Some Discoveries of Cloud Processes by Ground-Air Joint Detection

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In this paper, the general situation and discovery of the combined cloud detection test by ground-based dual-frequency cloud radar and UAV are introduced. Around the test region which is a shallow coastal mountainous area, there are three S-band single polarization weather radar CINRAD/SA and one S-band dual polarization radar CINRAD/SAD. The main equipment for joint detection is dual-frequency Ka/W coplanar-antenna, single-transmitter dual-receiver polarization cloud radar, laser cloud altimeter and lidar wind detector. The UAV has a fixed wing, and the load includes cloud droplet spectrometer, as well as probes for temperature, humidity and pressure. A rotorUAV is equipped with temperature, humidity, pressure and wind sensors. The differences between multiple detection devices in observation of the same target are analyzed, and some interesting discoveries are presented.

Keywords: coplanar-antenna, cloud radar, dual-frequency, ground-air, detection, UAV