

Development of the weather generating system for monthly rainfall forecasts over the Korean Peninsula

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Numerical weather forecast has been advanced greatly by application of computer, but it only limits for forecast of short-range weather situation, because the meteorological factors (such as precipitation) were forecasted according to weather situation, the forecast accuracy is little lower. For weather forecast of long-range above 15-day, it perhaps may be said: there is not a method that is recognized generally and reliable, the forecast accuracy is lower and lower.

Our main goal is to develop a weather generating system for monthly rainfall forecast. At present, we are mainly dependent on the several statistical methods for long-range rainfall forecast. But these statistical methods cannot reflect the dynamical changes of the atmosphere motion. In this study, we used the numerical forecast data as well as statistical methods to develop a weather generating system for monthly rainfall forecast.

At present, two types of global and regional forecasts are produced at KMA.

GDAPS (Global Data Assimilation and Prediction System) for 10-day projection runs at 12UTC with 10-hour data cutoff, in order to utilize as much observation as available. And RADPS (Regional Data Assimilation and Prediction System) runs twice a day (00 and 12UTC) for 48-hour forecasts. In this system, we use RDAPS data for the first 2 days rainfall forecast. And then, GDAPS data is used to forecast for next 8 days rainfall. When we use these numerical data in this method, we can predict rainfall for only 10-days. So we can make up the latter 20-days rainfall of the month by using the statistical method. We reflected the observed rainfall tendency of the past 20 years on this statistical method.

We performed and verified this weather generating system for 1 year by way of showing an example. The result of this system is so reliable, and it is beyond our expectation. In near future, we will be able to improve this system ability if we verify results of this system repeatedly.

Keywords: weather generating system; monthly rainfall forecasts; GDAPS; RDAPS