

Radiosonde Observations in the 30-40 km Altitude Range Using 3000 g Balloons

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Observation of temperature and wind velocity in the 30–40 km altitude layer have been sparse since the elimination of the standard rocketsonde sounding network in 1990s. In an effort to the vertical range of radiosonde observations into the upper stratosphere, experiments were conducted with a 3000 g balloon at Tsukuba, Japan on November 5, 2019. Four radiosondes were launched, with two reaching above 40 km altitude. To confirm the accuracy of the obtained data, especially the temperature data, these profiles were compared with satellite and reanalysis data in the 30–40 km layer. The ability to quantify gravity wave parameters from the obtained data is described, with application to wave events detected near 38–40 km. This system extends the ability to provide information regarding gravity wave and planetary wave activity upward to ~40 km. Finally, we will introduce an enhanced observation campaign using this system.

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