Working Group on Seasonal to Interannual Predictions
21st session
Institute of Numerical Mathematics of the Russian Academy
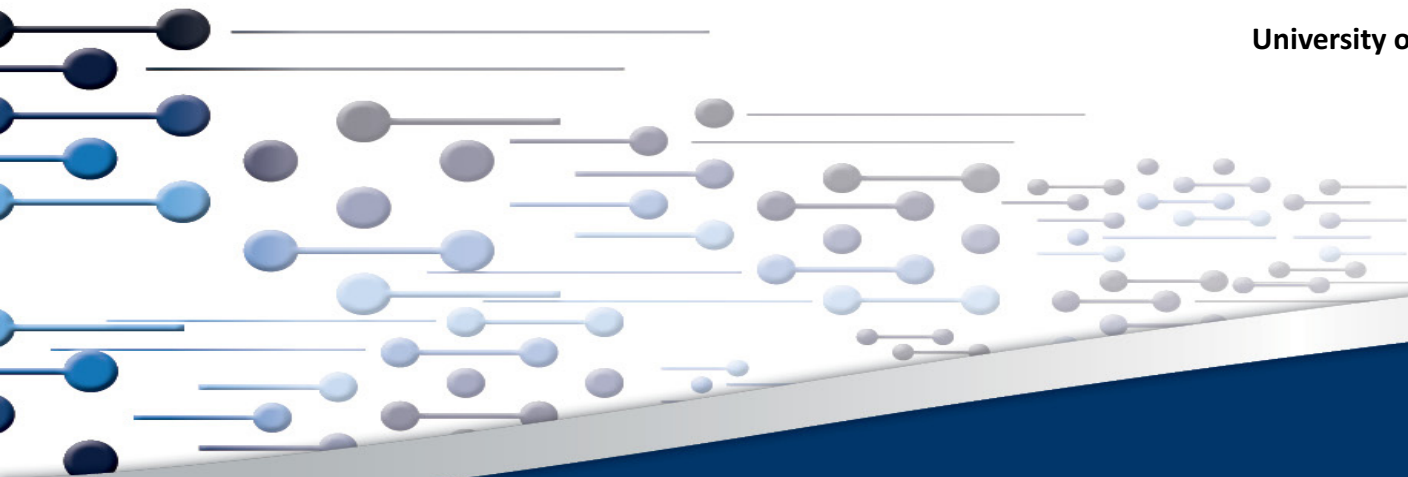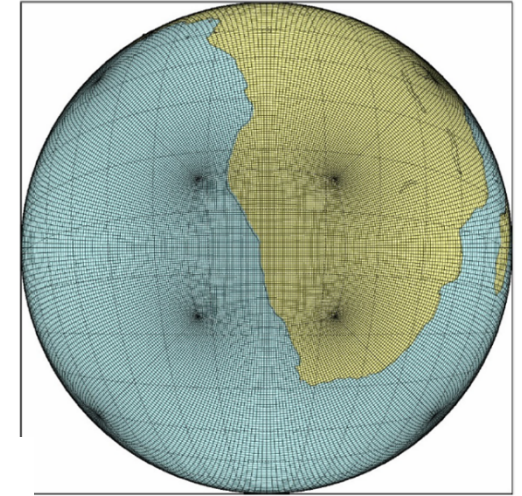of Science Moscow, 29-31 May 2019

CSIR Research activities update

Asmerom F. Beraki

CSIR – Smart Places, Global Change, Climate and Air Quality Modelling
and
University of Pretoria, GGMD
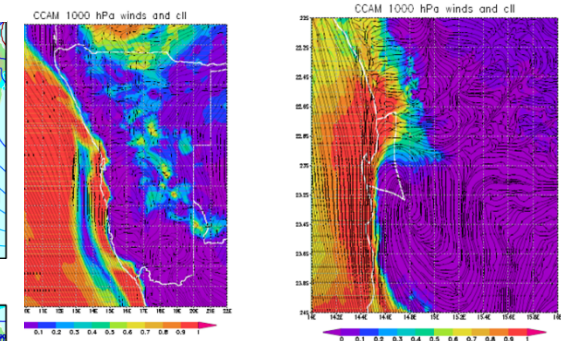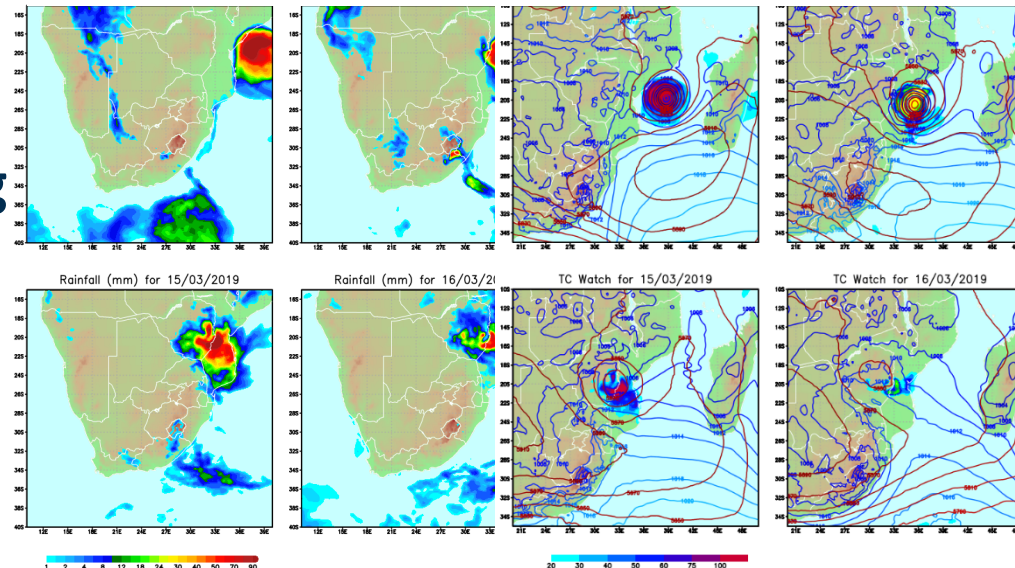
CSIR

our future through science

Seamless forecasting system

○ **Coupled ocean, atmosphere, land-surface and dynamic sea-ice models all cast on a cube-based grid and can be applied either at quasi-uniform horizontal resolution to function as a global climate model, or in stretched-grid mode to function as a high-resolution regional climate model.**

○ **A prognostic aerosol scheme applied consistently with the emission inventories and radiative forcing specifications of the Coupled Model Intercomparison Project Phase Five (CMIP5) and a dynamic river routing scheme** climate model.

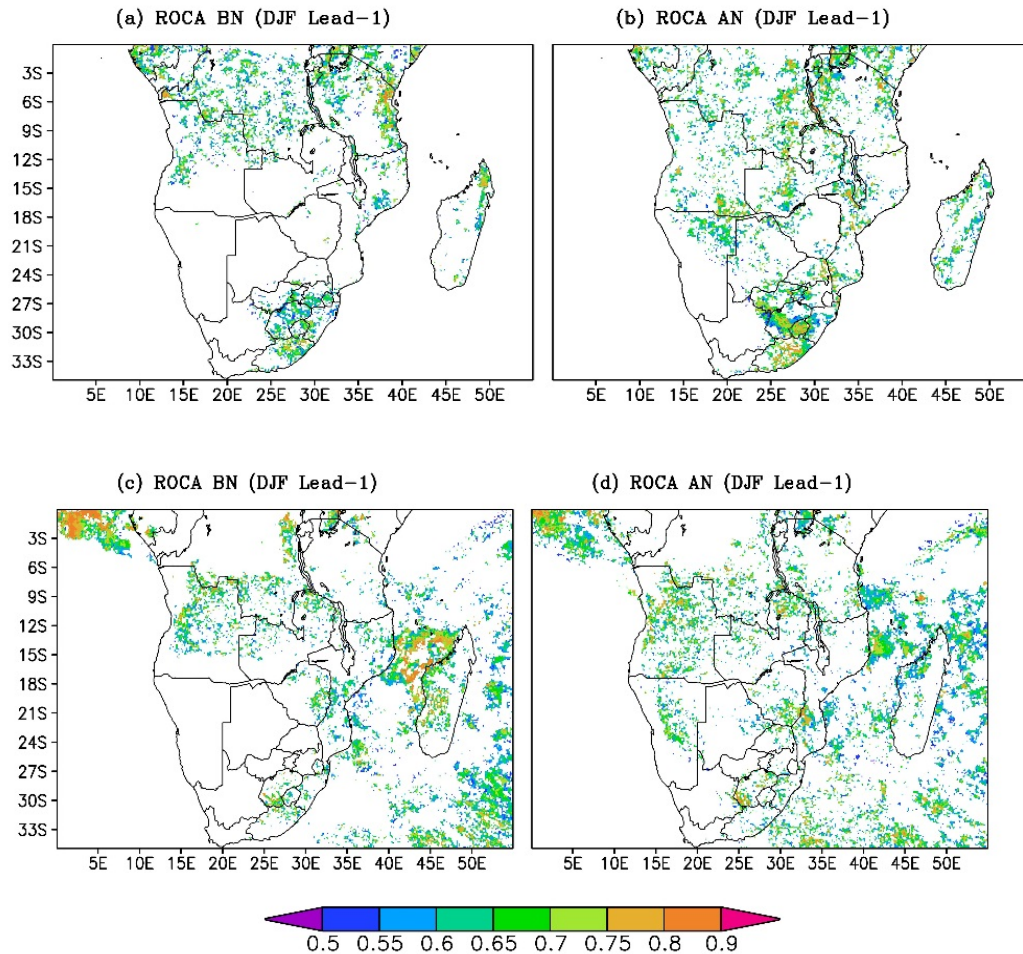○ **Realistic GH and O3 forcings**

○ **Supports Seamless forecasting**

Tropical cyclone Idai (issued on 13 March)

14 March 2019: Wikipedia

our future through science

(a) ROCA BN (DJF Lead−1)   (b) ROCA AN (DJF Lead−1)

(c) ROCA BN (DJF Lead−1)   (d) ROCA AN (DJF Lead−1)

0.5 0.55 0.6 0.65 0.7 0.75 0.8 0.9

CSIR NRE CLIMATE PREDICTION SYSTEM
CCAM−CABLE 8km (Seasonal timescale)
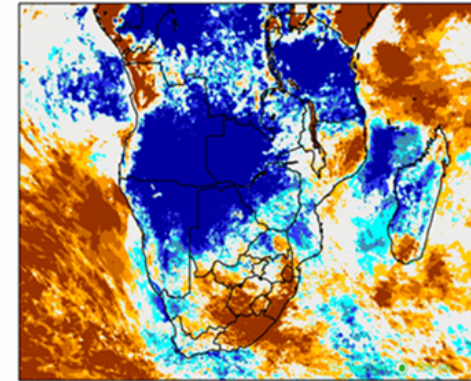Most likely Category of Rainfall
Forecast Period: Dec 2017 − Feb 2018

No Significance Test Applied
Ensemble size 12
Last Updated 16 Nov 2017

CSIR NRE CLIMATE PREDICTION SYSTEM
CCAM−CABLE 8km (Extended−Range timescale)
Most likely Category of Rainfall
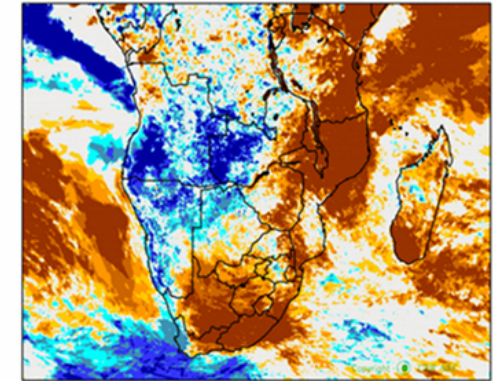Forecast Period: 20 Nov 2017 − 09 Dec 2017

No Significance
Ensemble size 12
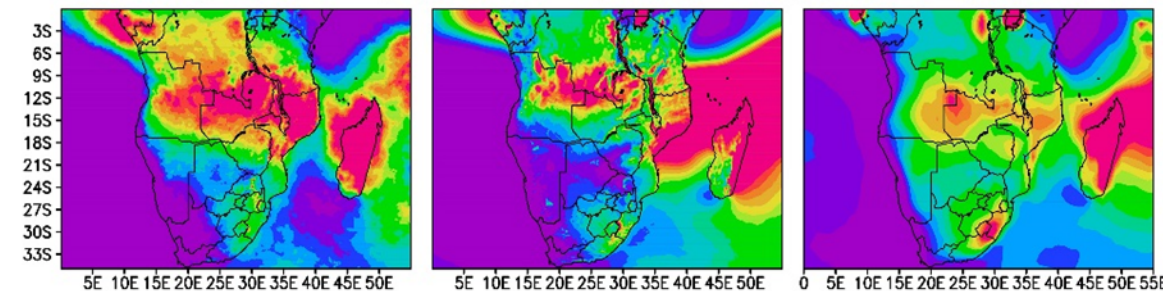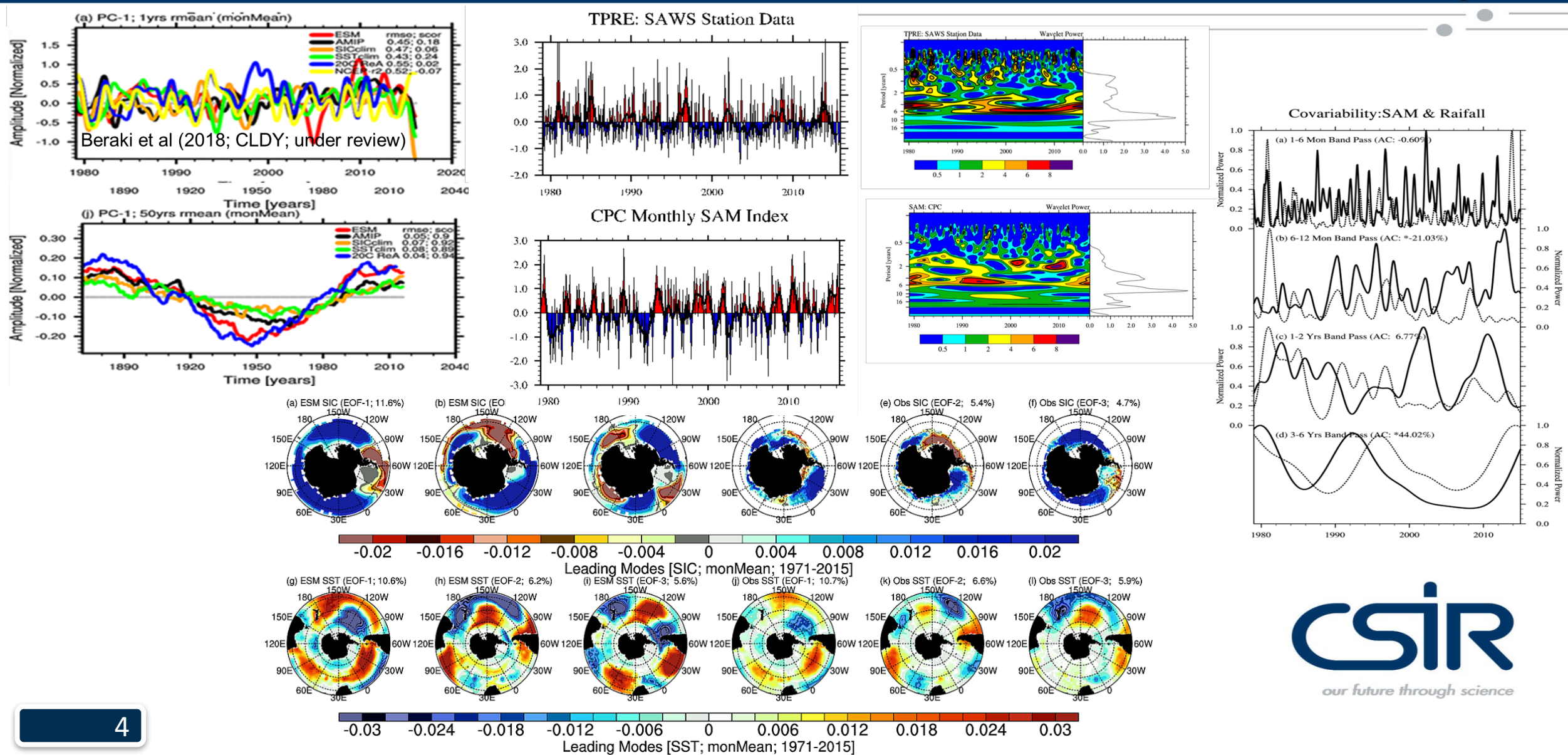Last Updated 04

<--- Dry Tendency   Wet Tendency -->
70-100% 60-70% 50-60% 33-50% OTHERS 33-50% 50-60% 60-70% 70-100%

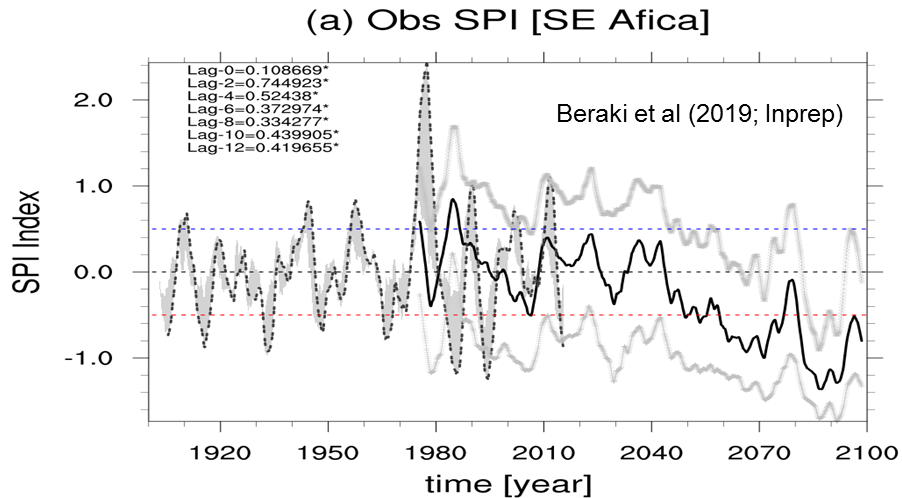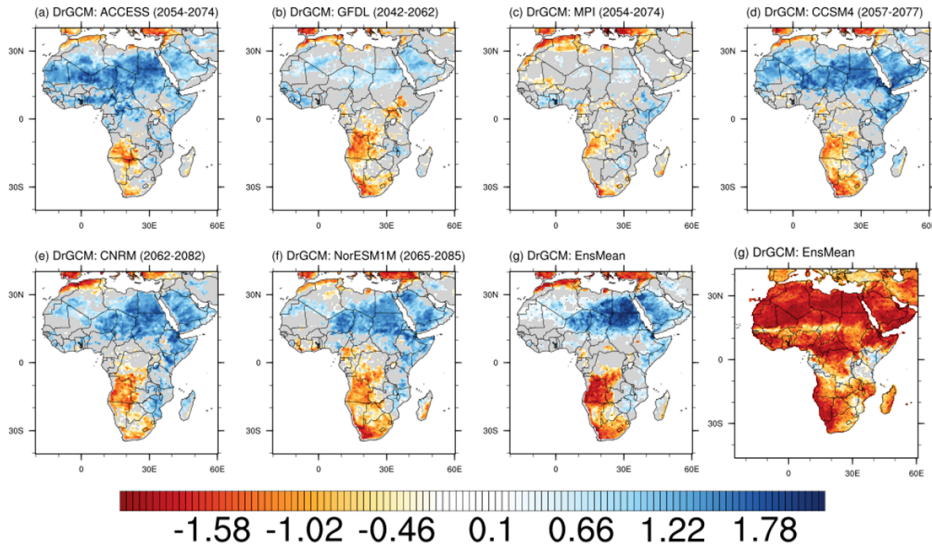(c) CHIRP (clim;2000−2014) (d) CCAM C192 (clim;2000−2014)(e) CCAM C96 (clim;2000−2014)

1 1.5 2 2.5 3 3.5 4 4.5 5 5.5 6 6.5 7

Beraki et al (2018; CLDY; under review)

(a) Obs SPI [SE Afica]

Lag-0=0.108669*
Lag-2=0.744923*
Lag-4=0.52438*
Lag-6=0.372974*
Lag-8=0.334277*
Lag-10=0.439905*
Lag-12=0.419655*

Beraki et al (2019; Inprep)

ACC85 3 Degrees   CCS85 3 Degrees
CNR85 3 degrees   GFD85 3 Degrees
MPI85 3 Degrees   NOR85 3 Degrees
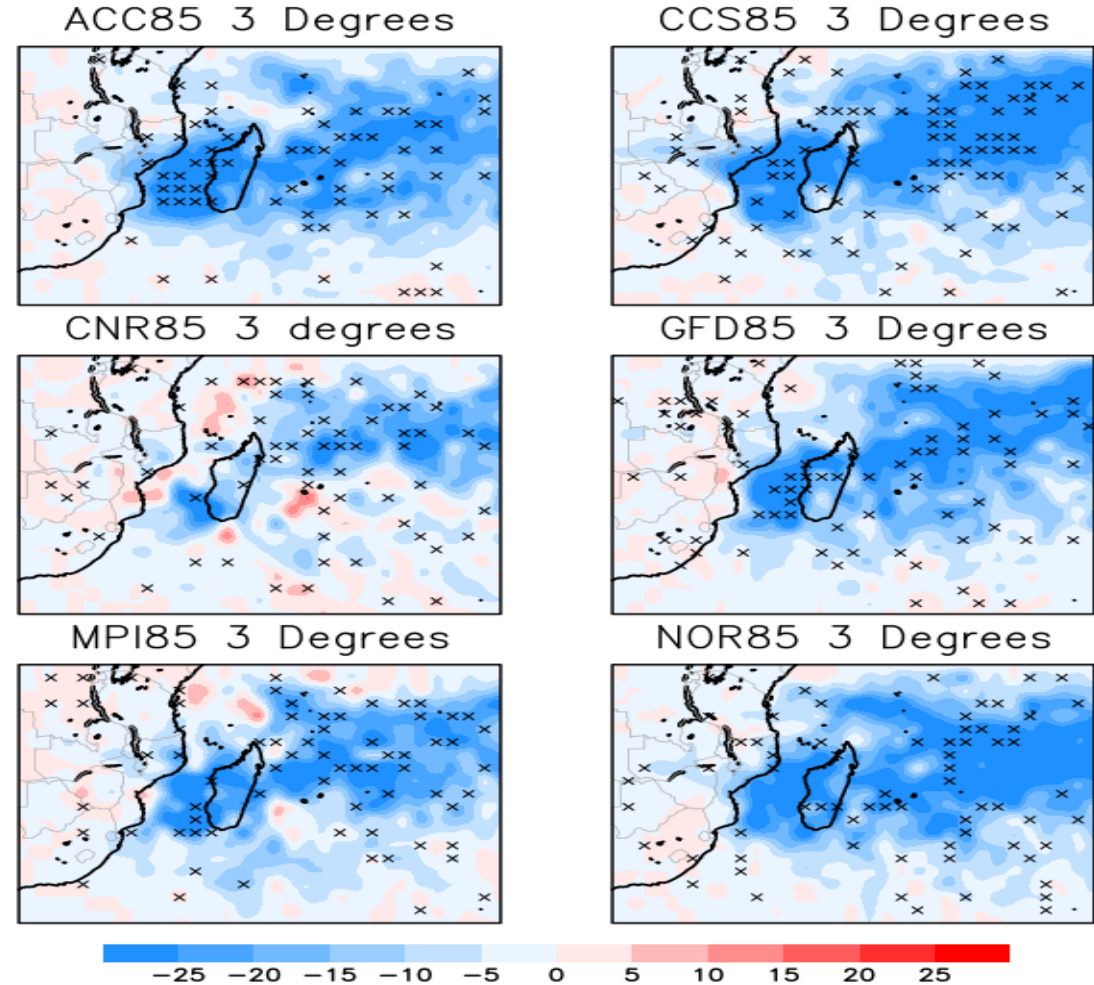
Muthige et al. (2018; *Environ. Res. Lett.*)