Downbursts captured by High Dense Ground Observation Network and Forecasting Possibility.

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Low cost compact weather station, POTEKA Sta. (hereinafter called POTEKA), has been developed by Meisei Electric co.ltd. There are 145 units installed in 2km interval in Gunma Prefecture since FY2013, sending weather data every 1 minute. On 15 June 2015, downburst occurred in Maebashi City and Isesaki City. The characteristic of downburst from this phenomenon and two other phenomenon in the past will be discussed in this paper.
Downburst occurred on 15 June 2015 was caused by active cumulonimbus passing from Maebashi City towards Isesaki City at around 16:00 JST. According to POTEKA's minutely temperature data, from 15:50, sudden drop in temperature has been captured. The average decrease rate was -2.6ºC per minute. In comparison, air pressure increased 5 minutes before the occurrence of downburst, followed by pressure dip and pressure jump occurred sequentially. It is estimated that pressure change is an outflow front of downburst.
Up to now, POTEKA has captured three downbursts including that of 15 June 2015. From those phenomenon, three similarities have been found: 1) sudden drop in temperature a few minutes before damage, 2) localized jump in air pressure a few minutes before damage, and 3) maximum wind speed after temperature drop. Particularly, sudden temperature drop has been measured clearly in several locations. From these results, observation of sudden temperature drop is considered an effective way in early detection of downburst. We are going to further investigate the characteristic of downburst, build the downburst early detection structure, and verify the effectiveness of the structure.

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