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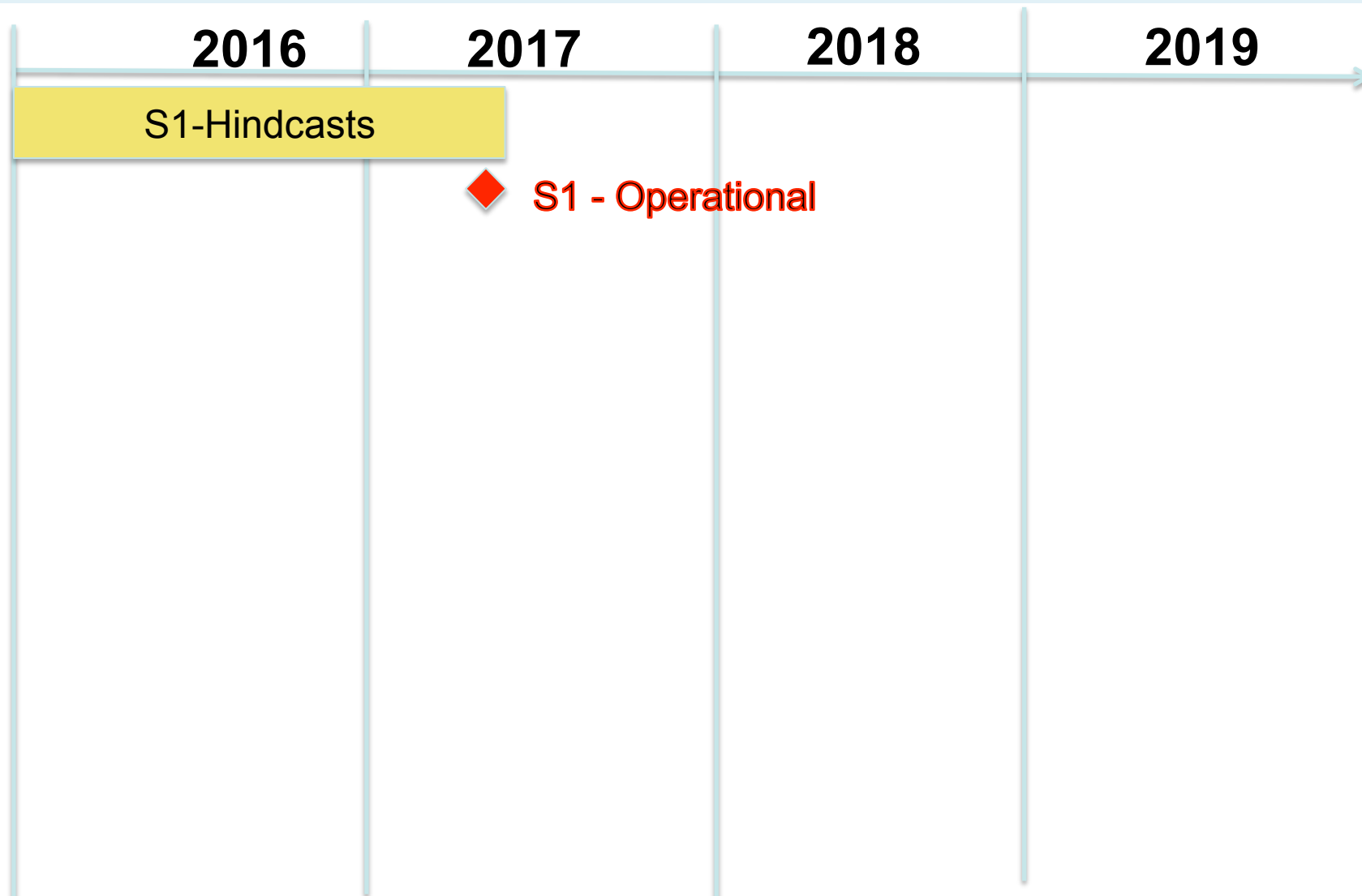
Seasonal forecasting

Oscar Alves

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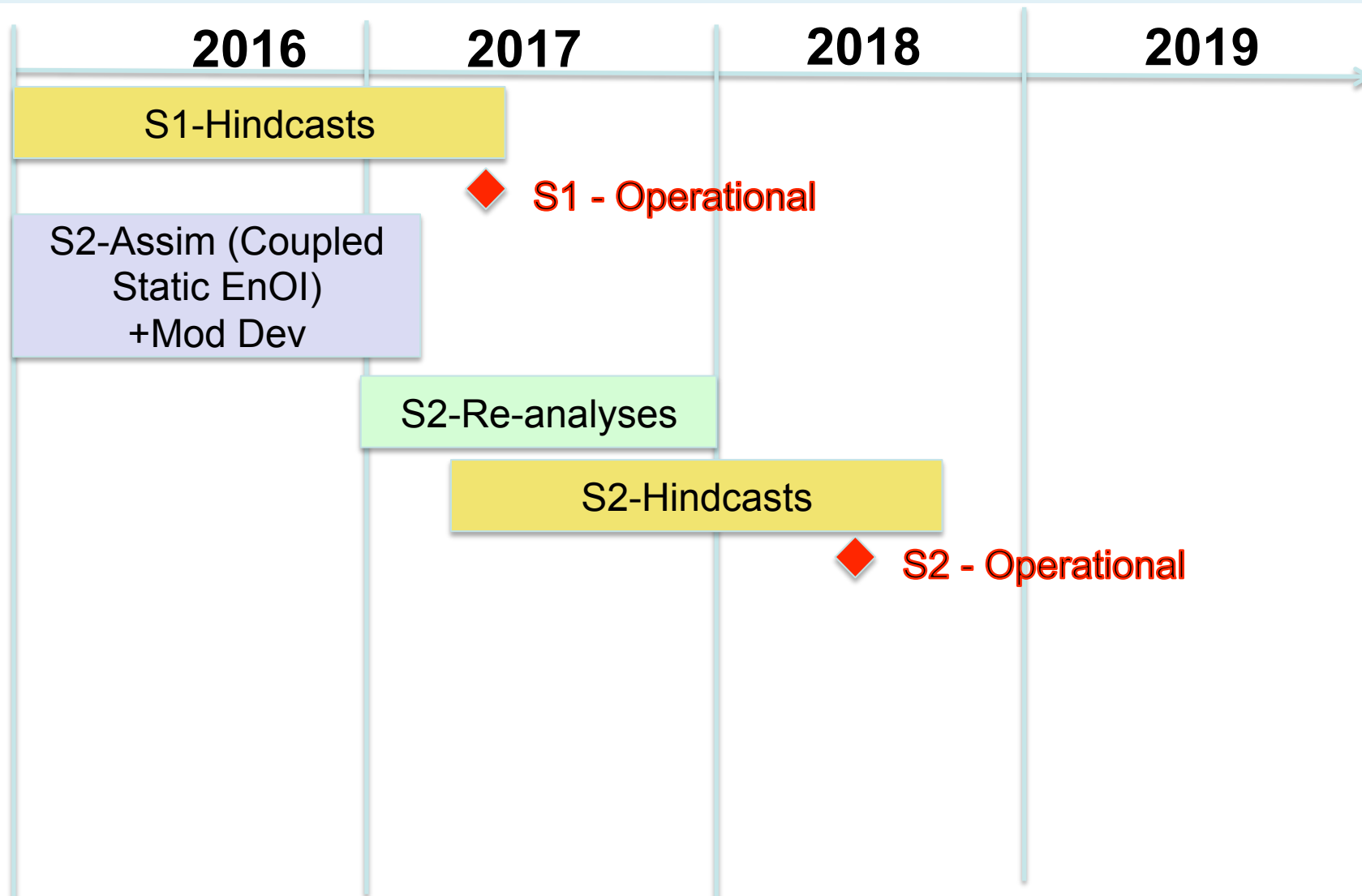


Progress



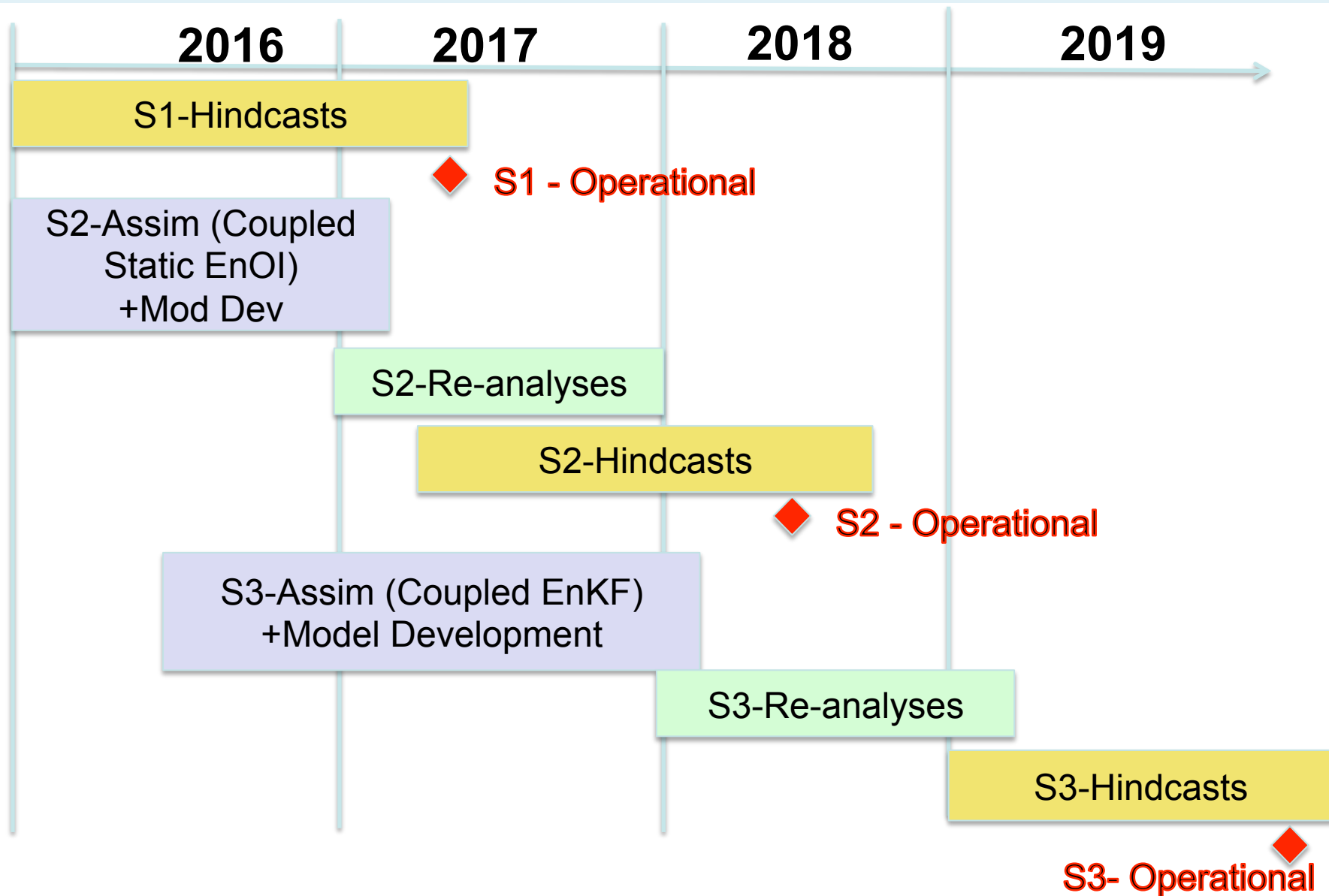


Progress





Progress



Model/Assim Configurations

	ACCESS-S1	ACCESS-S2	ACCESS-S3
Coupled model	UKMO GC2	GC2/GC3+local	GC3/4+local
Ocean Component	NEMO3.4 ORCA025 0.25deg 75 levels	NEMO3.5 + changes	NEMO ?
Other Models	Jules+CICE	Jules+CICE	Jules+CICE
Assimilation	From UKMO	Coupled EnOI	Coupled EnKF
Perturbation	Adhoc Static scheme	Bred Perturbations	From EnKF
Ice Initialisation	From UKMO	From EnOI or nudge to UKMO	From EnKF or nudge to UKMO
Land initialisation	Climatology	From Coupled EnOI	From EnKF

Model Development Focus

	ACCESS-S2	ACCESS-S3
Atmosphere	GC3: Reduce southern ocean bias Tune convection	GC3/4: Improved convection Improved convection (Jakob – Monash)
Ocean Component	GC3: NEMO3.5 + various changes Investigate ITF and role of shallow surface layers	UKMO ? Local ?
Ice	Various e.g. Antarctic ice shelf cavities and icebergs None Local	? None local
Land-surface	Jules improvements	Jules improvements Local vegetation



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ACCESS-S1

- ENSO skill improved, IOD Similar
- Skill over Australia – only modest improvement

Issues/focus for future work:

- Large bias in atmosphere in Maritime continent/Indian Ocean
- No land-surface initialisation
- Ocean data assimilation ??
- No initial condition ensemble perturbation scheme

Need understand:

- ENSO too weak in coupled model but too strong in seasonal forecasts (impact of IC ?)
- IOD variability too strong in forecast

Multi-year prediction

- Target studies e.g. La Nina following El Nino

Local Hindcasts – ACCESS-S1

23 years (1990-2012) (compared 14 from UKMO and 30+ from POAMA-2)

10 Member Ensemble (compared 3 from UKMO and 33 from POAMA-2)

4 times per month (1st, 9th, 17th, 25th)

Completed (1st July, Aug, Nov, Feb)

Rest to be done by end 2016

Available to external research projects (on NCI)



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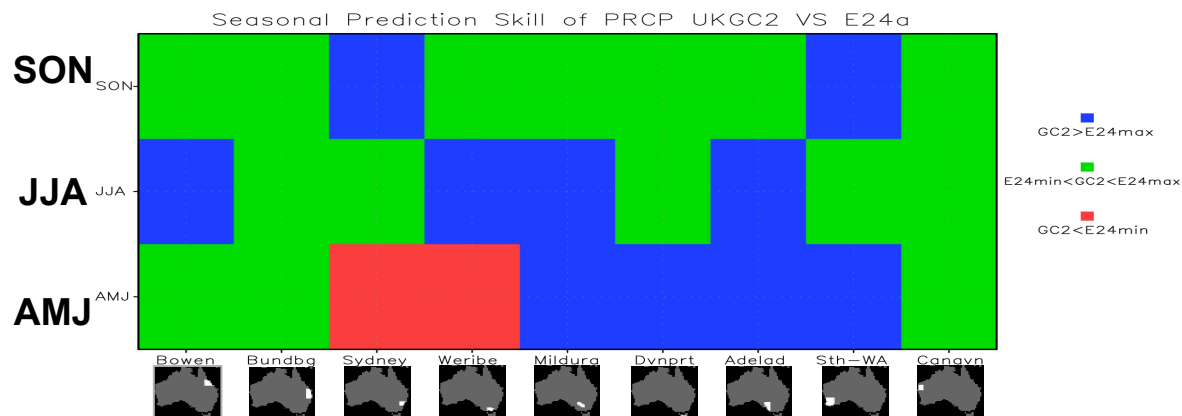
UKMO GC2 vs POAMA-2 Skill

(Based on UKMO hindcasts over 14 years)

Blue – GC2 better Green – Cannot tell Red – POAMA-2 Better

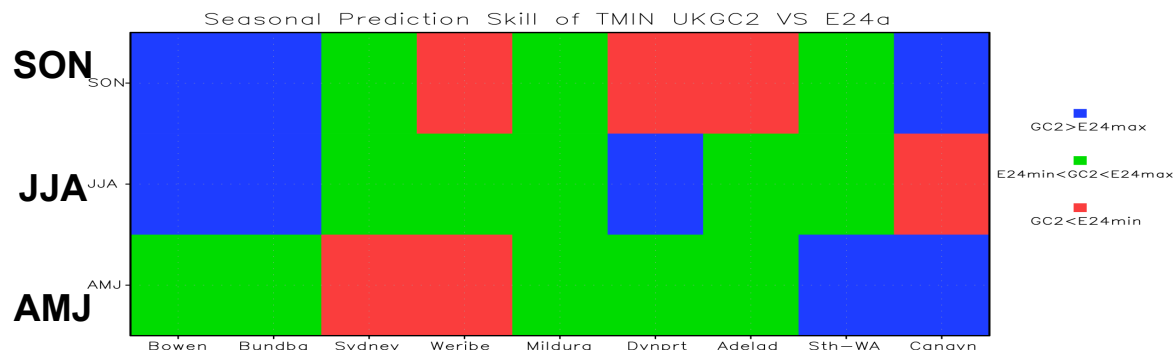
First Season Rainfall

for different Horticultural
Regions and Seasons



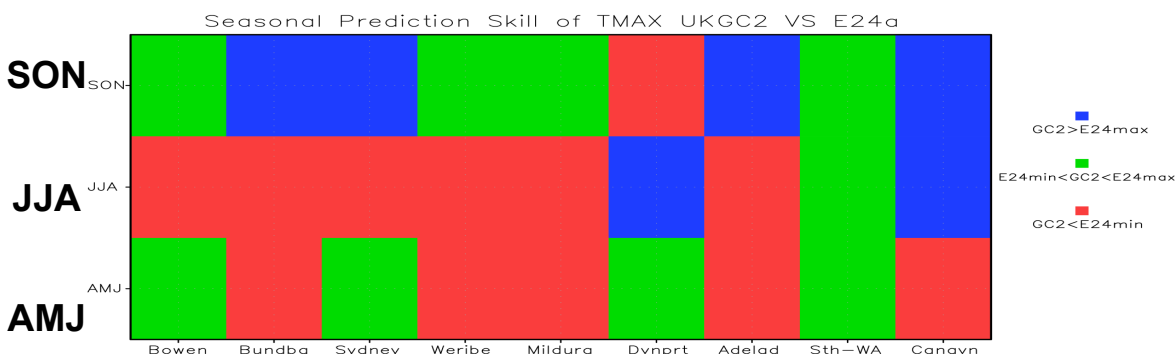
First Season Tmin

for different Horticultural
Regions and Seasons



First Season Tmax

for different Horticultural
Regions and Seasons





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UKMO GC2 vs POAMA-2 Skill

(Based on UKMO hindcasts over 14 years)

Blue – GC2 better

Green – Cannot tell

Red – POAMA-2 Better

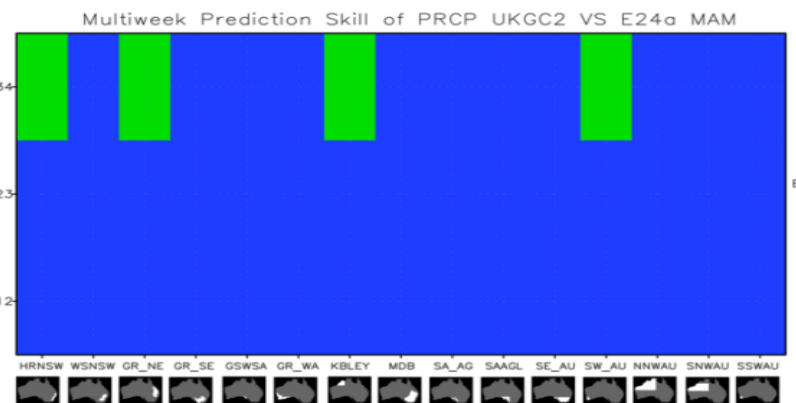
Multiweek Rainfall

For different Regions
and and lead times

Week 3&4

Week 2&3

Week 1&2



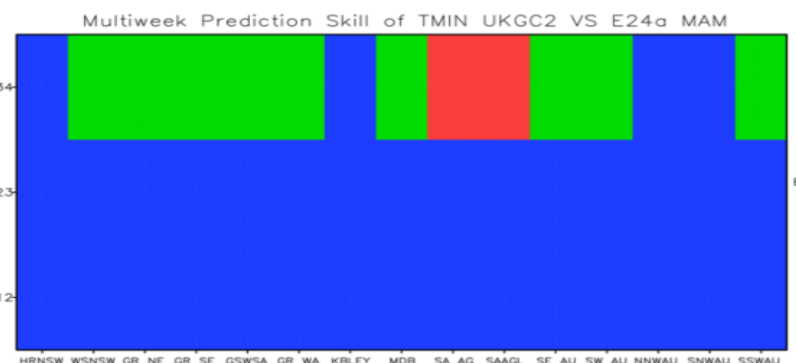
Multi-week Tmin

for different Regions and
Seasons

Week 3&4

Week 2&3

Week 1&2



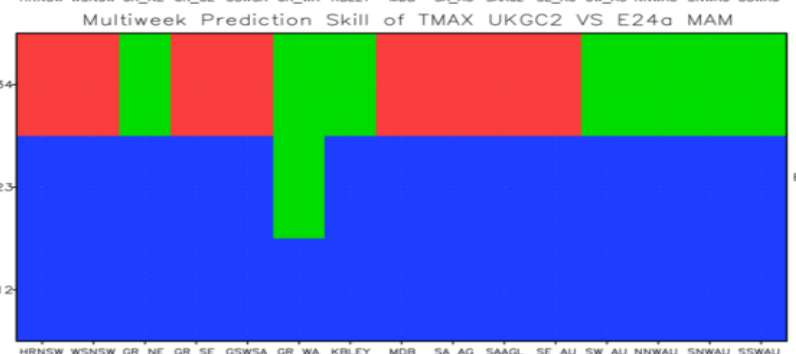
Multiweek Tmax

for different Regions and
Seasons

Week 3&4

Week 2&3

Week 1&2

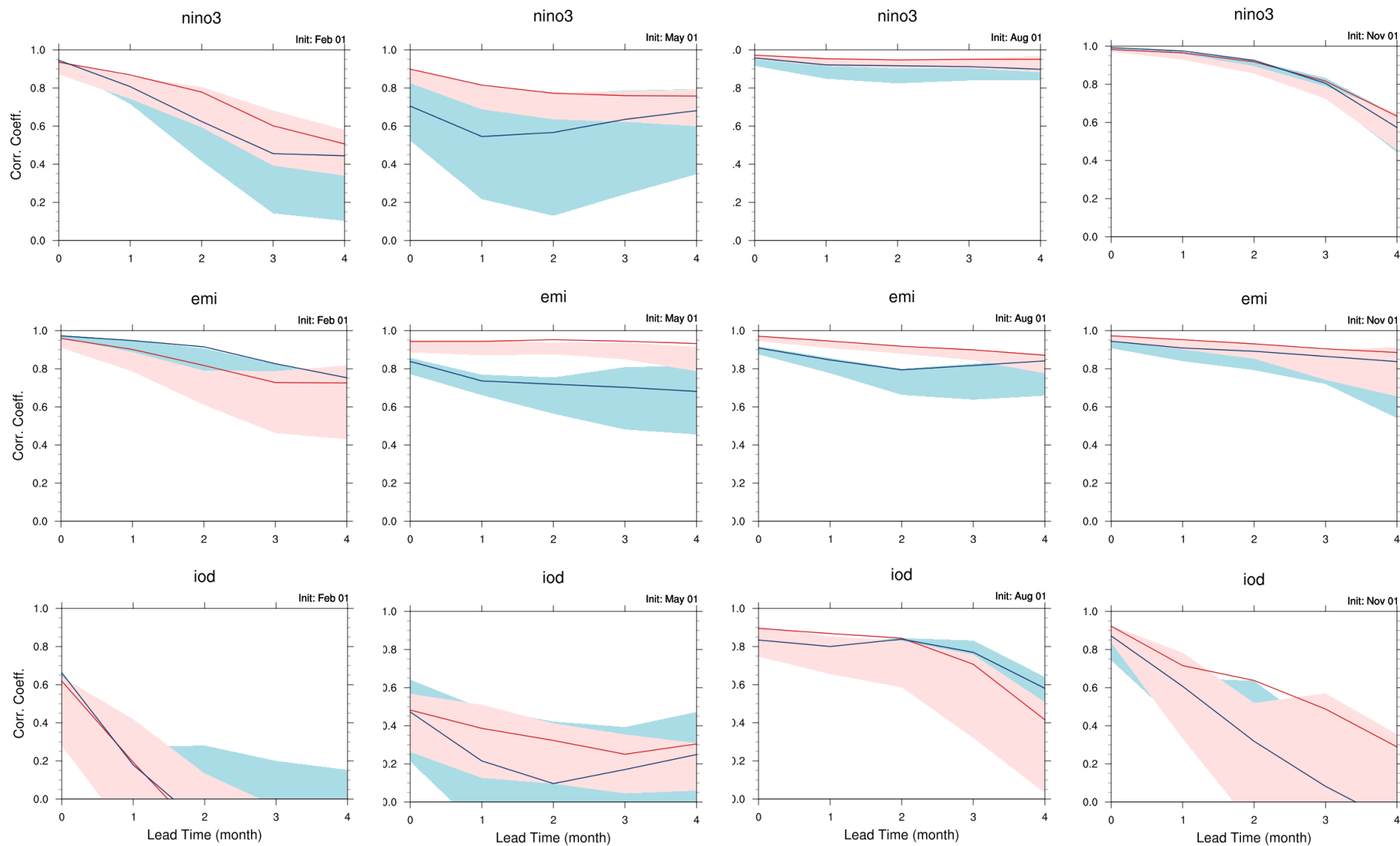




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ENSO/IOD Skill

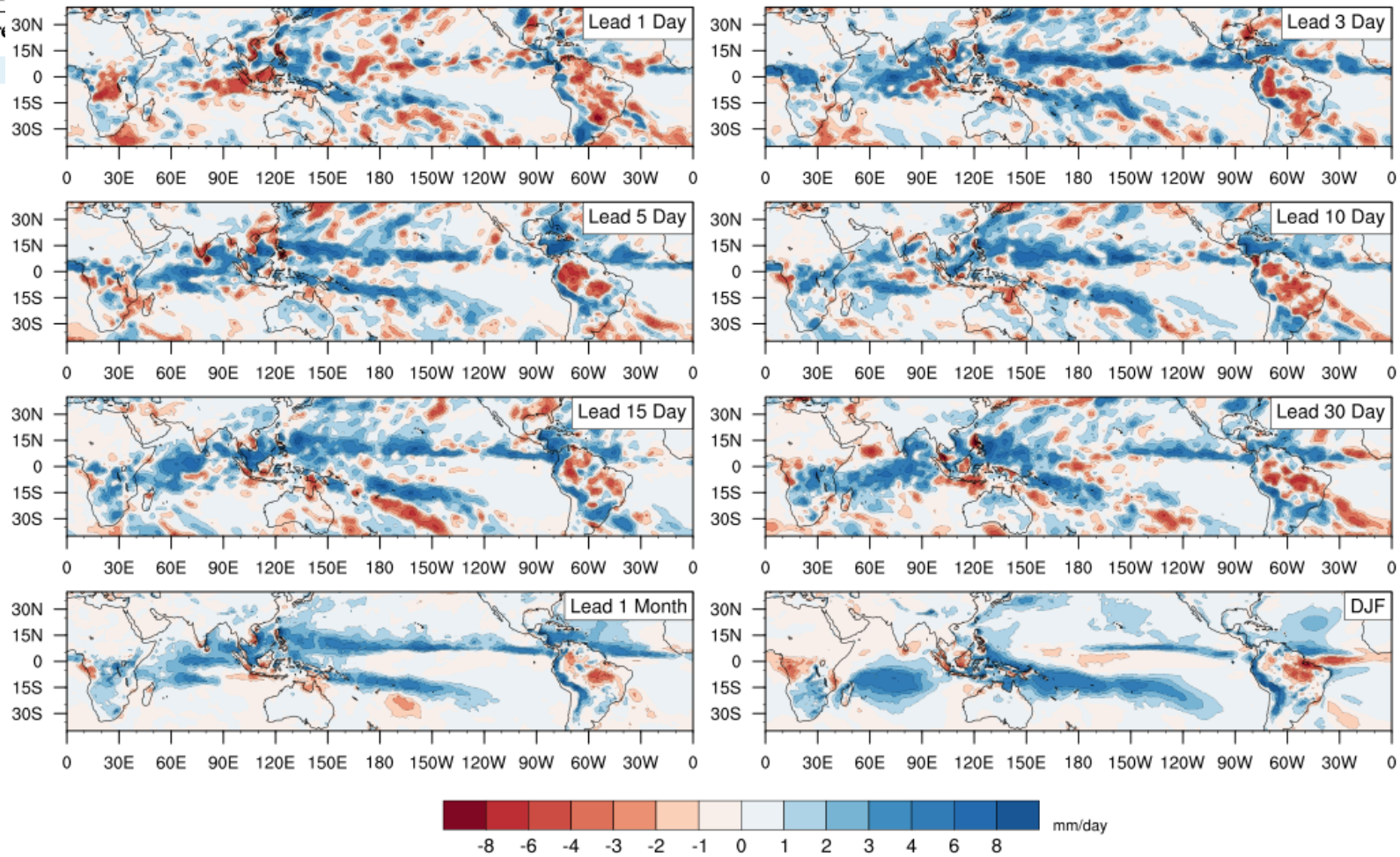
RED – ACCESS-S1 Blue/Green-POAMA2



Precipitation Bias: IC 1 Nov

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Bur





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Summary

Skill

- ENSO skill improved, IOD Same
- Skill over Australia – only modest improvement
- Statistical significance still an issue with 11 ensembles and 23 years

Issues/focus for future work

- Large bias in atmosphere in Maritime continent/Indian Ocean
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Need understand

- ENSO too weak in coupled model but too strong in seasonal forecasts (impact of IC ?)
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Ocean Model

- At this point ocean model development/improvement is low priority
- Understand ITF and role of shallow layers