

The Air We Breath: It Ain't What It Used To Be

-An SF₆ Story-

As Presented by:

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Climate Monitoring & Diagnostics Laboratory (CMDL)

- Keeping track of things that affect climate, the ozone layer and baseline air quality

CMDL Baseline Observatories

Mauna Loa,
Hawaii



Pt. Barrow,
Alaska



Trinidad
Head, CA



Russ Schnell

NOAA/CMDL

SF6 Meeting

Scottsdale, Arizona

December 2004

American
Samoa



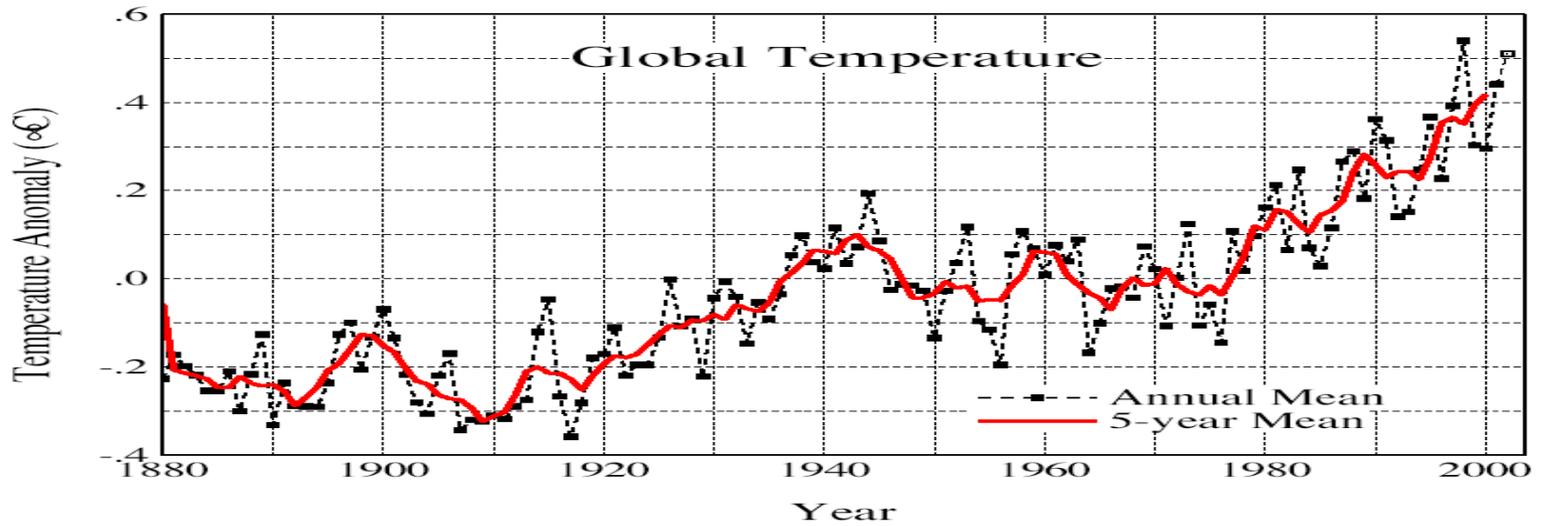
South Pole Station,
Antarctica



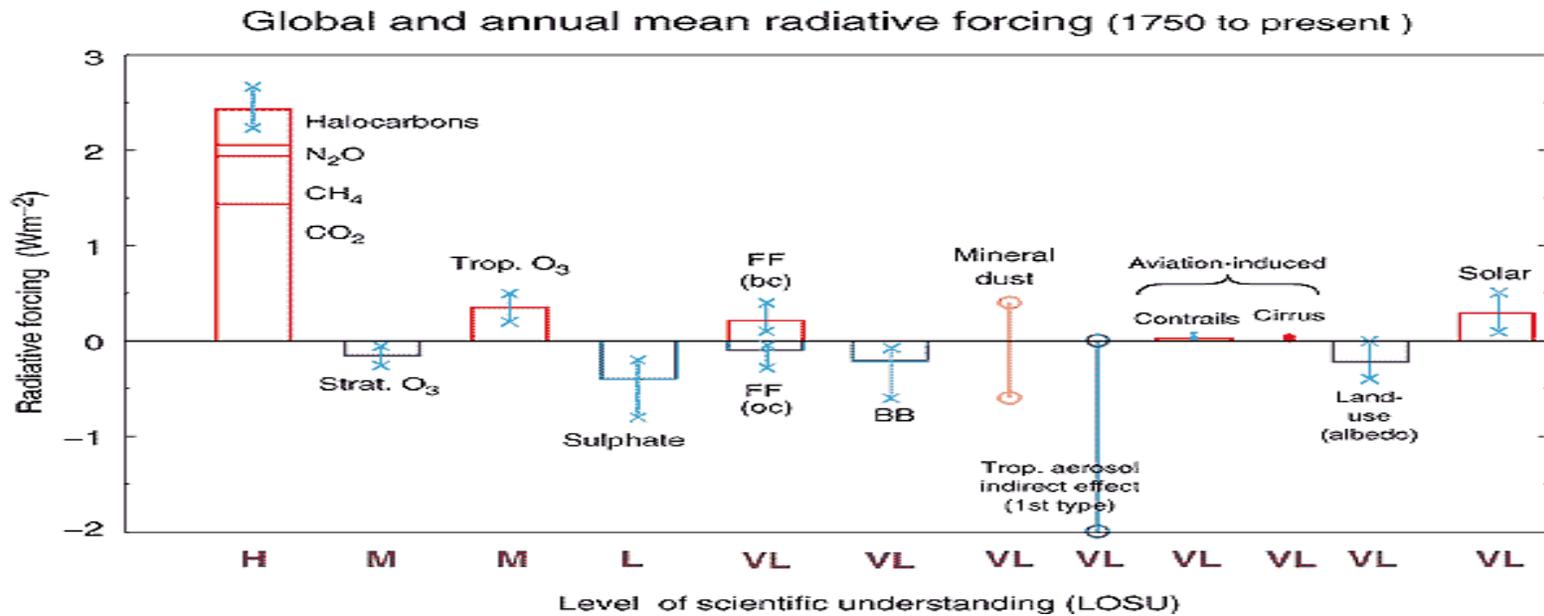
CMDL's MISSION

To acquire, evaluate, and make available, accurate, long-term,¹ continuous records of atmospheric gases, aerosol particles and solar radiation which affect *climate, the ozone layer and air quality*, in time and spatial scales that allow causes of change to be understood.

¹ CMDL is the only U.S. Federal Research Laboratory whose primary mission is monitoring elements of climate forcing, ozone depletion and baseline air quality.

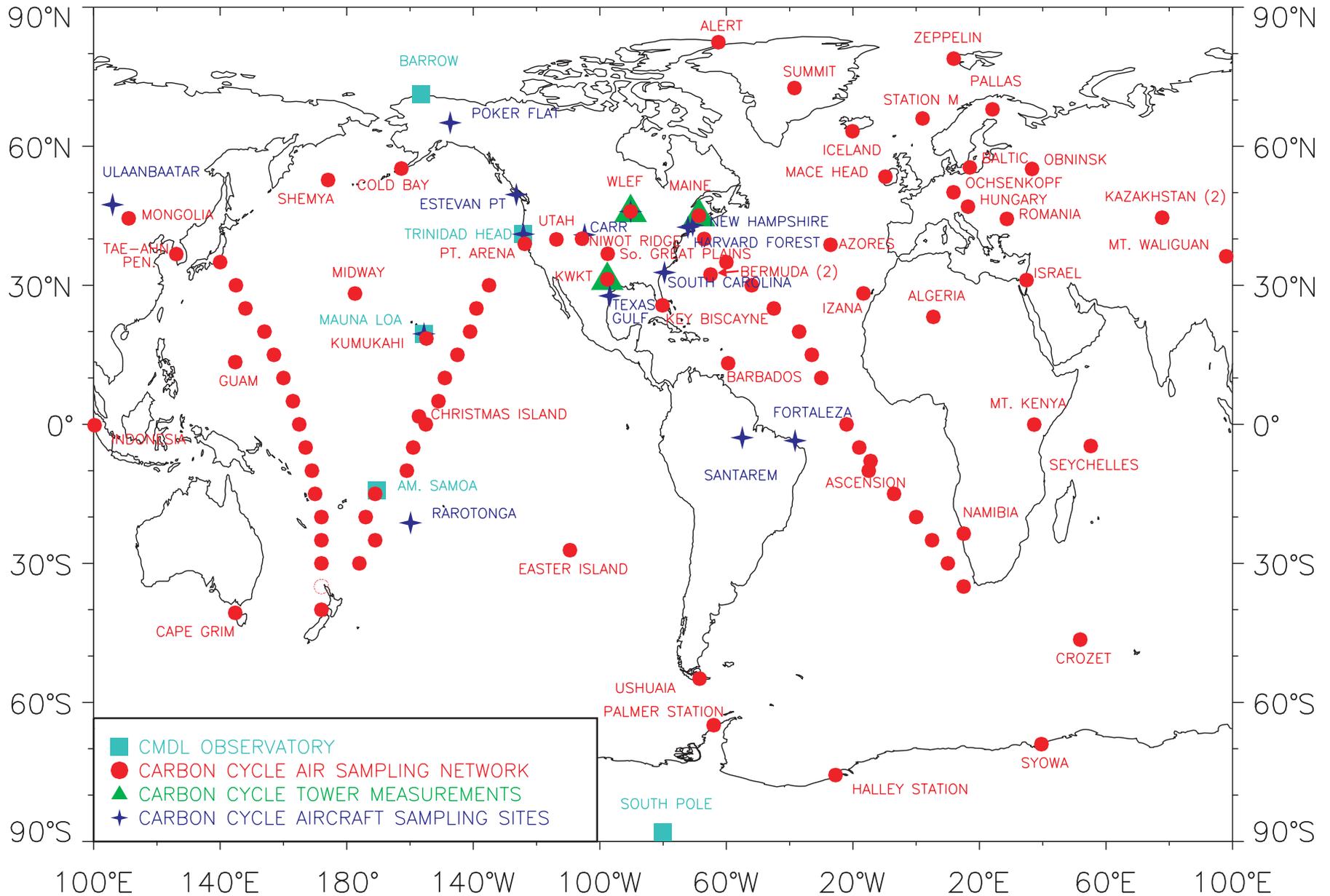


GISS global temperature anomaly (1880-2002) - J. Hansen

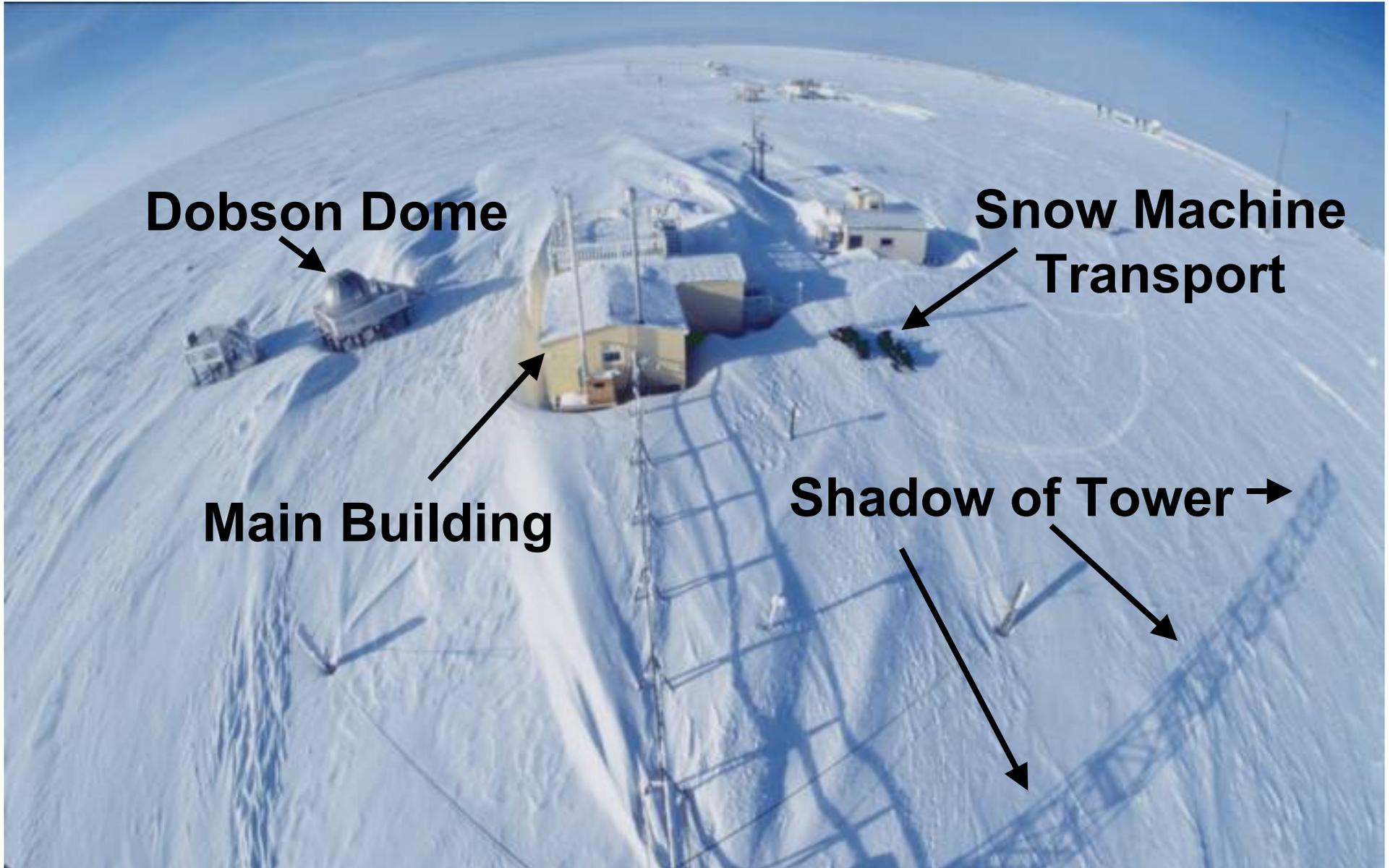


IPCC (2001)

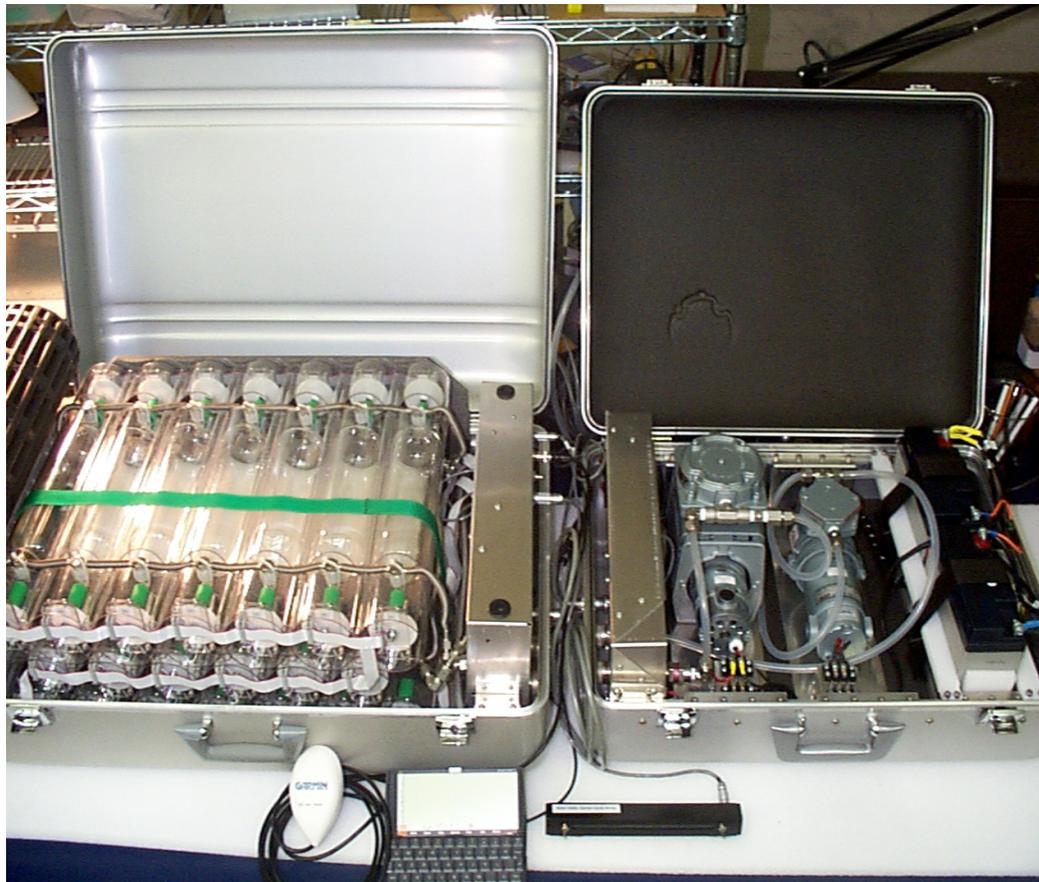
NOAA/CMDL Carbon Cycle Networks



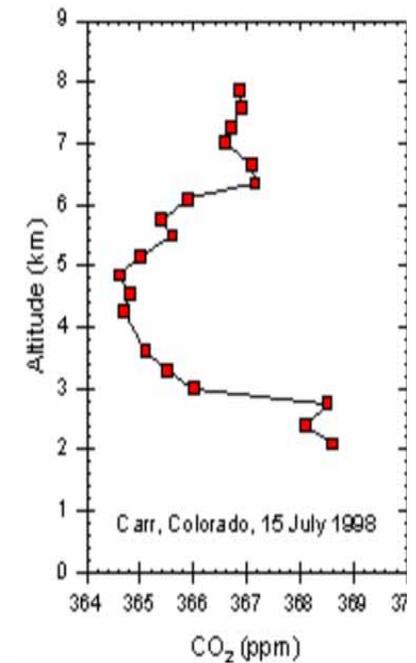
NOAA/CMDL Barrow, Alaska Baseline Observatory



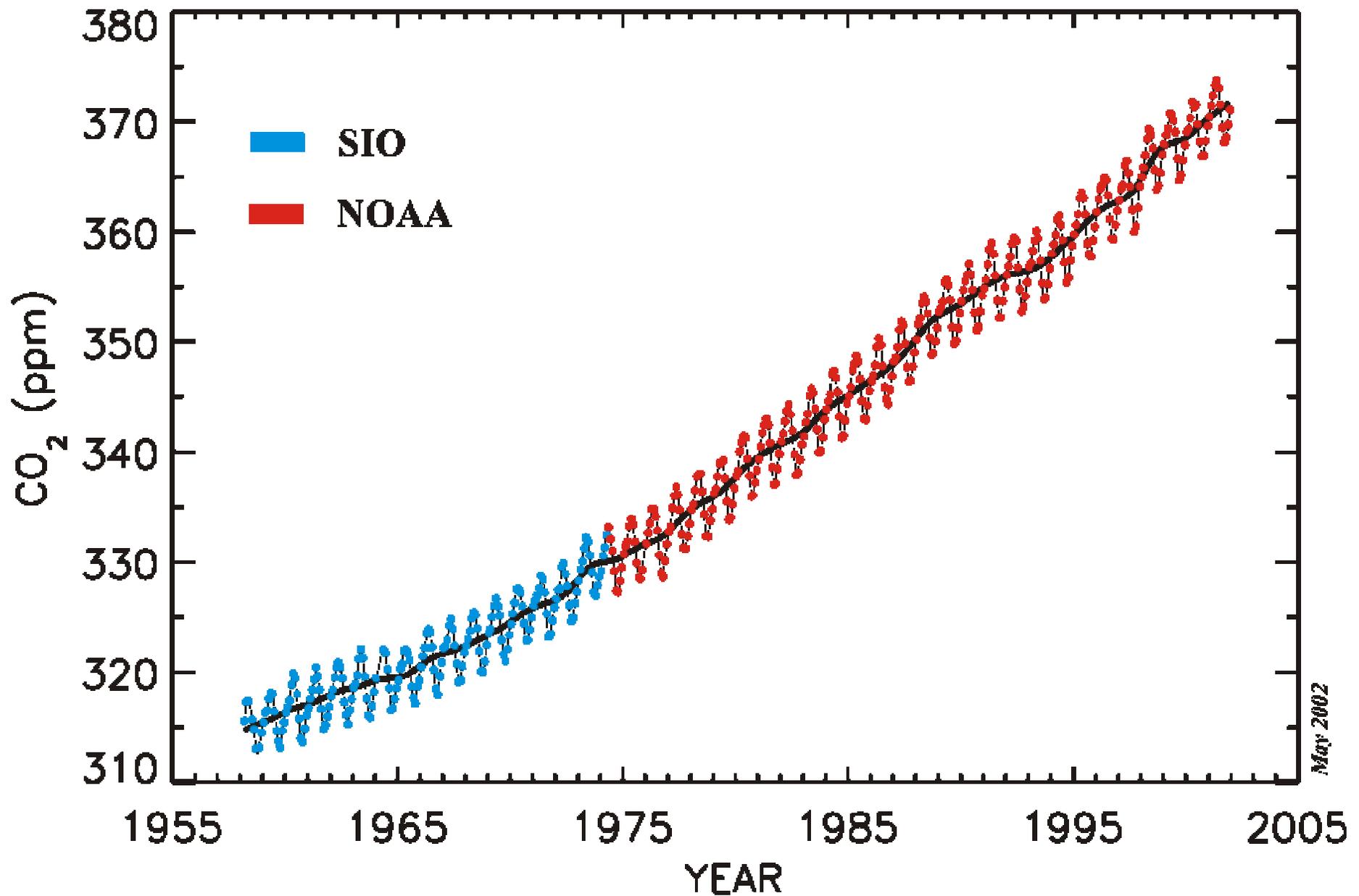
Automated Air Flask Sampling System



Vertical Profile of Carbon Dioxide at Carr, Colorado July, 1998

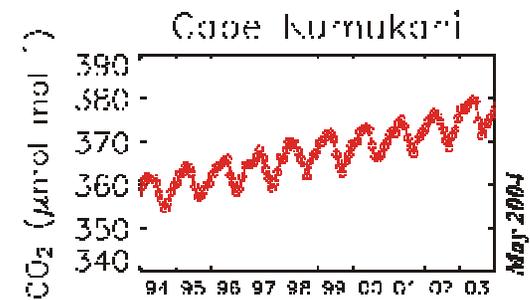
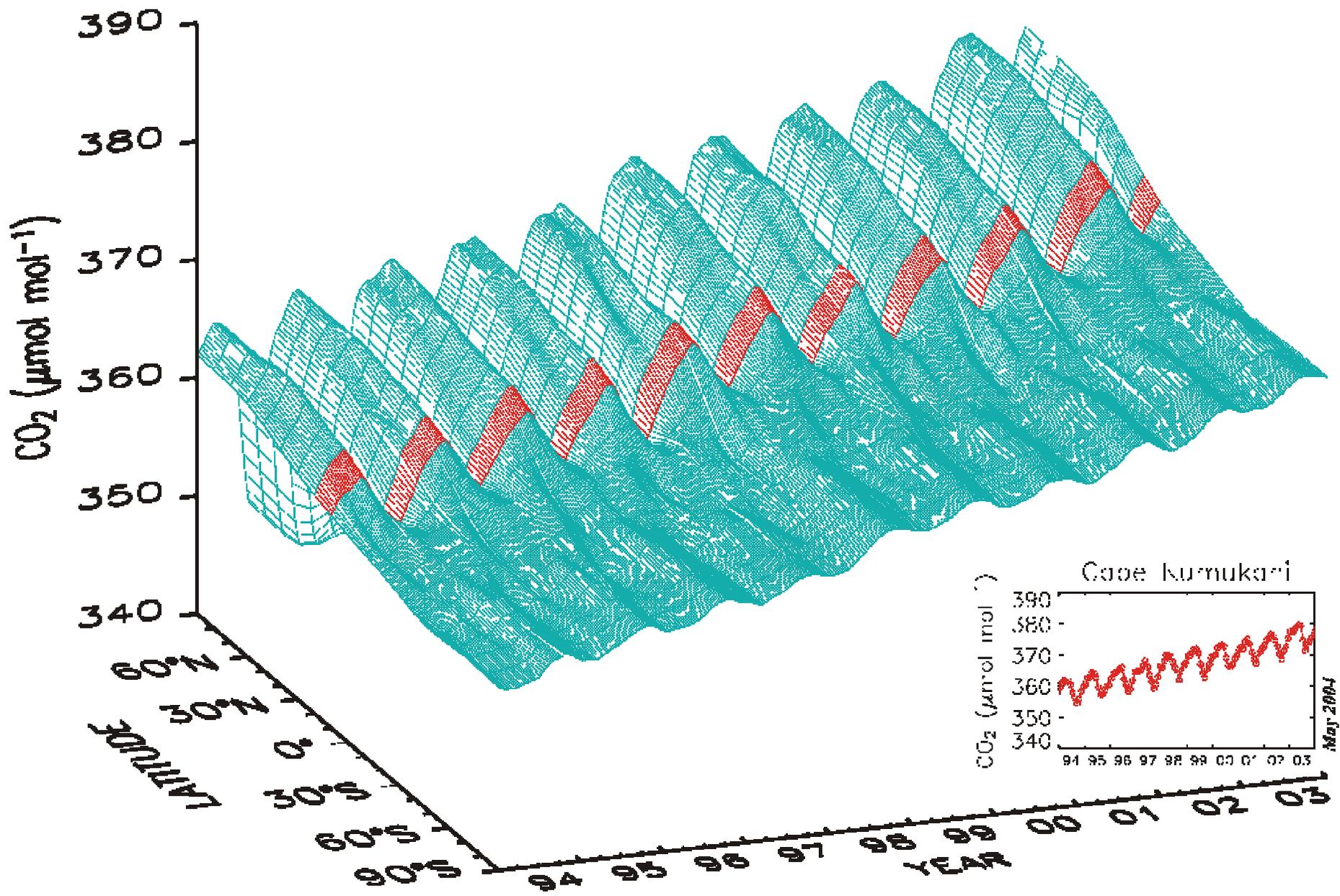


Mauna Loa Monthly Mean Carbon Dioxide

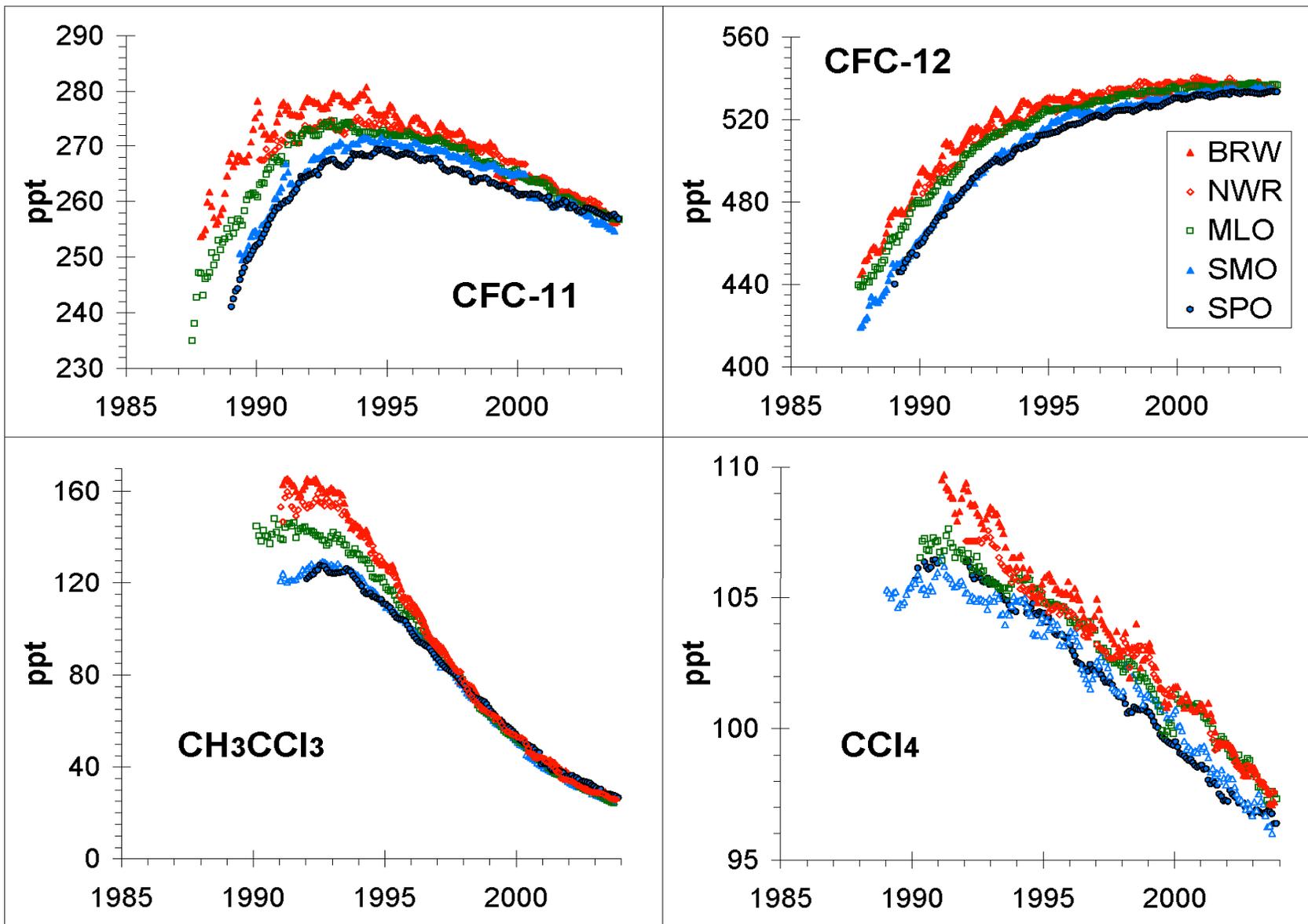


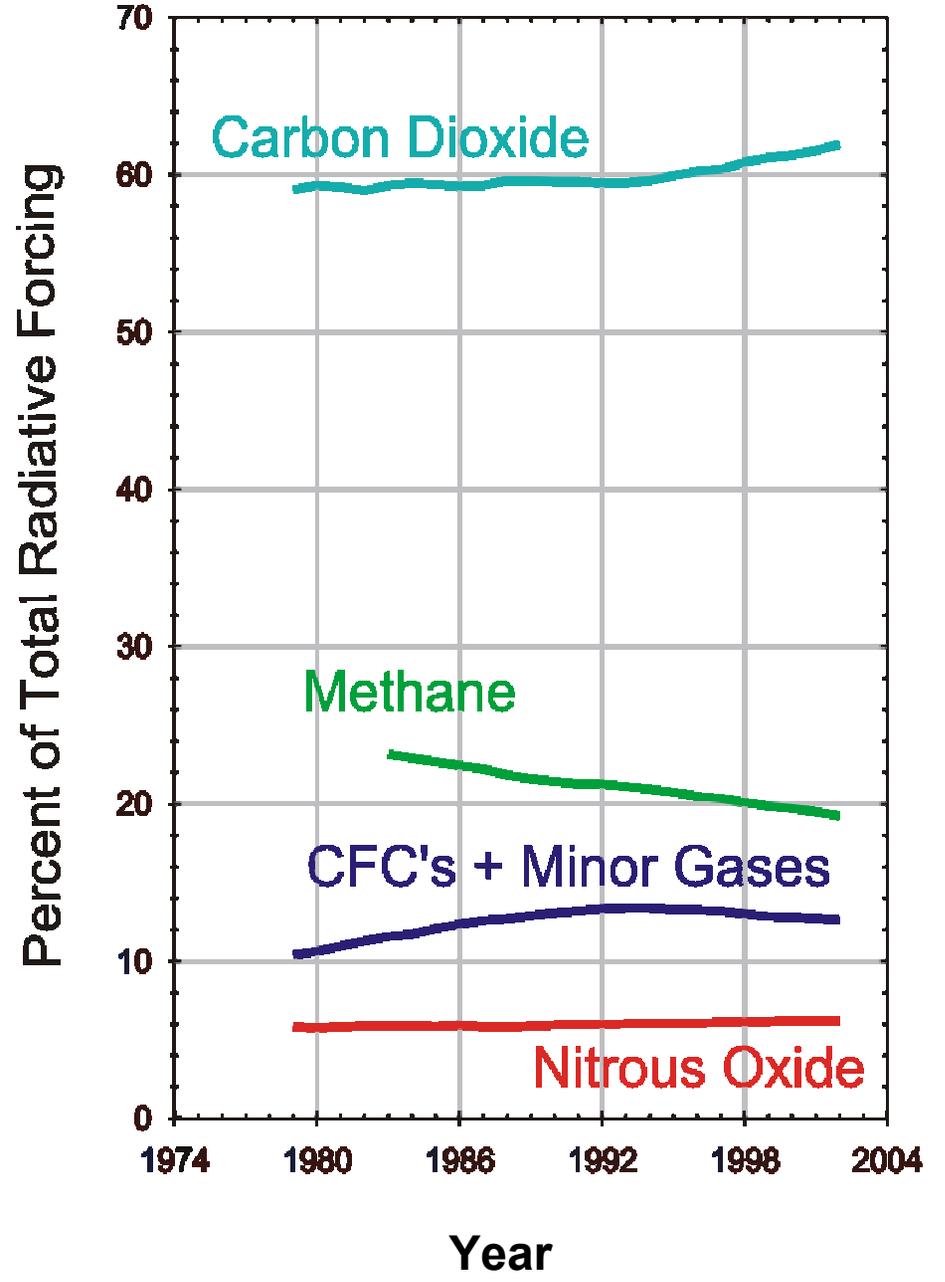
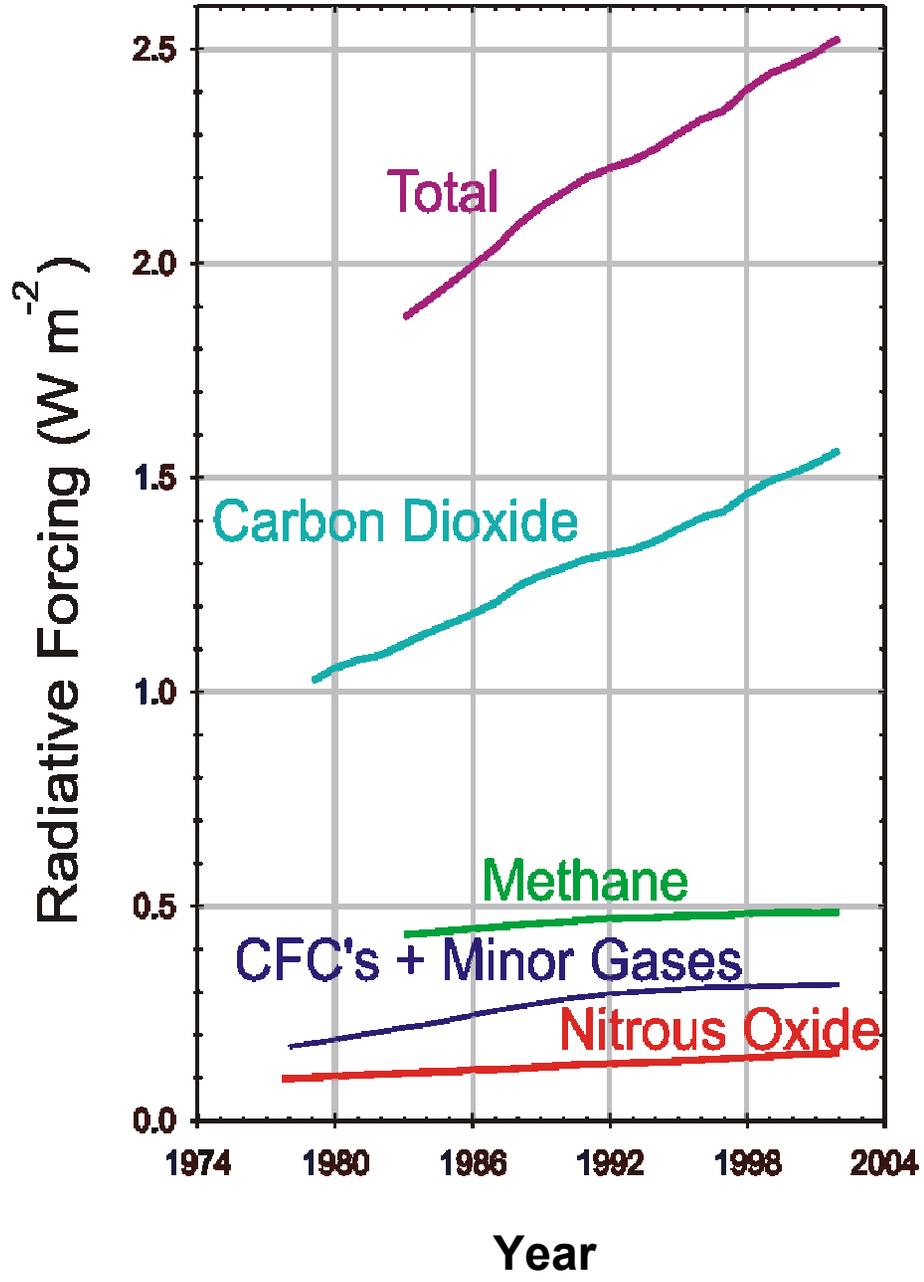
Global Distribution of Atmospheric Carbon Dioxide

NOAA CMDL Carbon Cycle Greenhouse Gases

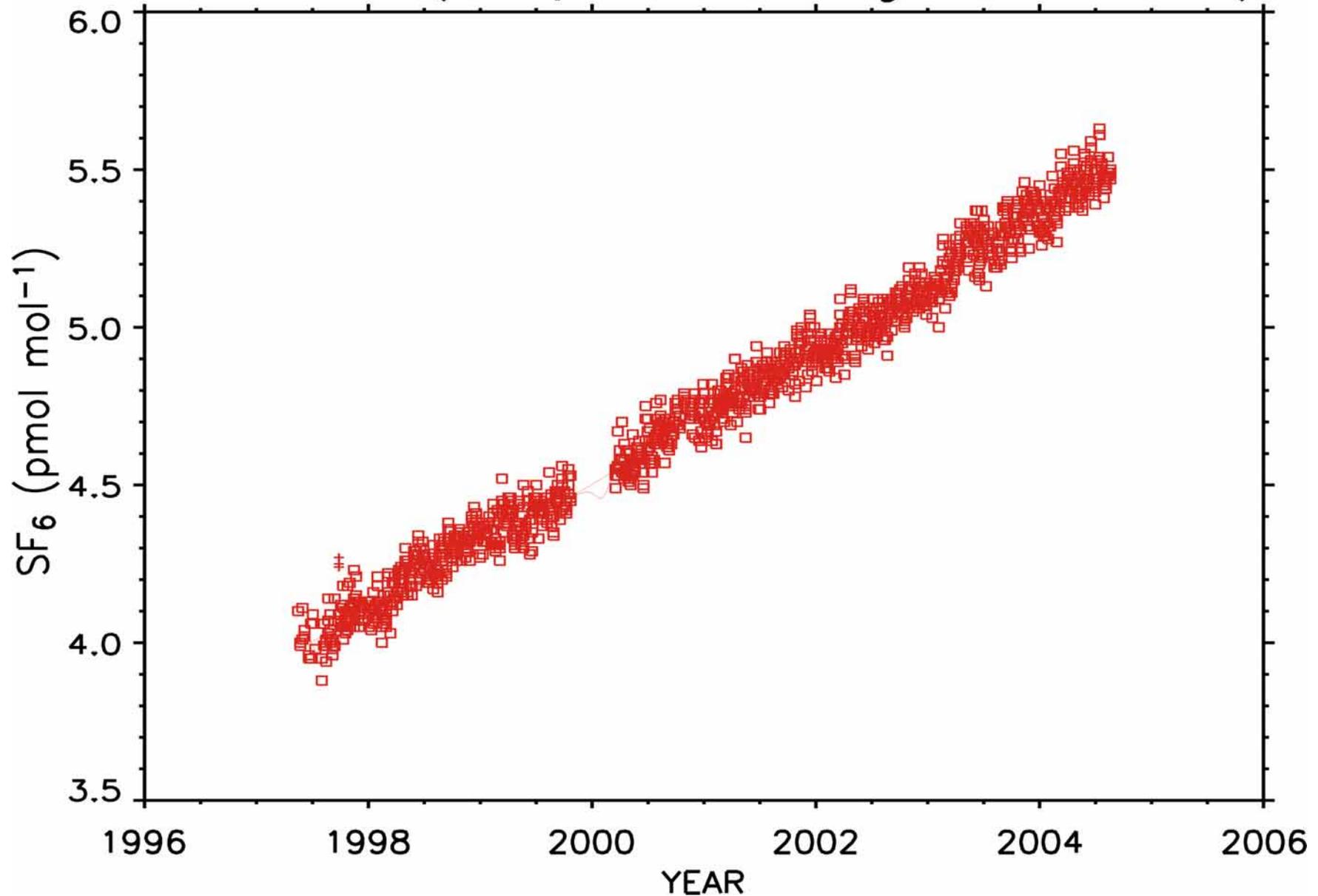


Global Halocarbon Trends

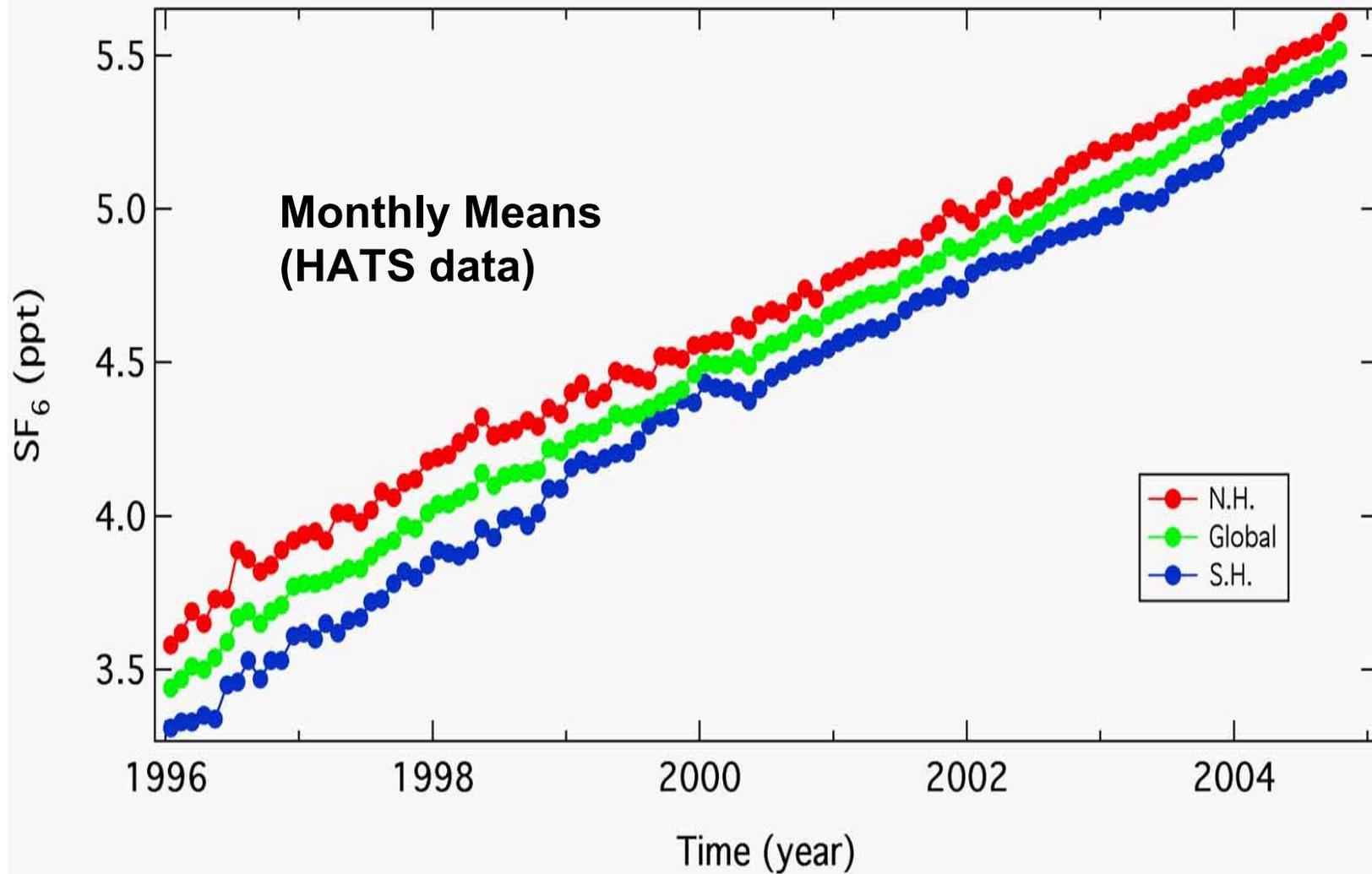




Mauna Loa, Hawaii, United States Flask Data (Sample Intake Height: 3397 masl)

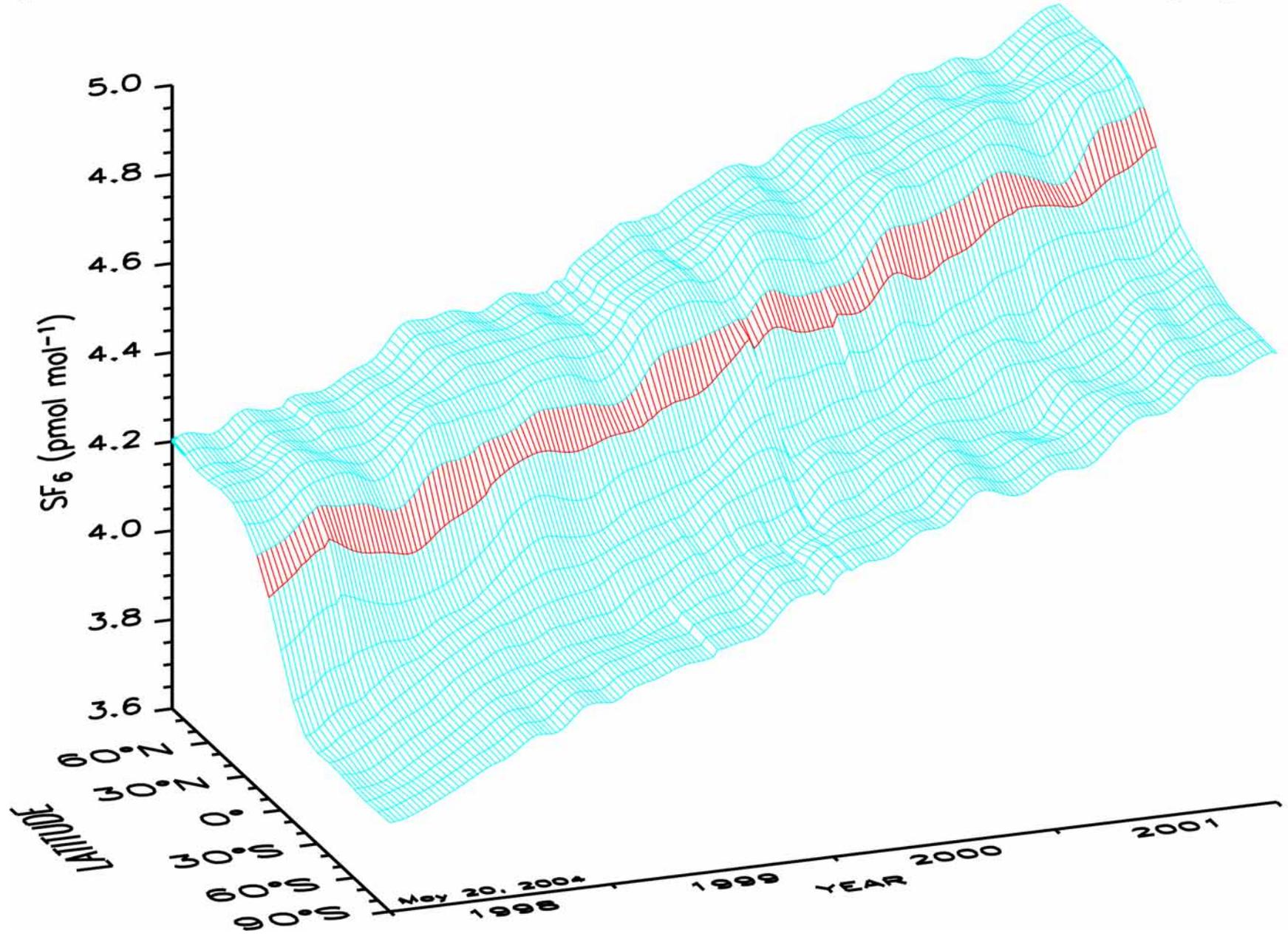


SF₆ Global Trends

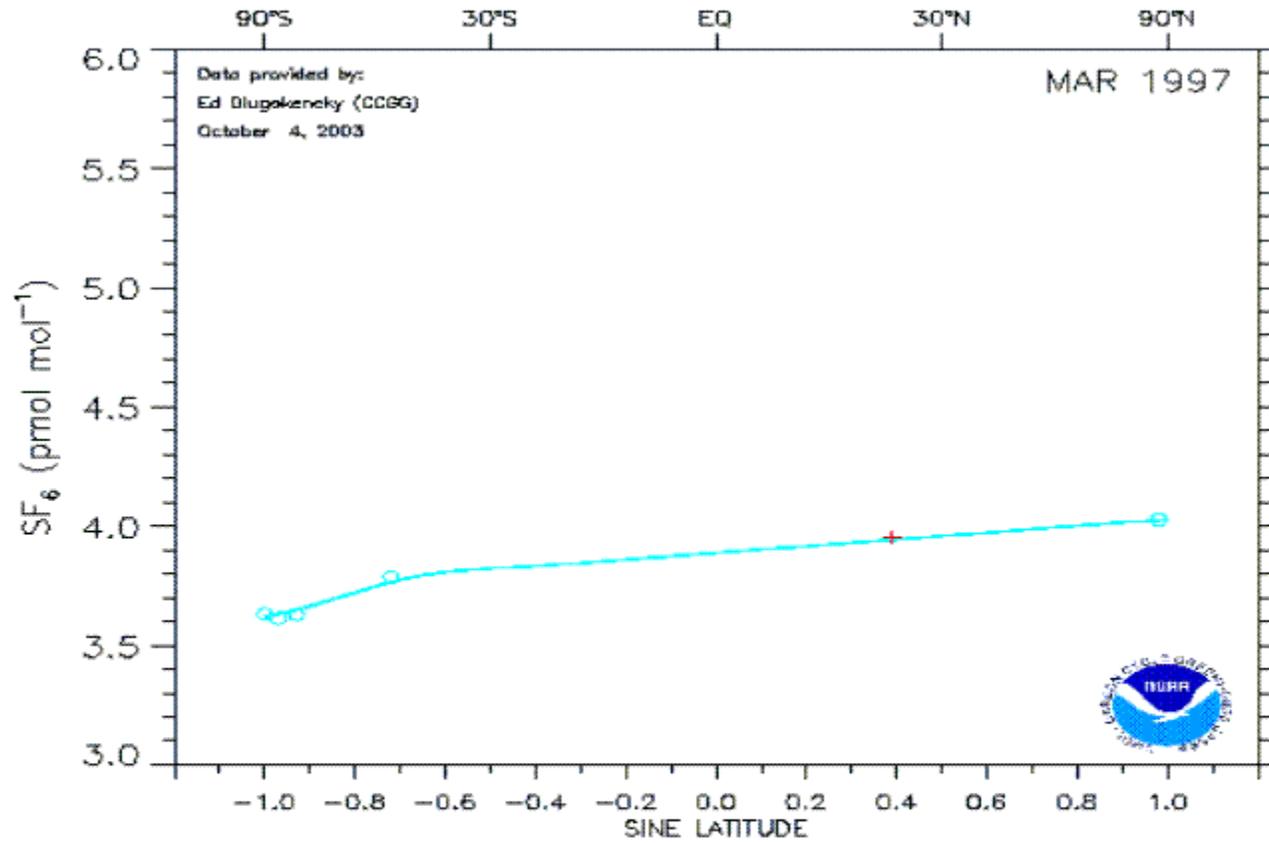


Global Distribution of Sulfur Hexafluoride

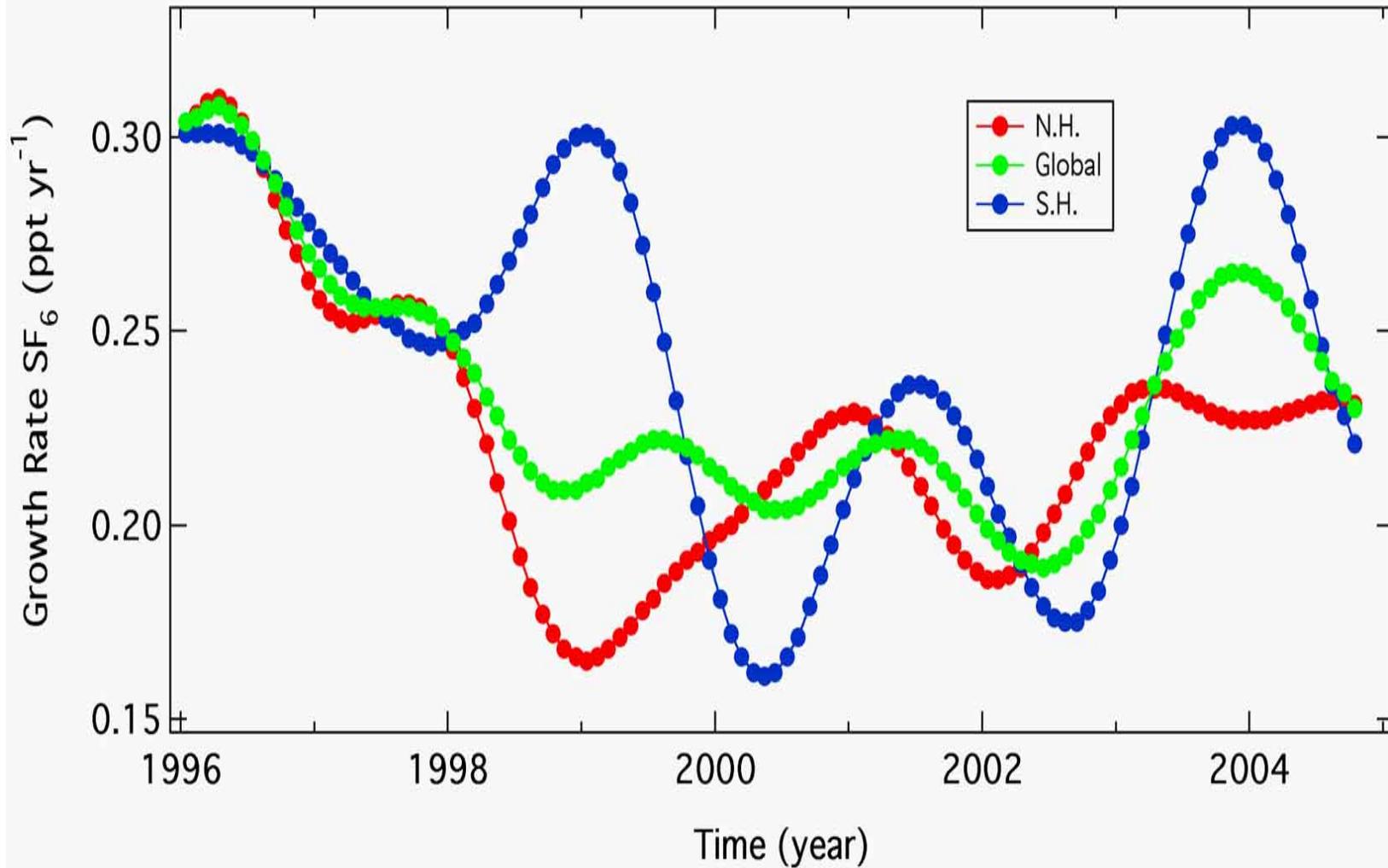
[10° latitude band in which Mauna Loa, Hawaii, United States resides is highlighted]

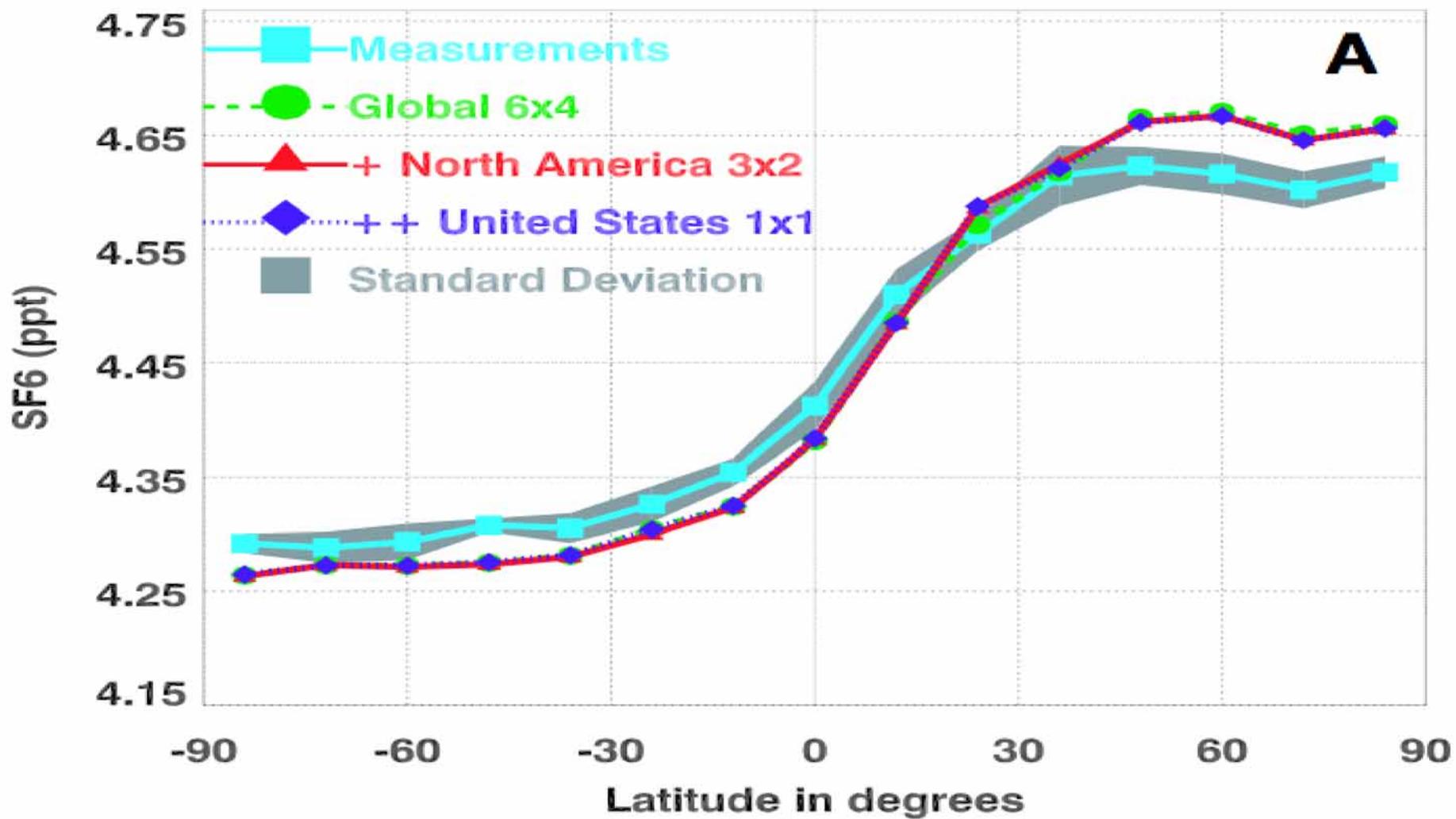


Latitude Distribution



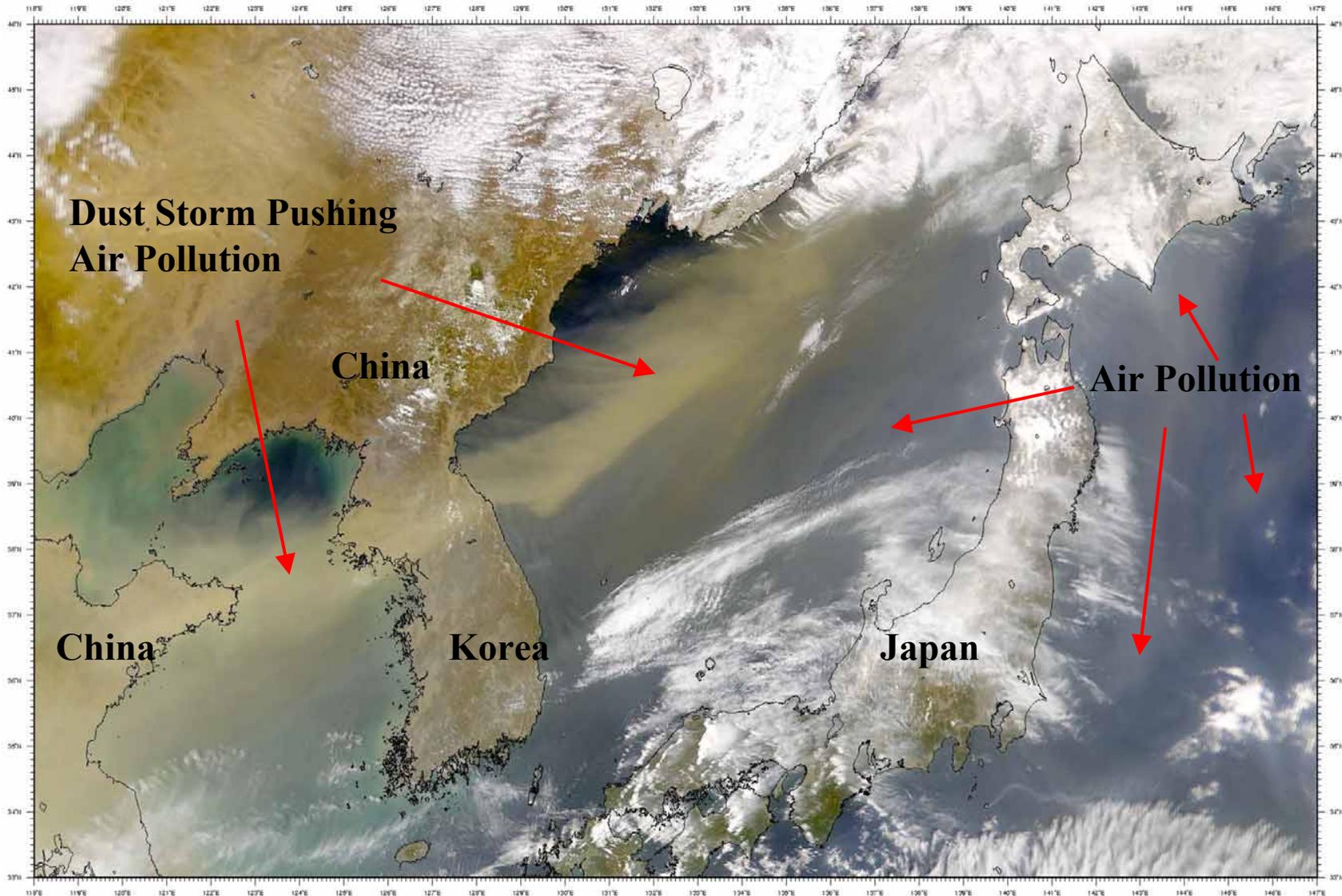
SF₆ Atmospheric Growth Rates





Dust and Air Pollution Flowing Out of Asia

April 2001



Questions for the SF6 Community

Observation:

The change in SF6 growth rate observed starting in 2002 needs an increase in global emissions of about 15% in the NH mid-latitudes.

Questions:

1. Can changes in North American emissions be responsible?
2. If not, what region is most likely? China? Former Soviet Union? Others?
3. Were there significant changes on the world SF6 market (prices/demand/supply/restrictions/...) that could change emission patterns/amounts?
4. How are military and space uses of SF6 reflected in emission inventories? In production, but not in sales? Aliased as some other process?

Trans-siberian Observations Into Chemistry of the Atmosphere (TROICA) and CHING! (Chinese Investigation of Gases)



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(As Seen From The NOAA/CMDL Perspective)

Thank You For your Time and Attention

-The End-