Assimilating Old and New In Situ Data: Extending Halocarbon Trends into the 21st Century

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The Halocarbons and other Atmospheric Trace Species (HATS) in situ program has installed new 4-channel gas chromatographs (GCs) at the NOAA baseline observatories during the past 3 years. The new instruments, named the Chromatograph for Atmospheric Trace Species (CATS), have replaced the Radiatively Important Trace Species (RITS) GCs. At the end of December 2000, the last RITS GC was retired, thus ending an illustrious and successful 17-year program. Prior to phasing out a RITS instrument, a CATS GC was operated simultaneously at an observatory for at least 9 months. The overlap helped solve startup problems with the new CATS instrument and has also allowed for intercomparison of data. The CATS GC measures the same compounds as the RITS system (N_2O, CFC-11, CFC-12, CH_3CCl_3, and CCl_4) as well as some additional species (CFC-113, $CHCl_3$, SF_6, halon-1211 ($CBrClF_2$), halon-1301 ($CBrF_3$), OCS, HCFC-22, HCFC-142b, CH_3Cl, and CH_3Br). Results from the RITS/CATS intercomparison will be shown as well as the in situ trends from 1983 to 2000. For example, CFC-11 is 1 to 2 ppt higher for RITS than for CATS during the intercomparison period at each of the observatories.

NOAA Observatories	RITS Operation Period	Date of CATS Deployment
Point Barrow, Alaska	Oct. 1986 to Feb. 1999	Jun. 1998
Mauna Loa, Hawaii	Jun. 1987 to Dec. 2000	Sep. 1998
American Samoa	Jan. 1986 to Sep. 2000	Dec. 1998
South Pole	Dec. 1983 to Nov. 2000	Jan. 1998

Comparison of RITS (small symbols) and CATS (large symbols) show a 1-2 ppt difference for CFC-11.