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Title: A Boundary Forcing for Applications in  Subseasonal to Seasonal Predictions
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Abstract:
Dynamical downscaling of global climate solutions has been successfully used in climate assessment at regional scale, however it adds uncertainty to predictions. In order to reduce uncertainty in downscaled predictions, a boundary forcing that combines scale-selective bias correction with precipitation assimilation was developed at the Federal University of Rio de Janeiro, Brazil. Similar to the spectral nudging, scale-selective bias correction prevents internal states generated by high-resolution solutions that are inconsistent with their large-scale boundaries. Additionally, the atmospheric model assimilates satellite-based precipitation estimates, which improves modeled moisture convergence at finer scales. Constraining model's convection with observations can reduce the uncertainty caused by the cumulus-convection parameterization, and better depict land surface processes in coupled land surface-atmospheric systems. In that regard, the new boundary forcing has been used in the assessment of South American surface water and energy budgets. Ultimately, this approach can be useful in the downscaling of subseasonal to seasonal predictions from global climate systems due to the long-term memory of surface soil moisture among other factors, mainly associated with surface and boundary conditions.
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