

## Development of high performance and low cost coherent doppler lidar.

YANO, Kenya<sup>1\*</sup> ; FURUMOTO, Jun-ichi<sup>1</sup> ; HIGASHI, Kuniaki<sup>1</sup> ; YABUKI, Masanori<sup>1</sup> ; HASHIGUCHI, Hiroyuki<sup>1</sup>

<sup>1</sup>Research Institute for Sustainable Humanosphere, Kyoto University.

In the summer season, the disastrous severe rain frequently occurs in Japan. The small-scale convergence of humidity in the boundary layer is considered as one of the most important factor to determine the generation of such a disastrous rainstorm.

Recently, the development of new metrological radar has been developing for monitor the rainstorm. It is, however, noteworthy that the result of the weather radar shows the echo from precipitation, which is falling down to ground in a couple of minutes. The forecast of rainstorm prior to 15-30 minutes is very difficult by using the weather radar only.

This paper develops the Coherent Doppler Lidar (CDL) to monitor the two-dimensional wind field in the atmospheric boundary layer. The new system improves the output power to increase the maximum height range. The high-performance and low-cost CDL will be realized by assembling the general fiber laser components, Dual polarization and multi-frequency observation is also included in the scope of this study to elucidate the characteristics of aerosol particles.

Keywords: Coherent Doppler Lidar, severe weather, Dual polarization, multi-frequency, aerosol