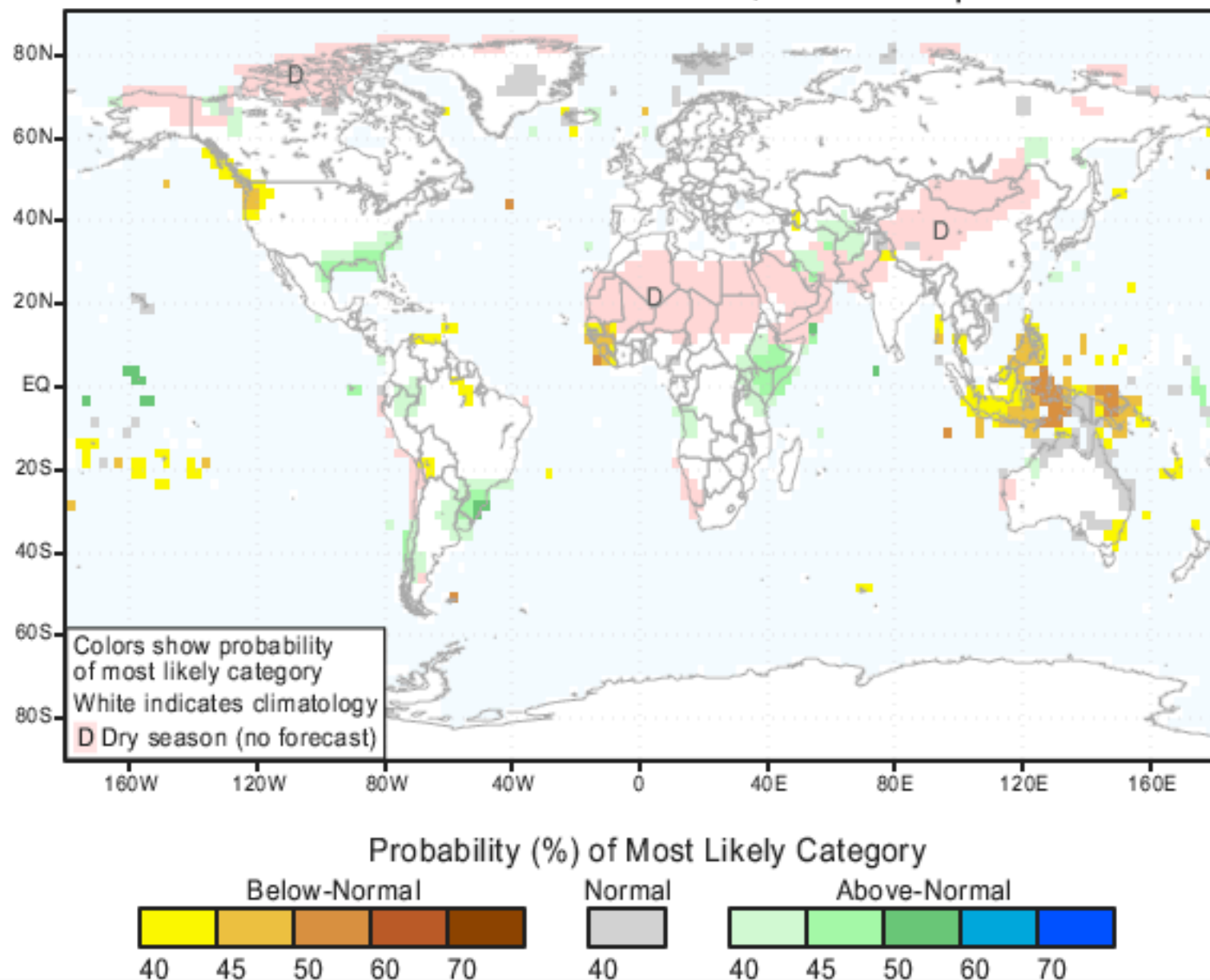


Recent changes to the IRI Net Assessment

International Research Institute for Climate and Society
Columbia University, USA

IRI Multi-Model Probability Forecast for Precipitation for October-November-December 2012, Issued September 2012

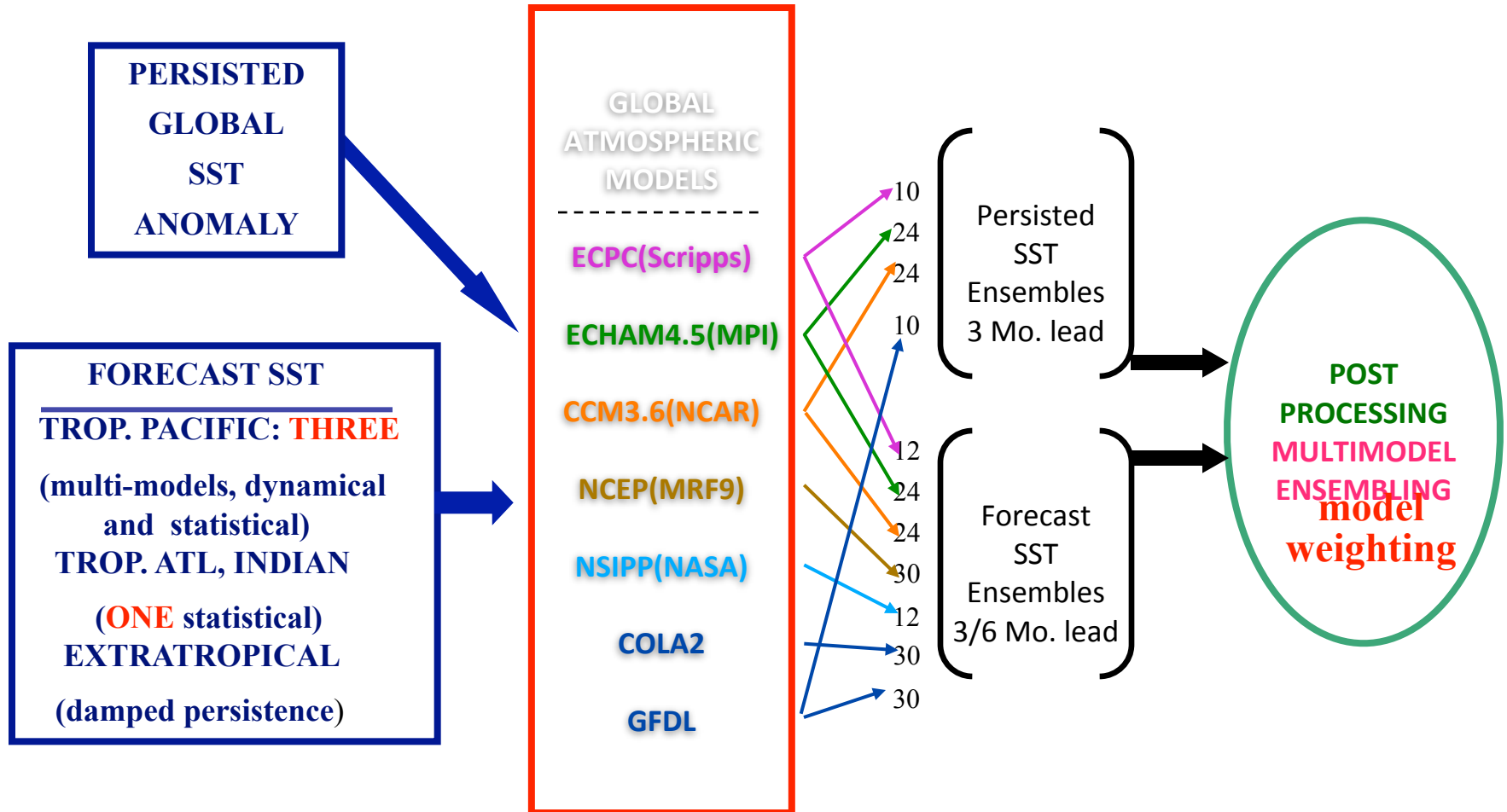


IRI DYNAMICAL CLIMATE FORECAST SYSTEM

2-tiered

OCEAN

ATMOSPHERE



Changes

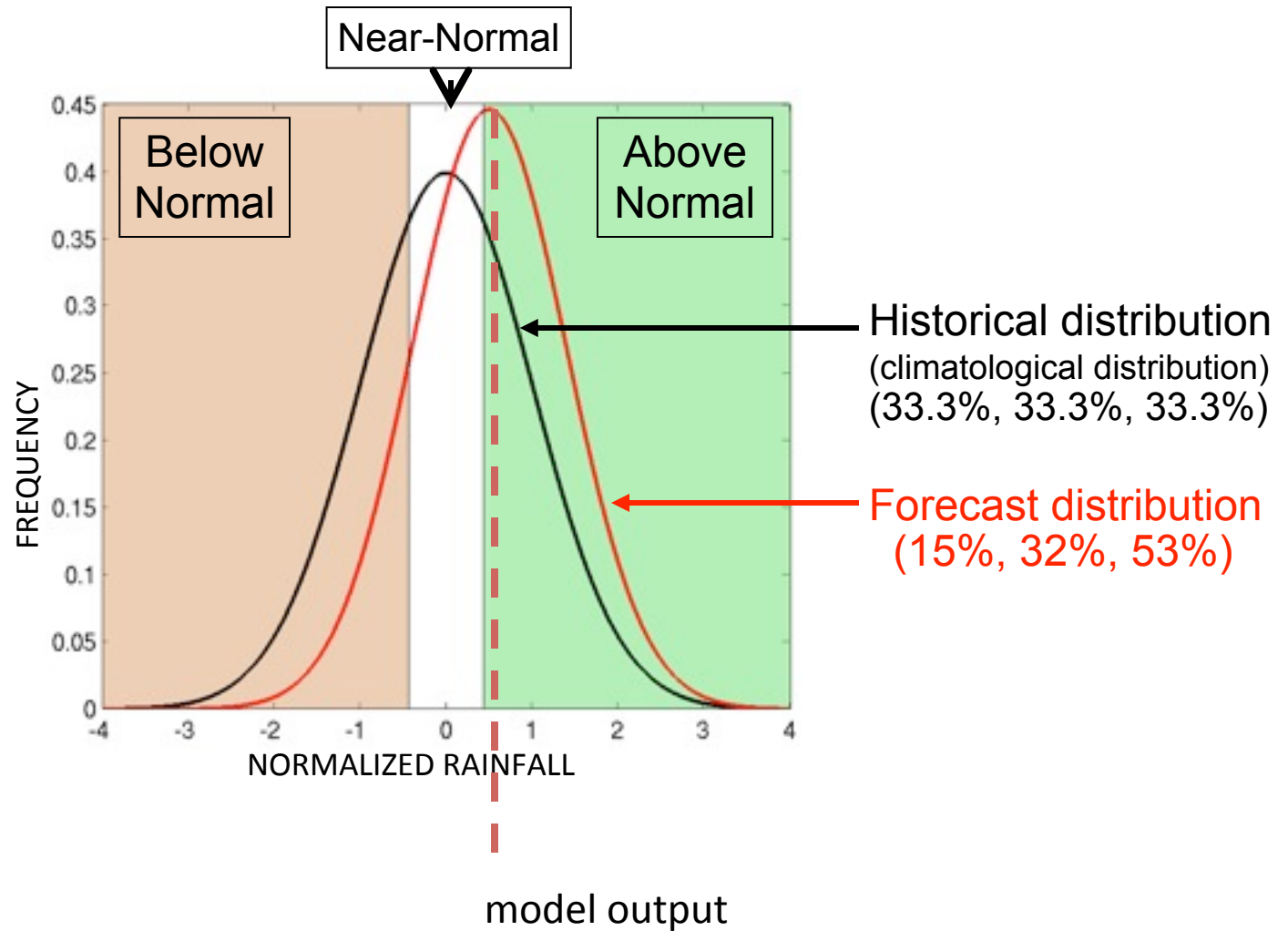
- Ocean forcing
 - LDEO + CA + CFSv2 mean and
 - 2 additional scenarios based on historical errors
- AGCM models
 - currently use: Echam4.5, CCM3.6, COLA, GFDL, FSU-COAPS (formerly ECPC)
- Experimental 1-tier system based on NMME

Post Processing

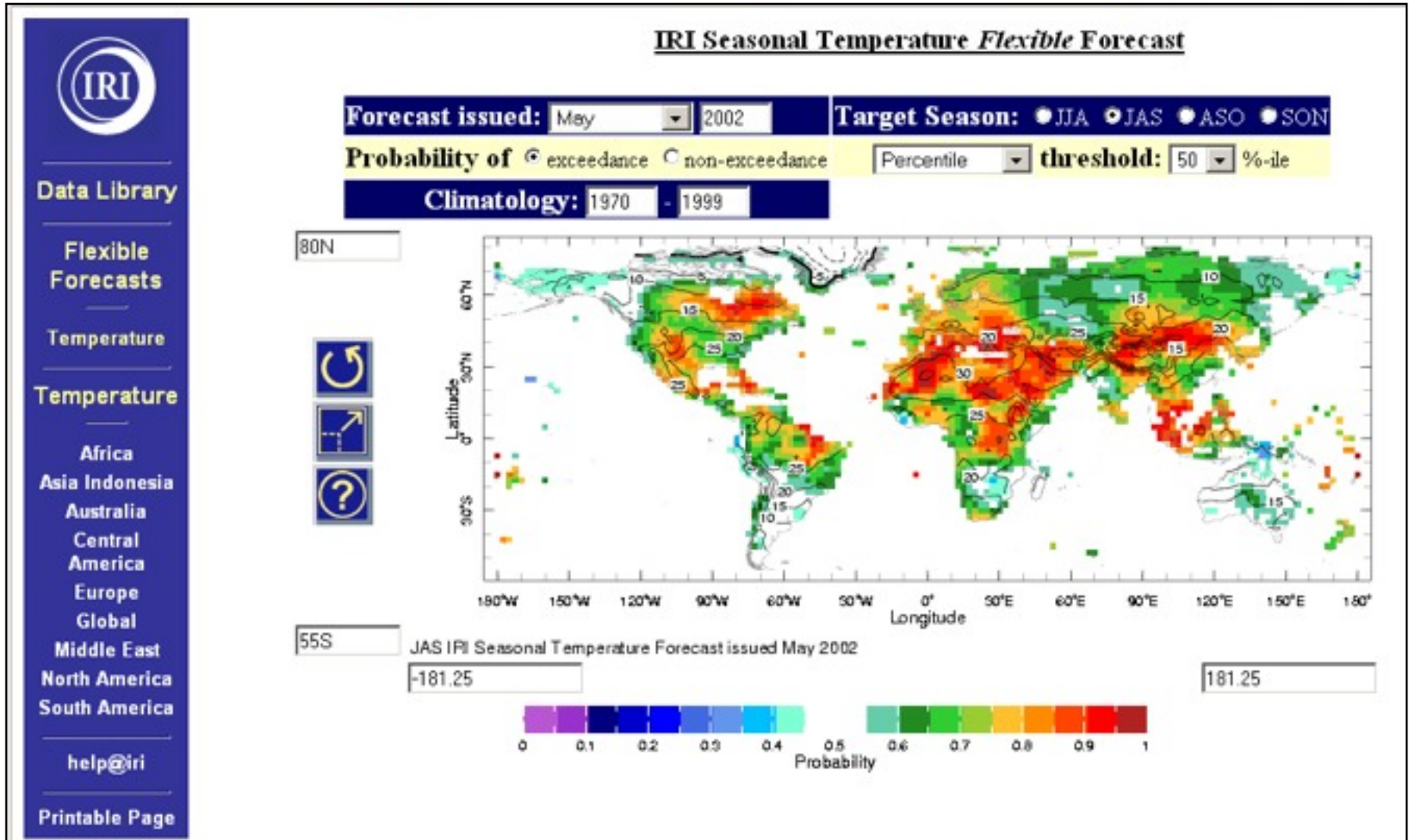
- Pattern-based correction of ensemble means
 - Regression based on historical model runs
 - Spread estimate from historical forecasts with forecast SST
- Equal weighting of corrected models
- Forecast probabilities
 - Gaussian distribution for temperature
 - Transformed Gaussian for precipitation

Constructing forecast probabilities beyond tercile categories

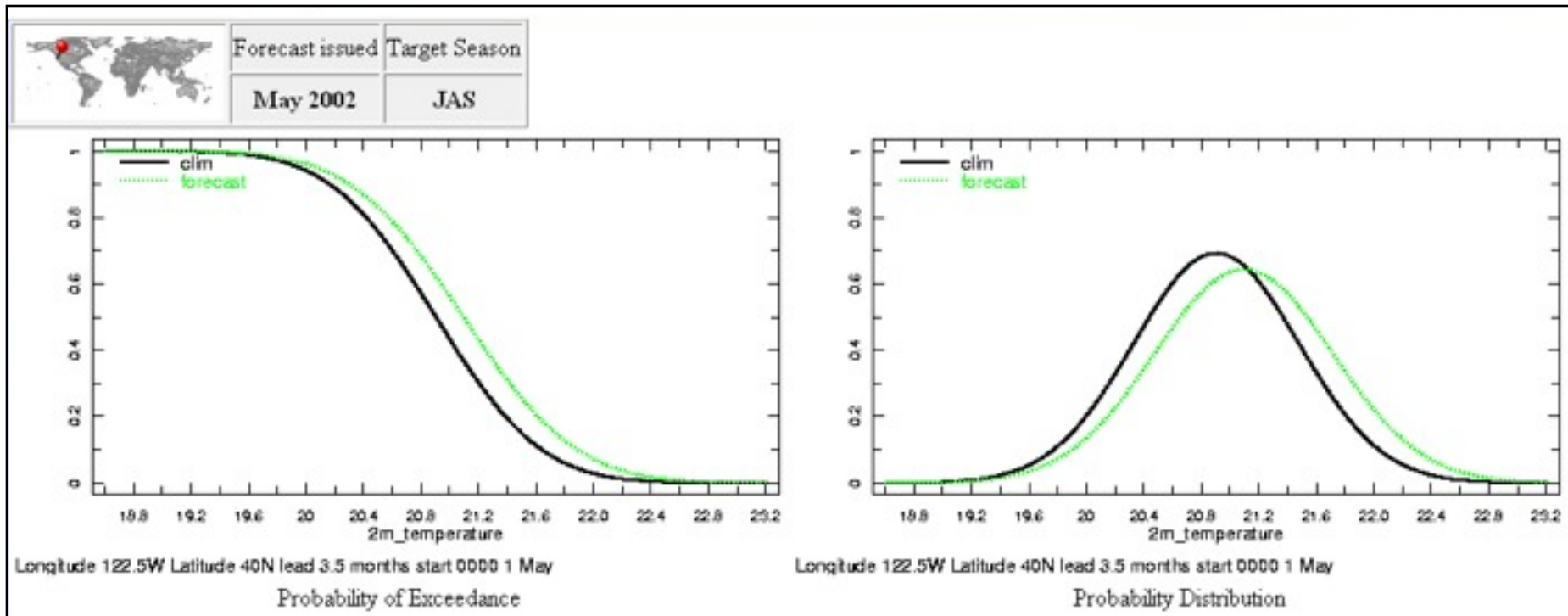
Shifted Gaussian



Flexible format map room



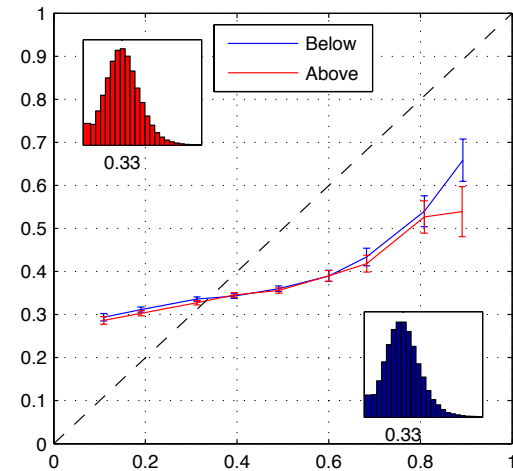
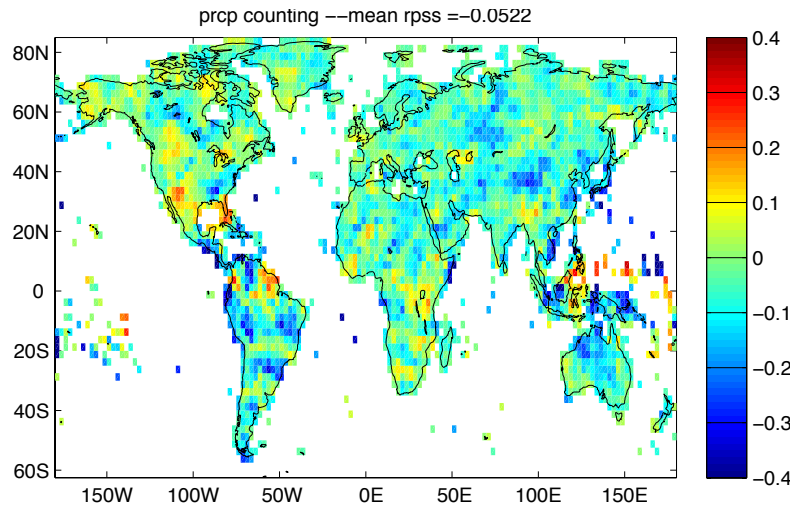
Flexible format map room



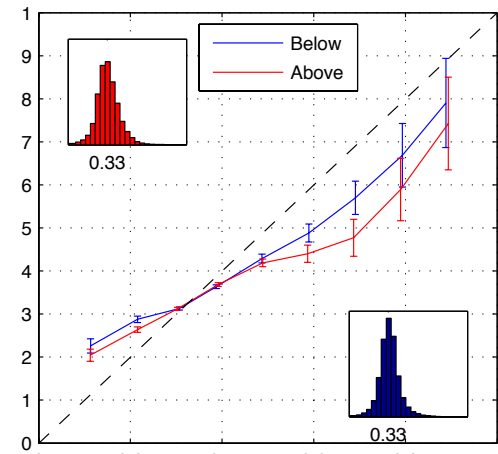
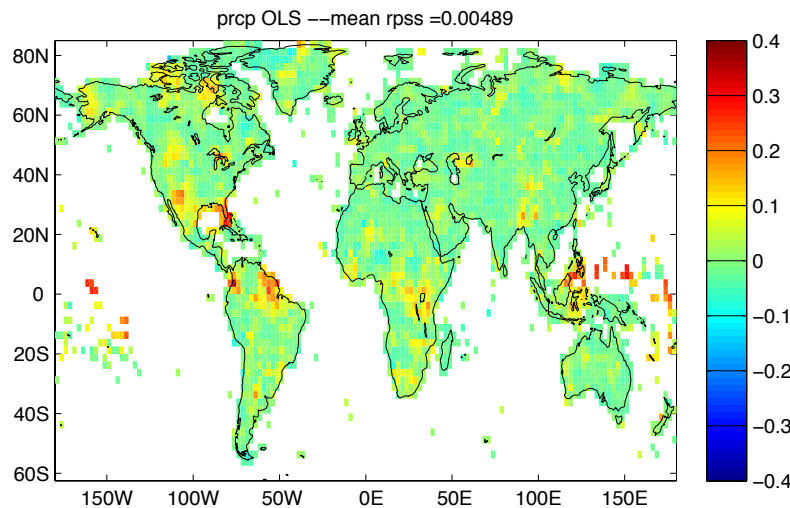
Are regression (gridpoint) forecasts reliable in practice?

DJF prcp
Nov 1

Ensemble
Frequency



Linear
regression



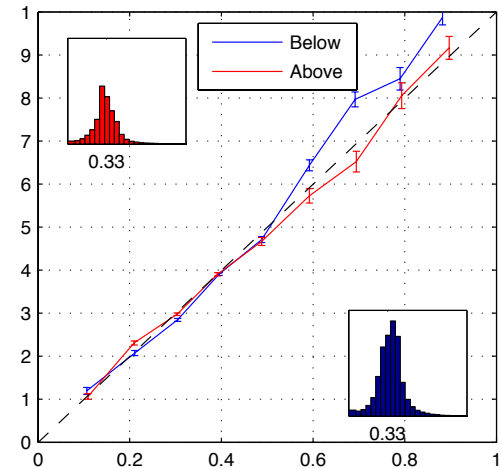
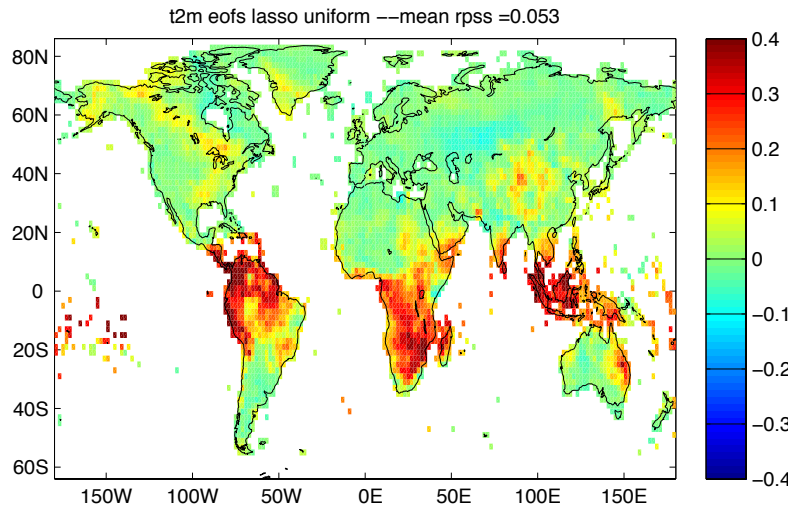
M. Tippett

Why over-confident?

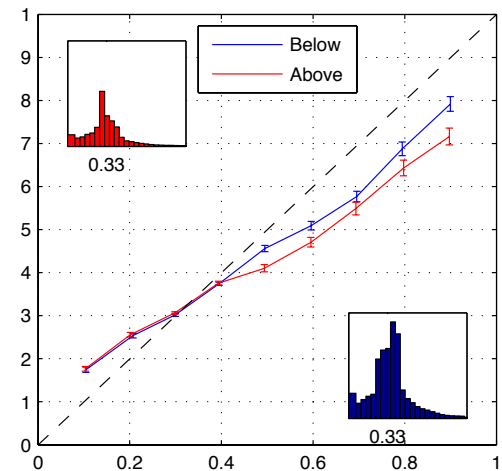
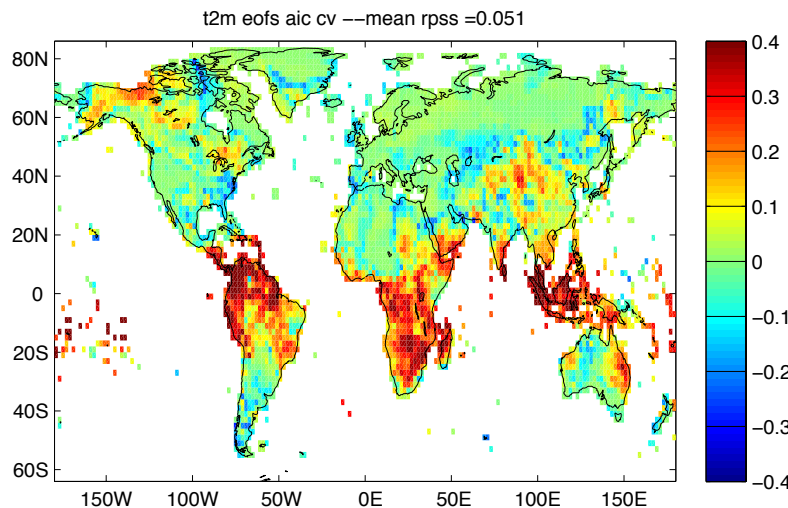
- Spread too small? No.
- Signal too strong? Yes.
- $MOS = a f + c$
 - Correct signal variance = $a^2 \text{Var}(f)$
 - Signal variance in practice
 $(a^2 + \text{sampling variance}) \text{Var}(f) > \text{true sig. var.}$

Selecting predictor patterns

EOFs+
lasso

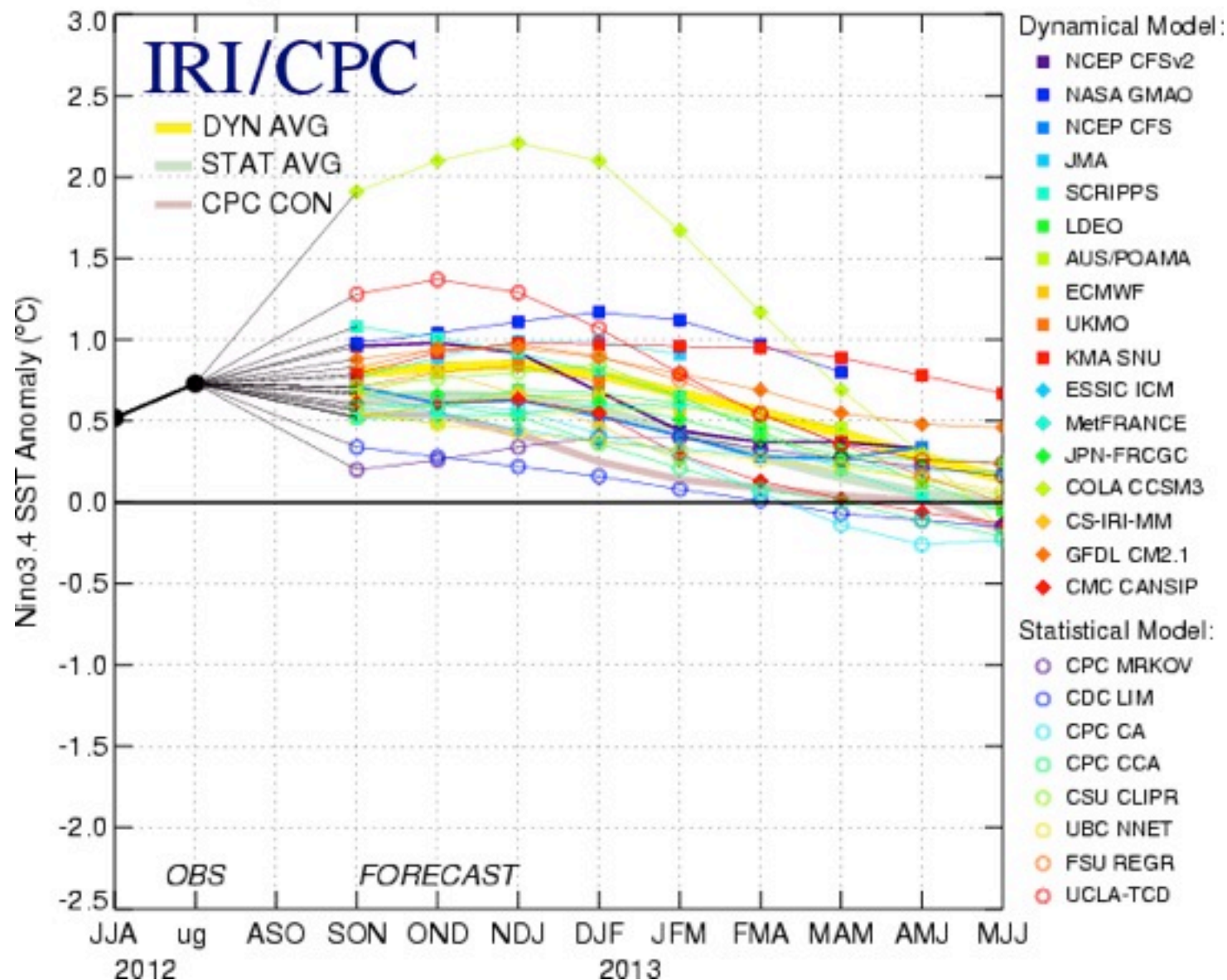


EOFs #
by AIC (or CV)

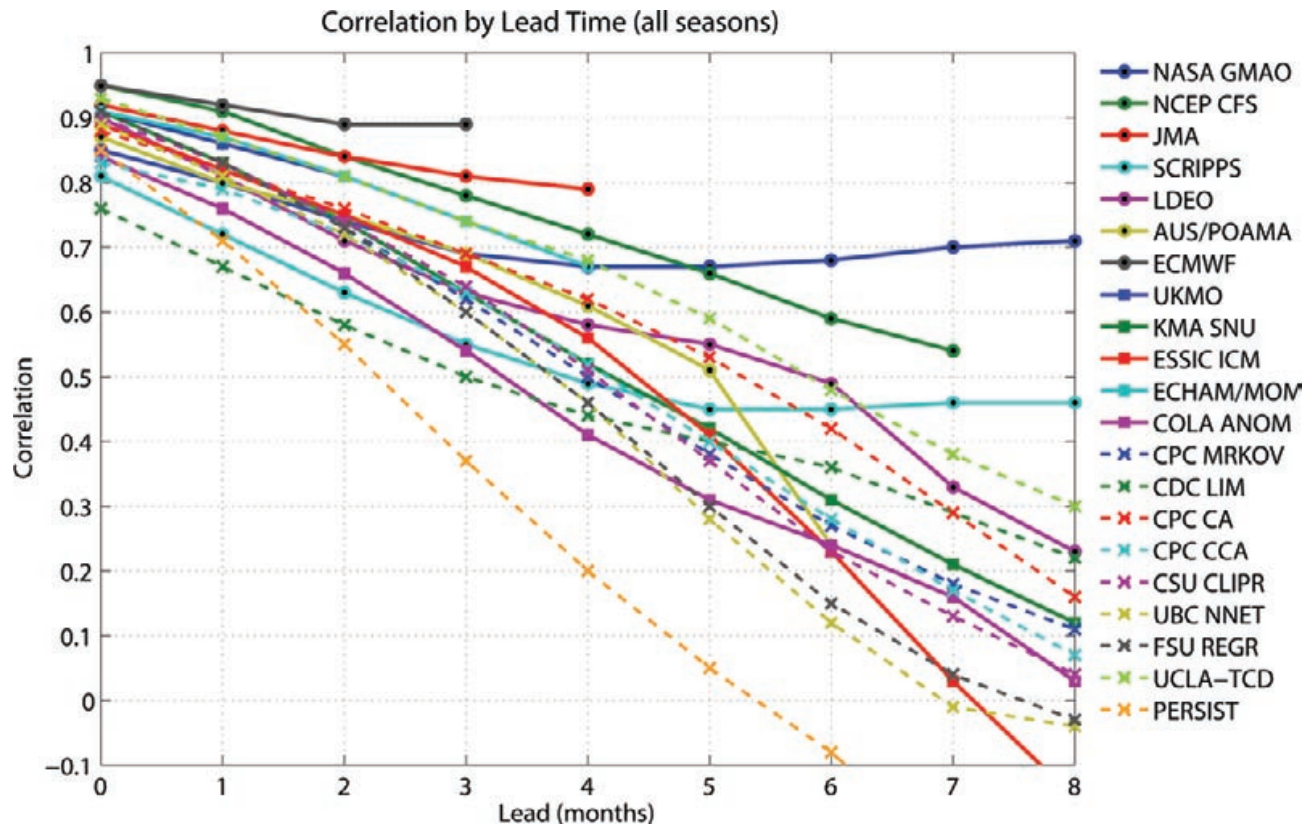


M. Tippett

Mid-Sep 2012 Plume of Model ENSO Predictions



Plume Verification 2002–2011



During the recent decade dynamical ENSO prediction models outperformed their statistical counterparts to a slight but statistically significant extent, primarily because of their better forecasts when traversing the northern spring predictability barrier

Barnston, Tippett, L'Heureux, Li, DeWitt (BAMS, 2012)