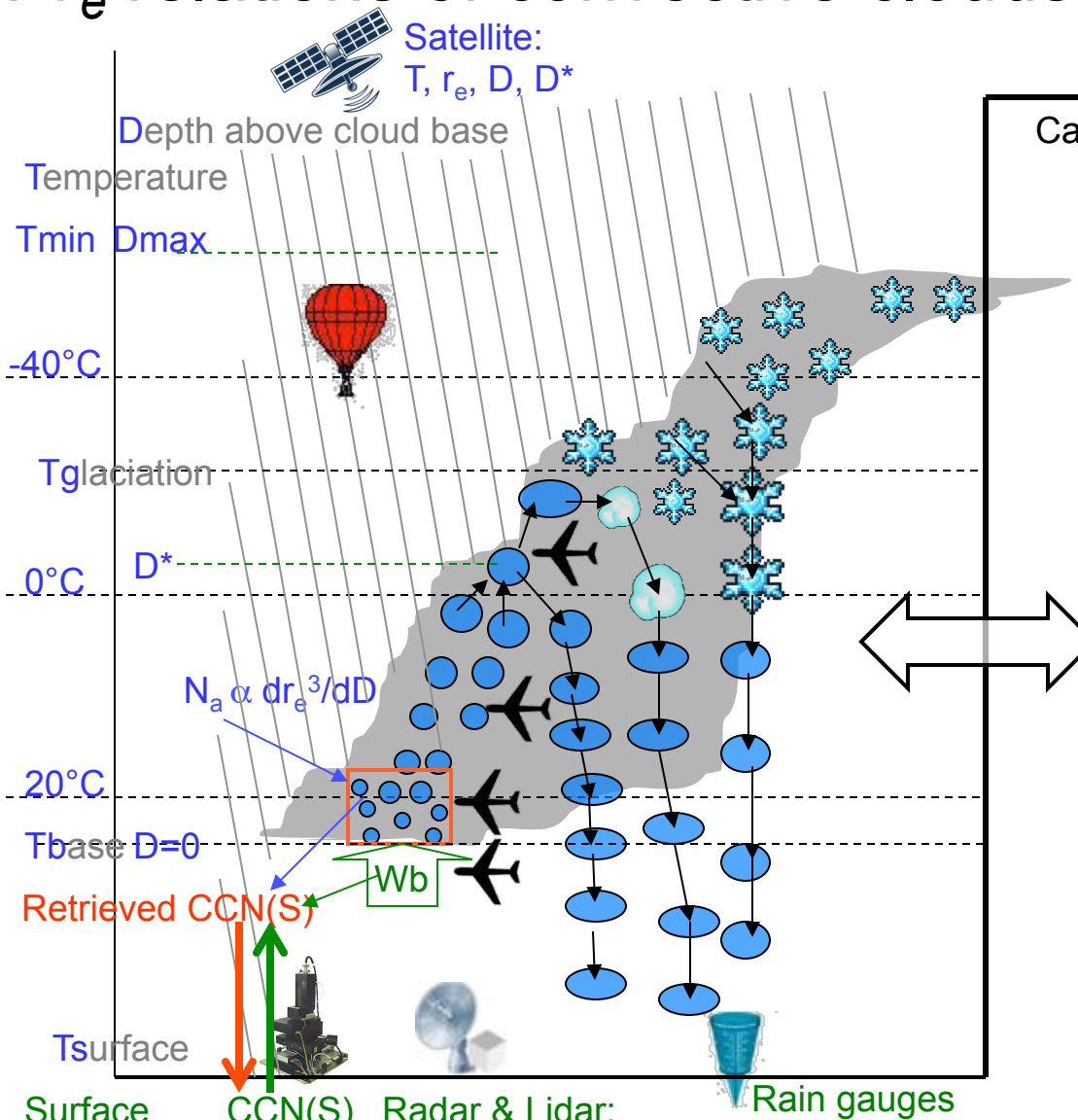
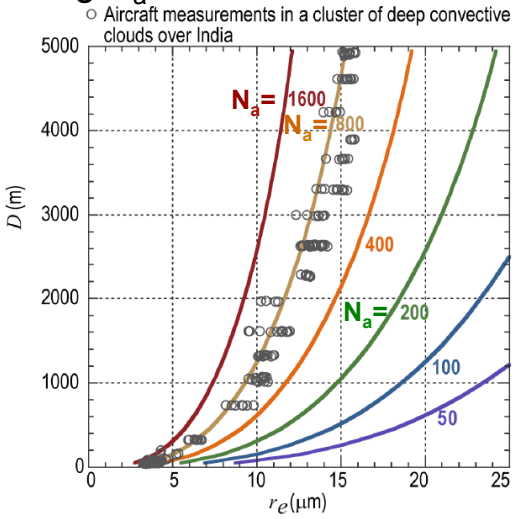
Retrieving CCN from satellite-measured T-r_e relations of convective clouds

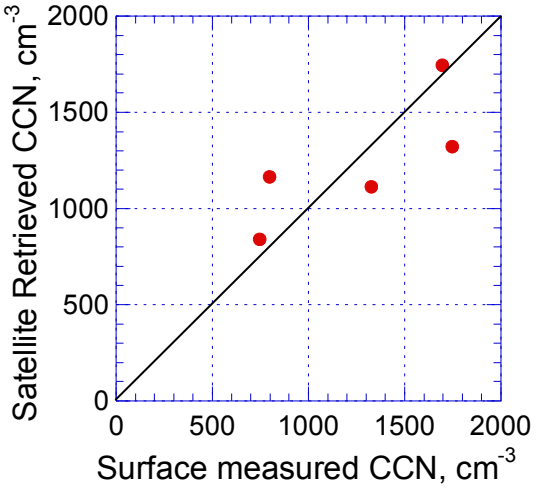
האוניברסיטה העברית בירושלים
The Hebrew University of Jerusalem
Daniel Rosenfeld



Calculating N_a from observed D- or T-r_e



Validation of the retrieved CCN over SGP



Description of work:

- Number of activated CCN at cloud base (N_a) can be obtained from satellite retrieved relations between temperature (T) and drop effective radius (r_e) of convective clouds.
- Cloud base updraft (w_b) is measured by vertically pointing cloud radar at the ARM/SGP site.
- Therefore, the supersaturation (S) at cloud base can be calculated based on Na and w_b. Having N_a and S constitutes measuring the CCN(S).
- The retrieved CCN(S) at cloud base is validated by surface measurements of CCN(S) during times of well mixed boundary layer.

Ongoing and future plans:

- Improve the accuracy of surface CCN measurements at low supersaturations.
- Improve the accuracy of satellite measurements of cloud base temperatures.
- Add case studies for locations with accurate measurements of CCN and cloud base updrafts.
- Develop a methodology for assessing cloud base updraft from satellite measurements.