Global Tropics Hazards And Benefits Outlook
December 29, 2015

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Outline

1. Review of Recent Conditions
2. Synopsis of Climate Modes
3. GTH Outlook and Forecast Discussion
4. Connections to U.S. Impacts
Synopsis of Climate Modes

ENSO:
• Current: **El Niño Advisory**
• Outlook: El Niño is expected to remain strong through the Northern Hemisphere winter 2015-16, with a transition to ENSO-neutral anticipated during late spring or early summer 2016.

MJO and other subseasonal tropical variability:
• The MJO remained coherent and robust, with the enhanced phase now propagating over the west-central Pacific after rapidly crossing the Maritime Continent.
  • Dynamical model MJO index forecasts all support continued eastward propagation of the signal across the Pacific during Week-1. During Week-2, the GFS slows the eastward propagation and amplifies, while the ECMWF depicts the MJO propagating to the Western Hemisphere.

Extratropics:
• The MJO is likely to support a downstream pattern change in the extratropics during the next several weeks, with a transition to positive height anomalies across the Arctic (negative AO). El Niño influence is anticipated to remain prominent as well; however, which may help to counter the MJO response over parts of North America.
Global Tropics Hazards and Benefits Outlook - Climate Prediction Center

Week 1 - Valid: Dec 30, 2015 - Jan 05, 2016

Week 2 - Valid: Jan 06, 2016 - Jan 12, 2016

Confidence
High Moderate

Tropical Cyclone Formation
Development of a tropical cyclone (tropical depression - TD, or greater strength).

Above-average rainfall
Weekly total rainfall in the upper third of the historical range.

Below-average rainfall
Weekly total rainfall in the lower third of the historical range.

Above-normal temperatures
7-day mean temperatures in the upper third of the historical range.

Below-normal temperatures
7-day mean temperatures in the lower third of the historical range.

Produced: 12/29/2015
Forecaster: Allgood

Product is updated once per week, except from 6/1 - 11/30 for the region from 120E to 0, 0 to 40N. The product targets broad scale conditions integrated over a 7-day period for US interests only. Consult your local responsible forecast agency.
MJO propagation is evident in the upper-levels.

Note destructive interference between MJO and El Niño during mid-December, and constructive interference in late December.
All three models depict eastward propagation of the MJO during Week-1.
The GFS slows the propagation during Week-2, with a strong projection in Phase-7 (central Pacific).
The ECMWF continues a robust eastward propagation across the Western Hemisphere during Week-2.
Average Conditions when the MJO is present

CAVEAT: These panels are representative of robust MJO events.

Climate anomalies associated with ENSO differ from these composites.
Low frequency ENSO state continues to dominate the pattern.

MJO signal is apparent in the OLR field (dashed lines)
January Tropical Storm Formation by MJO phase

**Phase 1 (67 days) 14 storms**

**Phase 2 (101 days) 15 storms**

**Phase 3 (112 days) 20 storms**

**Phase 4 (69 days) 11 storms**

**Phase 5 (67 days) 8 storms**

**Phase 6 (68 days) 18 storms**

**Phase 7 (81 days) 11 storms**

**Phase 8 (105 days) 16 storms**

**Null (36+ days) 67 storms**
Connections to U.S. Impacts
Phase-6 MJO events have a strong lagged response in the extratropics.
The canonical response to a Phase-6 Boreal winter MJO event favors below normal temperatures across the eastern CONUS during the Week 2/3 period.
$T_{2m}$ forecast anomalies conditioned on 12/25/15

Combined Week 3–4 T2m:
NDJ 2015 Anomalies
Nino3.4 = 2.5707; RMM1 = 1.7254; RMM2 = 1.3198

Combined Week 3–4 T2m:
NDJ 2015 Anomalies from MJO
Nino3.4 = 2.5707; RMM1 = 1.7254; RMM2 = 1.3198

Combined Week 3–4 T2m:
NDJ 2015 Anomalies from ENSO
Nino3.4 = 2.5707; RMM1 = 1.7254; RMM2 = 1.3198

Combined Week 3–4 T2m:
NDJ 2015 Anomalies from trend
Nino3.4 = 2.5707; RMM1 = 1.7254; RMM2 = 1.3198

[Map with temperature anomalies]
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