

A (Very) Preliminary Look at MJO Forecast Skill in the NMME

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NMME Subseasonal Team

Thanks: NCEP EMC/CPC



MAPP
Modeling, Analysis,
Predictions, and Projections



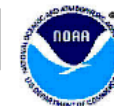
*Climate Diagnostics and Prediction Workshop
College Park, MD
October 21-24, 2013*



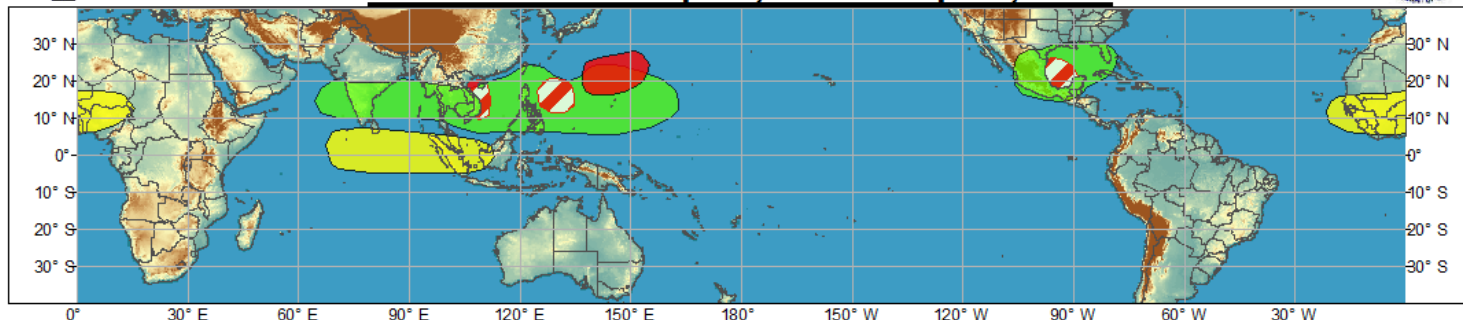
UNIVERSITY OF COLORADO BOULDER



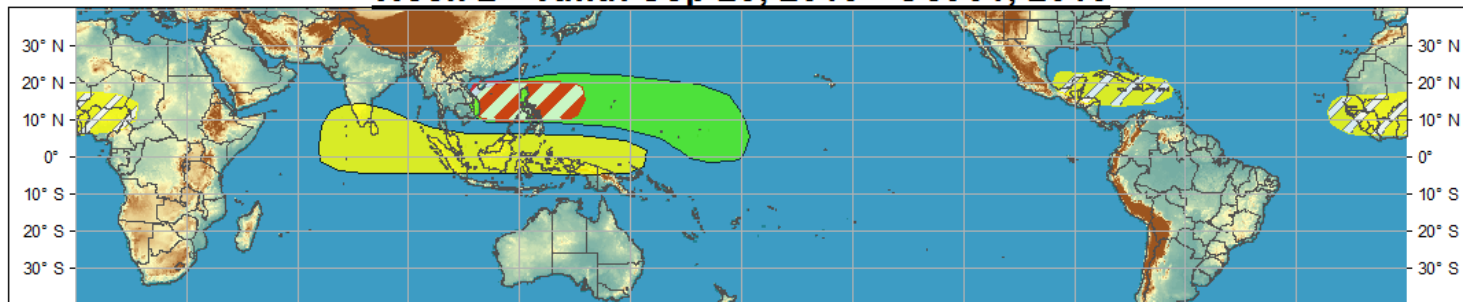
Global Tropics Hazards and Benefits Outlook - Climate Prediction Center



Week 1 - Valid: Sep 18, 2013 - Sep 24, 2013



Week 2 - Valid: Sep 25, 2013 - Oct 01, 2013



Produced: 09/17/2013

Forecaster: Baxter

	Confidence		
	High	Moderate	
Tropical Cyclone Formation			Development of a tropical cyclone that eventually reaches tropical storm/cyclone 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.

Product is updated once per week. The product targets broad scale conditions integrated over a 7-day period for US interests only. Consult your local responsible forecast agency.



www.cpc.ncep.noaa.gov/products/precip/CWlink/ghazards/images/gth_full.png

Can the NMME provide skillful prediction of the MJO to better inform the GTH forecaster?

Model Data

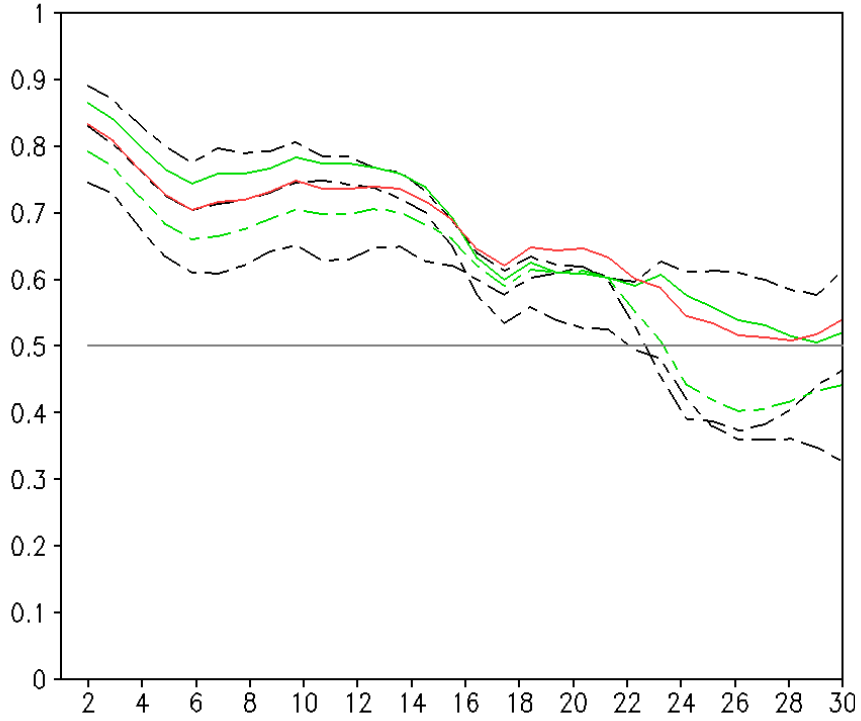
Model	Years	Initial Conditions	Lead	Ensemble members	Output Frequency
NCEP/CFSv2	1982-2009	Dec 27 (0,6,12,18Z)	9 months	4	daily
RSMAS/NCAR-CCSM4	1982-2005	Dec 25,26,27	12 months	3	daily

Verification Data

- Wheeler & Hendon RMM index

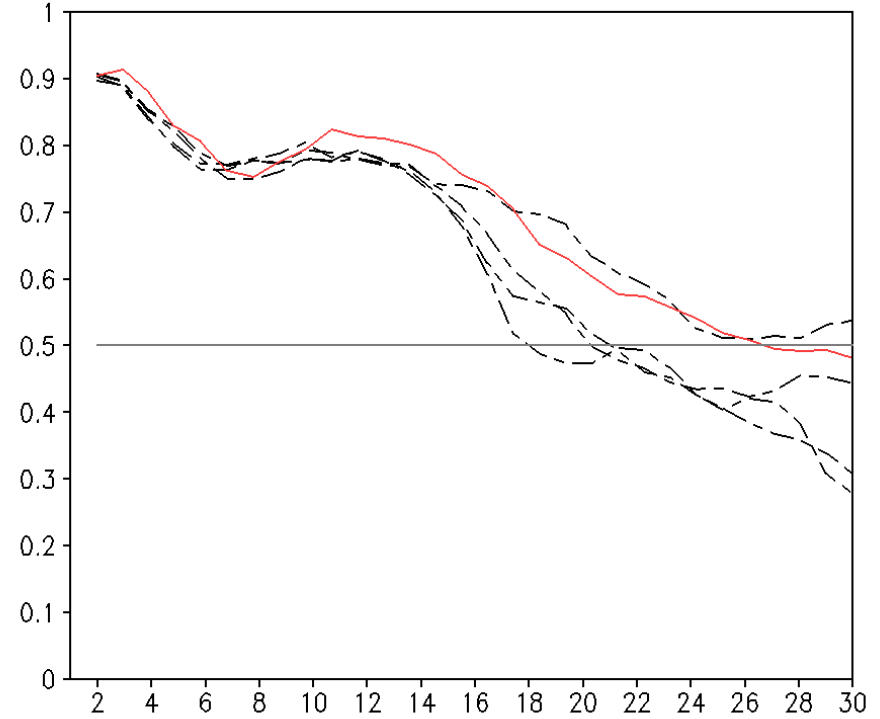
Bivariate RMM Correlation

CCSM4



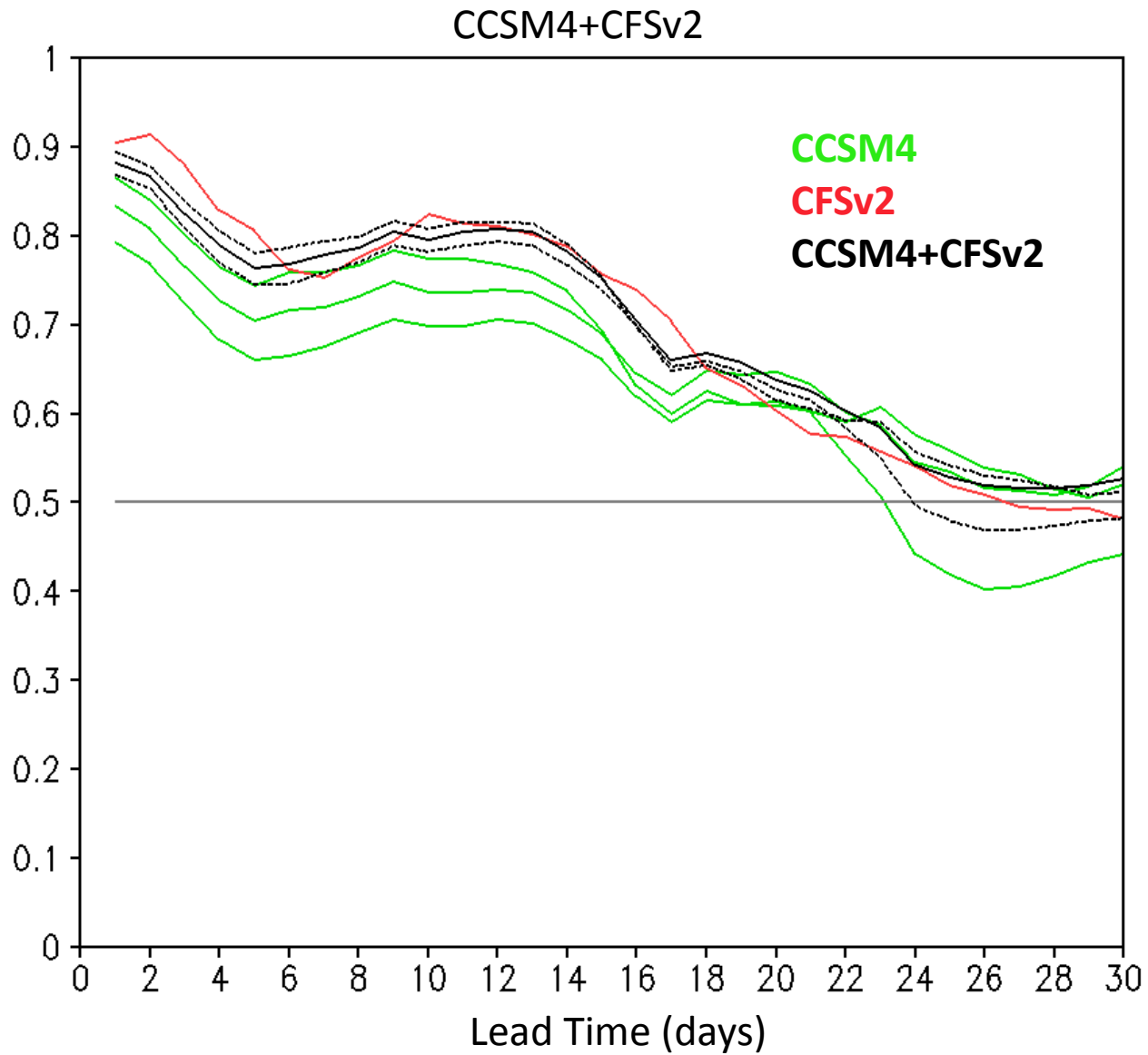
Lead Time (days)

CFSv2



Lead Time (days)

Bivariate RMM Correlation



Summary

- Multimodel ensemble is as good or better than best single model ensemble mean – is the “best” single model always the best?
- Old forecasts can hurt the multi-model skill – what is the balance number of ensemble members vs. old information?

Challenges

- Initialization frequency
- Significant increase in amount of data
- Balance of operational needs with what is feasible given current resources

Next Steps

- NMME Subseasonal Experiment

NMME Subseasonal Experiment

Goals

- To demonstrate the potential benefit of a subseasonal NMME in a retrospective context
- To provide a framework for a future real-time subseasonal NMME

NMME Subseasonal Team

Kathy Pegion (University of Colorado/CIRES & NOAA/ESRL/PSD)

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Siegfried Schubert (NASA/GMAO)

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Paul Dirmeyer (George Mason University/COLA)

Jim Kinter (George Mason University/COLA)

NMME Subseasonal Experiment

Protocols

- a) Reforecasts for 1999-2012
- b) November
- c) 45-days
- d) ICs: 2nd, 7th, 12th, 17th, 22th, 27th
- e) Ensemble members ≥ 3
- f) Limited set of variables: SST, U200, U850, OLR, Precip, MSLP, Z200.

Participating Models

- a) NCEP-CFSv2
- b) NASA-GMAO
- c) RSMAS/NCAR-CCSM4

Data Management/Archive: COLA

Connection to CPC Operational Products: GTH is weekly; initialization is 5-day – will test the impact of delayed model forecasts to potential skill for weekly product