

# Results from the new POAMA-1.5 System

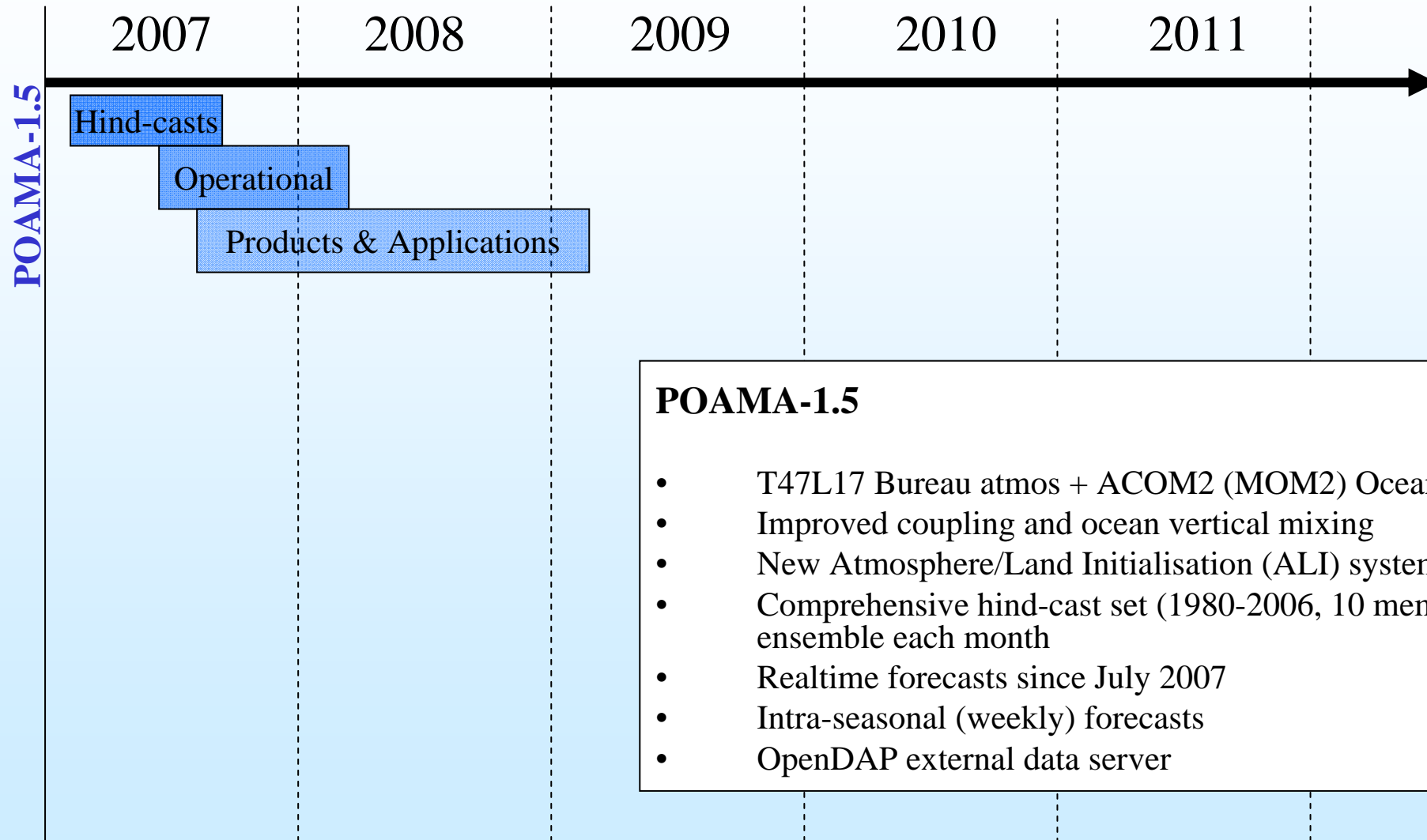
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**CAWCR**

**Centre for Australian Weather and Climate Research**  
(A joint centre of the Bureau of Meteorology and CSIRO)

POAMA website - <http://poama.bom.gov.au>

# POAMA- Seasonal Prediction System



## POAMA-1.5

- T47L17 Bureau atmos + ACOM2 (MOM2) Ocean
- Improved coupling and ocean vertical mixing
- New Atmosphere/Land Initialisation (ALI) system
- Comprehensive hind-cast set (1980-2006, 10 member ensemble each month)
- Realtime forecasts since July 2007
- Intra-seasonal (weekly) forecasts
- OpenDAP external data server

## Results

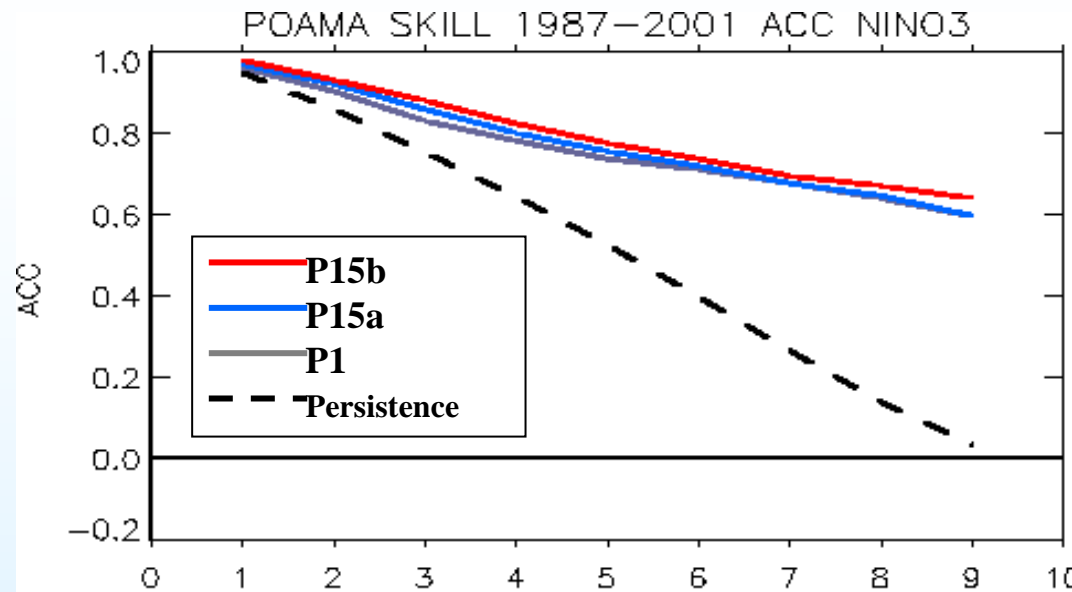
**POAMA-1.5b - operational version**

**POAMA-1.5a - No ALI (use AMIP land/atmos IC)**

**Most results based on 3-member ensemble, a few 10-member**

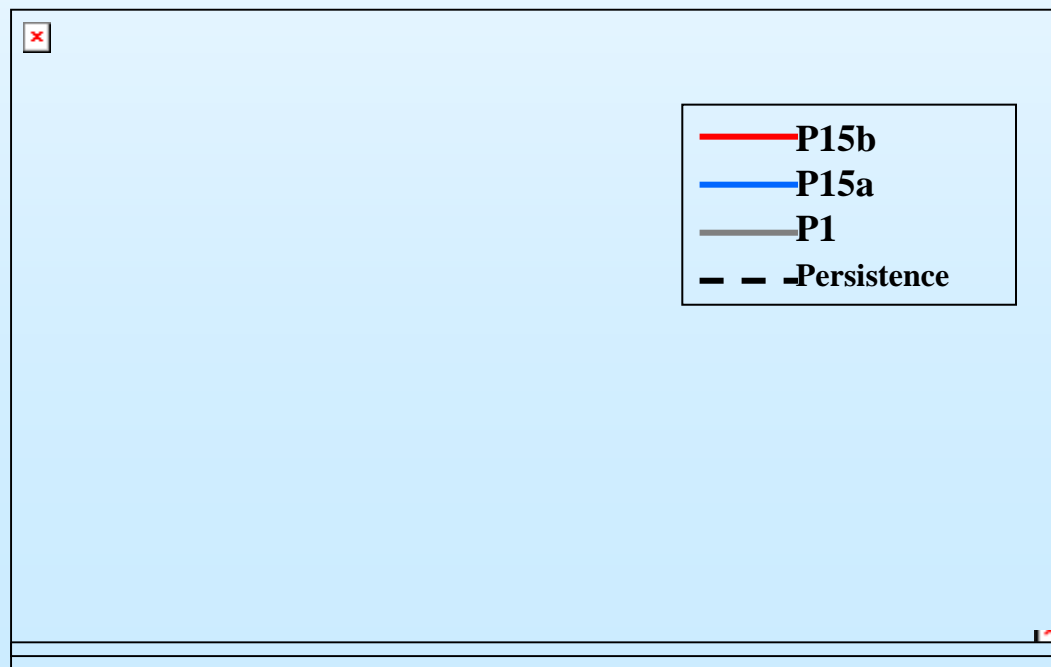
**Some 1987-2001, some 1980-2002**

Summary of work of many from BMRC

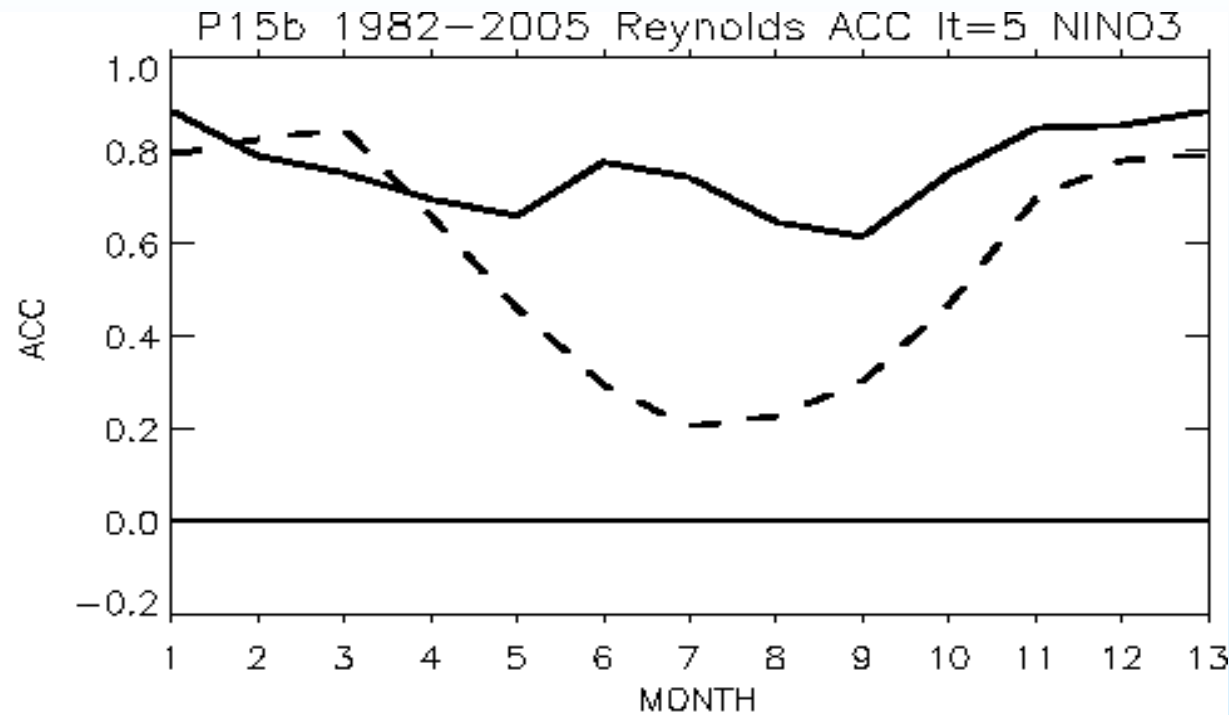


NINO 3  
SSTA forecasts

3-member ensemble



Indian Ocean  
Dipole Mode Index



POAMA15B

1982-2005

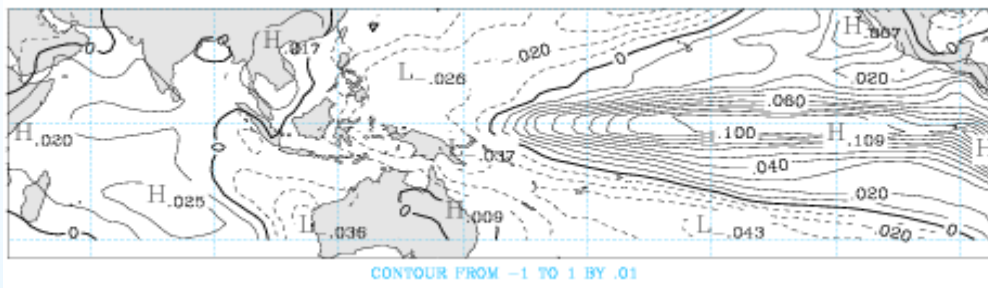
3 members mean

Skill at lead=5

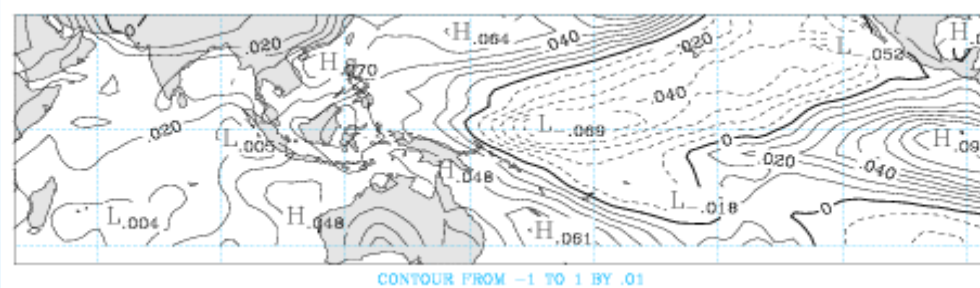
Dashed: persistence

## Correlation between the PCs from OBS and POAMA

SST EOF1



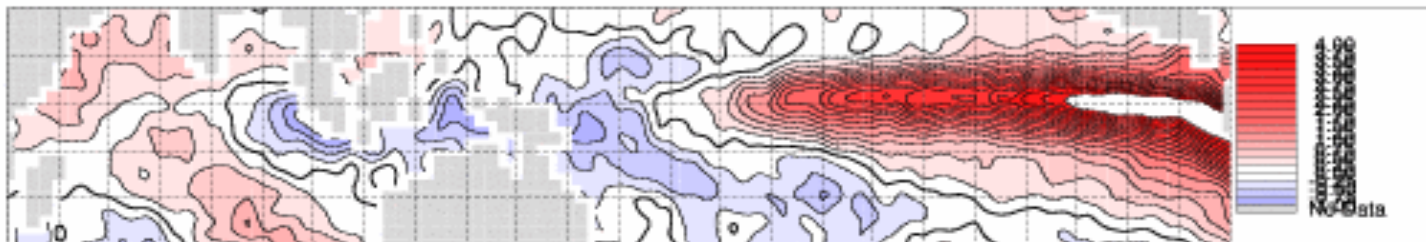
SST EOF2



	1 month lead	5 month lead	9 month lead
EOF PC1	0.98	0.77	0.67
EOF PC2	0.93	0.65	0.54

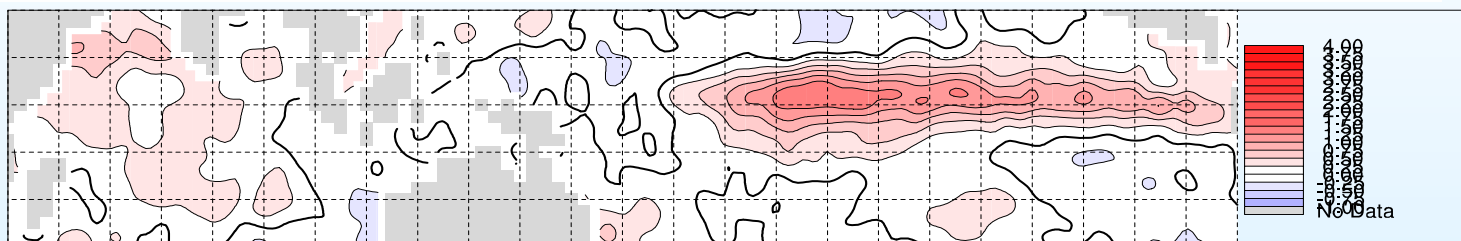
Wang and Hendon (2007) showed that EOF2 important for Australian Rainfall

# 1997 vs 2002 SST forecasts

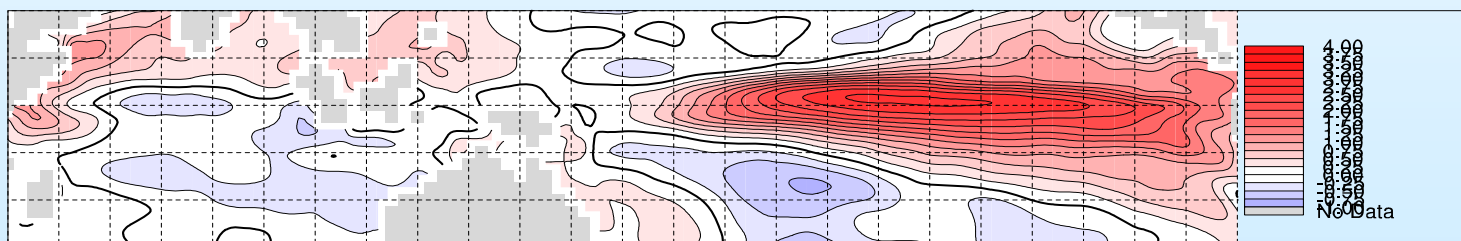


1997

OBS

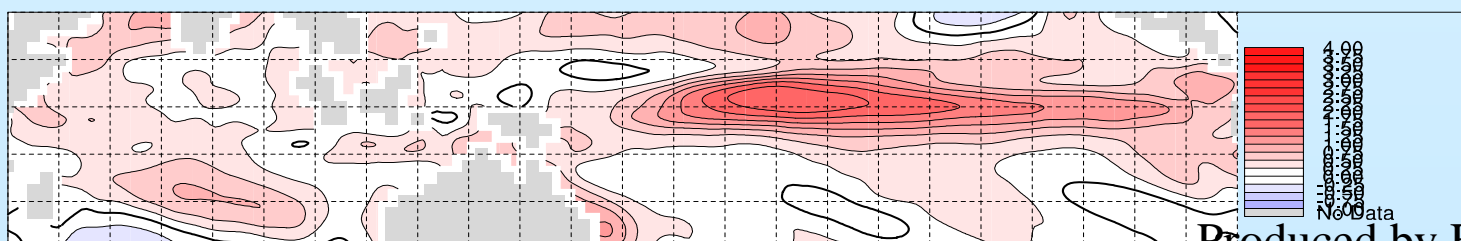


2002



SST anomaly predicted  
by POAMA 1.5a at LT3

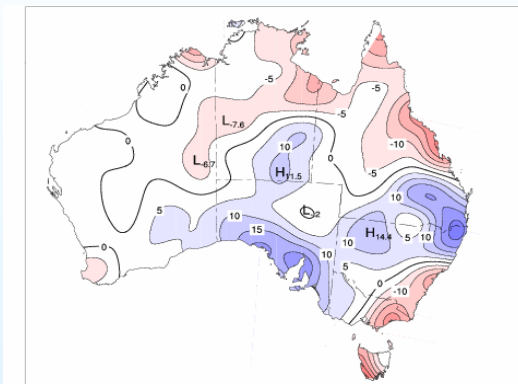
1997



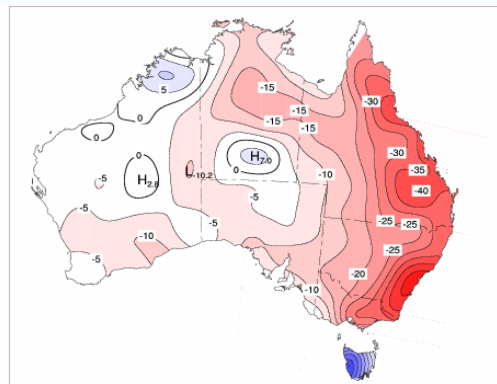
2002

# SON Rainfall anomalies during El Nino

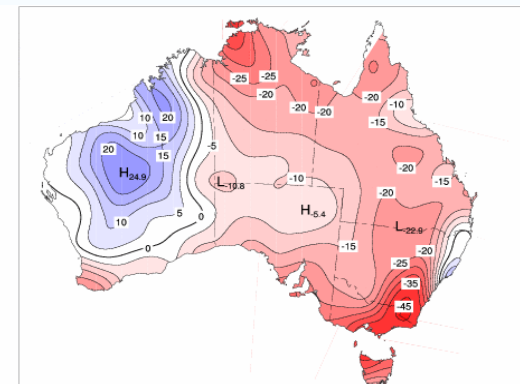
1997



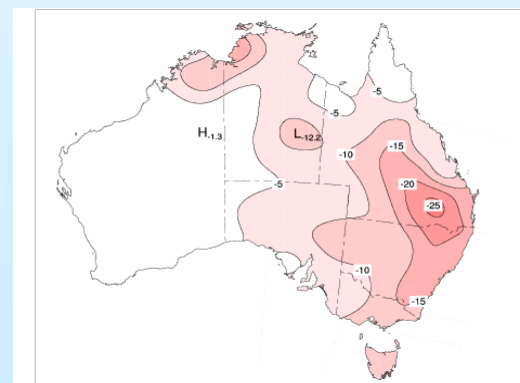
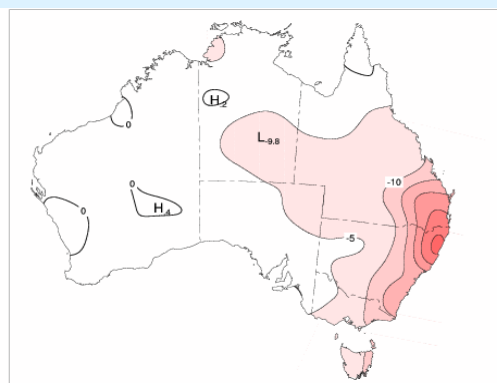
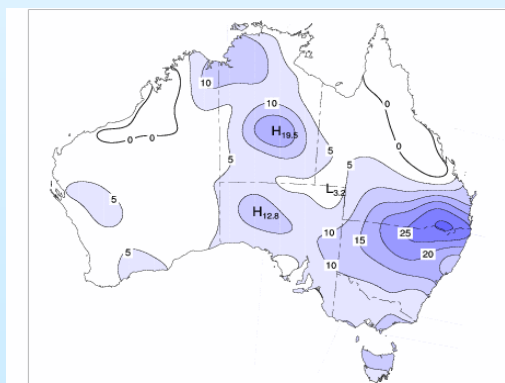
2002



2006

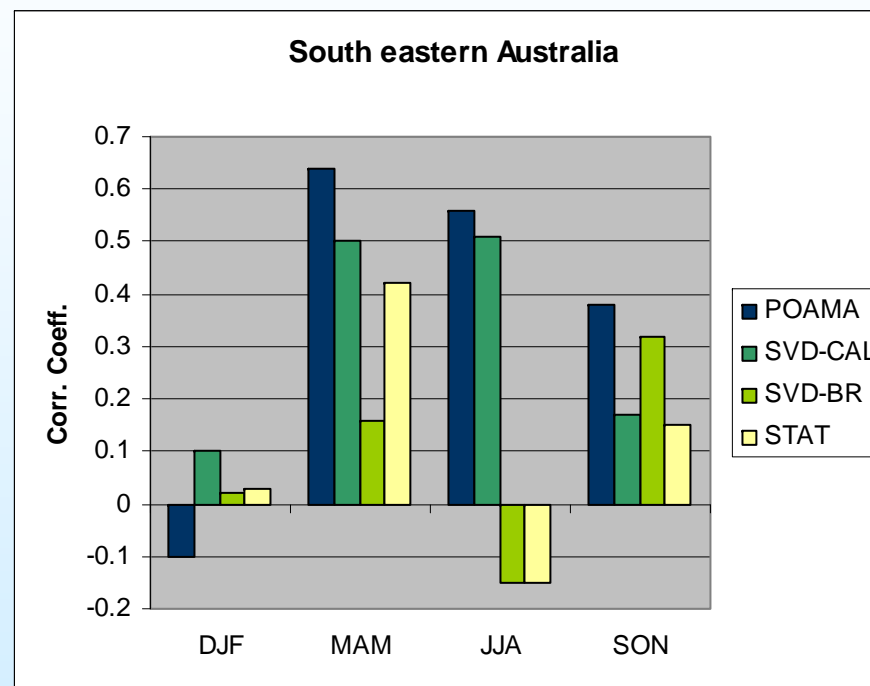
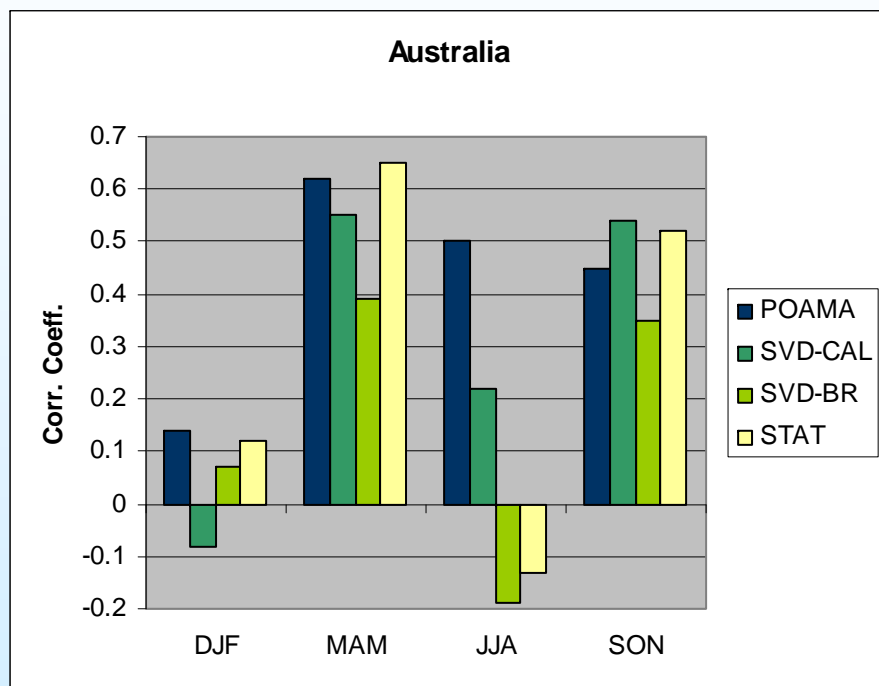


OBS



POAMA at LT0 (SON from Sep 1st Forecasts)

## Skill of dynamical, statistical-dynamical and purely statistical predictions (at lead-time 0 i.e. first 3 months)



SVD-CAL : Forecasting rainfall with POAMA predicted rainfall as predictor

SVD-BR : SST

STAT : SST observed in a previous month

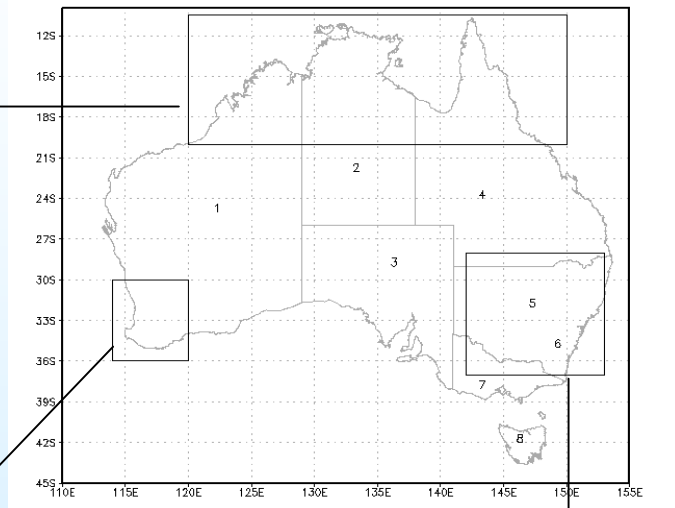
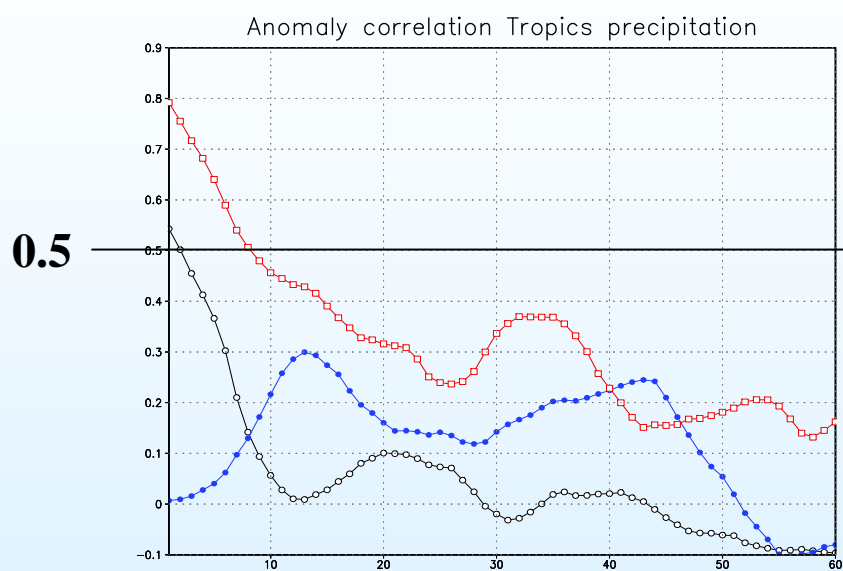
\* 5 predictors are used in multiple linear regression

# Intra-Seasonal Forecasts

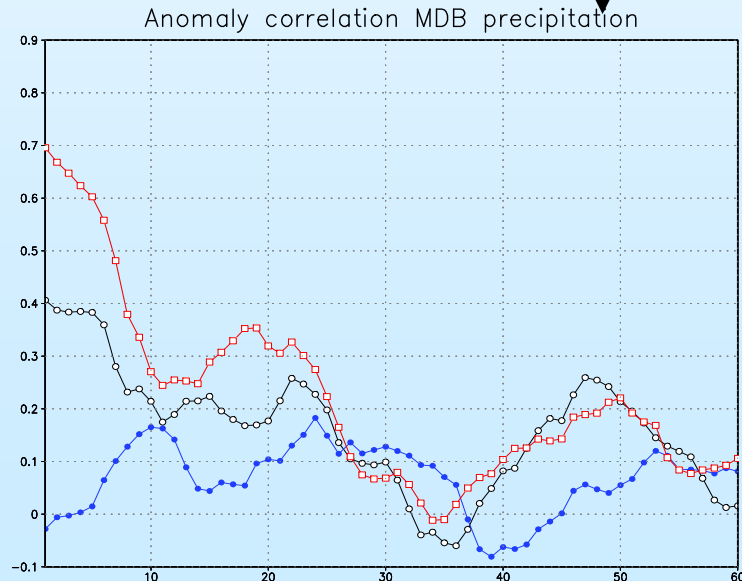
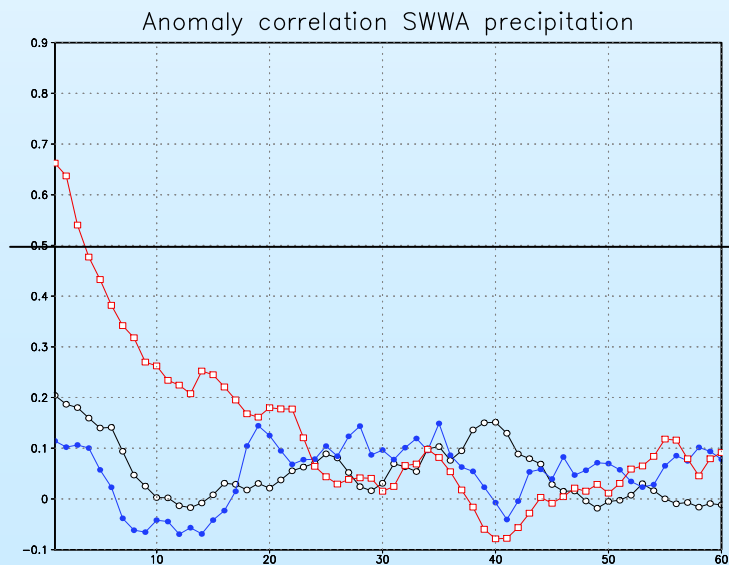
# Skill over Australia as a function of lead time (days): precipitation

3-member ensemble, weekly means (Debbie Hudson)

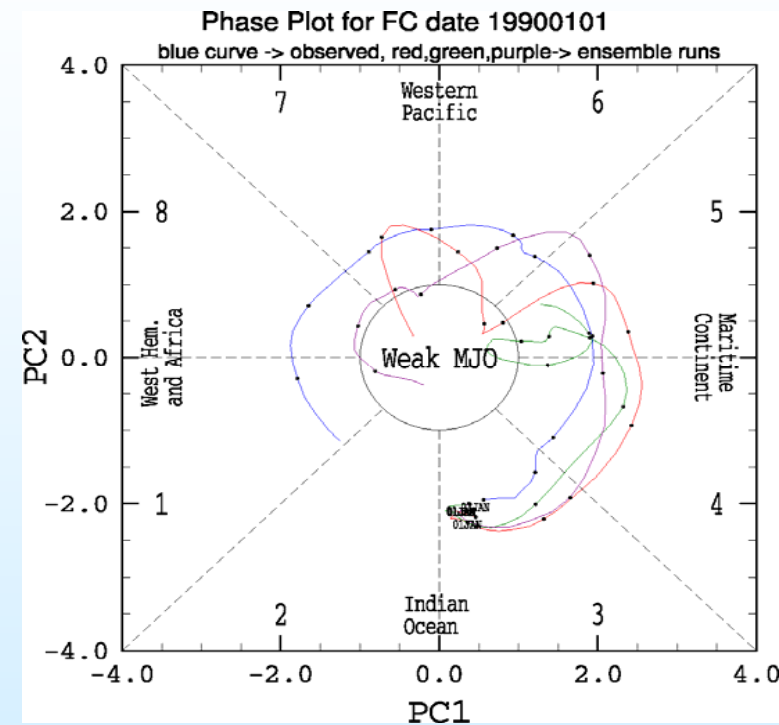
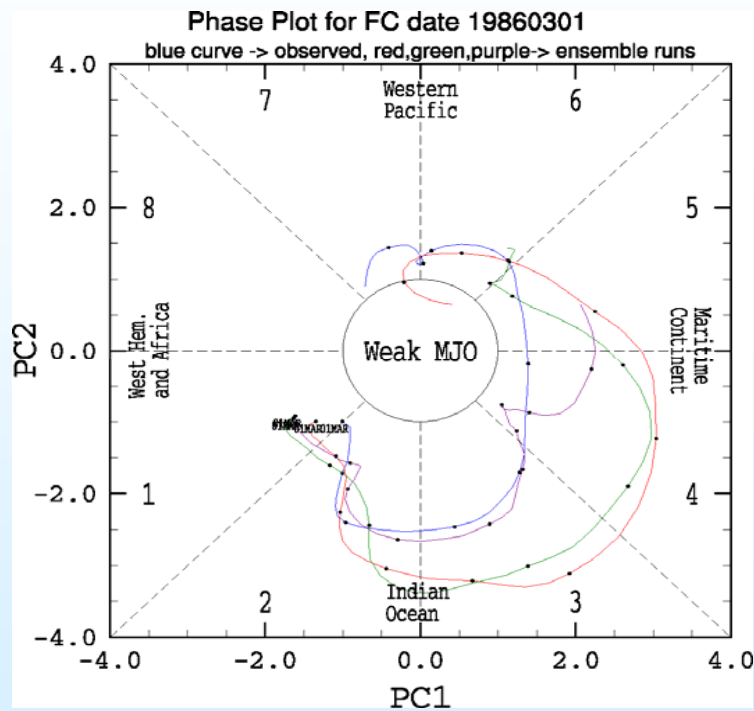
KEY: persistence p15a p15b



0.5



# Wheeler Phase diagrams of RMM12



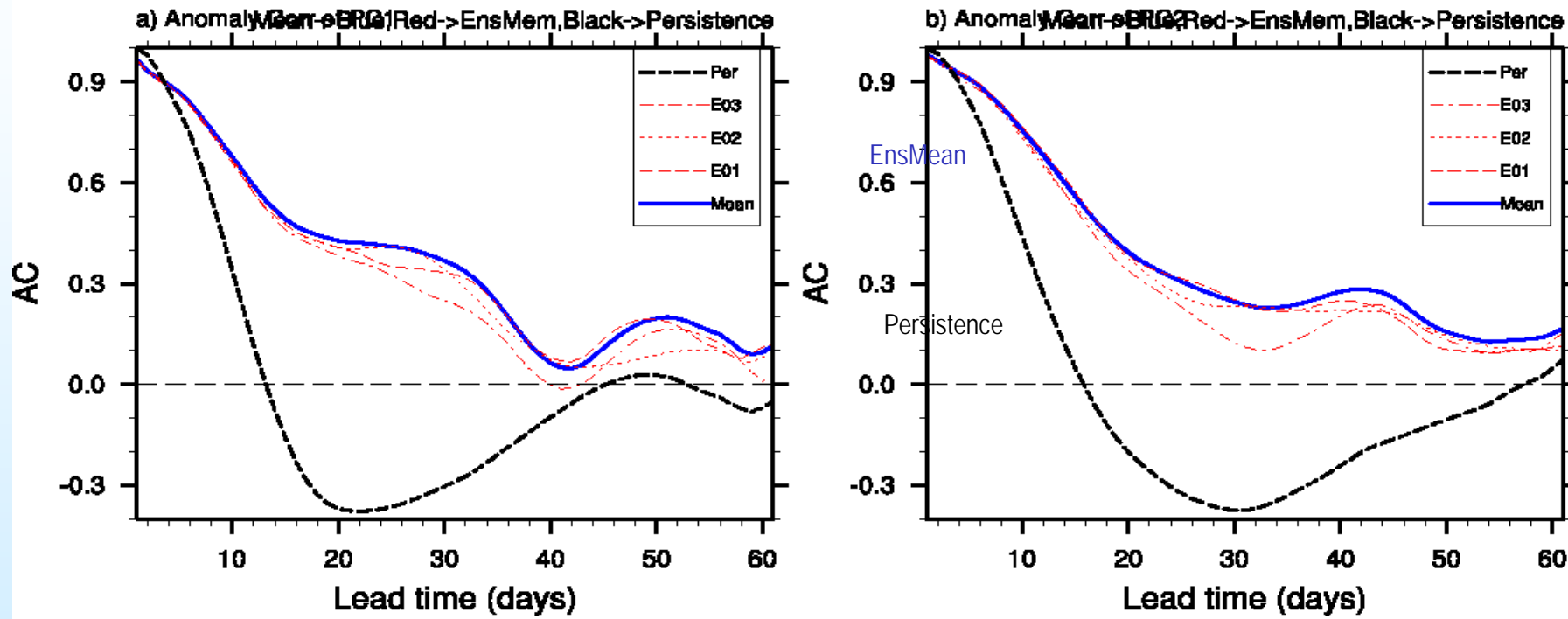
Two good forecasts:

- Blue is observed; the rest are POAMA hindcasts
- 50 days are plotted; the dots are 5 days apart
- By Harun Rashid

# Anomaly correlations

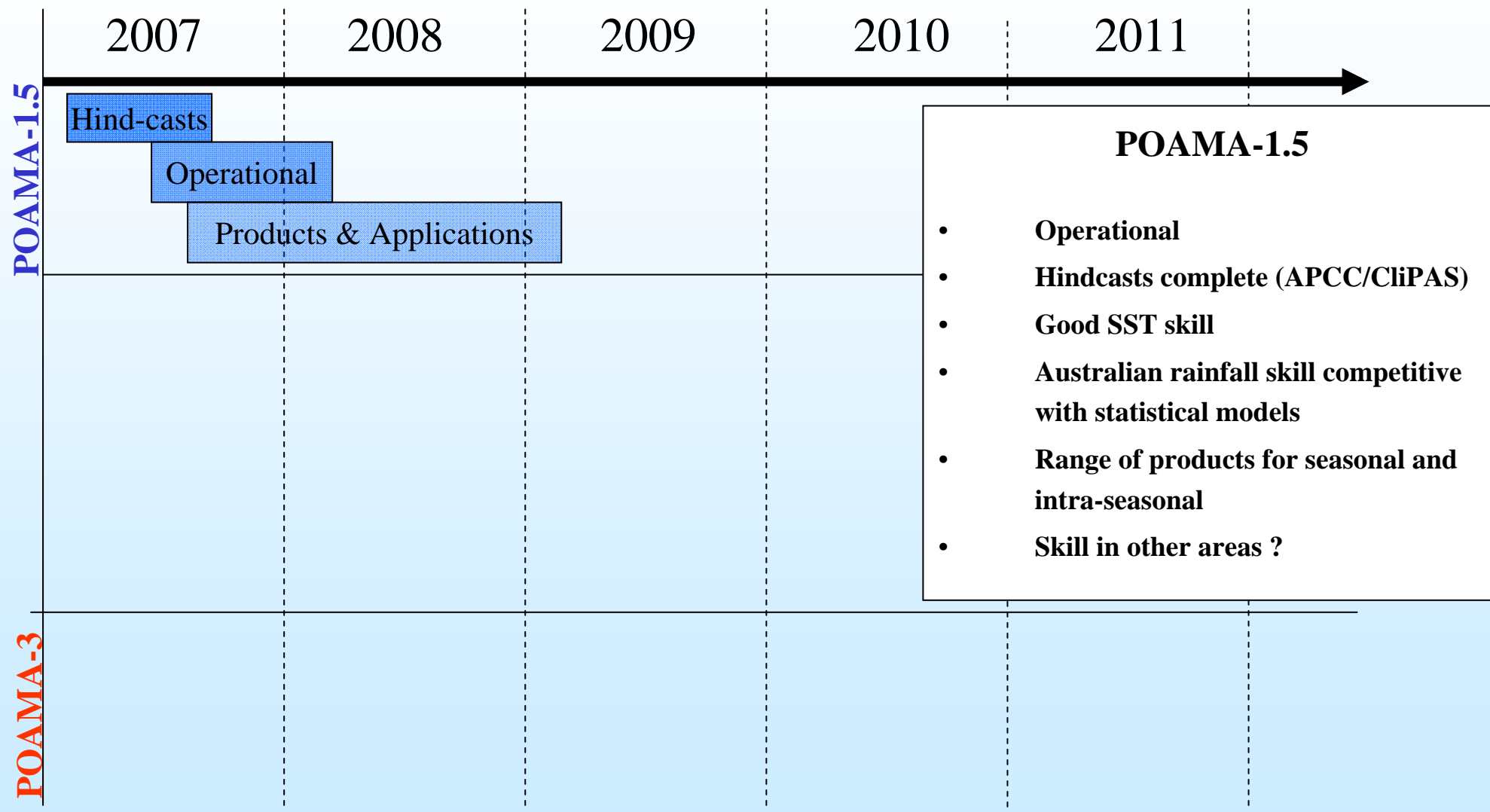
(All months together: 3 ens members)

## Anomaly Correlations and RMS errors of RMM12



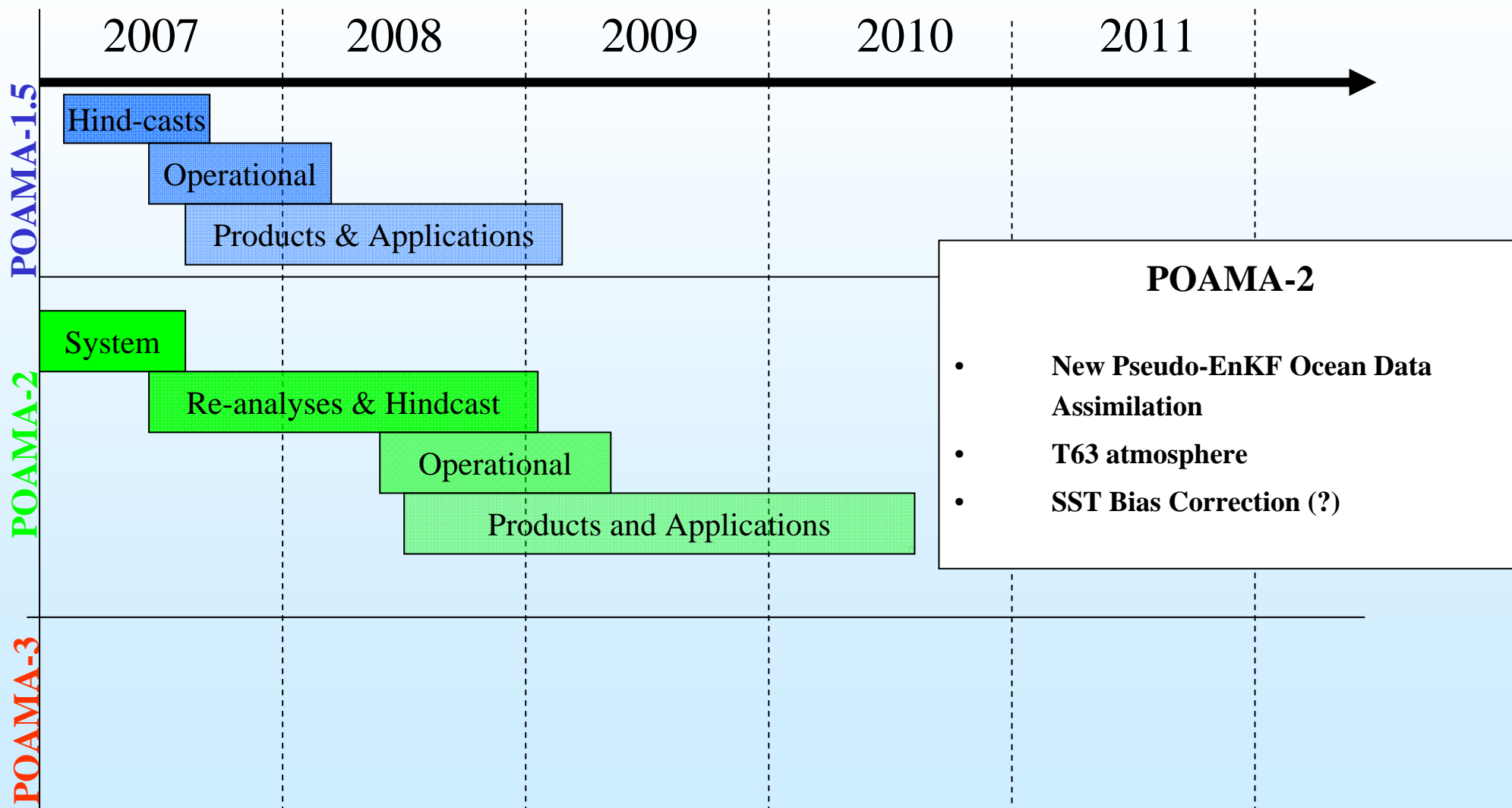
- Useful predictability (CorrCoef ~ 0.6) out to about 12-14 days
  - Longer than the persistence forecasts
  - Maybe be higher for specific seasons
- By Harun Rashid

## Summary/Future



<http://poama.bom.gov.au>

## Summary/Future



**POAMA-2**

- New Pseudo-EnKF Ocean Data Assimilation
- T63 atmosphere
- SST Bias Correction (?)

<http://poama.bom.gov.au>

## Summary/Future

