

The experience of developing an Earth System Model in Brazil

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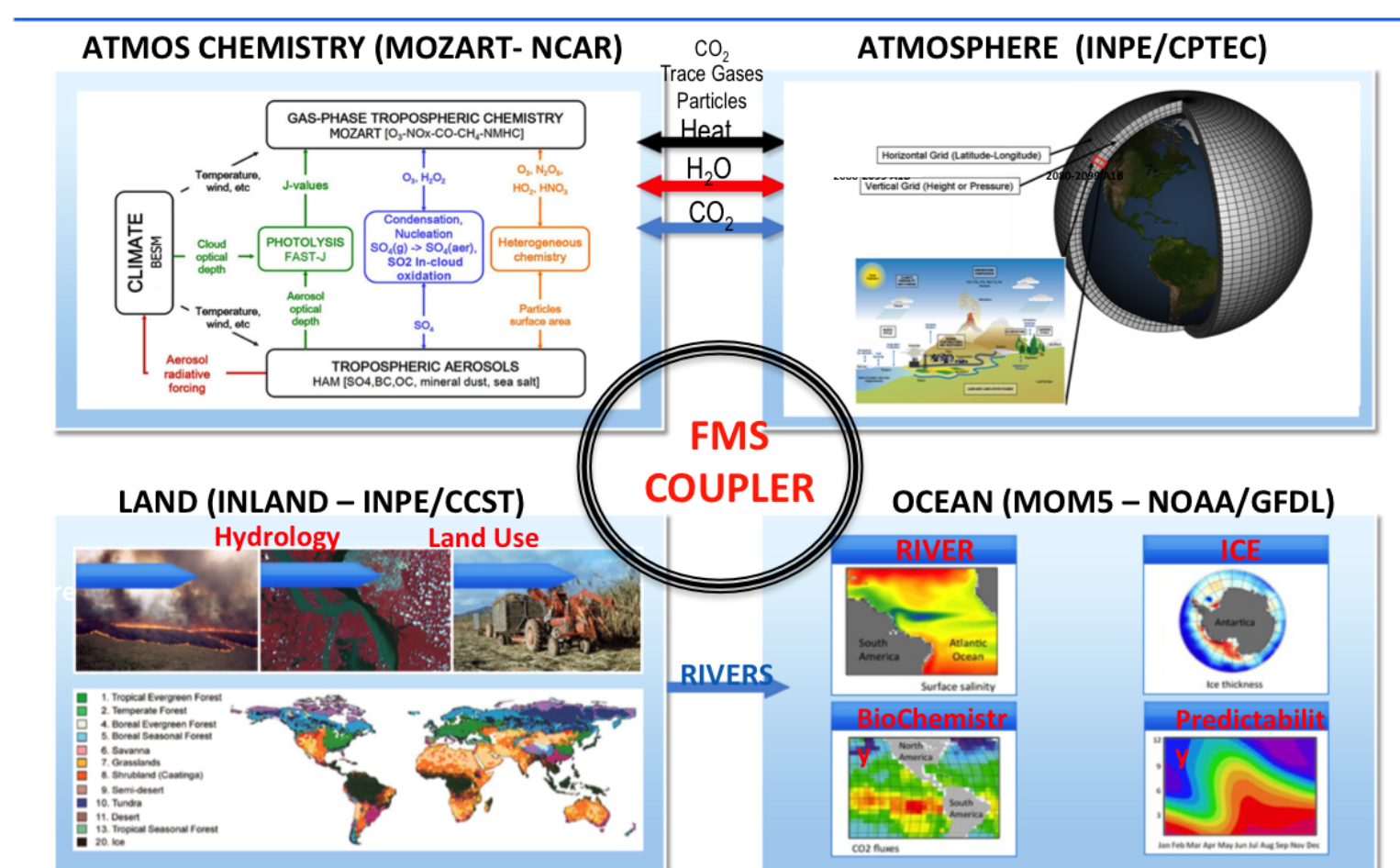
Introduction

The Brazilian Earth System Model, coupled ocean-atmosphere (BESM-OA2.5) is the coupling of the CPTEC/INPE Brazilian Atmospheric Model (BAM) and the GFDL/NOAA Modular Ocean Model (MOM4p1 and MOM5) (Nobre *et al.*, 2013; Capistrano *et al.*, 2016).

BESM development strategy

- 1 full use of CPTEC's experience and sub-models
- 2 collaboration with advanced climate change centers abroad
 - Use GFDL/FMS coupler to add components:
 - Dynamic vegetation with carbon cycle;
 - Continental hydrology-ocean coupling;
 - Ocean carbon cycle;
 - Enhanced sea ice and pack ice;
 - Atmospheric chemistry.

BESM component models



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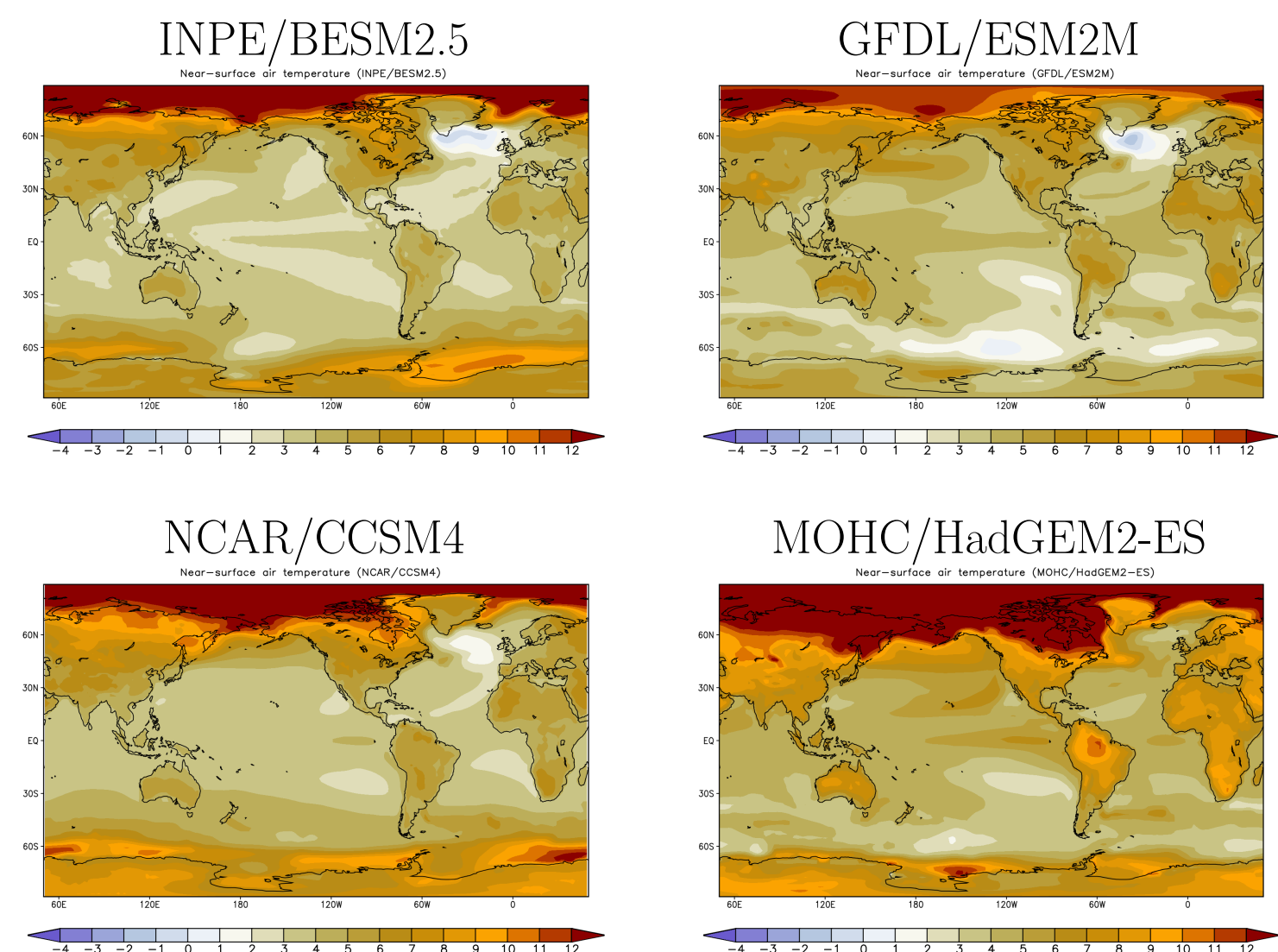
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Welcome to the ESGF Node @ INPE/CPTEC

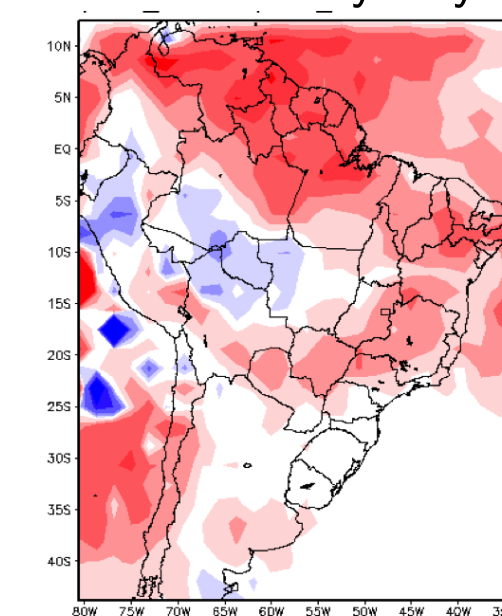
The Earth System Grid Federation (ESGF) maintains a global system of federated data centers that allow access to the largest archive of climate data world-wide. The ESGF Node at INPE/CPTEC is focused on supporting the access to the Brazilian Earth System Model (BESM) output. You can use this node as starting point for searching and downloading model output that are stored throughout the federation. You can also start from any of the other Nodes to download climate model output, reanalysis fields, as well as gridded and satellite data.



Results

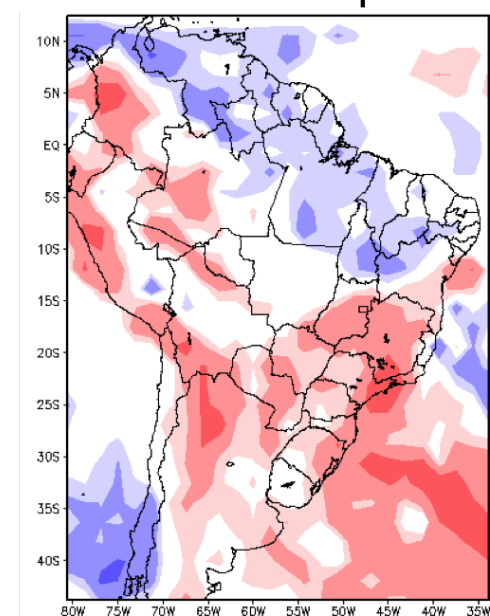


Consecutive Dry Days



Pesquero *et al.* (2016).

Extreme Precipitation Days



Acknowledgements

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Reference

- [1] Nobre, P. *et al.*. Climate simulation and change in the Brazilian climate model. *J Clim*, vol. 26(17):6716-6732, 2013.
- [2] Capistrano, V. B. *et al.*. Climate Sensitivity BESM version 2.5. *To be submitted to Journal of Climate*, 2016.
- [3] Pesquero, F. *et al.*. The equilibrium response of the Brazilian Climate Model - BESM2.5 to 4xCO2 atmospheric concentration forcing. *Submitted to Theoretical and Applied Climatology*, 2016.