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# Dynamical Downscaling Using Satellite-Gauge Precipitation Estimates

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Recent studies have shown that the use of a regional model to downscale the large-scale analyses marginally improves simulated precipitation fields. Using satellite-based products as input, a regional spectral model carried out extended and short-term simulations of the South American summertime circulations. The authors seek to recover the precipitation patterns from a daily, high-resolution, gauge-satellite based estimates over continental South America. In this study, precipitation assimilation is only effectuated in the same time scale that rainfall analysis is available. The regional model solutions using a satellite-gauge combined scheme are encouraging, especially in comparison to the global reanalyses. As will be shown, precipitation assimilation not only increases the regional model precipitation simulation skill but also provides improvements in other fields influenced by the precipitation. Due to the potential impact on land surface variables, improvements in monthly to seasonal forecasts are expected as well.