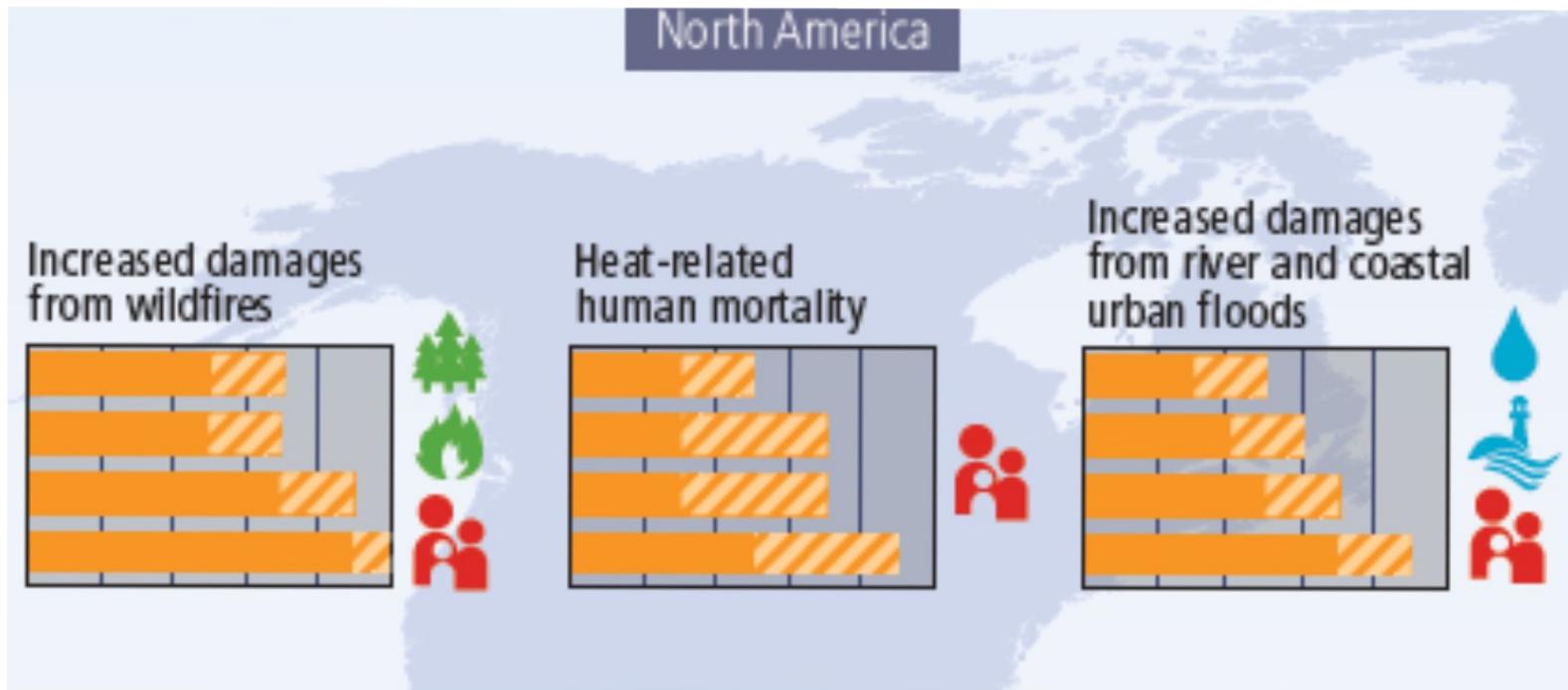


# North America and Australasia CORDEX projects using RegCM

Taleena Sines, Erika Coppola, Filippo Giorgi  
[tsines@ictp.it](mailto:tsines@ictp.it)

First, North America...

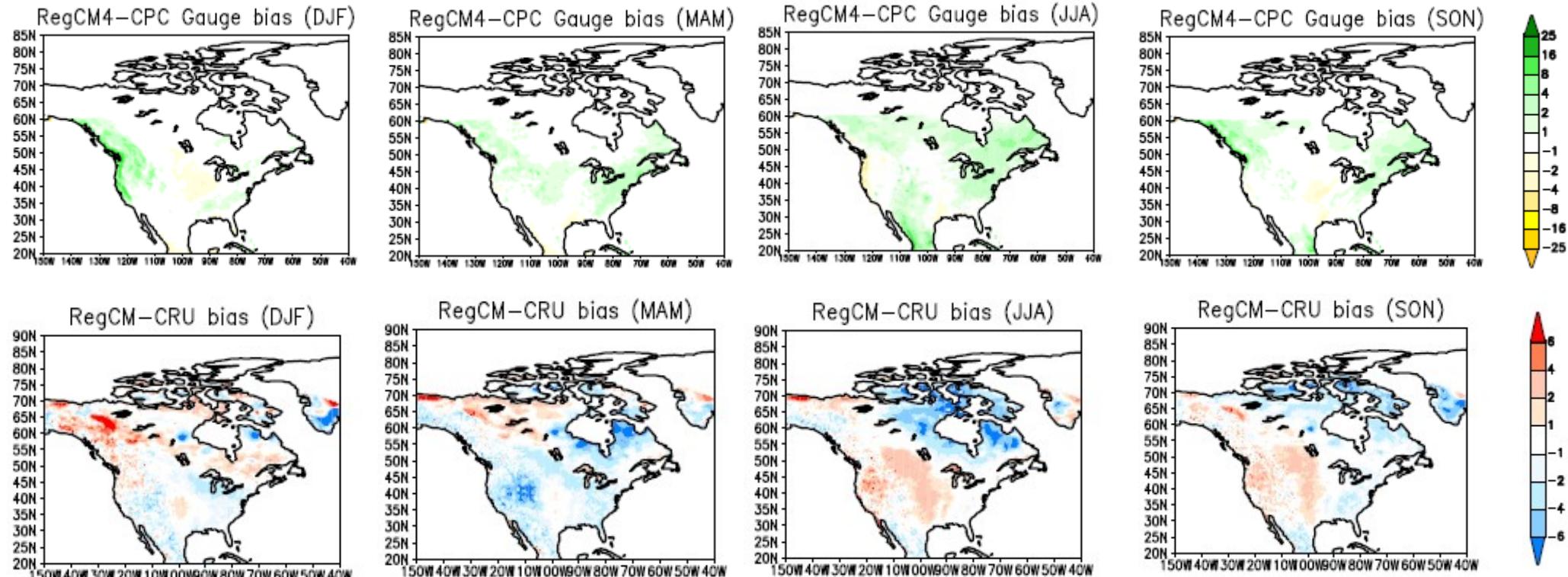
## IPCC 5<sup>th</sup> Assessment – Risks



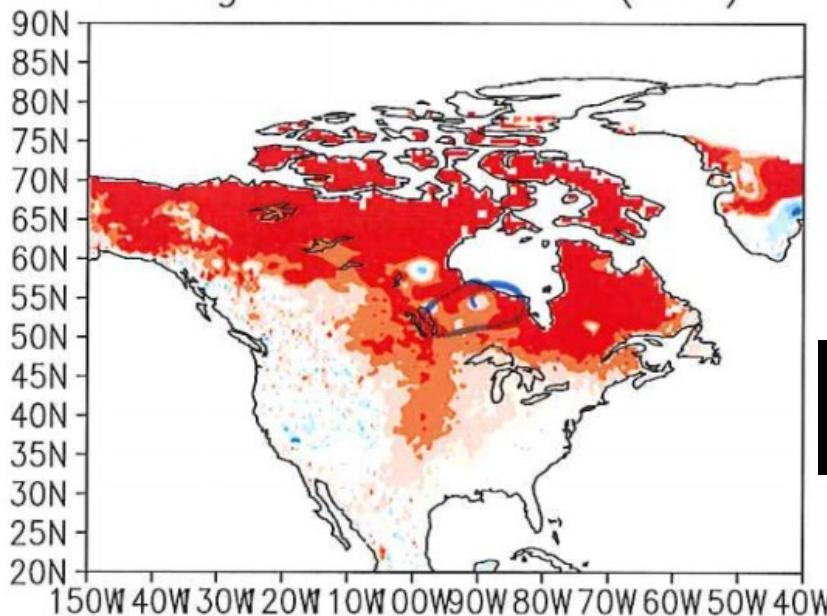
# Physics Configuration

Cumulus	Tiedtke (1996) L Tiedtke(1996) O
Boundary Layer	UW PBL (Bretherton and McCaa, 2004)
Land-Surface	CLM
Ocean Flux	Zeng et al (1998)
iy	271
jx	375

## Configuration Test



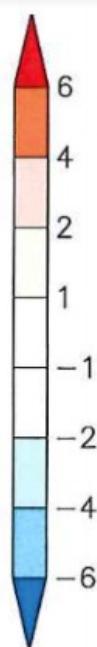
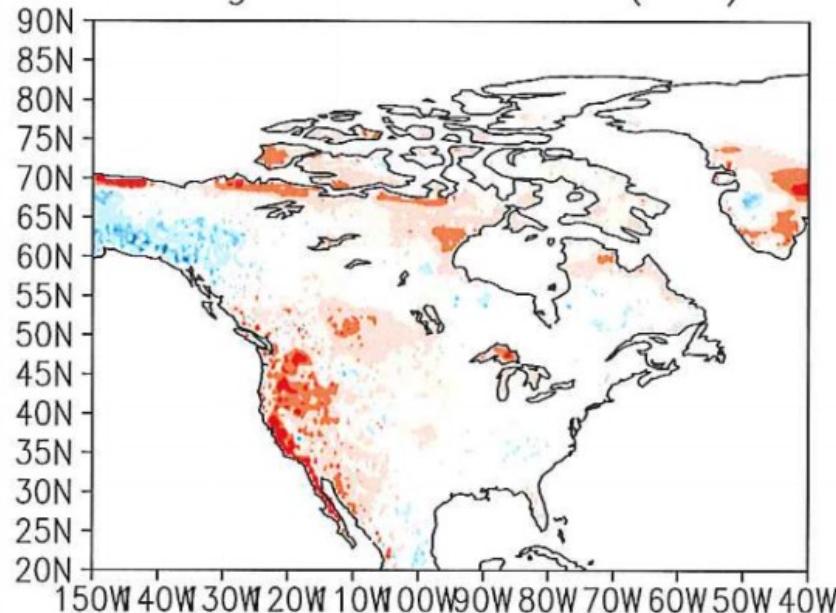
RegCM–CRU bias (DJF)



Unusual warm bias during early Configurations...

```
ibltyp = 2, ! Boundary layer scheme
! 0 => Frictionless
! 1 => Holtslag PBL (Holtslag, 1990)
! 2 => UW PBL (Bretherton and McCaa, 2004)
```

RegCM–CRU bias (JJA)

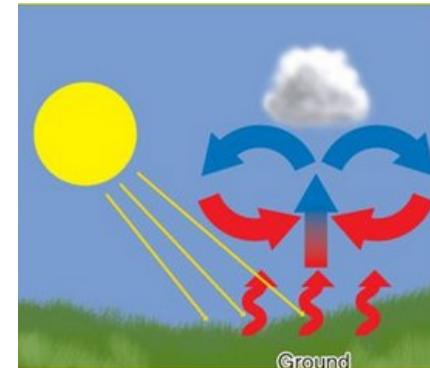


## Sensitivity of the regional climate model RegCM4.2 to planetary boundary layer parameterisation

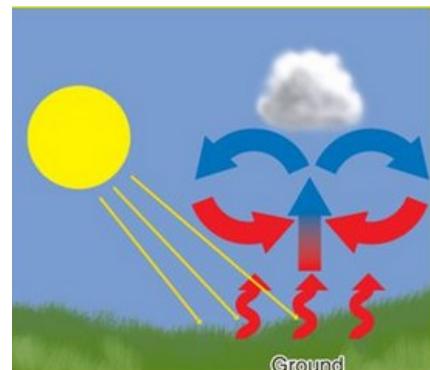
Ivan Güttler · Čedo Branković · Travis A. O'Brien ·  
Erika Coppola · Branko Grisogono · Filippo Giorgi

“ When compared with the default Holtslag scheme, the UW scheme, in the 10-year experiments over the European domain, shows a substantial cooling. It reduces winter warm bias over the north-eastern Europe by 2 °C and reduces summer warm bias over central Europe by 3 °C. ”

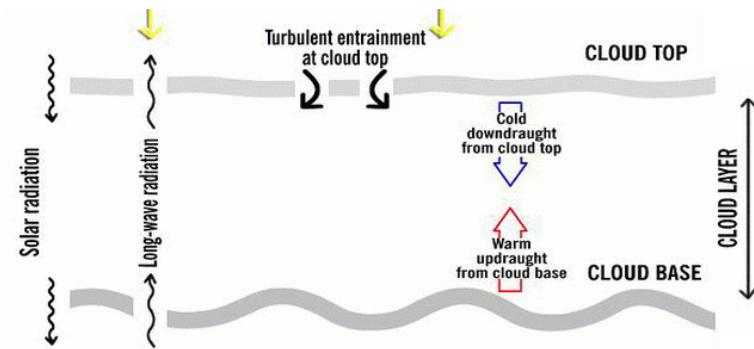
Holtslag (PBL = 1; default)



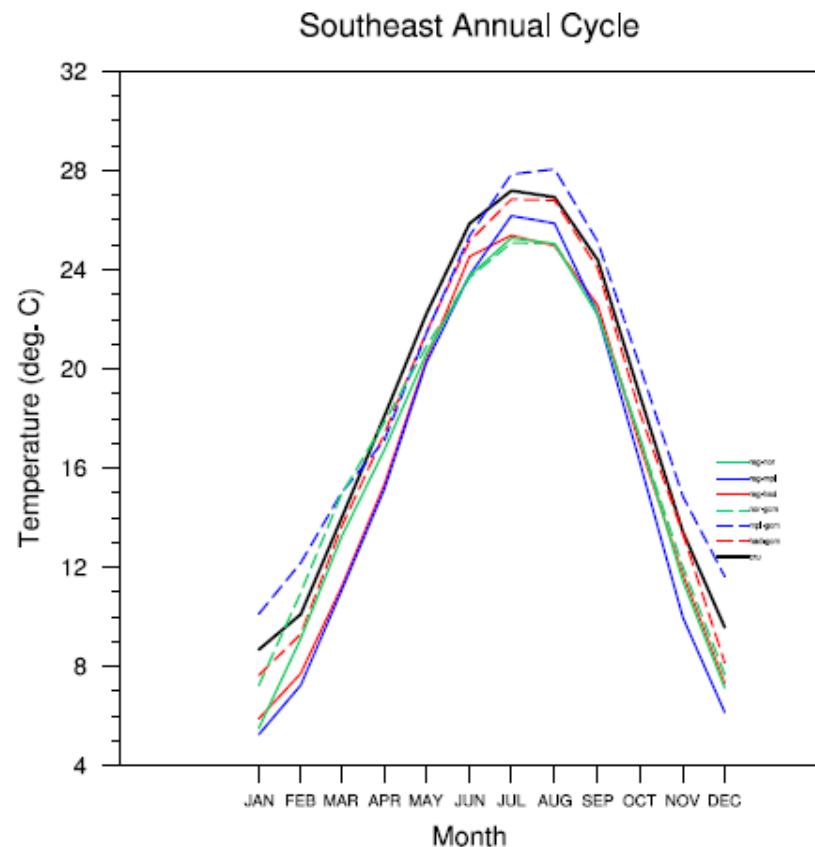
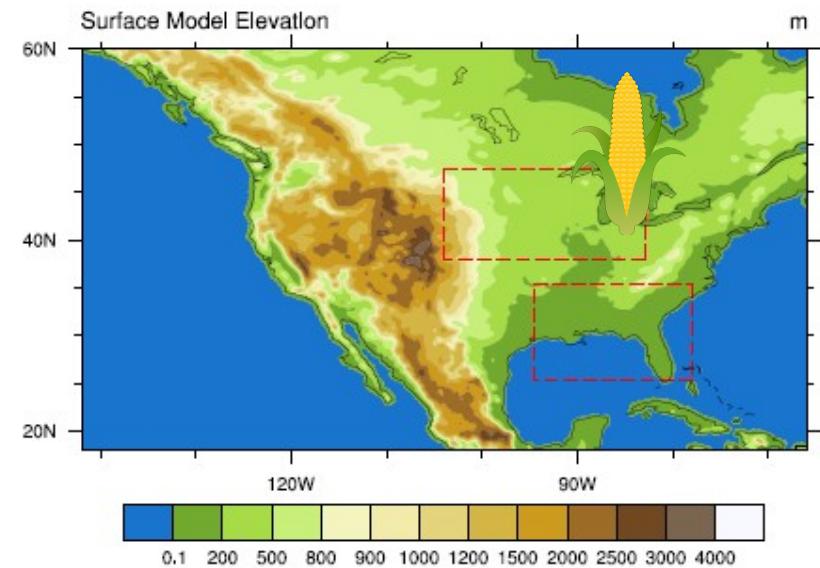
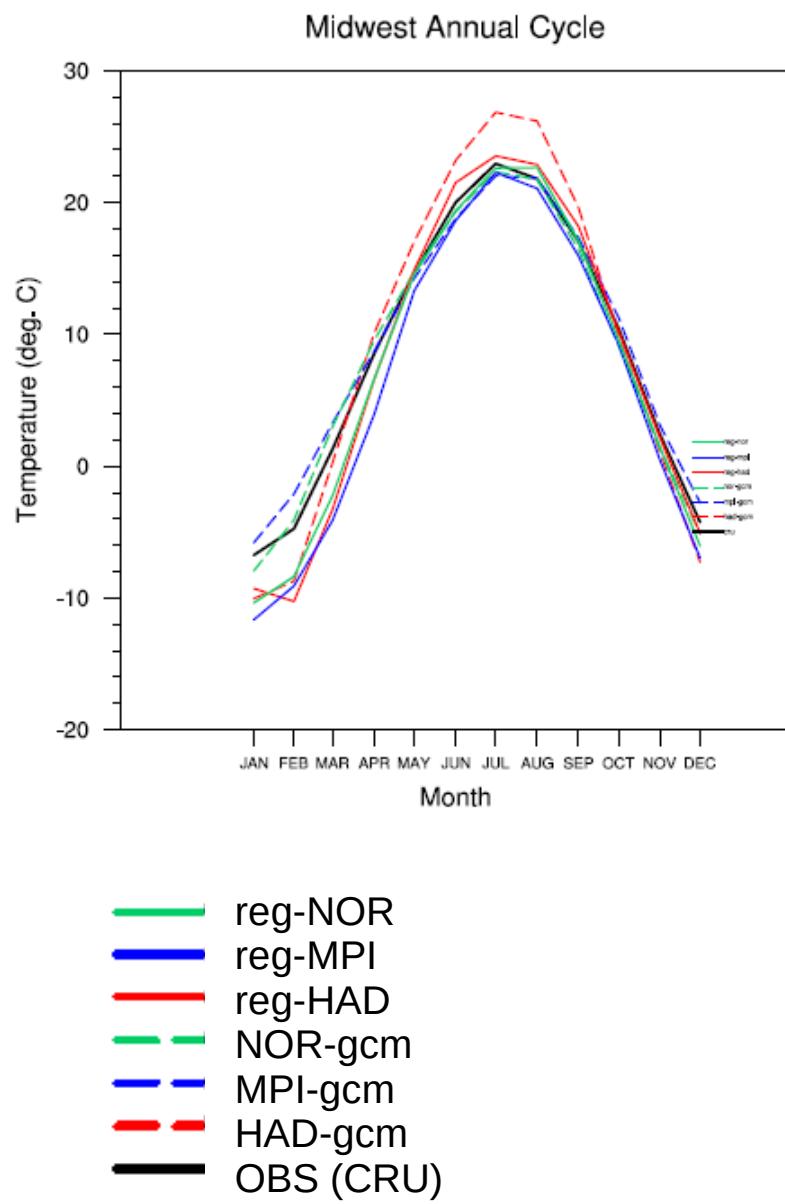
UW (PBL = 2)



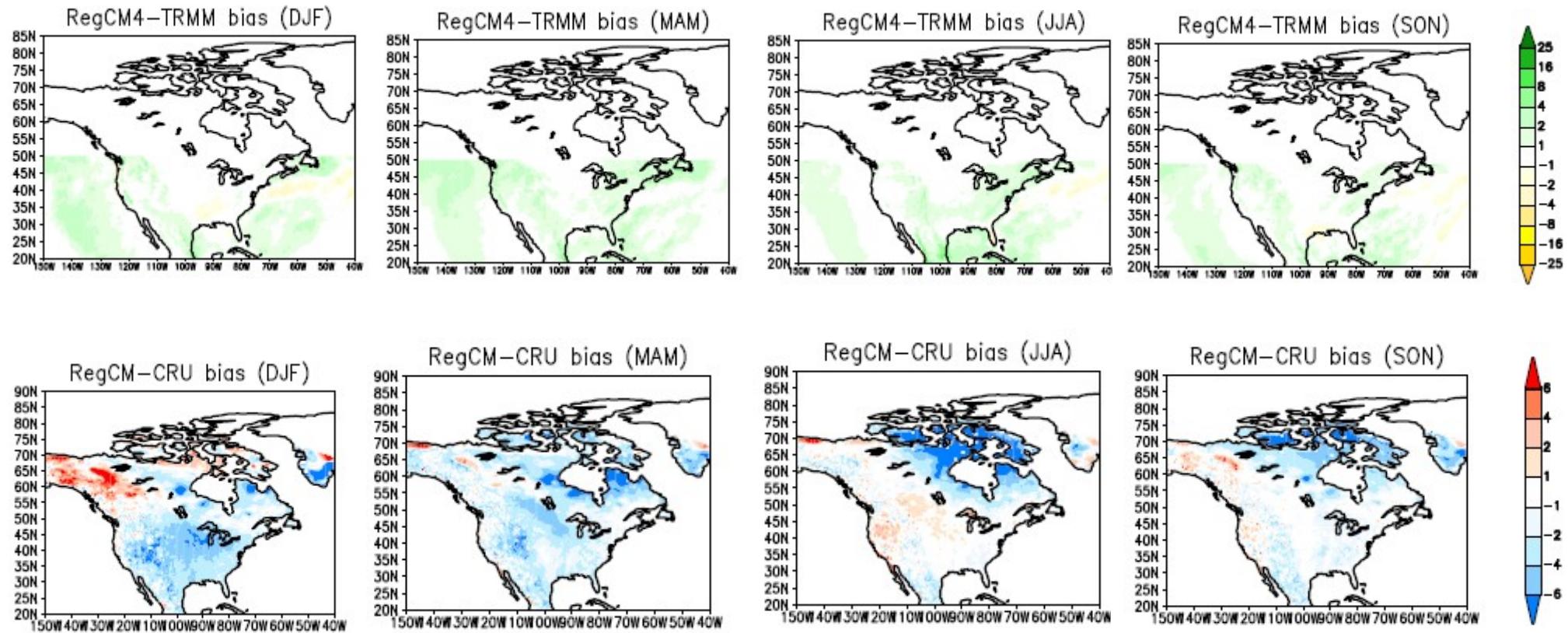
+

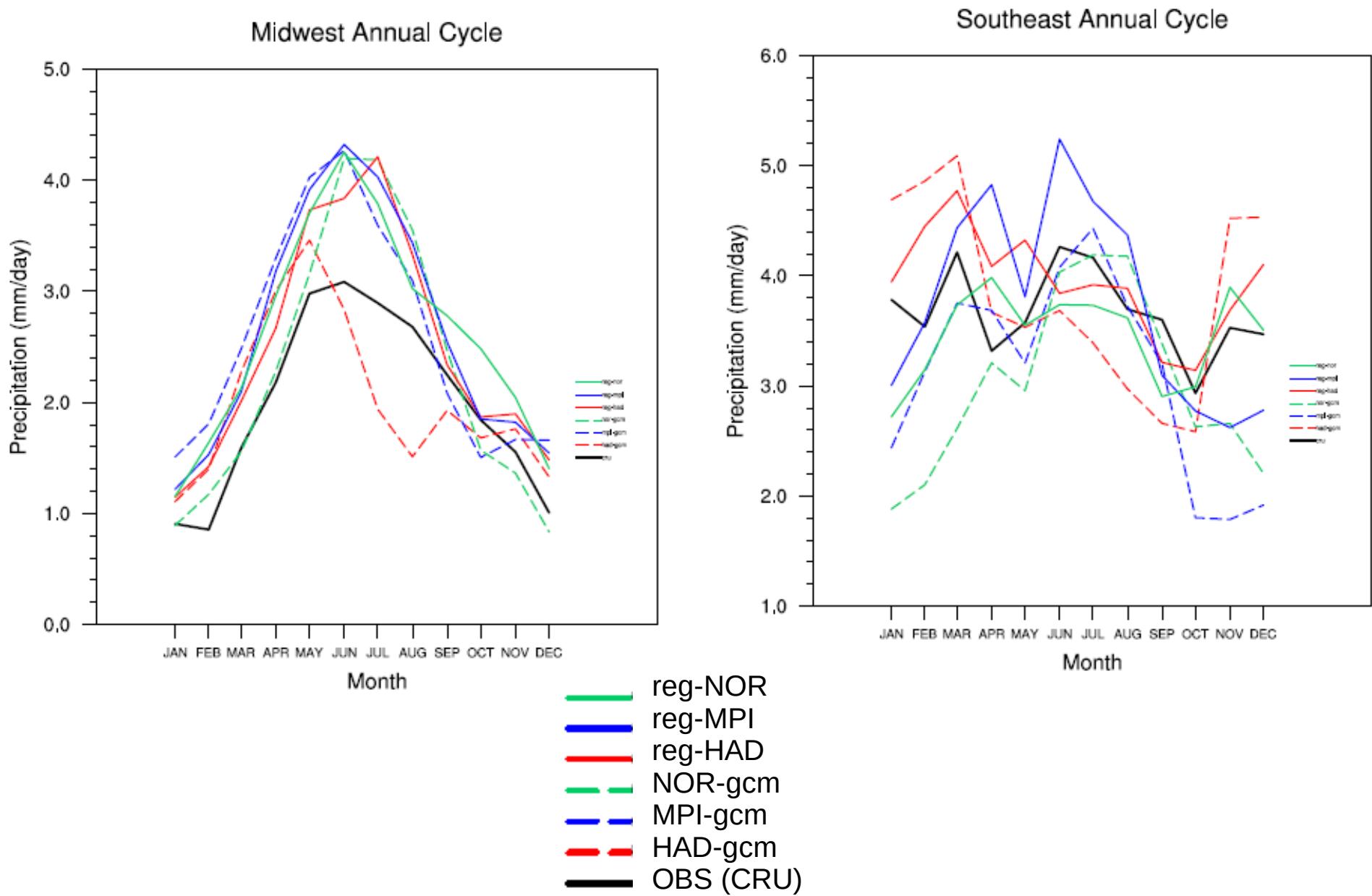


# North America Historical



# ERA-Interim run





# Simulation Progress

Evaluation (1979-2015)-On last few years

Historical (1970-2005) - Complete

- HadGEM
- MPI
- NorESM

Future simulations to begin soon...



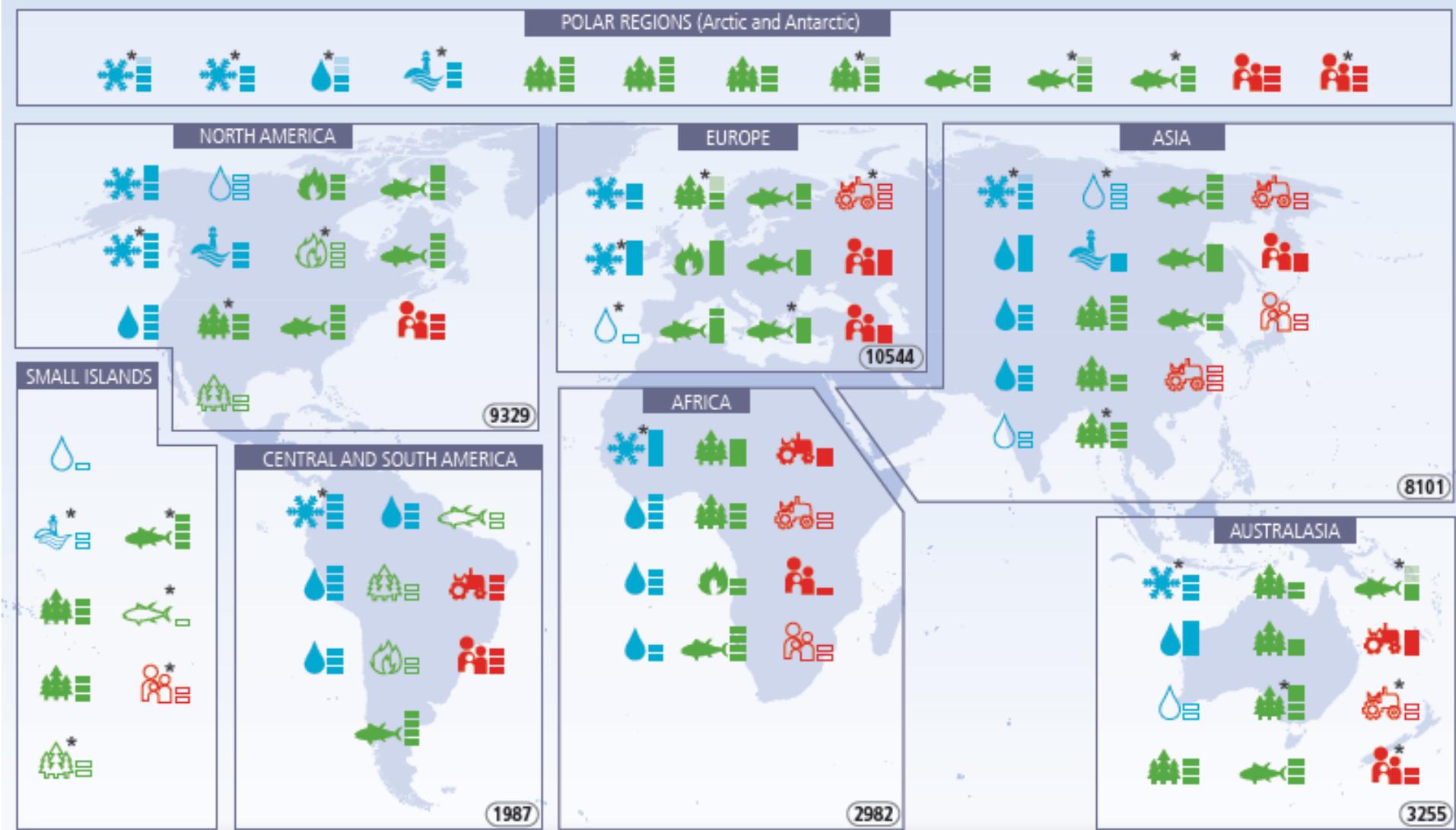
Now to a land down under...

Australia...technically Australasia

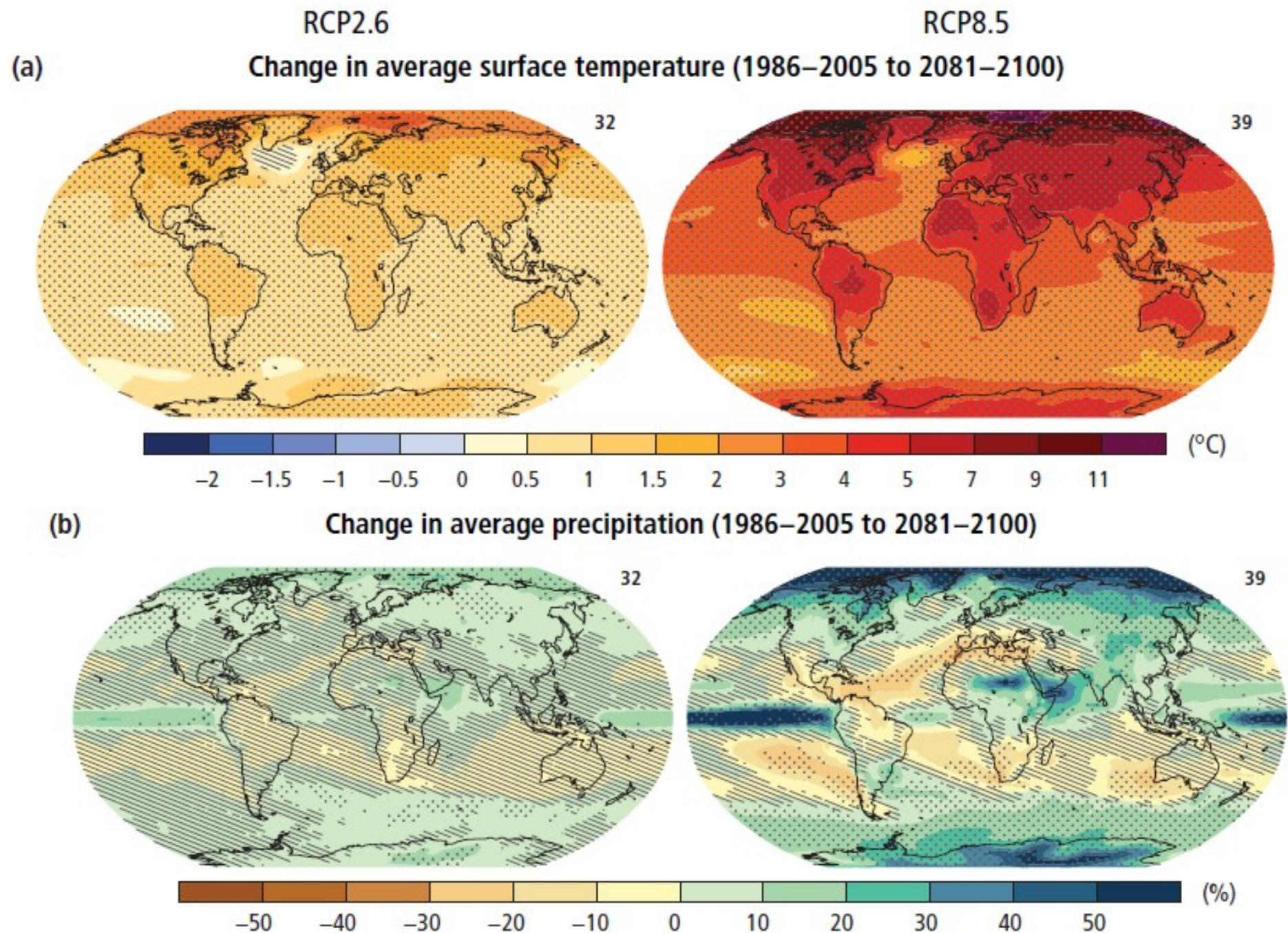


# IPCC 5<sup>th</sup> Assessment

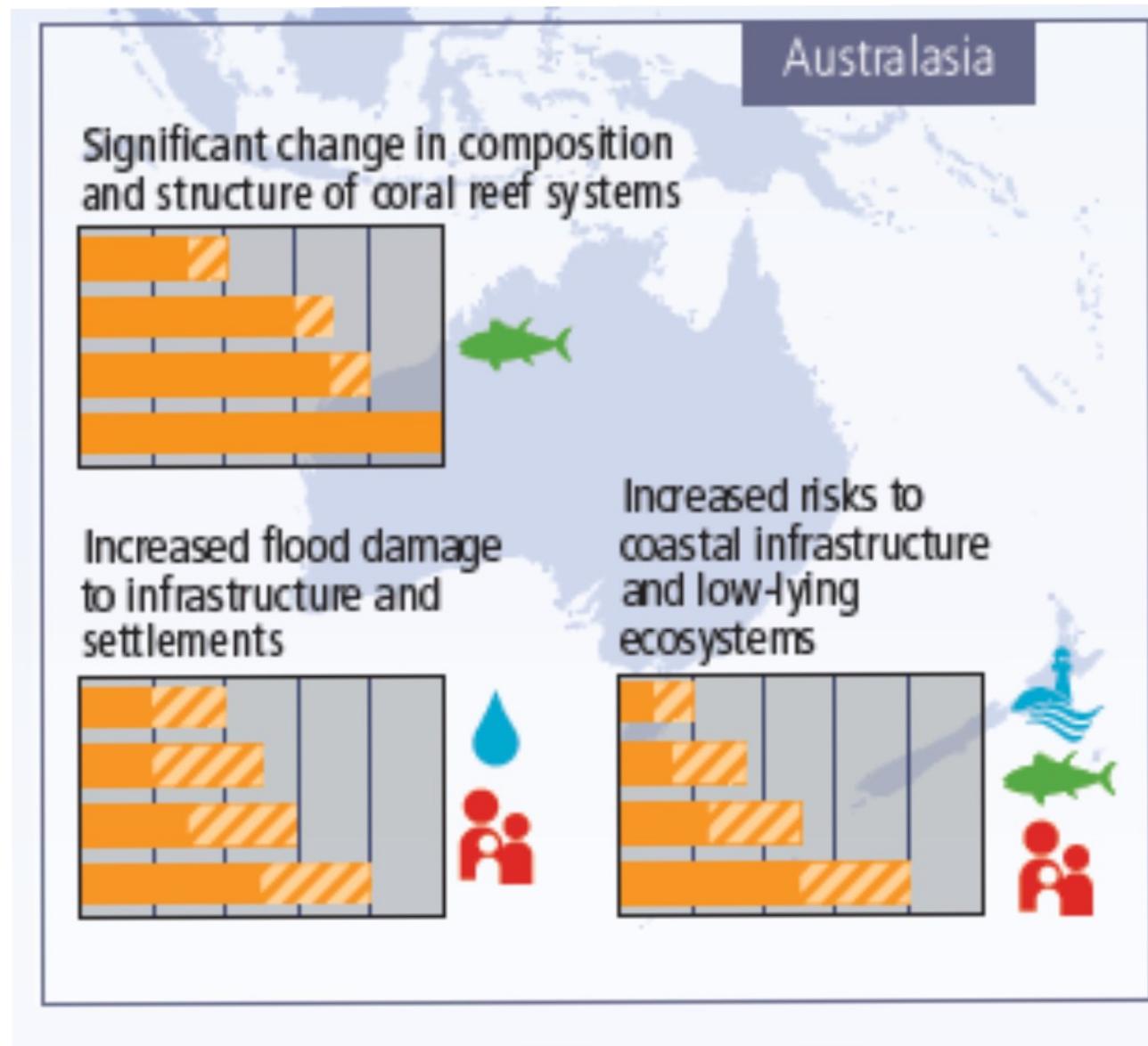
Widespread impacts attributed to climate change based on the available scientific literature since the AR4



# IPCC 5<sup>th</sup> Assessment

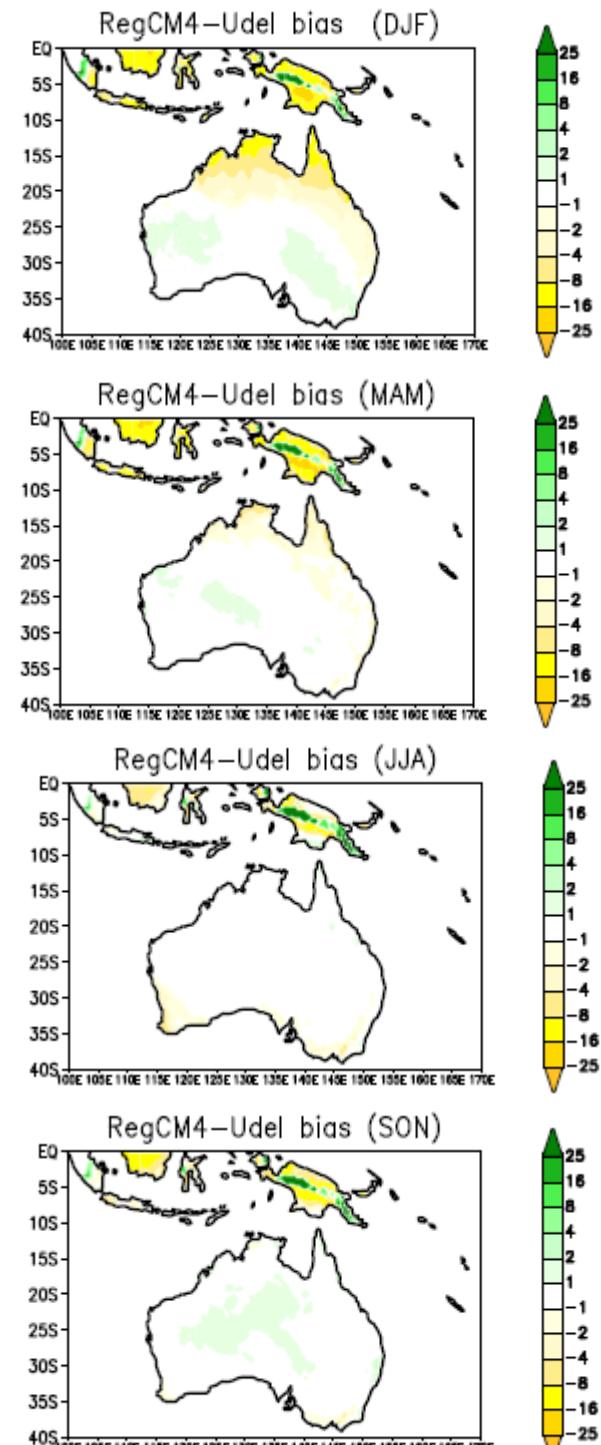
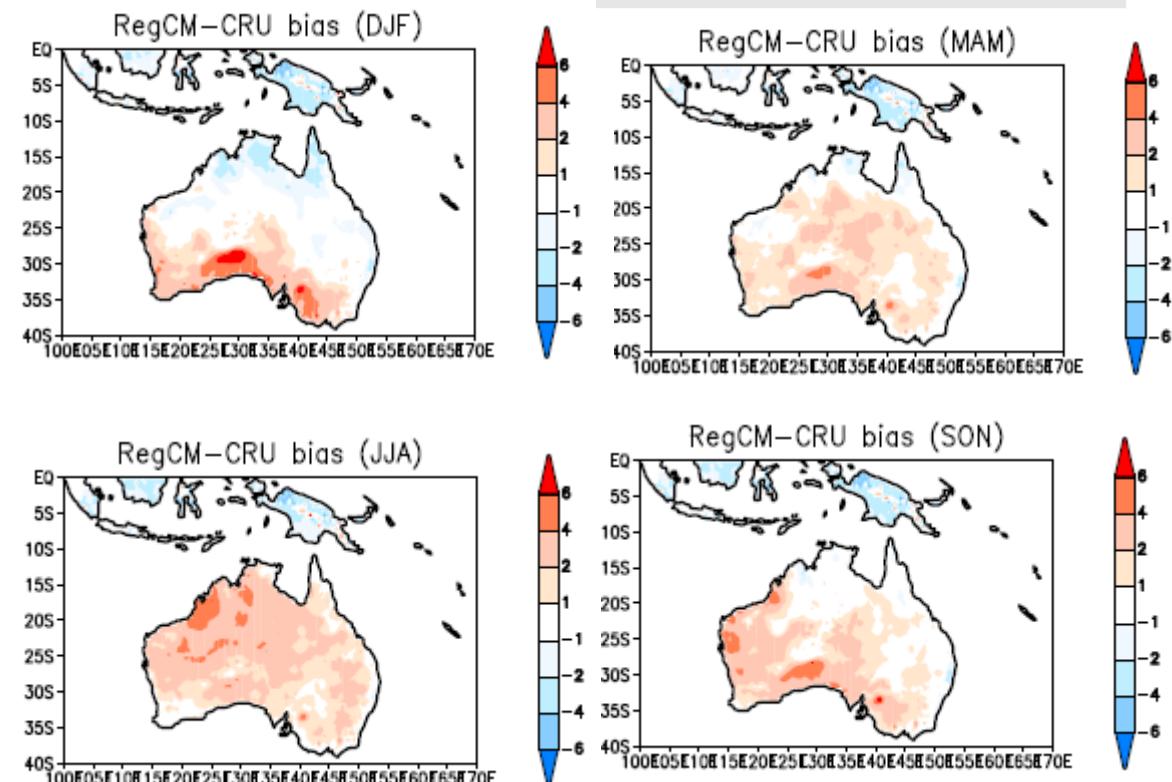


## IPCC 5<sup>th</sup> Assessment-Risks

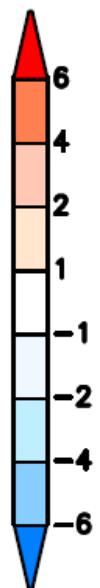
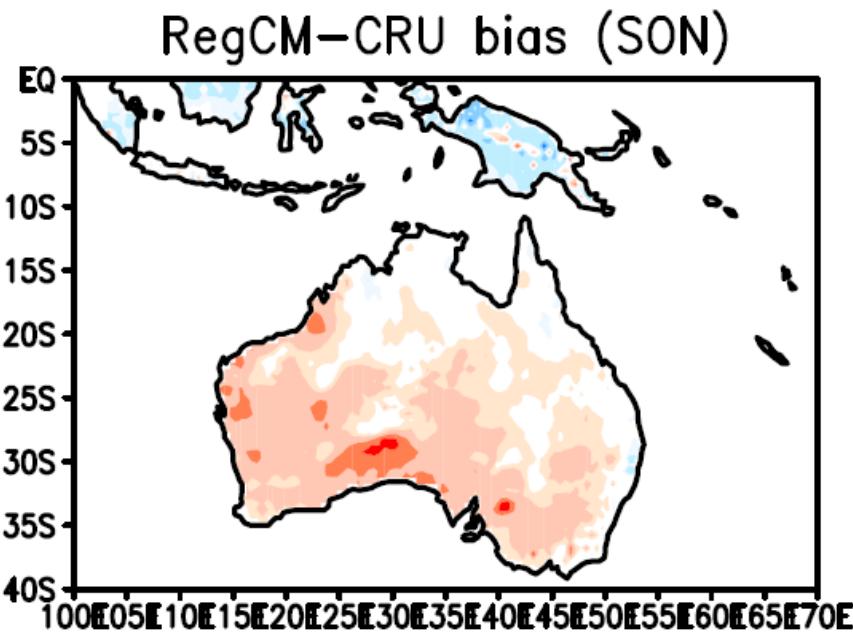
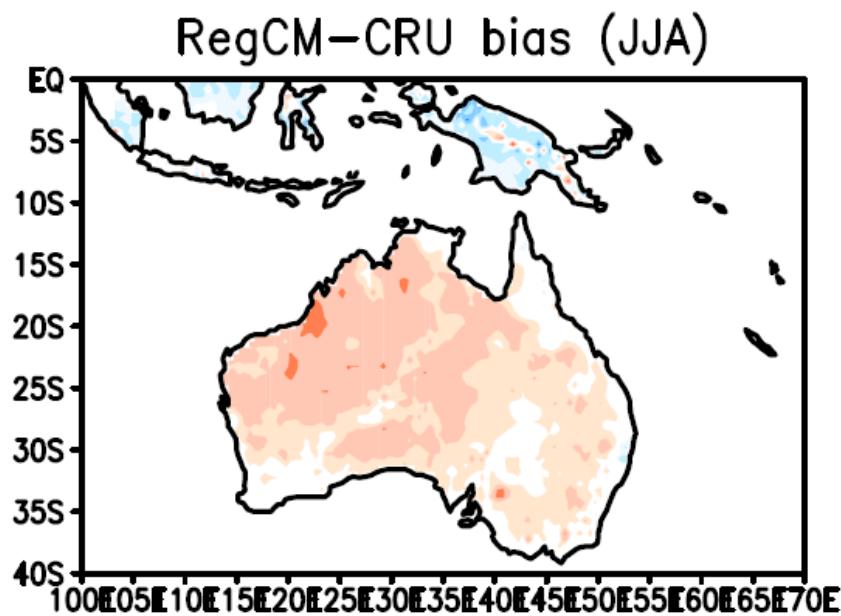
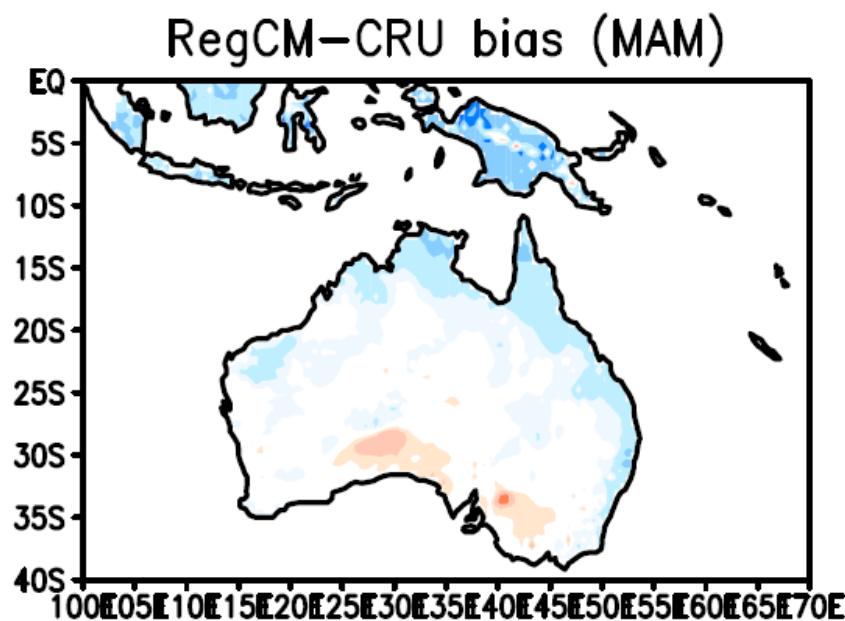
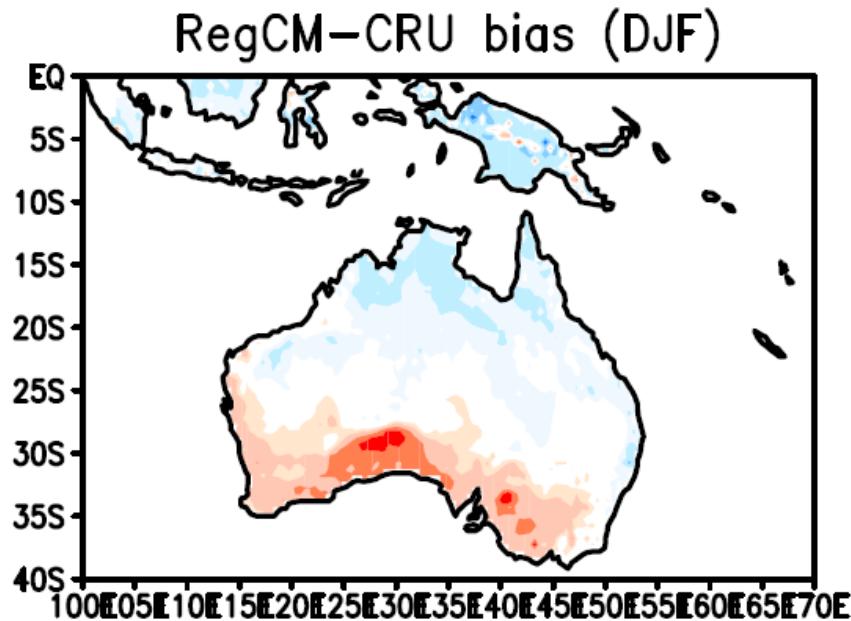


## Physics Configuration

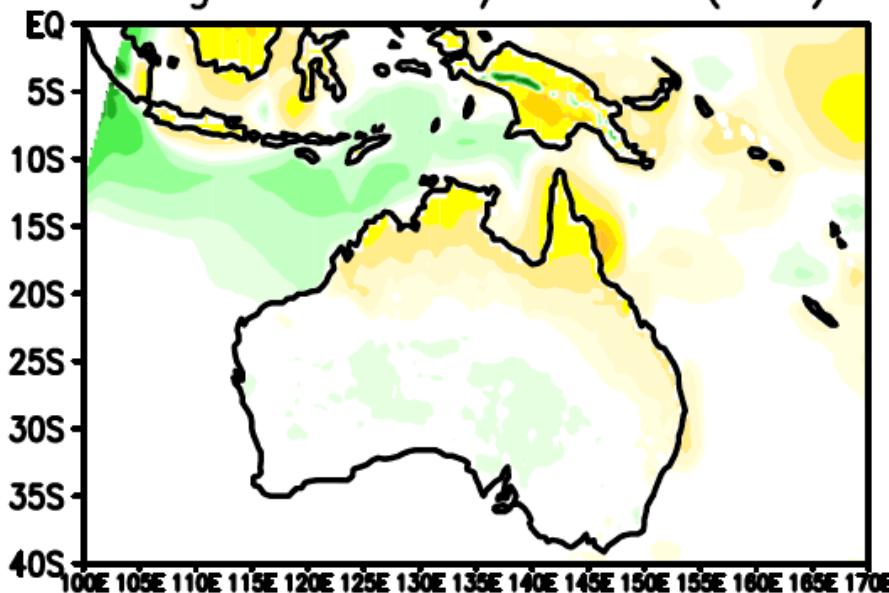
Cumulus	Tiedtke (1996) L Tiedtke(1996) O
Boundary Layer	Holtslag PBL (Holtslag, 1990)
Land-Surface	CLM
Ocean Flux	Zeng et al (1998)
ix	338
jx	416



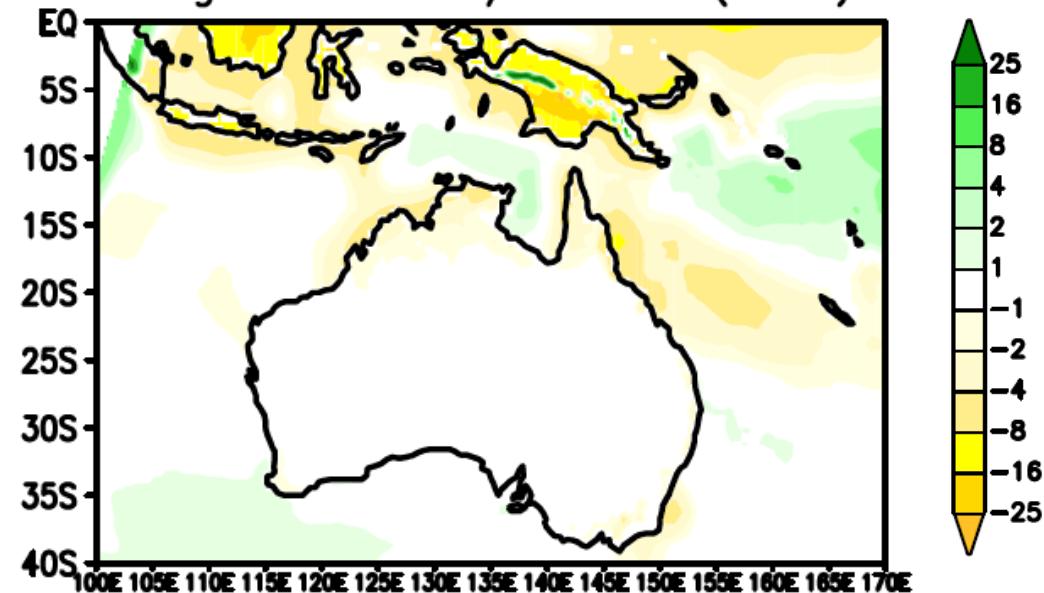
# Evaluation Run (1979-2015)



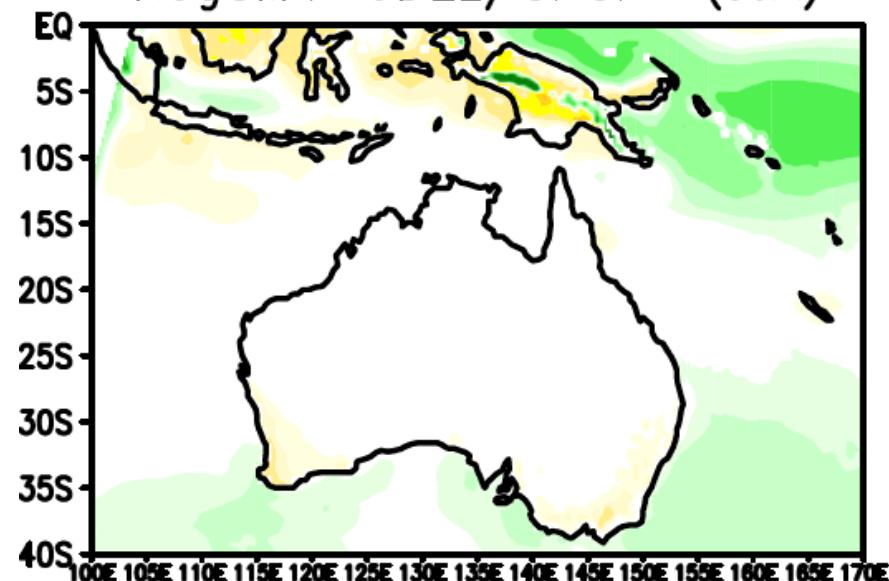
RegCM4-UDEL/GPCP (DJF)



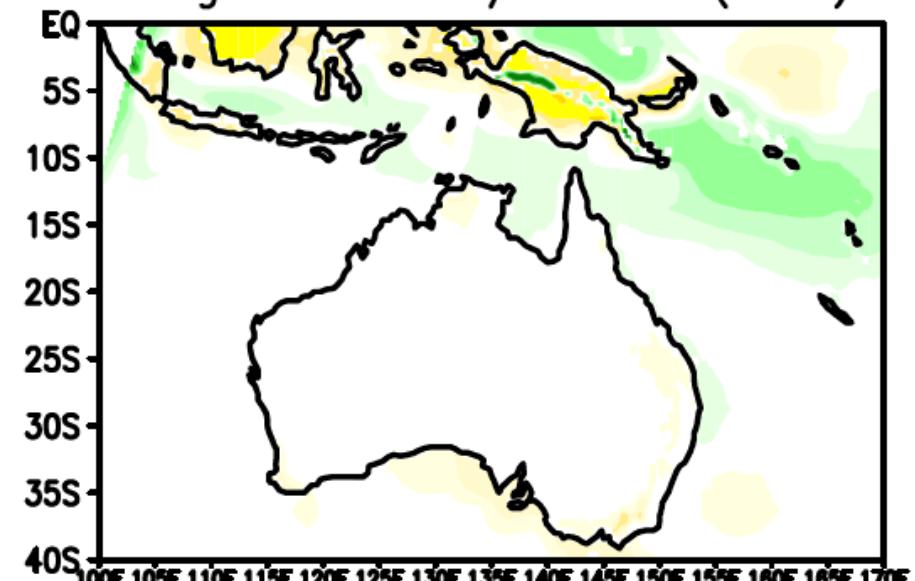
RegCM4-UDEL/GPCP (MAM)



RegCM4-UDEL/GPCP (JJA)

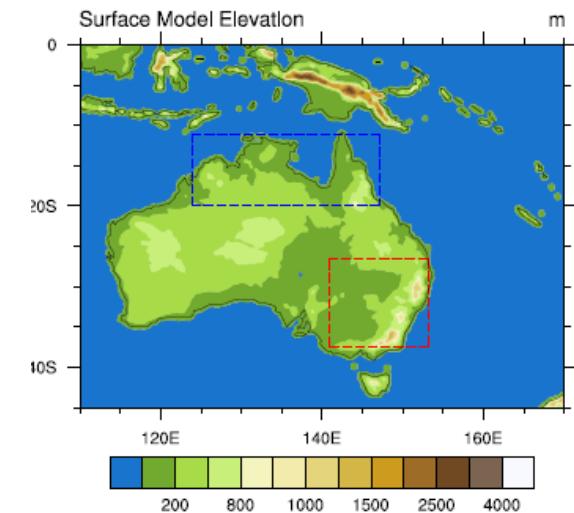


RegCM4-UDEL/GPCP (SON)

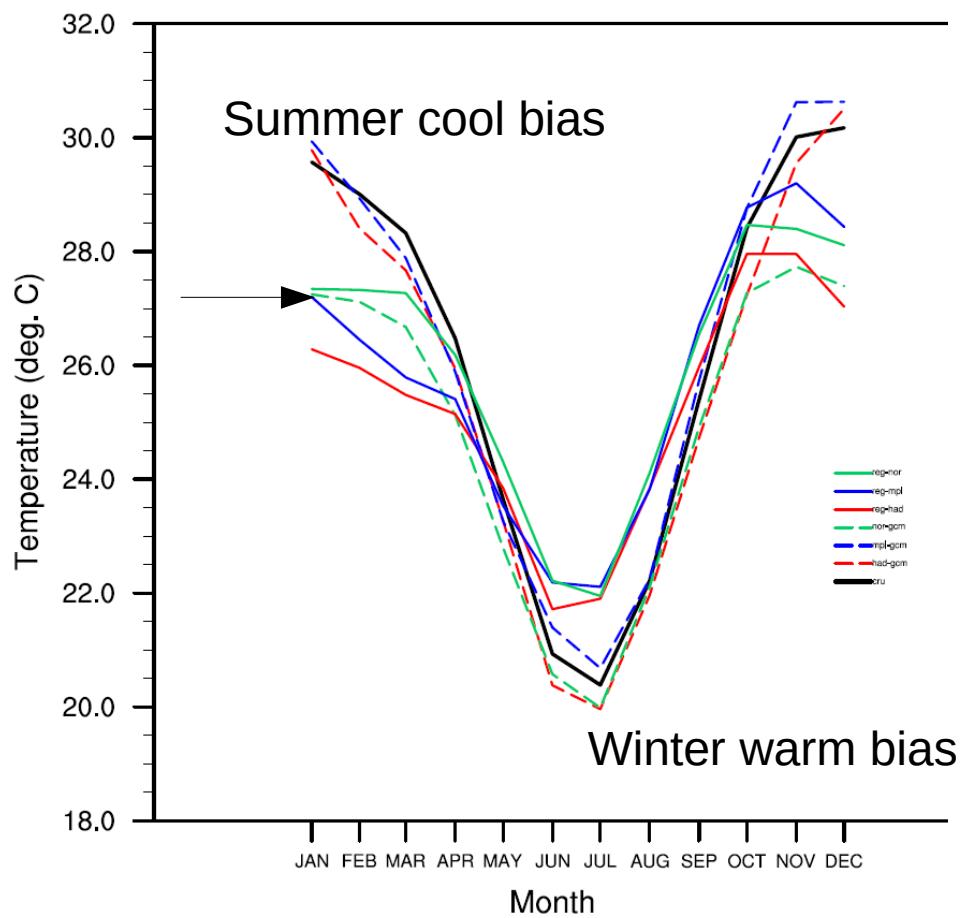


# Australasia Historical

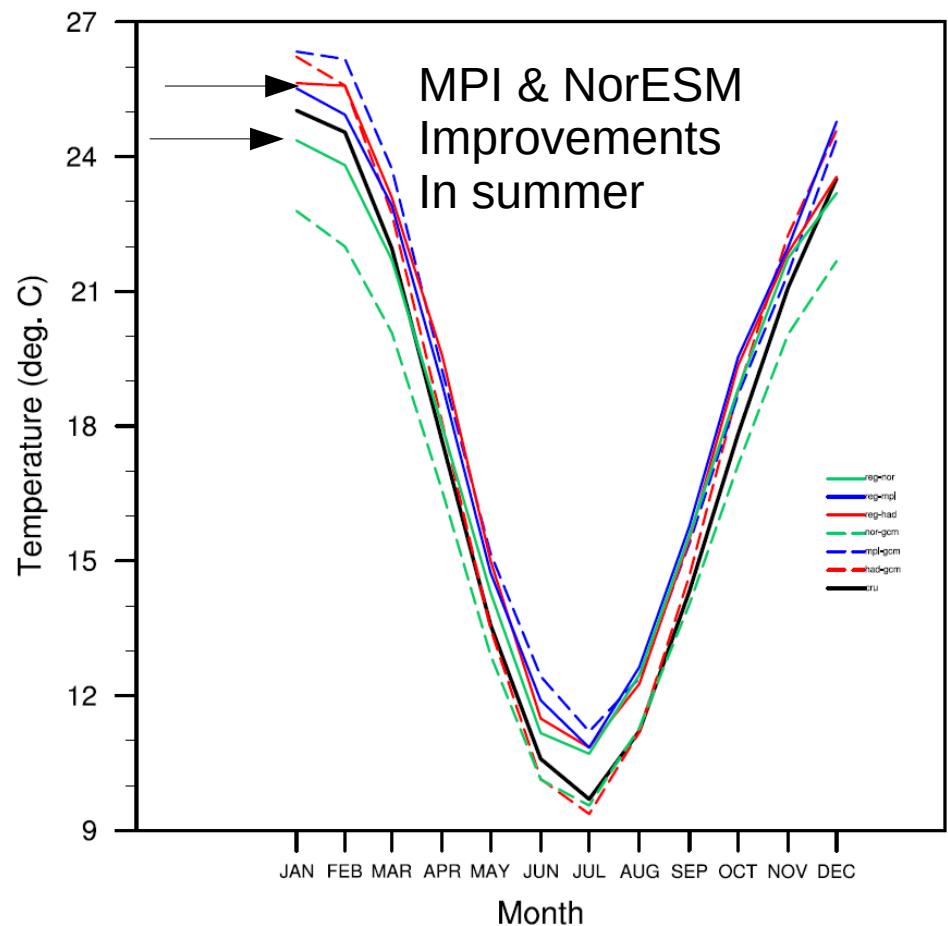
- reg-NOR
- reg-MPI
- reg-HAD
- NOR-gcm
- MPI-gcm
- HAD-gcm
- OBS (CRU)



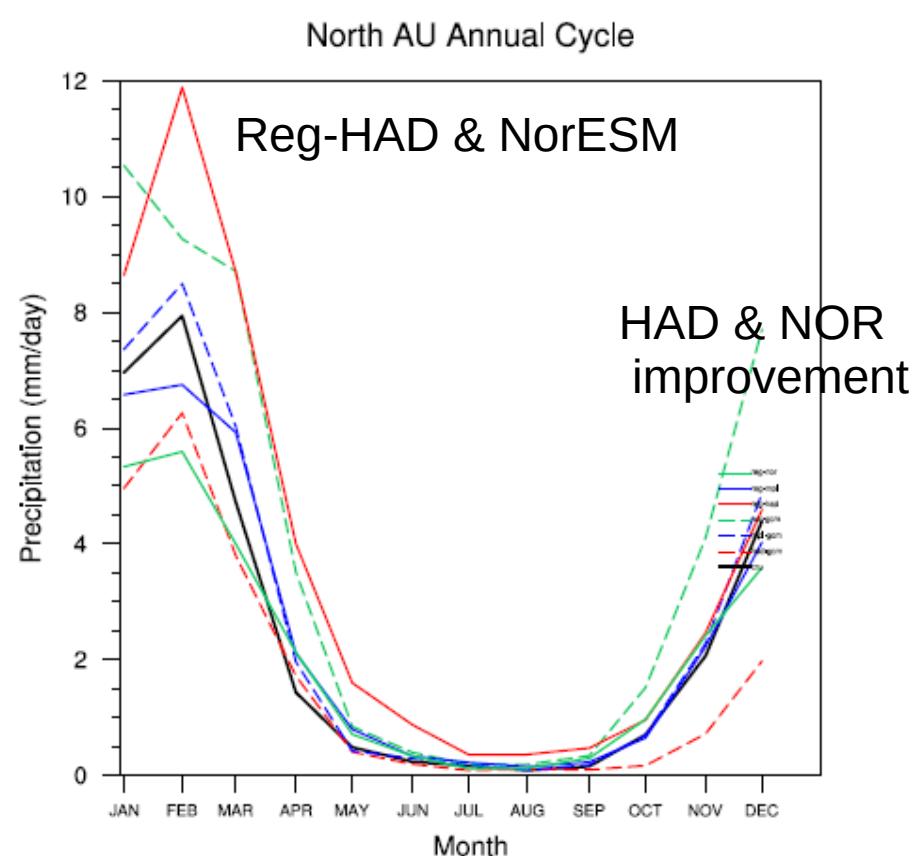
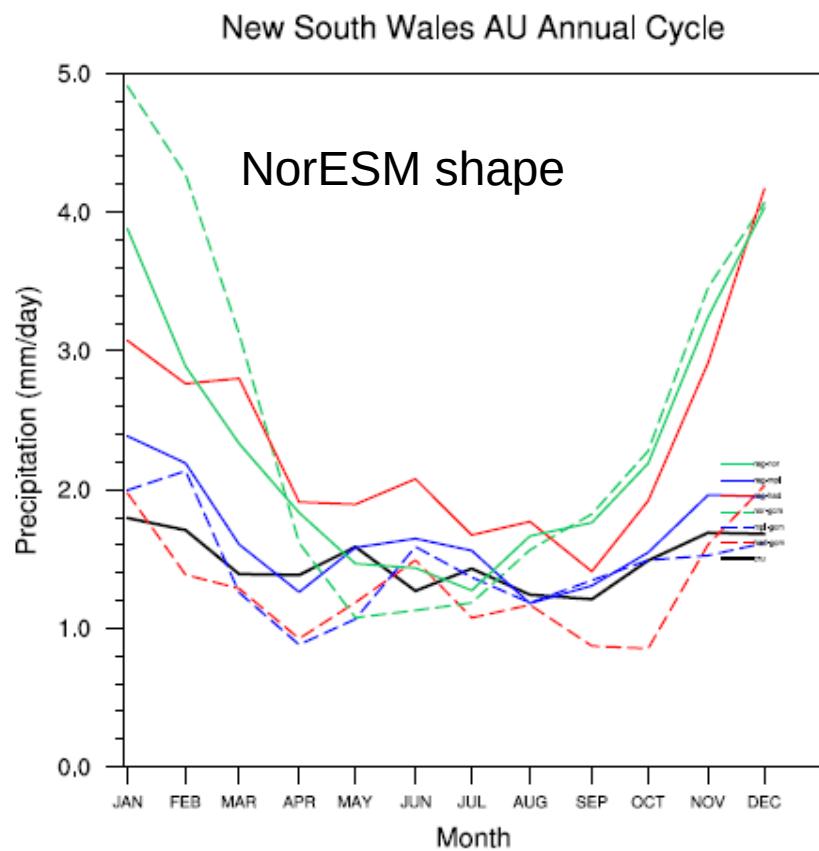
North Annual Cycle



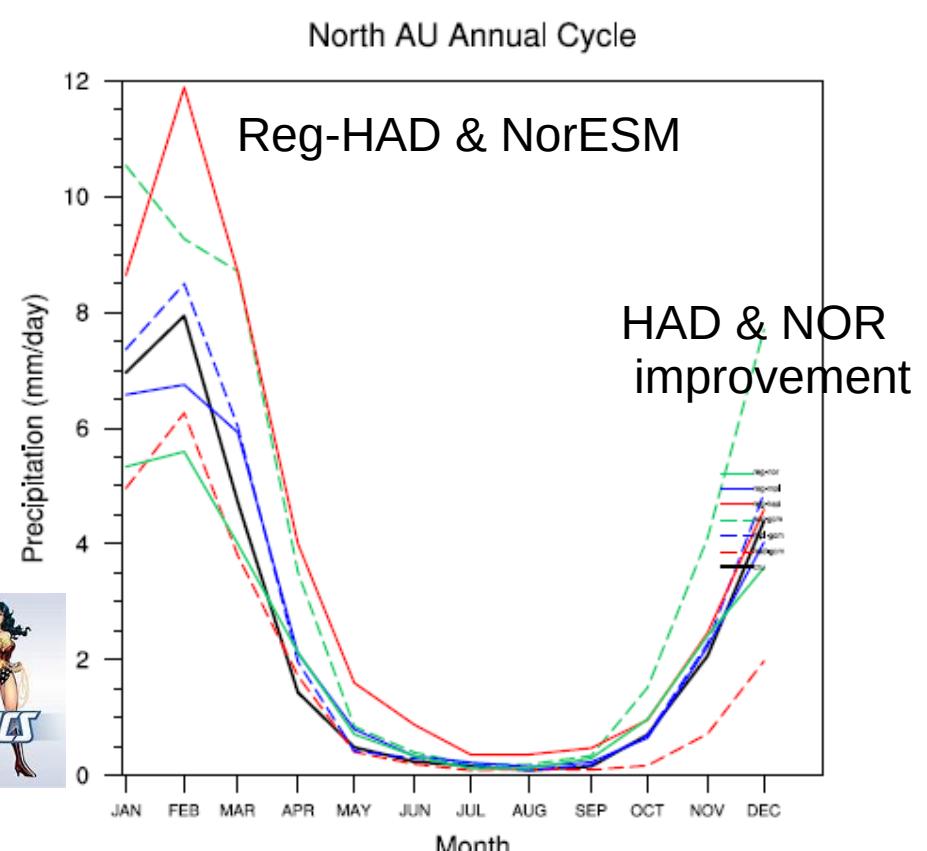
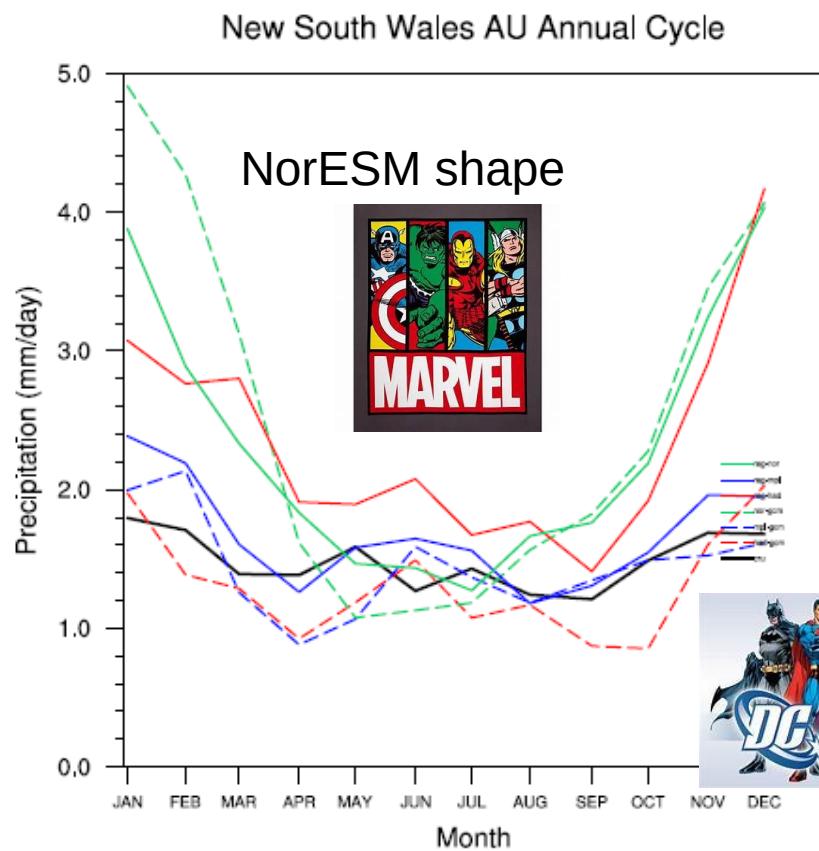
New South Wales Annual Cycle



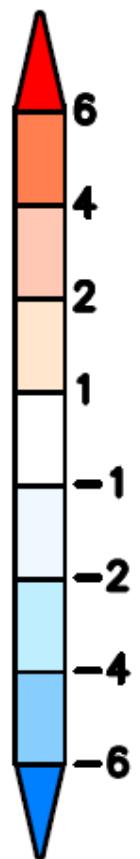
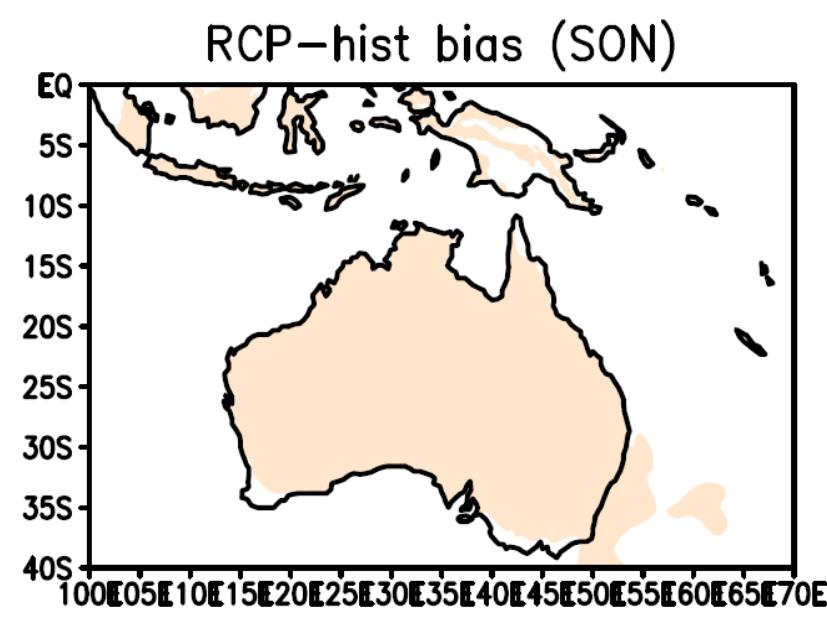
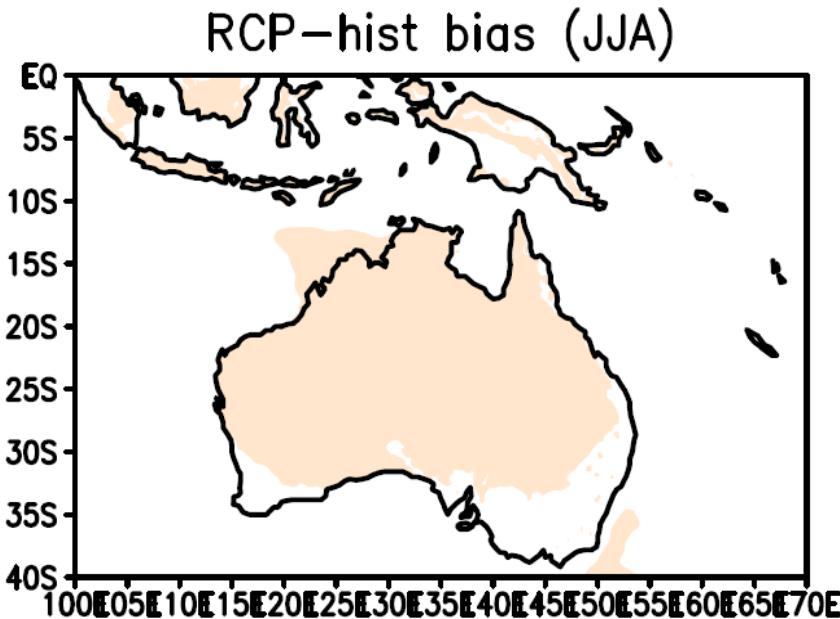
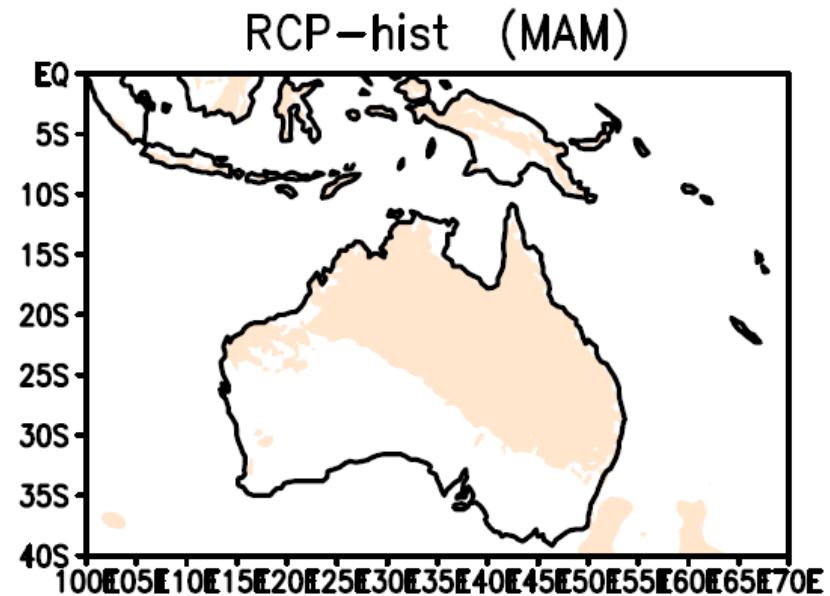
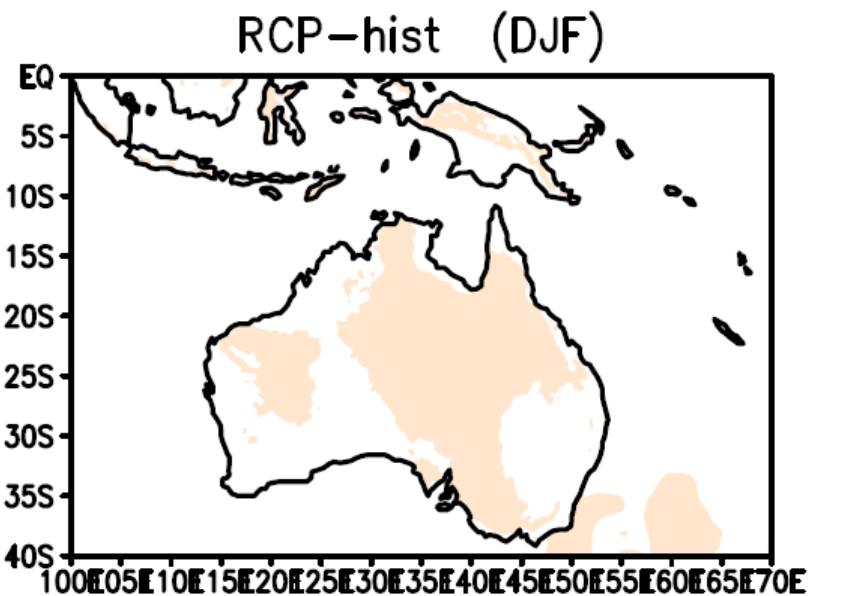
reg-NOR  
reg-MPI  
reg-HAD  
NOR-gcm  
MPI-gcm  
HAD-gcm  
OBS (UDEL)



reg-NOR  
 reg-MPI  
 reg-HAD  
 NOR-gcm  
 MPI-gcm  
 HAD-gcm  
 OBS (UDEL)



## Australasia HadGEM RCP2.5 2005-2040s





Thank you!

