The latest projected climate change signal over Southern Africa using the Conformal Cubic Atmospheric Model (CCAM)

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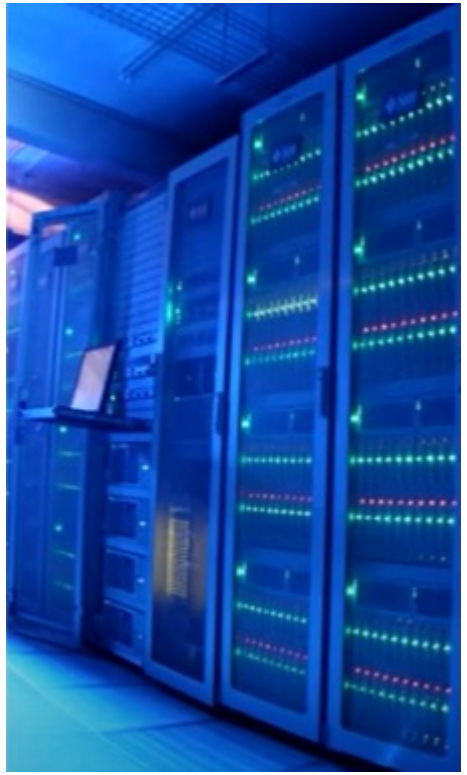
Climate Modelling at the GCI

- Conformal Cubic Atmospheric Model (CCAM)
- Centre for High Performance Computing (CHPC)



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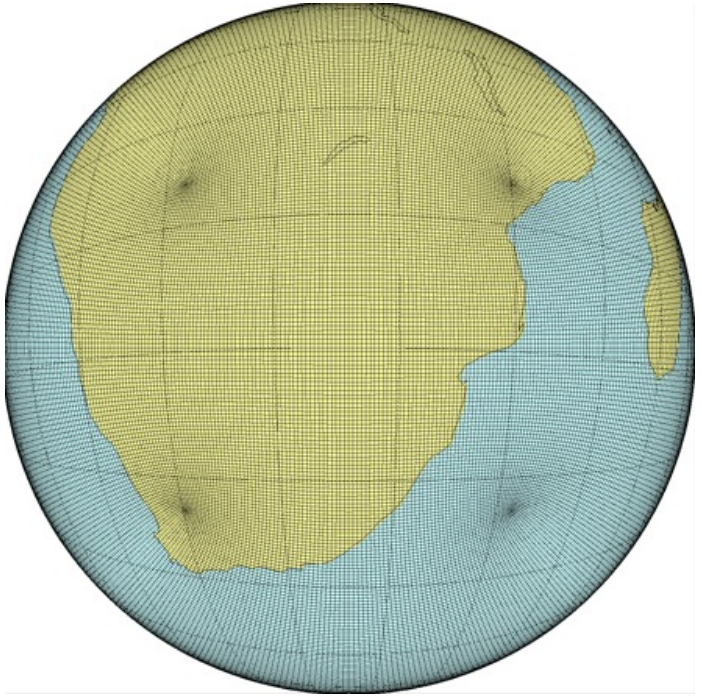
Conformal-Cubic Atmospheric Model (CCAM)

- Developed by CSIRO in Australia
- Cube-based grid
- Stretched grid enables for global grid to be focused over a particular region
- Widely used in South Africa, Australia and globally



Southern Africa 8km res C192 grid, viewing every 2nd point

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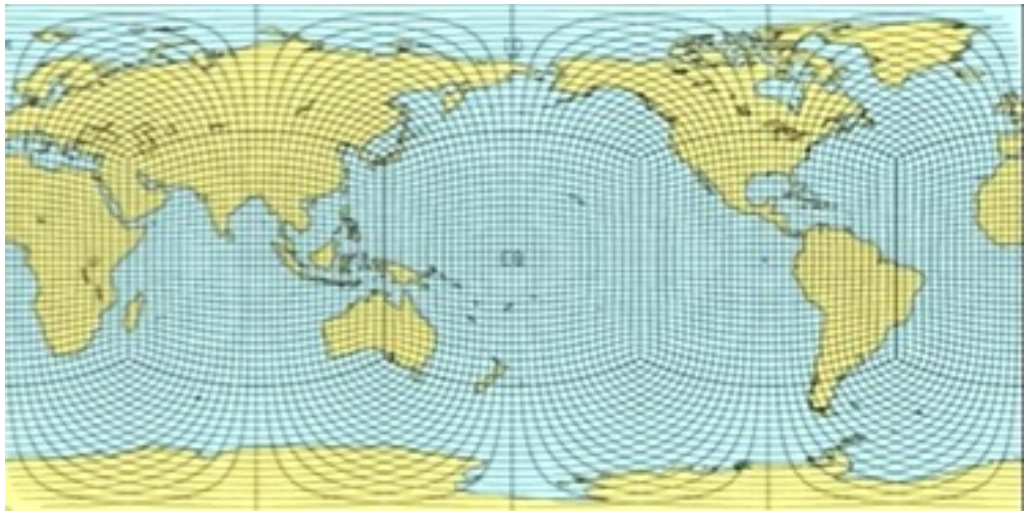
CCAM Downscaling Methodology

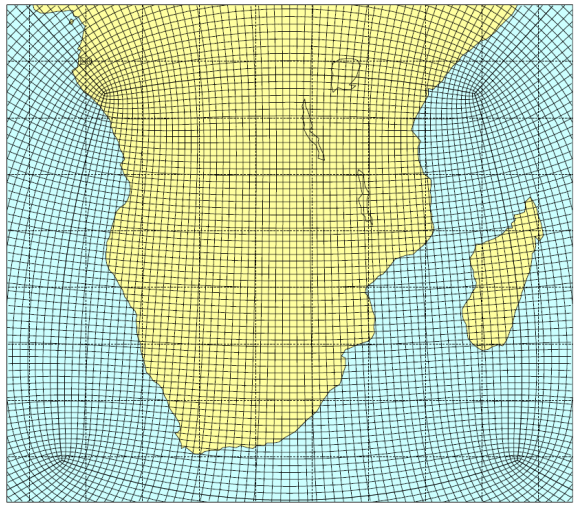
First dynamic downscaling of CMIP6 over southern Africa

Downscaling using CCAM in 2 stages



Global simulations, quasi-uniform C192 resolution (~ 50km)

SSTs, sea-ice, atmospheric nudging



Very high-resolution simulations over areas of interest (~ 8km)

CCAM outputs are regridded onto a standard lat-lon grid

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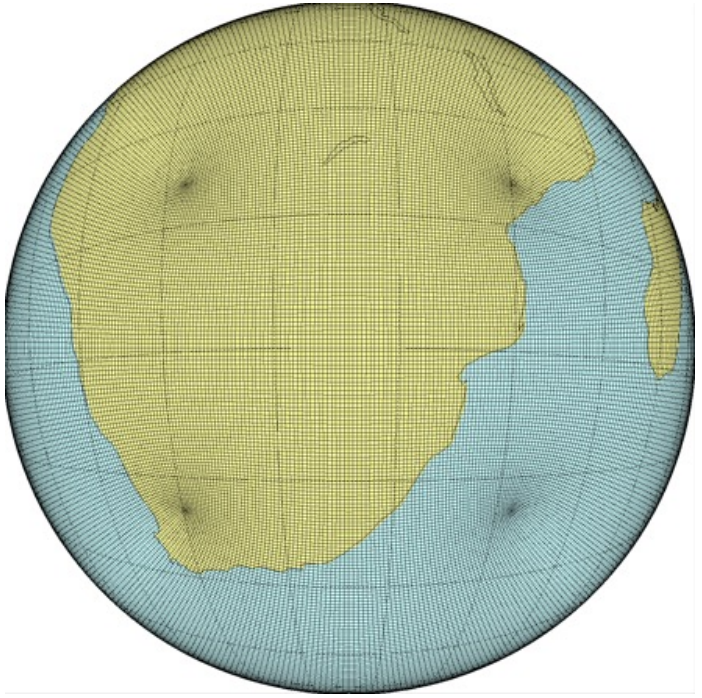
GCMs being downscaled at the GCI

- ACCESS-CM2
- ACCESS-ESM1-5
- CESM2
- CNRM-CM6-1-HR
- CNRM-ESM2-1
- EC-Earth3
- FGOALS-g3
- GFDL-ESM4
- GISS-E2-1-G
- MPI-ESM1-2-LR
- MRI-ESM2-0
- NorESM2-MM



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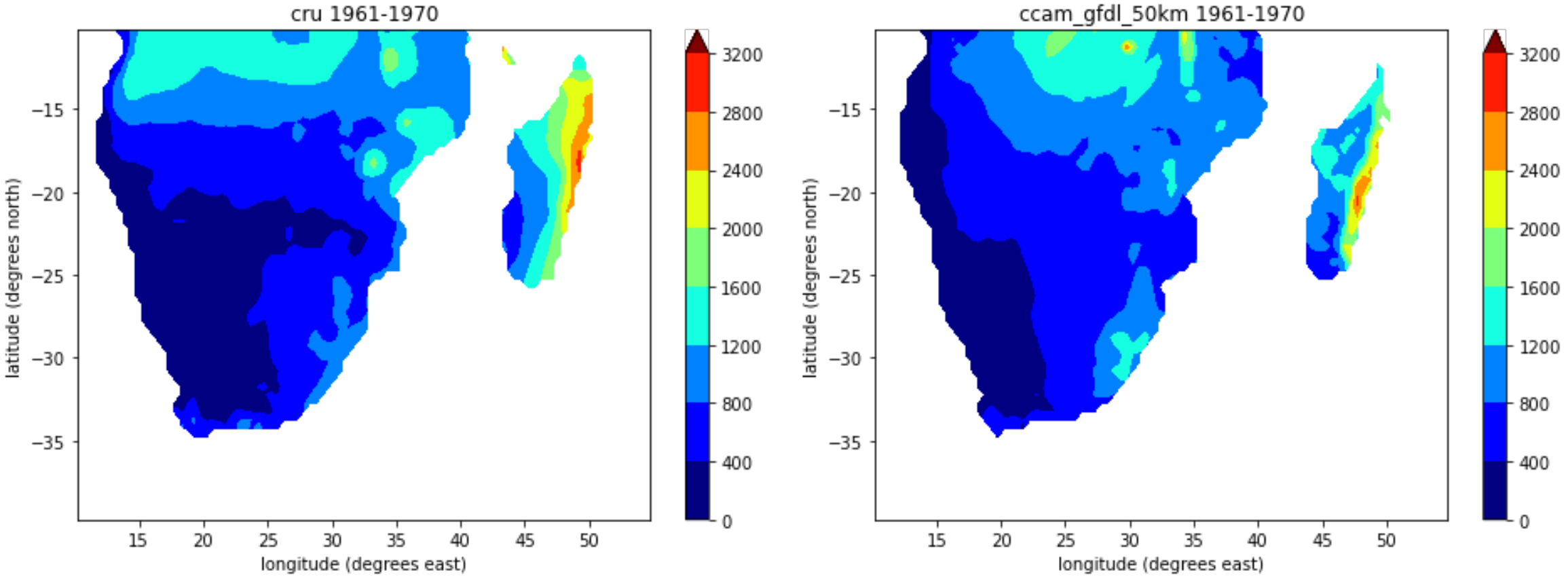
CCAM 50km Verification



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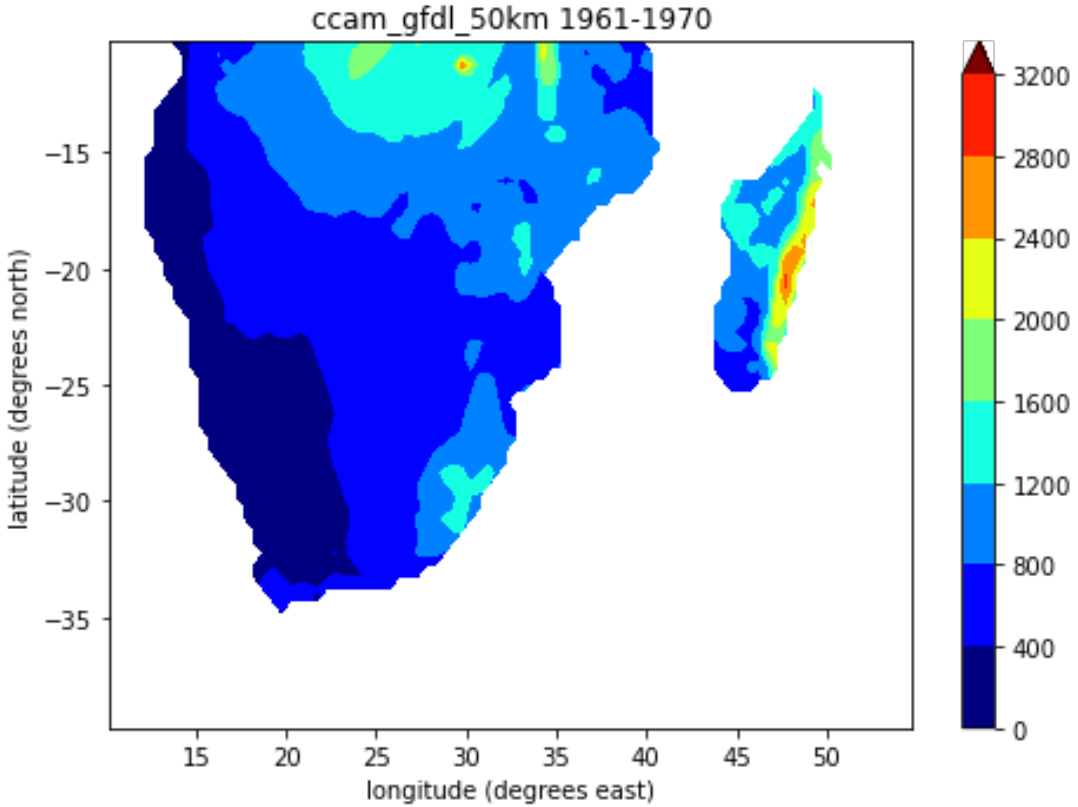
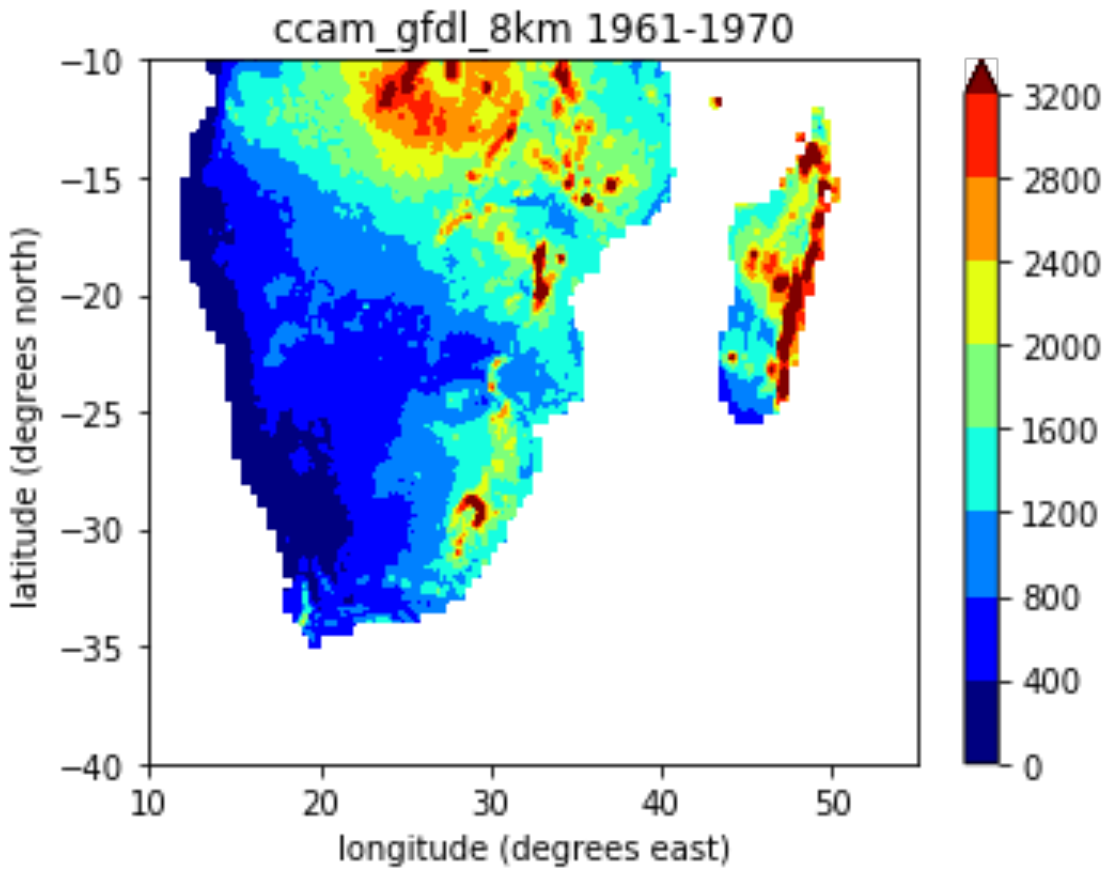
CCAM 50km vs 8km





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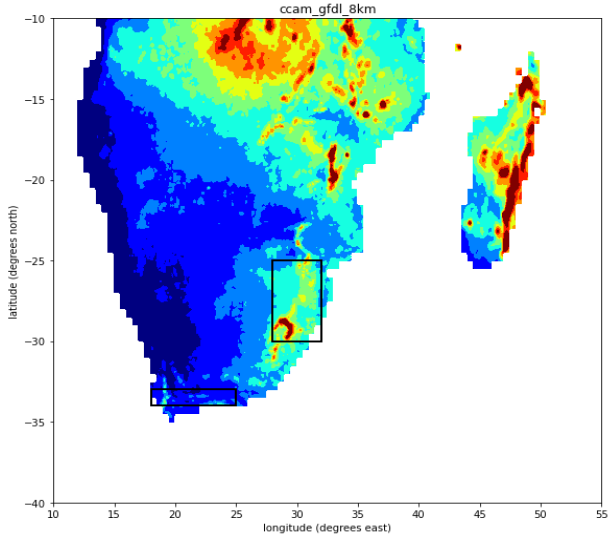
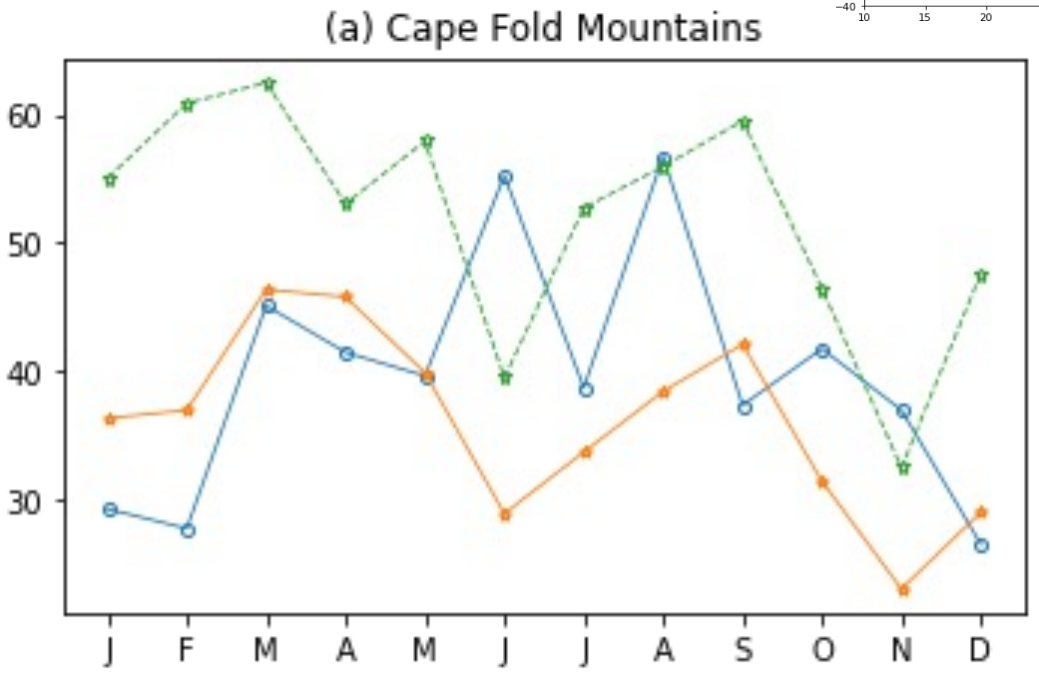
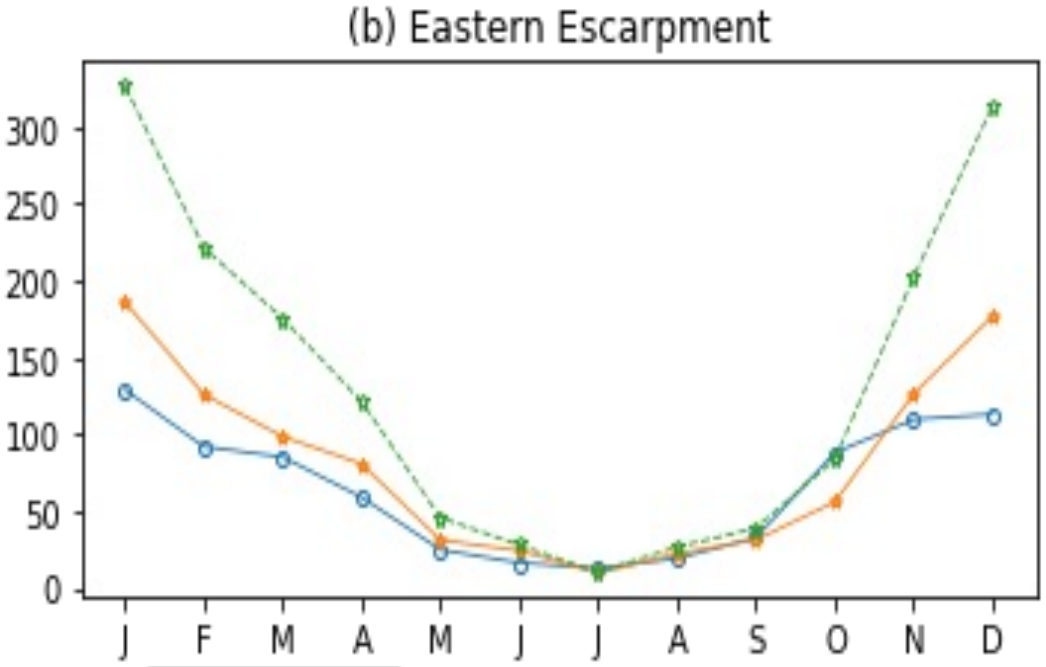
Seasonal Cycle 1961-1970







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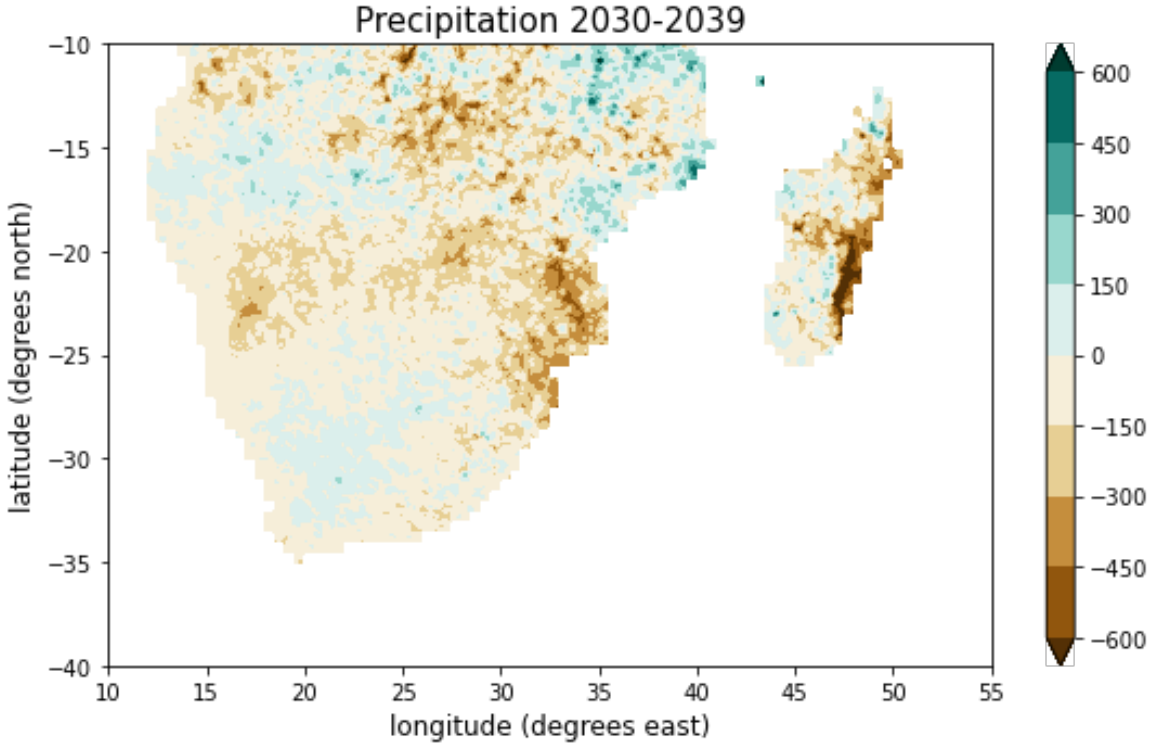
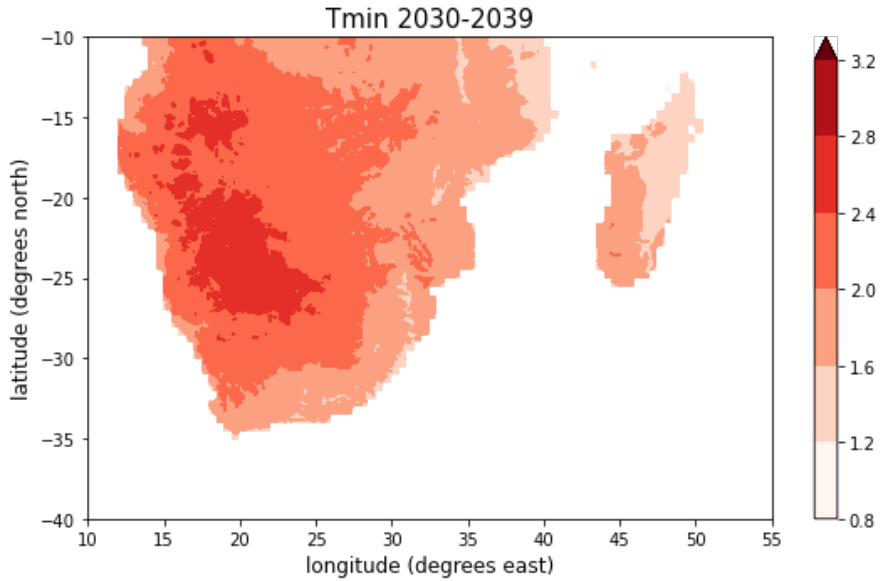
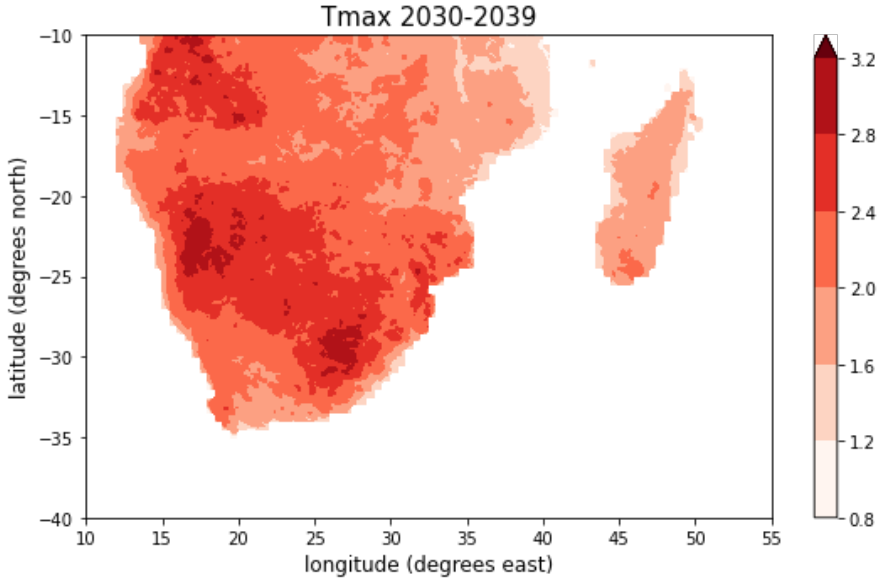
Detailed Projections of Future Climate Change







Thank you!

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