Please Note: Many additional NCEP model forecast graphics (in addition to what is included here) are available at the DYNAMO data catalog and span from hourly to Week-2.

Work supported by NOAA’s Climate Program Office

NOAA/CPC
ESSIC/CICS
CICS-NC
SUNY
Australia BOM
Review of Conditions
During the Past Week
The MJO strengthened during the past week and this appears to be the primary mode of subseasonal coherent tropical variability ongoing, although there is an atmospheric Kelvin wave propagating through the region with its enhanced phase in the western Pacific. The enhanced convective phase of the MJO is currently centered over the eastern Maritime continent. The Asian monsoon circulation remained enhanced very early during the past week, but has weakened in recent days.

Enhanced convection was observed from the Bay of Bengal to the western Pacific and also across parts of the western and central Indian Ocean near the DYNAMO array. Easterly low-level wind anomalies continued across the array, although these have weakened in recent days. At upper-levels, weak westerly wind anomalies were observed over the campaign site. SST anomalies remain positive across most of the equatorial Indian Ocean with below-normal SSTs along the southern Sumatra coast.

The WH MJO index showed an increase in amplitude and irregular eastward propagation over the past week and this behavior, in general terms, was highlighted by most operational model forecasts one week ago, although their amplitudes were reduced. There was not too much helpful guidance from the models two weeks ago, although both the ECMWF and Canadian models showed some signs of an increased signal.
OLR Time Longitude – Total Anomalies

OLR: 5S - 5N

8-May to 25-Sep-2011

Courtesy: Carl Schreck
CICS-NC
OLR Time Longitude – Tropical Modes

Ovals are projections of leading modes: MJO (blue), KW (green), ER-1 (black)

Courtesy: Carl Schreck CICS-NC
Weekly Spatial OLR

Total field

Anomalies
Zonal wind shaded, direction by vector
Westerly total/anomalies (red shades)
Easterly total/anomalies (blue shades)

Pentad averages for last 5 days (bottom) and 5 days previous (top)
Zonal wind shaded, direction by vector
Westly total/anomalies (red shades)
Easterly total/anomalies (blue shades)

Daily averages for last 4 days
Zonal wind shaded, direction by vector
Westerly total/anomalies (red shades)
Easterly total/anomalies (blue shades)

Pentad averages for last 5 days
(bottom) and 5 days previous (top)
Sea Surface Temperature

SST (°C) 21 SEP 2011

SST Anomalies (°C) 21 SEP 2011

NOAA - Climate Prediction Center
Equatorial Cross Section

Pressure Longitude Cross-section -- 5N - 5S
Mean U-W (streamlines), Specific Humidity (shaded) (g/kg)
SEP 19 2011 -- SEP 25 2011

Pressure Longitude Cross-section -- 5N - 5S
Anomalous U-W (streamlines), Specific Humidity (shaded) (g/kg)
SEP 19 2011 -- SEP 25 2011
MJO Index

Last 60 Days of Observations: Sep. 26, 2011
MJO Index Validation

1 Week Ago
Forecasts from: 20110920

2 Weeks Ago
Forecasts from: 20110912
**IOD - Dipole Mode Index**

**Indian Ocean Dipole Mode Indices**

- **SETIO** [90-110°E, 10S-0°]
- **WTIO** [50-70°E, 10S-10N]
- **BMI = WTIO - SETIO**
Verification

X ➔ Denotes TC development location
Forecast Graphics
Outlook and Forecast Rationale

The MJO is forecast to remain active with MJO index model forecasts indicating continued eastward propagation from the eastern Maritime continent well into the western Pacific (WH phase 5 to phase 7). There is generally good agreement with the MJO forecast overall, however, the speed of propagation varies highly between individual model forecasts. The amplitude of the MJO index forecasts favors moderate strength activity at the current time. An atmospheric Kelvin wave is expected to be an additional factor in the forecast but its impact is expected to be secondary.

For Week-1, enhanced convection is forecast from the South China Sea to the western Pacific and suppressed convection is favored from India across the eastern Indian Ocean to western Indonesia, primarily associated with the MJO. Model forecast guidance strongly supports both of these regions, but also continues to indicate enhanced convection in a narrow region across the southern portions of the DYNAMO array. The existence of an area of enhanced rainfall in this general region has been persistent during the last few weeks, but highly variable in final location. Confidence in this area is low-to-moderate as it remains at odds with the forecast phase of the MJO.

During Week-2, the area of enhanced convection over the western Pacific and the suppressed convection over India and parts of the Indian Ocean are forecast to shift eastward, associated with the forecast MJO phase. Numerical forecast guidance continues to forecast a relatively narrow area of enhanced convection south of the equator in proximity to the DYNAMO array for areas across the central and western Indian Ocean.

**Probability of at least moderate strength MJO (Outside WH unit circle with eastward propagation):**
Week-1: 90%, Week-2: 70%, Week-3: 50%
DYNAMO Forecast

Tropical Hazards/Benefits Outlook
Climate Prediction Center


Confidence
- High: Development of a tropical cyclone that reaches a max. sustained wind of 63 km/hr.
- Moderate: Weekly total rainfall in the upper tercile.
- Below-average: Weekly total rainfall in the lower tercile.

Produced: 09/27/2011
MJO Index Forecasts

MJO Index Forecast for 27Sep2011-11Oct2011

MJO Index Forecast for 27Sep2011-11Oct2011
OLR Spatial Forecast Maps – Tropical Modes

Courtesy: Carl Schreck CICS-NC

Madden-Julian Oscillation in OLR

Kelvin Waves in OLR
OLR Spatial Forecast Maps – Tropical Modes

Courtesy: Carl Schreck CICS-NC
GFS / CFS Forecasts – Week-1

GFS forecast Precip for week 1 from: 20110926all

GFS - CMORPH forecast Precip for week 1 from: 20110926all

NOAA - Climate Prediction Center

NOAA - Climate Prediction Center
Ensemble GFS Forecasts – Week-1

GEFS precip for week 1 from: 20110927

GEFS apricip for week 1 from: 20110927

NOAA – Climate Prediction Center
GFS / CFS Forecasts – Week-2

GFS forecast Precip for week 2 from: 20110926all

GFS – CMORPH forecast Precip for week 2 from: 20110926all

Week 2 Anomalies (mm/day) 40Oct2011-10Oct2011

REVH vs. A-Wind for week 2 from: 20110926all (850hPa)
Ensemble GFS Forecasts – Week-2

GEFS precip for week 2 from: 20111004

GEFS aprecip for week 2 from: 20111004

NOAA – Climate Prediction Center
Operational GFS Precipitable Water and 10 m Anomalous Wind

GFS frcst A_PWAT vs. A_Wind 10m for week 1 from: 20110926all

GFS frcst A_PWAT vs. A_Wind 10m for week 2 from: 20110926all
Comments, Suggestion and Questions?
Monsoon Indices

Daily Webster–Yang Monsoon Index, SEP 25, 2011

Vertical Shear (850–200hPa)

- Climatology
- Observation
- GEFS Forecast

Data Source: NCEP/CDAS (GDAS for the last two days)

Values above (below) climatological means indicate strong (weak) monsoon.

Daily Indian Summer Monsoon Circulation Index, SEP 25, 2011

Climatology
- Observation
- GEFS Forecast

Data Source: NCEP/CDAS (GDAS for the last two days)

Values above (below) climatological means indicate strong (weak) monsoon.