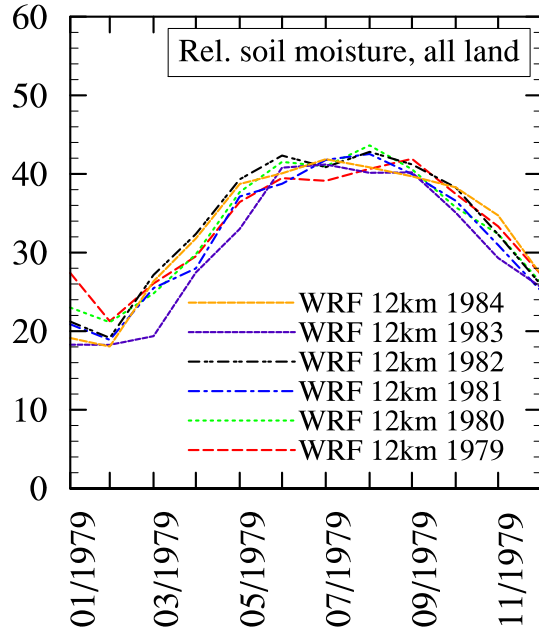
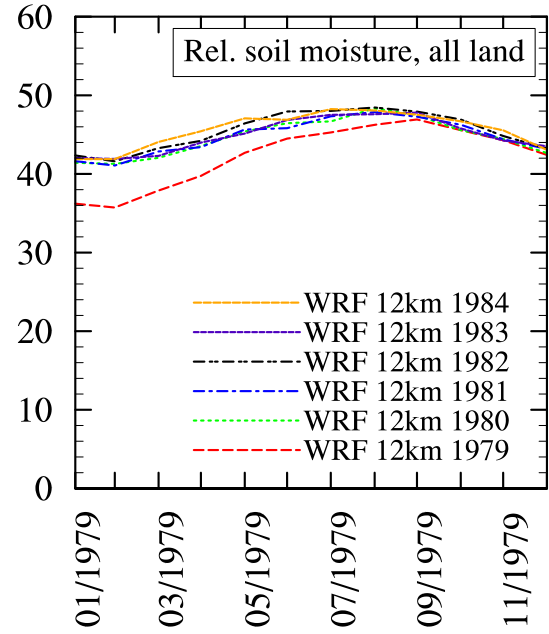


Spinup times for soil properties (moisture, temperature) for West Africa

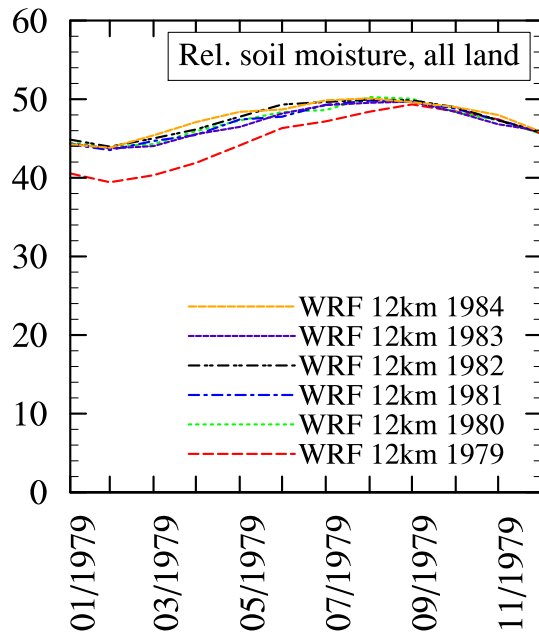
In the following, we compare the annual cycle (xy plots, monthly averages) and annual averages (contour plots) of subsequent years of the WRF 12km run, used as reference in this investigation. The xy plots show the annual cycle of six subsequent years (1979 to 1984) for soil temperature and soil moisture on the four levels of the NOAH land-surface model (level 1: 5cm, level 2: 25cm, level 3: 70cm, level 4: 1.5m). The contour plots display the difference of the average soil temperature/moisture for each year to a three-year mean value derived from 1982, 1983 and 1984.



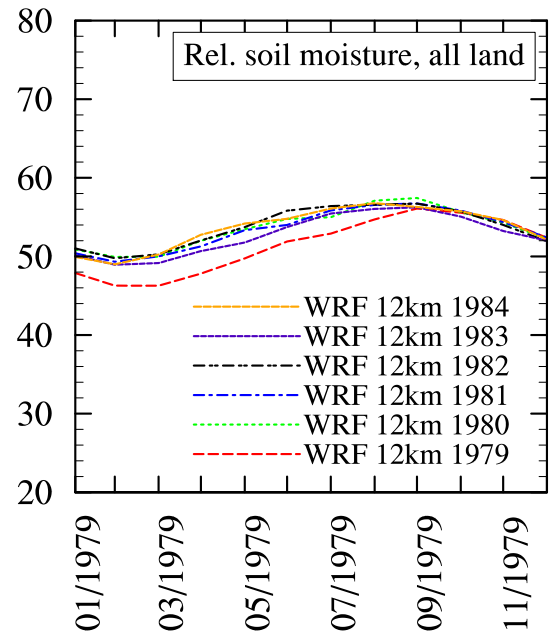
(a) Rel. soil moisture [%] for level 1 (5cm)



(b) Rel. soil moisture [%] for level 2 (25cm)



(a) Rel. soil moisture [%] for level 3 (70cm)



(b) Rel. soil moisture [%] for level 4 (1.5m)

Figure 1: Annual cycle of relative soil moisture for the four levels of the NOAH land-surface model

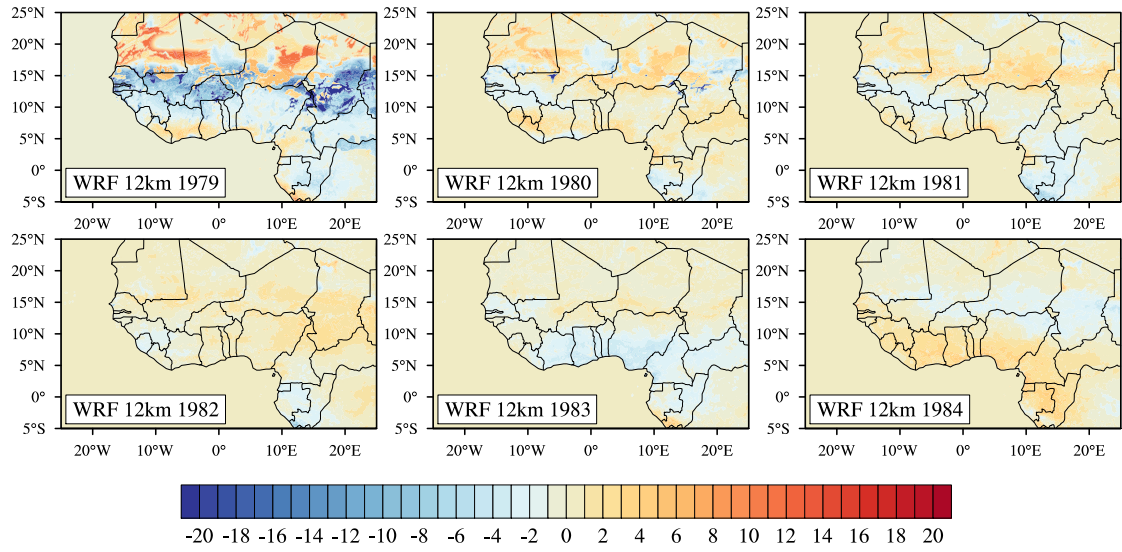
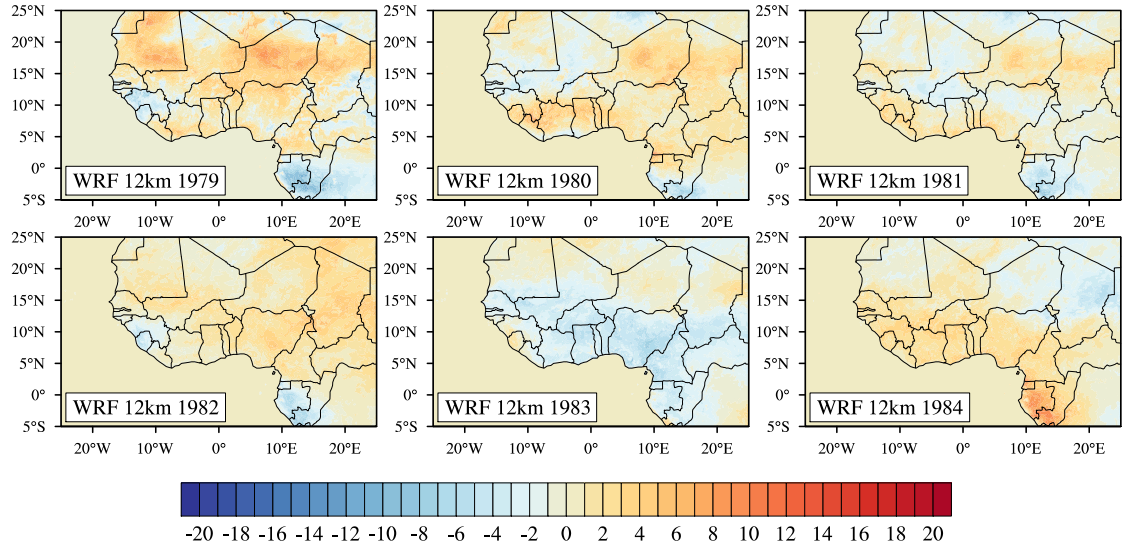
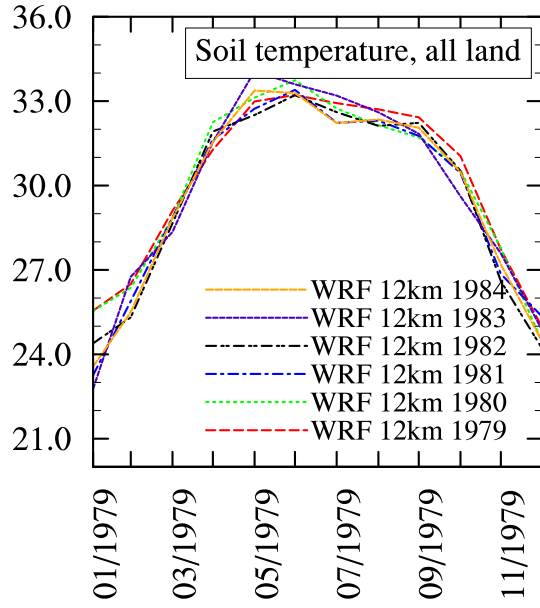
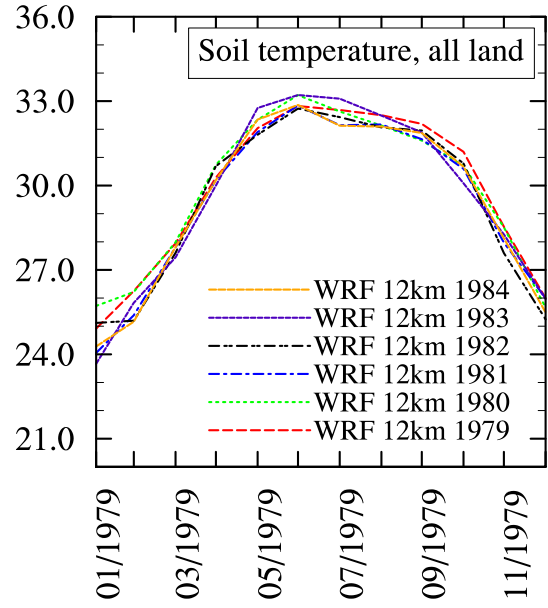


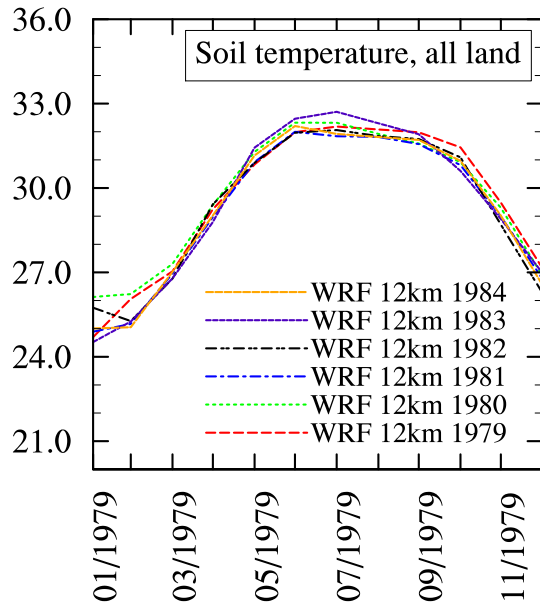
Figure 2: Average annual relative soil moisture for levels 1 and 4 of the NOAH land-surface model



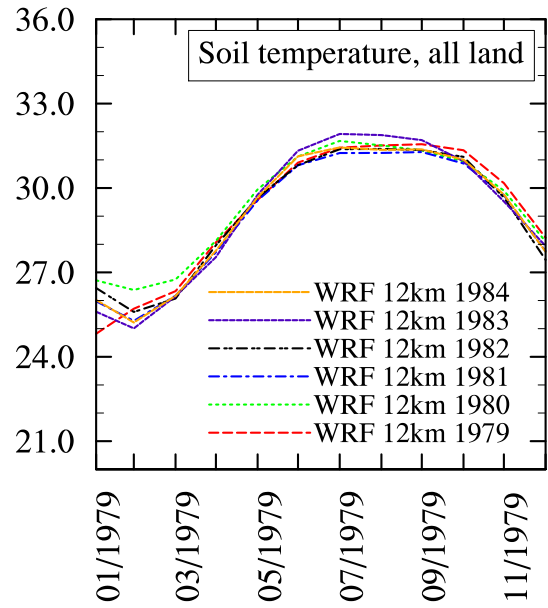
(a) Soil temperature [$^{\circ}\text{C}$] for level 1 (5cm)



(b) Soil temperature [$^{\circ}\text{C}$] for level 2 (25cm)

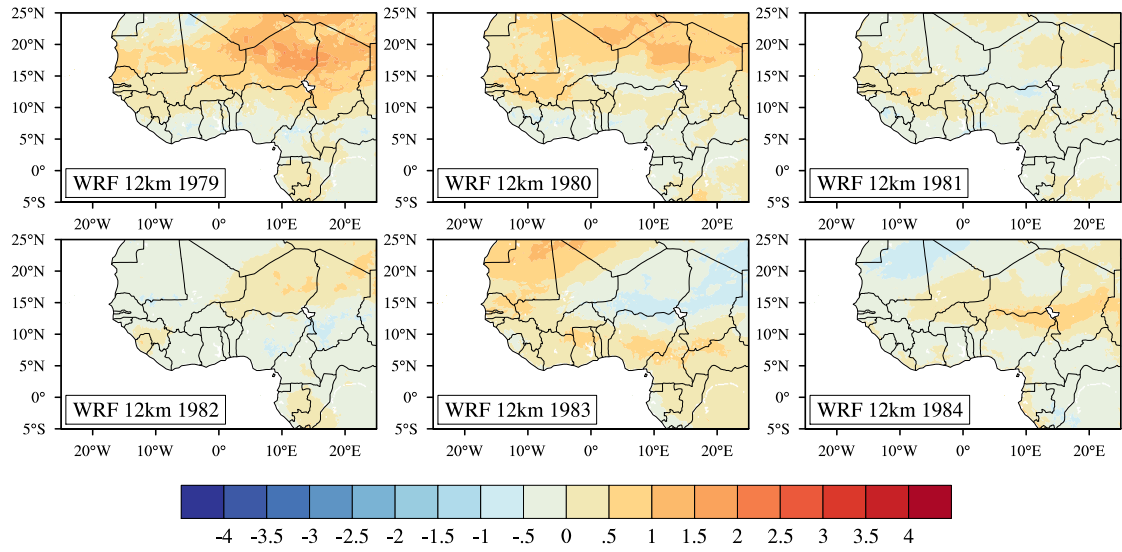


(a) Soil temperature [$^{\circ}\text{C}$] for level 3 (70cm)

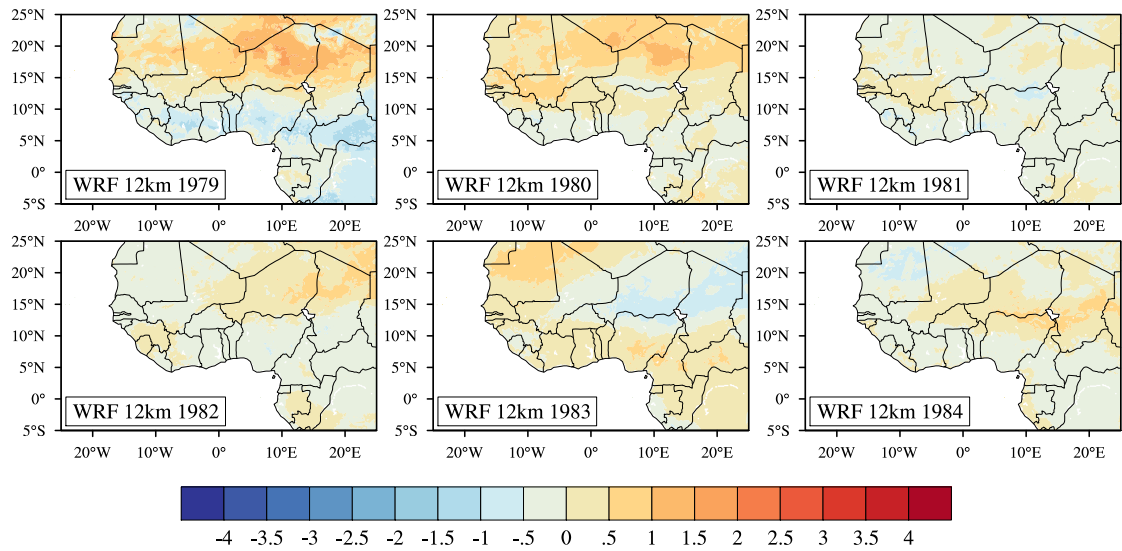


(b) Soil temperature [$^{\circ}\text{C}$] for level 4 (1.5m)

Figure 3: Annual cycle of soil temperature for the four levels of the NOAH land-surface model



(a) Difference of annual soil temperature to 1982-1984 mean [$^{\circ}\text{C}$] for level 1 (5cm)



(a) Difference of annual soil temperature to 1982-1984 mean [$^{\circ}\text{C}$] for level 4 (1.5m)

Figure 4: Average annual soil temperature for levels 1 and 4 of the NOAH land-surface model