Table 1. A summary of the observational studies of individual cloud droplet/residual particle, including studied site, collected droplet size, the used single particle technique, major particle types.

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Site | Droplet size | Single particle technique | Observed or focused major types | | | References | |
| Mt. Norikura, Japan 1 | NA | Electron microscope | Sulfate, nitrate, and their mixtures | | | Ishizaka et al., 1994 | |
| A subalpine mountainous terrain on a northwesterly slope, near Mt. Le Donon, France 1 | > 15 μm | Laser microprobe mass spectrometry | ammonium and sulfate in smaller droplets; crustal components in larger droplets | | | Gieray et al, 1993 | |
| The Swiss High Alpine Research Station Jungfraujoch 1 | NA | SPLAT and ATOFMS 5 | Sulfate, organics, mineral | | | Kamphus et al. (2010) | |
| > ~2.5 μm | SP2 | Soot | | | Motos et al., 2019a | |
| (1) upwind site (Goldlauter) (2) summit site (Schmücke) and (3) downwind site (Gehlberg), central Germany 1 | > 5 μm | SEM and NanoSIMS | Organic aerosol, mixed particles (with organic and inorganic components), mineral dust, soot | | | Harris et al., 2014 | |
| > 5 μm | ALABAMA 5 | Organic-K; soot; biomass burning; K | | | Roth et al., 2016 | |
| Mt. Tianjing, China 1 | > 8 μm | SPAMS 5 | K-rich, OC, soot, Na-rich | | | Lin et al., 2017 | |
| > 7.5 μm | TEM-EDS | Sulfate (S)-rich, S-OM, aged soot, aged refractory mixture | | | Fu et al., 2020 | |
| Zeppelin Observatory near Ny-Ålesund, Svalbard, Norway | 6.0~7.0-40 μm | TEM-EDS | mineral dust, sea salt, K-bearing, sulfate, carbonaceous | | | Adachi et al., 2022 | |
| Mt. Kleiner Feldberg, near Frankfurt, Germany 1 | > 7.3 (±0.4) μm | Electron microscope | Soluble, insoluble, or mixed | | | Hallberg et al., 1994 | |
| Urban Kyoto, Japan 2 | > 3.5 μm | micro-PIXE | Crustal components, sulfur | | | Ma et al., 2003 | |
| Mt. Tai, China 2 | NA | SEM-TEM | Salts (Sufate), Fly ash/metal, Organic, Soot, Crustal dust | | | Li et al., 2011b | |
| NA | TEM | S-rich, Mineral, Soot, Fly ash/metal, S-mineral, S-soot, S-fly ash/metal, S-fly ash/metal-soot | | | Liu et al., 2018 | |
| Mt. Lu, China 2 | > 3.5 μm | TEM-EDS | Focused on trace metals (Pb-rich, fly ash, Fe-rich, and Zn-rich) | | | Li et al., 2013 | |
| Urban Guangzhou, China 2 | > 8 μm | SPAMS 5 | EC-NaK, EC, EC-Metal, K-rich, Mineral dust/metal | | | Bi et al., 2016 | |
| Irchel campus of the University of Zurich, Switzerland 2 | > ~2.5 μm | SP2 | Soot | | | Motos et al., 2019b | |
| Moor House, GDF Summit, Fell Gate in Cumbria, U.K 3 | > 5 μm | LAMMS | | Sea-salt, sulphate , iron-/aluminium-rich, calcium sulphate, phosphate-rich | Gieray et al, 1997 | |
| Off the coast of central California, U.S.A 3 | 9-30 μm | TEM-EDS | Marine material, Organic, Si-rich | | | De Bock et al., 2000 | |
| Over the Indian Ocean 3 | 9-30 μm | SEM-TEM | Focused on organo-nitrogen compounds | | | Twohy et al., 2005 | |
| Northeastern Pacific;Indian Ocean;Caribbean Sea;midwestern United States 3 | 8-50 μm | TEM-EDS;SEM | Crustal dust, Soot, Organic, Sulfates, Industrial metals, Salts | | | Twohy et al., 2008 | |
| Mt. Taiko, Japan 3 | 1.4–2.8, 2.8–6.4,  6.4–20, >20 μm | micro-PIXE | Si, Ca, and Fe in small droplets (<6.4 μm); S and Cl in larger droplets (>20 μm) | | | Ma et al., 2004 | |
| The ground site in Point Reyes National Seashore, U.S.A. 3 | > 5 μm | CCSEM/EDX | Sea salt, sulafte | | | Hopkins et al., 2008 | |
| near Barrow, Alaska, U.S.A. 3 | > 11 μm | SPLAT II 5 | Sulfate/Organics, Sea Salt, Biomass Burning, Organics | | | Zelenyuk et al., 2010 | |
| > 11 μm | CCSEM/EDX; STXM/NEXAFS | mixtures of sea salt, CNO (carbon, nitrogen, oxygen), CNOS (carbon, nitrogen, oxygen, sulfur) and soot | | | Hiranuma et al., 2013 | |
| Over the southeast Pacific Ocean 3 | 7-50 μm | TEM-EDS | Sulfate, Sea Salt, Reacted Sea Salt, Biomass Burning | | | Twohy et al., 2013 | |
| Over the Sahara Desert, Mauritania 4 | 7-50 μm | TEM-EDS | Crustal dust, metals, salts, mixed | | | Twohy et al., 2009 | |
| Oman into the UAE (Omanmountain region) 4 | 2-47 μm | TEM-EDS | Silicate/gypsum aggregates, silicate/NaCl aggregates, and mixed cation sulfate salts | | | Semeniuk et al., 2014 | |
| Niamey, Niger 4 | > 5 μm | TEM, SEM-EDX | Quartz, Alumionsilicate, Calcite, Dolomite, Seasalt+Dust, Seasalt Sulfate, Biomass burning, Biogenic | | | Matsuki et al., 2010 | |
| Over the Saudi Arabia 4 | > 0.05, > 0.3,  > 2.0 μm | TEM | Mineral, Sulfate, Sulfate+Mineral, Soot, Soot+Mineral, Other | | | Pósfai et al., 2013 | |

1,2,3,4 Refers to Remote background, Urban/Industrial, Marine/Coastal, and Dusty regions, respectively.

5 These instruments are similarly grouped as SPMS technique.