



# Climate Services, WMO and GAW Observations

Liisa Jalkanen

Atmospheric Environment Research (AER) Division  
WMO Secretariat

# World Meteorological Organization

Independent technical UN agency

188 Members manage through WMO Congress and Executive Council

Secretariat in Geneva (staff 280)

## Technical Departments

Observing and Information Systems (OBS)

Climate and Water (CLW)

Weather and Disaster Risk Reduction Services (WDS)

## Research (RES)

**Atmospheric Research and Environment Branch (ARE)**

**Atmospheric Environment Research Division (AER)**

**Global Atmosphere Watch (GAW)**

# WCC-3

31 Aug – 4 Sept 2010

Establishment of the **Global Framework for Climate Services (GFCS)** to strengthen the production, availability, delivery and application of science-based climate prediction and services.

Components being proposed are:

- 1) Observations
- 2) Climate Research, Modelling and Prediction
- 3) Climate Services Information System
- 4) Climate User Interface Programme
- 5) Capacity building

(GAW involvement in bold)

# Global Framework for Climate Services (GFCS) (lead WMO)

- In preparation phase
- High Level Task Force of independent advisers will consult with governments, partner organizations and relevant stakeholders prepare a report, including recommendations on proposed elements of the Framework and findings and proposed next steps for developing and implementing the Framework.

The HLT will develop the components of GFCS and define the roles, responsibilities, and capabilities of the elements of the GFCS and clearly illustrate how it will assist in the integration of climate information and services into national planning, policy and programmes, taking into account the special needs of Africa, Small Island Developing States (SIDS), Least Developed Countries (LDCs) and Land-Locked Developing Countries (LLDCs).

**Report to be submitted to WMO Congress in 2011 for consideration of Member States (188)**

## GFCS, internally WMO

- Mapping the relationships of WMO Programmes, technical commissions and co-sponsored Programmes (GCOS, WCRP)
- GFCS needs to be taken into consideration in all related planned activities and needs to be referred to in a consistent matter
- Between the technical commissions need to prioritize problem solving, optimization of resources etc to minimize duplication of effort and promote timely responses to GFCS implementation and operation.

# Commission on Atmospheric Sciences CAS XV Nov 2009 Seoul

As mentioned already at this meeting, difficult for scientists to communicate to the policy makers and general public, difficult to connect to users.

CAS XV and WMO Executive Council Research Task Team recognized the above and recommended to:

Increase the two-way interactions between research, users and operations that begin early in the defining of a research problem and continue through the research process. Such interactions will help focus basic and applied research on user needs and make a more rapid transfer of research to operations and end users.

BUT: not easy to find user, especially one to easily communicate with.

Focus on distilling research advances into products specially at the regional level that can be readily made available and, through training activities, enable their use by those needing information.

# Commission on Atmospheric Sciences CAS XV Nov 2009 Seoul

Vital to continue atmospheric chemistry observations, analysis and assessment related to climate change as it provides the only way of telling whether mitigation is working.

Climate change and air quality closely related, however, complex and not fully understood. Changes in pollution levels maybe gains/losses for climate, depending on whether results in direct/indirect radiative forcings that are warming/cooling.

Important to integrate air quality and climate stabilization goals in the design of environmental policy to realize potential synergistic benefits.



GAW Report No. 172

**REVISED**

9:58 am, Sep 26, 2007

WMO Global Atmosphere Watch (GAW)  
Strategic Plan: 2008–2015



World  
Meteorological  
Organization  
Weather • Climate • Water



Included:  
Products and  
Services  
(Assessments)



## GAW and GCOS

WMO/GAW Global Atmospheric CO<sub>2</sub> and CH<sub>4</sub> Monitoring network is a “comprehensive” network and the GAW Dobson, Brewer and ozone sonde networks are “baseline” networks of GCOS.

Similar status is being sought for global N<sub>2</sub>O and aerosol networks.

## Quality assurance/Quality Control (QA/QC)

Serves both developed and developing countries

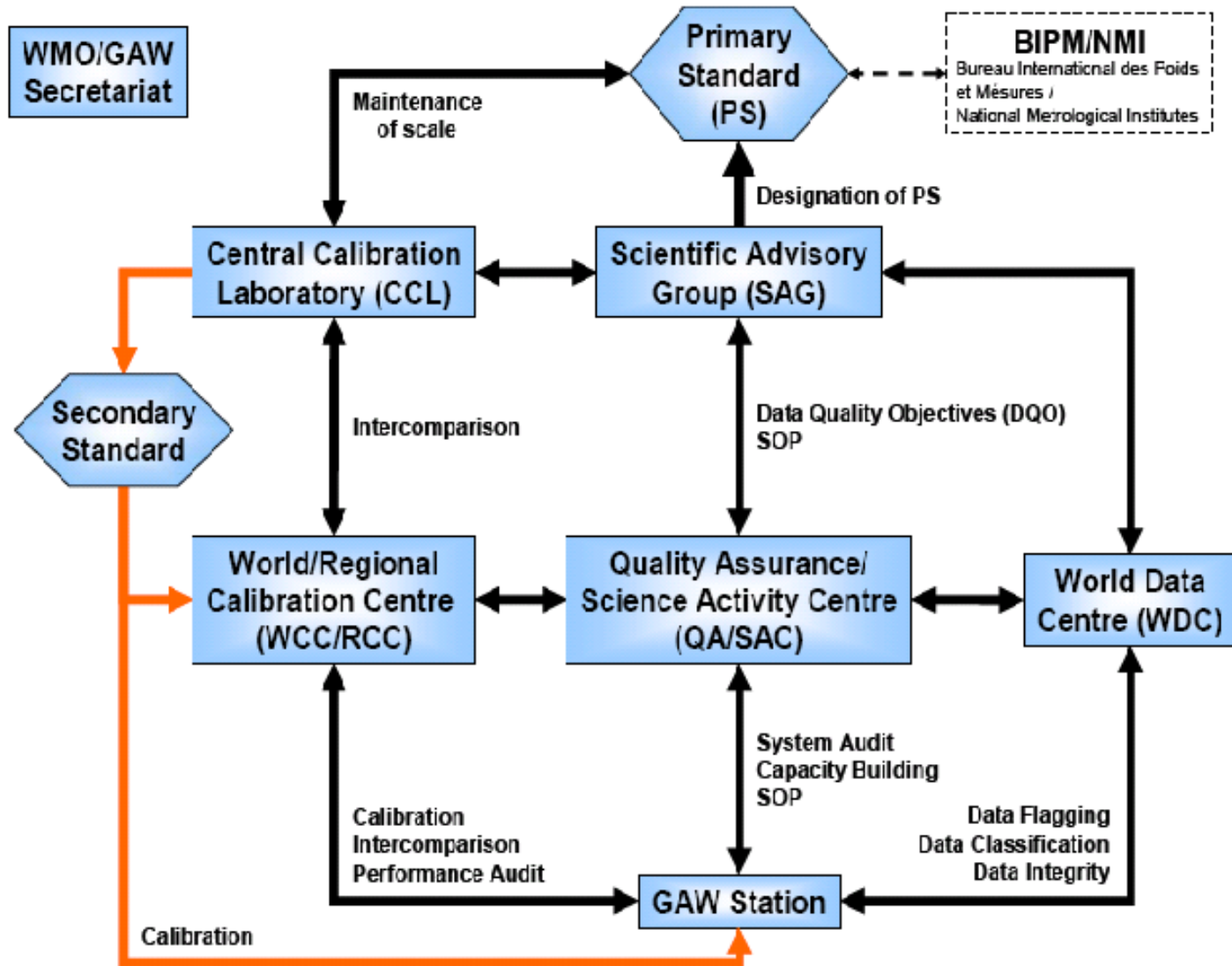


The **GAW QA/QC** system impacts all aspects of atmospheric chemistry observations, including

- training of station personnel;
- assessment of infrastructures, operations and the quality of observations at the sites;
- documentation of data submitted to the WDCs;
- improvement of the quality and documentation of legacy data at the WDCs.

The *primary objectives* of the GAW QA/QC system are to ensure that the data in the WDCs are **consistent, of known and adequate quality**, supported by comprehensive metadata, and sufficiently complete to describe global atmospheric states with respect to spatial and temporal distribution.

# Conceptual framework of the GAW quality system



# GAW World Central Facilities



To implement Quality Assurance system GAW includes five types of central facilities dedicated to six groups of measurement variables, which are operated by WMO Members.

- **Quality Assurance Science Activity Centres (QA/SACs)**
- **Central Calibration Laboratory (CCL)**
- **World Calibration Centre (WCC)**
- **Regional Calibration Centre (RCC)**
- **World Data Centre (WDC)**

**WMO BIPM WS** 30 March- 1 April 2010

**Measurement Challenges for  
Global Observation Systems for  
Climate Change Monitoring  
Traceability, Stability and Uncertainty**

Very well received from both sides; practical value of getting together

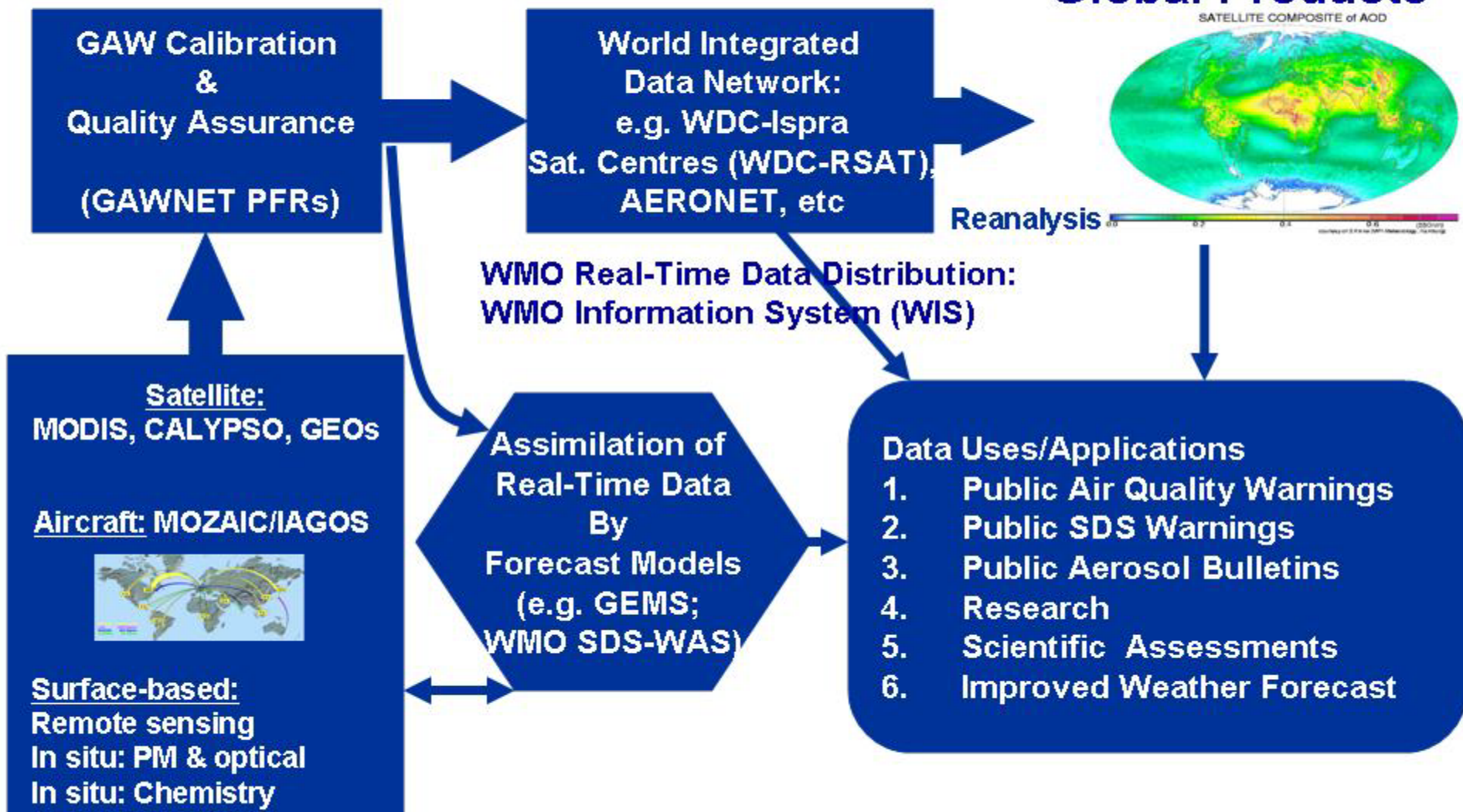
Signing of Mutual Recognition Arrangement (MRA)  
Opportunity to strengthen recognition and to collaborate with NMIs for GAW purposes (most concrete: VOCs)

The laboratories to represent WMO in activities organized within the MRA:

PMOD/WRC (solar irradiance); EMPA (surf O<sub>3</sub>) and NOAA/ESRL (greenhouse gases and CO).

# IGACO-Aerosols

## Global Products



**Leaders: WMO/GAW & Satellite Orgs & ENV Orgs**



**Observations are also needed in NRT**  
**Criteria different from data for climate**  
**services**

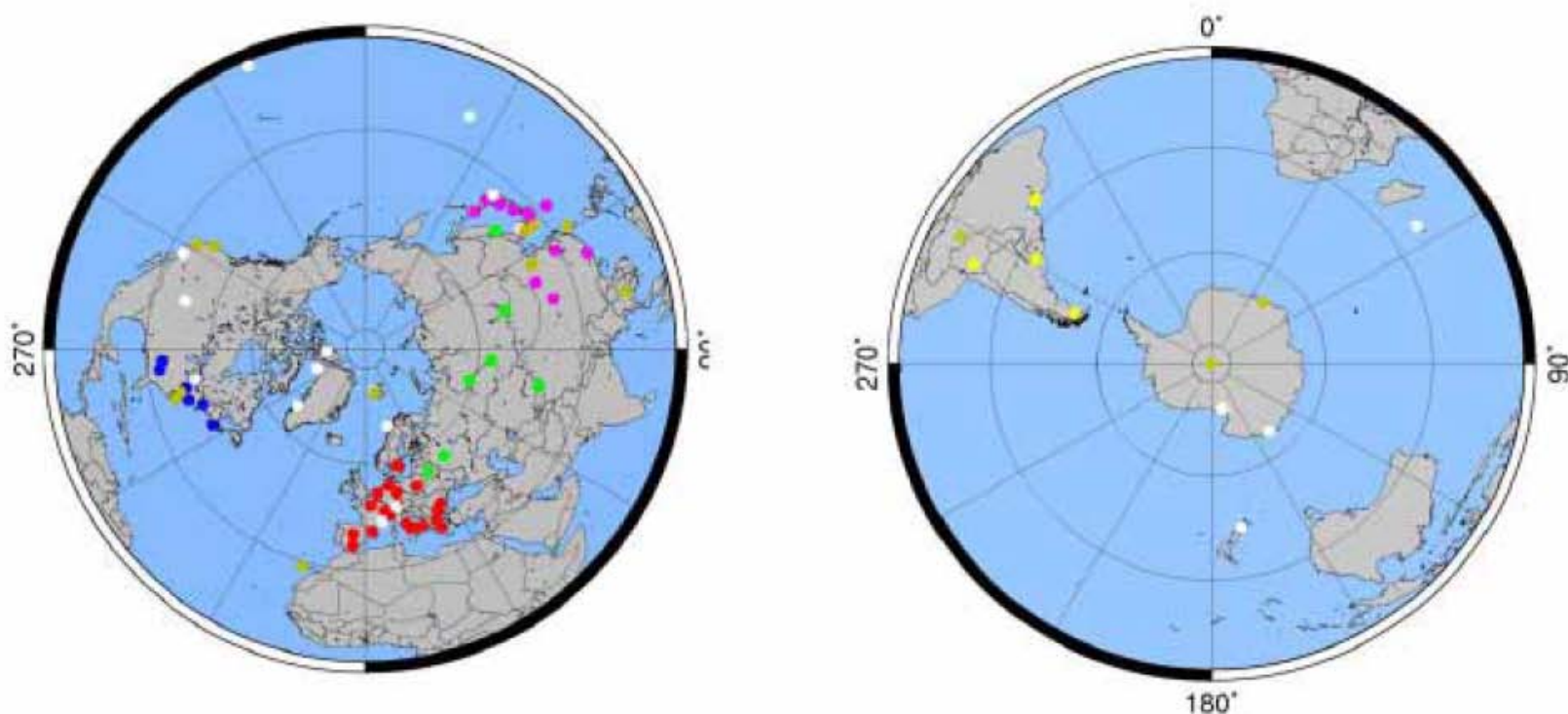
# GAW WIS WIGOS Pilot Project Improvement of Dissemination of Ozone and Aerosol observations in NRT - Rationale

- Availability of ozone and aerosol data would allow ingestion into atmospheric models in support of improved weather forecasts, surface UV and air quality.
- WMO ozone bulletins need ozone data in NRT
- Large, integrating projects, such as GEMS and MACC need ozone and aerosol data in NRT for model validation
- Delivery of NRT data can help to detect problems at stations at an early stage.



# GAW Aerosol LIDAR Observing Network GALION

Lead: Jens Bösenberg, Ray Hoff



**GAW Aersol Lidar Observation Network GALION  
Providing information during volcanic ash event**

**THANKS!**

**Especially to NOAA and experts in  
labs and at stations for your  
continued strong support and  
participation in GAW!**