Review on Application of Wind Profiler Radar in Weather Monitoring and nowcasting

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Wind profiler radar is the vertical wind profile detection equipment. It has played an important role in weather forecast and nowcasting. This paper reviews the applications of wind profiler radar data in different types of severe weather monitoring and forecasting. In addition, the main problems in the application and its prospects are discussed. Besides the basic products of WPR, some derivative products can be calculated for weather diagnosis. WPR products can not only monitor the structures and evolution of different scale weather systems, but also can monitor the precipitation, thunderstorm cloud and estimate the size and height distributions of precipitation particle. Wind profiler radar data has positive impact on Rapid Update Cycle (RUC) model and other mesoscale models, and improved skill in short-range weather forecasts. Using multi source data including WPR to develop the comprehensive monitoring technology of different kinds of severe weather and data assimilation technique will become a main application direction of weather service in the future.

Keywords: wind profiler radar, disastrous weather