THE MEASUREMENT OF CO_2 IN THE MID-SEVENTIES AT MAUNA LOA: A HISTORICAL PROSPECTIVE

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During the late sixties, the Mauna Loa Observatory (MLO) was just barely surviving. Fortuitously, a major shift in its fortunes took place in 1971 when Air Resources Laboratory, NOAA was able to obtain funding for a new program – The Geophysical Monitoring for Climatic Change (GMCC). GMCC was established to measure the global background of trace materials (aerosols and gases) in the atmosphere that would influence the climate. Because of C. D. Keeling's almost two-decade-long CO_2 record at the observatory, it was obvious that MLO must be maintained and expanded as the first observatory under the new program. Through the GMCC funding, three other remote observatories were established at Barrow, Alaska; America Samoa and the South Pole. Following the GMCC initiative, other countries established remote observatories (24) which are now coordinated under the World Meteorological Organization's Global Atmosphere Watch. In January 1990, GMCC became an independent laboratory which was renamed the Climate Monitoring and Diagnostics Laboratory (CMDL). Recently, CMDL has been absorbed into the Earth System Research Laboratory/NOAA as the Global Monitoring Division.

This poster will describe the challenges of maintaining two CO_2 systems at MLO at its 20th year of operation (1977). A NOAA CO_2 Applied Physics analyzer was established in 1973 to run in parallel with the Scripps CO_2 instrument. These two instruments required weekly calibrations using standard gases provided by Scripps. Both systems used paper chart recorders to collect the data. The NOAA data were also recorded on a data system. With twenty years of experience, the MLO staff members became highly proficient in all aspects of CO_2 measurement and quality control of data, which contributed to our understanding of the carbon cycle in the atmosphere and hence global climate change.