



INFLUENCES OF TELECONNECTION PATTERNS ON SOUTH AMERICA IN SUBSEASONAL TO SEASONAL MODELS HINDCASTS



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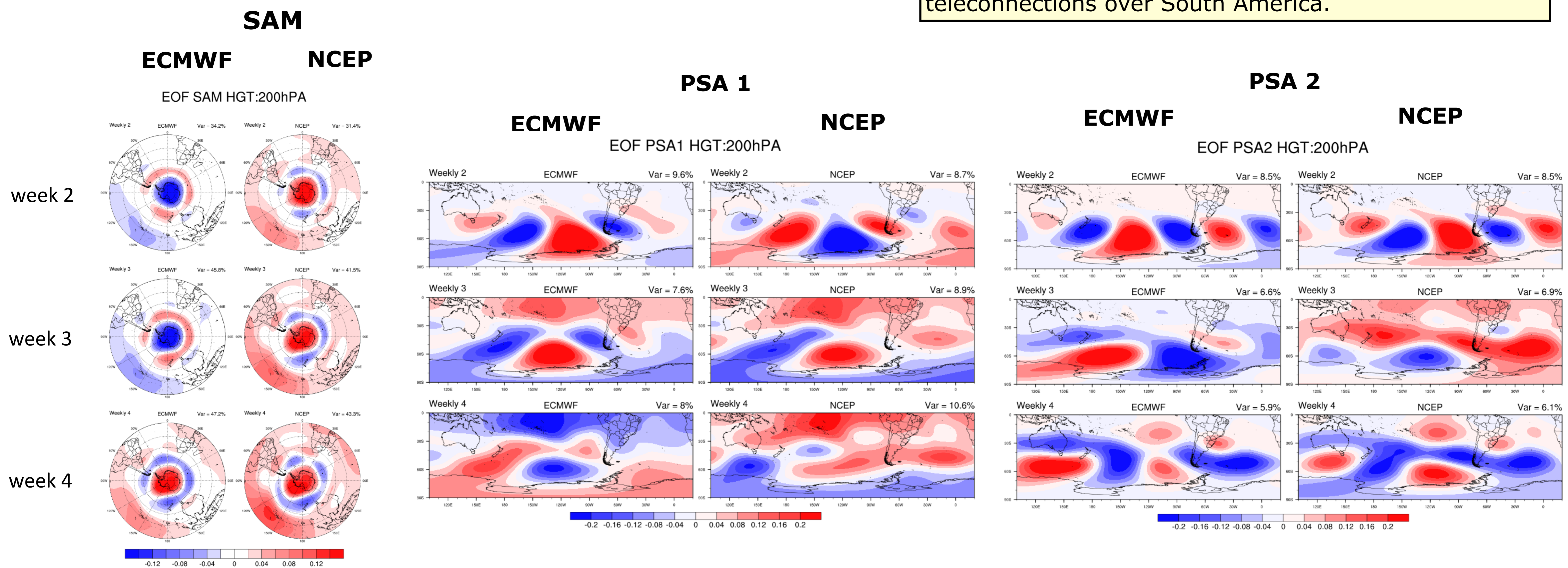
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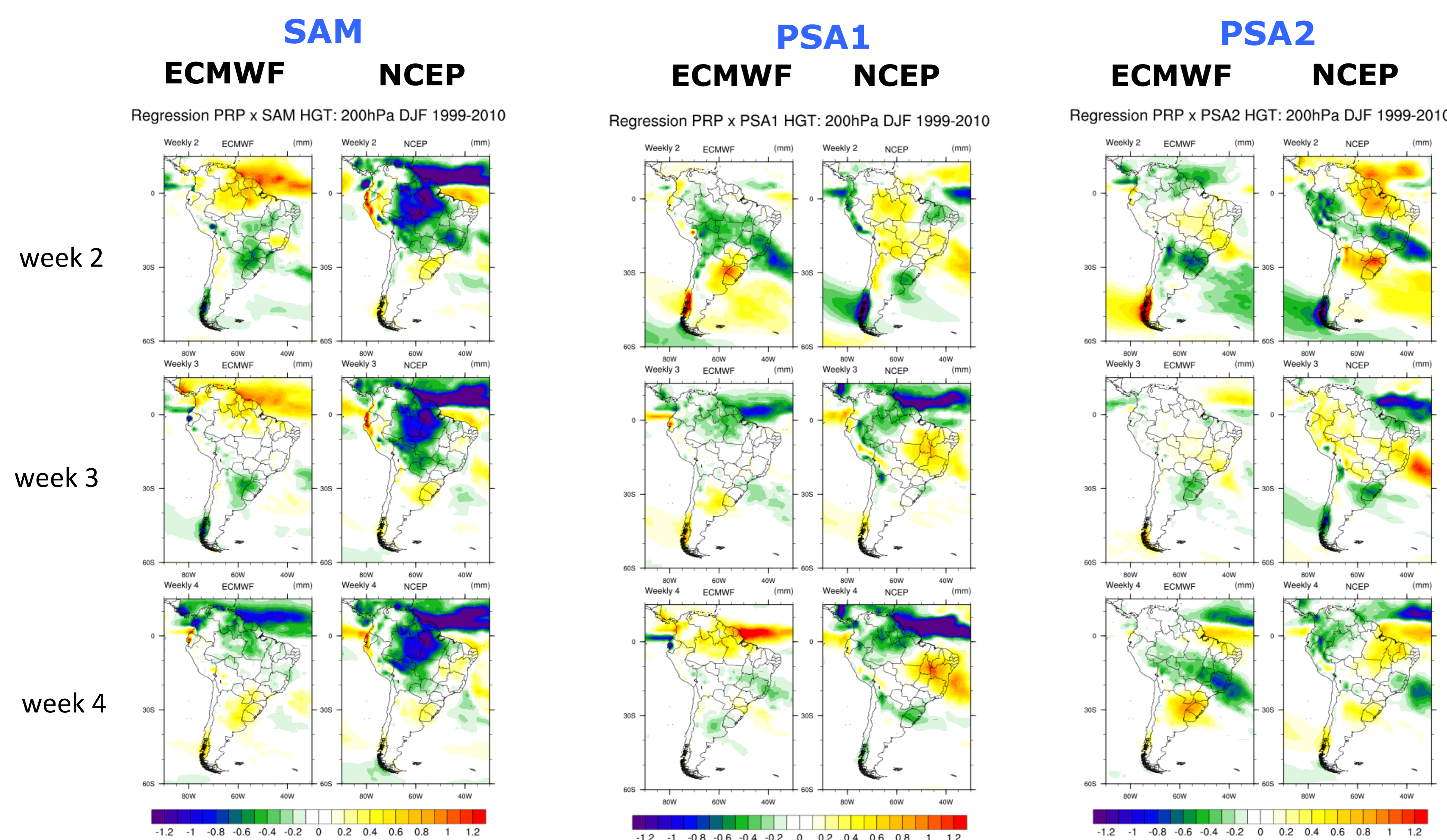
INTRODUCTION: Southeast and Southern regions of South America (SA) are affected by teleconnection patterns such as Pacific South America (PSA) and Southern Annular Mode (SAM). PSA shows a wavetrain pattern from tropical to extratropical atmosphere over South Pacific Ocean triggered by convection in the tropical Indian, Maritime Continent and tropical Pacific. The SAM has opposite atmospheric anomalies between high and middle latitudes and it is linked with the polar vortex intensity and jet streams. Predictions in the subseasonal time scale during summer are very important for several sectors of Southeastern and Southern regions, as these are very populated regions of SA and have agriculture and the largest hydropower that are very much affected by precipitation extremes, both excess and lack of rain.

OBJECTIVE: The aim of this study is to investigate the ability of two models of the S2S project (ECMWF and NCEP) to detect the Southern Hemisphere teleconnections in model hindcasts.

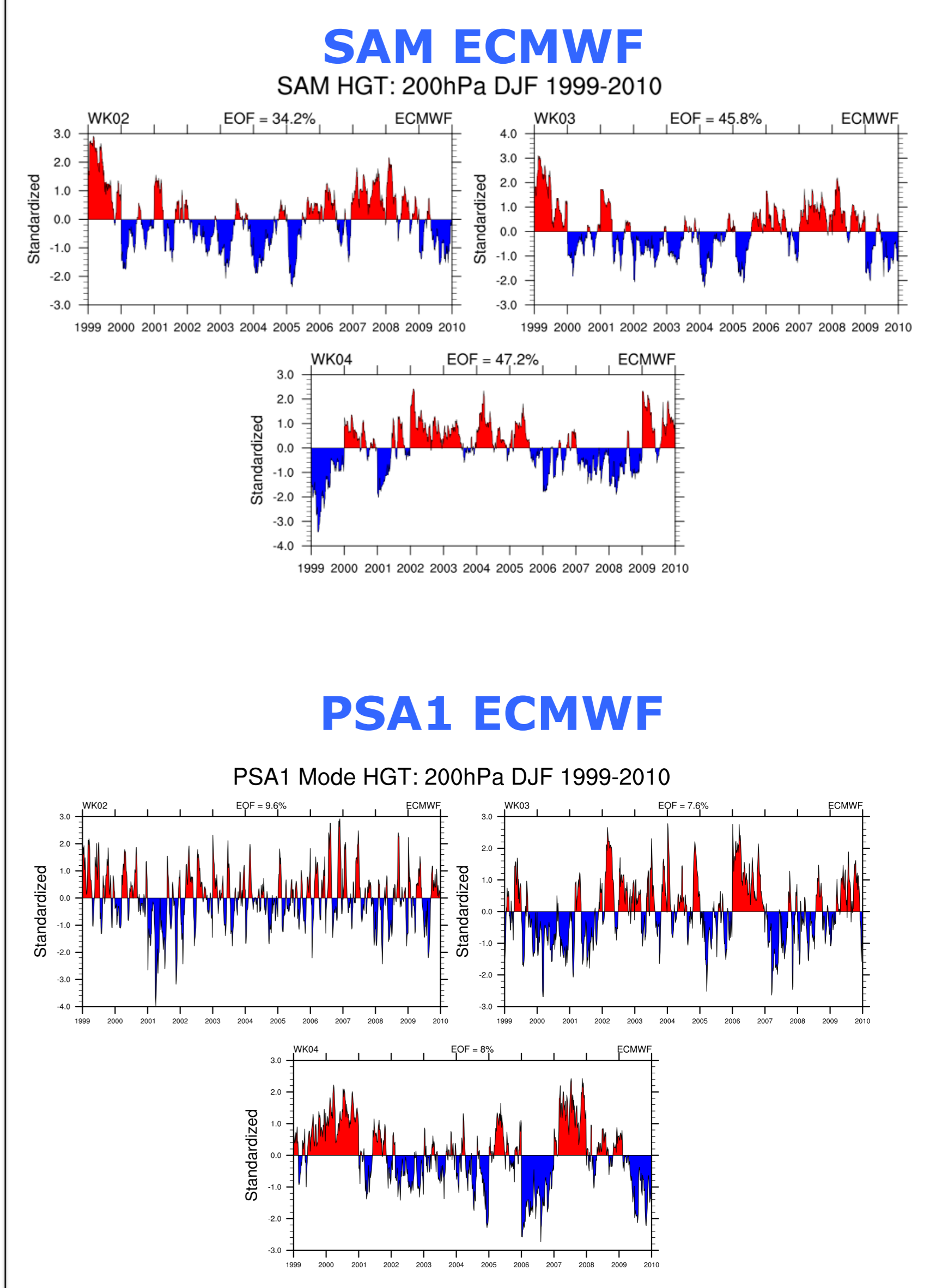
DATA and METHOD: The period of analyses is 1999 to 2010 for the summer season (DJF). Geopotential at 200 hPa and precipitation from weeks 2 to 4 from the S2S data are analysed. EOF is applied to geopotential anomalies to get the first mode (SAM) and the second and third (PSA1 and PSA2) modes. Regression analyses against precipitation anomalies show the influences of teleconnections over South America.



REGRESSION PC X PRECIPITATION



AMPLITUDES



DISCUSSION: The SAM is represented by the 2 models in the hindcasts of weeks 2 to 4. Both models indicate precipitation variability in parts of SESA related to this teleconnection. Reduction in the positive phase and increase in the negative phase, likely related to the jet streams intensity and position. PSA1 and PSA2 are well reproduced by the two models in the second week. In the forecasts for the third week, the wavetrain is present in PSA1 and PSA2, but in the fourth week the configuration is not organized. The PSA patterns show the 2 centers over South America, indicating a trough and a ridge that affect the precipitation in the region. The regression maps confirm the influences of PSA1 in the second week and of PSA2 in weeks 2, 3 and 4.

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