

Measurements of cloud particles and sea salt aerosols at Tarawa (1.35N, 172.92E), Kiribati using balloon-borne Cloud Particle Sensor (CPS)

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The Cloud Particle Sensor (CPS; Fujiwara et al., AMT, 2016) is a small-mass (200 g) balloon-borne sensor flown with Meisei radiosonde. The CPS is equipped with a diode laser at 790 nm and two photodetectors, with a polarization plate in front of one of the detectors, to count the number of particles per second and to obtain the cloud-phase information (i.e., liquid, ice, or mixed). The lower detection limit for particle size was evaluated in laboratory experiments as 2 μ m diameter for water droplets. We have flown a total of 13 CPSs at an equatorial Pacific site, Tarawa (1.35N, 172.92E), Kiribati, in January 2016, November 2016, and November 2017 under the Soundings of Ozone and Water in the Equatorial Region (SOWER) project. In the presentation, we will show the measurements of cirrus cloud layers in the upper troposphere and of non-spherical particles in sub-saturated marine boundary layer. The latter particles were found in all the 13 soundings and are most probably sea salt aerosols.

Keywords: cloud particle, sea salt aerosols, radiosonde