INTRODUCTION
Regional climate projections with two complementary methods
- Dynamical approach (COSMO-CLM)
  - Driven by the AOGCM ECHAM5/MPIM
  - 2001-2100: SRES A1B scenario
- Statistical approach (STARS)
  - Driven by the WATCH data set (forcing variable: temperature)
  - 1976-2000: WATCH data for the years 1951-1975 was used with observed temperature trend
  - 2001-2006: WATCH data for the years 1951-2000 was used with a temperature trend of 1.5°C (corresponds to SRES A1B)
  - 100 realizations were computed for each time period
- Both methods are tested against WATCH data for the years 1976-2000

STARS (Statistical Analogue Re-sampling Scheme)\(^1\)
- constraint: parameters of a linear regression line for a chosen climatological variable
- simulated series are generated by re-sampling from segments of observation series
- resulting series comply with prescribed regression parameters
- physical consistence between different variables and in space and time

RESULTS
Precipitation bias (simulations vs. WATCH) for 1976-2000

Table 1: Spatial distributions of precipitation for 1976-2000

![Fig. 2: Precipitation bias in %. Points indicate significant difference (\(\alpha=0.05\)).](image)

Projected (with STARS) precipitation change (2036-2060 vs. 1976-2000)

Figure 3: Taylor-diagram for precipitation compared to the WATCH data set.

CONCLUSIONS
- COSMO-CLM reproduces precipitation poorly for Southern Africa
- STARS provides excellent validation results

Climate projections with a mean temperature trend of 1.5°C for the years 2011-2060 using STARS show
- Precipitation decreases mainly in the inland regions
- Very profound during austral summer (rainy season) with values of up to 50%
- Winter precipitation increases in Swaziland and the northeastern portion of the simulation area