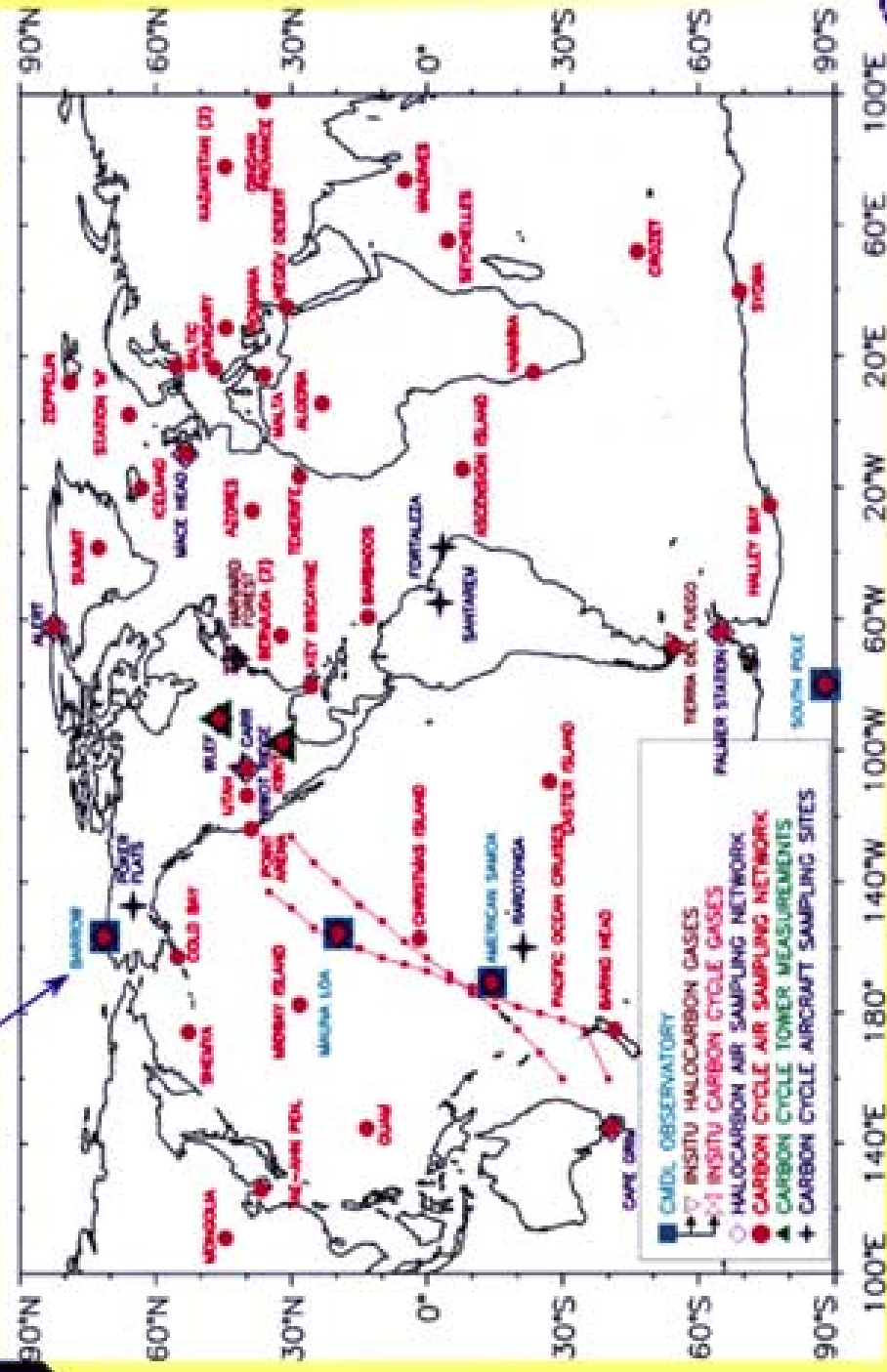
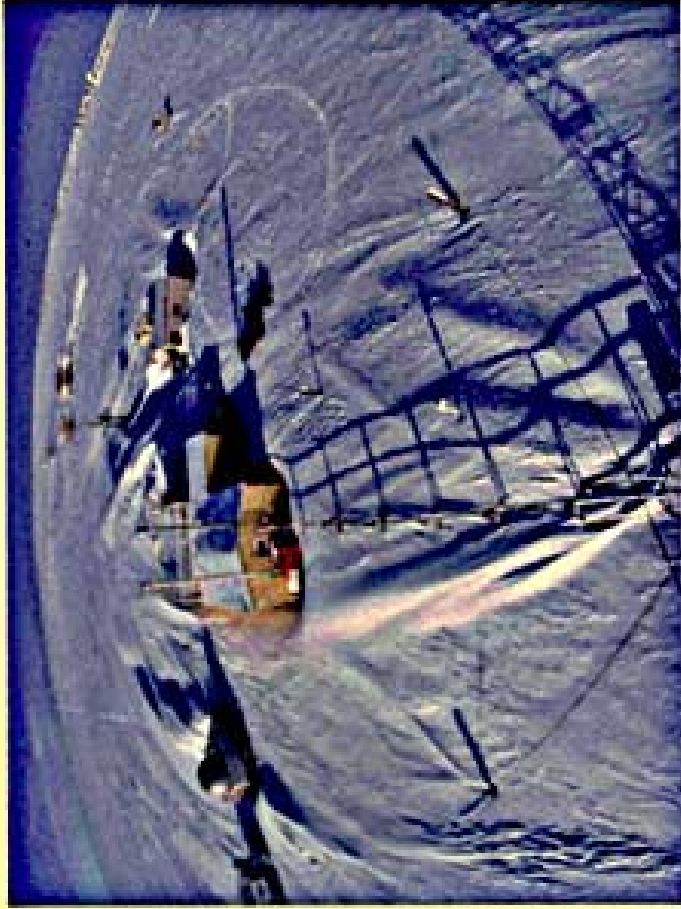


BARROW OBSERVATORY IS ONE OF THE MOST IMPORTANT OF NOAA'S CLIMATE MONITORING SITES





BARROW OBSERVATORY



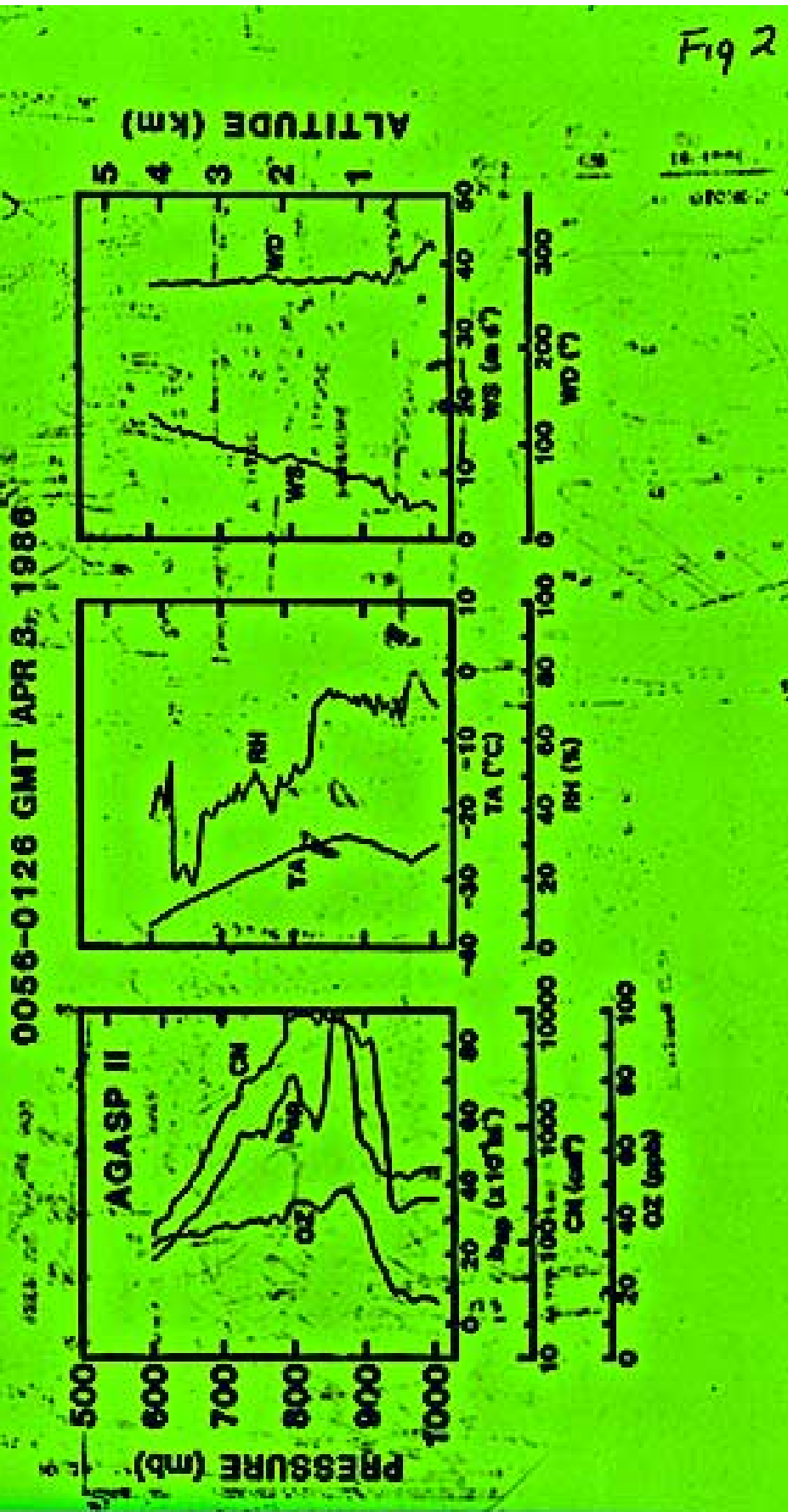
ESTABLISHED IN 1973

**Northern-most of
NOAA's Four Baseline
Climate Observatories:**

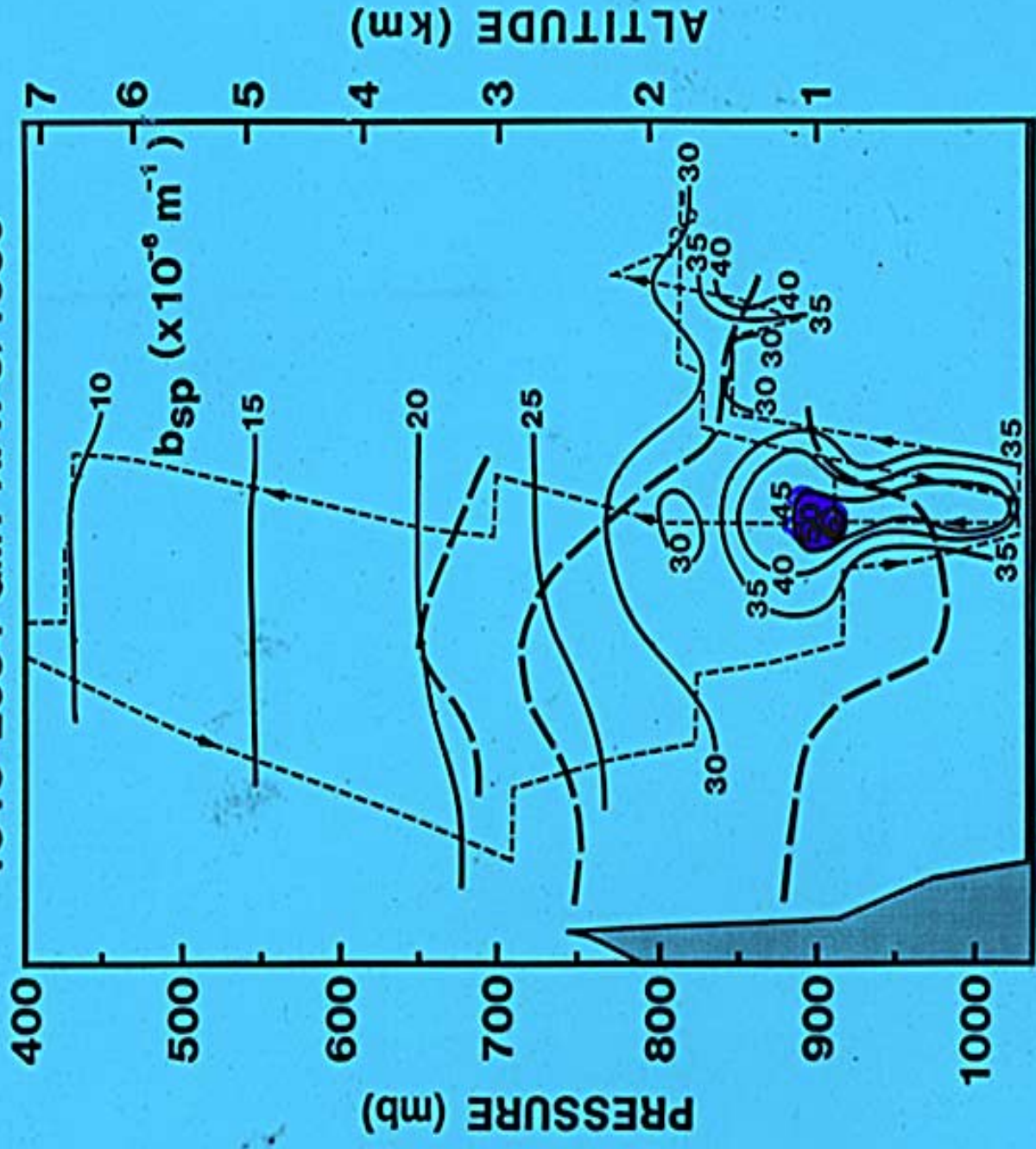
**Barrow, Alaska
Mauna Loa, Hawaii
American Samoa
South Pole, Antarctica**



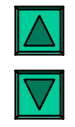




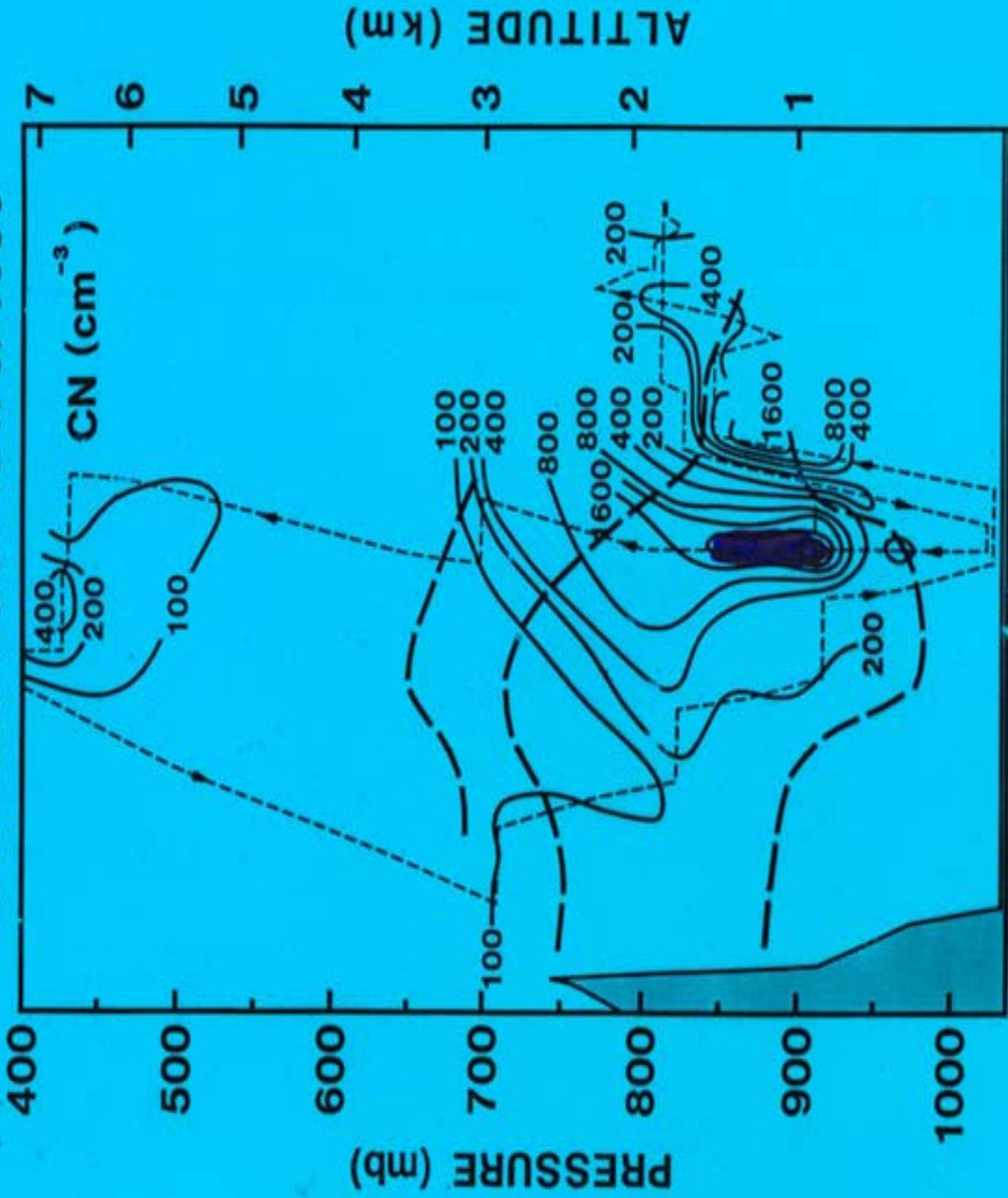
1513-2034 GMT APR 8, 1986



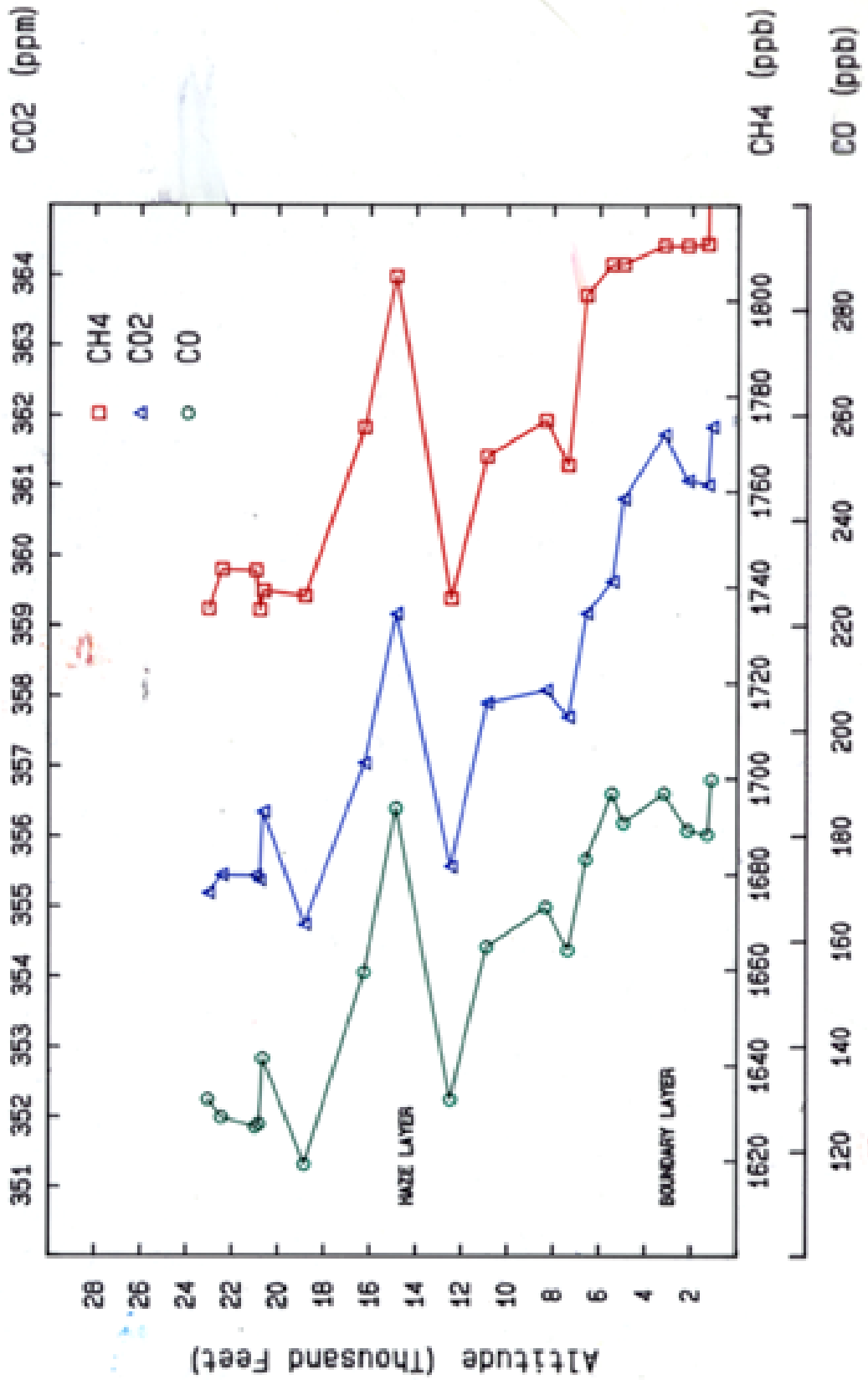
LAT 69 70 71 72 73 74 75 76° N
LON 144 142 140 138 136 134 132° W

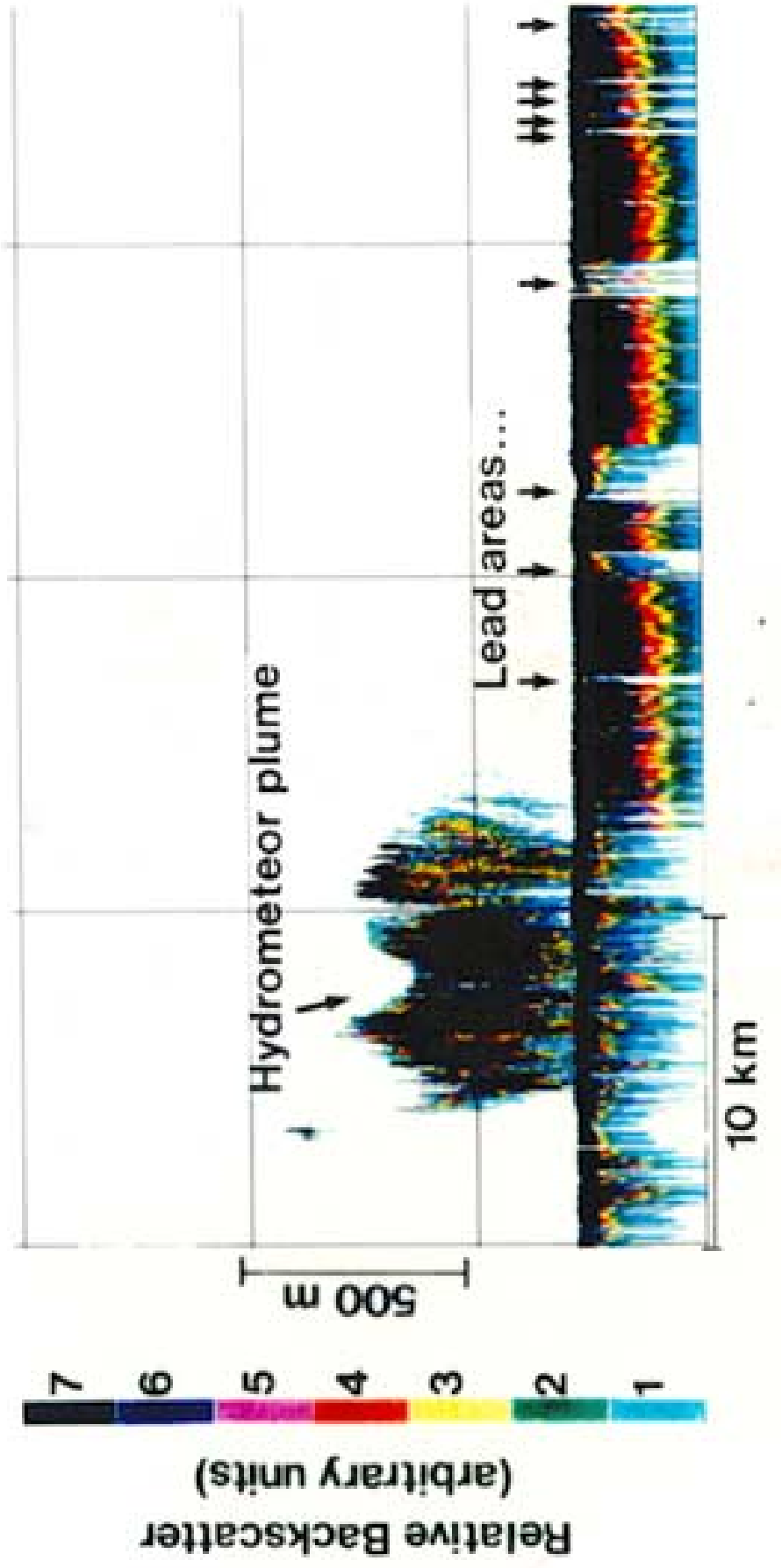


1513-2034 GMT - APR 8, 1986



AGASP FLIGHT 306 21 MARCH 89







Barrow, Alaska

CH₄
BC
CO₂

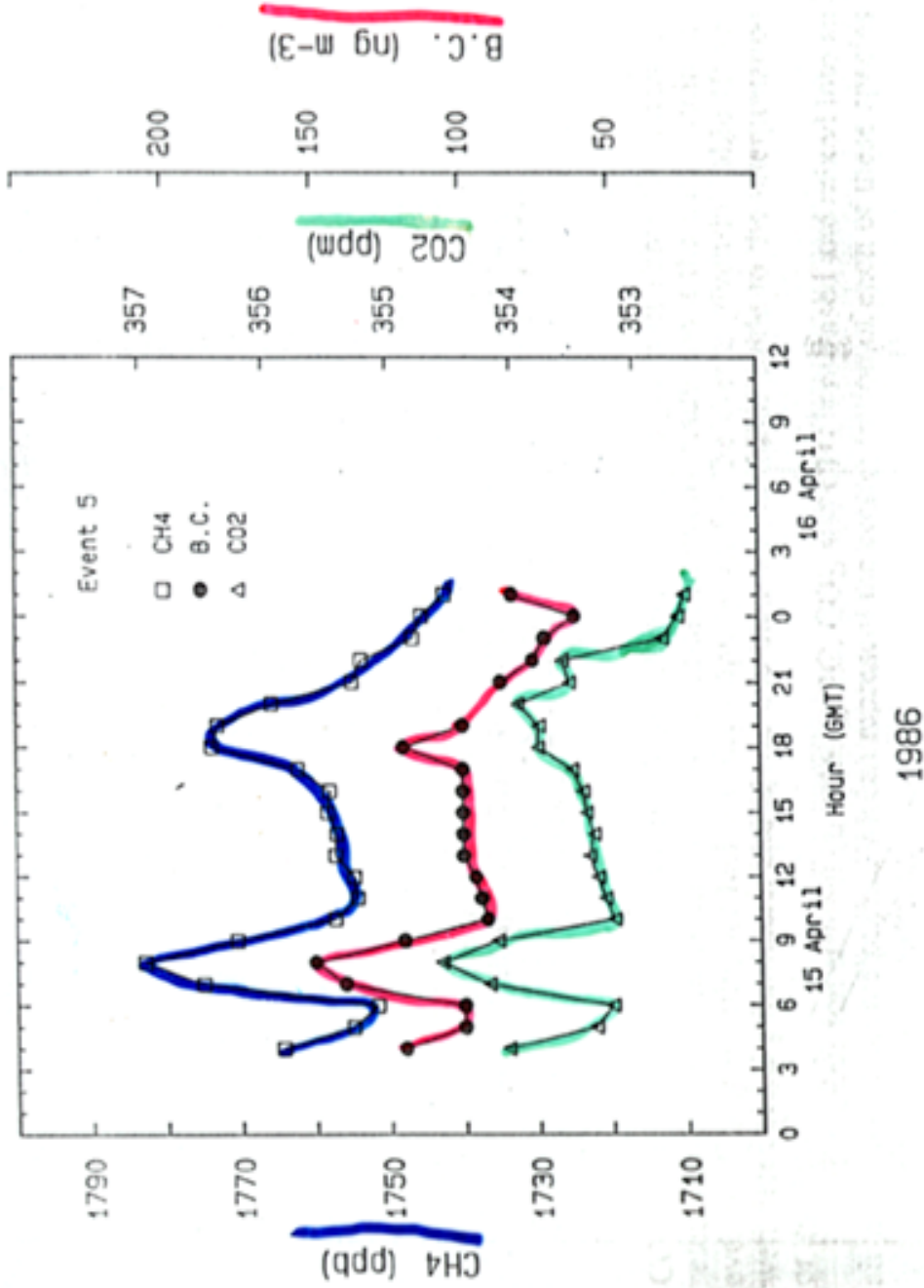
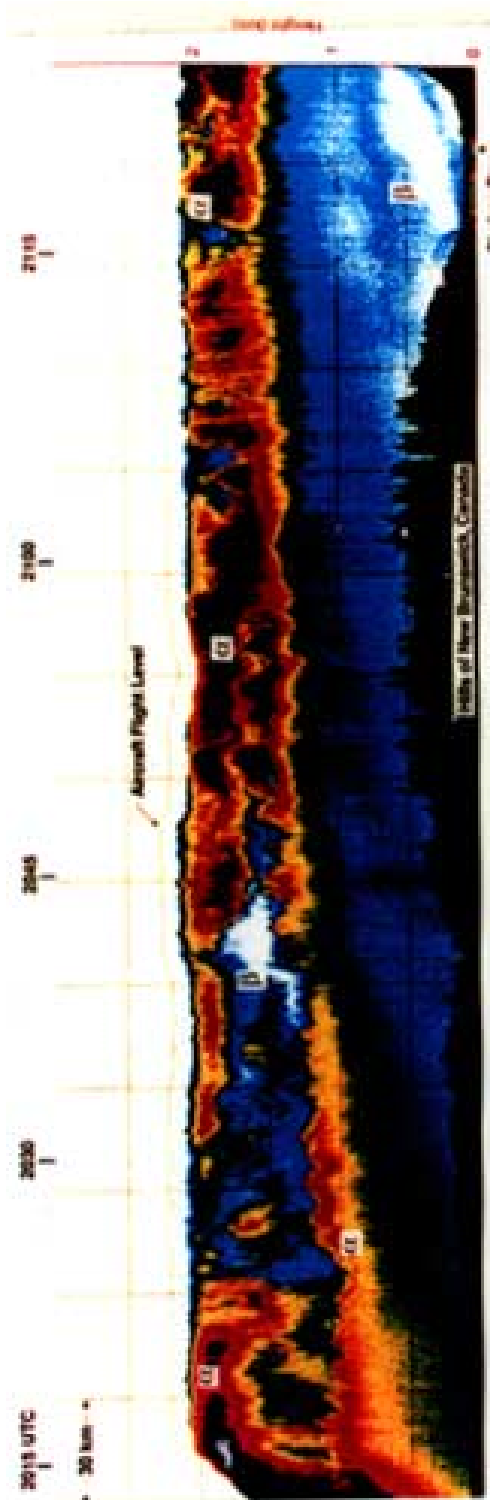
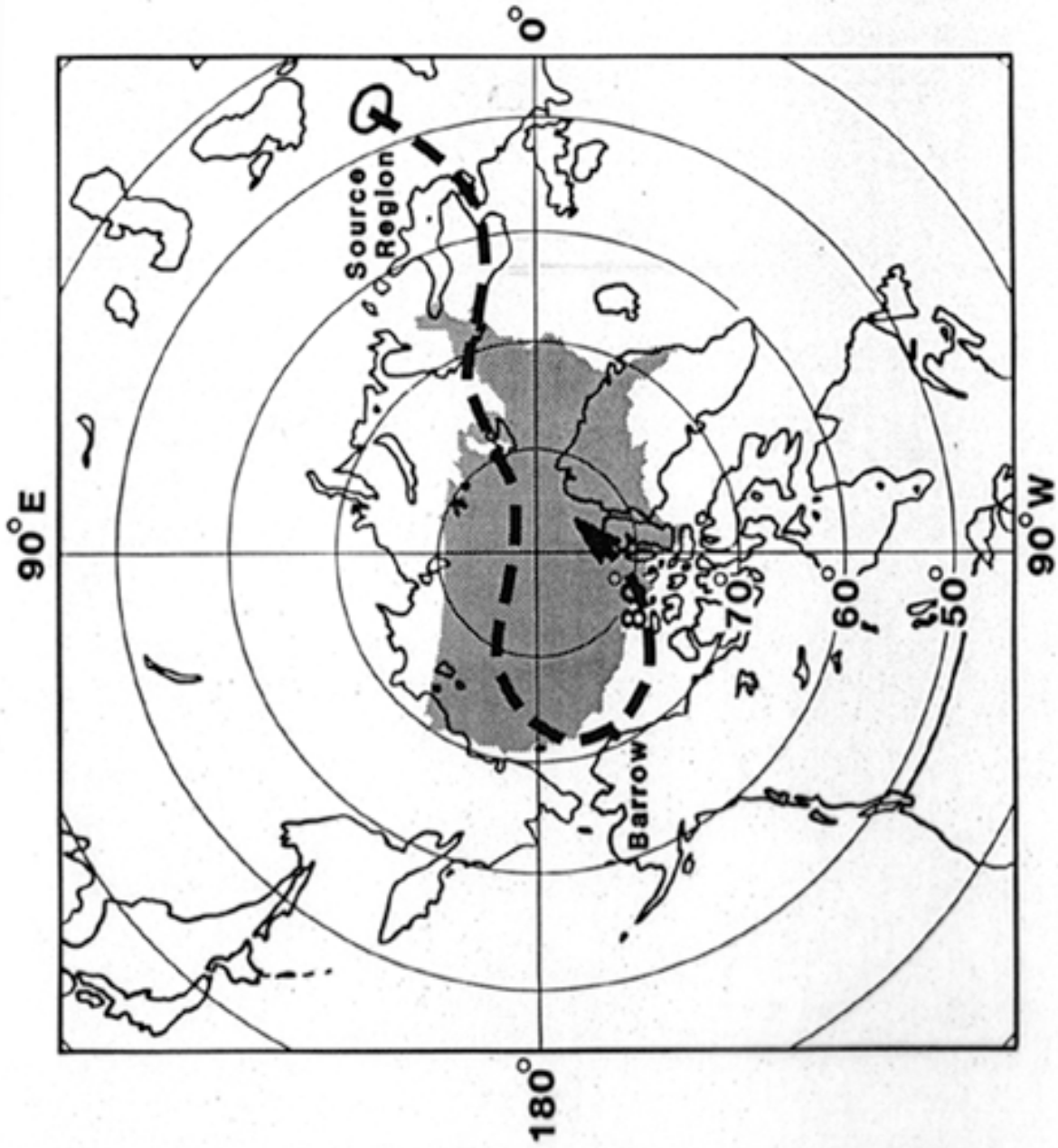


Figure 5. Hourly average concentration values of methane (\square), aerosol black carbon (\bullet), and carbon dioxide (Δ) during event 5 (0400 hours GMT on 15 April to 0100 hours on 16 April 1986). The mean (and standard deviation) values for the wind speed and wind direction during this period were 7.4 (0.8) ms^{-1} and 111 (13) degrees respectively.



Backscatter Coefficient ($10^{-10} \text{ m}^{-1} \text{ sr}^{-1}$)

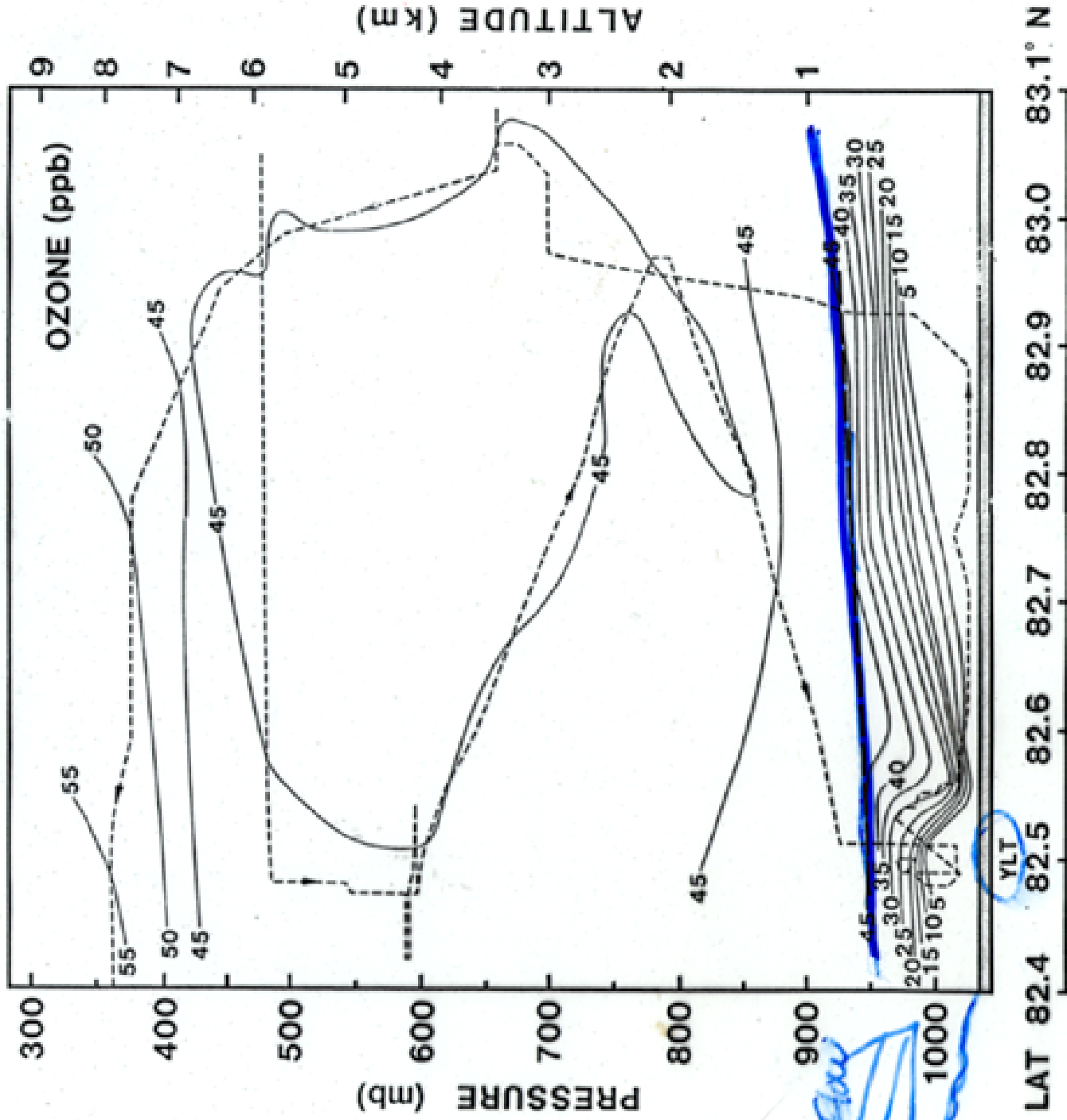
Backscatter Coefficient ($10^{-10} \text{ m}^{-1} \text{ sr}^{-1}$)



Path of an Arctic haze event that originated in south-eastern Europe, travelled across Scandinavia, the pole, and north of Alaska on to Alert, Canada. The haze was tracked for 10,000 km, and off Alaska had greater concentrations of anthropogenic pollutants than haze measured off the eastern USA coast during WATOX. The scale of the overlay is the same as the underlay.

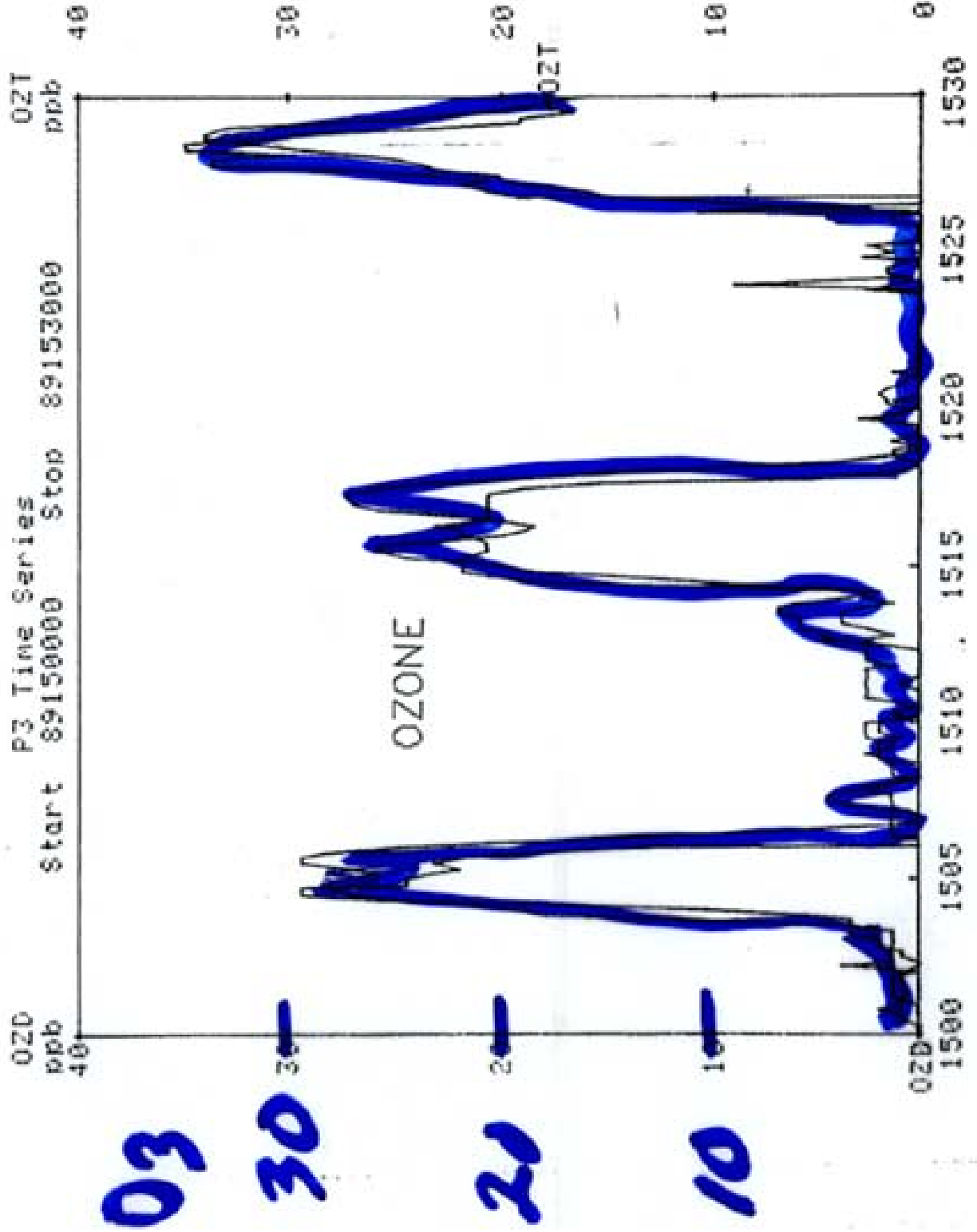


1902-2150 GMT APR 15, 1986



Air Flow

Arctic

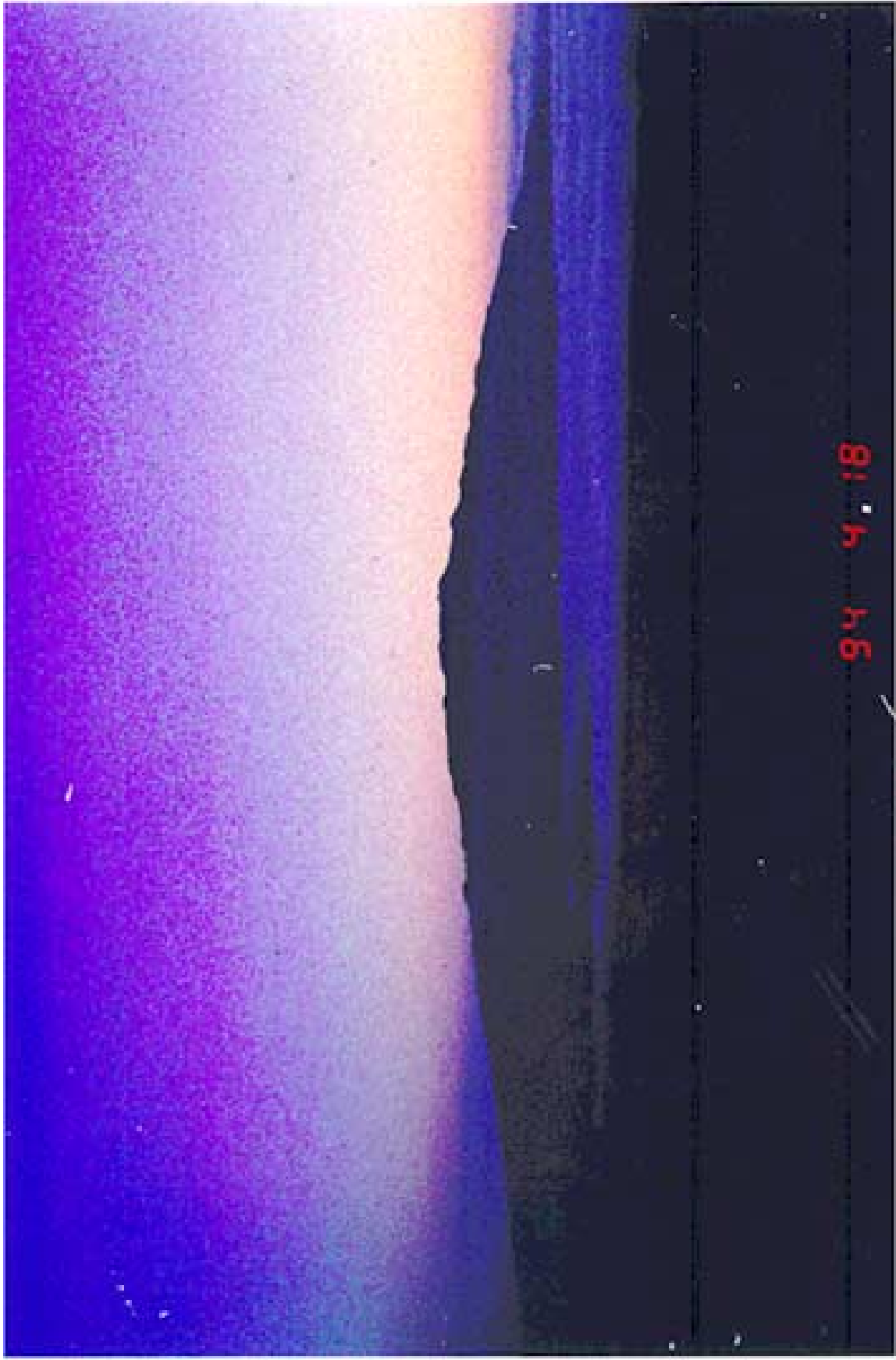


◀▶ Ozone Transect, Boundary Layer

1258-1321 Z, March 29, 1989

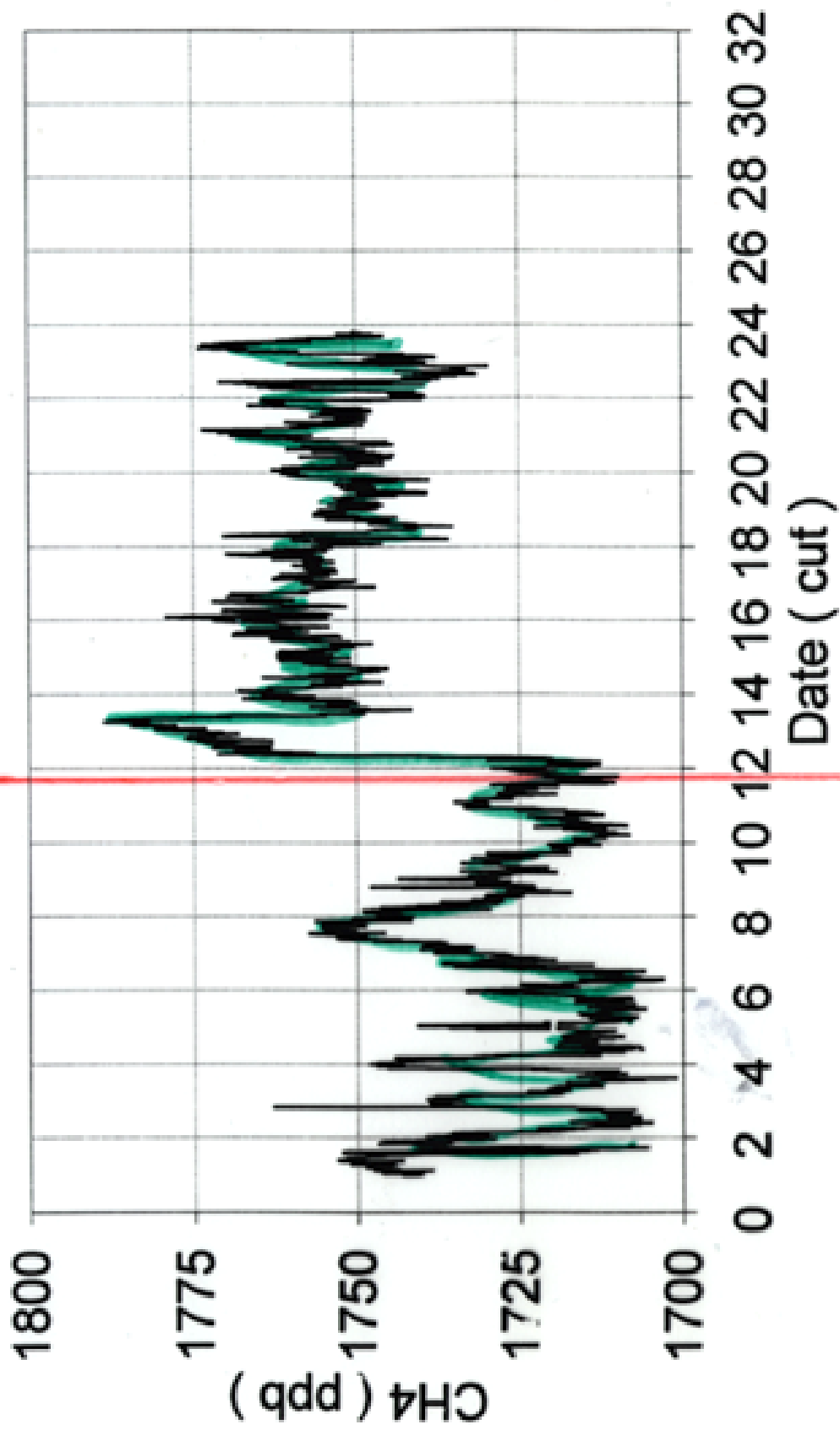




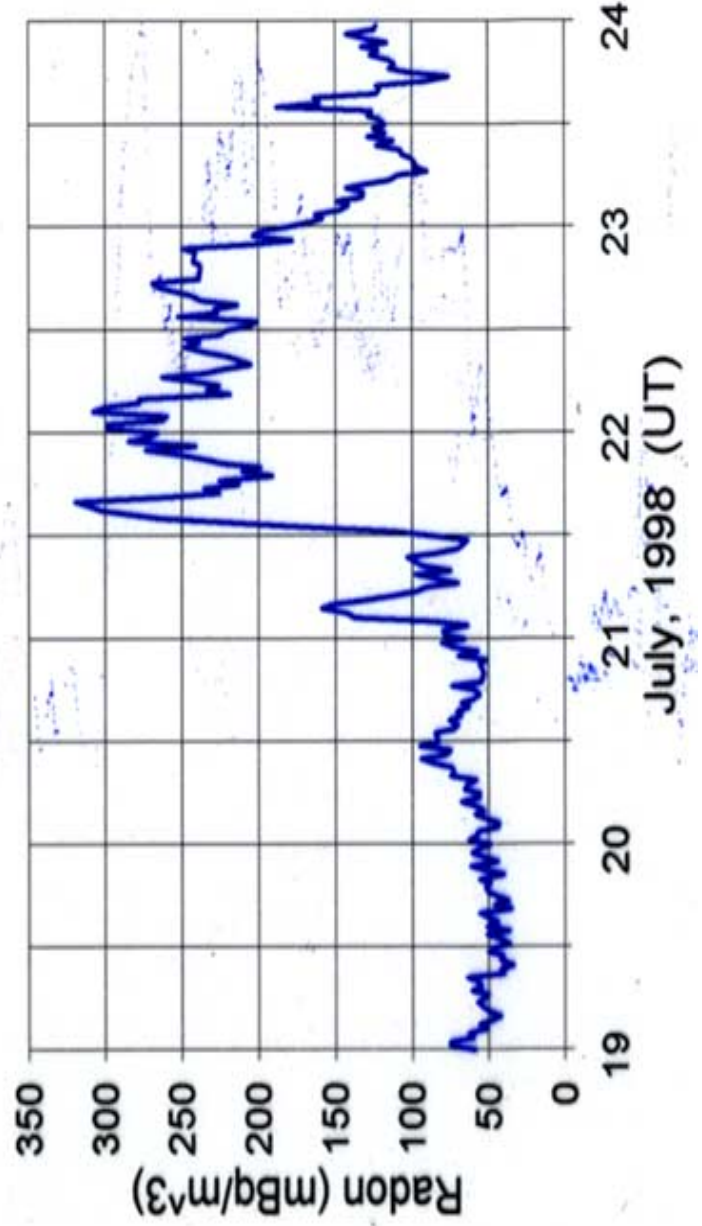
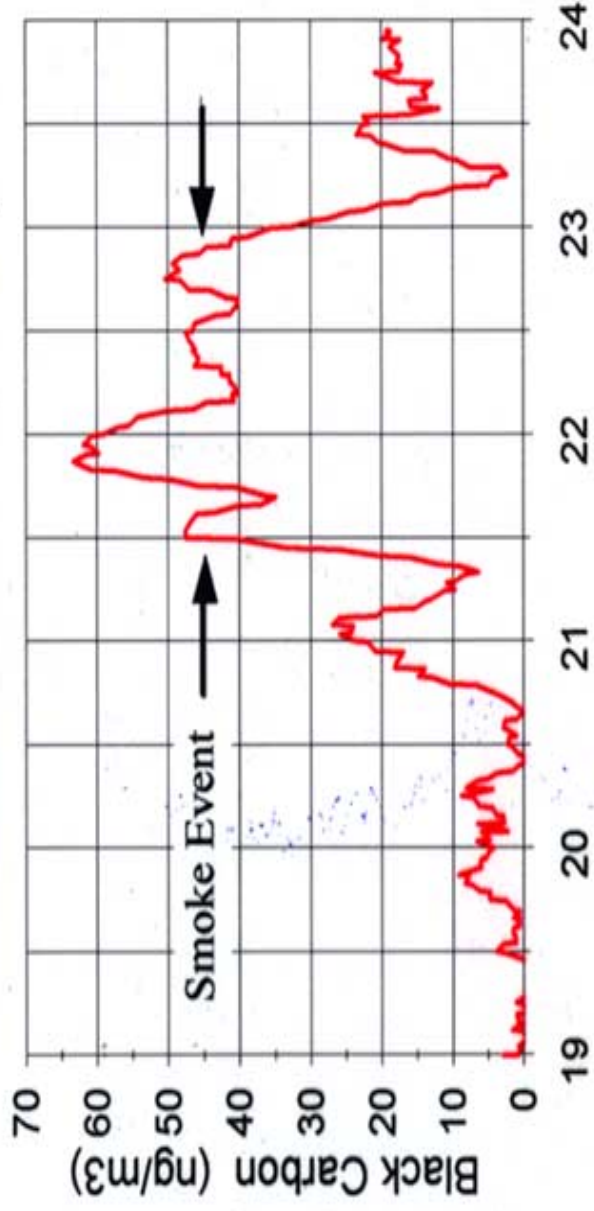




MLO CH4
MARCH 1994



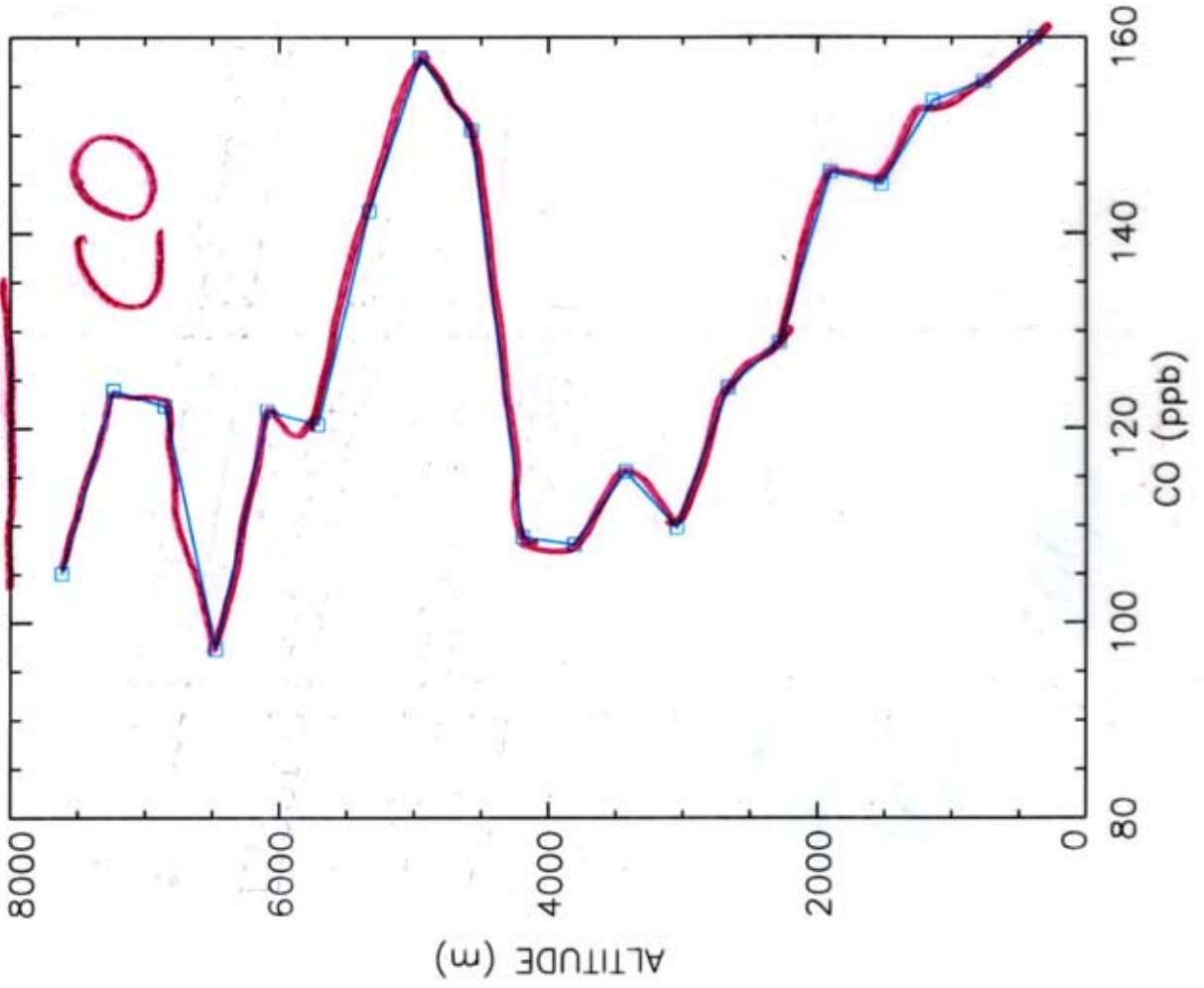
Mauna Loa Observatory

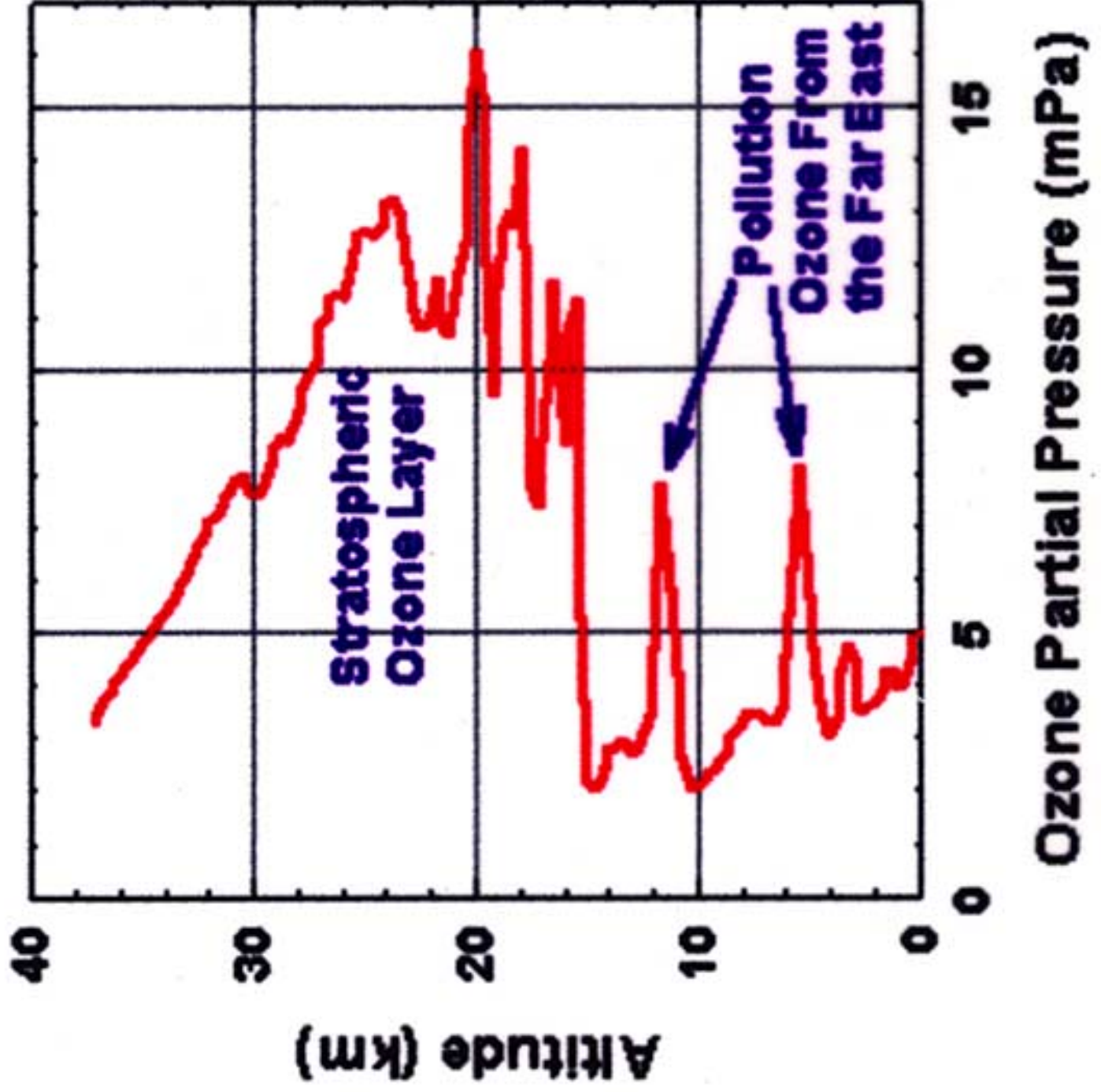


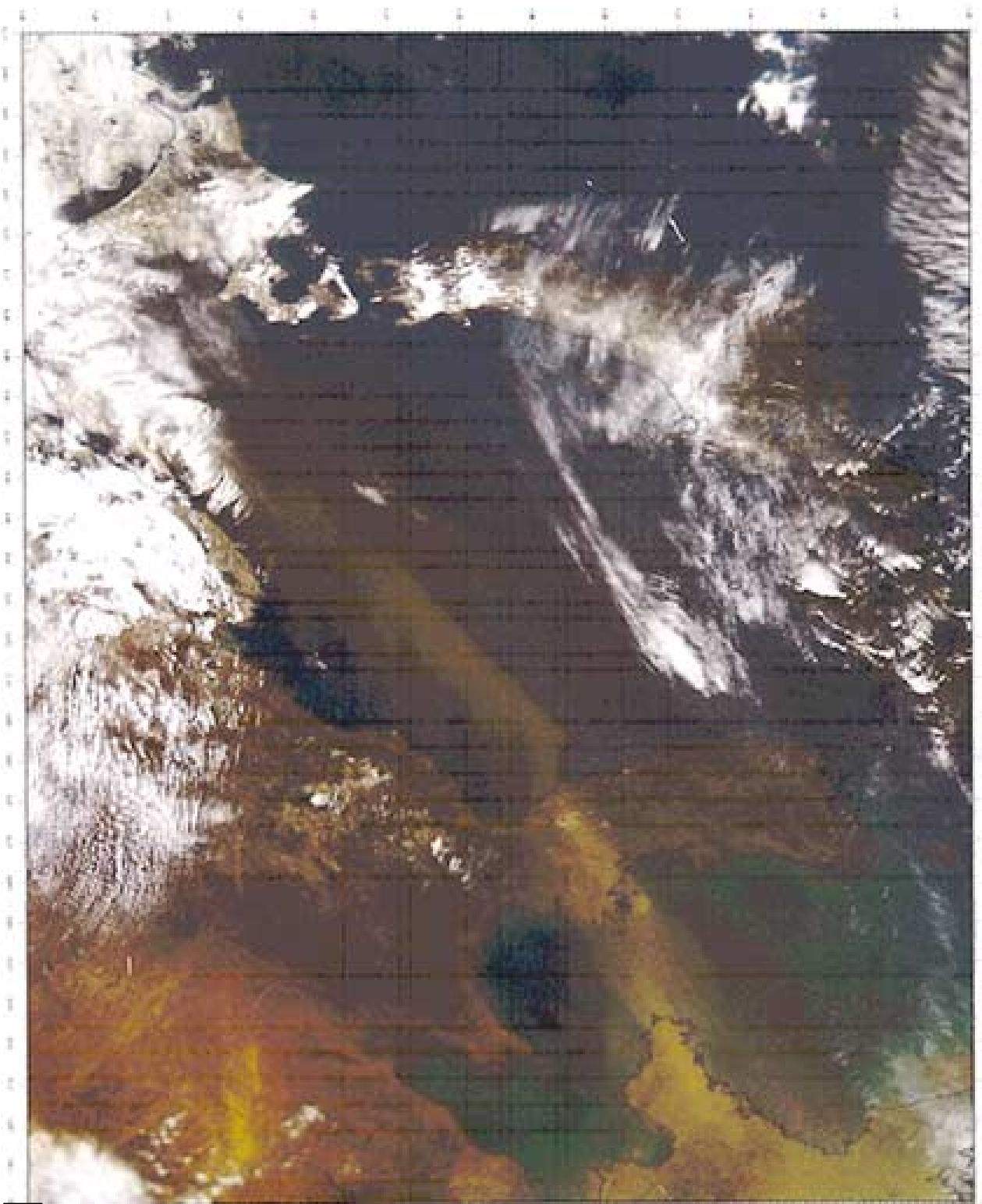
Hawaii

HAA 2000_03_22_1951

CO

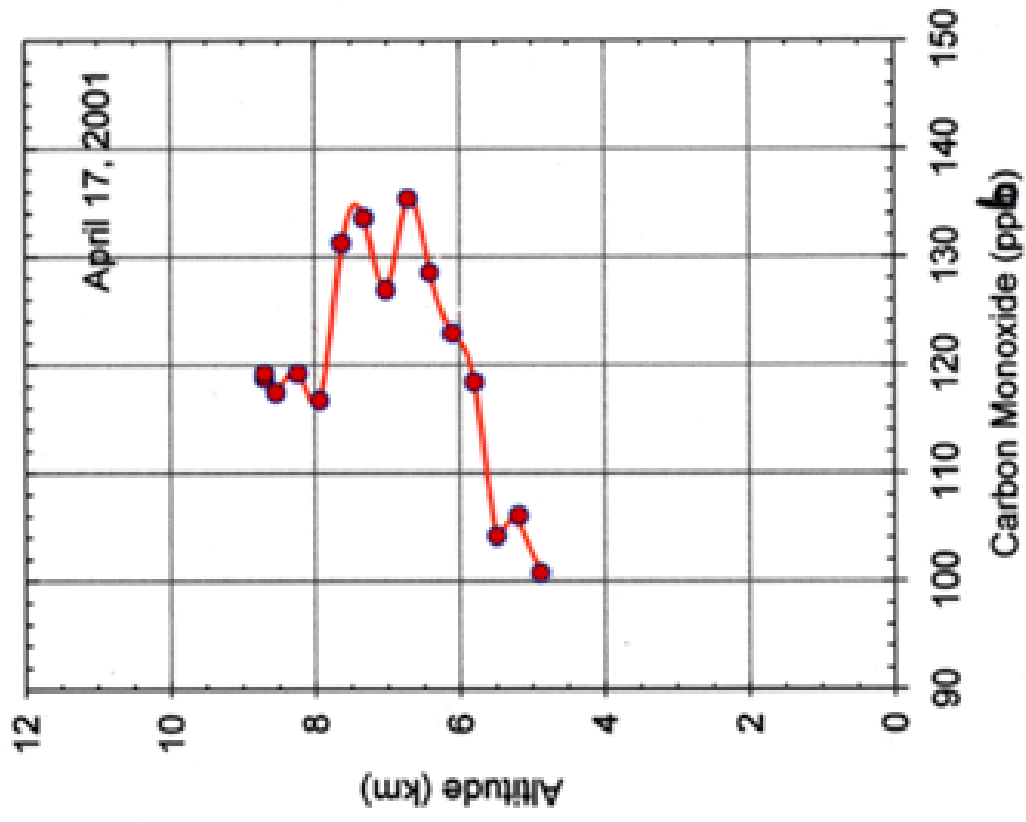
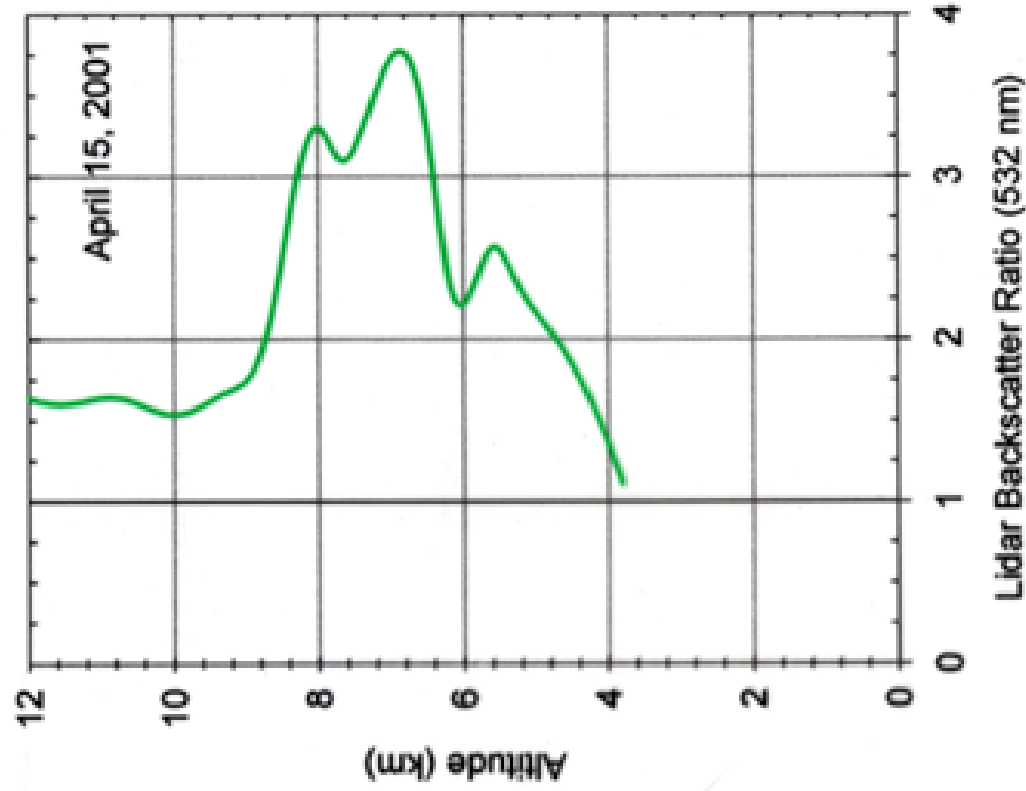






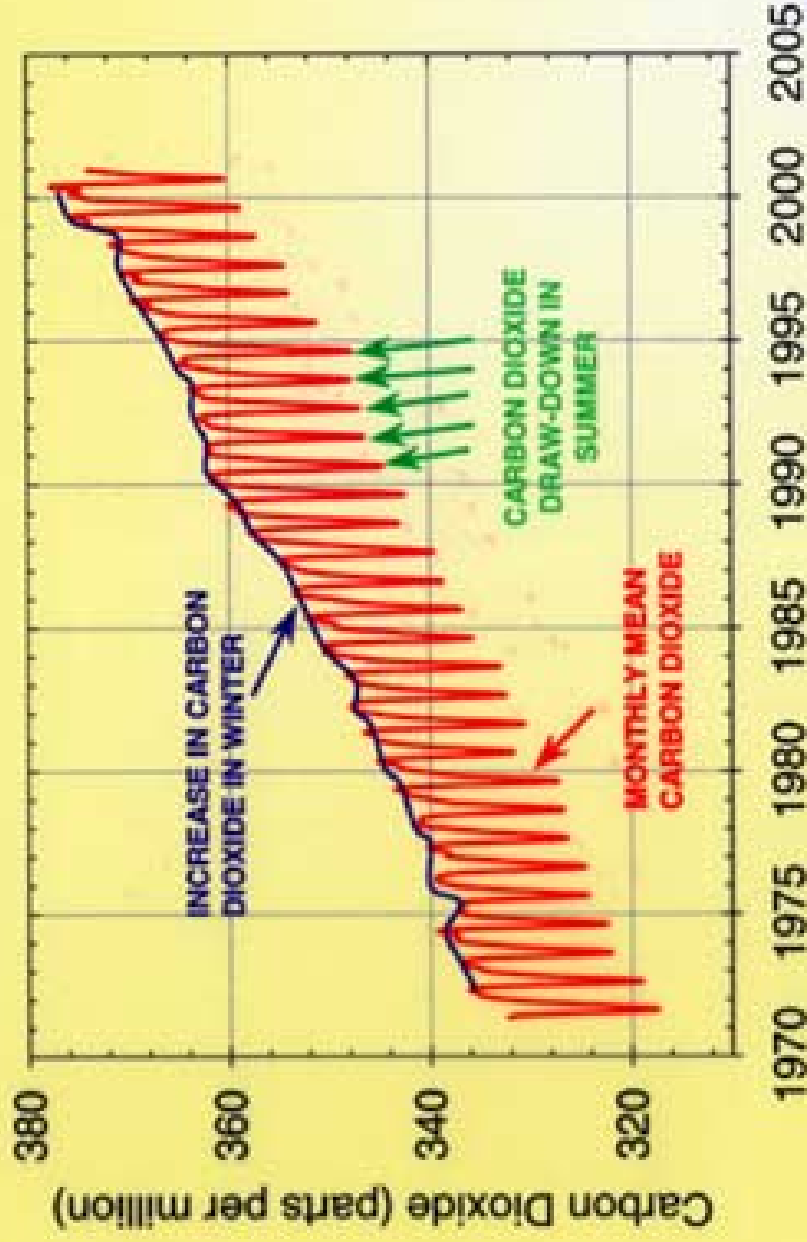


Mongolian Dust Event – Boulder, Colorado



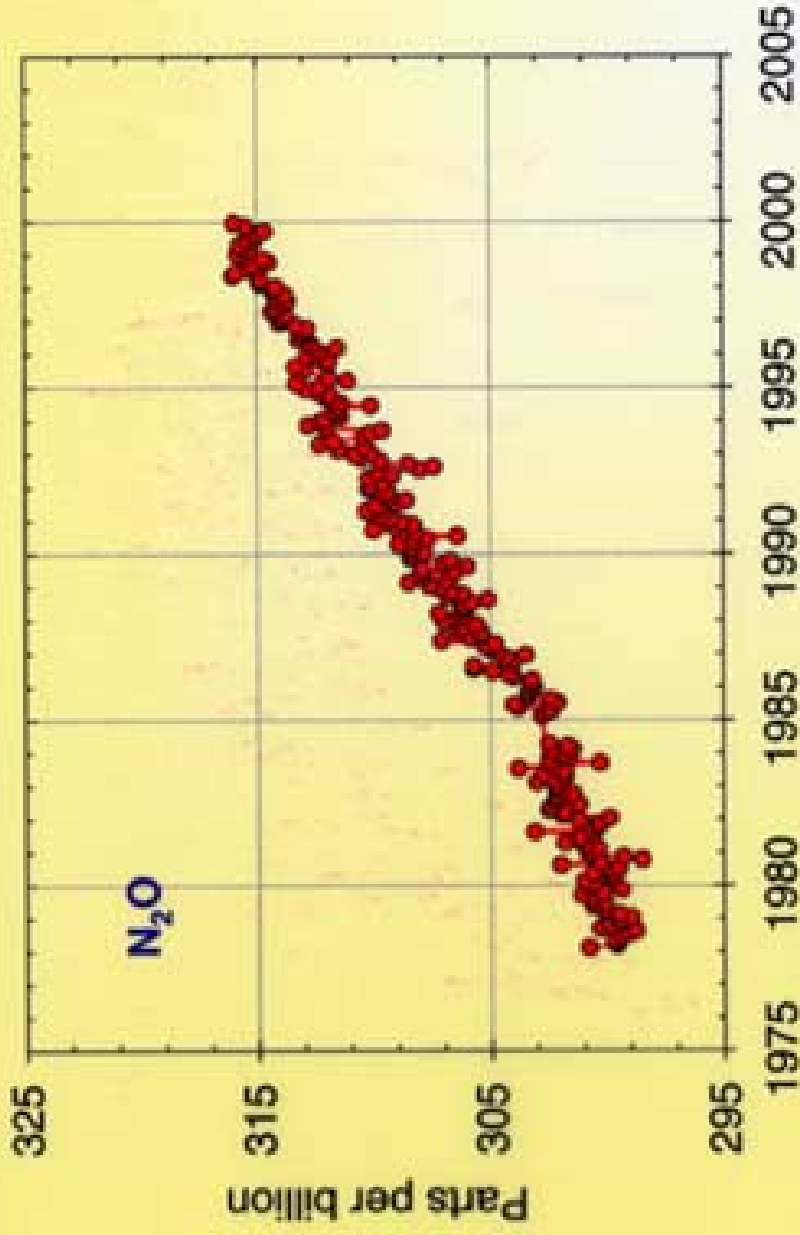


**CARBON DIOXIDE AT BARROW OBSERVATORY
SHOWS THE LARGE EFFECTS OF UPTAKE BY
TREES, PLANTS AND SOILS DURING THE SUMMER**



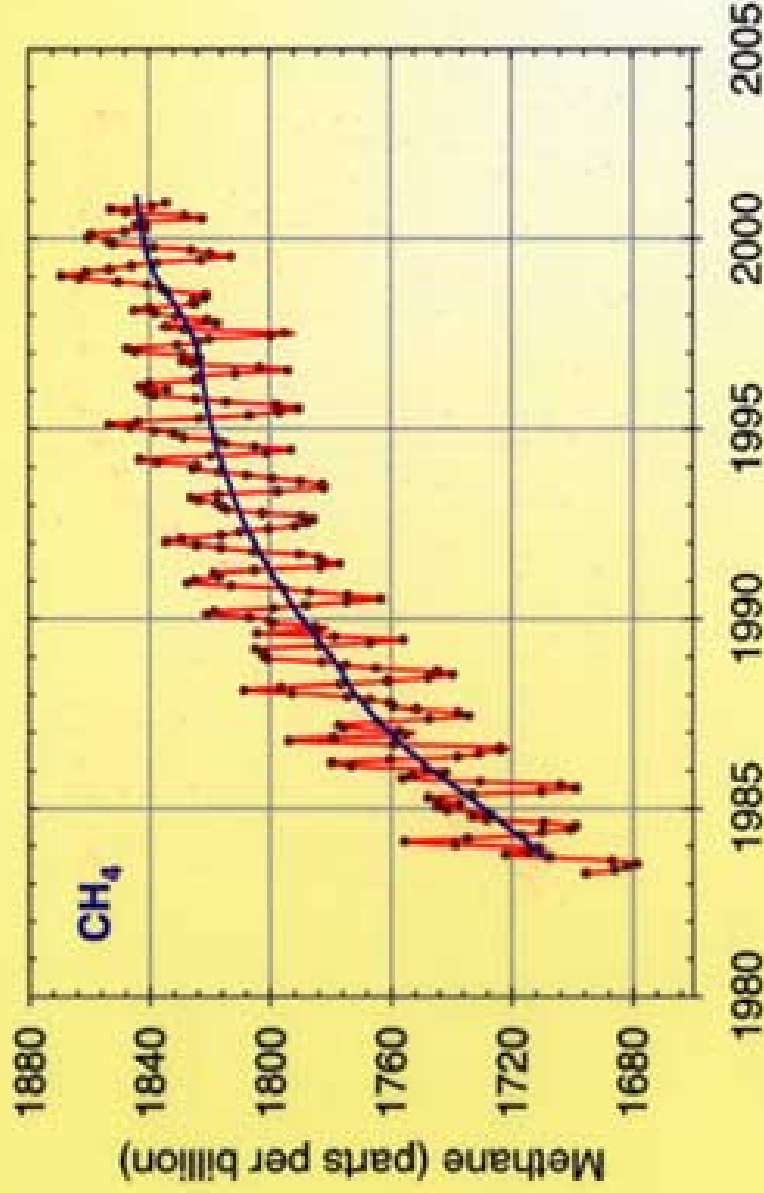


NITROUS OXIDE IS AN IMPORTANT GREENHOUSE GAS AND OZONE DEPLETER. IT HAS ANTHROPOGENIC SOURCES, WHICH ARE NOT WELL KNOWN, AND IS INCREASING IN THE ATMOSPHERE AS SHOWN IN THE BARROW OBSERVATORY RECORD



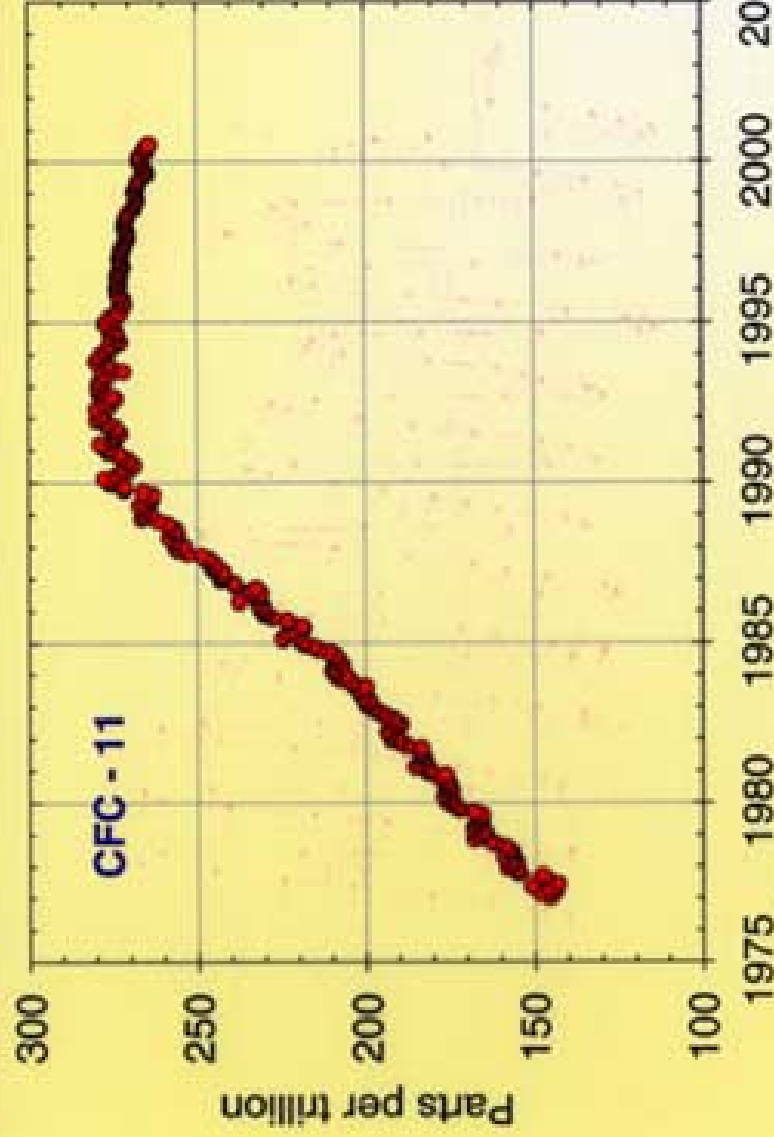


METHANE IS THE SECOND-MOST IMPORTANT GREENHOUSE GAS AFTER CARBON DIOXIDE. THE LARGE INCREASES OBSERVED PRIOR TO 1990 APPEAR TO HAVE DECLINED AT BARROW OBSERVATORY AND ELSEWHERE IN THE WORLD. THIS IS GOOD NEWS FOR CLIMATE.



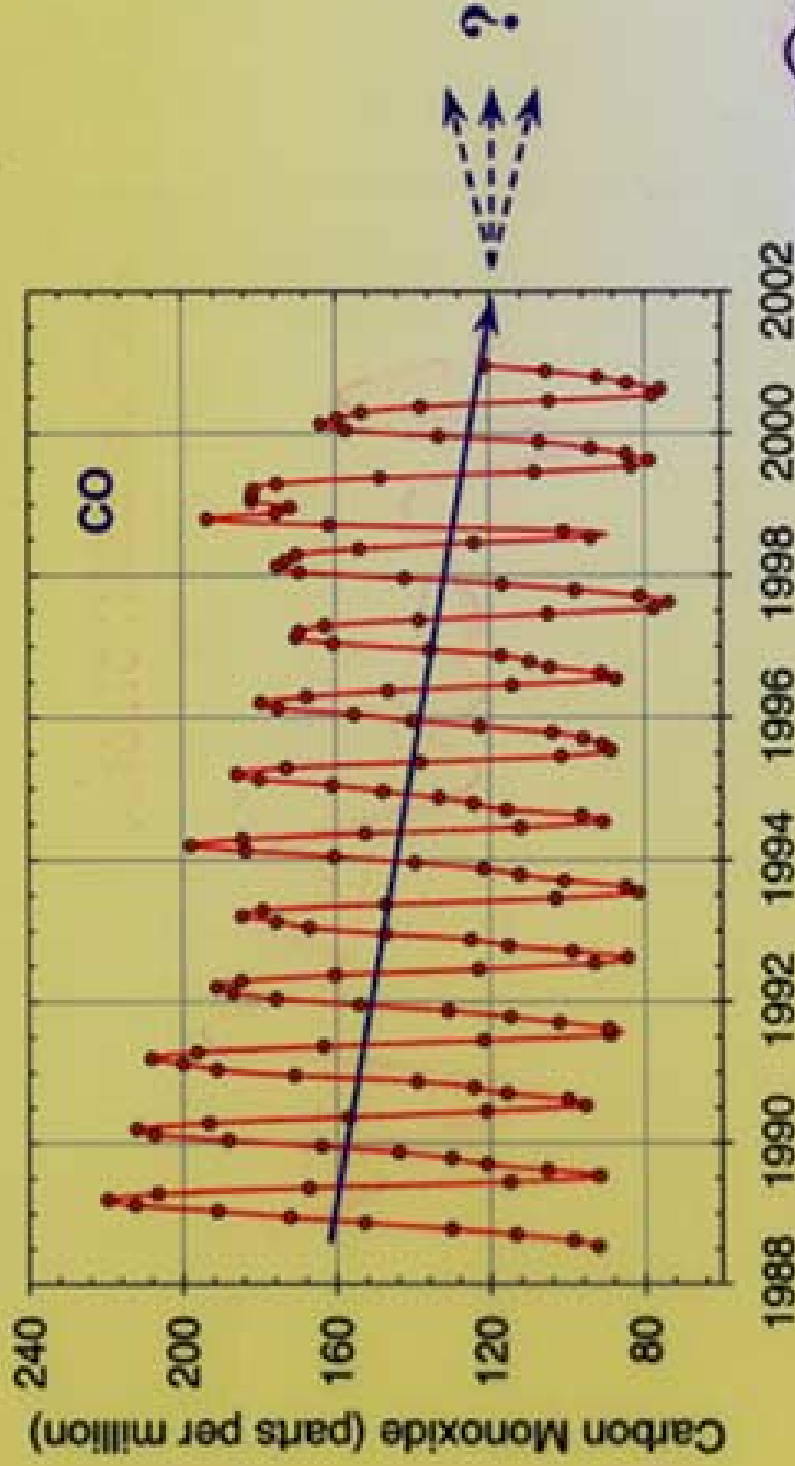


NOAA MEASUREMENTS SHOW THAT THE INCREASE IN OZONE-DESTROYING CHLOROFLUOROCARBON-11 (CFC-11) IN THE ATMOSPHERE, HAS STOPPED AND IS NOW DECLINING AT BARROW AND ELSEWHERE IN THE WORLD. THIS DEMONSTRATES THE EFFECTIVENESS OF THE INTERNATIONAL PROTOCOLS TO SAVE THE OZONE LAYER AND PREVENT SOLAR ULTRAVIOLET RADIATION FROM INCREASING TO LEVELS HARMFUL TO HUMANS AND THE BIOSPHERE





CARBON MONOXIDE IS AN INDUSTRIAL POLLUTANT WHICH CAN BE CARRIED LONG DISTANCES BY HIGH-ALTITUDE WINDS. OVERALL, THE LEVELS AT BARROW OBSERVATORY HAVE DECLINED SINCE THE 1980'S BUT FUTURE INDUSTRIAL EXPANSION IN ASIA MAY CHANGE THIS.





SPRINGTIME ARCTIC HAZE HAS DECLINED AT BARROW OBSERVATORY SINCE THE 1980'S. THIS MAY BE DUE TO BOTH DECREASED POLLUTION COMING FROM EURASIA AND A CHANGE IN THE GENERAL CIRCULATION OF AIR IN THE ARCTIC.





THE SNOWMELT DATE OBSERVED AT THE BARROW OBSERVATORY HAS ADVANCED BY ABOUT A WEEK OVER THE PAST 60 YEARS. THIS IS MUCH LESS THAN THAT OBSERVED IN BARROW TOWN BY THE NATIONAL WEATHER SERVICE (NWS), DUE MAINLY TO URBANIZATION. THE CAUSE OF THE EARLIER SNOWMELT AT THE OBSERVATORY, 6 MILES FROM TOWN MAY BE DUE TO LONG-TERM CLIMATE CHANGE AND/OR CHANGES IN WIND CIRCULATION PATTERNS.

