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Examining aircraft measurements for connections of precipitation to aerosol particles

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Abstract

Since 1980, Environment Canada has conducted several airborne studies that have sampled aerosols, clouds and precipitation. Measurements of the concentrations and sizes of aerosol particles, cloud droplets and precipitation-sized particles were made using a variety of probes suspended under the wings of an aircraft, either the National Research Council of Canada DHC-6 Twin Otter or the NRCC Convair 580. We are beginning to examine these datasets to understand the connections going from aerosol particles to the cloud droplets and to the formation of precipitation relative to other factors, such as liquid water content, cloud depth and type as well as turbulence levels. Here, we will present two specific examples and a summary of the cloud flights from seven studies all conducted in warm cloud conditions.

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