

## **Precipitation change scenarios and their relation with moisture transport and convergence projections in Southern South America**

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The aim of this study is to analyze the relationship between future summer precipitation scenarios in southern South America with projections of moisture transport and convergence. For this purpose, three GCMs (CCCMA-CGCM3.1(t63), GFDL-CM2.0, MRI-CGCM2.3.2) available from the WCRP CMIP3 Multi-model Dataset were selected. The A1B scenario was used to prepare climate change scenarios for the time slices 2020-2029, 2040-2049 and 2070-2079 with respect 1990-1999. Summer precipitation changes and future convergence projections were analyzed for three particular regions within South America: the core monsoon region (monsoon), the continental South Atlantic Convergence Zone region (SACZ) and southeastern South America (SESA). Results of the GCMs validation show a considerably good representation of precipitation both for South America and these sub-regions. The comparison between the projected changes in precipitation and moisture convergence show in most of the cases (models, time slices and sub-regions) a coherent pattern with positive changes of both variables. Nevertheless, the 2070-2079 time slice is the period where the projected changes in precipitation and convergence are clearer. The zonal and meridional moisture transport differences between projections for this period and present day simulations show a coherent relationship in the three sub-regions with the precipitation projected changes. Thus, the increase in the southward moisture transport along the monsoon and SESA regions and the intensification of the westward flux in the SACZ region, contribute to the projected increase in precipitation in each region.