The new POAMA-2 system

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Notable Features

	POAMA-1.5	POAMA-2	
Model	Atmos BAM3 Low Res T47 Good MJO Large SST drift	Atmos BAM3.1 Convection improvement Ave Res T63 Good MJO Small SST drift Explicit bias correction	
Initialisation	Atmos/land – ALI (6hr) Perturbations - basic	Ocean PEODAS - nearly EnKF Atmos/land – ALI (daily) Salinity Ocean PEODAS Pert	

Based on 5 members with and without bias correction

What Got Better

- ENSO
- SST Bias
- Rainfall at longer leads (>3 months esp with bias correction)

What got Worse

- IOD – damped amplitude
- Regional first season rainfall and temperature
- Regional multi-week rainfall

On Balance – NOT BETTER THAN POAMA-1.5

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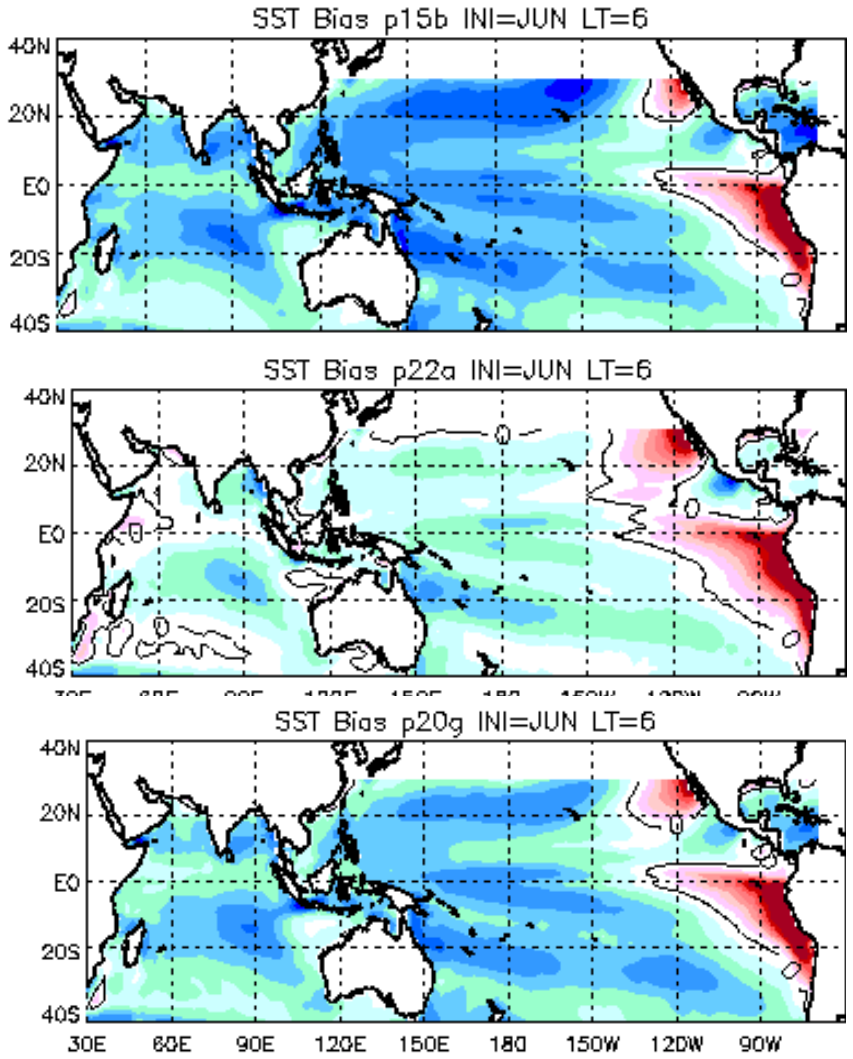
What Next ?

	POAMA-1.5	POAMA-2 Modified	
Model	Atmos BAM3 Low Res T47 Good MJO Large SST drift	~~Atmos BAM3.1~~ **Convection improvement** ~~Ave Res T63~~ Good MJO **Small SST drift** **Explicit bias correction**	
Initialisation	Atmos/land – ALI (6hr) Perturbations - basic	**Ocean PEODAS - nearly EnKF** ~~Atmos/land – ALI (daily)~~ Salinity Ocean PEODAS Pert	

SST Bias

6 month lead starting in June

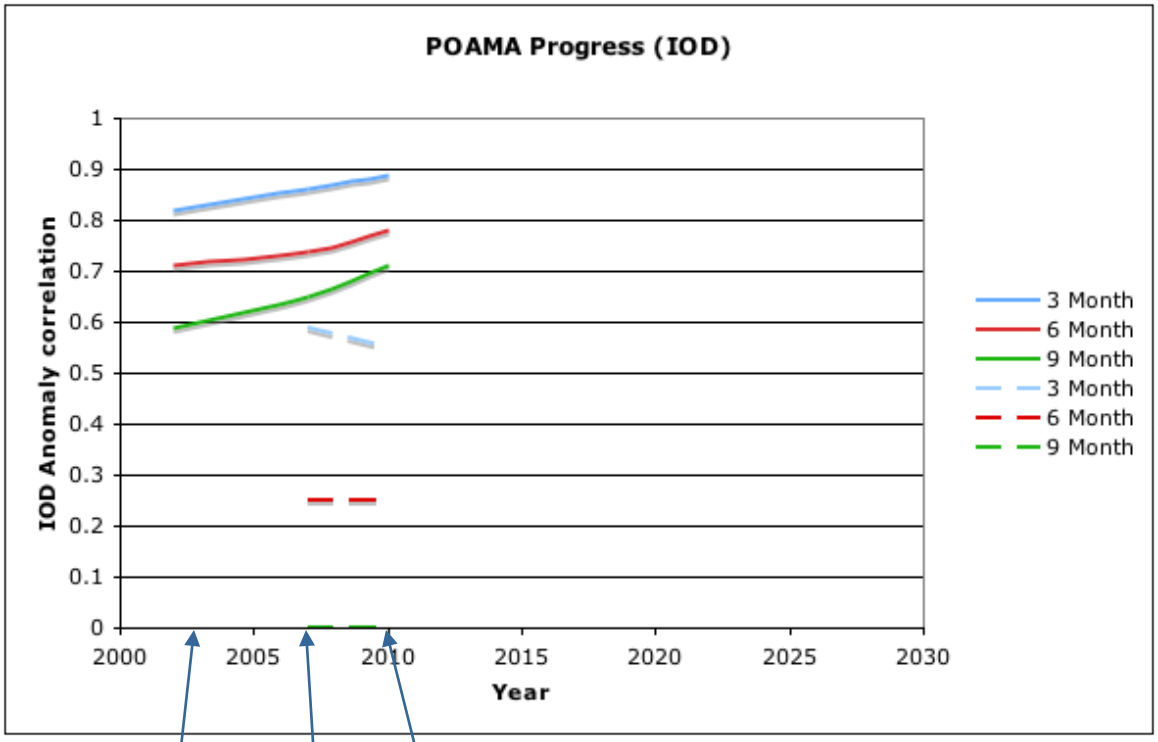


PIAMA15

POAMA-2

POAMA-2 Modified

POAMA Progress



V1

V1.5

V2 & modified

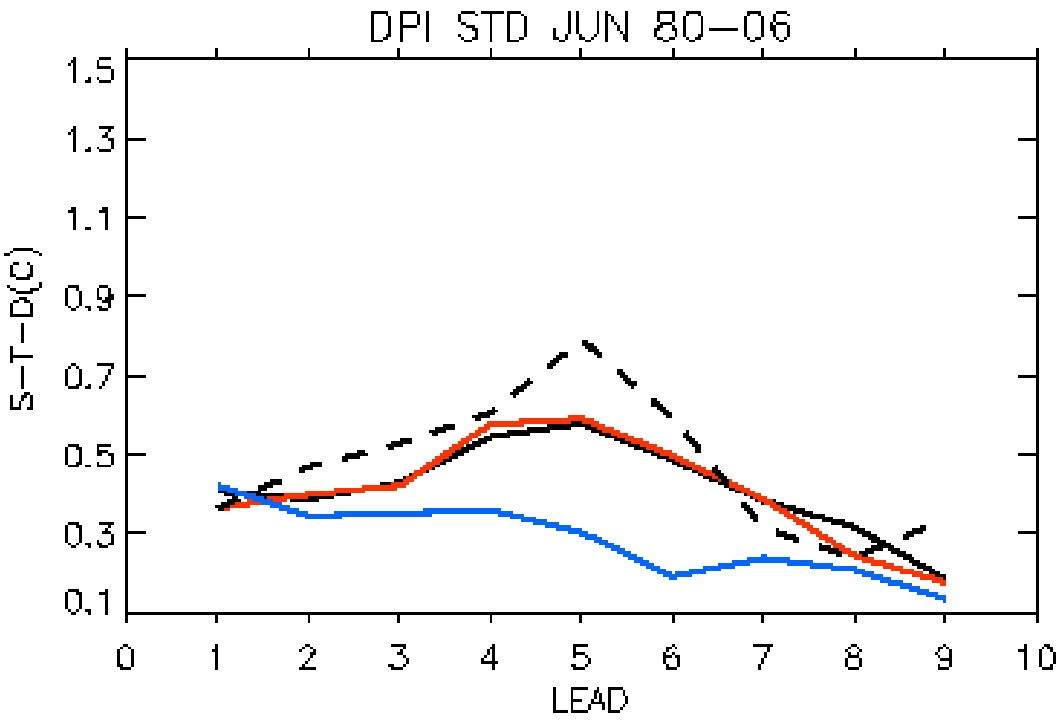
Improvements due to

- Increased supercomputing
- Improved forecast system (model, physics, initialisation strategy)
- (New observing networks ?)

Based on hind-casts up to 2001

Amplitude of IOD

June starts

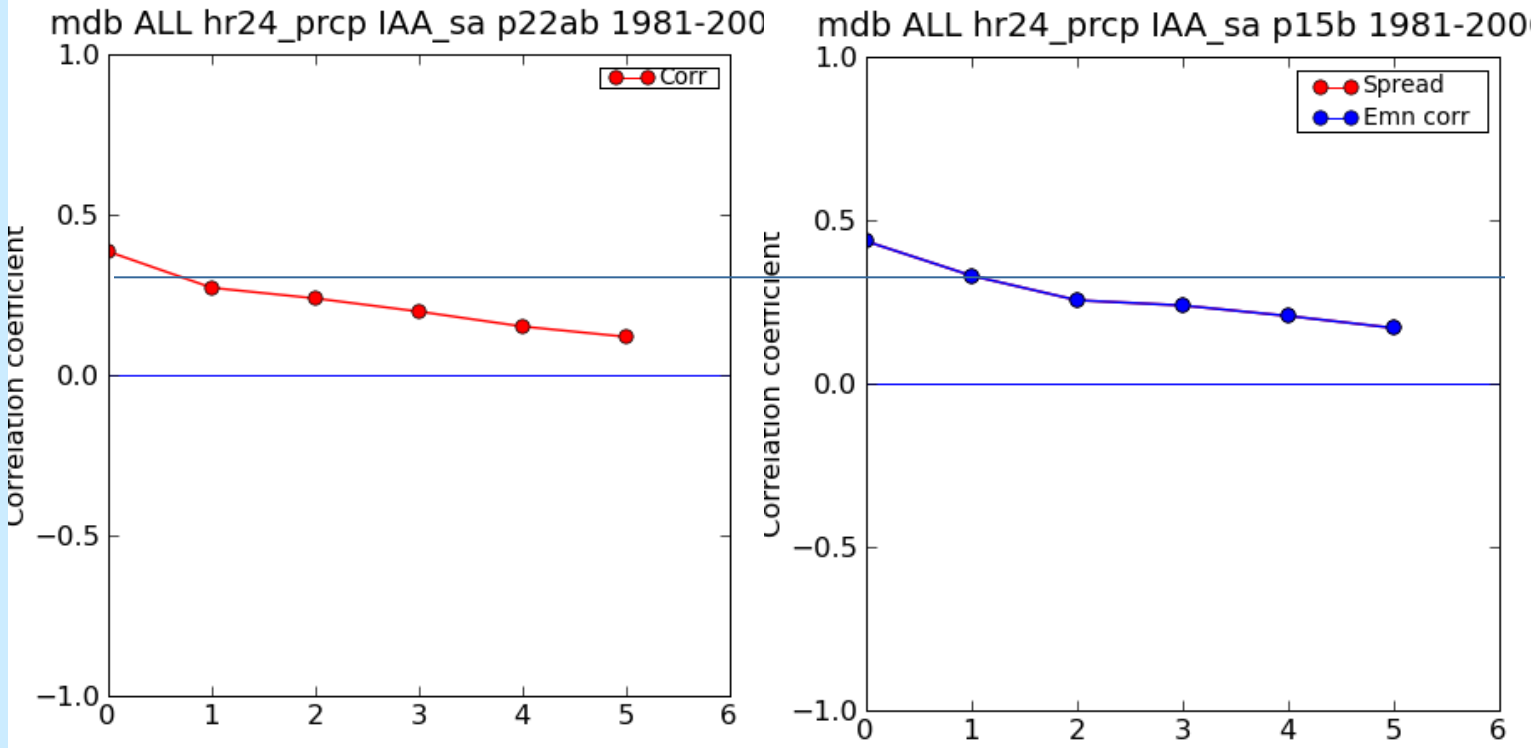


POAMA 1.5
POAMA-2
POAMA-2 M

Regional Rainfall Skill

SE Australia rainfall skill
(10 member)

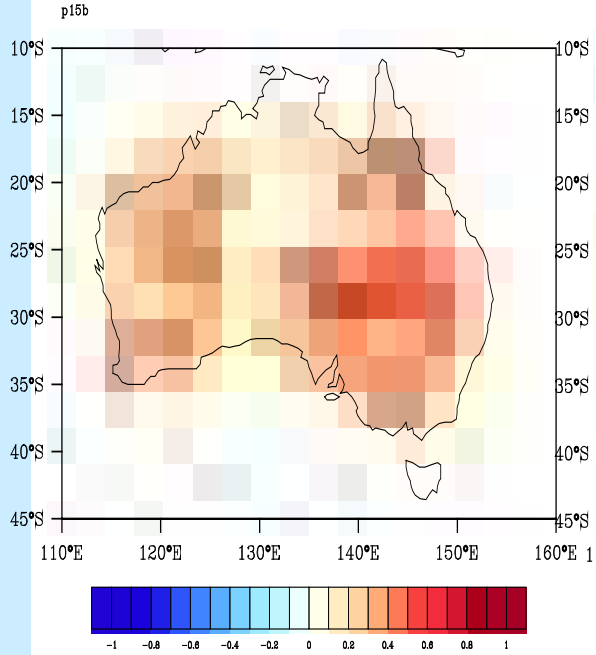
Blue – POAMA 1.5
Red – POAMA-2



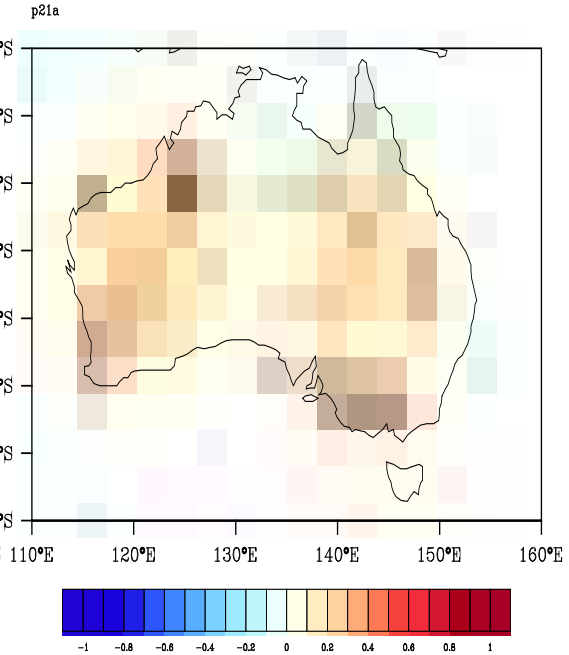
Regional Rainfall Skill

First season JJA Anomaly correlation (5-member)

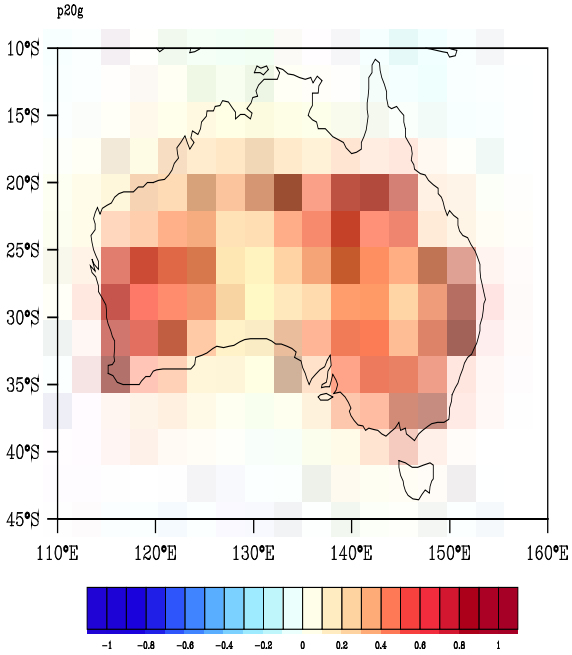
POAMA-1.5



POAMA-2



POAMA-2 Modified



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Other things need to look at

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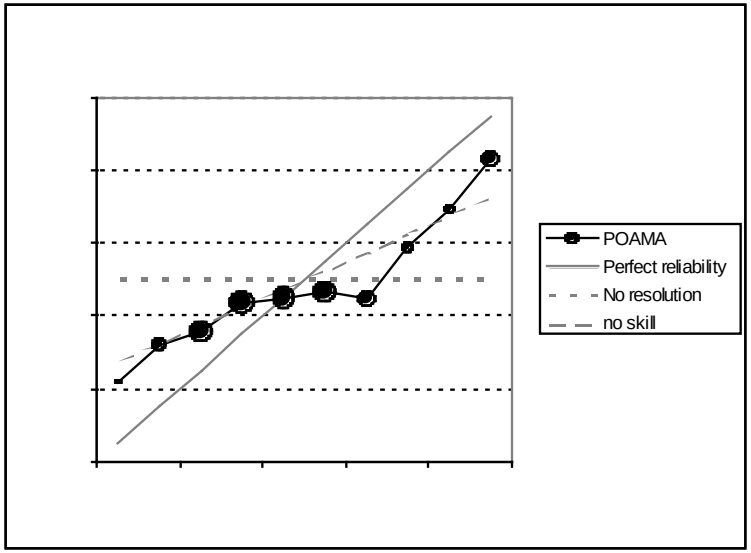
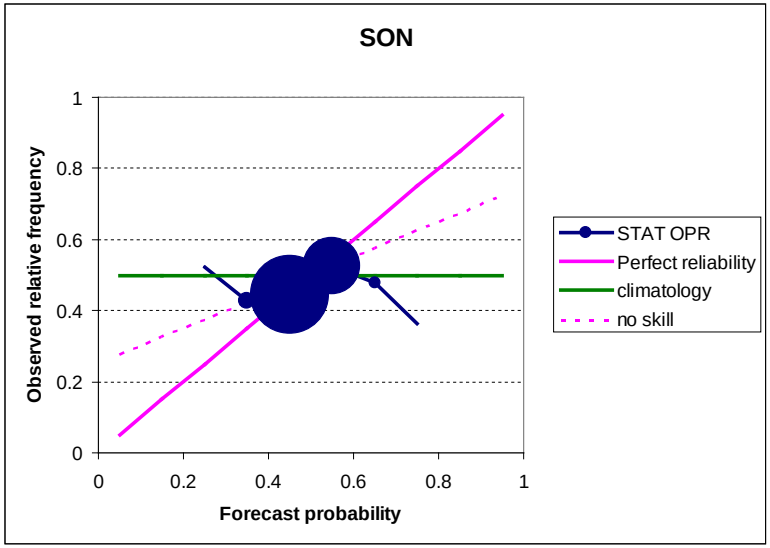
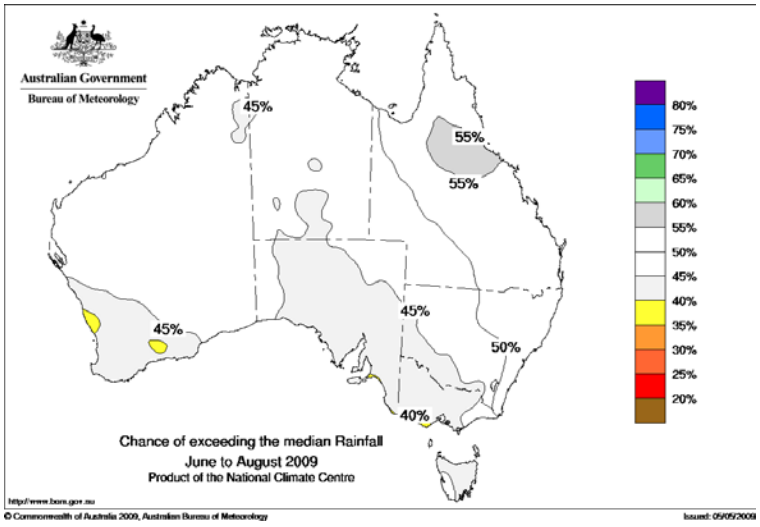
POAMA-1.5

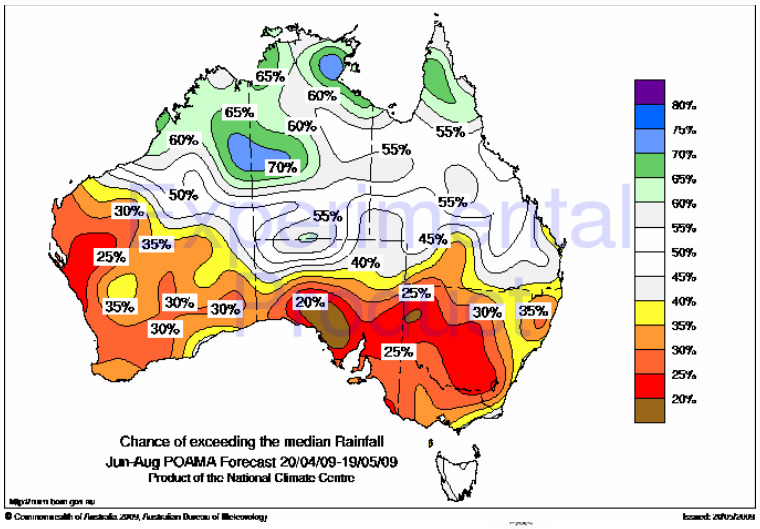


Operational Statistical



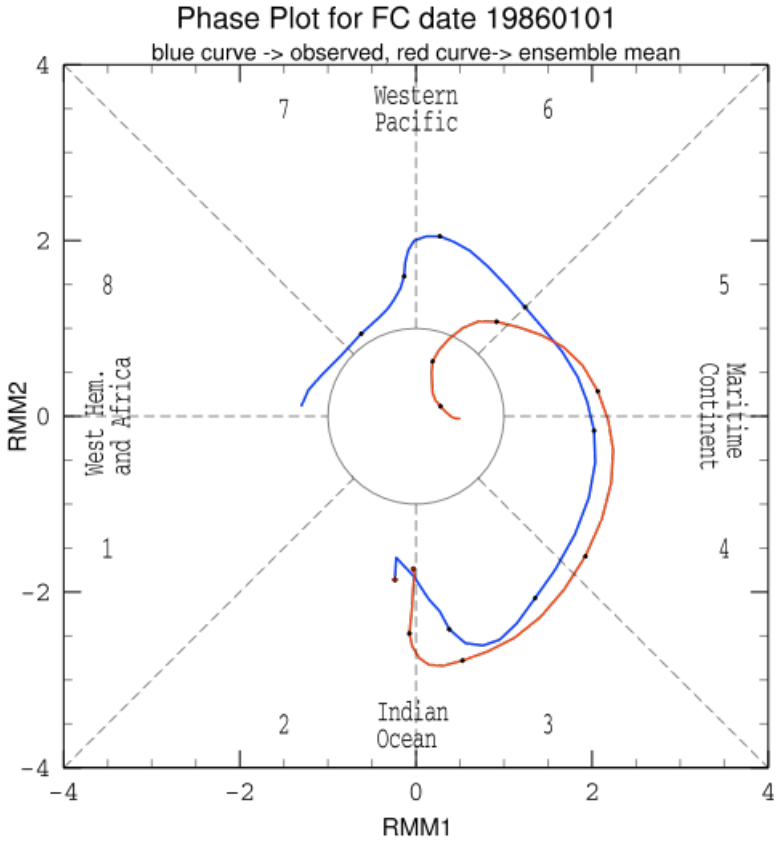
Issue: Reliability



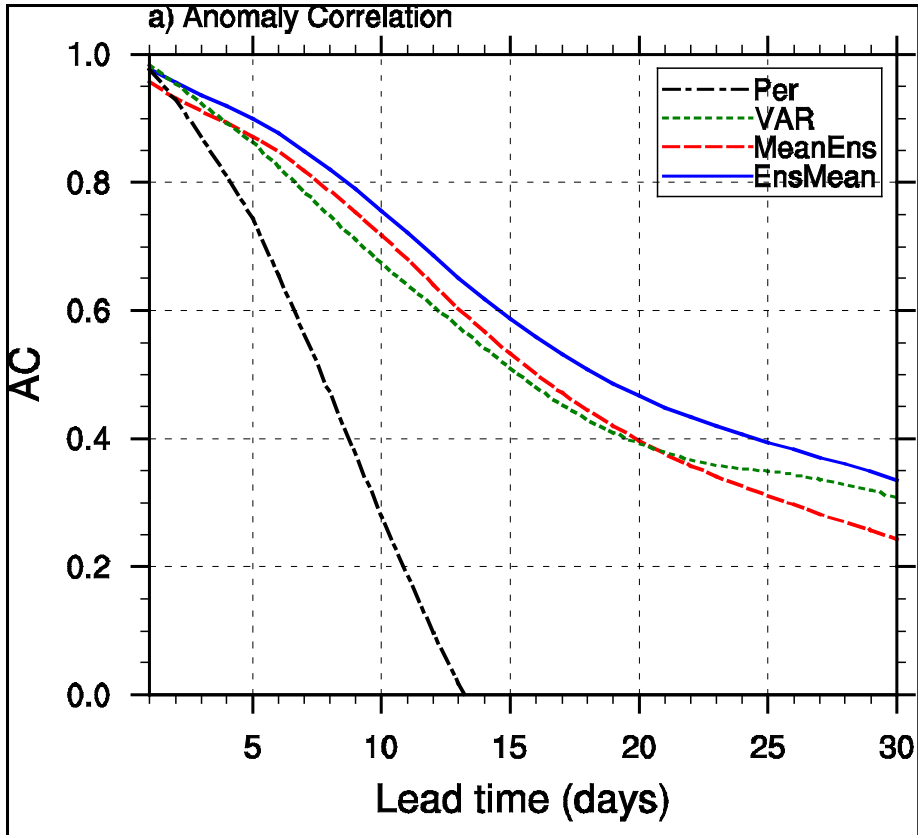


- Why so emphatic
- Model problem?
- Ensemble generation problem?
- Short term calibration
- Long term solution
- Improve ensemble generation

MJO Skill (POAMA-1.5)



Wheeler and Hendon (2004)
MJO Phase diagram



VAR = Maharaj and Wheeler (2005)
statistical autoregressive model

POAMA-2 Operation Configuration

Seasonal forecast:

30-60 member to 9-months every 15 days

Hind-cast set ~ 30-40 member once per month

Intra-seasonal:

10-20 member 6 week forecast every week

Hind-cast set 10-20 members every 10 days

Trials will start on new BoM supercomputer ~ early 2010

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Plans for further development

	POAMA-1.5	POAMA-2 Modified	POAMA-3
Model	Atmos BAM3 Low Res T47 Good MJO Large SST drift	~~Atmos BAM3.1~~ **Convection improvement** ~~Ave Res T63~~ Good MJO **Small SST drift** **Explicit bias correction**	UKMO UM + MOM4 At least N96+ L38 CABLE land surface
Initialisation	Atmos/land – ALI (6hr) Perturbations - basic	**Ocean PEODAS - pseudo EnKF** ~~Atmos/land – ALI (daily)~~ Salinity Ocean PEODAS Pert	Coupled ~pseudo EnKF + coupled perturbations