

US Baseline Station Network

P. Tans

Climate Monitoring
and Diagnostics Laboratory
NOAA/ERL/CMDL

CLIMATE MONITORING AND DIAGNOSTICS LABORATORY
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

FORMERLY
GEOPHYSICAL MONITORING FOR CLIMATIC CHANGE

LONG-TERM ATMOSPHERIC MONITORING OF TRACE SPECIES RELATED TO
CLIMATE CHANGE AND STRATOSPHERIC OZONE DEPLETION

- . CARBON DIOXIDE IR
- . METHANE GC
- . CARBON MONOXIDE GC
- . OZONE - IN SITU Dasibi
- . OZONE - STRATOSPHERE ECC sonde , Dobson
- . NITROUS OXIDE GC
- . EIGHT HALOCARBON SPECIES GC
- . WATER VAPOR - STRATOSPHERE sonde
- . AEROSOLS - IN SITU CN counters , soot
- . AEROSOLS - STRATOSPHERE lidar

BASELINE OBSERVATORIES

- . BARROW, ALASKA 71.3 °N 156.6 °W 10 M ELEV.
- . MAUNA LOA, HAWAII 19.5 °N 155.6 °W 3.4 KM ELEV.
- . CAPE MATATULA, 14.3 °S 170.6 °W 30 M ELEV.
AMERICAN SAMOA
- . SOUTH POLE, 90.0 °S 2.8 KM ELEV.
ANTARCTICA

CMDL MEASUREMENTS AT MAUNA LOA

GASES

CARBON DIOXIDE	FLASKS
CARBON DIOXIDE	IN SITU
C-13 IN CARBON DIOXIDE	FLASKS
O-18 IN CARBON DIOXIDE	FLASKS
METHANE	IN SITU
METHANE	FLASKS
CARBON MONOXIDE	FLASKS
CARBON MONOXIDE (1992)	IN SITU
NITROUS OXIDE	FLASKS
NITROUS OXIDE	IN SITU
CFC-11	FLASKS
CFC-11	IN SITU
CFC-12	FLASKS
CFC-12	IN SITU
CFC-113	FLASKS
CFC-113	IN SITU
METHYL CHLOROFORM	FLASKS
METHYL CHLOROFORM	IN SITU
CARBON TETRACHLORIDE	FLASKS
CARBON TETRACHLORIDE	IN SITU
H-1301	FLASKS
H-1211	FLASKS
CFC-22 (1992)	FLASKS
OZONE	IN SITU
OZONE	TOTAL COLUMN
OZONE	UMKEHR PROFILES
OZONE	SONDE PROFILES

AEROSOLS

CONDENSATION NUCLEI	IN SITU
SCATTERING COEFFICIENT	IN SITU
BLACK CARBON	IN SITU
BACKSCATTER COEFFICIENT	LIDAR PROFILES

SOLAR RADIATION

DIRECT BEAM - ALLWAVE
DIRECT BEAM - SPECTRAL
GLOBAL FLUX - ALLWAVE
DIFFUSE FLUX - ALLWAVE
AEROSOL OPTICAL DEPTH - SUNPHOTOMETER
UV FLUX - BROADBAND

METEOROLOGY

AMBIENT TEMPERATURE
DEW POINT TEMPERATURE
ATMOSPHERIC PRESSURE
WIND SPEED AND DIRECTION
PRECIPITATION AMOUNT

PRECIPITATION CHEMISTRY

PH, CONDUCTIVITY, CHEMISTRY	DAILY SAMPLES
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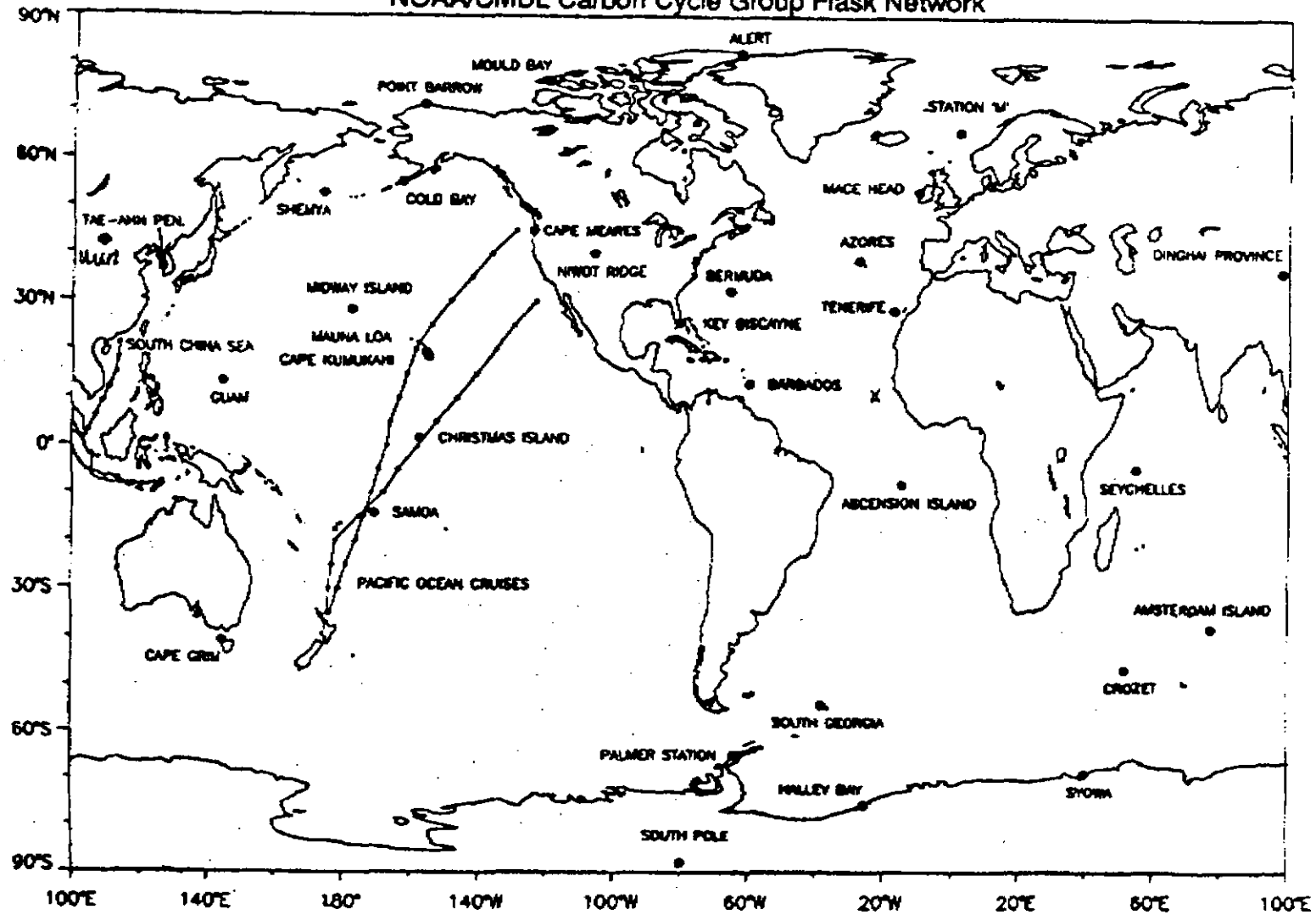
CONTINUING COOPERATIVE PROGRAMS AT MAUNA LOA

CARBON DIOXIDE (SIO) - FLASKS AND IN SITU
CARBON-13 (USGS) - FLASKS *cu*
METHANE-13 (USGS) - FLASKS *cu*
METHANE-13 (U. OF WASH.) - FLASKS
CARBON-13 (CSIRO) - FLASKS
FREONS, OTHER TRACE GASES (OGC) - FLASKS
FREONS, OTHER TRACE GASES (NCAR) - FLASKS
TOTAL OZONE AND SO₂ (ATM. ENV. SERV. CANADA)
SURFACE SO₂ (EPA) - IN SITU
NITROUS OXIDE (SIO) - FLASKS
NITRIC ACID (U. OF RHODE ISLAND) - FILTERS
TOTAL SURFACE PARTICULATES (DOE/EML) - HI-VOL
TOTAL SURFACE PARTICULATES (EPA) - HI-VOL
ATMOSPHERIC AEROSOLS (U. OF WASH.)
ATMOSPHERIC AEROSOLS (U.C. DAVIS) - FILTERS
SOLAR RADIATION (U. OF ARIZONA)
ULTRAVIOLET RADIATION (TEMPLE U.)
SOLAR RADIATION (COLO. STATE U.)
UV RADIATION (SMITHSONIAN BIOL. LAB.)
PRECIPITATION COLLECTION (DOE/EML)
PRECIPITATION COLLECTION (U. OF VIRGINIA)
ATMOSPHERIC DEPOSITION (NADP)
BERYLLIUM-10 (ISWS)
RADON-222 (DOE, ANSTO)

RECENT SHORT-TERM COOP PROGRAMS AT MLO

AEROSOL CHARACTERIZATION (NASA/MSU, NOAA/WPL)
PHOTOMETER CALIBRATION (NASA/GODDARD)
TRACE GAS SPECTRA (U. OF DENVER)
HELIUM ISOTOPIC CONC. (USGS)
USSR KOROLEV CRUISE - LOGISTICAL SUPPORT
PHOTOCHEMISTRY EXPERIMENT - MLOPEX (NCAR, NOAA/AL)
ATMOSPHERIC AEROSOLS (U. OF HAWAII)

NOAA/CMDL Carbon Cycle Group Flask Network



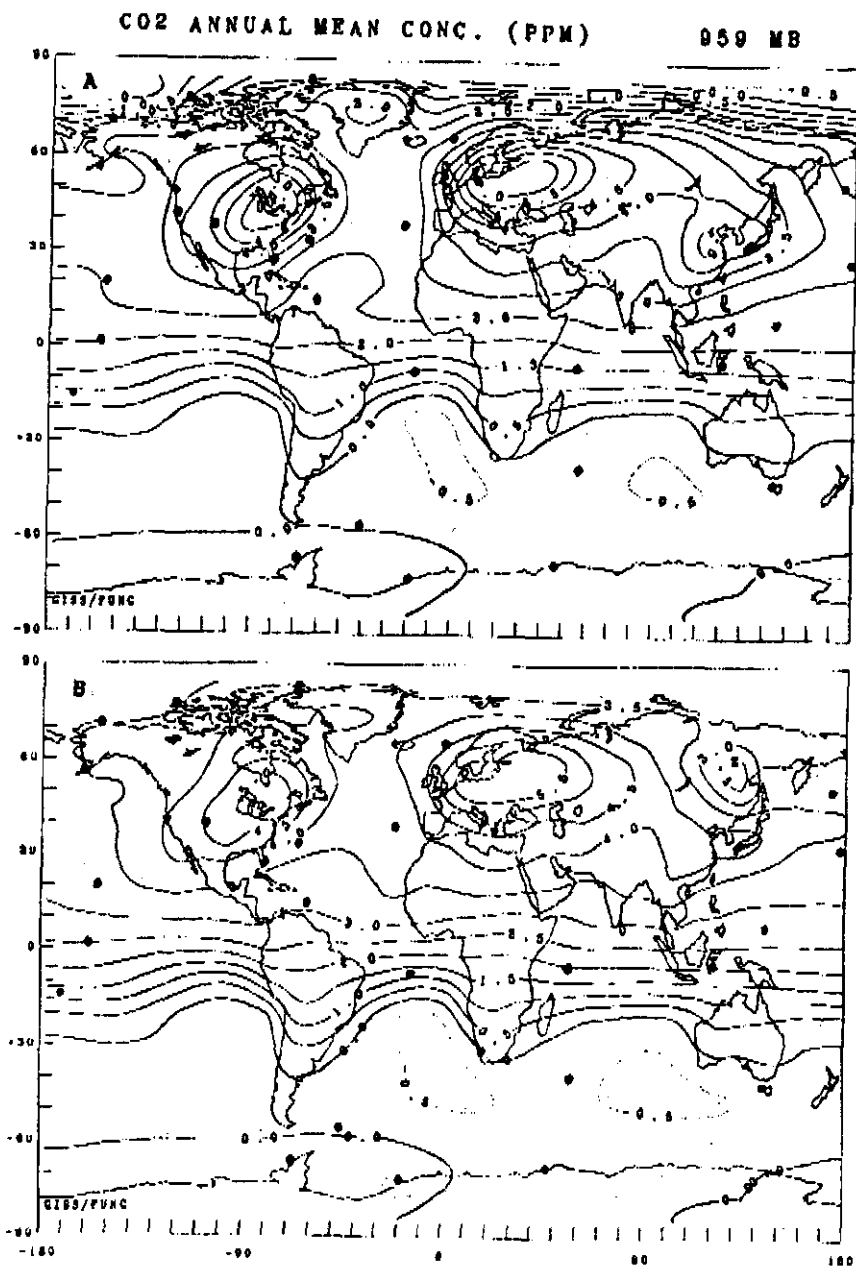


Fig. 1

NOAA CMDL Carbon Cycle Group

STANDARDS

Gravimetric (Long-lived gases, with J. Elkins)
Volumetric (CO₂ only, WMO Central CO₂ Laboratory)

INTERCOMPARISONS

WMO CO₂ "round-robin" intercomparison
T. Nakazawa (CO₂, CH₄, CO)
M. Hirota (CH₄)
Australia-France-New Zealand (CO₂, isotopes,.....)

DATA DISTRIBUTION

CDIAC, Oak Ridge (CO₂ in-situ and flasks, CH₄ flasks)
WDCGG, Tokyo (CO₂ in-situ)
On-line, via Internet by anonymous FTP from
address "ccg.cmdl.crl.gov"
or "140.172.192.20"
(currently CO₂ in-situ, soon CH₄ flasks, then CO₂ flasks, etc..)

STATION AUTOMATION

Mauna Loa first, then other CMDL observatories

NEW THRUSTS:

Measurements on very high towers (600 m.)

Automated flask sampling from aircraft

Fast-cycling GC (2 min. per sample) (J. Elkins)

Measurements of direct radiative effect of aerosols countering greenhouse warming
(Charlson's hypothesis)

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