

Meteorological Measurements at the CMDL Baseline Observatories

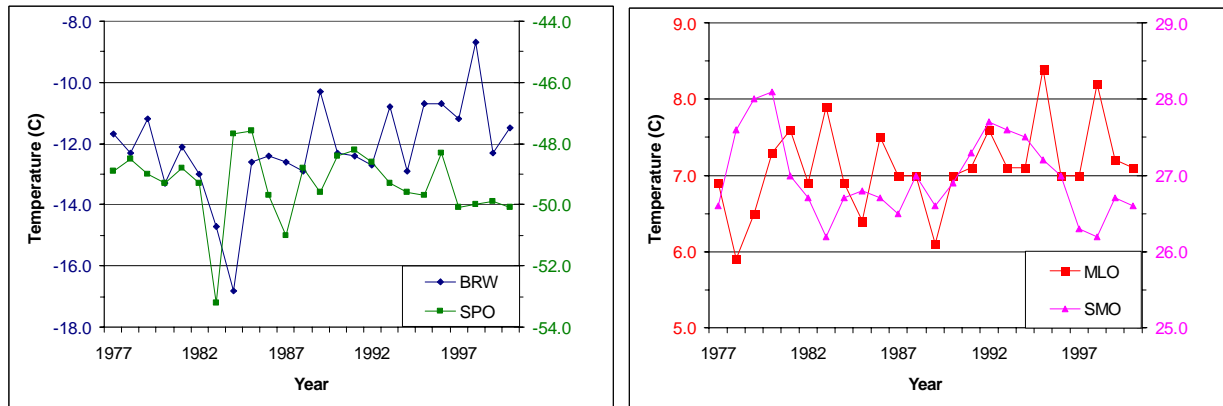
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A variety of meteorological parameters are measured continuously at the CMDL baseline observatories at Barrow, Alaska (BRW); Mauna Loa, Hawaii (MLO); Cape Matatula, American Samoa (SMO); and the South Pole (SPO). Measurements at the surface include wind direction and speed, barometric pressure, and ambient and dewpoint temperatures. Precipitation amount is also measured at BRW, MLO, and SMO. In addition to these measurements, temperatures are also recorded at the top of the sampling towers at BRW (16 m); MLO (38 m); and SPO (22 m). There is an additional anemometer at a height of 38 m at MLO. The meteorological sensors currently in use were selected for their accuracy and ability to withstand the austere conditions of the polar regions.

Analysis of the meteorological data at the observatories shows some interesting features and trends. Some of the features include semi-diurnal pressure patterns, diurnal wind patterns, and temperature inversions. Of interest are the trends in temperature. A linear trend analysis of hourly average temperatures shows that temperatures are rising at BRW and MLO while SMO and SPO have shown cooling.



Yearly average surface temperatures (based on hourly averages) for BRW and SPO (left) and MLO and SMO (right).