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Investigation of the impact of radiative forcing on long-term atmospheric variability through comparison of results of two climate Eta model integrations with different longwave radiation schemes.

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The climate regional ETA model which was forced at its lateral boundaries by the data of global climate experiment with HadAMP model has been integrated over South America for the period of 1961-1966. There were made two model integrations with different longwave radiation schemes. The offline comparison of the schemes show similar values of top and surface longwave radiation fluxes and heating rate values in clear sky atmosphere. Thus, significant flux difference in the model integrations is observed only in the regions with high cloud cover values. The change in the radiation-cloud interaction in the tropical and subtropical regions leads to the change in the convection and hence in the precipitation. The space-scale of these effects is not more than 200-300 km with the time-scale of some hours up to 2-3 days. We have analised averaged temperature, precipitation, and geopotential fields as well as a dispertion of these fields. There were made Fourier analysis of mean fields and time series of averaged over specific regions meteorological characteristics. The analysis of results of these calculation gives information on peculiarities of interaction of short-term, small scale radiative forcing with synoptic scale circulations.