

Seasonal Forecast with RegCM4.6.1 over South America

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Introduction and Objective

One of the current challenges in climate modeling is the seasonal forecast. Most of these forecasts are produced with Global Climate Models (GCMs). In this context, this study evaluates the ability of the Regional Climate Model version 4.6.1 (RegCM4.6.1) nested in the Climate Forecast System version 2 (CFSv2) from National Centers of Environmental Prediction (NCEP) in predicting the seasonal climate over South America (February-March-April 2018).

Methodology

Three simulations were performed from January 01 2018 to April 30 2018 with 25 km of horizontal resolution using RegCM4.6.1. The first month of forecast was considered as spin-up period. Simulations were performed with different cumulus convection parameterization (Grell-Emanuel, Emanuel, and Kain-Fritsch). Data from the Climate Prediction Center (CPC) were used to validate the forecasts.

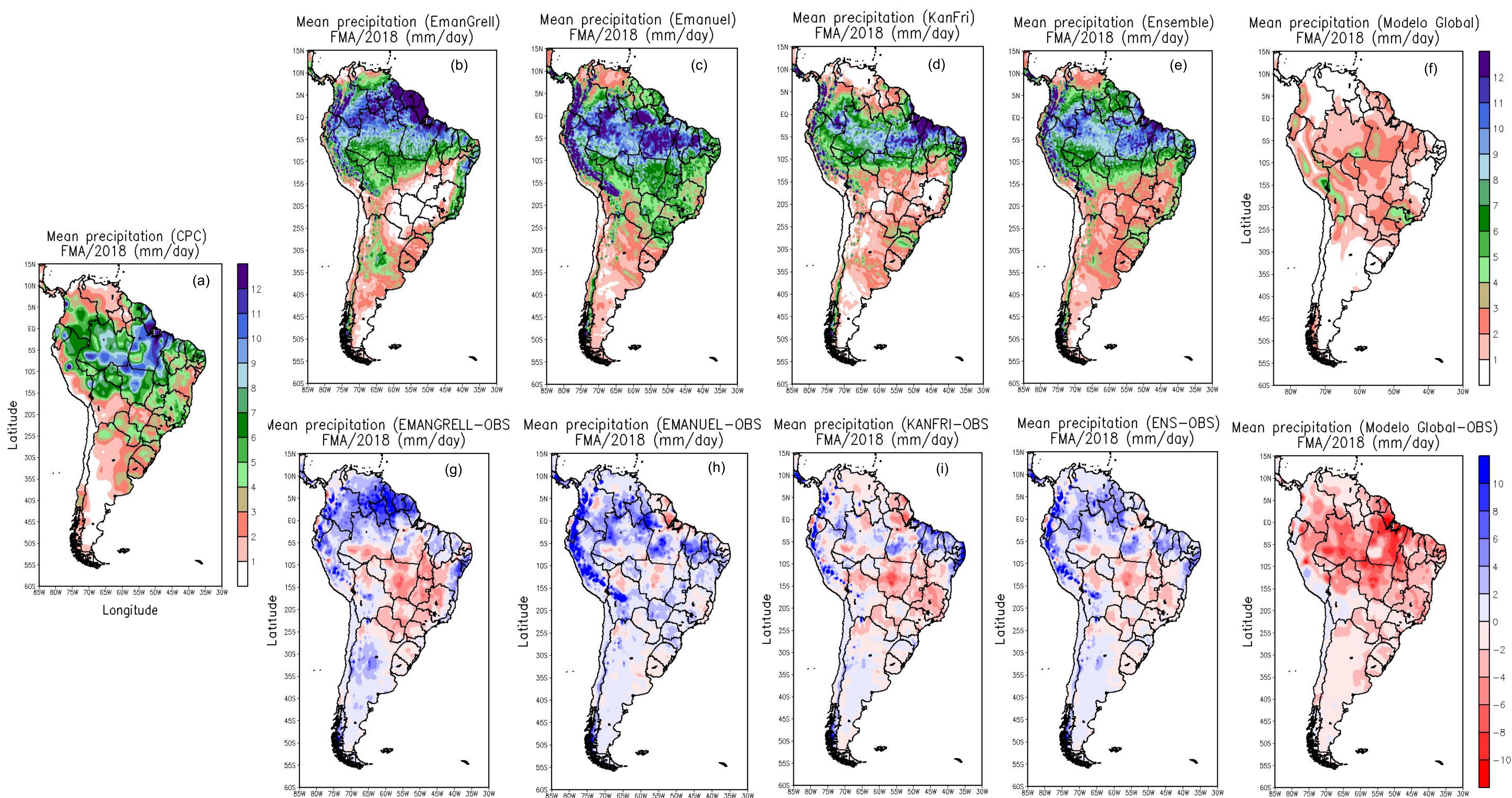


Figure 1: Precipitation (mm/day) in February-March-April (FMA) 2018: a) CPC observation, b-d) simulated by RegCM4.6.1 with different parameterization schemes, e) RegCM ensemble, f) simulated by CFSv2 and g-k) simulations minus CPC.

Acknowledgements:

Results and Conclusions

Grell-Emanuel and Emanuel convective schemes overestimated the precipitation in the north of South America. In this region, Kain Fritsch scheme simulated more realistically the rain. Comparing the RegCM4.6.1 ensemble with the CFSv2 forecast, the regional climate modeling is able to reduce the dry bias simulated by the global model over latitudes lower than 20°S.

