The GAW Network and QA/QC Measures for VOC

GAWG Workshop 2006
Paris, 4-5 April 2006

Rainer Steinbrecher, Bernhard Rappenglück
and
Leonard Barrie

The Outline

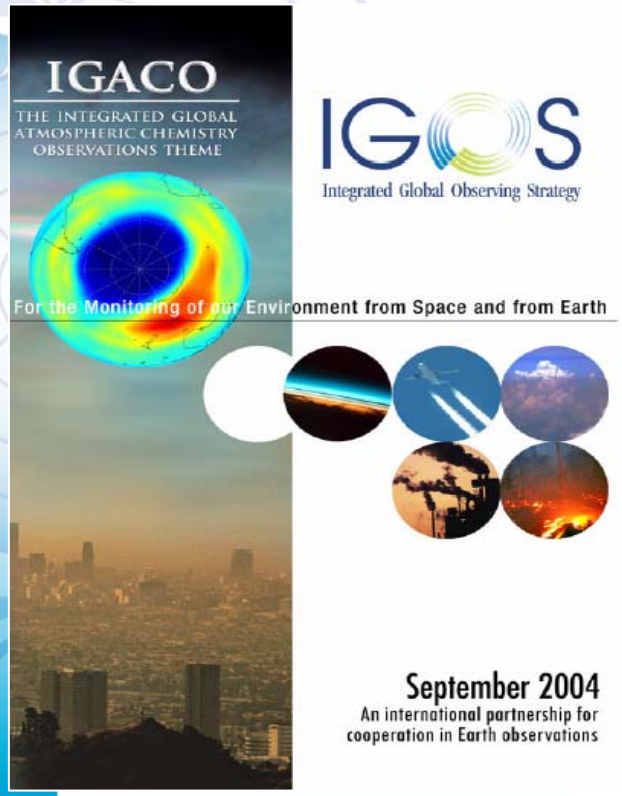
- The GAW Program
- The GAW-WCC-VOC
- The Current WCC VOC Standard
- The Future GAW-VOC strategy within IGACO for 2008 to 2015
- The VOC Central Calibration Laboratory

What is GAW?

- WMO/GAW was established 1989 by merging GO_3OS and BAPMoN.
- GAW focuses on global networks for GHGs, ozone, UV, aerosols, selected reactive gases, and precipitation chemistry.
- GAW is a partnership involving contributors from 80 countries.
- GAW is coordinated by the Environment Division of WMO/AREP.
- Currently GAW coordinates activities and data from 24 Global stations, 637 Regional stations, and 19 Contributing

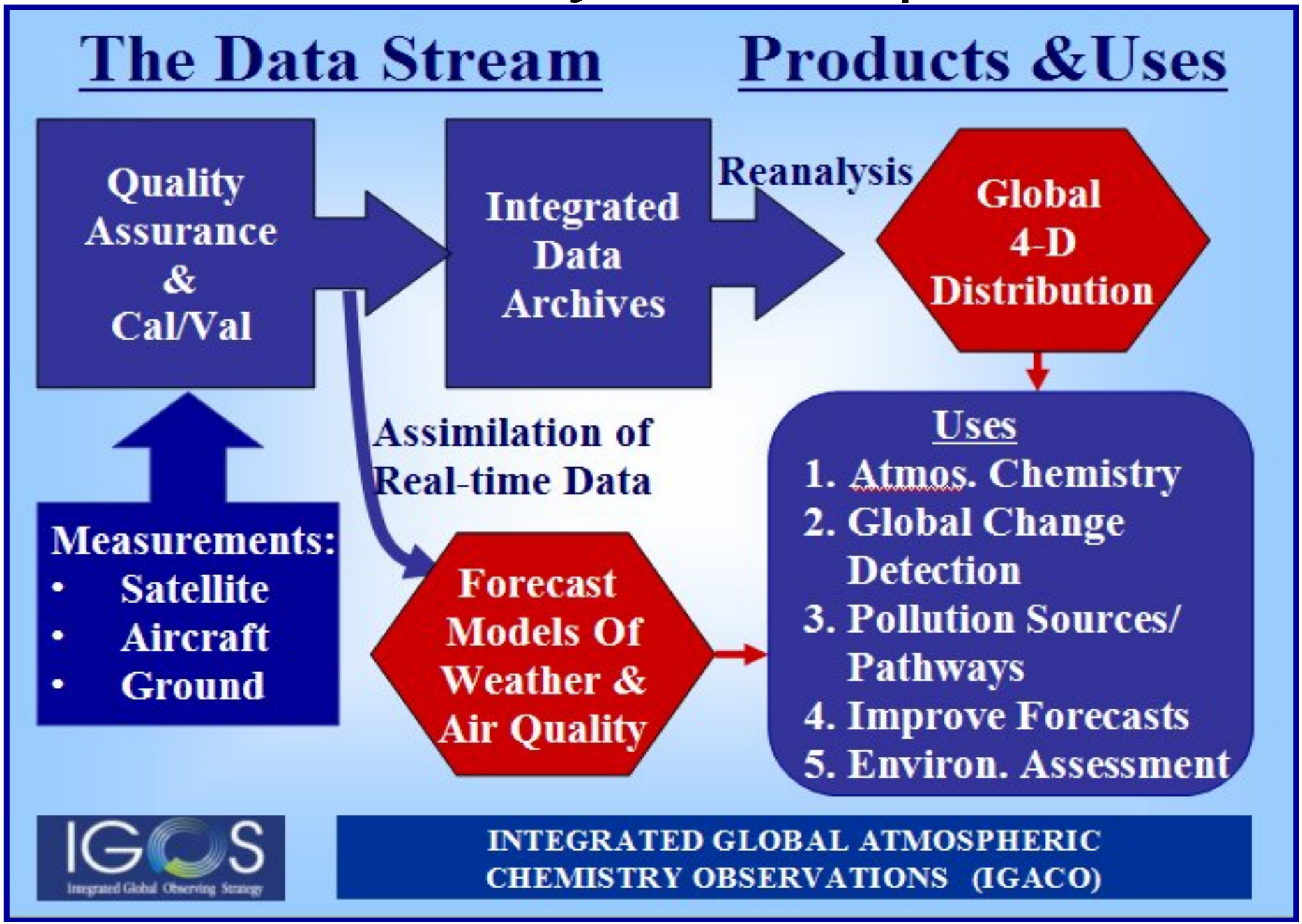
WMO
OMM

GAW AND THE FUTURE



- **IGACO**
- **Presents the reason and need for Global Atmospheric Chemistry Observations**
- **Targets 13 variable groups including reactive gases.**
- **Assesses past, current and expected state of observing system for each target variable**
- **Reviews requirements for observations for each target variable group**
- **Makes 12 General Recommendations and 7 Specific Recommendations**
- **Provides a framework for the next generation GAW programme 2008-2015**

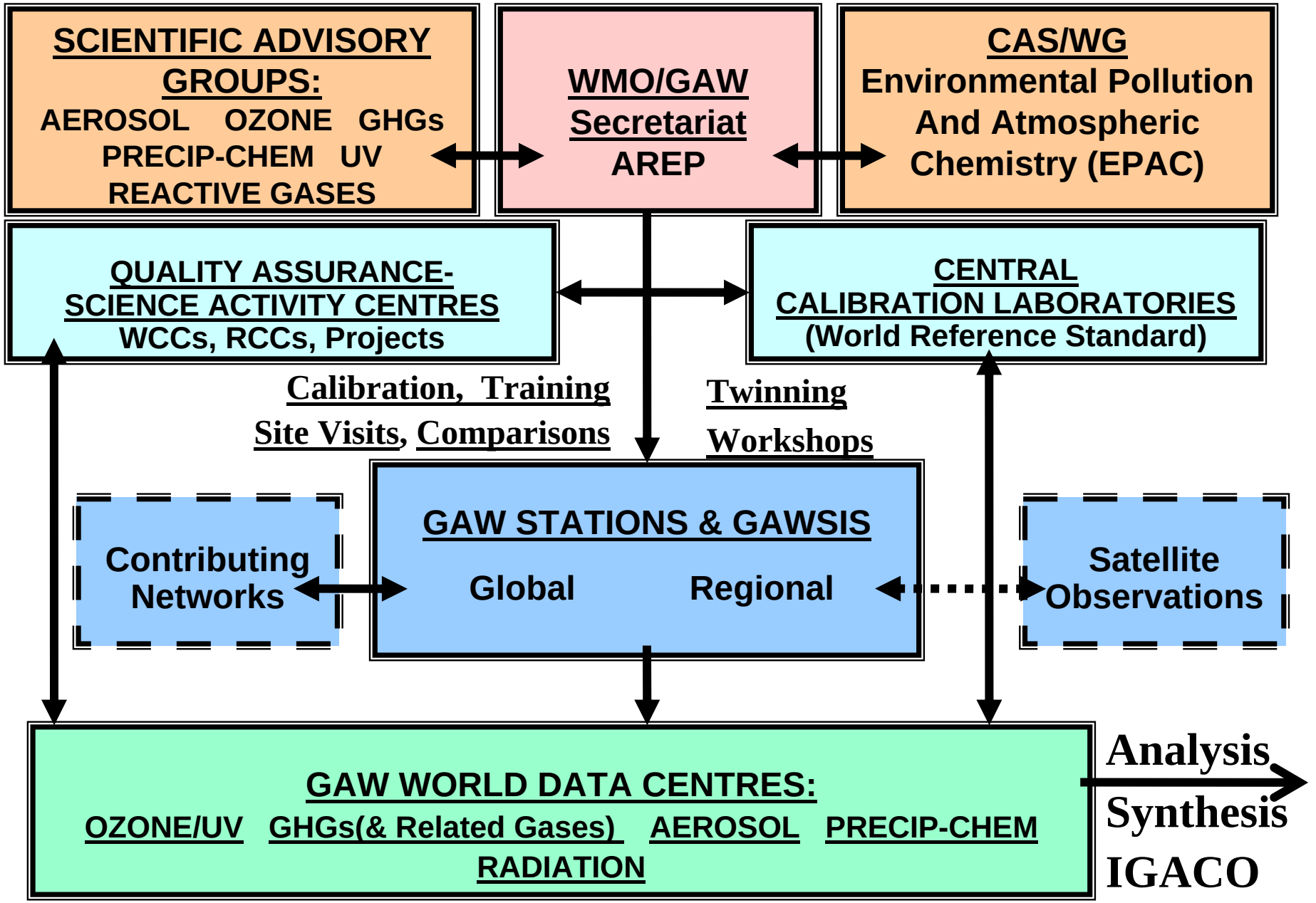
The IGACO System Components



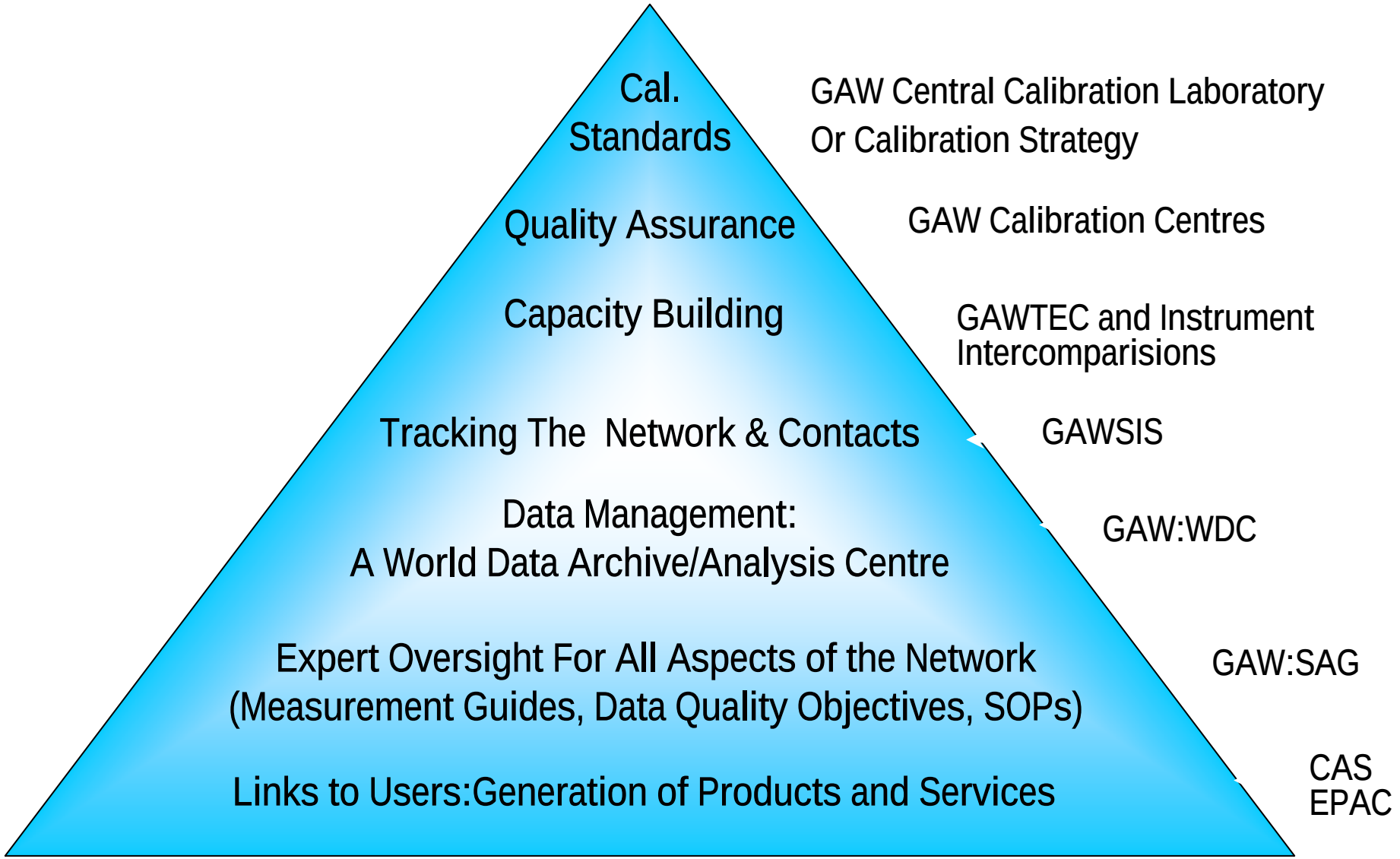
IGACO TARGET VARIABLE LIST

Chemical species	Air Quality	Oxidation Capacity	Climate	Stratospheric Ozone Depletion
O_3	✓	✓	✓	✓
H_2O (water vapour)	✓	✓	✓	✓
CO	✓	✓	✓	
CO_2			✓	
CH_4		✓	✓	✓
HCHO	✓	✓		
VOCs	✓	✓		
N_2O			✓	✓
$NO_x = NO+NO_2$	✓	✓	✓	✓
HNO_3	✓	✓		✓
SO_2	✓	✓	✓	✓
BrO, ClO, OClO				✓
HCl, $ClONO_2$				✓
CH_3Br, CF_3Br, CFC-11, CFC-12, HCFC-22				✓
				✓
aerosol optical properties	✓		✓	✓
actinic flux	✓	✓		

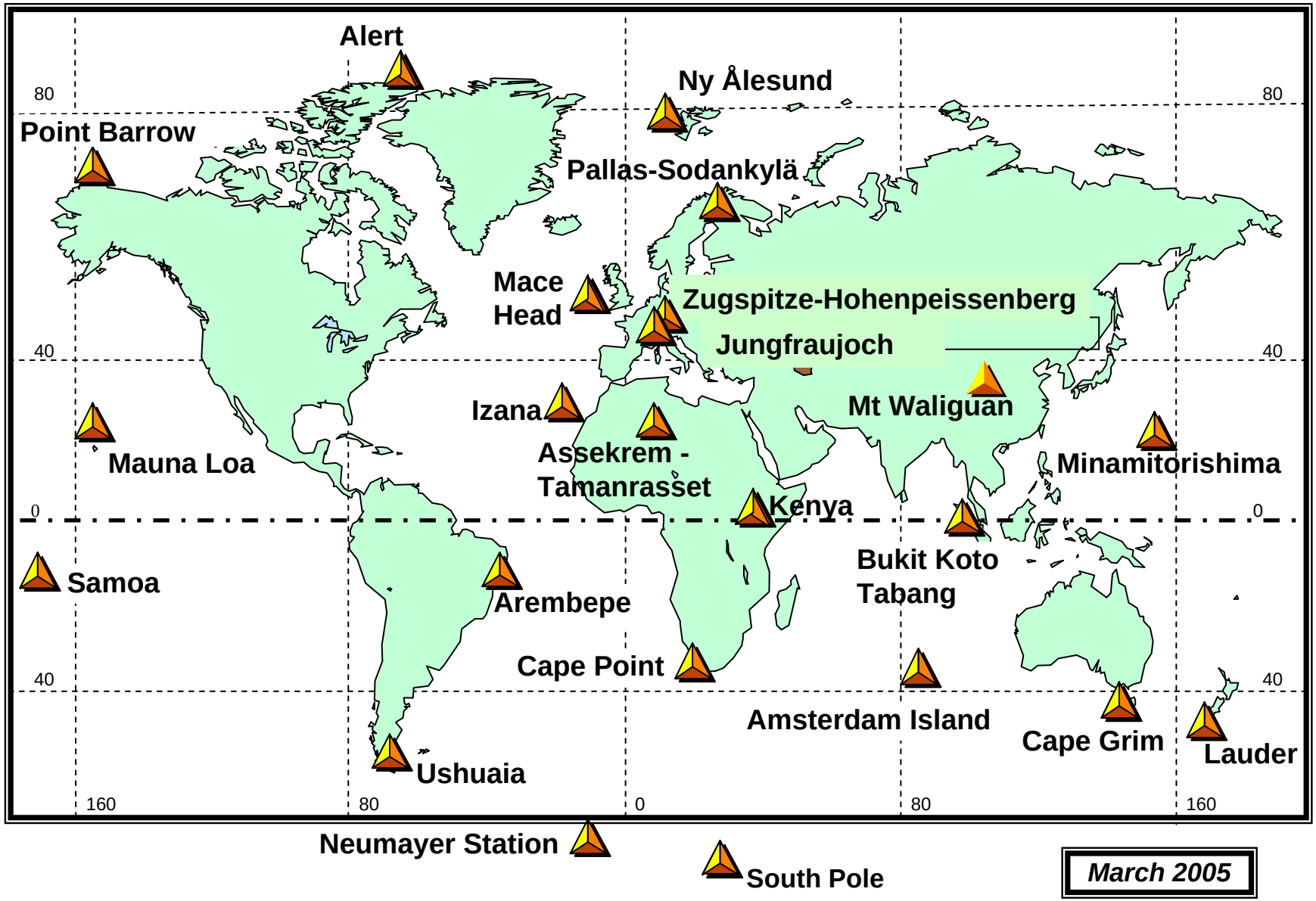
GAW Monitoring Components



GAW Target Variable

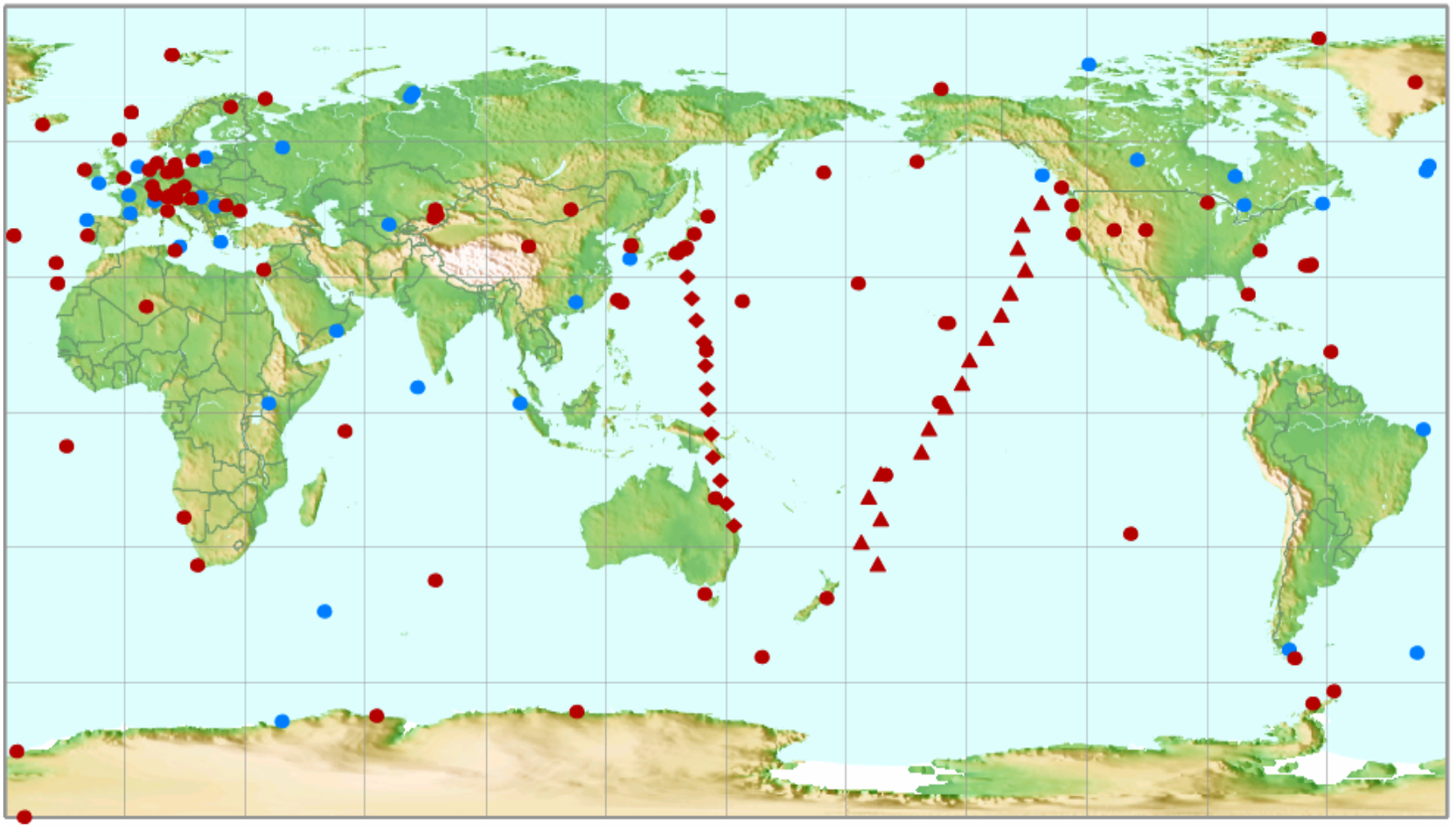


GLOBAL STATIONS IN GAW



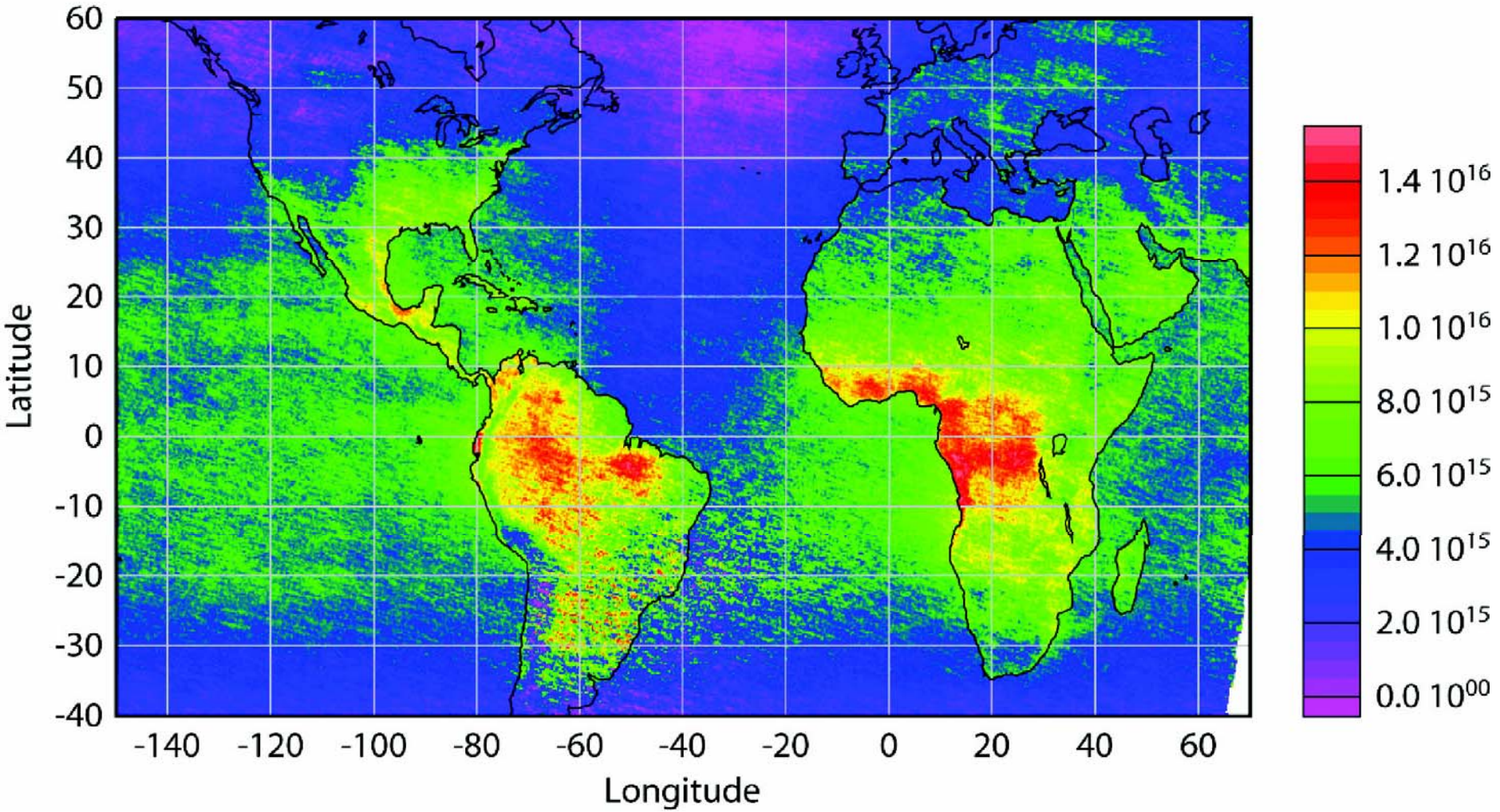
GAW Global Carbon Dioxide Network

{Major Partner NOAA/CMDL}

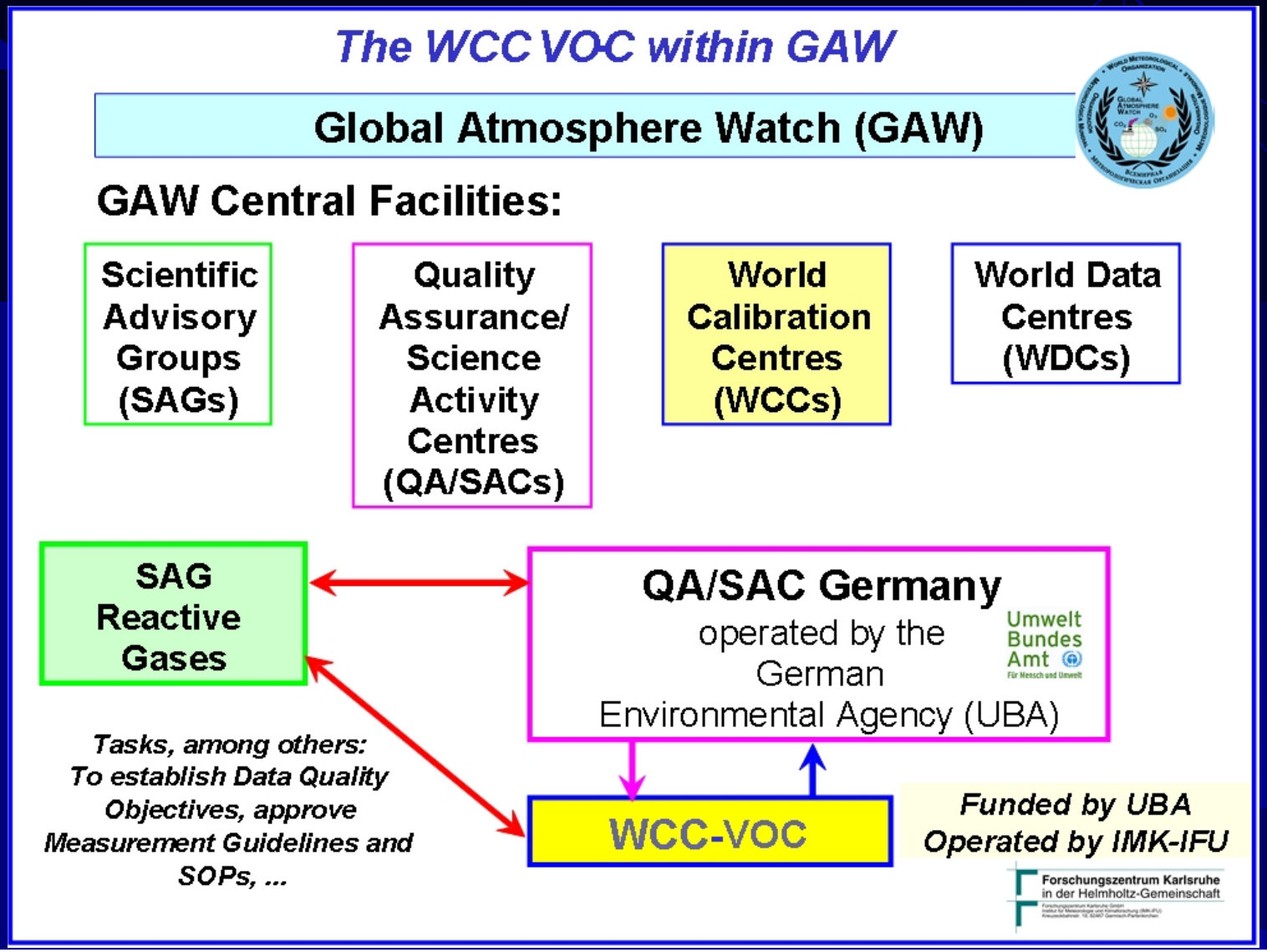


SCIAMACHY HCHO 2003

(Courtesy of F. Wittrock, U. of Bremen)



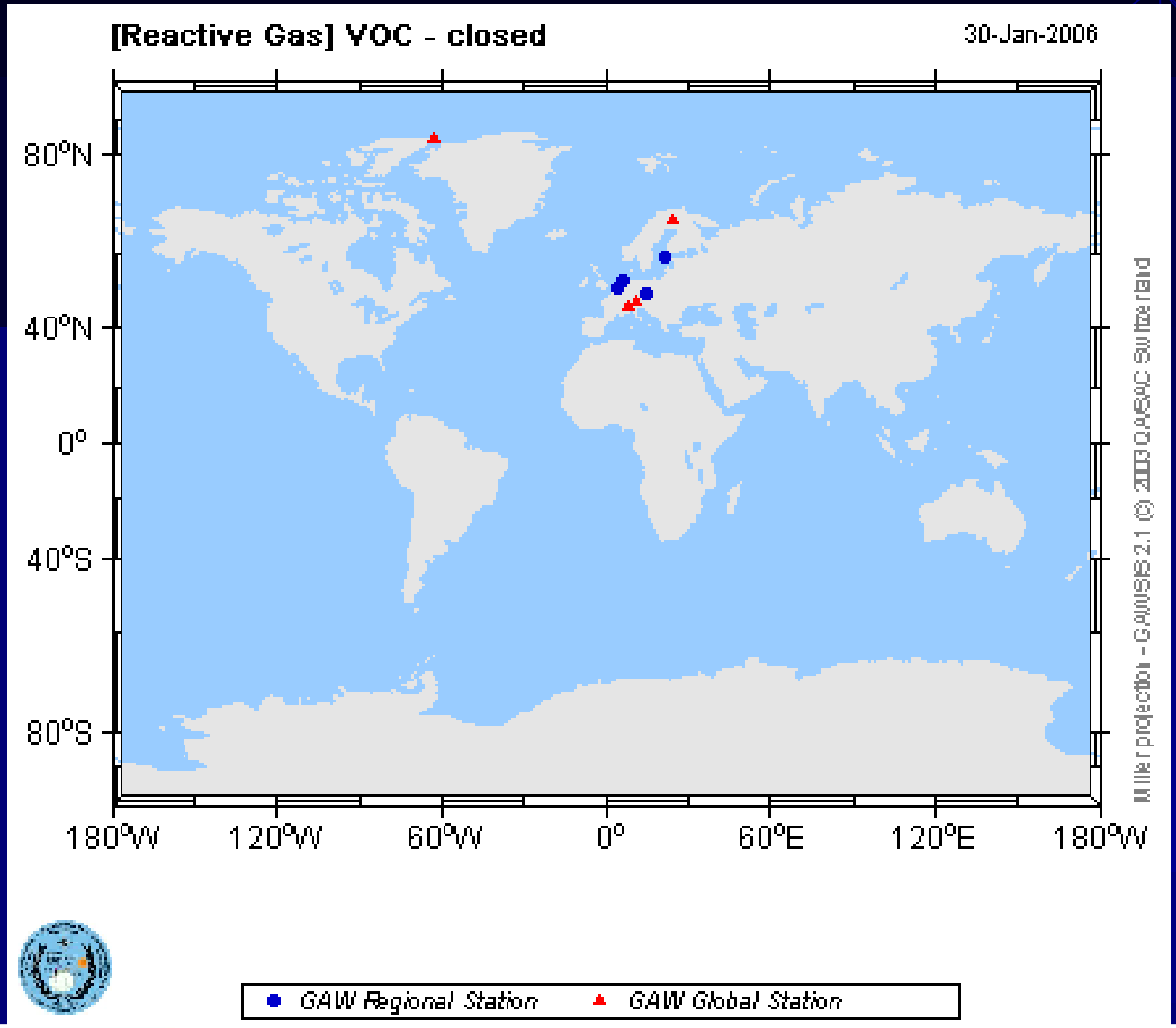
The WCC-VOC


The WCC VOC within GAW
Global Atmosphere Watch (GAW)
GAW Central Facilities:
Scientific Advisory Groups (SAGs)
Quality Assurance/ Science Activity Centres (QA/SACs)
World Calibration Centres (WCCs)
World Data Centres (WDCs)
SAG Reactive Gases
QA/SAC Germany
operated by the German Environmental Agency (UBA)
Umwelt Bundes Amt
Für Mensch und Umwelt
Tasks, among others:
To establish Data Quality Objectives, approve Measurement Guidelines and SOPs, ...
WCC-VOC
Funded by UBA
Operated by IMK-IFU
Forschungszentrum Karlsruhe
in der Helmholtz-Gemeinschaft

The Current WCC-VOC-Standard

- The WCC Reference Standard used so far contains 73 C2-C11 NMHCs at low ppbv levels in N_2, prepared and certified by NCAR (Apel. Riemer, Boulder, USA)
- The WCC Reference Standard contains 21 NIST-traceable compounds
- With the exception of propyne and 1,3-butadiene, this WCC Reference Standard contains all 30 target NMHCs recommended by WMO (WMO GAW Report No. 111, 1995)

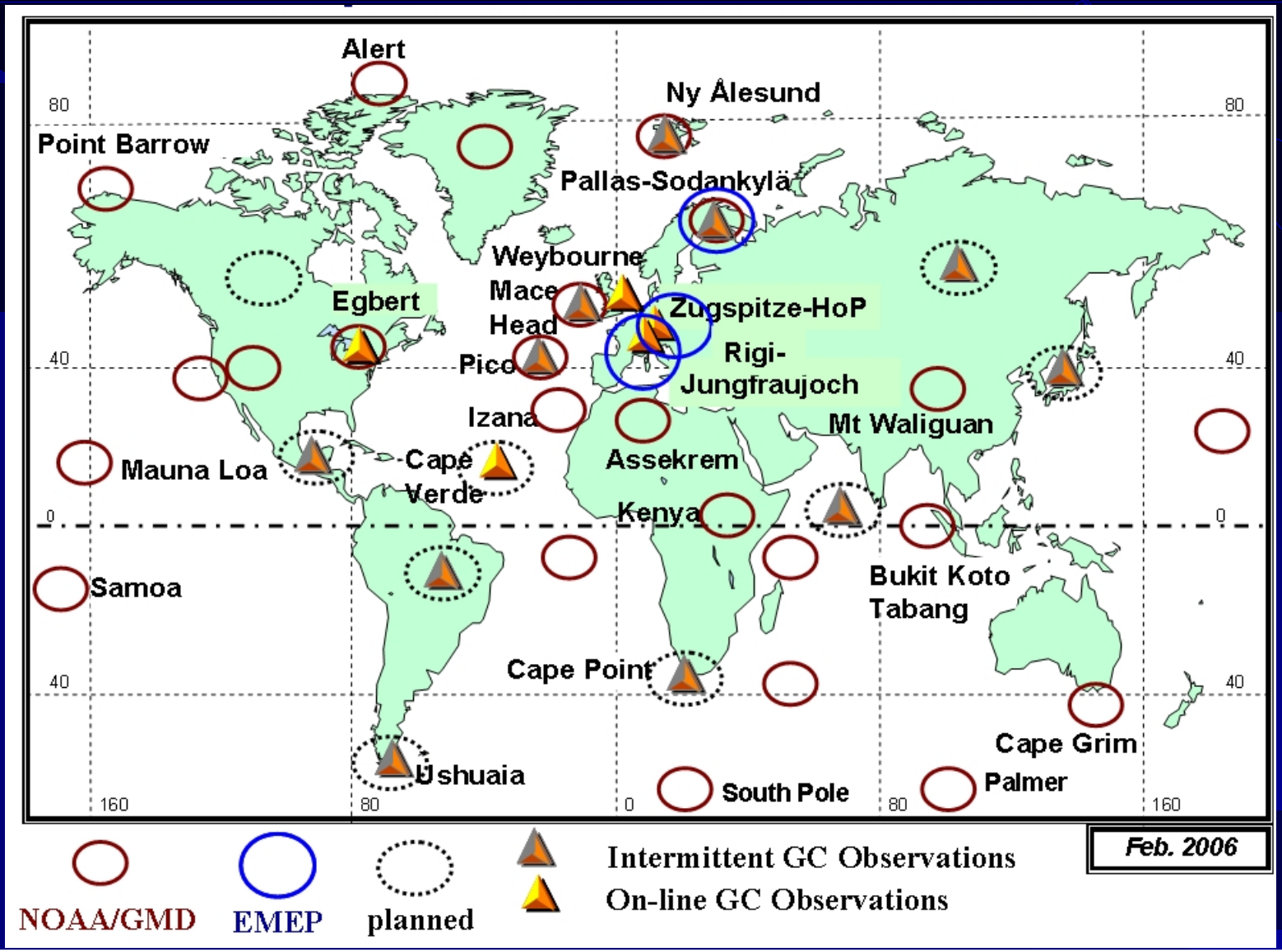
The Current GAW-VOC-Stations



Forschungszentrum Karlsruhe
in der Helmholtz-Gemeinschaft
Institut für Meteorologie und Klimaforschung
Atmosphärische Umweltforschung

Umwelt
Bundes
Amt
Für Mensch und Umwelt

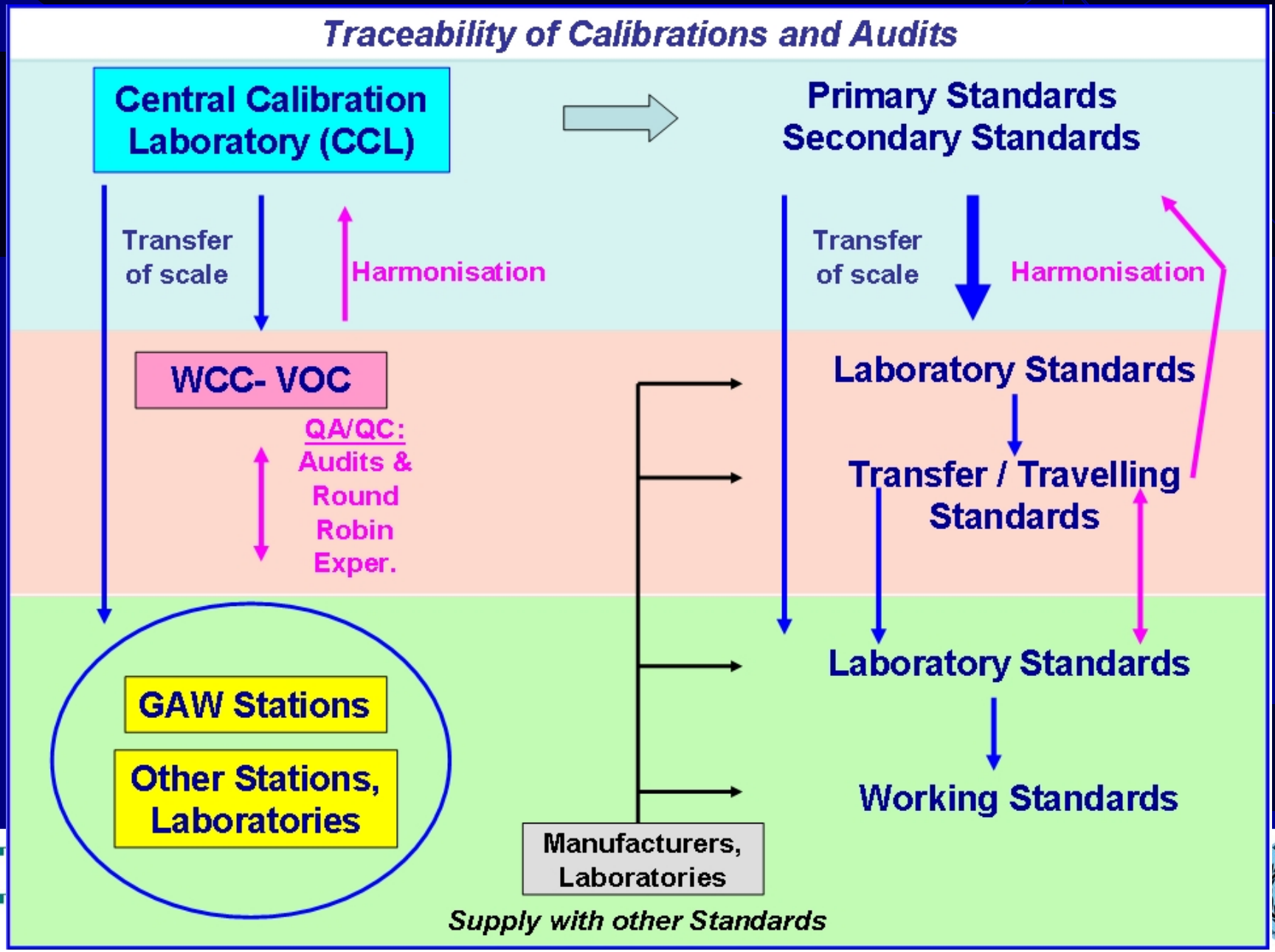
The Future GAW-VOC-Stations



The Future WCC-VOC-Standard

Compound	
Ethane	Acetone
Propane	DMS
Acetylene	Benzene
Isoprene	Toluene
Formaldehyde	Iso-Butane
Monoterpenes	n-Butane
Acetonitrile	Iso-Pentane
Methanol	n-Pentane
Ethanol	

The Future GAW-VOC QA/QC Strategy



The Future GAW-VOC Central Calibration Laboratory

The basic concept for the traceability of standards is the relation to a CCL-calibrated gas mixtures (Scale) to which all laboratory and transfer standards of the WCC will be related.

The GAW-SAG „Reactive Gases“ and the Subgroup VOC would appreciate if the CCQM Gas Analysis Working Group will host the GAW-VOC Scale

WMO

&

GAW-VOC

say

Thank You