

# Update on the WMO/GAW activities of relevance to LRTAP Convention

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**WMO OMM**

World Meteorological Organization

Organisation météorologique mondiale

# The 17<sup>th</sup> World Meteorological Congress

(25 May -12 June 2015)



- Approved WMO Strategic Plan for 2016-2019
- Approved WMO budget
- Elected new WMO Secretary General (Petteri Taalas started his term on 1 January 2016)

# WMO strategic priorities (2016-2019)

- (a) Disaster risk reduction
- (b) Global Framework for Climate Services
- (c) WMO Integrated Global Observing system
- (d) Aviation meteorological services
- (e) Polar and high mountain regions
- (f) Capacity Development
- (g) WMO Governance

# The Environmental Pollution and Atmospheric Chemistry Scientific Steering Committee (EPAC SSC) meeting, 15 -17 March 2016



- The first day was focused on partnerships (external partners involved UNEP, WHO, SPARC, GESAMP)
- Finalized GAW Implementation Plan (available on the web)

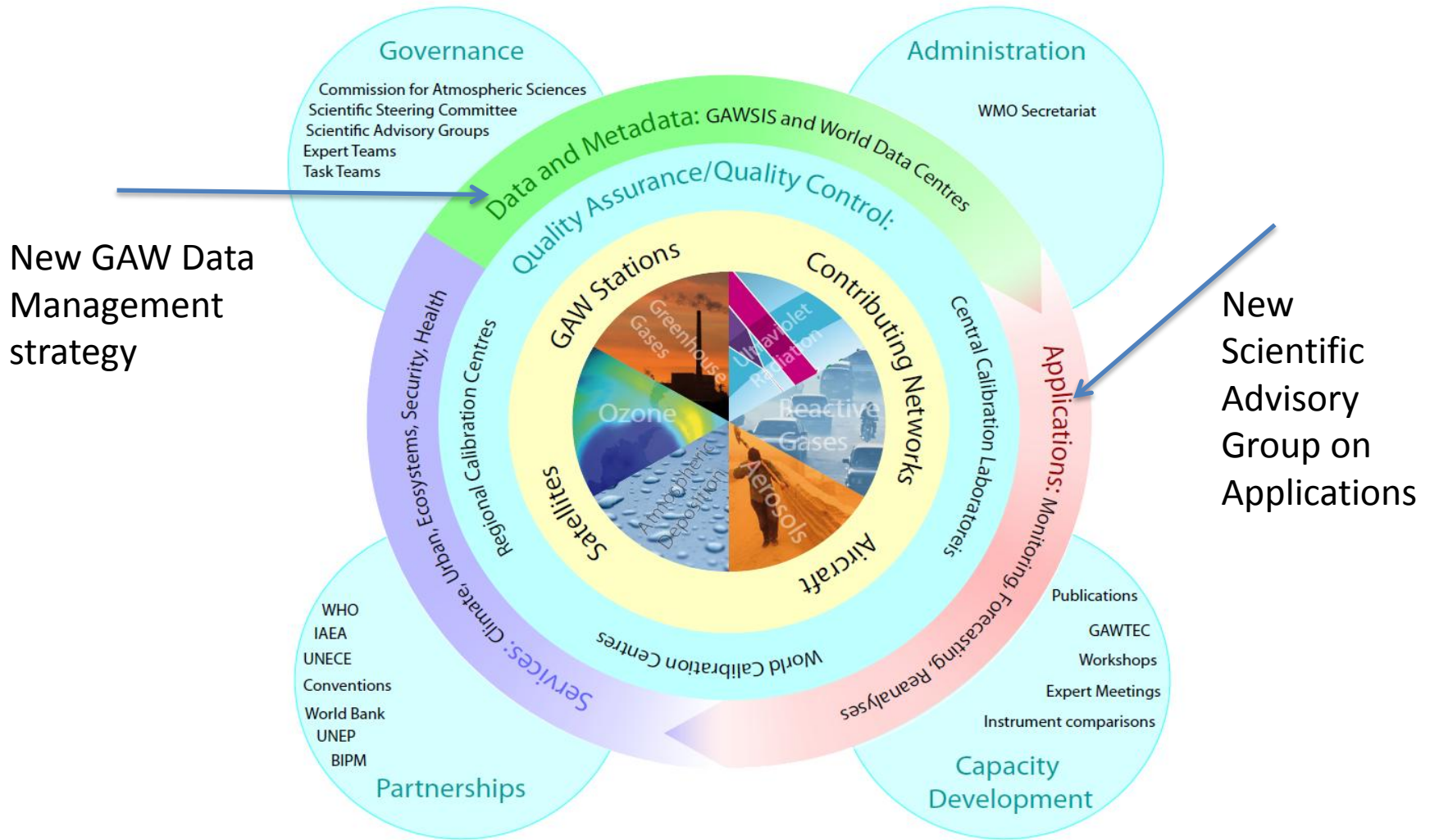
# GAW Implementation Plan (2015-2023)



- The plan concerns only implementation of the GAW Programme, WMO Strategic Plan is taken as an overall strategy
- Follows the concept “**research enabling services**” – the activities are around application areas rather than focused on GAW parameter specific areas
- More focus on modelling tools and value added products
- Provides clear framework for the programme implementation concerning network design, modelling tools, quality assurance principles, data management, collaboration with the other programmes

IP builds upon the premise that **atmospheric composition matters** - to climate, weather forecasting, human health, terrestrial and aquatic ecosystems, agricultural productivity, aeronautical operations, renewable energy production, and more.

# Conceptual GAW diagramme



# Network development/ European contribution

- Weybourne Atmospheric Observatory (UK)
- Monte Curcio station (Italy)
- Environmental-Climat observatory of Lecce (Italy)
- Environmental-Climat observatory of Lamezia Terme (Italy)
- Environmental-Climat observatory of Capo Granitola (Italy)
- DEBITS network meeting, **19 October 2015** – important contribution to the total deposition research coordinated by the SAG-TAD

Some networks recognize the importance of collaboration with GAW and consider it **as a tool for global harmonization**, but there are many concerns as well. SSC will develop a strategy to promote the role of GAW among potential contributing networks.

**EMEP officially is not a contributing network to GAW**

# Workshop on the GAW Data Management

## 10-11 August 2015



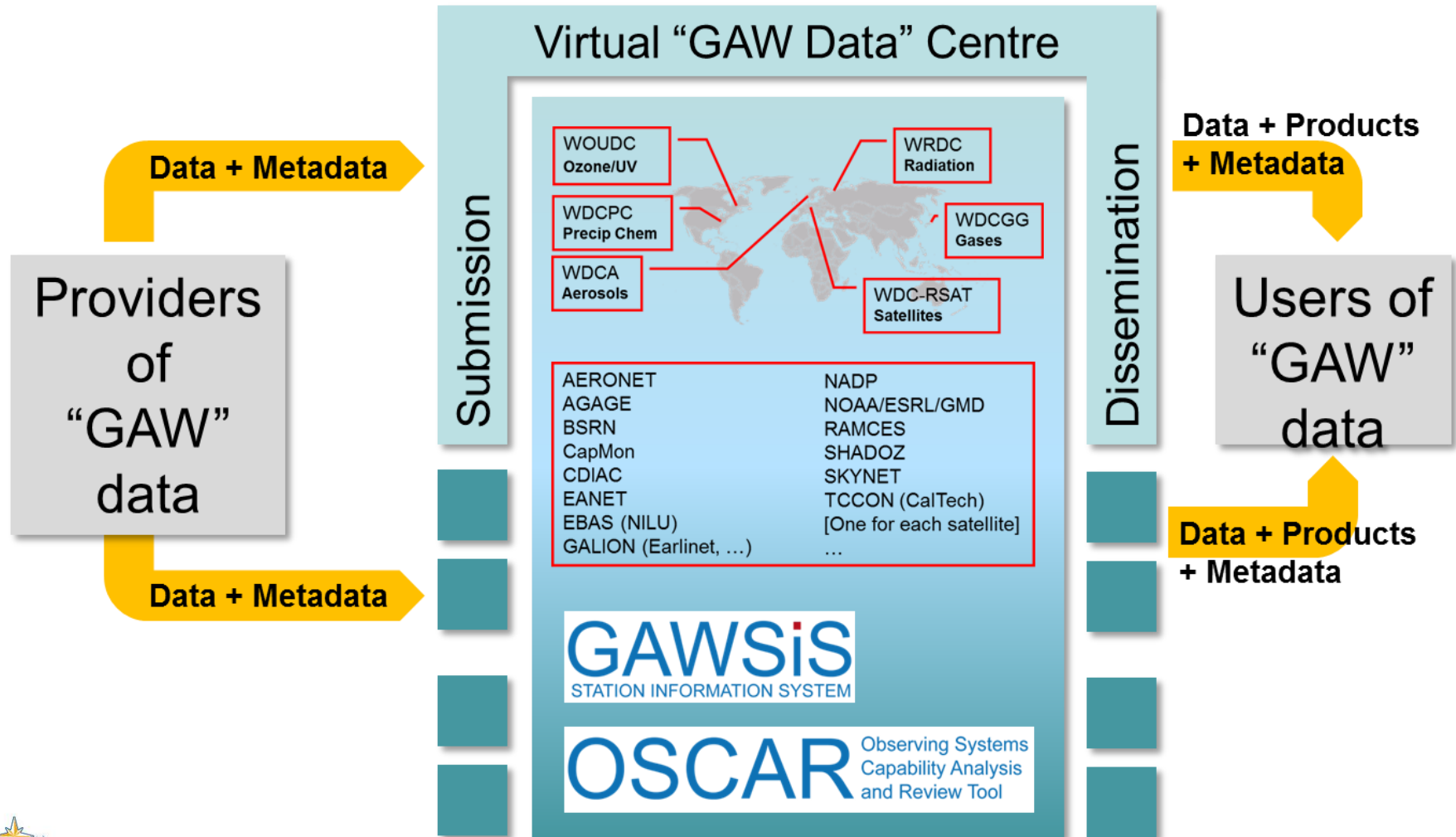
Invited organizations: 6 GAW data centers, GAWSIS, WMO Information System, *BADC*, CDIAC, regional GAW representatives, US EPA, HTAP, Aeronet, NDACC, EMEP, EANET, *MACC*, *GEIA*, *Aerocom*, Debits, IAGOS, *Global Carbon Project*

### **GAW Data strategy:**

- GAW global and regional data stations subscribe to the GAW QA/QC system and submit their observations to the existing GAW WDCs.
- GAW contributing stations are members of GAW contributing networks . They are free and invited to submit their data to GAW WDCs, and will in all likelihood be required to submit data to the dedicated data centre of that program.
- All these data centres will form the federation of GAW data, and will collaborate with GAWSIS to establish machine-to-machine interfaces for synchronizing at least mandatory WIGOS metadata with GAWSIS (an obligation under the WIGOS framework, as GAWSIS is the source of metadata of chemical composition observations for OSCAR). GAWSIS will hence aspire to serve as a global metadata portal for observations “supporting the objectives of GAW” (i.e., GAW data.). This also includes observations provided by sources outside the federation (e.g., health-related observations.)



# Federated approach to data management

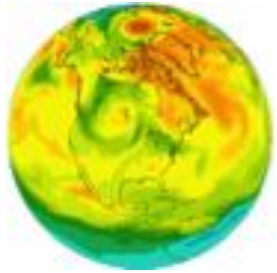


# Example of the applications in GAW

- *Support of climate negotiations:* IG<sup>3</sup>IS
- *Ecosystem services:* analysis of total deposition, nitrogen cycle, deposition to the oceans/marine geoengineering
- *Health:* sand and dust storms, urban air quality (GURME), biomass burning
- *Food security:* atmospheric composition and agriculture
- *Transport security:* volcanic ash forecasting



# Integrated, Global, Greenhouse Gas Information System (IG<sup>3</sup>IS)



- ◆ As the negative impacts of rising global temperatures become increasingly evident, nations, states, cities and private enterprises are accelerating efforts to reduce the atmospheric abundance of the greenhouse gases.

- Emission reduction efforts require **evidence-based information** to succeed.
- At the 17<sup>th</sup> WMO Congress in June 2015 a resolution was passed requesting a plan for an IG<sup>3</sup>IS.
- GHG information is user oriented (what and for whom)?
- Based on a combination of measurements, models, and bottom-up activity data.

- ◆ Success in building an IG<sup>3</sup>IS will require:

- Partnerships and collaborations
- Filling gaps for ground-based, airborne, and space-based observations,
- Improvements in transport and carbon-cycle modeling,
- Temporally and spatially explicit bottom-up inventories (human-dimensions),

**The ultimate goal of the system is to provide information about sources and sinks of greenhouse gases at management and policy relevant temporal and spatial scales.**

Despite some efforts to reduce emissions, greenhouse gases in the atmosphere continue to rise.



# IG<sup>3</sup>IS and 4 Pillars for COP-21

- 1) Intended Nationally Determined Contributions (INDCs)
- 2) Climate Finance
- 3) Agreement text
- 4) Lima-Paris Action Agenda

National level targets  
[Trend Monitoring]

Reporting, mechanisms  
[Improved Emissions Estimates]

Specific sub-national actions in different sectors, and initiatives involving cities [Mitigation Guidance]

opinion & comment

COMMENTARY:

## Towards a new climate diplomacy

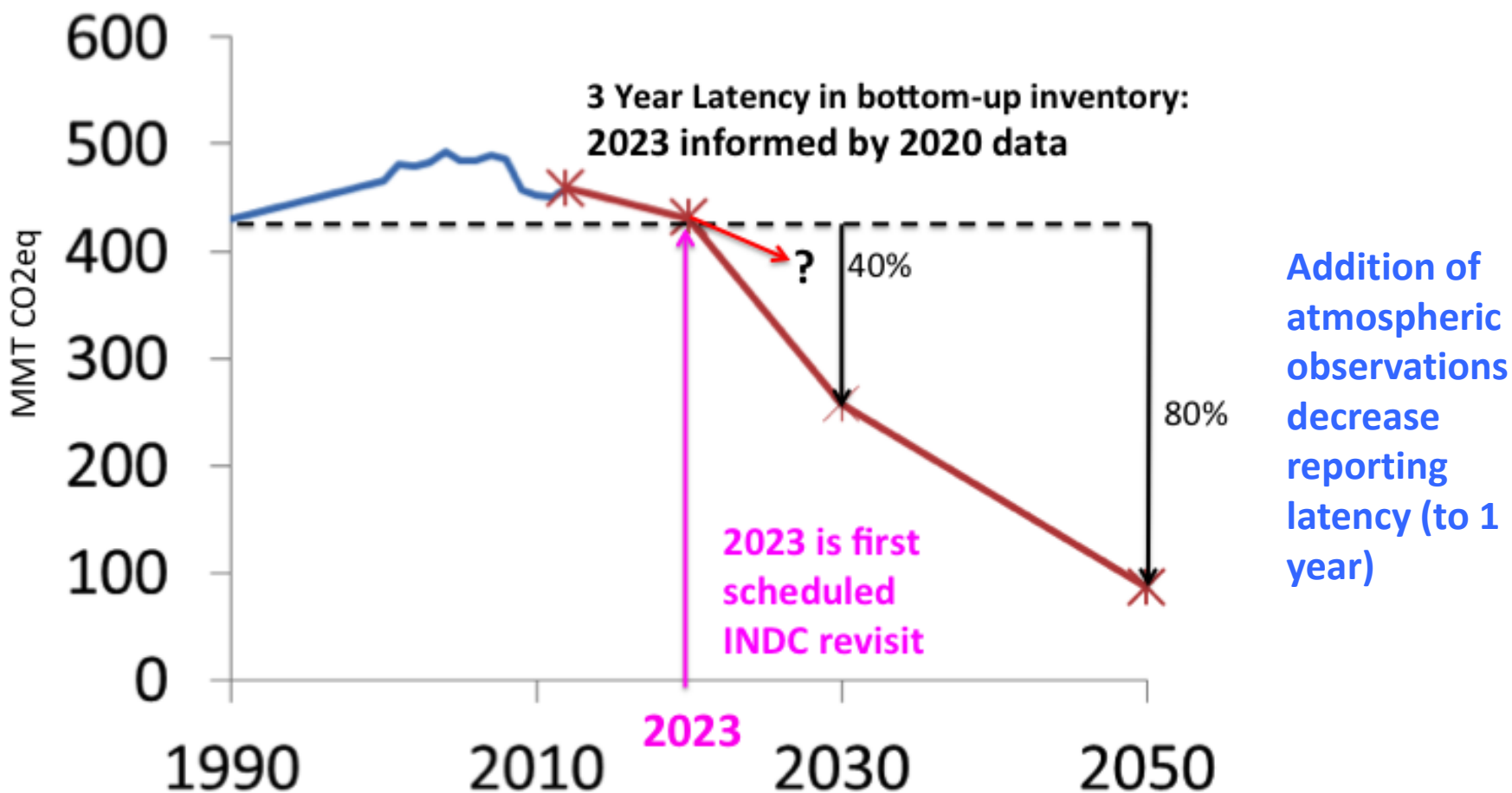
Angel Hsu, Andrew S. Moffat, Amy J. Weinfurter and Jason D. Schwartz

A new kind of climate politics is emerging, as national actions prove insufficient to address the changing climate. Subnational actors — ranging from provinces and cities, to civil sector organizations and private companies — are acting alongside nation states, making up for lost ground and missed opportunities.



# Objective 1: trend monitoring

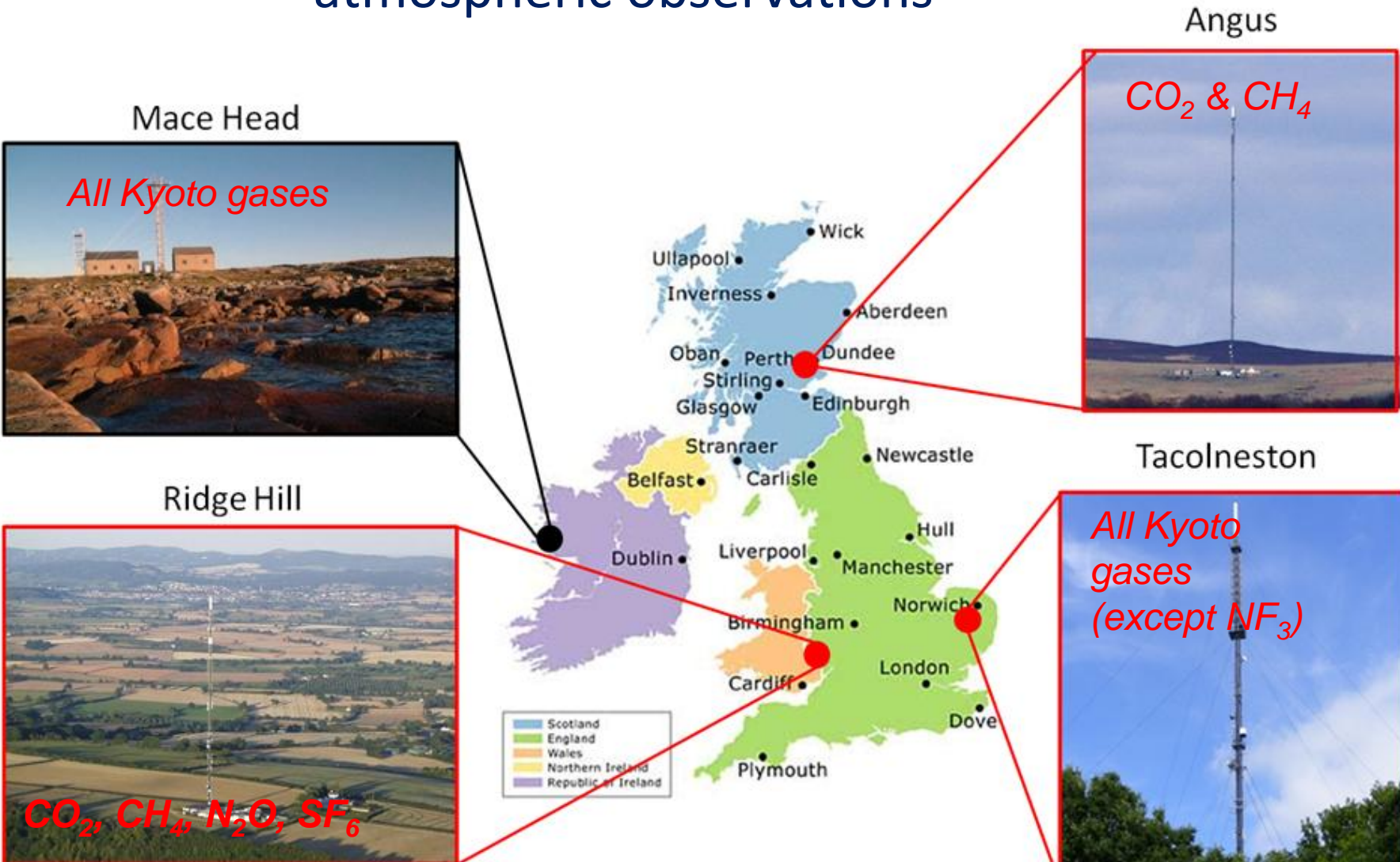
## Impact of 3 year emission inventory reporting latency



To support the Paris Agreement's goal/actions for global stocktaking by enhancing the Global Carbon Project methodology through increasing use of atmospheric composition data.



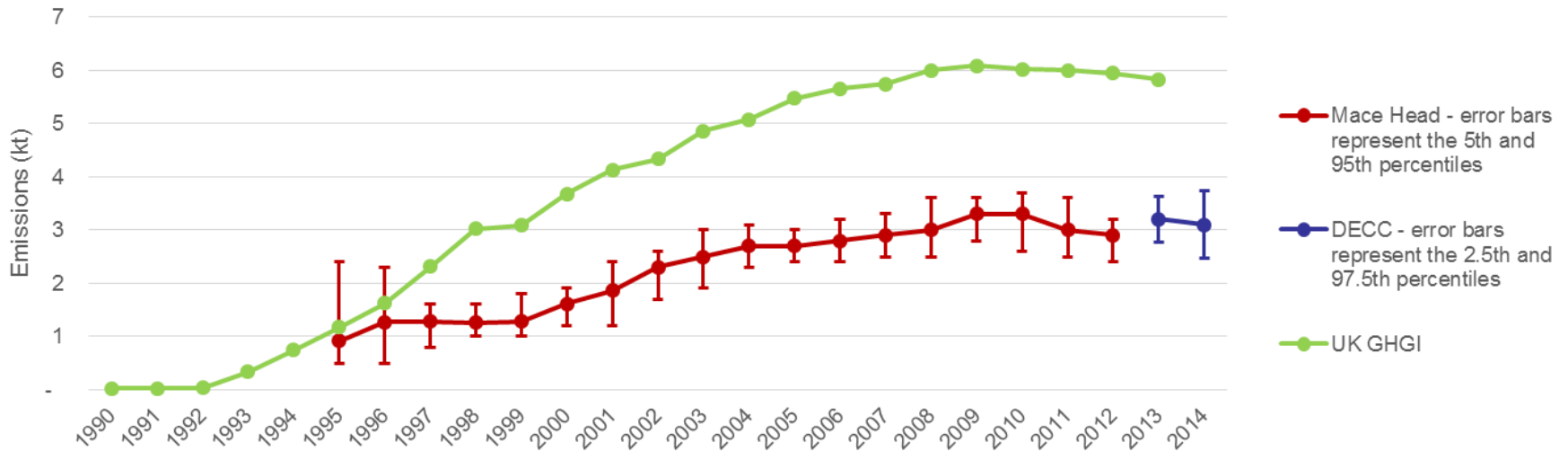
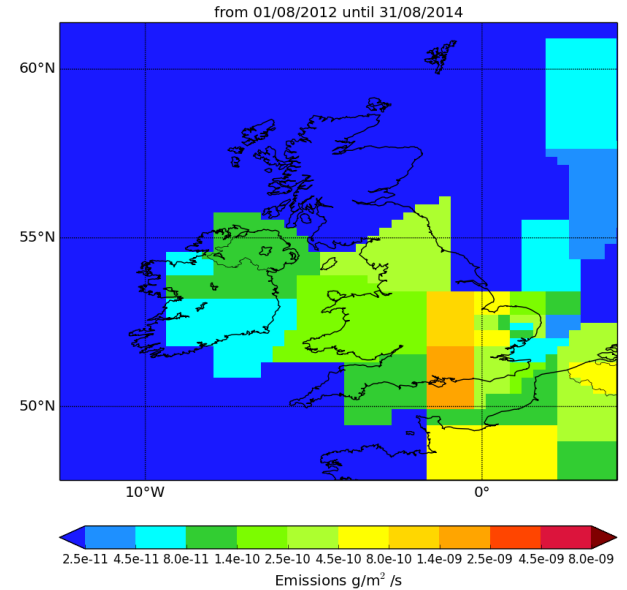
# Objective 2: improvement of emission inventory based on atmospheric observations



**UK DECC Measurement Network + NAME model**

# HFC-134a results

- Significant mismatch throughout the entire time-series of emissions, inversion is approximately 50% lower than inventory.
- Investigated the refrigeration model used by inventory compilers, key variables to be re-considered by DECC:
  - Refill rate
  - Uptake rate



# Further developments of IG3IS

- IG3IS was presented at the IPCC meeting of Task Force on National Greenhouse Gas Inventories ( 25-29 April 2016, Wollongong, Australia)
- Side event at the 44th session of the UNFCCC Subsidiary Body for Scientific and Technological Advice (SBSTA), 16-26 May 2016
- Side event at the United Nations Environmental Assembly, 23-27 May 2016, Nairobi, Kenya
- IG3IS concept paper will be presented at the WMO Executive Council (June 2016)



# Ecosystem services

- Scientific Advisory Group on Total Atmospheric Deposition started working with user community to identify required **deposition** products. SAG TAD discussed new ideas on model/data fusion at the last meeting (broader workshop is planned on 28 February- 3 March 2017 in Geneva).
- **Workshop on air pollution and agriculture, Pune, India, 2-4 November 2015**
- **NOx expert meeting and N-cycle workshop, 12-14 April, York, UK**

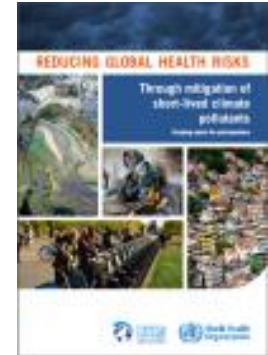


Developed recommendations to EC-68 related to improved collaboration between WMO technical commissions on the connection between atmospheric composition and agriculture (**LRTAP experience is taken into consideration**)

- Included the International Nitrogen Management System (INMS) and **TF on Reactive Nitrogen**
- Identified ammonia as a gap to be addressed by GAW on global scale
- It recommended that organic nitrogen compounds in the gas phase, aerosol phase and total deposition be identified as an important area for research and measurements activities

# Human health

- WMO is a partner in the Climate and Clean Air coalition (with deep involvement in Urban Health Initiative, impact assessment group and strategic planning group). WMO hosted CCAC Working group meeting on 19 May and science-policy dialog on 20-21 May 2016.
- “Reducing Global Health Risks Through Mitigation of Short-Lived Climate Pollutants: Scoping report for policymakers”, WMO and CCAC with contribution from WMO (22 October 2015)
- **Expert Meeting and Workshop on the health impact of airborne dust, Amman, Jordan, 2-5 November 2015**
- **TOAR Workshop 1.03, 25-27 January 2017, Beijing, China** (TOAR develops impact matrices, can support impact studies in GAW)

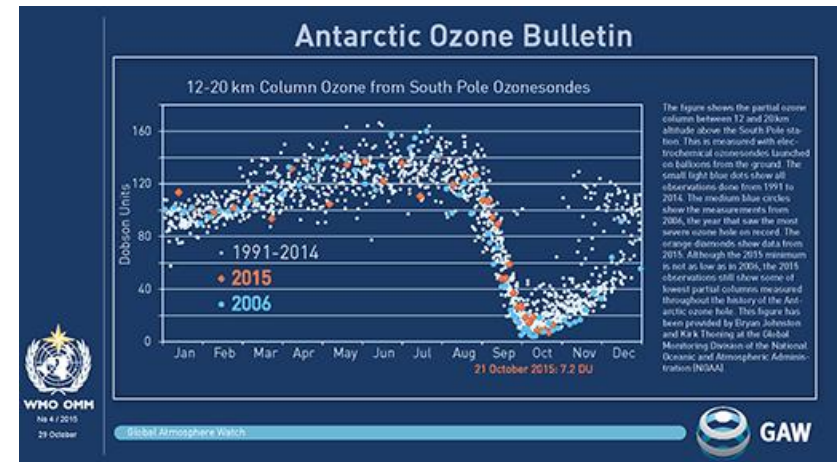
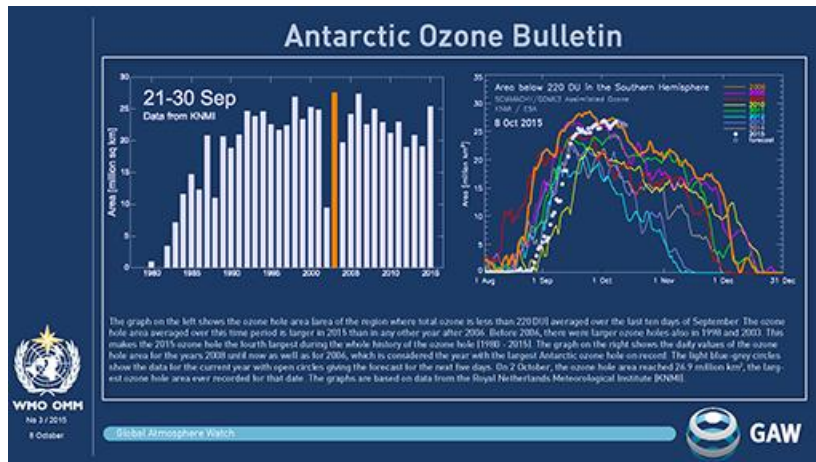


# Quality Assurance

- National Physical Laboratory (UK) was accepted as a Central Calibration Laboratory for NO
- World Data Center for Reactive Gases was established in NILU (Norway)
- The Korea Meteorological Administration (KMA) launched the first SF<sub>6</sub> Inter-Comparison Experiment (SICE-2016) in its functions as the World Calibration Centre for SF<sub>6</sub>
- Measurement Guidelines for NO<sub>x</sub> measurements are to be finalized by the end of 2016

# GAW outreach

- **8 GAW Reports** were published within last year
- **Four e-Zines** were issued with GAW news.
- **5 Antarctic Ozone Bulletins** and **one Arctic Ozone Bulletins** were issues during the recent “ozone depletion season”
- **11<sup>th</sup> GHG Bulletin** was released on 9 November 2015



# Training and capacity development

- GAWTEC 29 session, Scheefernerhouse, Germany, 1-14 November 2015 (reactive gases and UV radiation)
- GAWTEC 30 session, Physical properties of aerosols, April 3rd - 16th, 2016
- YESS (Young Earth System Scientists) Early Career Researchers Workshop 2015, Offenbach, Germany, 28-30 October 2015



Participants of the 29<sup>th</sup> GAWTEC session



# Future meetings

- **The 68<sup>th</sup> session of Executive Council, 15-24 June 2016 (new format of the sessions and documents)**
- The UN Environment Assembly (UNEA), UNEP Headquarters, UN Offices in Nairobi (UNON), Gigiri, Nairobi, Kenya, 23-27 May 2016
- Biomass Burning workshop (with IBBI), Jakarta, Indonesia, 29 August -1 September 2016
- Quadrennial Ozone Symposium, Edinburgh International Conference Centre (EICC), Edinburgh, United Kingdom, 4 - 9 September 2016
- **GAW Quadrennial Symposium 2017, 10-13 April 2017, Geneva**



# Thank you Merci



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