

Potential predictability of South America temperature and precipitation in CHFP and SHFP models

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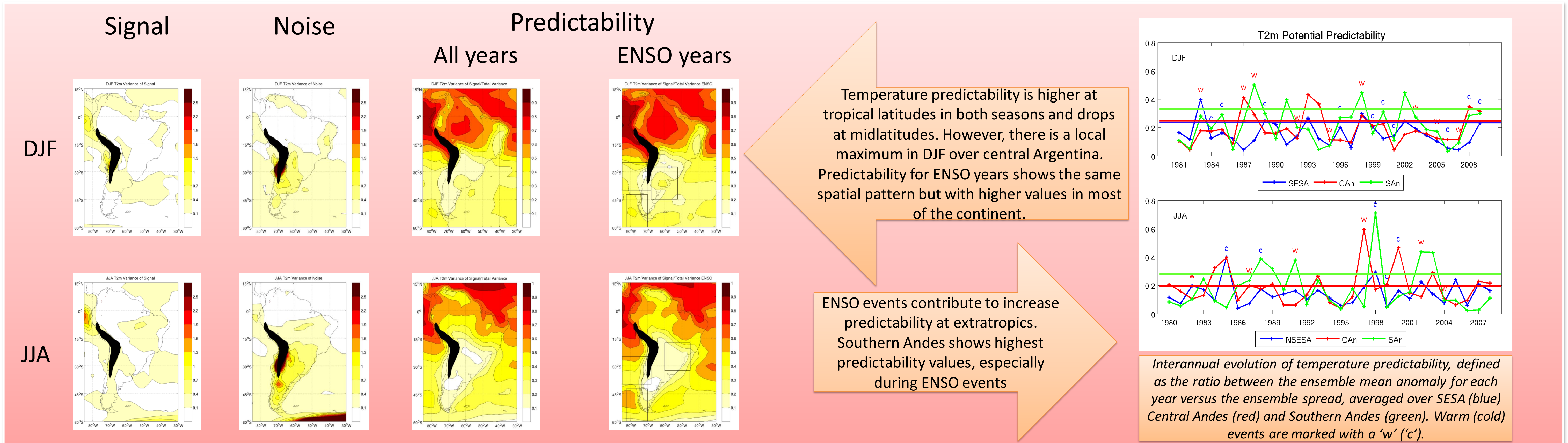
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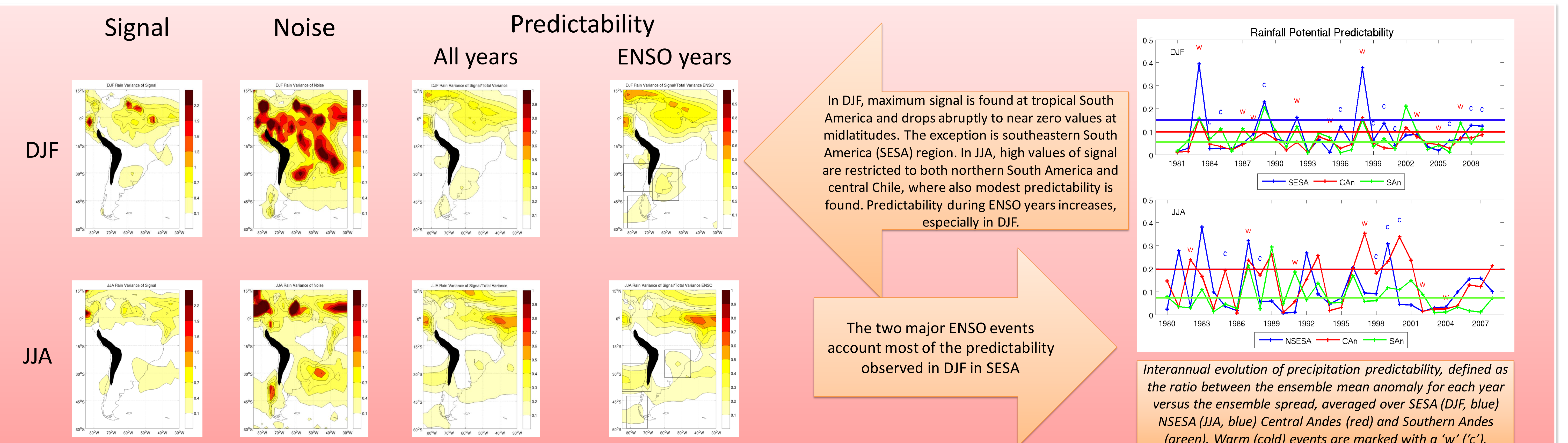
GOAL: Document the predictability of seasonal means of surface temperature and precipitation in South America during JJA and DJF

Data and methods: Ensembles of lead-1-month climate predictions of 17 models (each one with 10 members on average) from the WCRP/CHFP-SHFP Project are used. In particular, 5 different climate models which resolve the stratosphere (high-top models) and 12 models which do not (low-top models) are considered. An unbiased multi-model ensemble (MME) was constructed by pooling all models together. High-top and a low-top MME were also made. Predictability is computed as the ratio between the ensemble mean variance (or variance of signal) and the total variance, computed as the sum between signal variance and the ensemble spread (or noise variance).

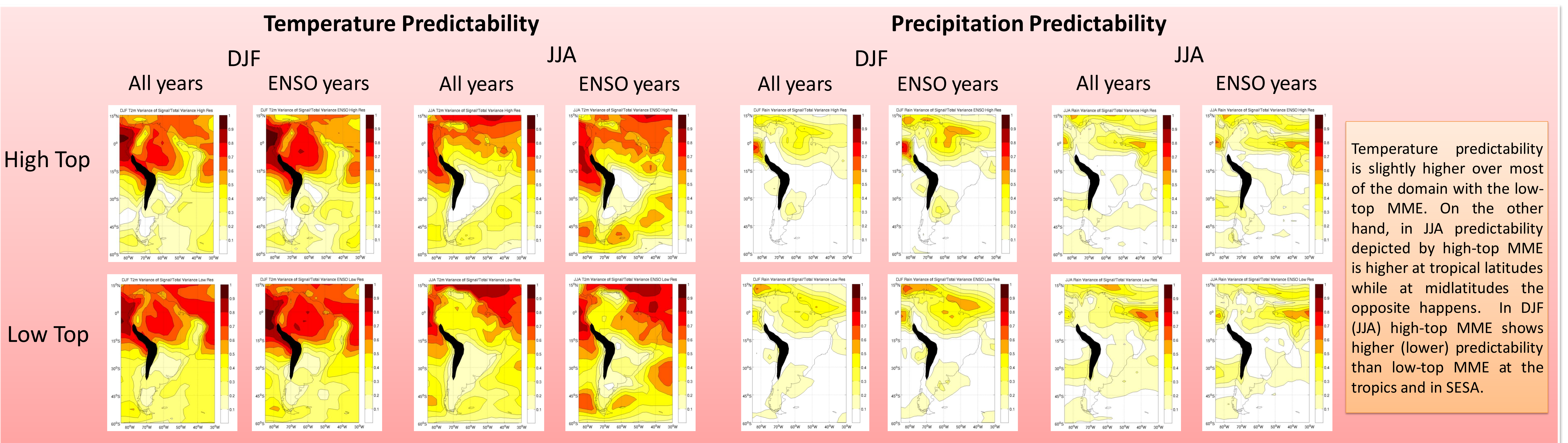
TEMPERATURE PREDICTABILITY



PRECIPITATION PREDICTABILITY



IMPACTS OF IMPROVING STRATOSPHERE RESOLUTION IN CLIMATE MODELS ON REGIONAL PREDICTABILITY



Conclusions: The study shows as expected higher predictability levels at tropical South America than at the extra-tropics. However, regions like SESA and central Chile can exhibit moderate levels of predictability depending on the variable and season. In general, predictability slightly increases in ENSO years than in other years, while the contribution to predictability increase due to a better resolving stratosphere is not that evident.