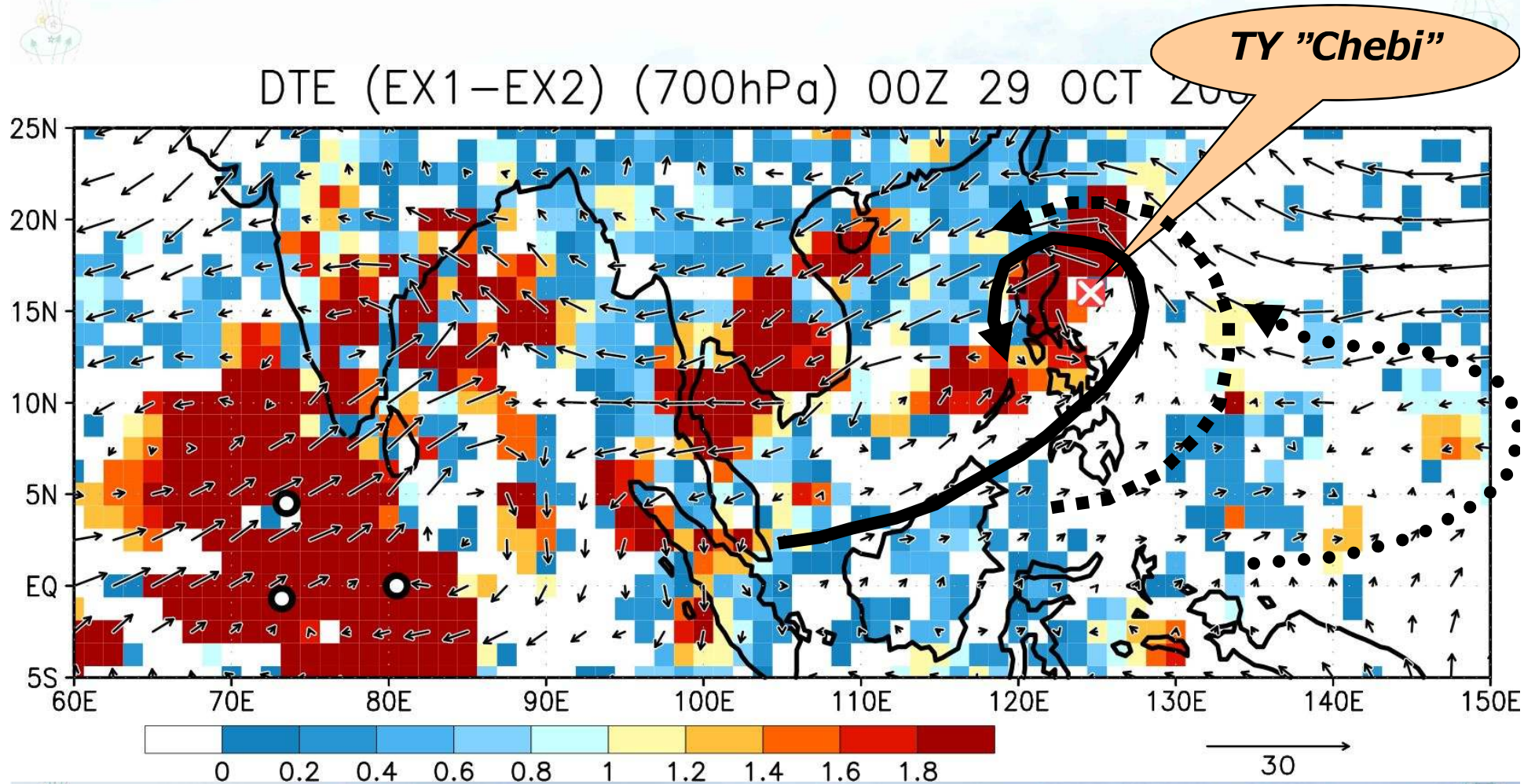
DTE (EX1-EX2) (700hPa) 00Z 25 OCT 2006



Horizontal distribution of signals

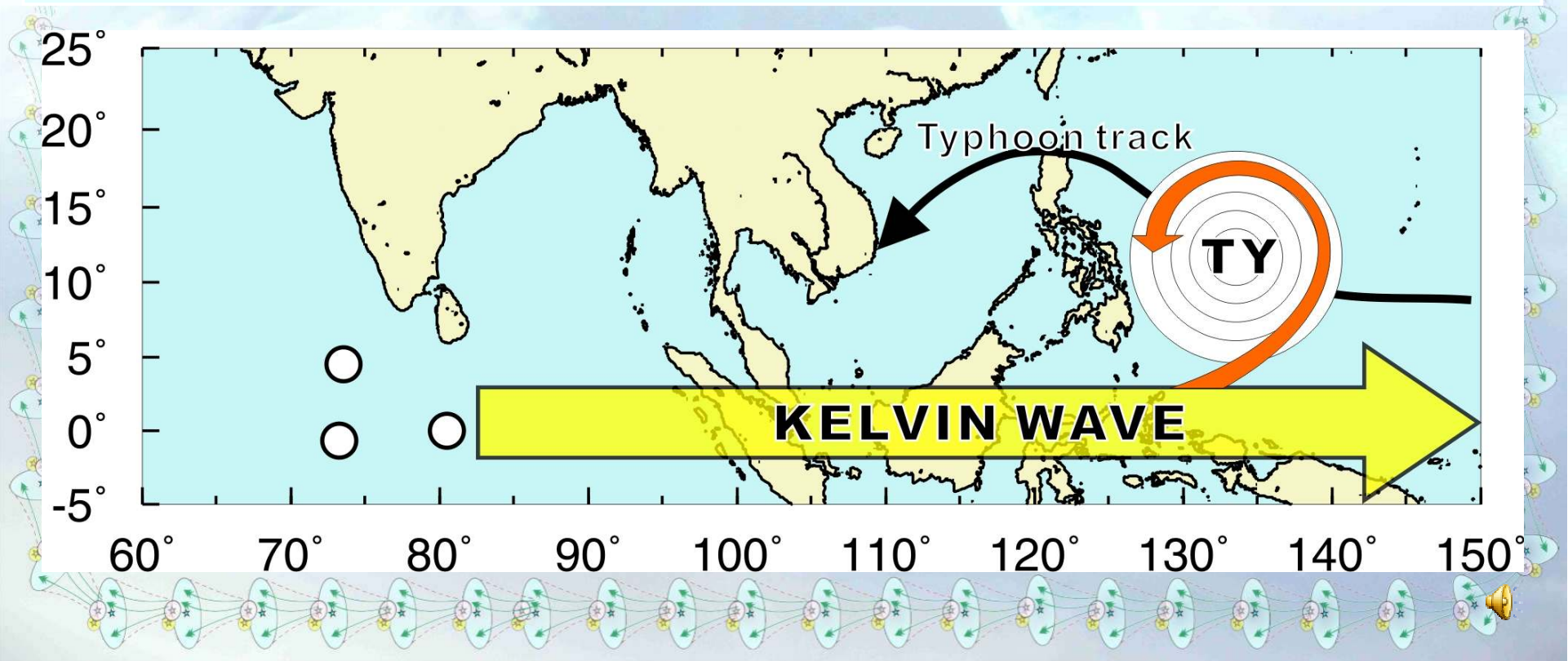


Horizontal distribution of signals



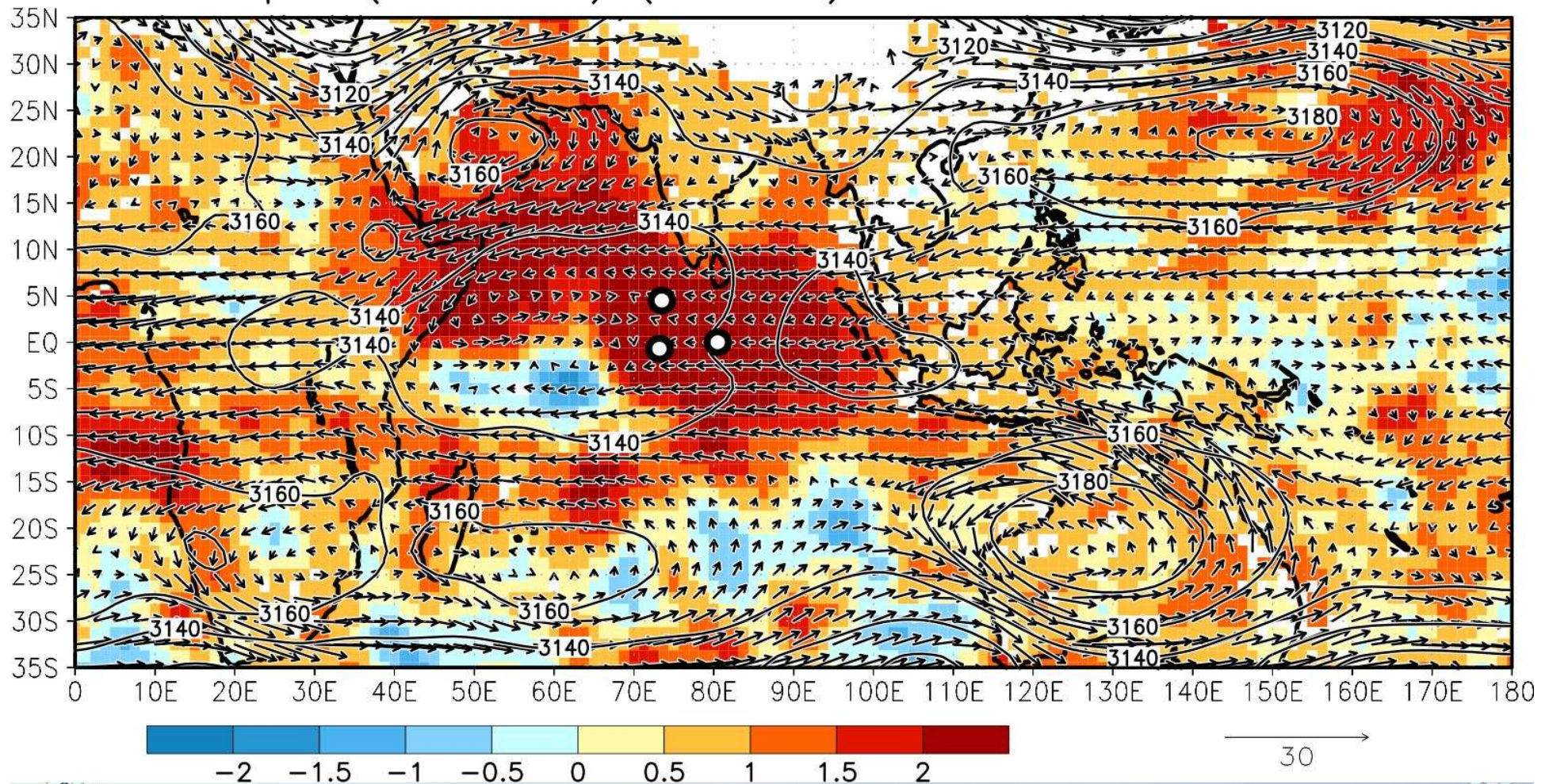
Summary

The MISMO sondes have a great impact on the analysis of the typhoons over the tropical western Pacific.

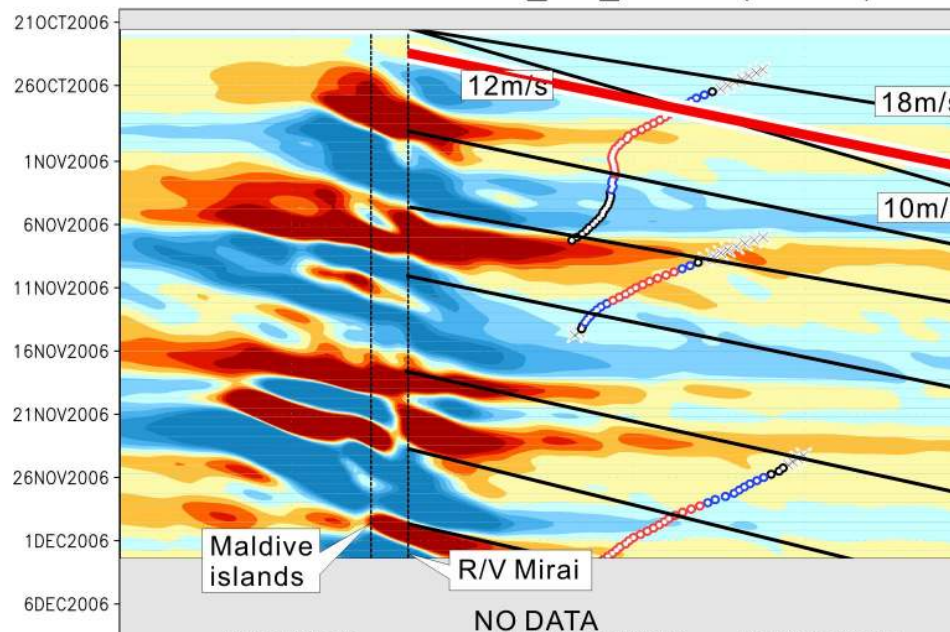


Evaluation of accuracy improvement

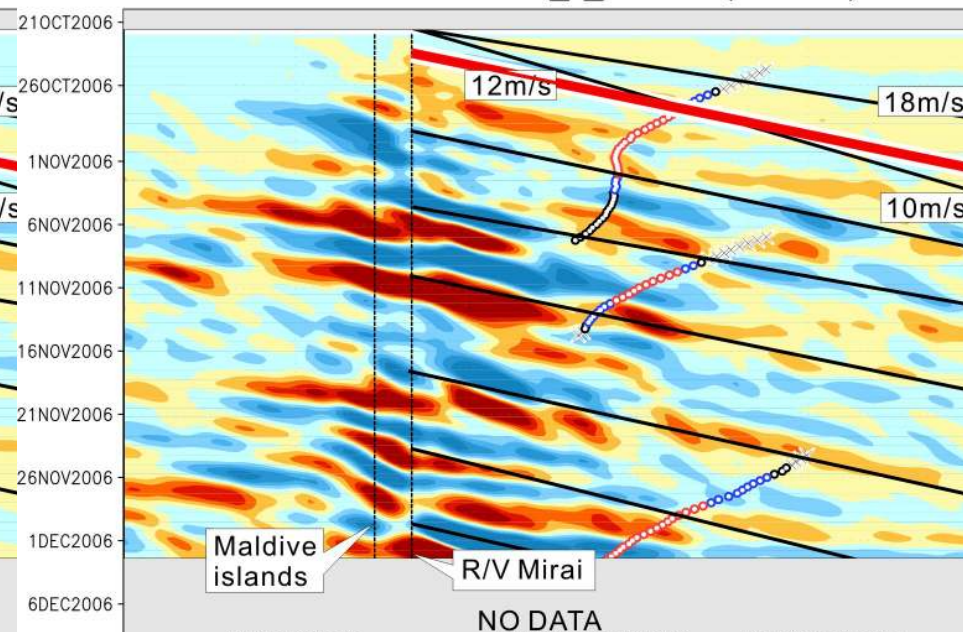
DTE Sprd (EX1-EX2) (700hPa) AVE:12Z22OCT-12Z2DEC



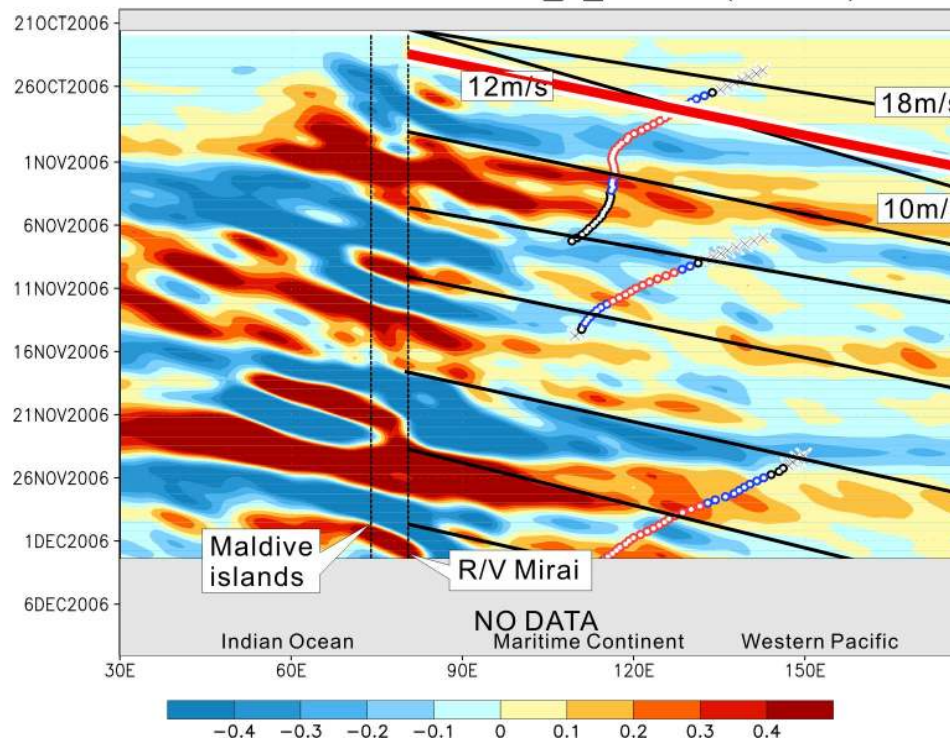
AVE:-1.25-1.25N IS_DTE_KELVIN (700hPa)



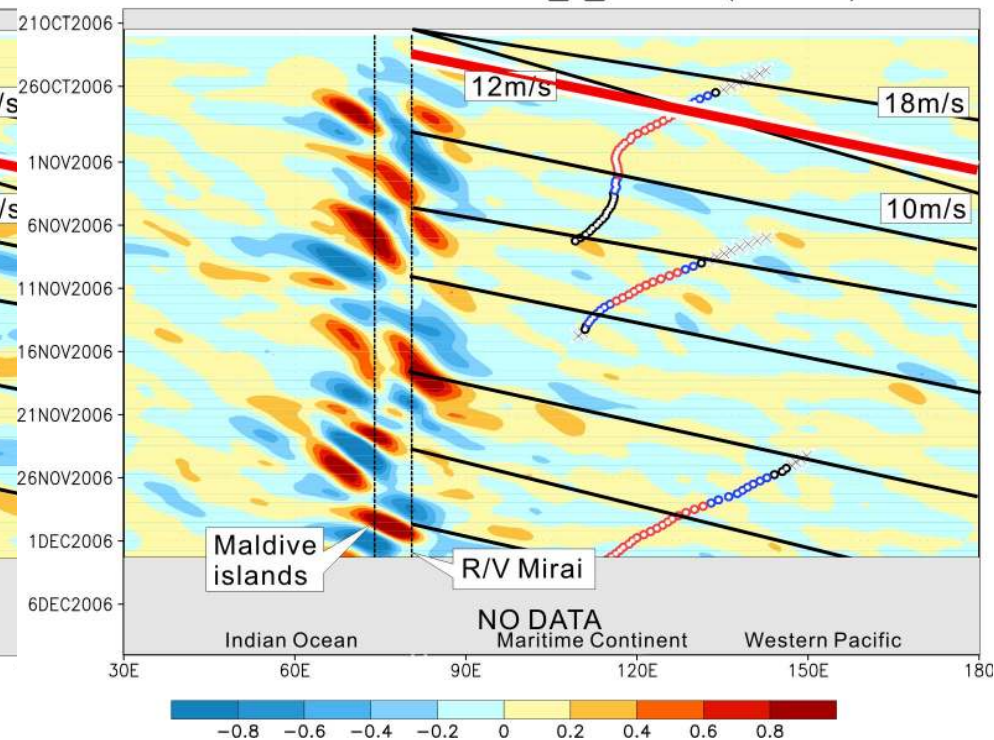
AVE:-1.25-1.25N IS_T_KELVIN (700hPa)



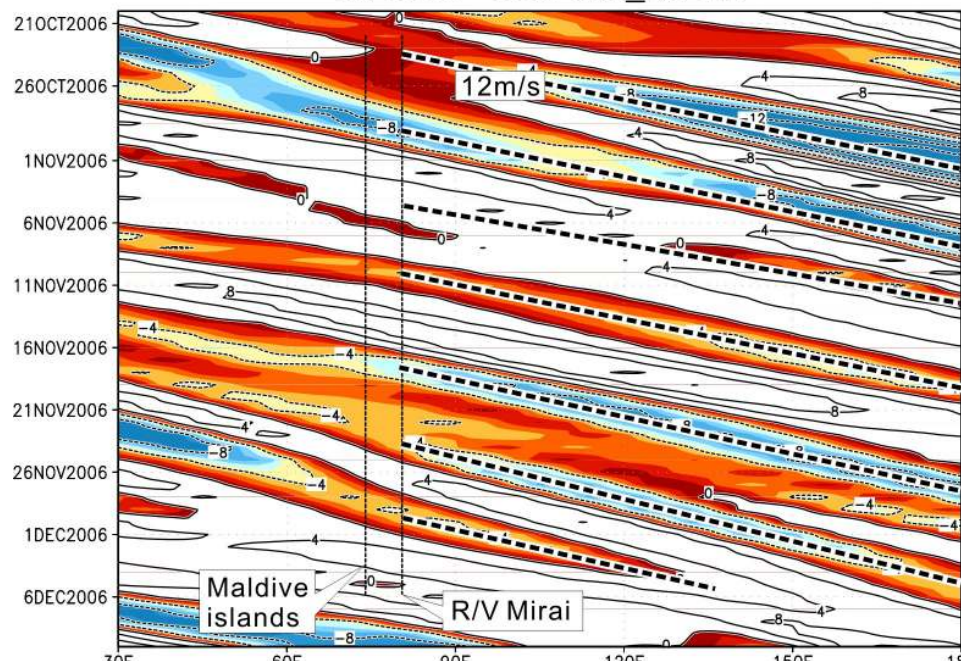
AVE:-1.25-1.25N IS_U_KELVIN (700hPa)



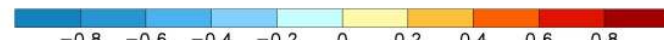
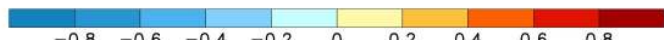
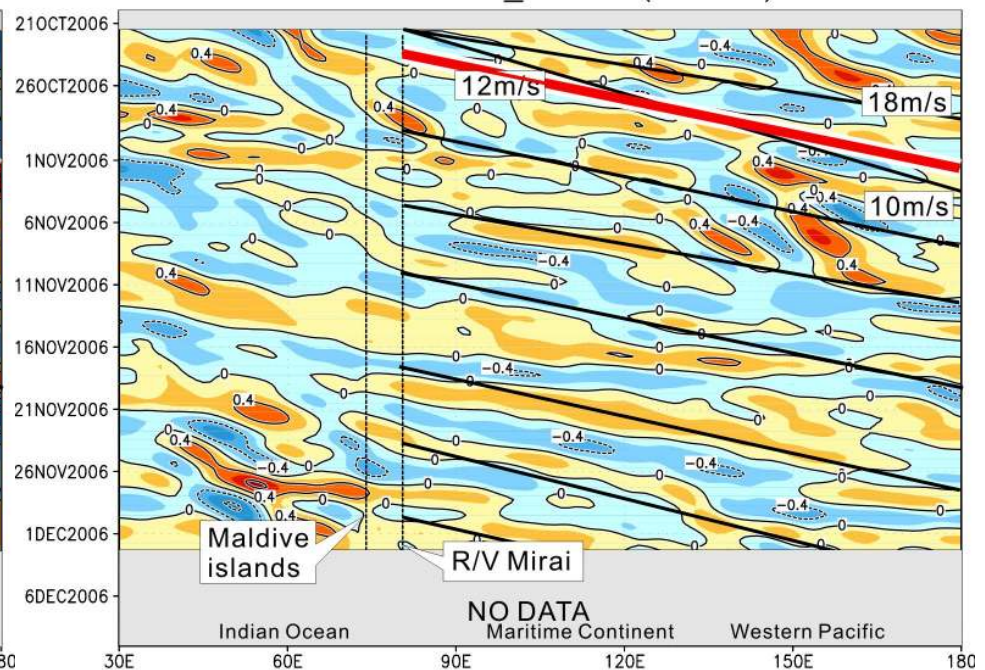
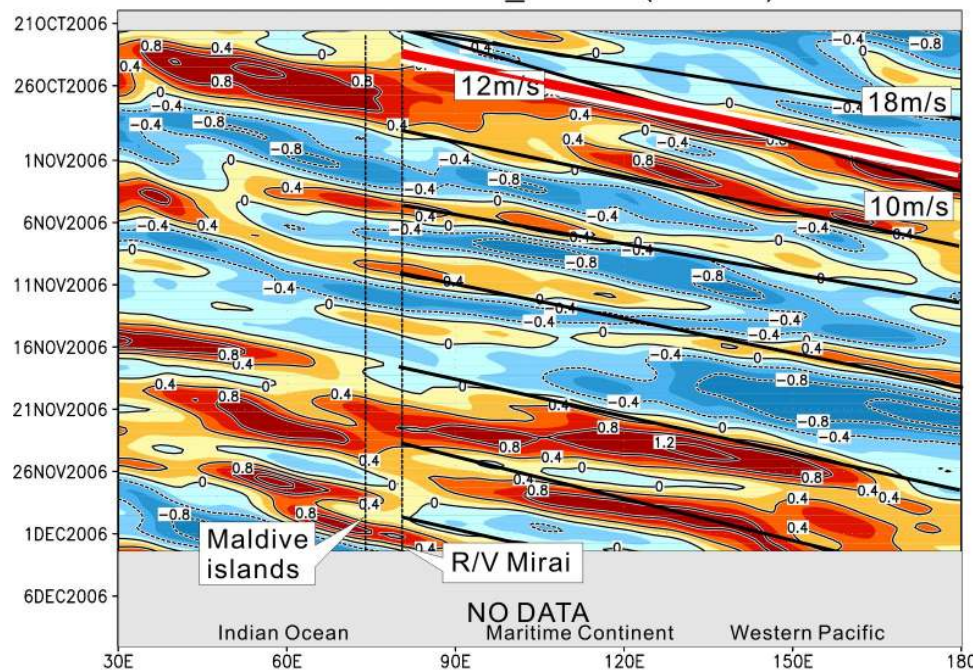
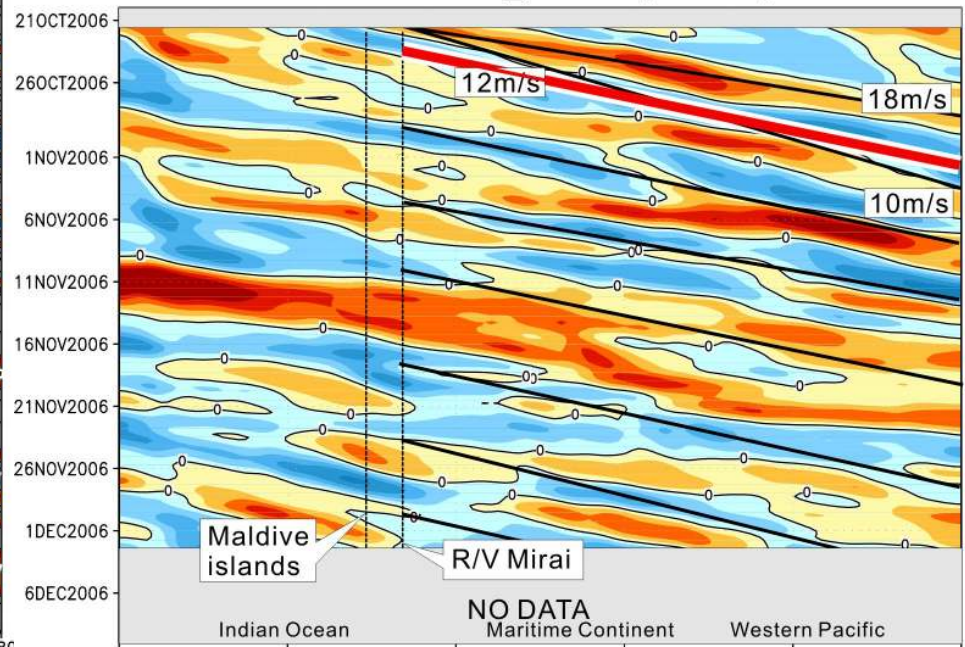
AVE:-1.25-1.25N IS_V_KELVIN (700hPa)



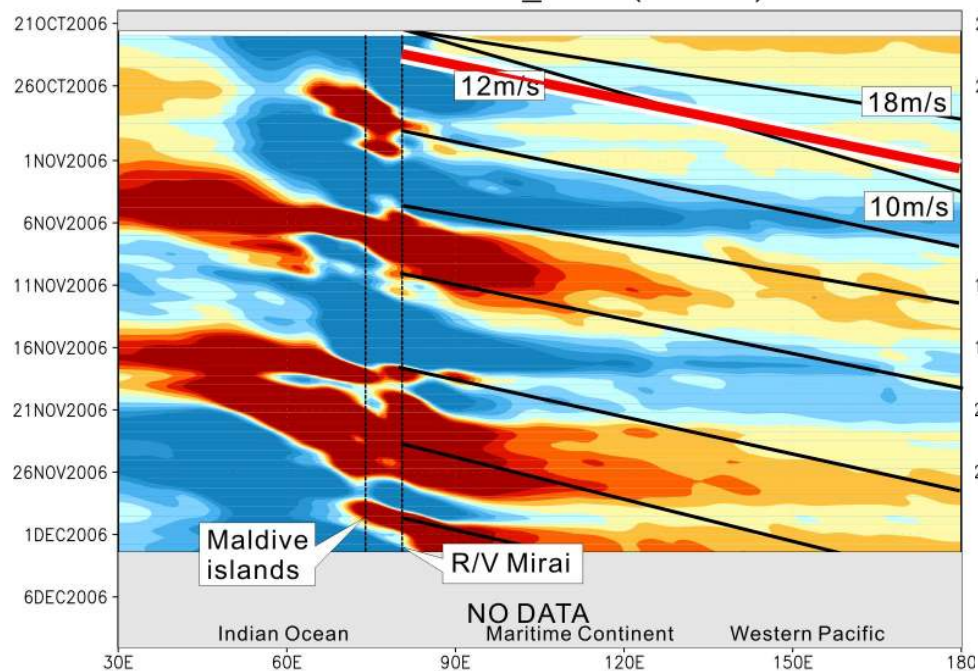
AVE:7.5S-7.5N OLR_KELVIN



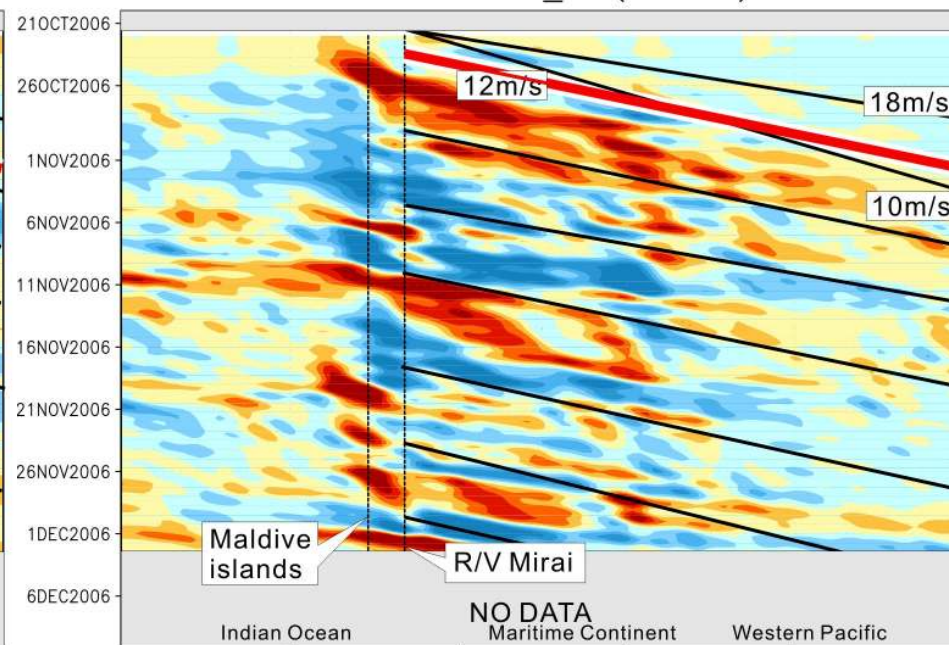
AVE:-5-5N T_KELVIN (700hPa)



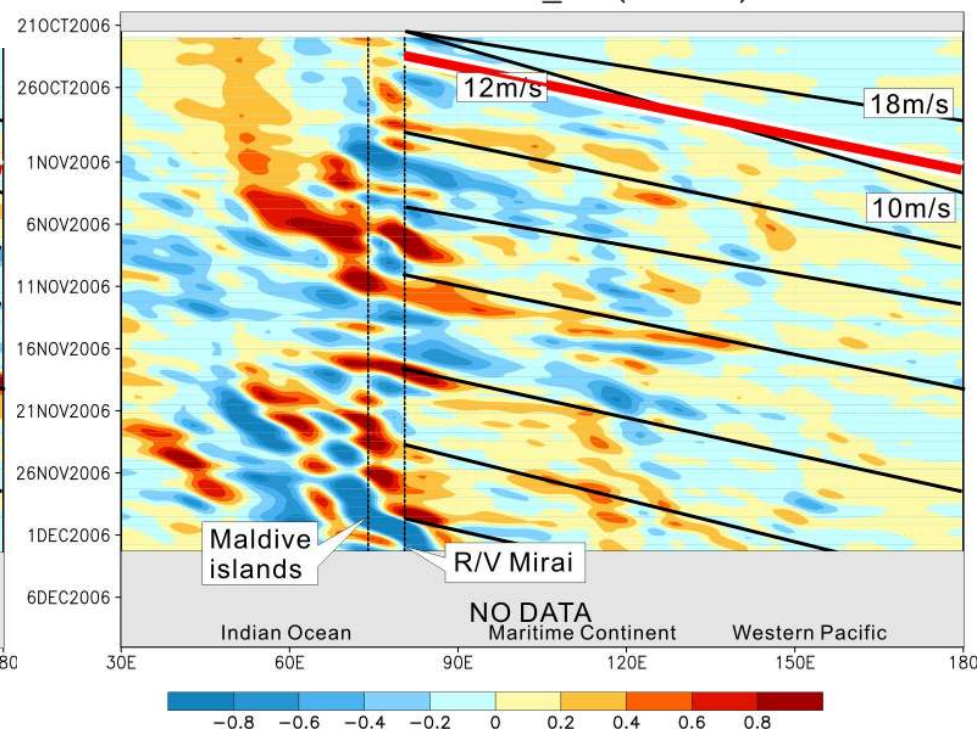
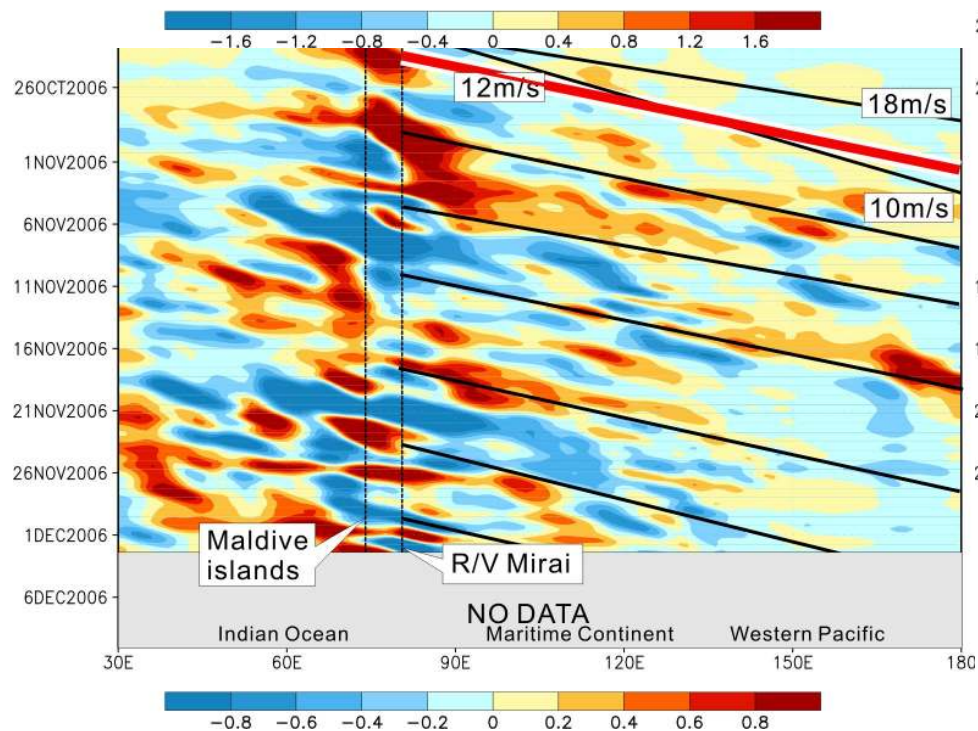
AVE:-5-5N IS_DTEE (700hPa)

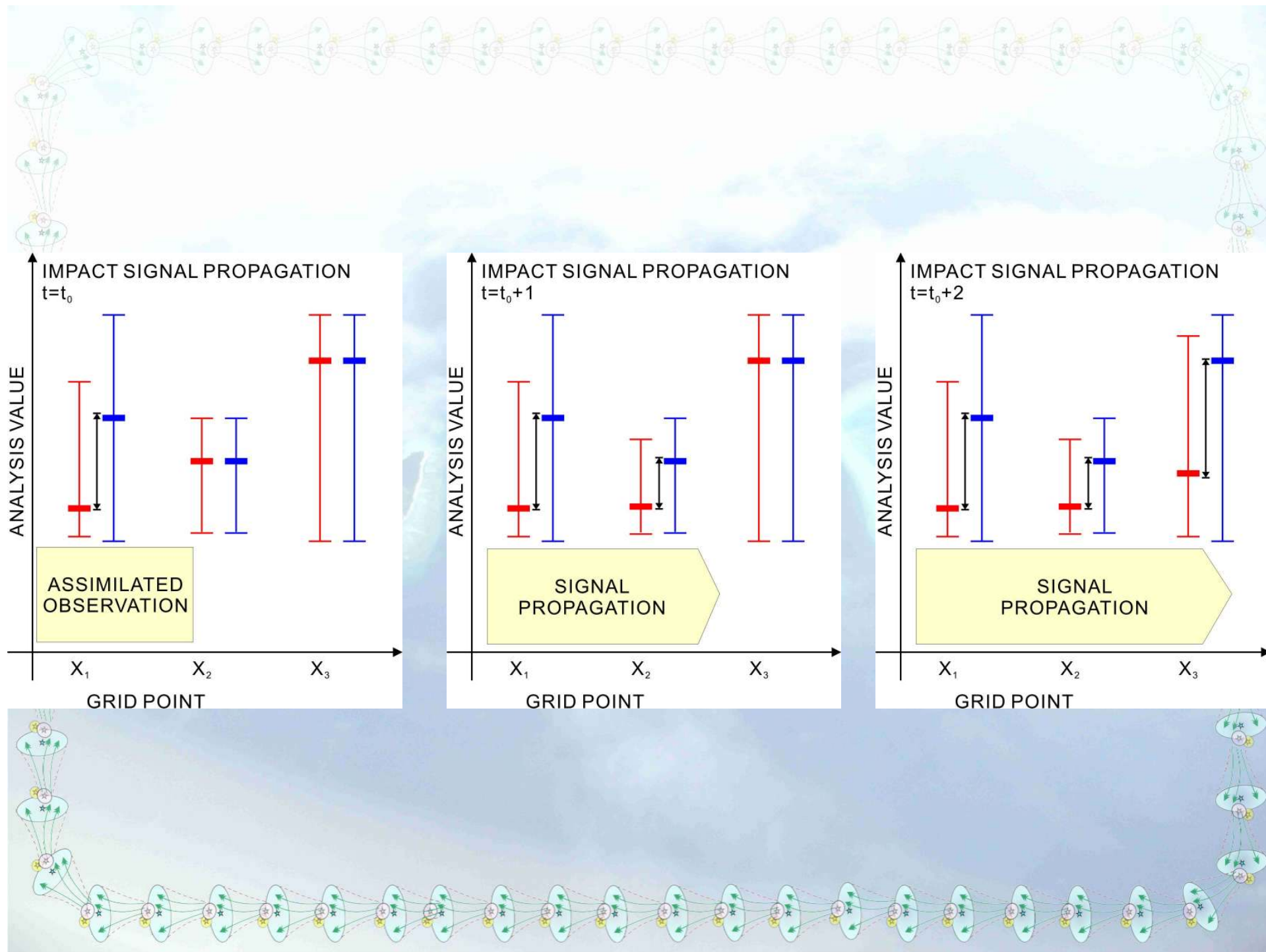


AVE:-5-5N IS_TE (700hPa)



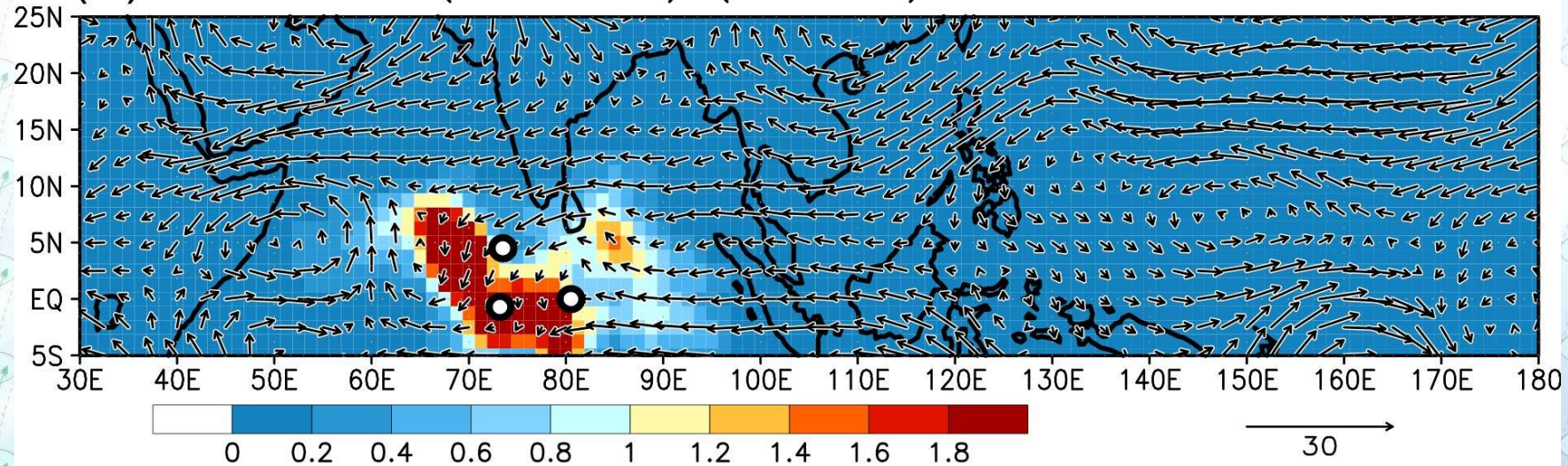
AVE:-5-5N IS_VE (700hPa)



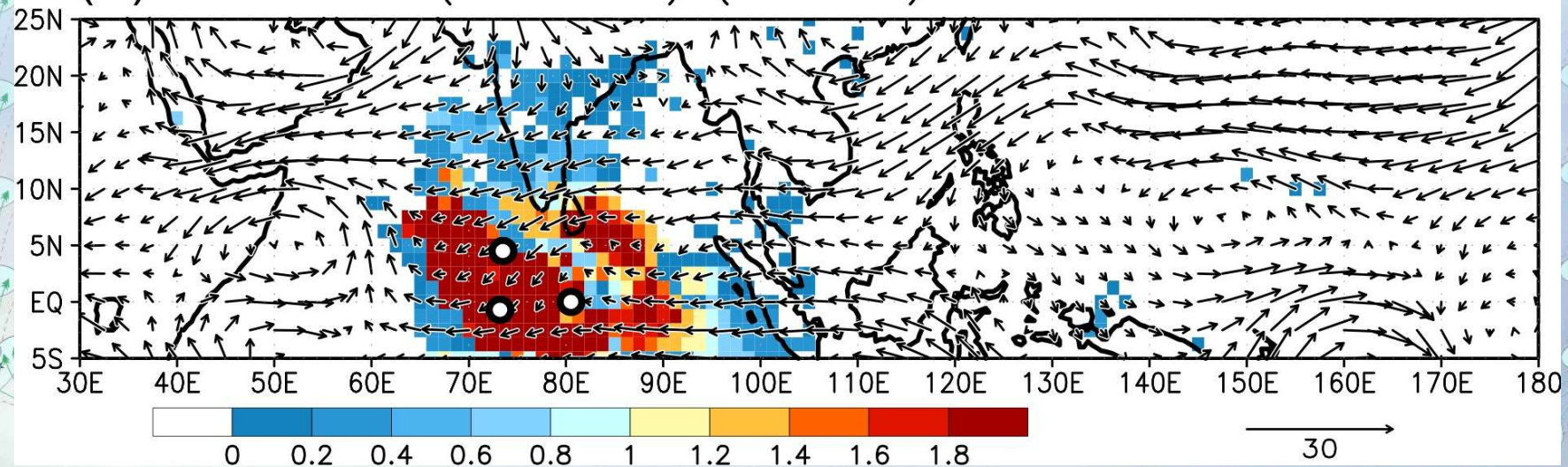


Simple diff. and “reliable” impact

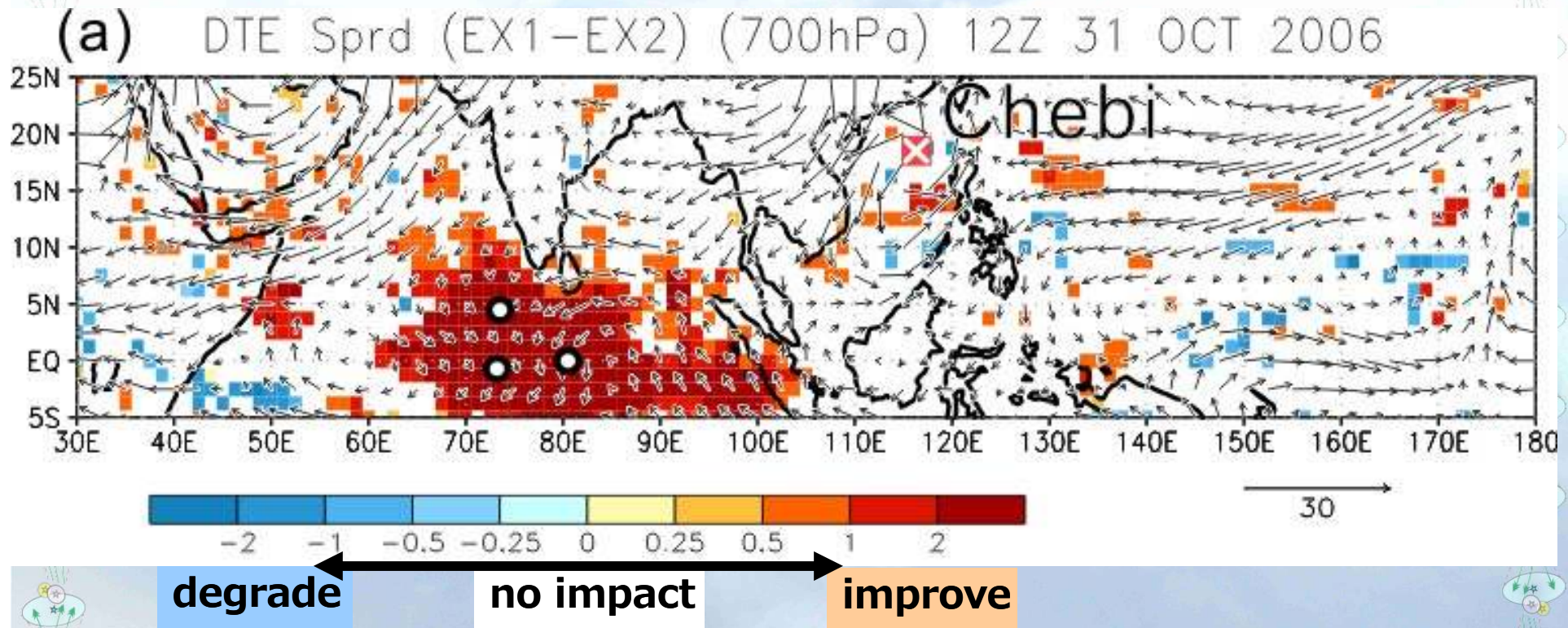
(a) DTE (EX2-EX1) (700hPa) 23 OCT 2006



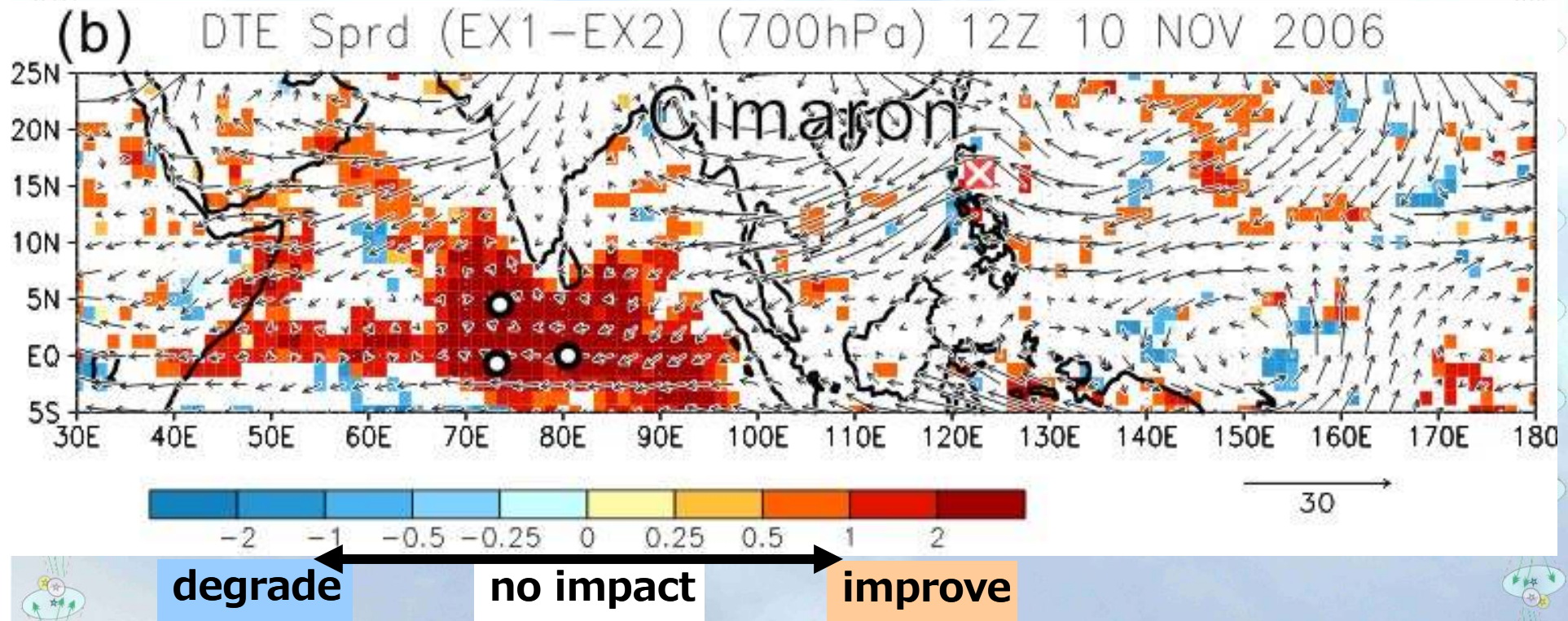
(b) DTE (EX2-EX1) (700hPa) 23 OCT 2006



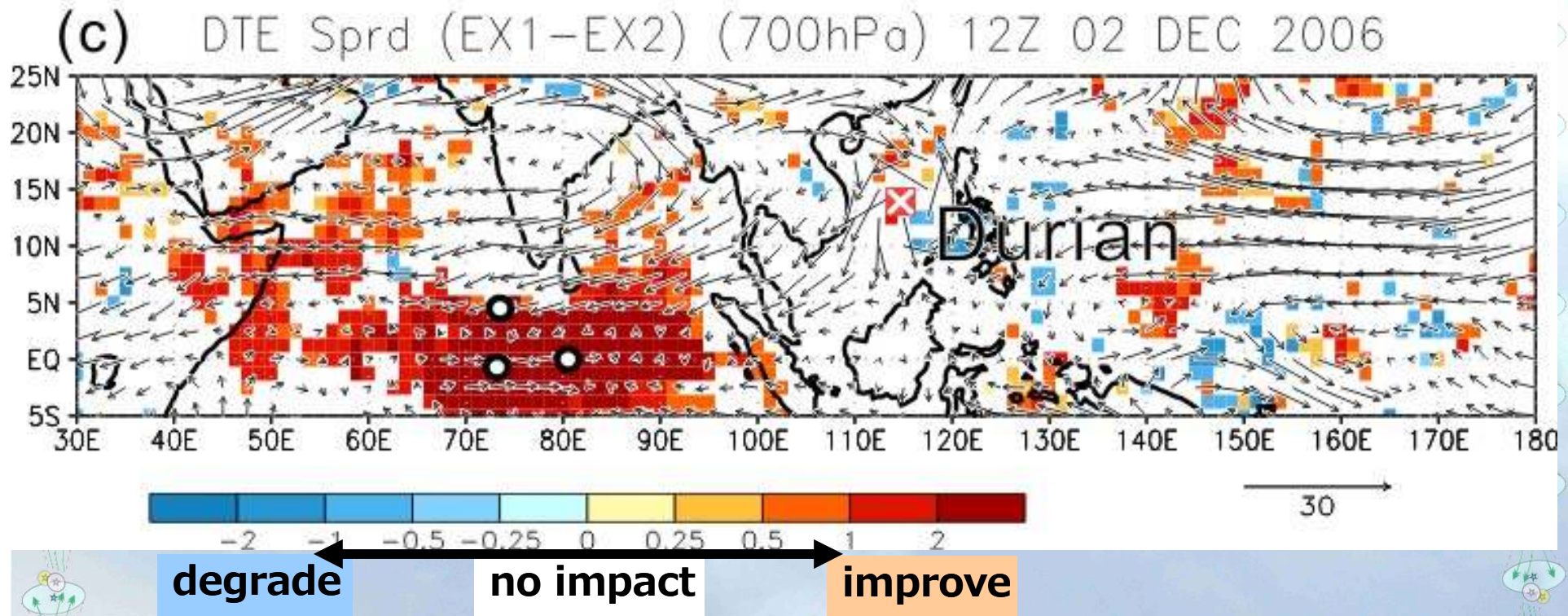
Evaluation of accuracy improvement



Evaluation of accuracy improvement

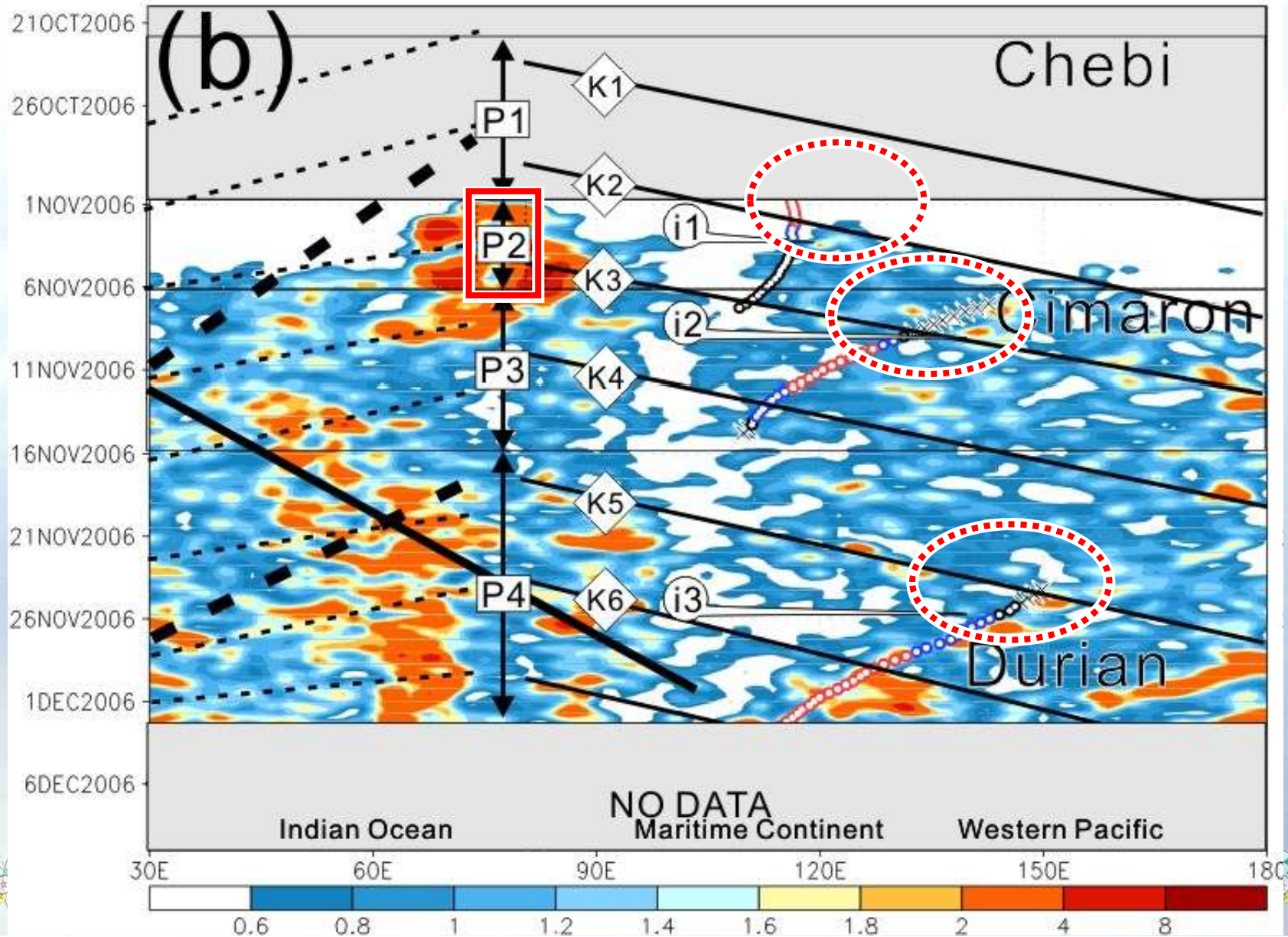


Evaluation of accuracy improvement



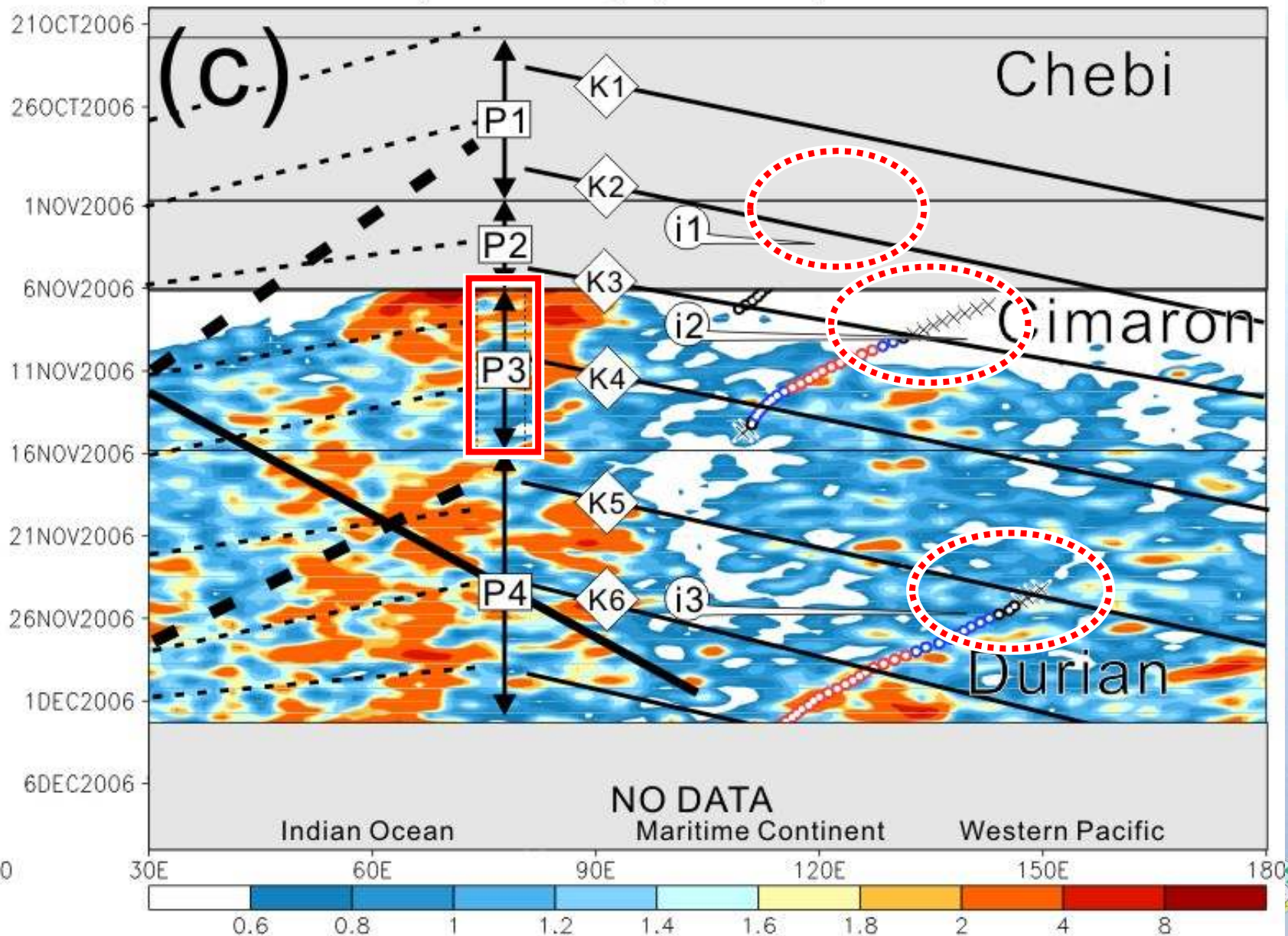
Impact on the typhoons

DTE (EX1-EX3) (700hPa) AVE:5-25N



Impact on the typhoons

DTE (EX1-EX4) (700hPa) AVE:5-25N



Impact on the typhoons

