Comparison of integrated bias correction to ensemble forecast of precipitation in Southeast China

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Based on the 24h precipitation ensemble forecasts from three global numerical forecast centers (CMA, ECMWF and NCEP) and rain gauge data in the southeast region from 1 June to 31 July 2015 and using the Bayesian Model Averaging (scheme A) and combined Bayesian Model Averaging and statistically downscale (scheme B), we have corrected the three single-center and multicenter grand ensemble precipitation predictions, compared the adjustment effects of the two schemes, and then selected the precipitation forecasts from August 1 to 31 in 2015 to perform an independent sample test, and analyzed the skills of precipitation prediction before and after the correction. Taking 50th percentile precipitation forecast of three single center and grand ensemble as example, the results indicate that scheme A eliminates a large number of the false alarm of light rain and corrects the bias for light and moderate rains remarkably. But the correction of the precipitation intensity for those exceeding heavy rain is not evident. With the precipitation thresholds increasing, the correction of scheme A becomes weak. The correction to the orientation of rain belt is not clear, and reduces the magnitude of precipitation area of heavy rain or even makes the area disappear. After adopting scheme B adjustment, it not only reduces the false alarm of raw ensemble forecasts, but also corrects the precipitation intensity and the rainfall area, so that the range and magnitude of the precipitation forecasts are closer to observations. But its effect is still not significant to correct high-graded precipitation such as those exceeding 50.0 mm.