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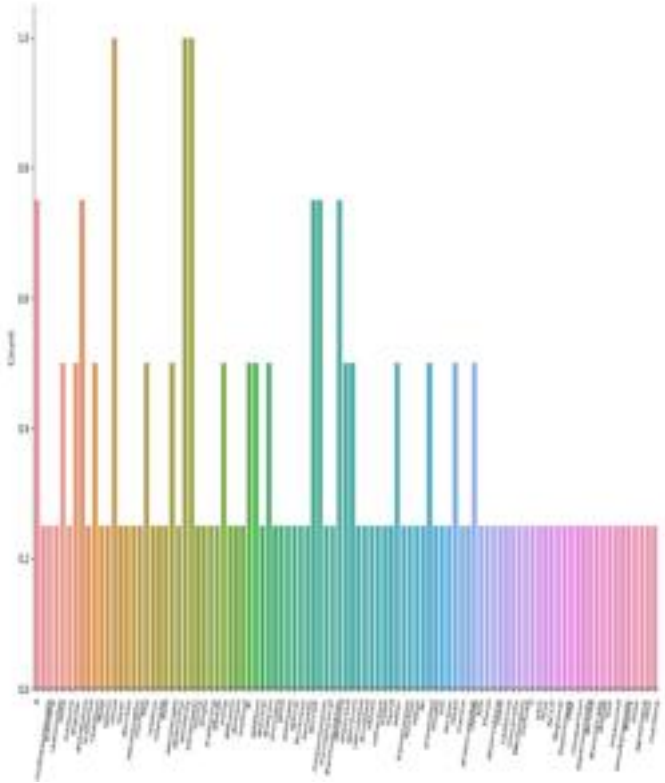
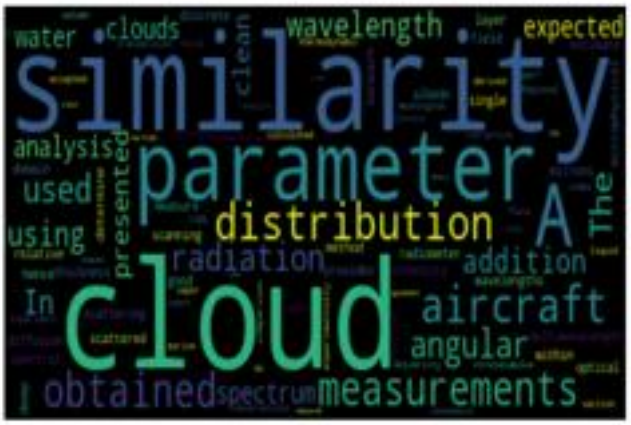
A comparison of the experimentally-derived similarity parameter spectrum with that expected theoretically from the cloud droplet size distribution measured simultaneously from the aircraft is presented. In addition to the spectral similarity parameter, the analysis provides a good estimate of the optical thickness of the cloud beneath the aircraft. A multiwavelength scanning radiometer was used to measure the angular distribution of scattered radiation deep within a cloud layer at discrete wavelengths between 0.5 and 2.3 microns. An analysis is presented for the results obtained for a 50 km section of clean marine stratocumulus clouds on 10 July 1987. The measurements and theory are in very close agreement for this case of clean maritime clouds. These observations were obtained off the coast of California from the University of Washington Convair C-131A aircraft as part of the First ISCCP Regional Experiment (FIRE).

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