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## Investigation of Properties of High Level Cirrus Clouds and their Importance for Satellite and Aircraft Operations

 Authors: [John Hallett](#); [NEVADA UNIV RENO DESERT RESEARCH INST](#)

**Abstract:** New instrumentation has been designed developed and deployed for characterizing ice and water droplets in clouds in the atmosphere by in situ aircraft measurement. The principle of operation depends on capture of the particles on a forward facing probe and their processing through evaporation and/or melting to give particle mass and density. Data is both video recorded and also obtained as permanent record as a plastic cast. New analysis tools have also been developed for analysis of the results, displaying particle forms, concentration and spatial distribution in high resolution. Test results have been obtained in hurricane outflow, in arctic clouds and in aircraft **contrails**. Application lies in determining the optical properties of such clouds from the viewpoint of their influence on laser propagation and transfer of atmospheric radiation; it also lies in characterizing clouds in terms of their potential for enhanced aircraft icing when specific spatial distributions of ice particles and supercooled cloud exist.

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