

HyARC Seminar(#161)

Date: October 23 (Wednesday) 15:00-

Room: Meeting room (617) of Research Institutes Building

Speaker: Dr. Takanobu Yamaguchi (University of Colorado CIRES/NOAA ESRL)

Title:

On the size distribution of cloud holes in stratocumulus and their relationship to cloud-top entrainment

Summary:

The relationship between cloud-top entrainment and cloud hole size at the top of stratocumulus clouds is explored with large-eddy simulations and a Lagrangian parcel tracking model. The cloud-hole size distribution follows a negative power law, in excellent agreement with satellite observation at 15m resolution. As a result of the steep decrease in the number of holes with increasing size, the number of entrained Lagrangian parcels also decreases with increasing hole size (negative power law), even though the number of entrainment events per hole increases with increasing hole size (positive power law). Thus, entrainment preferentially occurs in small holes. Further analysis shows that the domain averaged entrainment velocity is a reasonable approximation to the domain averaged cloud-hole vertical velocity, and dominated by contributions from the small holes.

(given in English or Japanese)