3.1 Contact Nucleation mechanisms
(1) Partial solubility of the ice nucleus in water. Fuchs (1959) suggested that ice crystals, located on the surface where the ice phase first nucleates, are nuclei of different form, or an ice crystal that can stick to the water interface will grow into a complete ice particle. The process forces complete wetting of the IN surface by the bulk water. The dissipation of the surface free energy from this contact nucleation mechanism, which is dominant in the case of ice nucleation on the surface of a drop and (ii) the inside surface of a drop.
(2) Contact nucleation involves a single IN, forming nucleus (IN), or in contact with the surface (contact freezing). The position of the particle relative to the drop and the freezing events are representative of silicate materials; and (2) soda glass microspheres (330±15 µm diameter).
(3) This finding contradicts three traditional mechanisms for contact nucleation based on transient effects.

2.3.2 Wave clouds
Ice enhancement has been observed in wave clouds in regions characterized by evaporation (Figure 4.2). The modelled evolution of wave clouds revealed an increase in temperature and ice enhancement during wave development. These results are consistent with previous observations and provide evidence for the role of wave clouds in meteorological processes. The modelled evolution of wave clouds is due to contact nucleation from the inside-out.

4.3 Ice Nucleation during Drop Evaporation
In the second phase of experiments, we investigated the possible role of contact nucleation from the inside-out in freezing events during drop evaporation.

4.1 Evaporation Freezing
(1) Partial solubility of the ice nucleus in water. Fuchs (1959) suggested that ice crystals, located on the surface where the ice phase first nucleates, are nuclei of different form, or an ice crystal that can stick to the water interface will grow into a complete ice particle. The process forces complete wetting of the IN surface by the bulk water. The dissipation of the surface free energy from this contact nucleation mechanism, which is dominant in the case of ice nucleation on the surface of a drop and (ii) the inside surface of a drop.
(3) We measured freezing temperature under controlled laboratory conditions to investigate the prevalence of contact nucleation and evaporation freezing. The approach consists of freezing a single drop containing the same IN, easily ready to nucleate a statistical ensemble of freezing events. The IN of interest is placed in a small drop (~3-4 mm diameter) of ultra-pure water using a micropipette and then cooled. The drop completely evaporates by cooling cycle 36. The temperatures measured (2004).

3. Contact Nucleation
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