

Subseasonal Eta RCM run driven by the BESM global model over Tibetan Plateau

Show affiliations

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The Eta Regional Climate Model (Eta RCM) is used by the Center for Weather Forecasts and Climate Studies (CPTEC) of the Brazilian National Institute for Space Research to produce seasonal climate forecasts since 2002. The model has also produced downscaling of global climate models of CMIP5 to support impact and adaptation studies and National Communications. The model has gone through upgrades along these years, which include the modifications to a finite volume dynamics, the cut-cells applied to the step-mountain eta vertical coordinate, for multidecadal integrations, among other modifications. Likewise, the Brazilian Earth System Model (BESM) has been developed in parallel to the development of the Eta RCM. The BESM is based on INPE's global atmospheric model, it is coupled to the MOM5 ocean model, has produced multicentennial integrations, and contributed to the CMIP5 dataset. The objective of this work is to show the dynamical downscaling of the Eta RCM driven by the BESM global model at T062L28 resolution, over the Tibetan Plateau (TP) domain for the period between May and June 2003. The run started on the 10th April 2003. The Eta model was setup with 40-km horizontal resolution and 38 layers, in a domain that covers most of Asia, between 60°E-130°E and 5°N-50°N. Sea surface temperature was provided by the BESM and was updated daily during the regional integration, whereas the lateral boundaries were updated every 6 hours with the BESM atmospheric conditions. The Eta RCM driven by BESM underestimates precipitation was over most of the area, in particular over the Plateau and in the eastern Asia. The Eta-BESM run underestimates the 2-m temperature in the western part of the Plateau but overestimates in the eastern part and in the eastern Asia. The Eta RCM run driven by Era-Interim reanalysis reduces the errors found in the Eta-BESM run. Test with higher horizontal resolution in order to improve the representation of the topography will be shown.

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