3.2.11. DATA PROCESSING

Shortwave and longwave radiation are monitored at the four CMDL baseline stations (BRW, SPO, MLO, SMO) and three other stations (Bermuda, Kwajalein, and BAO). Data are collected using Campbell Scientific data loggers. Meteorology data from the last three stations are also collected. Standard telephone lines are used to download the data from all stations except SPO, where the Internet is used. The telephone download intervals vary from station to station, but are typically 4 hours. The Internet transfer of data takes place once a day.

The Mauna Loa Automated Solar Dome data are collected on a PC by a custom program. These data are downloaded once a day to Boulder via the Internet. Multifilter, rotating shadowband radiometers (MFRSR) are operated at four sites: Bermuda, Kwajalein, BAO, and Boulder. Data from these stations are downloaded locally to a PC system and transferred over the Internet once a day to the Boulder server. UV radiation is monitored at three sites in Alaska: Nome, St. Paul, and Barrow. BSI instruments are used to gather data, and the data are stored on an on-site PC. These data are transferred to Boulder once a day over the Internet. In addition, a Norwegian Institute for Air Research instrument is also used to monitor UV at Barrow. Data from this instrument are stored locally on a PC and transferred to Boulder over the Internet. It should be noted that this transfer has to be initiated manually.

All data mentioned are permanently archived on a server in Boulder. Each morning plots of the previous day's data are created and made available on local-access-only Web pages. Data listings are also available. With this information, scientists in the Boulder laboratory can review the data collection performance and make changes if problems occur.

The radiation data are edited using qualitative and quantitative methods developed in the laboratory. These data are available to researchers through the CMDL web pages. CMDL is a contributing member to the BSRN. Monthly files are made from Barrow, South Pole, Bermuda, Kwajalein and BAO data and sent to the BSRN archive in Zurich, Switzerland.

All-sky photographs are collected at three sites: Barrow, BAO, and Boulder. Images are taken at 1-min intervals and analyzed on a dedicated PC. Once every 15 minutes an image and a calculated cloud-cover image are transferred to one of the laboratory servers and made available on the Web.