

## Referee comment

### **General comments:**

Based on the observed results of microwave radar, this paper analyzed the seeding process of the upper layer in stable stratus cloud to the lower layer cloud. Specifically, by defining the relevant parameters of the seeding process, the characteristics of these parameters in the seeding process were obtained, such as the seeding depth and the seeding action time. The significance of this paper is to reveal the cloud interaction in vertical direction from the observed results of microwave radar.

The process from cloud to rain is very complex, the upper cloud affected the lower, and produced precipitation, have been widely attention, such as cold cloud precipitation process that involves the upper ice particles falling action on the lower cloud.

**Response:** We appreciate the reviewer's thoughtful review and constructive comments.

### **Specific comments:**

1. Is the method described in the article appropriate for unstable cloud systems?

**Response:** In this study, the method of fixed-base observation using one radar is suitable for stable stratiform cloud systems. In the unstable convective cloud system with change rapidly, the corresponding method will be used to deal with it. Our idea of this paper is still useful.

2. In the article, only one microwave radar was used. If the two radars placed along the direction of cloud movement, is it better for your result?

**Response:** Although a single radar is used in this study, the spatiotemporal conversion method in this paper is still valid and reliable for the stable cloud system. For unstable cloud systems, such as convective cloud systems, if multiple radars can be used to observe at the same time, the results will be more accurate and convincing.

3. It is very nice for this article that obtained the useful characteristics of seeding process, such as the differences of seeding depth and the seeding action time for the three different seeding processes. My suggestion is that in the follow-up studies by large sample statistics, possibly more specific differences between different seeding types will be obtained.

**Response:** In this paper, the seeding effect between double-layer cloud systems is analyzed in terms of macro characteristics. In the future, the rainfall of double-layer cloud systems and mixed phase cloud systems in this region will be studied and analyzed in detail, in order to expose the rainfall mechanism in this region.