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Aerosol Optical Depth Measurements at high altitude and polar WMO Global Atmospheric Watch - PFR Network Stations

Stelios Kazadzis, Natalia Kouremeti, and Julian Groebner

Physikalisch-Meteorologisches Observatorium Davos, World Radiation Center (PMOD/WRC), Davos Dorf, Switzerland
(stelios.kazadzis@pmodwrc.ch)

Multiwavelength aerosol optical depth (AOD) has been defined as an essential climate variable for the Global Climate Observing System (GCOS) and the Global Atmosphere Watch (GAW) Program of the World Meteorological Organization. It is the most important parameter related to aerosol radiative forcing studies. PMOD/WRC have developed the Precision Filter Radiometer (PFR) that has been used for long term AOD measurements under a GAW-PFR Network of sun-photometers started in 1995 at Davos Switzerland and from 1999 at other locations, worldwide.

Here we present:

An overview of the results of the long term GAW-PFR AOD series for four high altitude stations (Izana/Spain, Mauna Loa/USA, Mt. Walliguan/China and Jungfrauoch/Switzerland). Mean AODs at 500nm were from 0.015 up to 0.096 with small negative changes per year for all stations.

An overview of the results for polar stations (Ny Ålesund/Norway, Summit/Denmark, Marambio/Finland). Ny Ålesund mean AODs at 500nm were almost double compared with the other stations.