Brief Review of MISMO

Mirai Indian Ocean cruise for the Study of the MJO-convection Onset

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Outline :

(1) Project Overview

(2) Observations in MISMO

(3) General Atmospheric and Oceanic Conditions

MISMO Workshop at YES/JAMSTEC in Yokohama, Nov. 25-26, 2008

What was MISMO ?

Purpose :

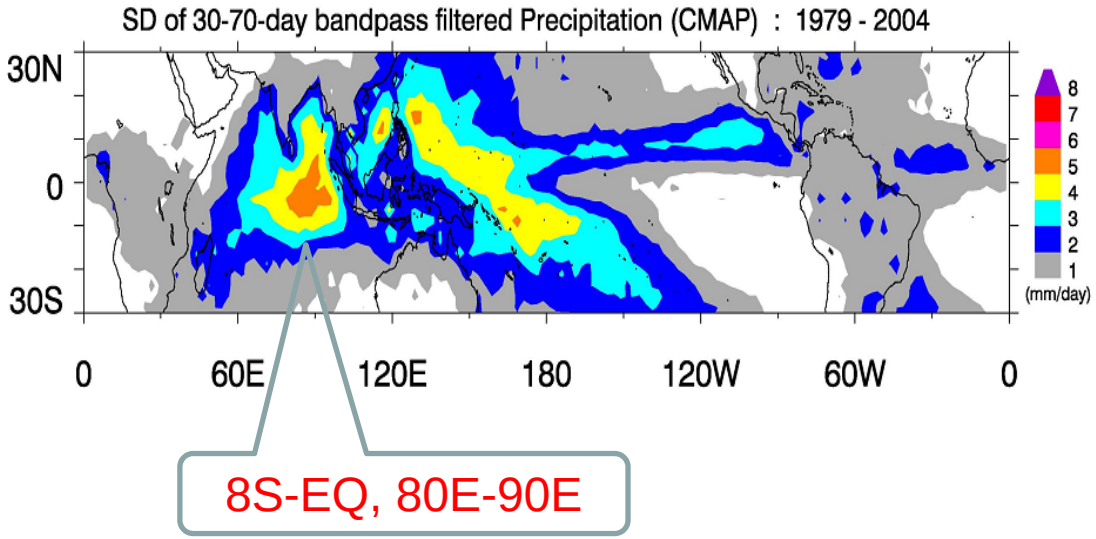
To capture the atmospheric and oceanic features when MJO-convection is initiated in the Indian Ocean

Major Targets :

a. Time evolution of atmospheric vertical structure
b. Air-sea interaction with focus on diurnal variation of SST
c. Oceanic response to MJO (and Westerly Wind Burst) → Any relationship to Wyrtki jet ?

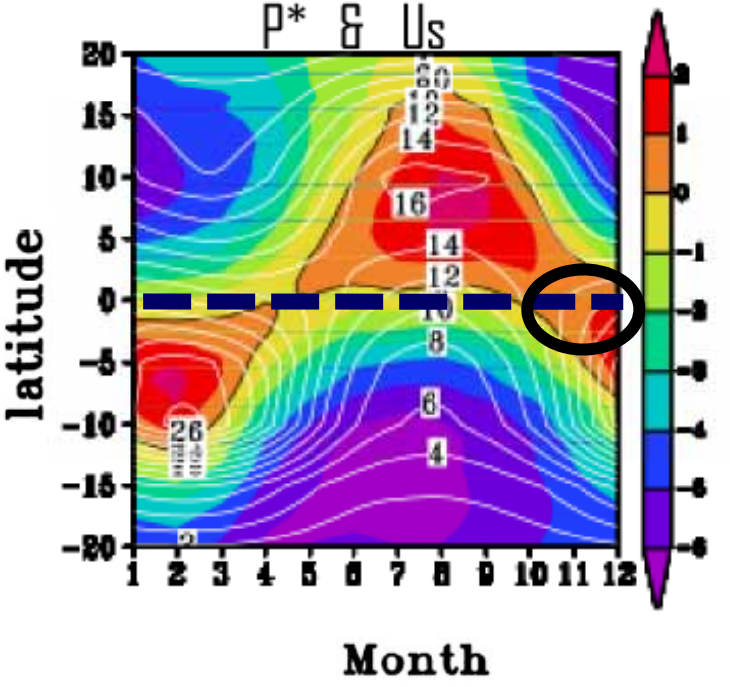
Occurrence of MJO-convection

Dominance of Intraseasonal Precipitation



Reproduced after Lin et al. (2004) for 26 yr CMAP data

Seasonal Cycle of MJO signal



From Zhang and Dong (2004)

MISMO took place in the central equatorial Indian Ocean from late October to early December 2006.

Observations and Participants

Observations :

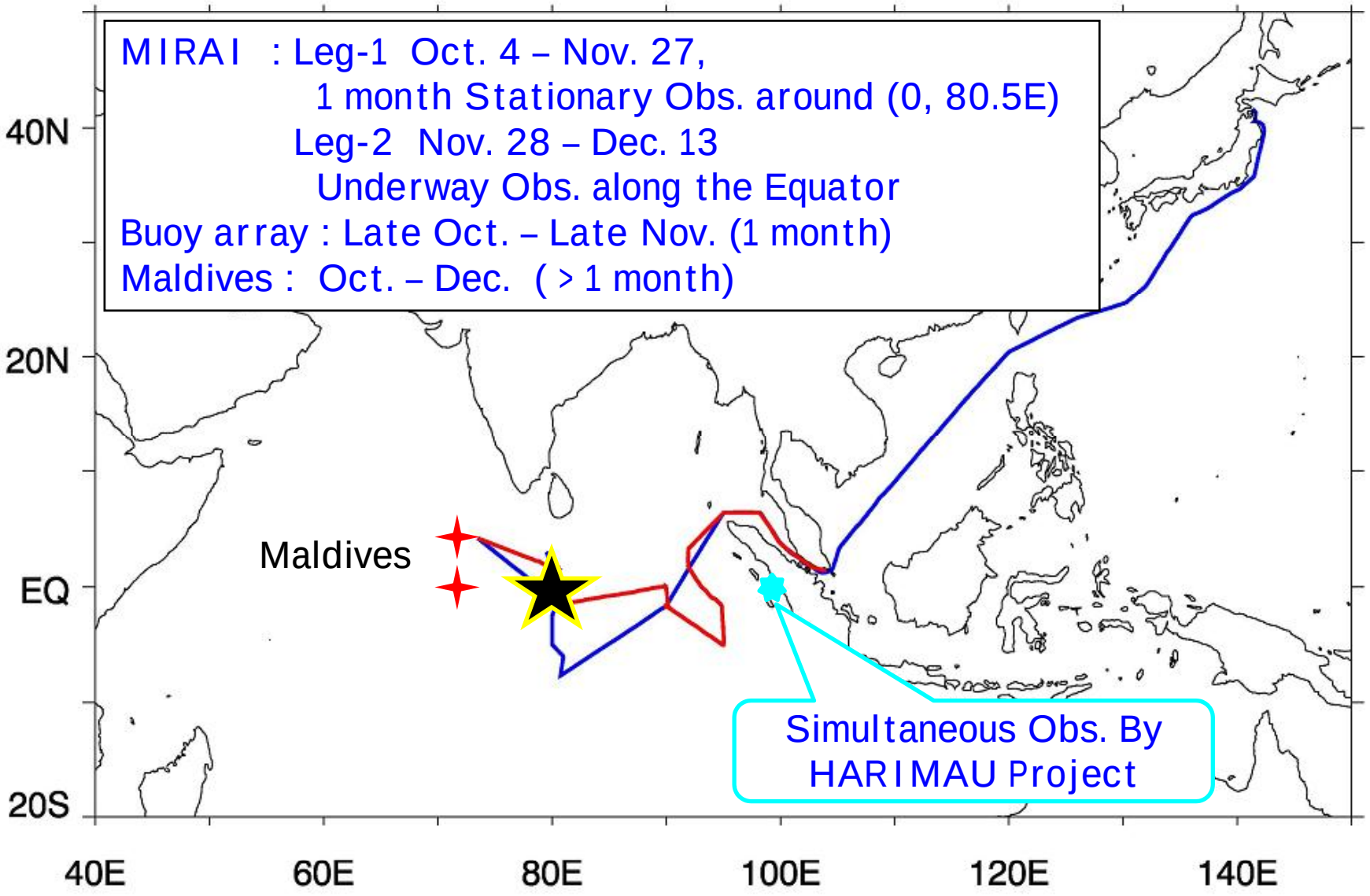
Constructed observational network with R/V Mirai, Land-based sites at Maldives, and a mooring array around 0, 80.5E

Participants :

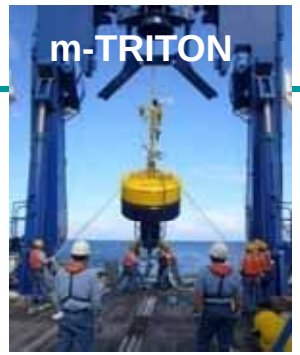
Japan (70 scientists/technical staff from 16 institutes/Univs)

Maldives Met Office, US (U. Miami, NOAA/PMEL), India (NIO)

Observation Area

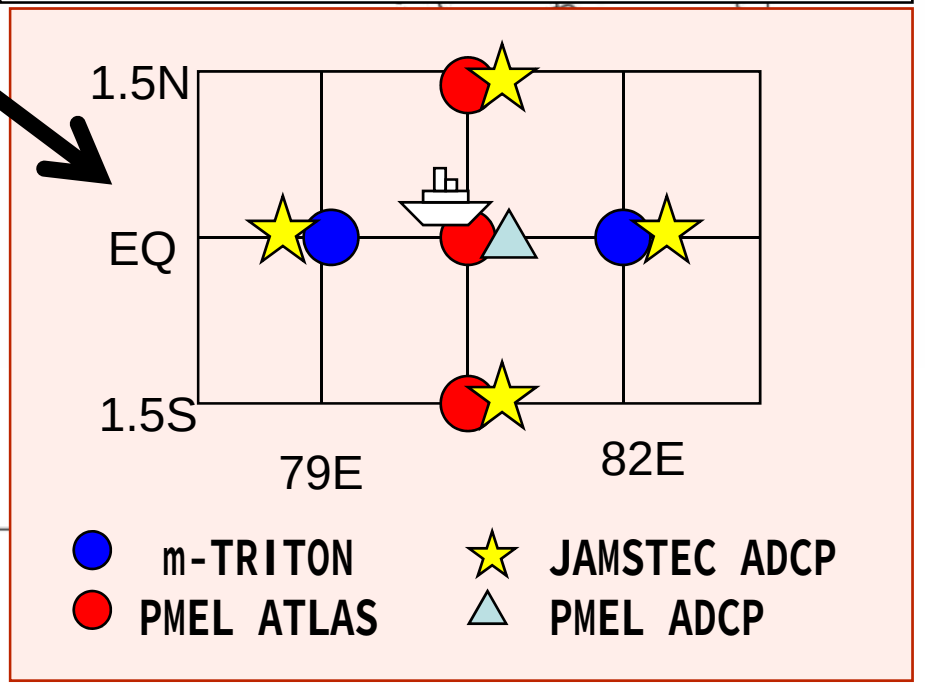


Oceanic Observation Network



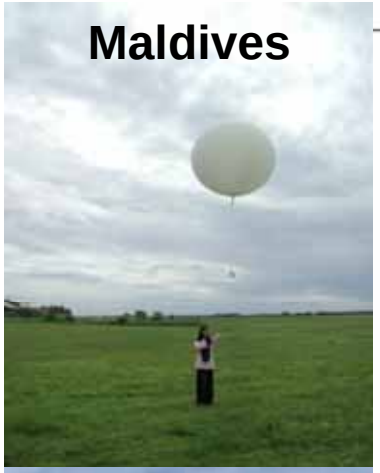
Park at 500m depth

Ascend every day



Atmospheric Observation Network

Infrared SST Autonomous Radiometer
Turbulent Flux Measurement
Wind Profiler
95-GHz Cloud Radar
Mie-scattering LIDAR
Videosonde (13 times)
Water-vapor & Ozone-sonde (15 times)
CTD (down to 500m, every 3h)
ADCP etc.



Hulhule

(2 times / day)

Kadhdhoo

Gan

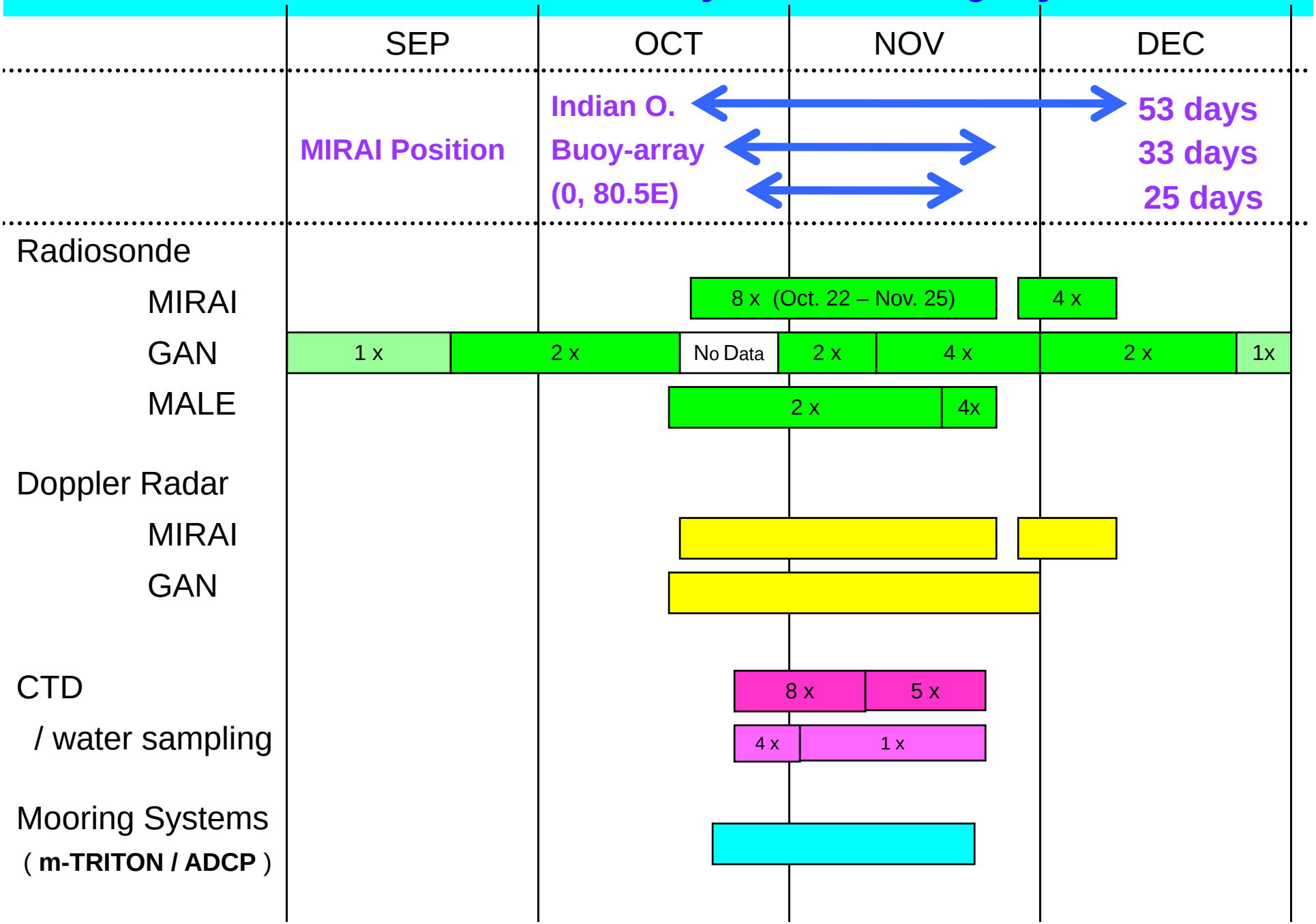
(4 times / day)

R/V Mirai

(8 times / day)

72E 74E 76E

Observation Periods of Major Observing Systems

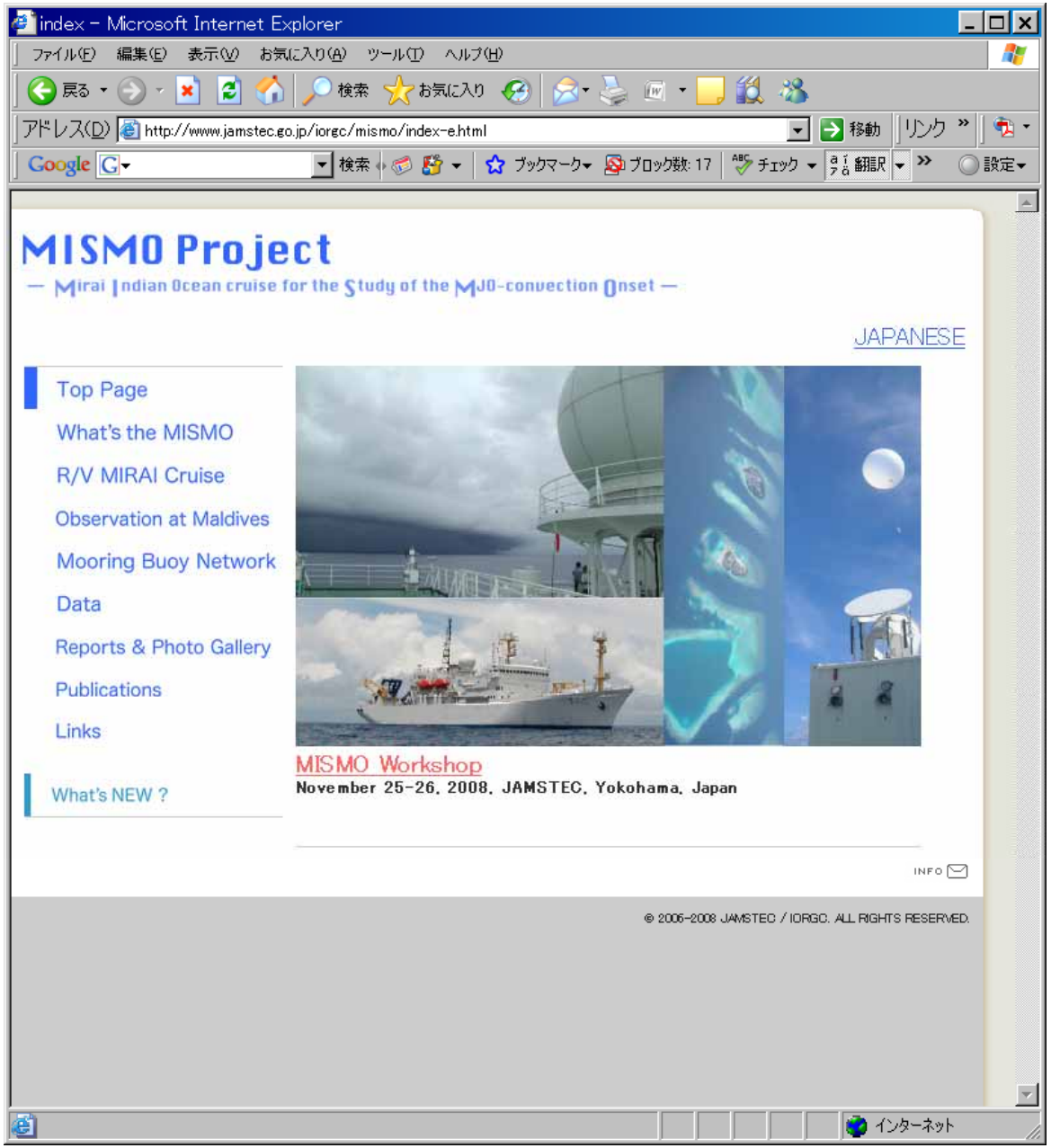


MISMO Web Page

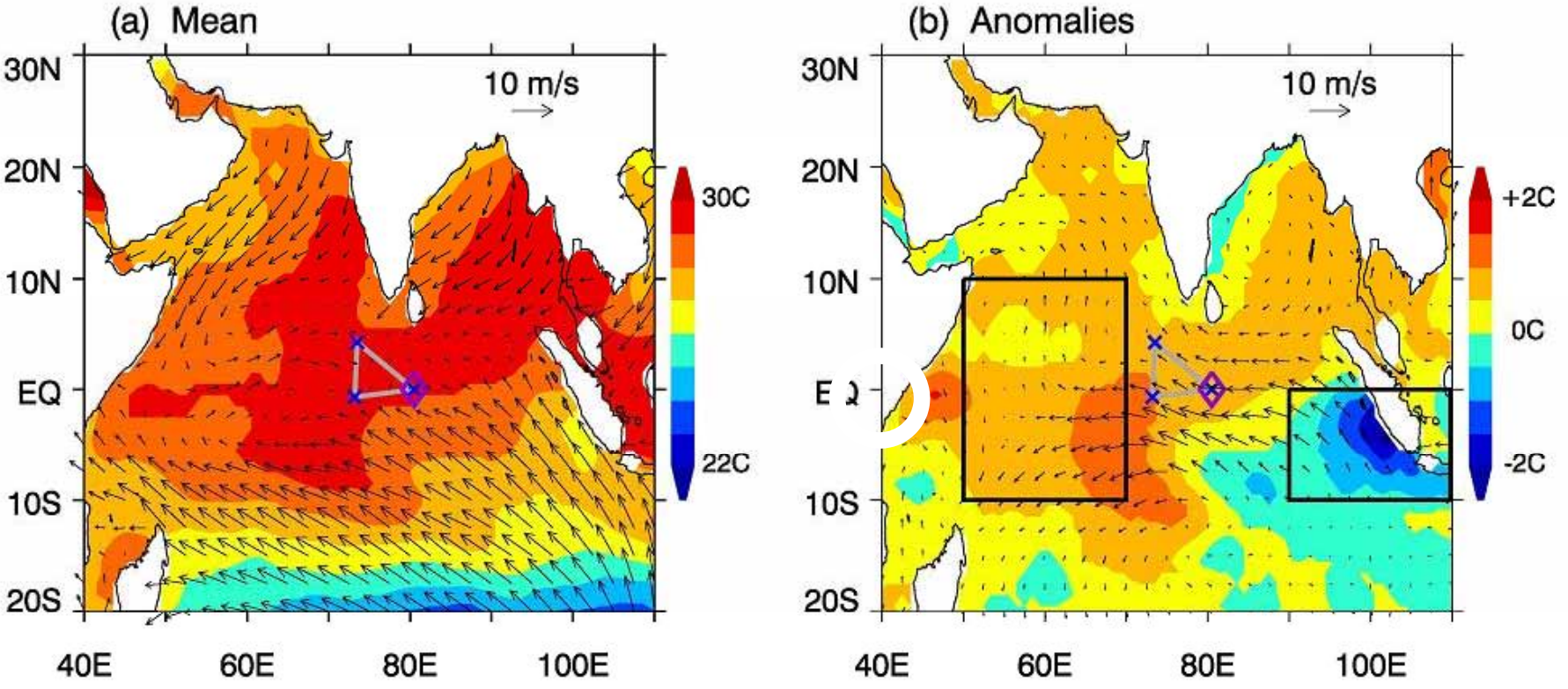
MISMO Web Site :

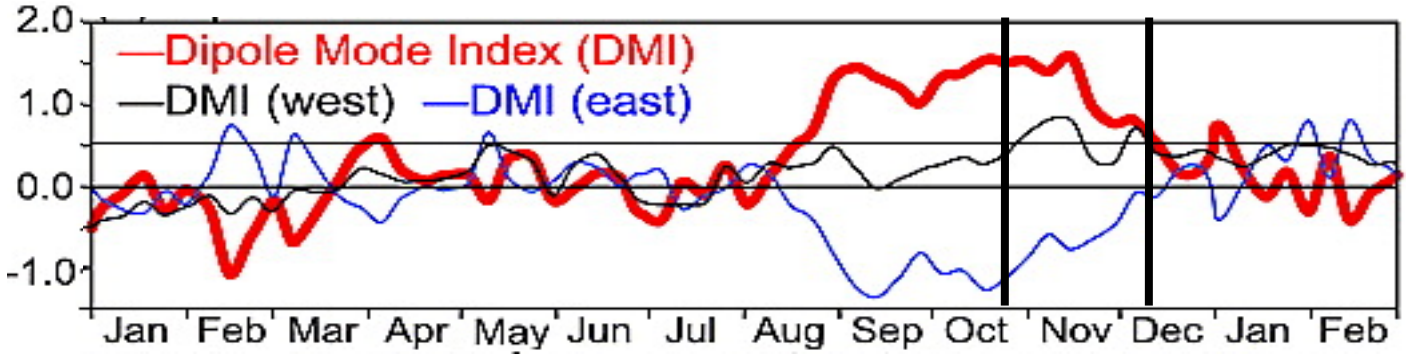
http://www.jamstec.go.jp/iorgc/mismo/

Data are now available from this site.

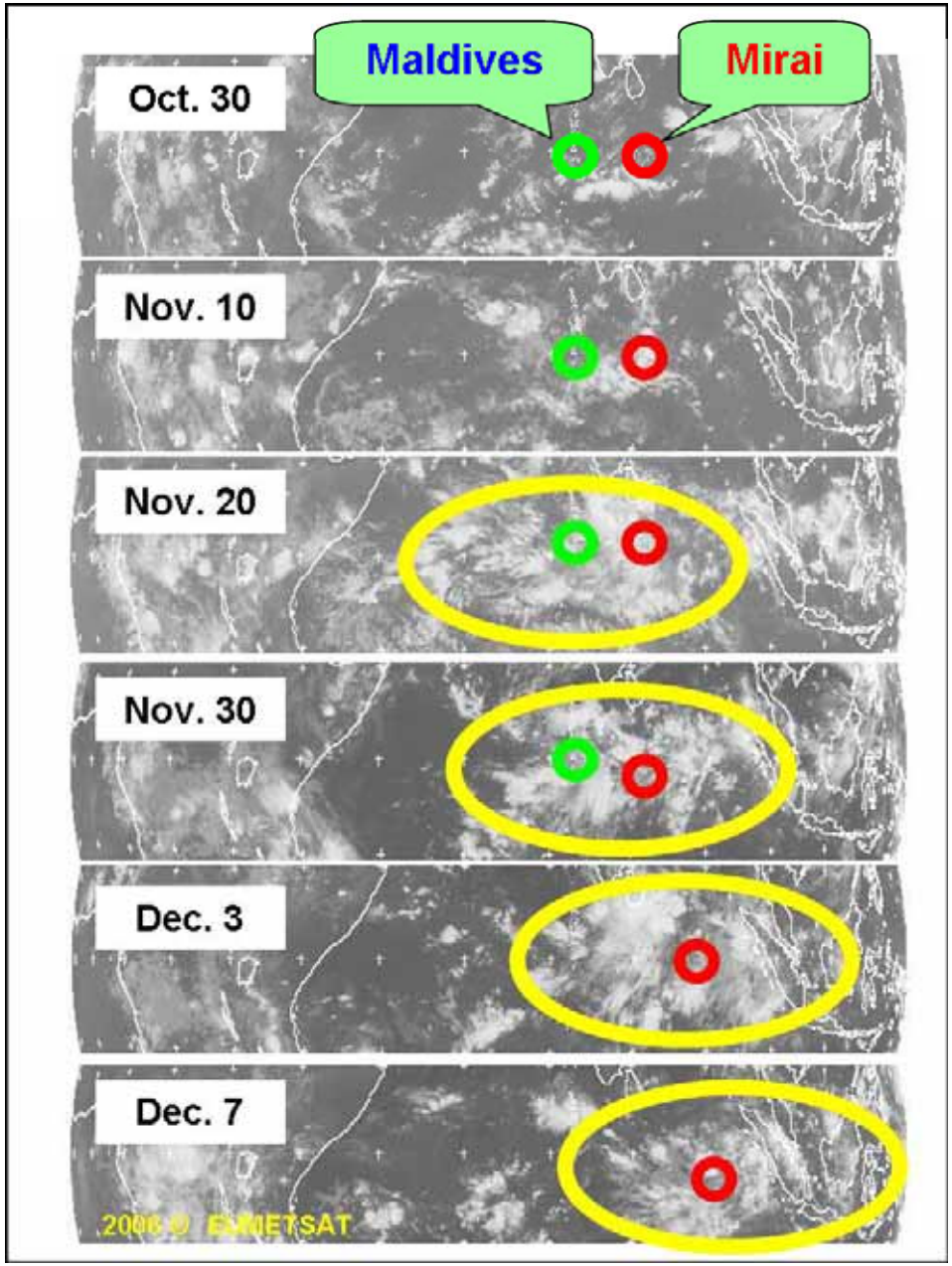


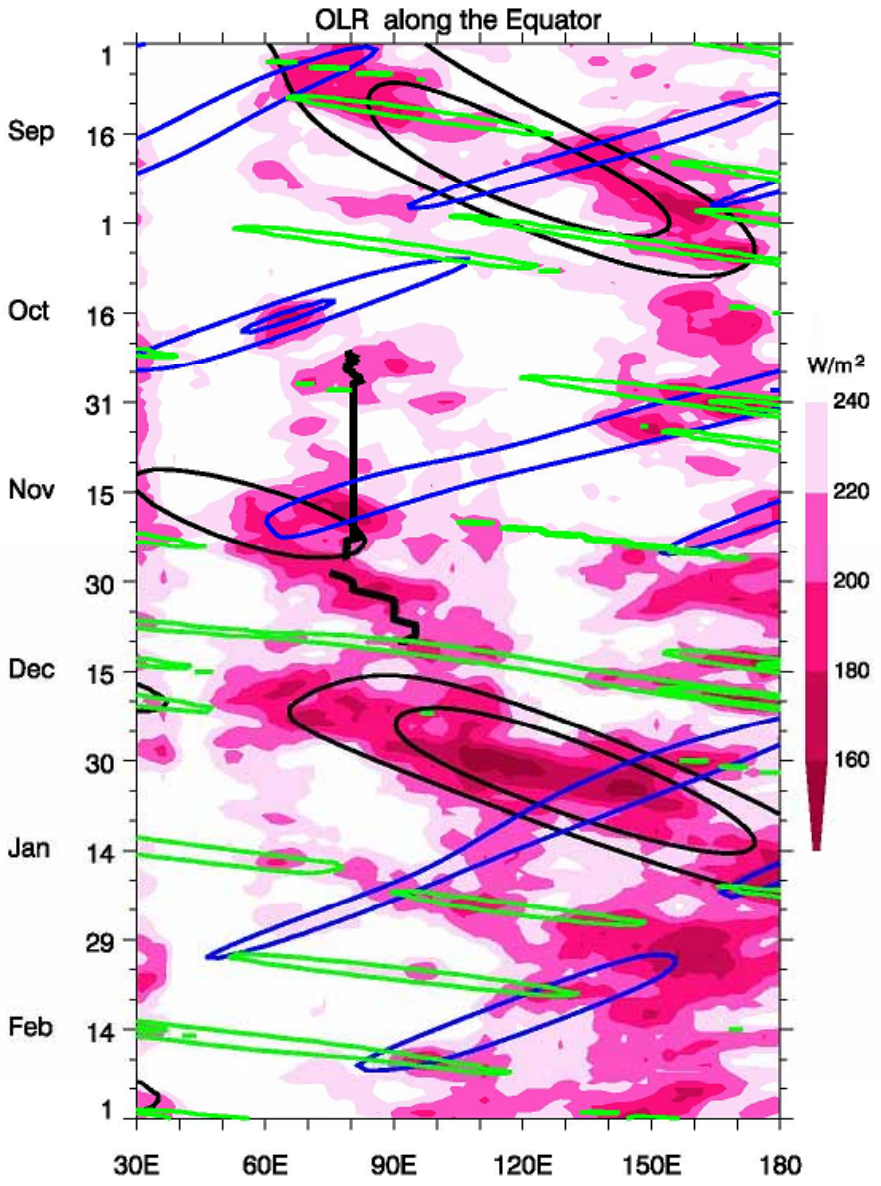
Oceanic Condition during MISMO





Cloud Activity from Sep. 2006 to Feb. 2007





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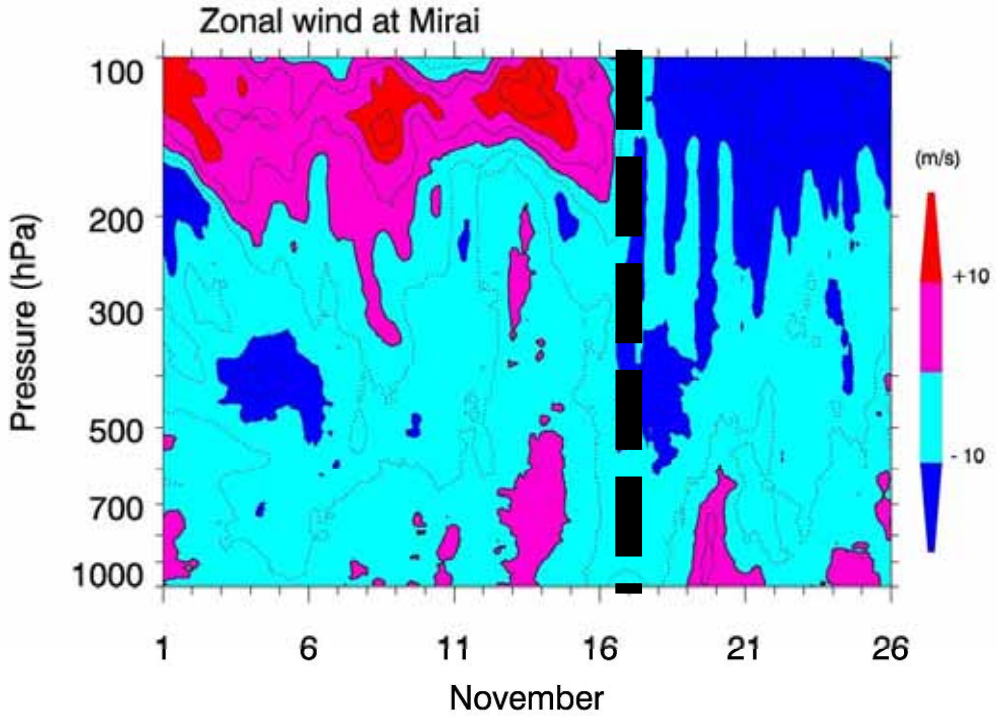
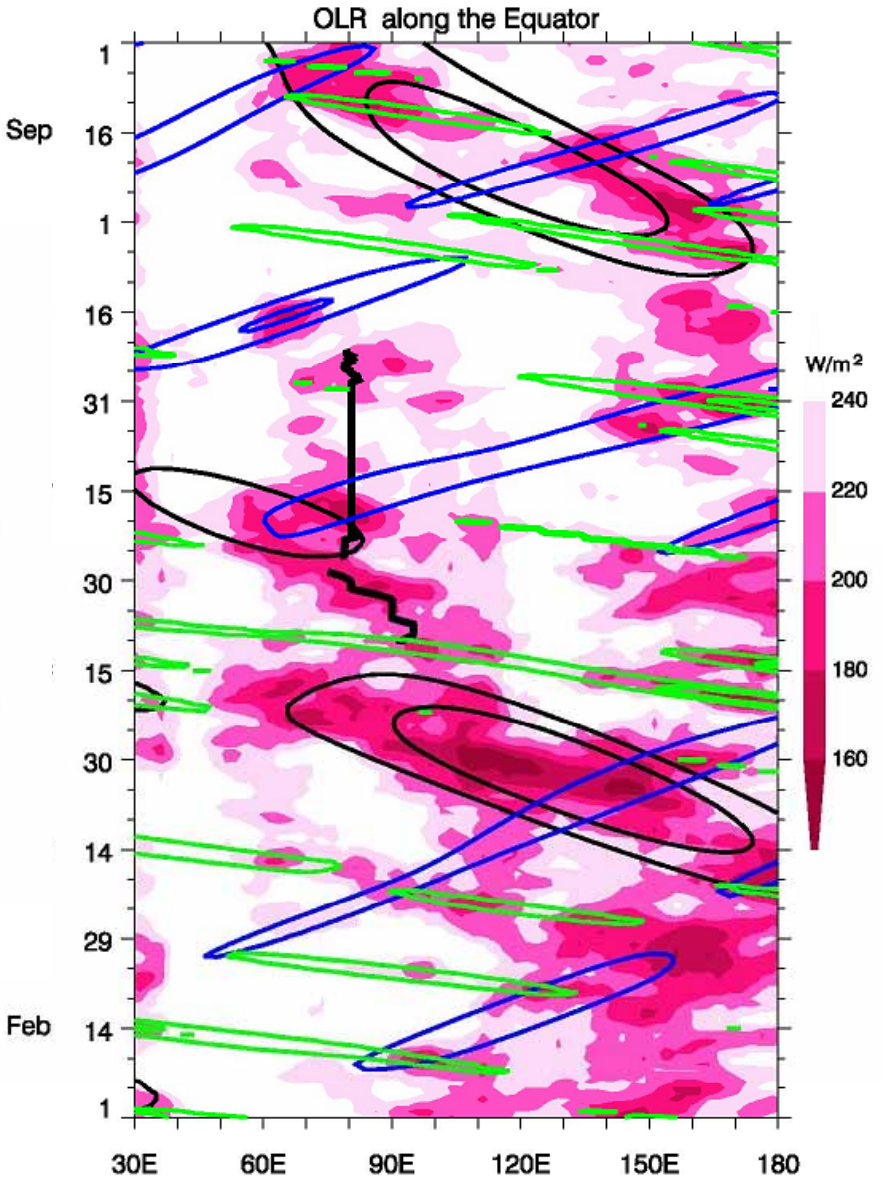
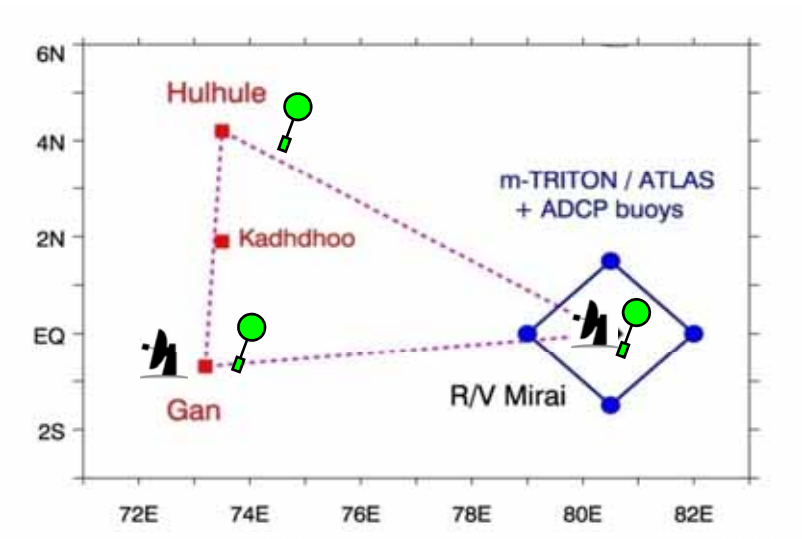
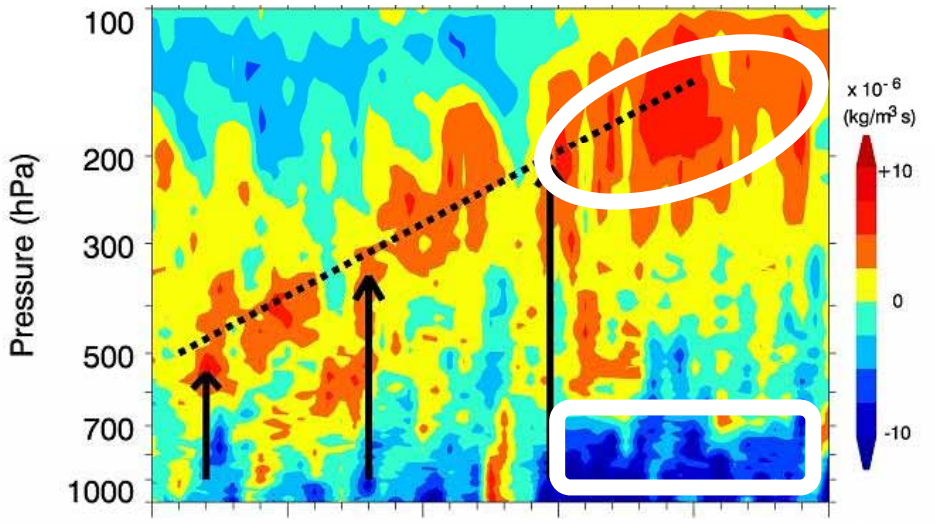




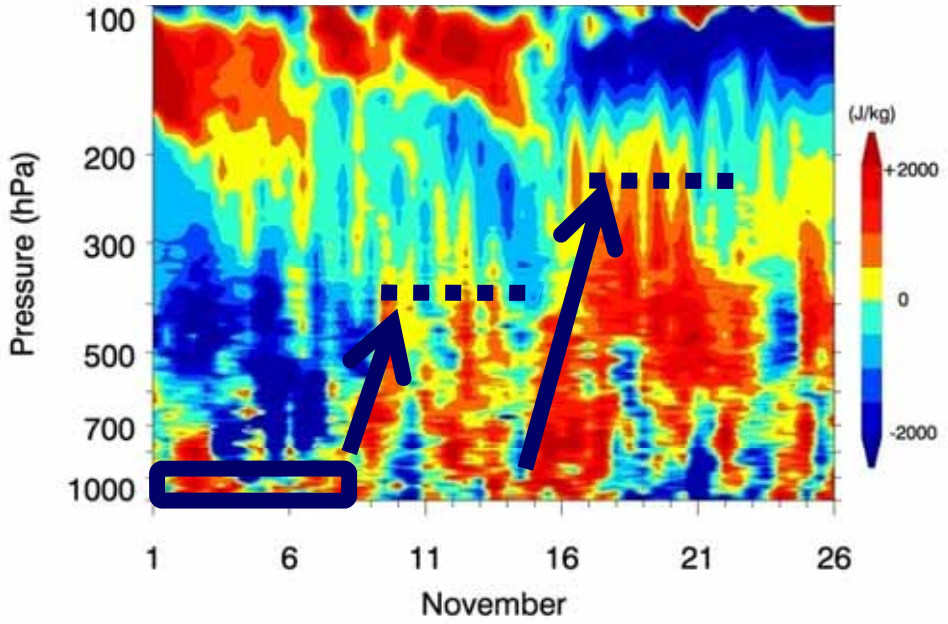
Gradual Deepening of Convection



Mass Divergence



Moist Static Energy Anomaly



Summary of MISMO

1) MISMO field experiment took place under the strong IOD event.
2) Weak MJO-convection was initiated over the central Indian Ocean in late November 2006. MISMO Observation network could monitor them, but whole life cycle was not obtained and we missed to capture December Strong Event.
3) While gradual deepening of convective area was demonstrated, analyses suggest the strong relationship between convective activity and large-scale equatorial waves.
4) Various kind of data were obtained during MISMO . Data is now available from web site at

http://www.jamstec.go.jp/iorgc/mismo/

Scientific Results will be presented from now !