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*CORDEX Africa Simulation with
Convective Parameterization Tests,
RegCM3 vs. RegCM4*

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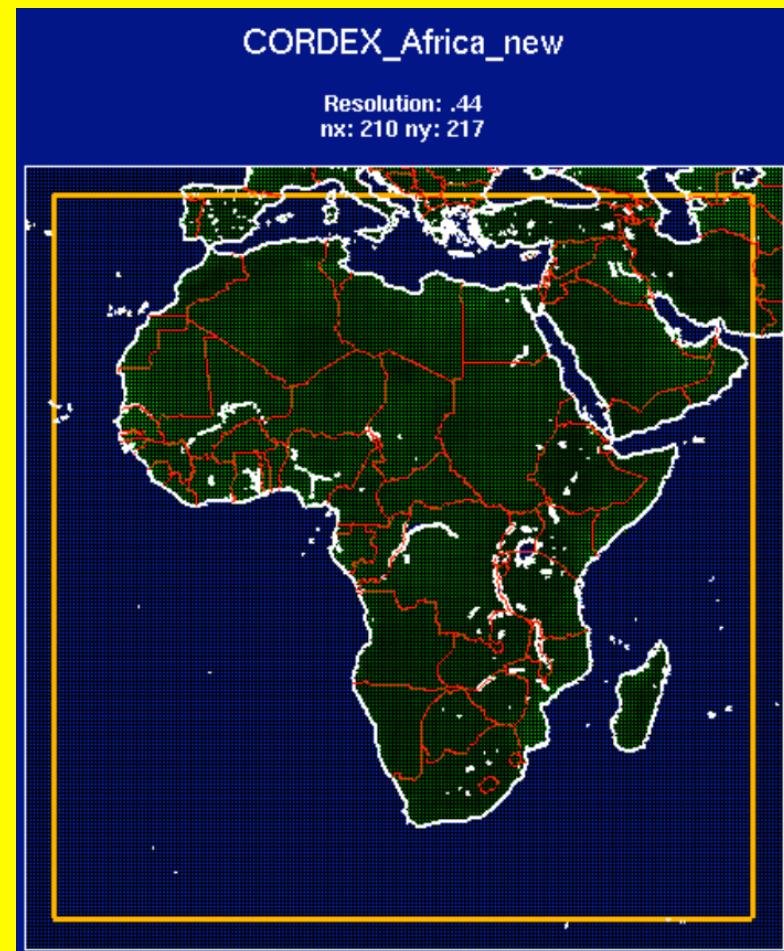
Settings

- Domain size: 238x250, 50km, 12 pt buffer zone
- Saharan albedo 0.2 for wavelength $<0.7\mu\text{m}$ and 0.4 for $>0.7\mu\text{m}$
- Large scale precipitation RegCM alpha
- ERA Interim 1989-2002, 1989 spin-up



Validation

- CRU land – total area excluding buffer zone (12pt)
- Period 1990-2002, vs. CRU TS2.1



Convection

Tests RegCM3:

- Kuo and Anthes
- Grell (Arakawa and Schubert)
- Grell (Fritsch and Chappell)
- Emanuel, final runs Kuo and Anthes, Grell (Fritsch and Chappell)



Convection

Final runs RegCM3:

- Kuo and Anthes
- Grell (Fritsch and Chappell)
- Emanuel

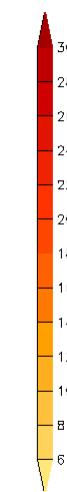
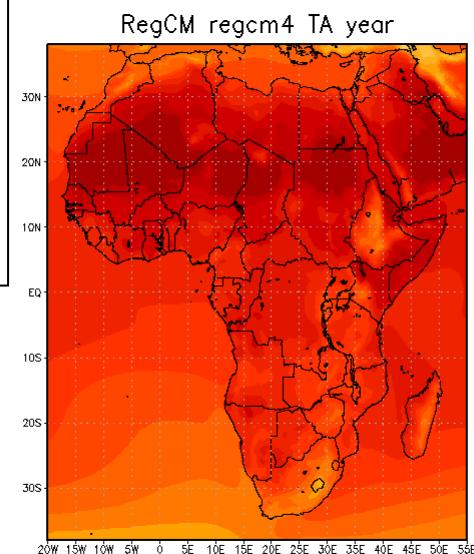
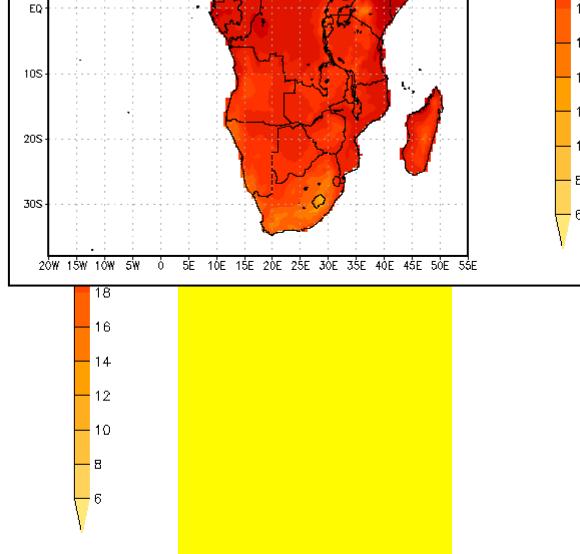
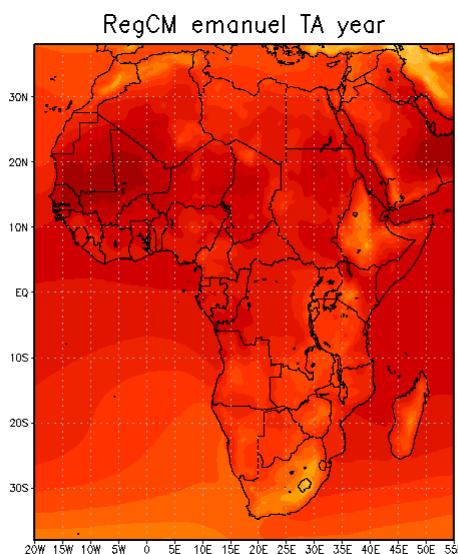
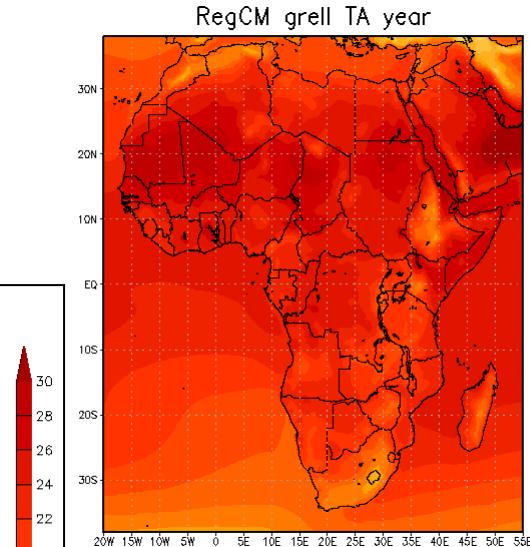
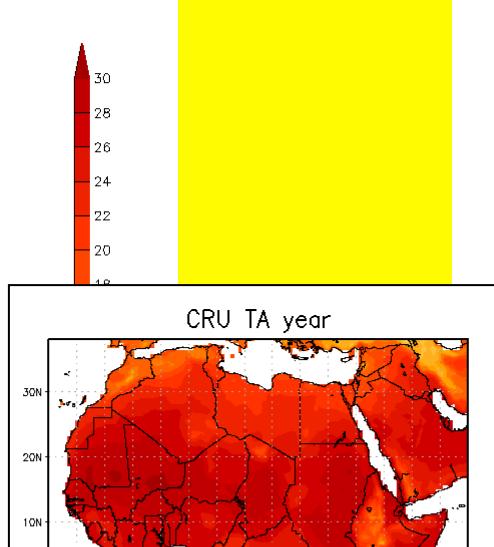
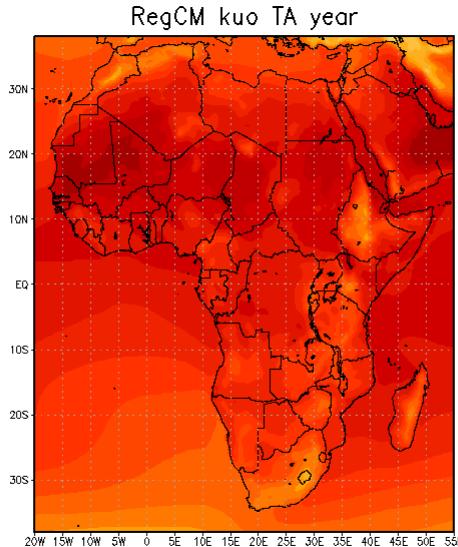
RegCM4.0

- Grell (Fritsch and Chappell)



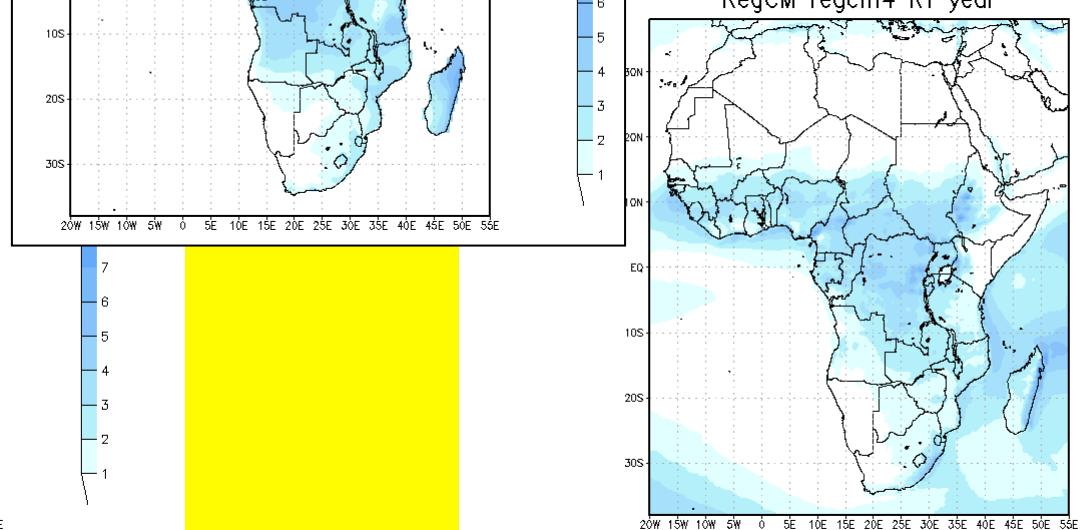
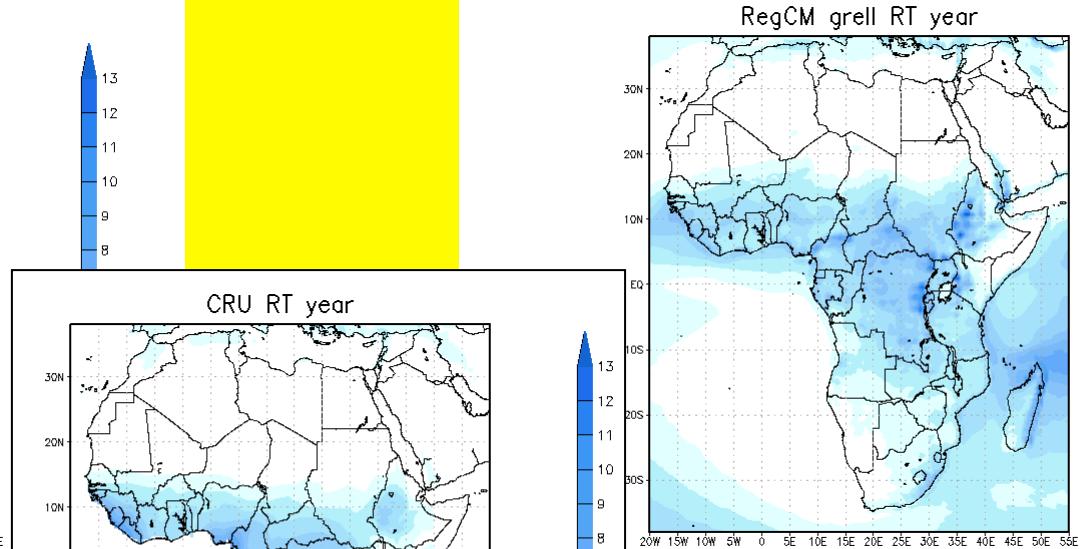
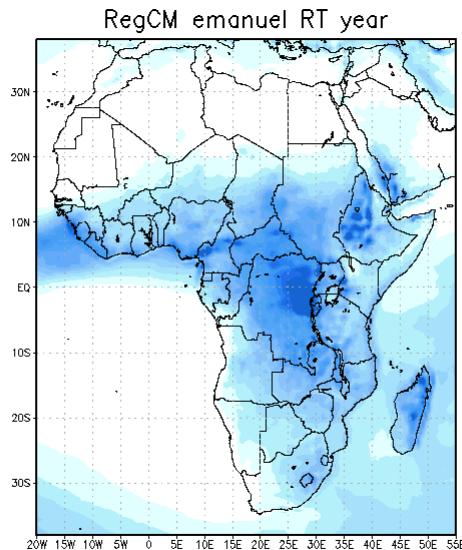
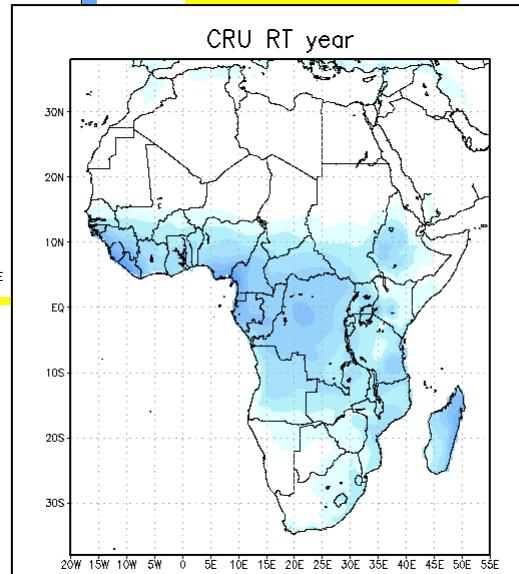
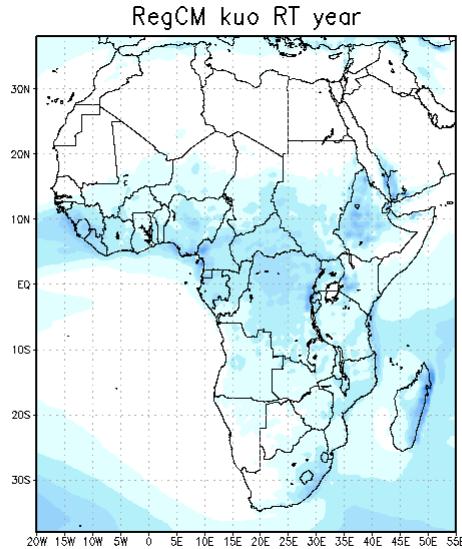
All models and CRU 1990-2002

Temperature (°C)



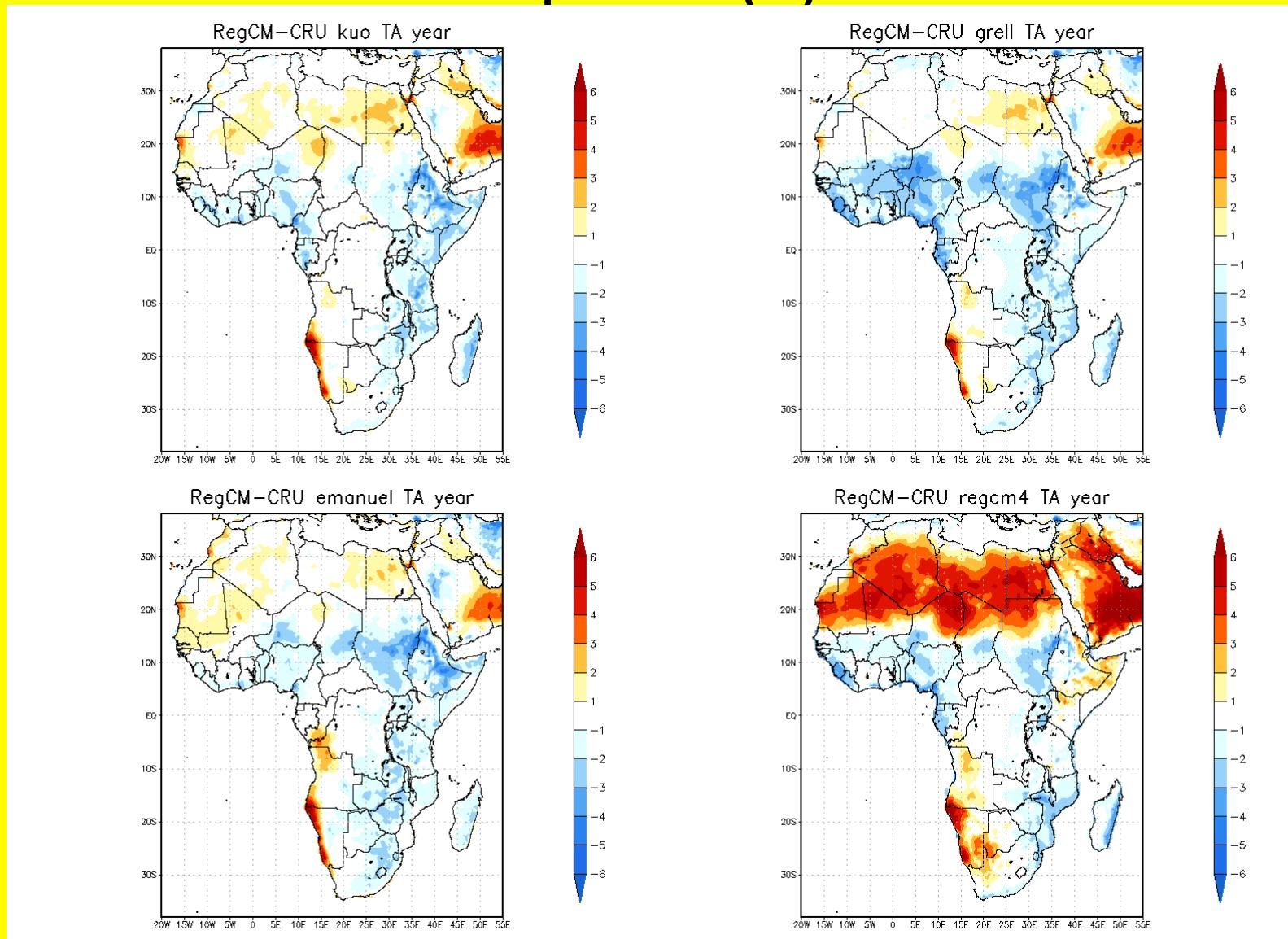
All models and CRU 1990-2002

Precipitation (mm/day)



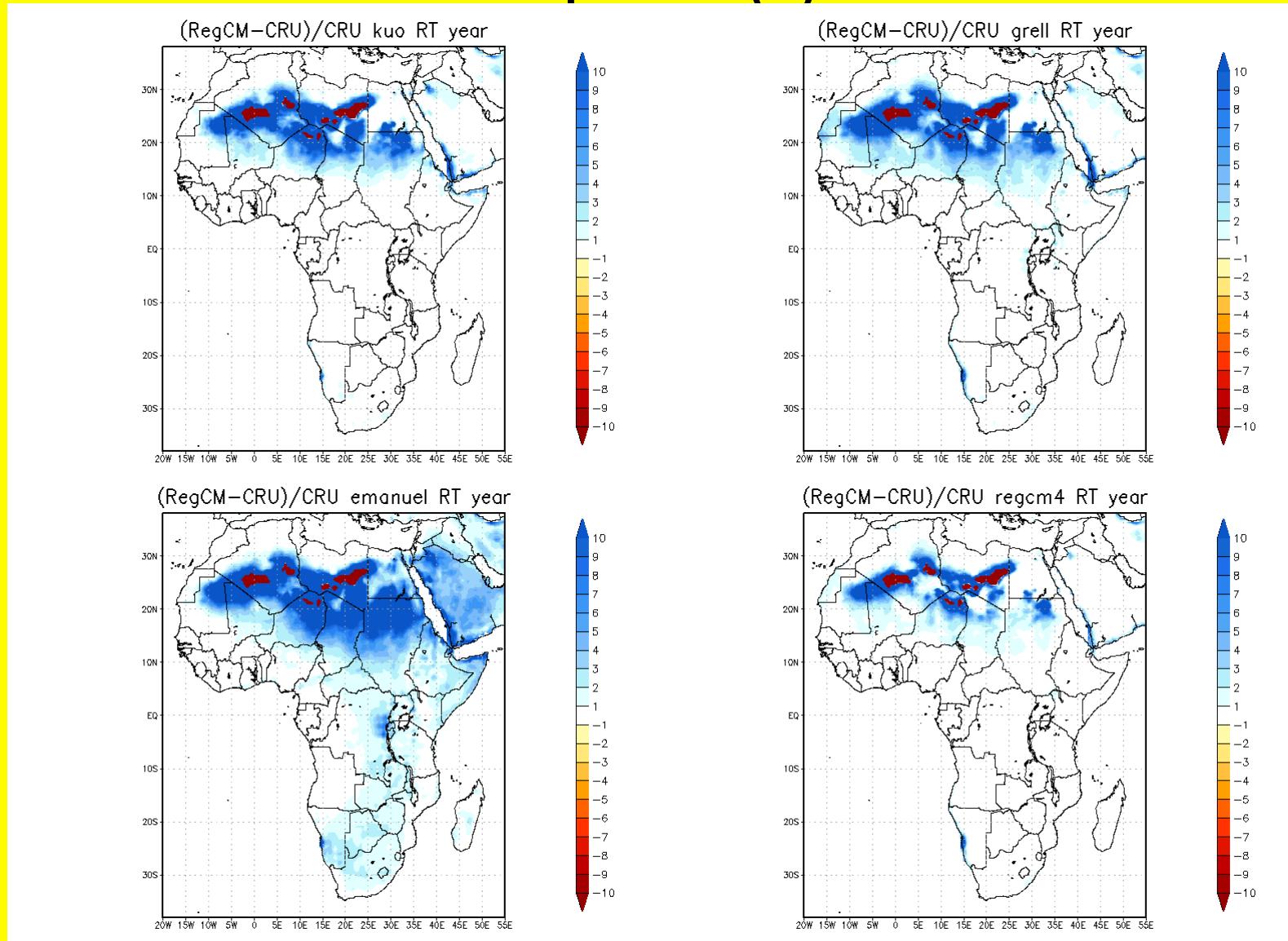
All models-CRU 1990-2002

Temperature (°C)



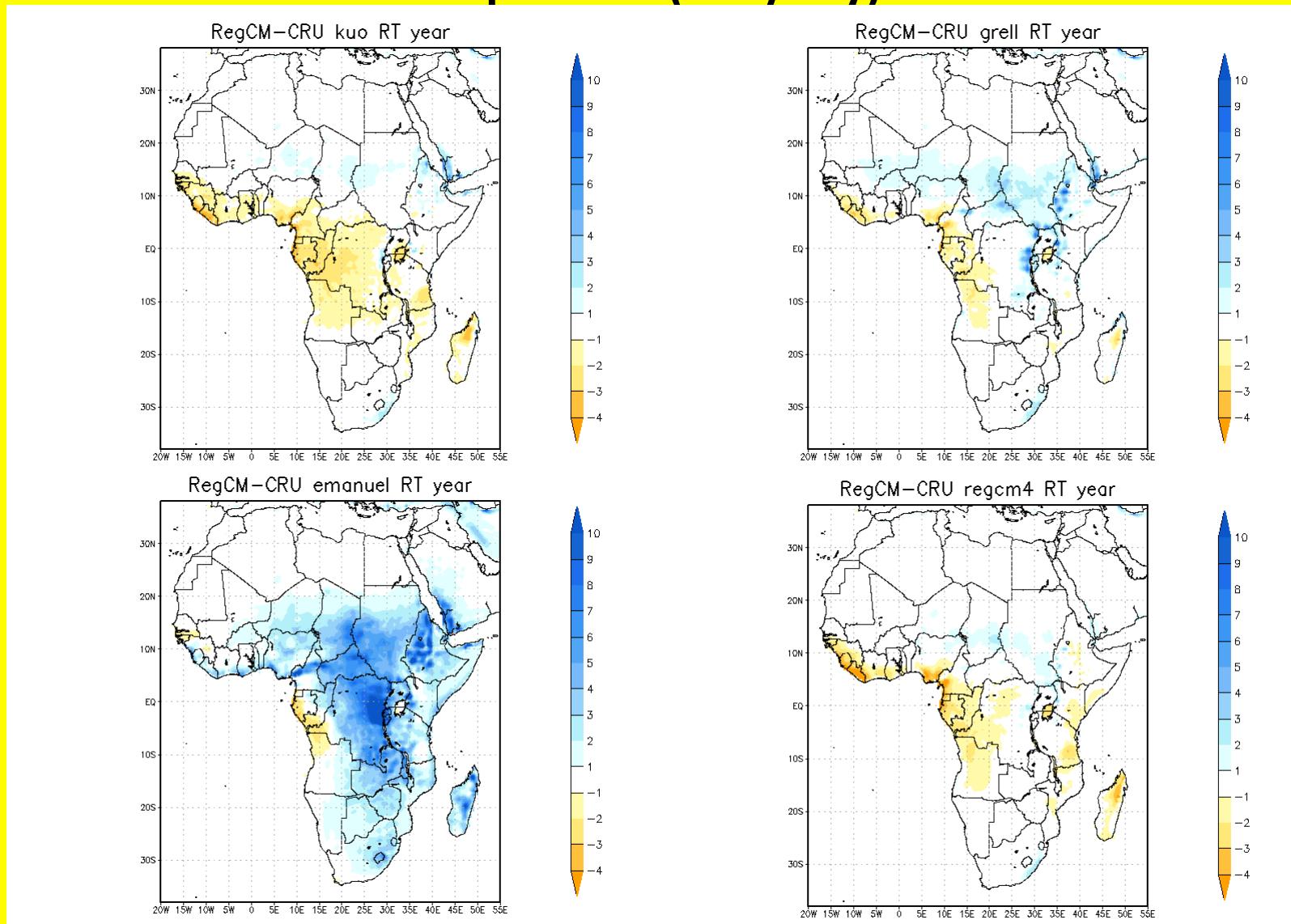
All models-CRU 1990-2002

Precipitation (%)



All models-CRU 1990-2002

Precipitation (mm/day)



Validation

- CRU land – total area excluding buffer zone (12pt)
- Period 1990-2002, vs. CRU TS2.1

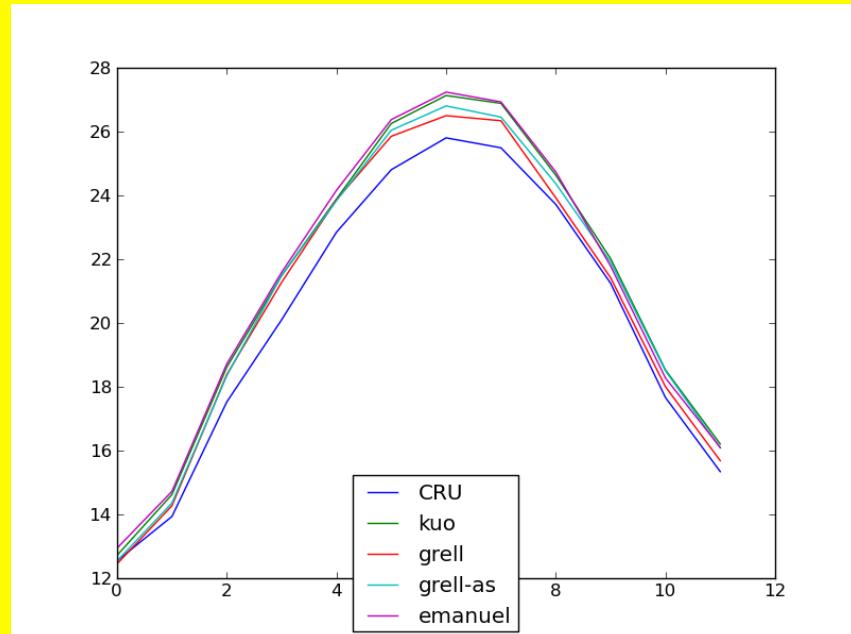
Time series:

- Africa continent land – 18W-52E, 35S-38N
- ITCZ land – 18W-52E, 15S-15W

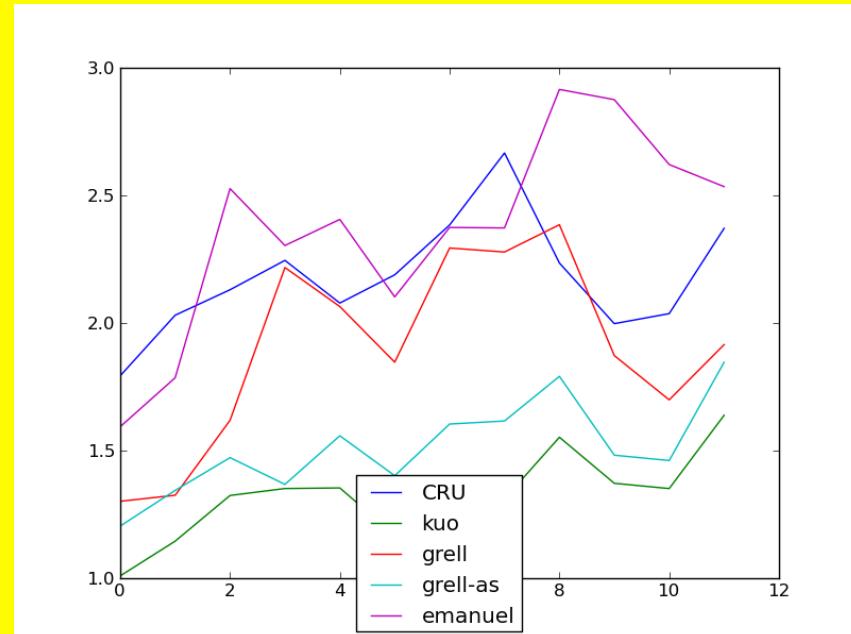


CRU land 1989

Temperature (°C)

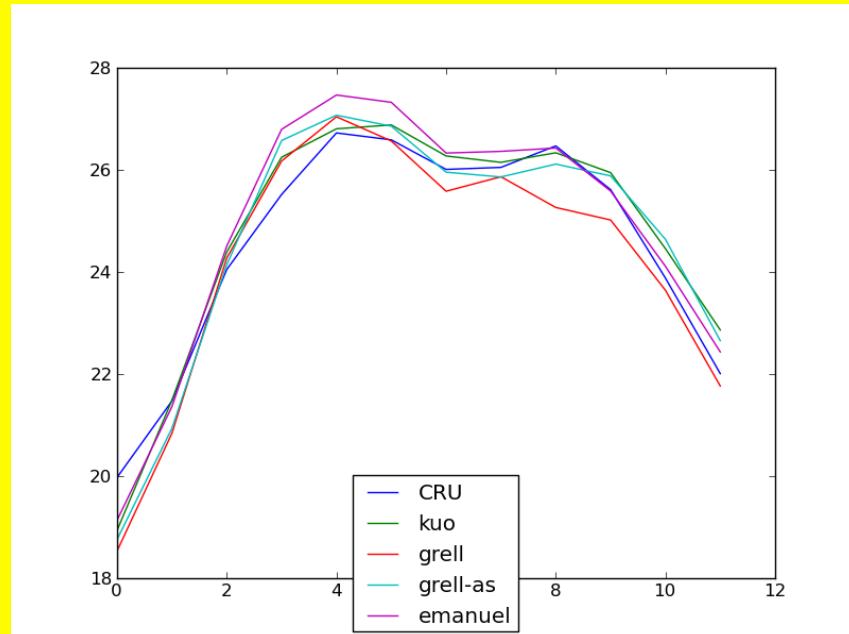


Precipitation (mm/day)

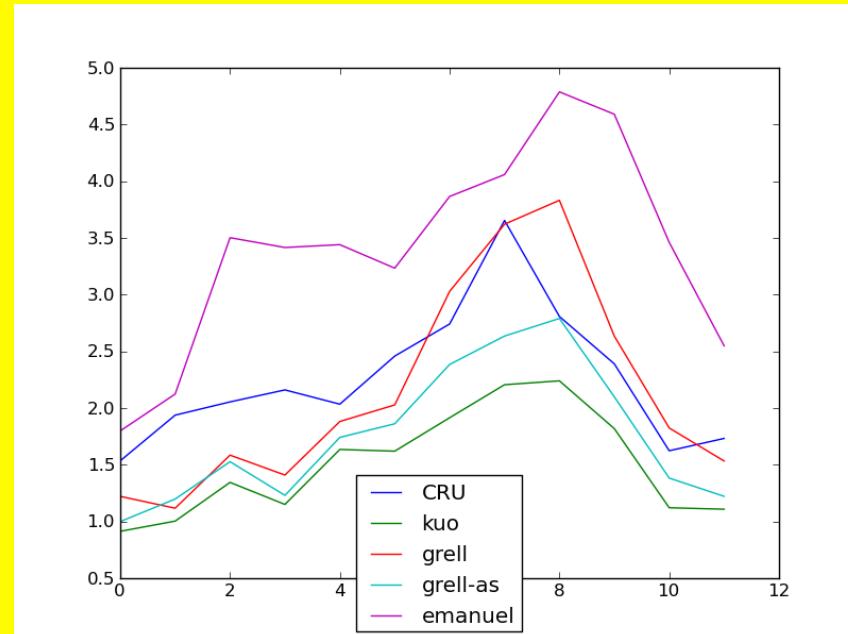


Africa continent 1989

Temperature (°C)

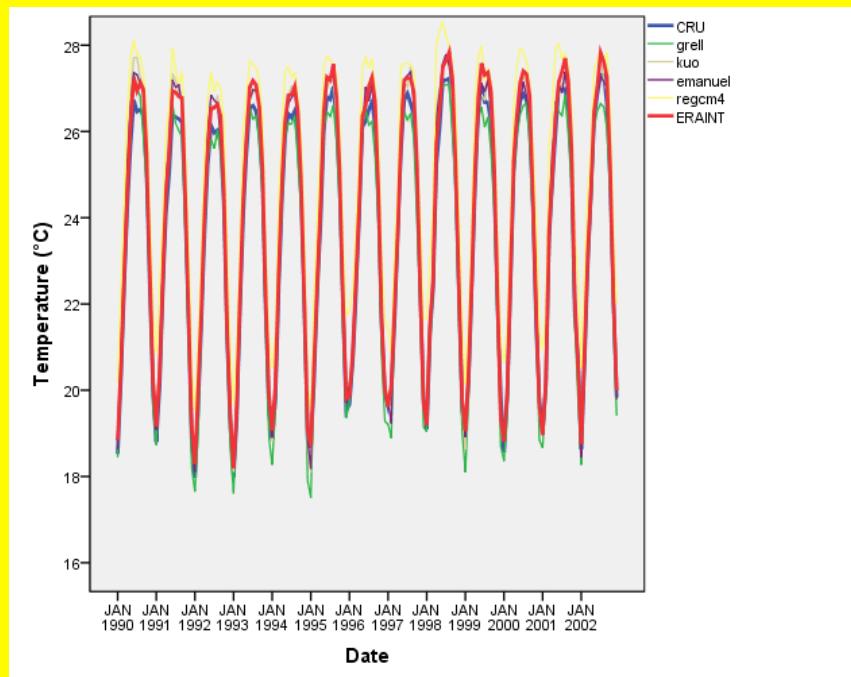


Precipitation (mm/day)

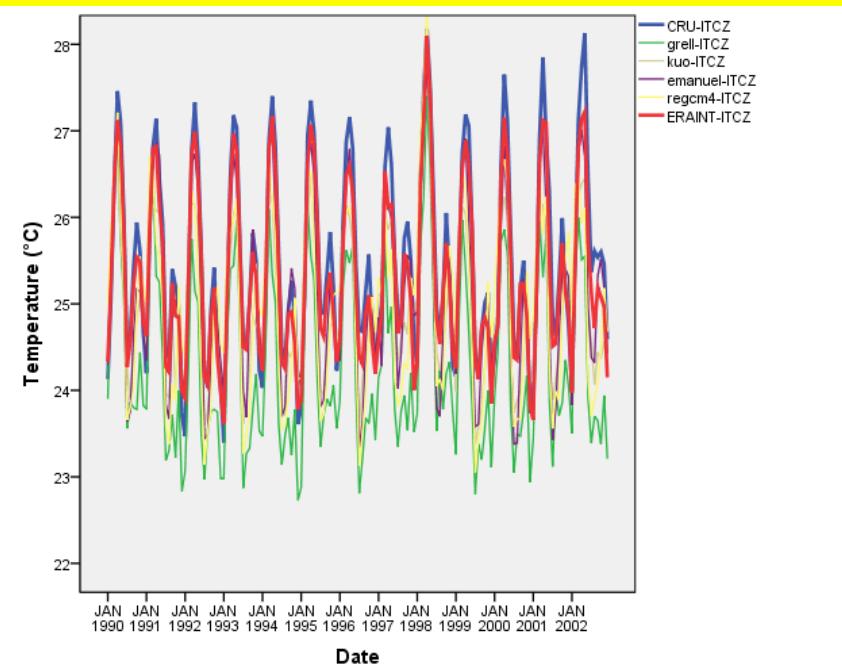


Temperature – monthly

Africa

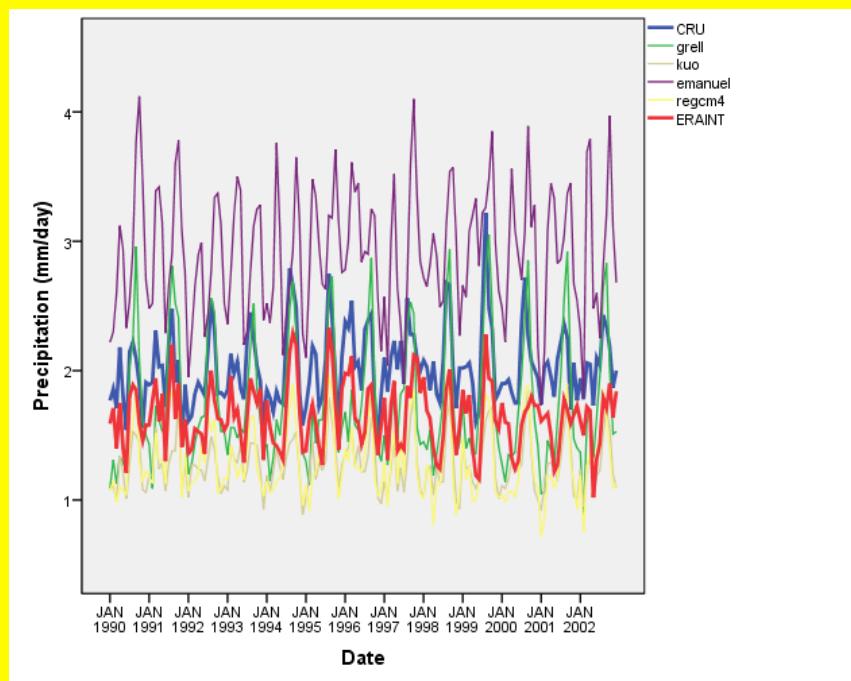


Africa - ITCZ

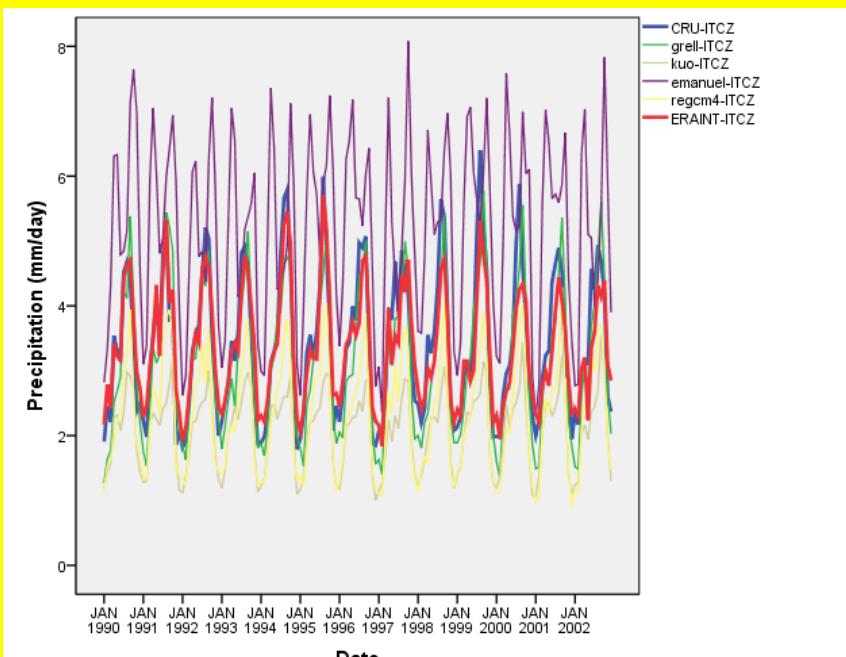


Precipitation – monthly

Africa

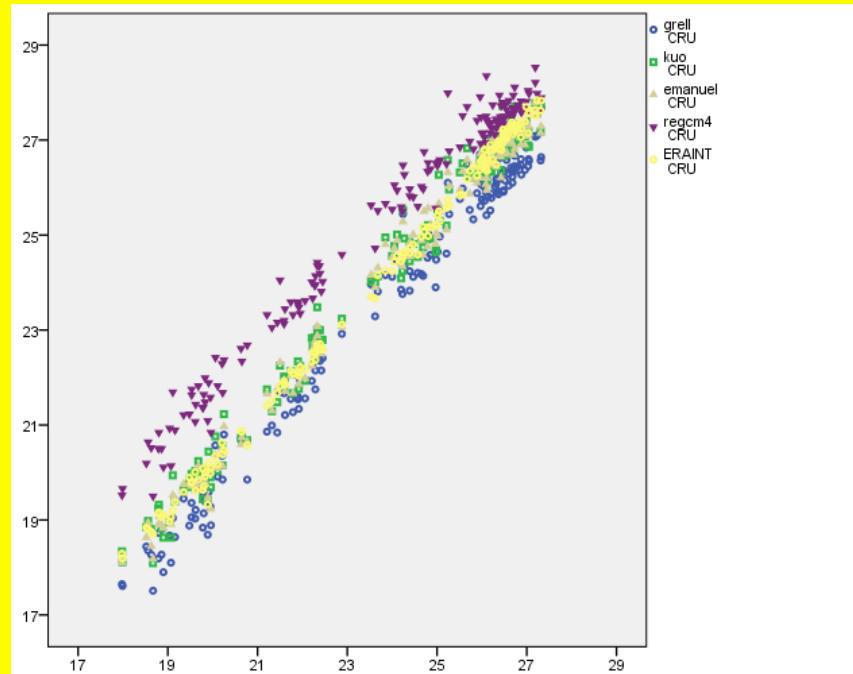


Africa - ITCZ

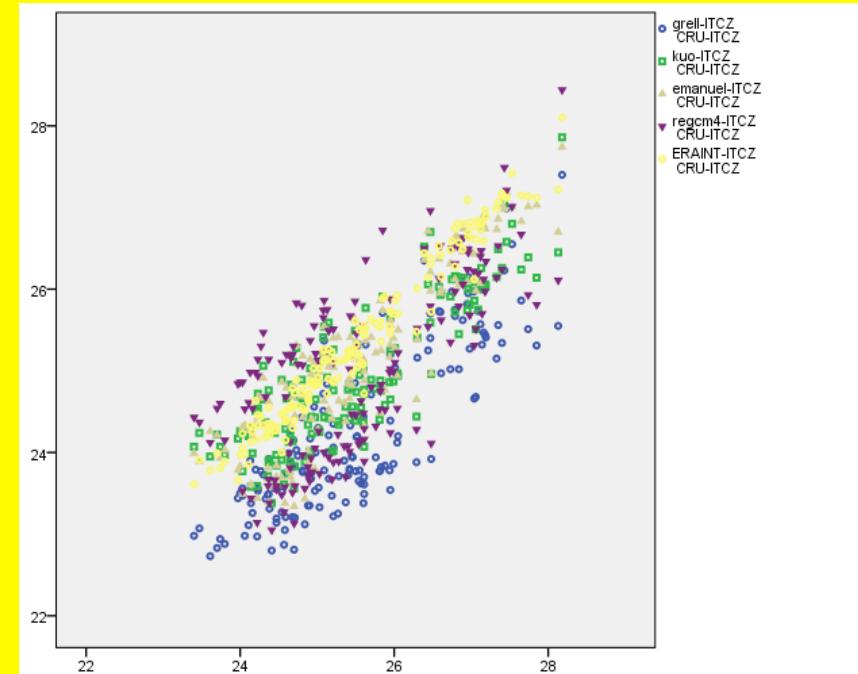


Temperature – monthly

Africa

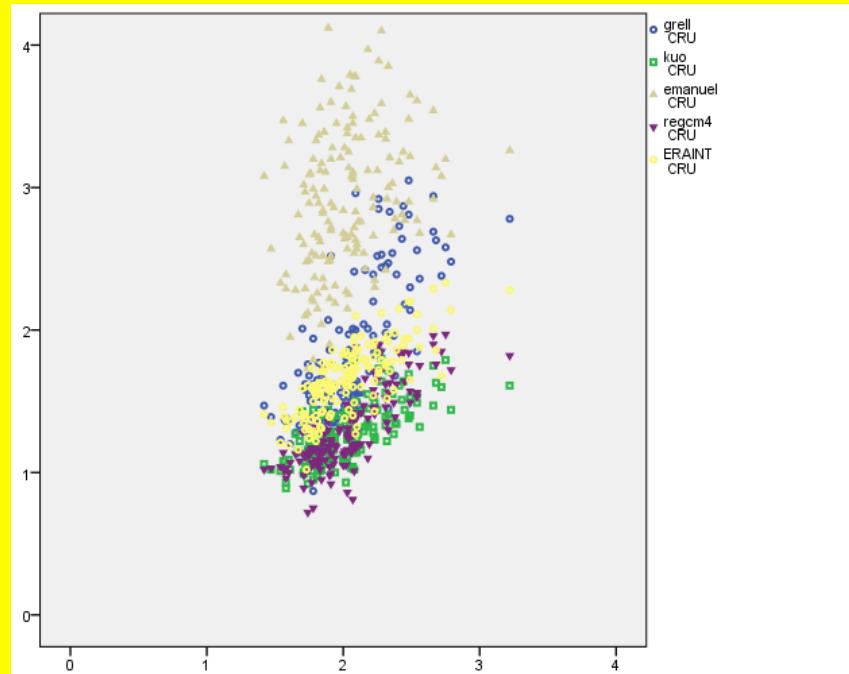


Africa - ITCZ

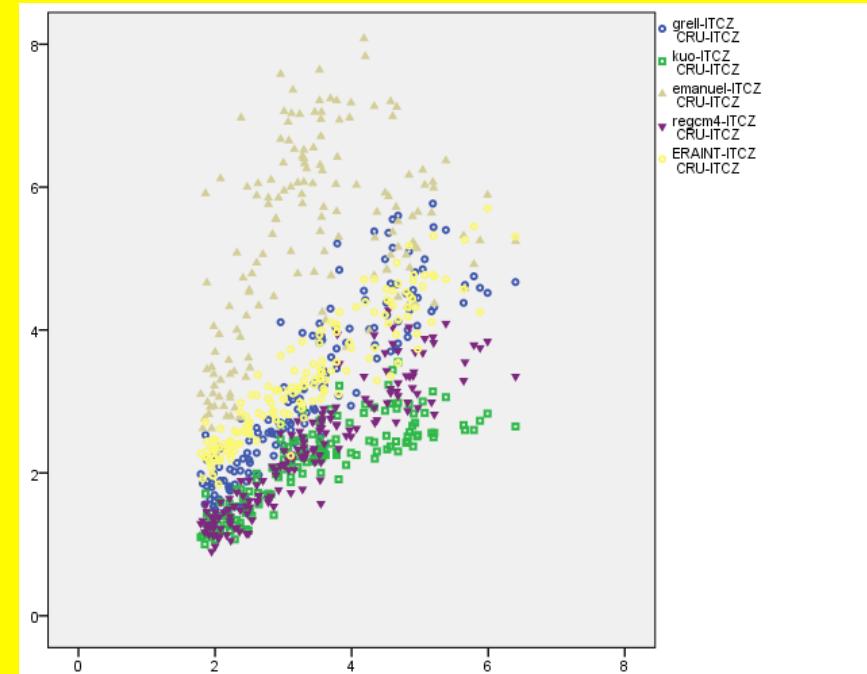


Precipitation – monthly

Africa

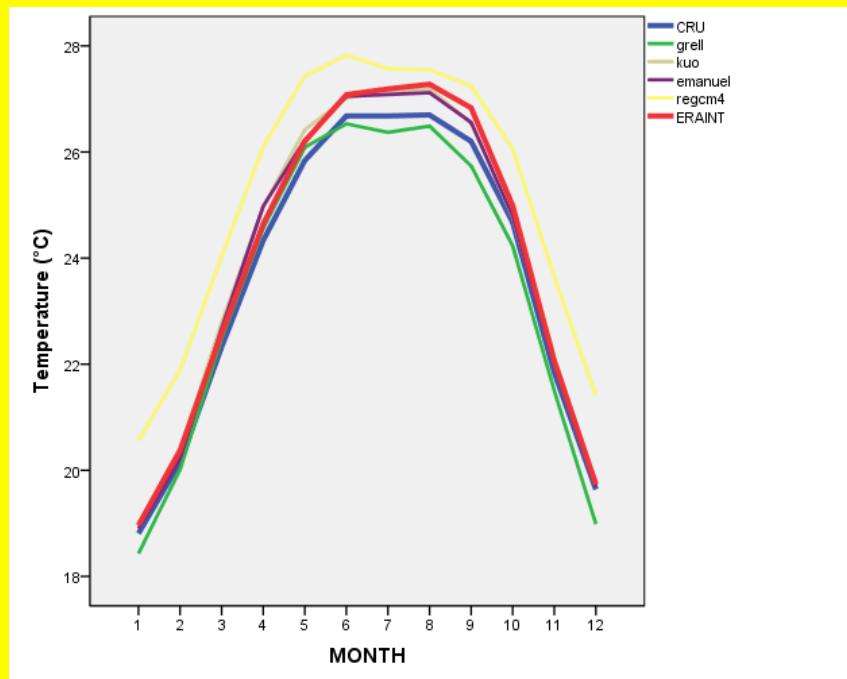


Africa - ITCZ

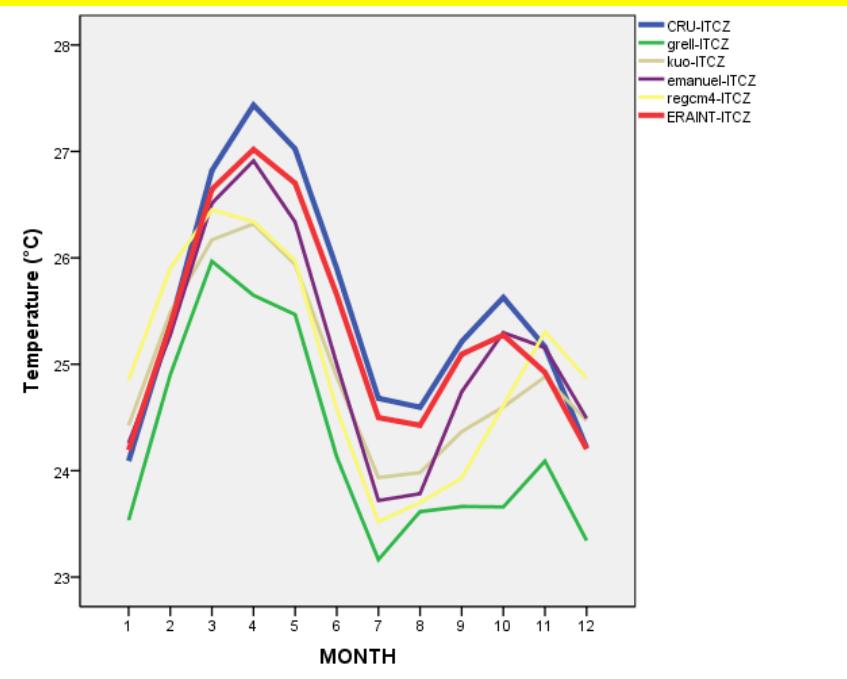


Temperature – annual cycle

Africa

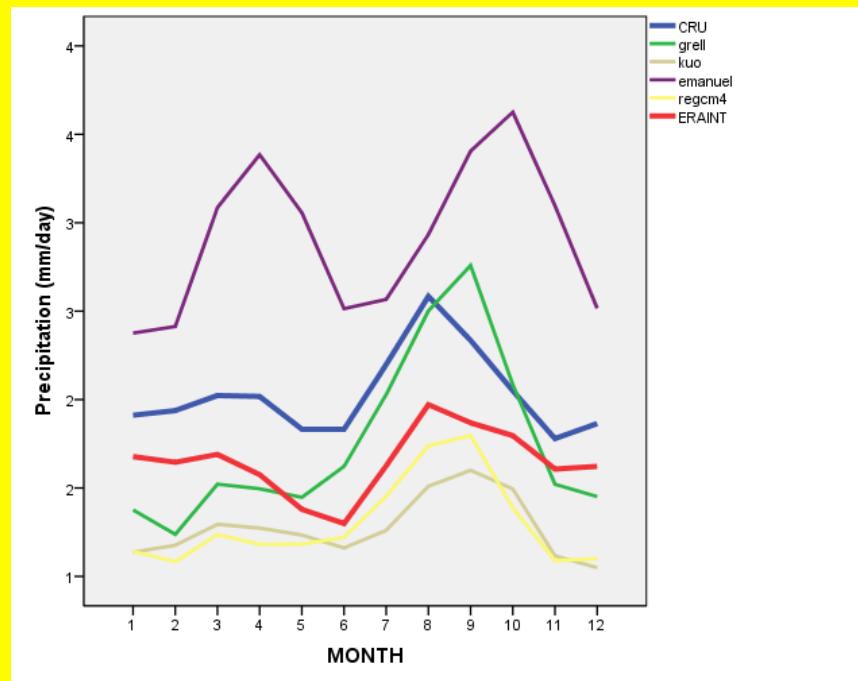


Africa - ITCZ

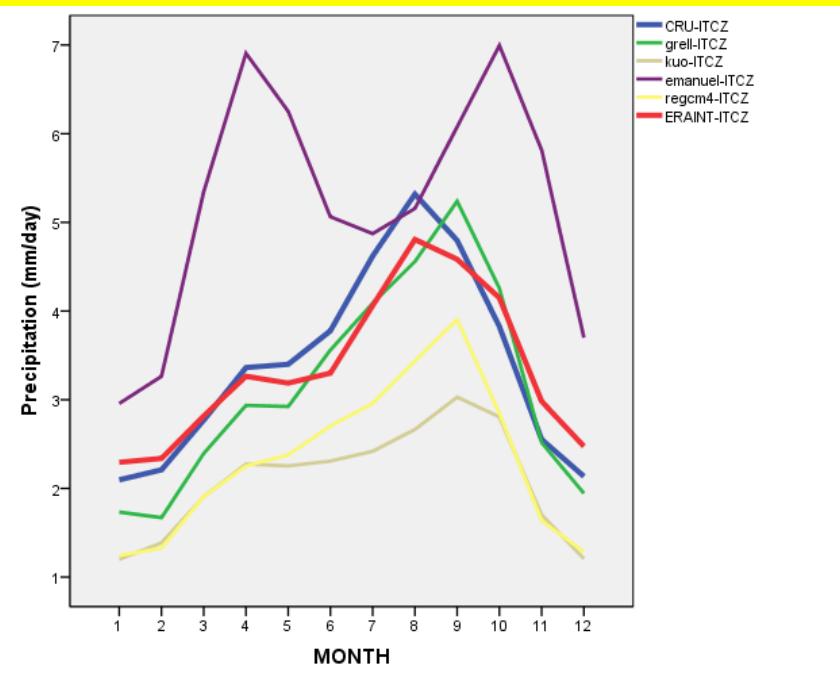


Precipitation – annual cycle

Africa

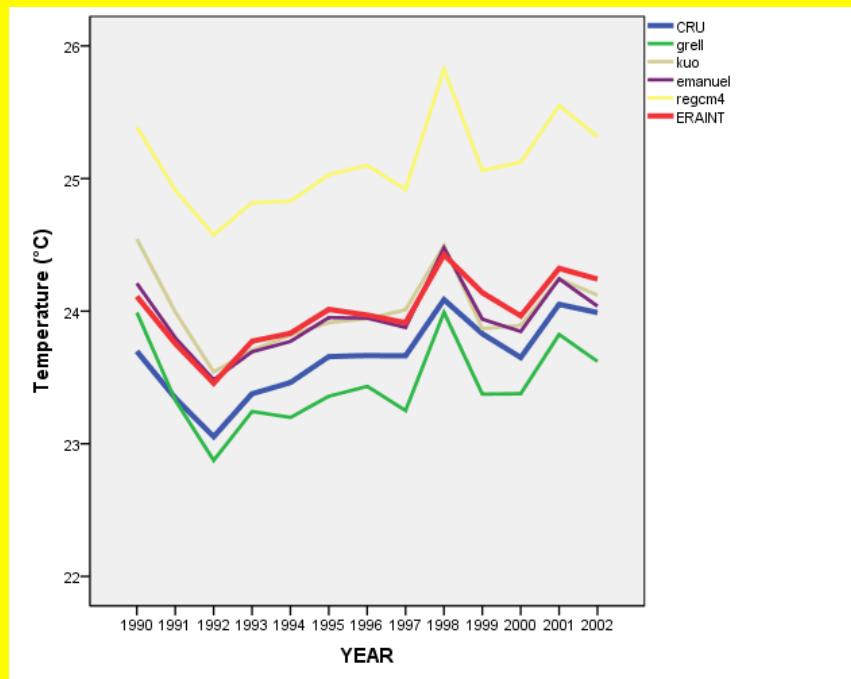


Africa - ITCZ

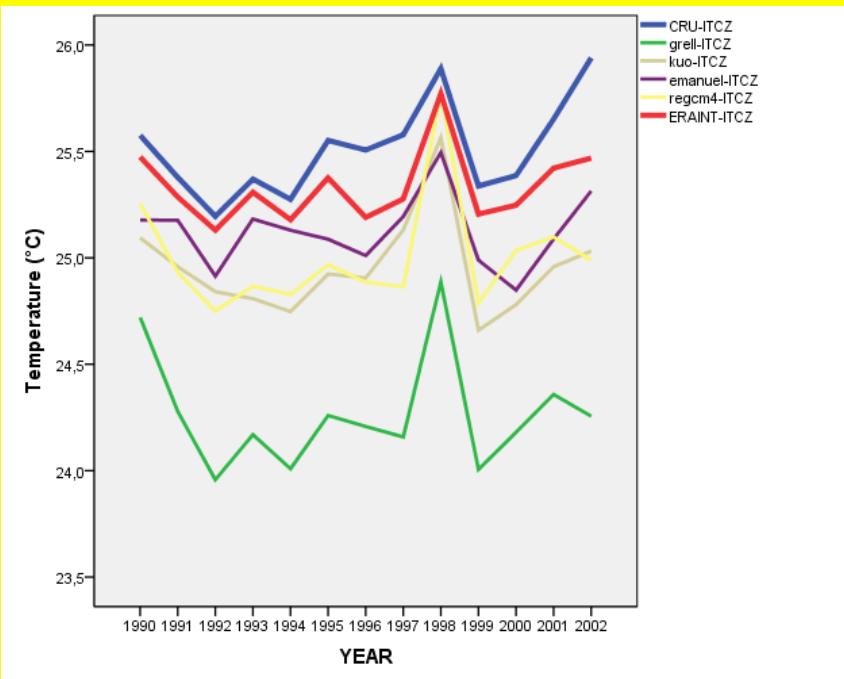


Temperature – annually

Africa

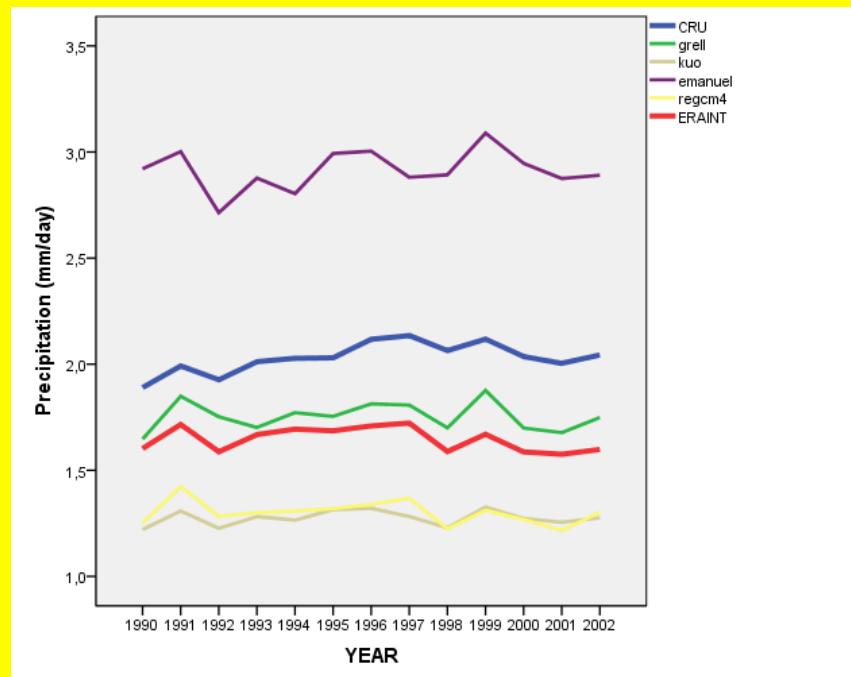


Africa - ITCZ

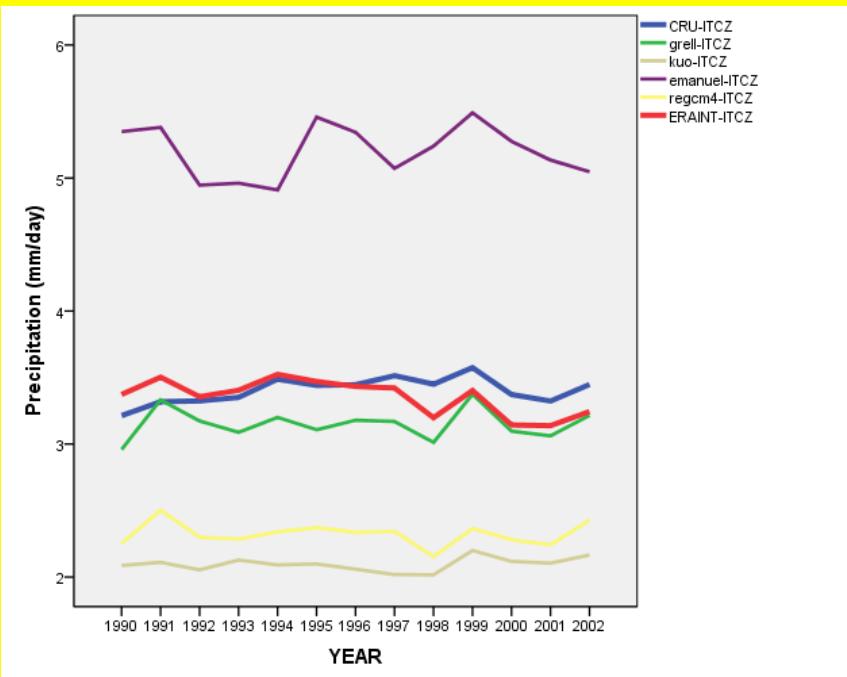


Precipitation – annually

Africa



Africa - ITCZ



Summary, outlooks, options

- Complete the tests at least till 2006 (CRU TS3.0)
- More tests for RegCM4.0 (RegCM4.1?)
- More detailed statistical analysis (regions, higher statistics)
- Scenarios – ECHAM?, ARPEGE?

Thanks for your attention!

