

WMO/GAW activities of relevance to EMEP (update 2019)

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WMO OMM

World Meteorological Organization
Organisation météorologique mondiale

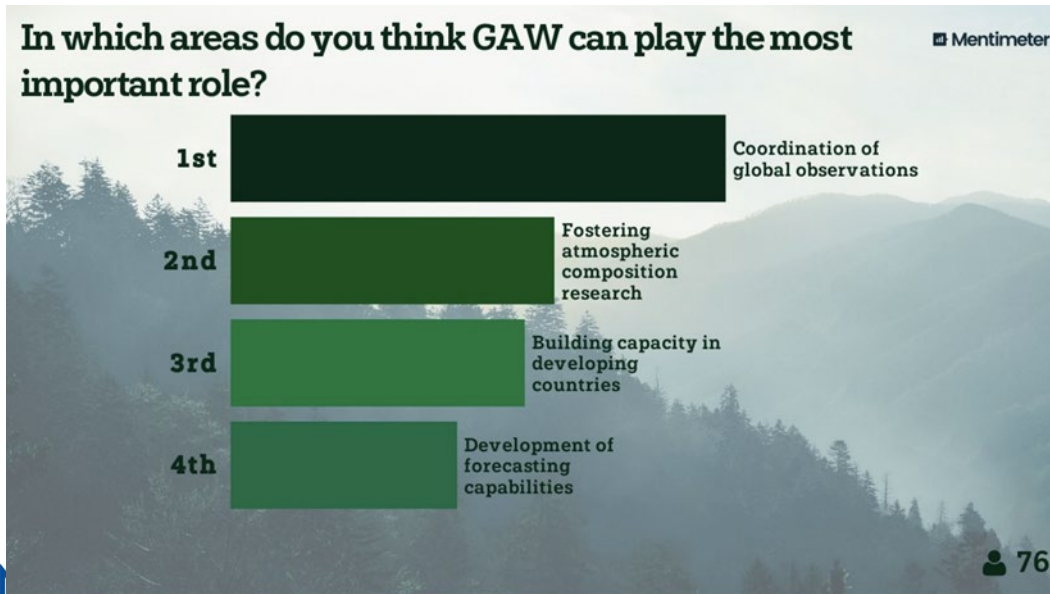


30th anniversary of GAW

- Union Symposium at the EGU General Assembly, 7-12 April 2019 “From fundamental Atmospheric Composition Research to Societal Services/30 years of the WMO Global Atmosphere Watch Programme” with 6 invited talks

<https://client.cntv.at/egu2019/us5>

- Scientific highlights are published
- Photos collected for the production of the photo album for GAW



WEATHER CLIMATE WATER

WORLD METEOROLOGICAL ORGANIZATION

From fundamental Atmospheric Composition Research to Societal Services - 30 years of the Global Atmosphere Watch Programme

The Global Atmosphere Watch (GAW) Programme of the World Meteorological Organization focuses on building a single coordinated global understanding of atmospheric composition and its change. It coordinates high-quality atmospheric composition observations across local to global scales to drive high quality and impact science while co-producing a new generation of research enabled products and services. About 100 countries are participating in the GAW Programme.

One major aspect of the GAW mission is to organize, participate in and coordinate assessments of the chemical composition of the atmosphere on a global scale. In this way, GAW provides reliable scientific information for policymakers, supports international conventions and contributes to improve the understanding of climate change and long-range transboundary air pollution.

Recent scientific highlights from GAW focal areas

Increasing greenhouse gases

Carbon dioxide crossed 400 ppm throughout GAW stations in the Northern hemisphere in 2014, and in 2016, 400 ppm was breached in the Southern hemisphere's remote locations, at for instance, Cape Grim GAW Global station in Tasmania. Greenhouse gas concentrations continue to rise with new record highs every year. There is no sign of reversal in this trend. In 1989, when GAW was initiated, the global mean CO₂ concentration was 353 ppm. The largest observed growth rate 2015/2016 is attributed to the strong El Niño event in that year as during El Niño events the land uptake is usually decreased as a result of increased drought in tropical regions, leading to less carbon uptake by vegetation and increased CO₂ emissions from fires.

Globally averaged CO₂ mole fraction. Observations from 123 stations have been used.
Source: WMO Greenhouse Gas Bulletin 14.

Ozone layer starts to heal

Actions taken under the Montreal Protocol have led to decreases in the atmospheric abundance of controlled ozone-depleting substances and the start of the recovery of stratospheric ozone.

Daily ozone mass deficit over Antarctica for various years compared with the range of values over the period 1990-2016 (gray shaded area). The thick dark gray line shows daily values averaged over the 1990-2016 period. Values have been computed using data from TOMS, Aura OMI, and SCIAMOS NPP OMI.
Source: WMO, Scientific Assessment of Ozone Depletion: 2018.

Reform of WMO

The eighteenth World Meteorological Congress (Cg-18, Geneva, 3–14 June 2019) adopted a historical reform of the WMO constituent bodies to embrace a more **comprehensive Earth system approach**, with a stronger focus on water resources and the ocean, more coordinated climate activities and a more concerted effort **to translate science into services for society**.

The Congress approved a new WMO strategic plan 2020-2023. **Long-term Goals and Strategic Objectives:**

Goal 1: Better serve societal needs: delivering, authoritative, accessible, user-oriented and fit-for-purpose information and services

Goal 2: Enhance Earth system observations and predictions: Strengthening the technical foundation for the future

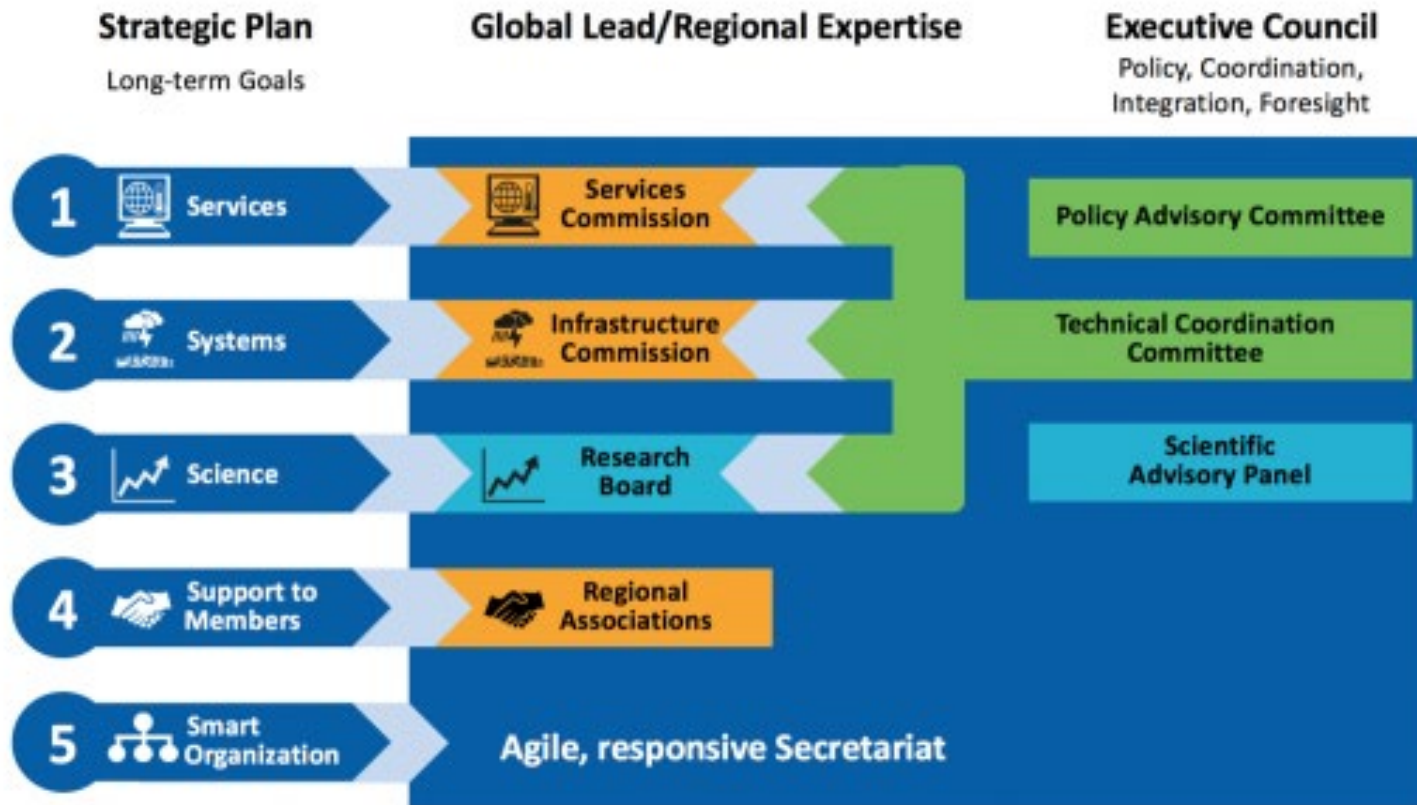
Goal 3: Advance targeted research: Leveraging leadership in science to improve understanding of the Earth system for enhanced services

Goal 4: Close the capacity gap on weather, climate, hydrological and related environmental services: Enhancing service delivery capacity of developing countries to ensure availability of essential information and services needed by governments, economic sectors and citizens

Goal 5: Strategic realignment of WMO structure and programmes for effective policy- and decision-making and implementation.

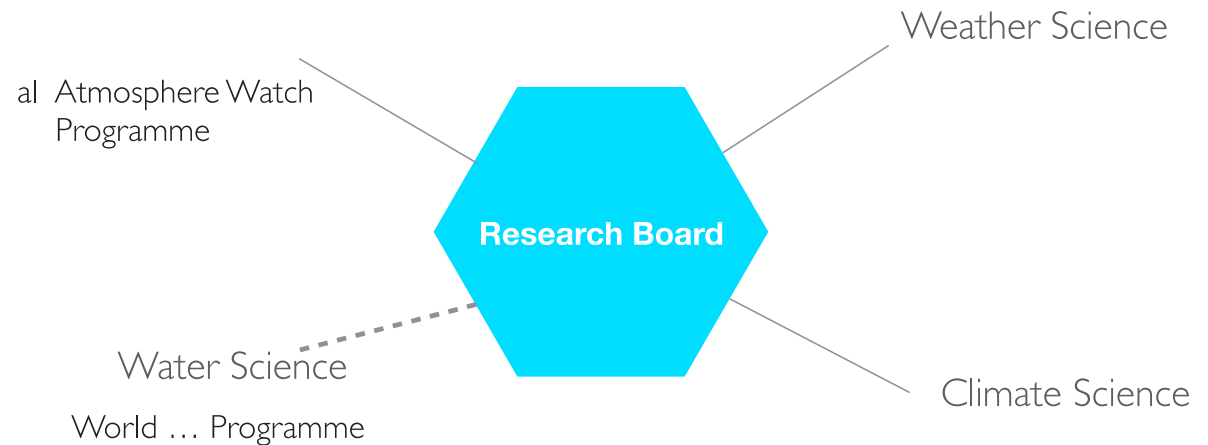


Structure of WMO constituent bodies

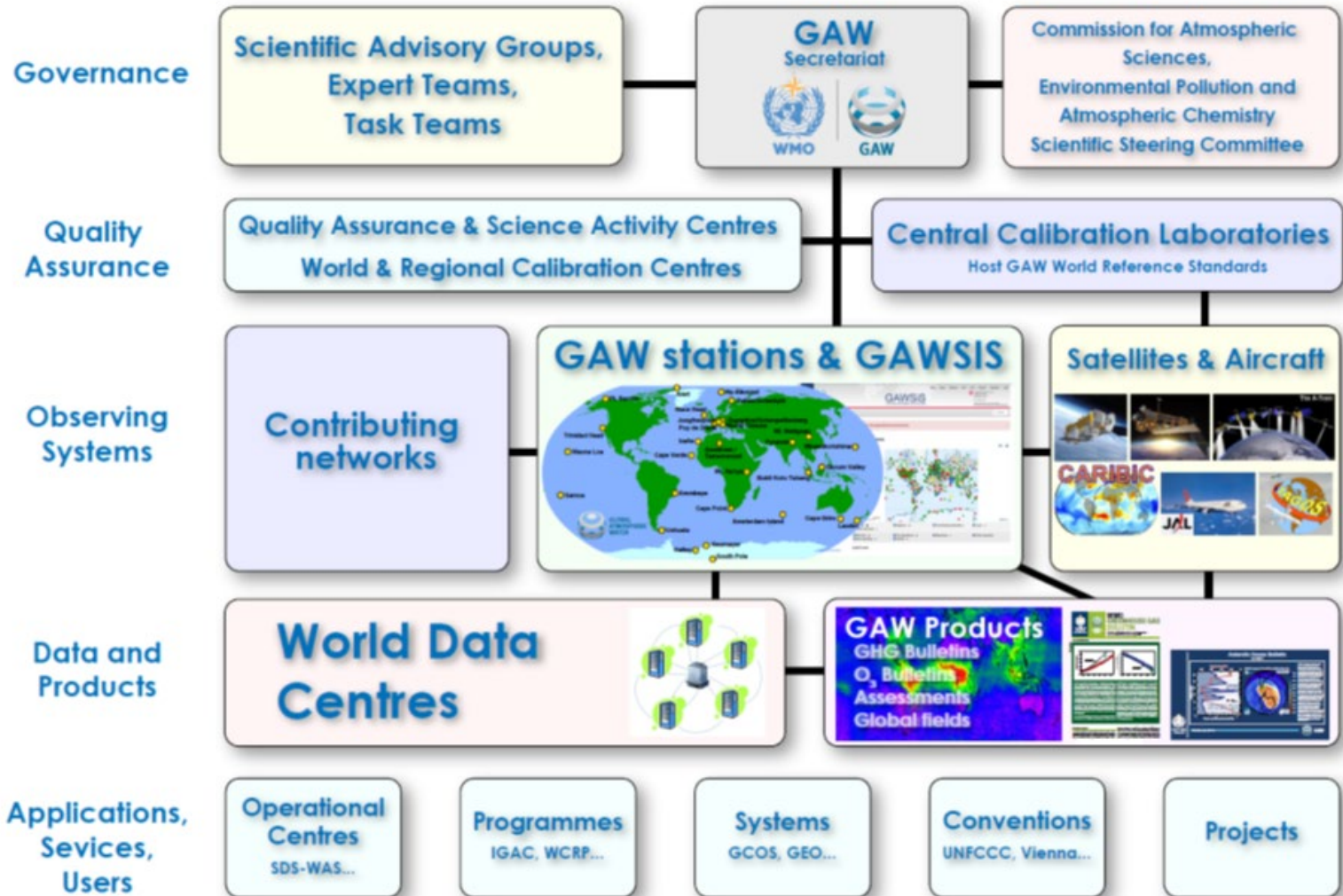


Research Board

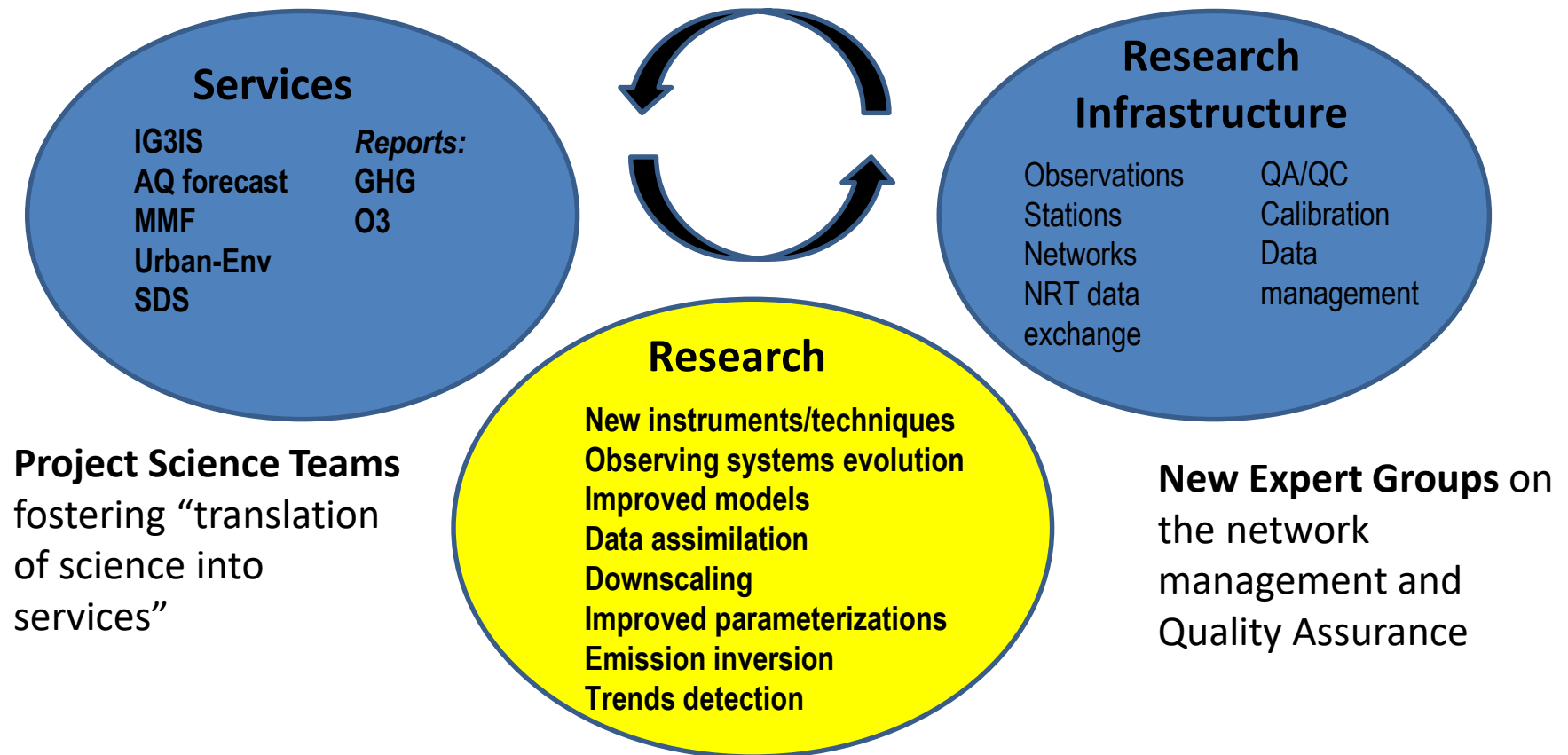
1. Advance knowledge of the Earth System (fundamental knowledge development)
2. Advance policy relevant science (where some interaction with TCs happens)
3. Enhance connections between the science and the services through the value chain approach (where most of the interaction with other TCs will happen)



Current organization of GAW



GAW Program Elements: Aligning with new WMO structure



Cross-cutting thematic projects to develop new services :

- Integrated Global Greenhouse Gas Information System - IG³IS (support of climate services)
- Measurement-model fusion for total atmospheric deposition (support of the ecosystem assessment and food security)
- Global Air Quality Forecasting (support of the health sector)
- Contribution to the integrated urban service



Updates on the IG³IS activities



- Mario Peiro started as a new associated project officer on 15 February 2019
- Presentation of IG³IS at COP-24 (side event)
- IG³IS was included in the agreement between WMO and Green Climate Fund
- IG³IS was mentioned as a framework to improve estimates of GHG concentrations and fluxes by the 50th session of Subsidiary Body for Scientific and Technological Advice (SBSTA,) and in the 2019 Refinement to the 2006 Guidelines for National Greenhouse Gas Inventories adopted and accepted during the 49th Session of the IPCC in May 2019 (Volume I, Chapter 6)

IG³IS Symposium and User Summit, 13-15 November 2018, Geneva

More than 60 attendees from 24 countries, including scientists, national stakeholders and private sector representatives.



2019 Expert Meeting on MMF-GTAD



Held at WMO, Geneva on 26 and 27 February 2019

Objectives:

- Updated knowledge of stakeholder activities/needs, the state of global measurement databases, the state of MMF-related science including chemical transport modelling activities (global and hemispheric), global reanalysis activities and measurement-model fusion/mapping activities
- A reality check on the suitability of the 3 goals and other key recommendations from the 2017 Workshop
- Updated realistic goals and a path forward for the Global MMF-GTAD Project
- Development of the Project's Implementation Plan
- Development of strategies to obtain the necessary funds to finance the project's objectives

MMF-GTAD Project: Goals

- ✓ Agreement to establish a formal WMO/GAW MMF-GTAD Project , with initial focus on S, N and O₃.

- ✓ A plan for a three-goal project:

Goal 1a (Short Term) MMF of existing 2010 ensemble global model results with existing data sets (e.g. HTAP).

Product: comprehensive data set and model ensemble output files and gridded MMF maps

Goal 1b (Medium Term) “Stitching” together existing and new national/regional/global MMF-TAD maps (AQMEII, TFMM, Asia, Canada, USA, UK, Sweden, Norway) to produce global maps

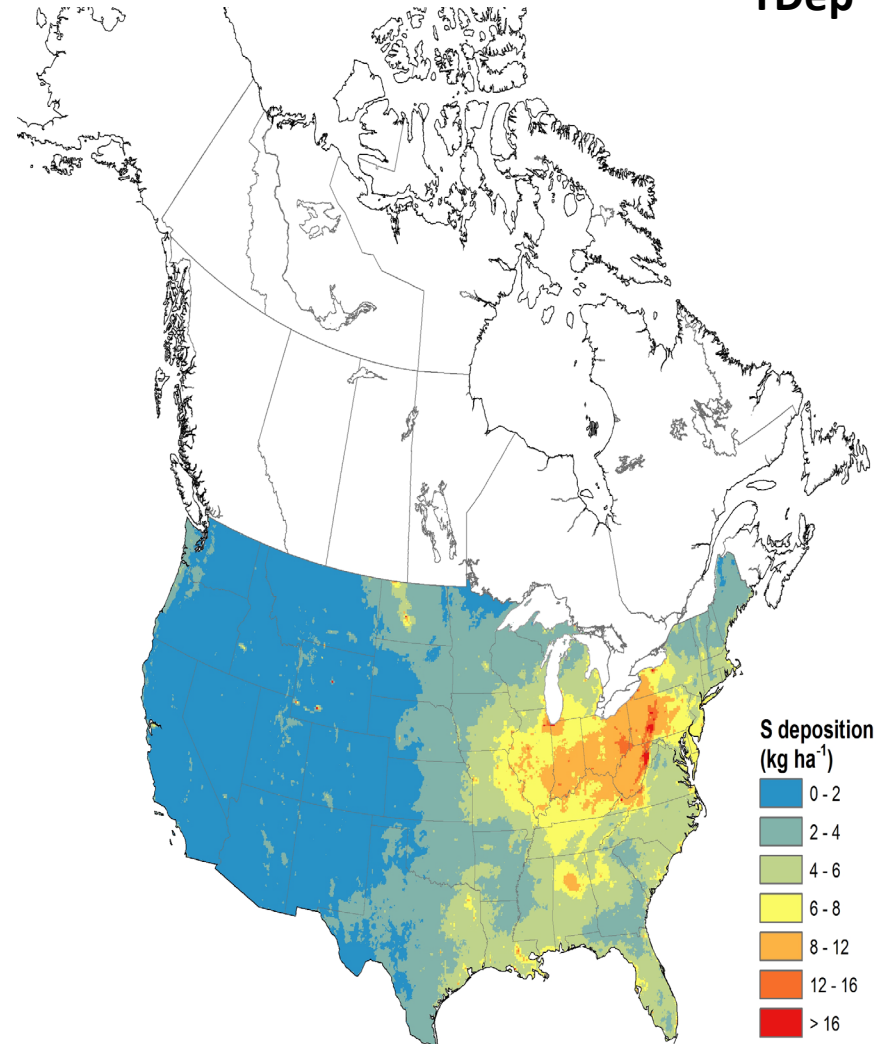
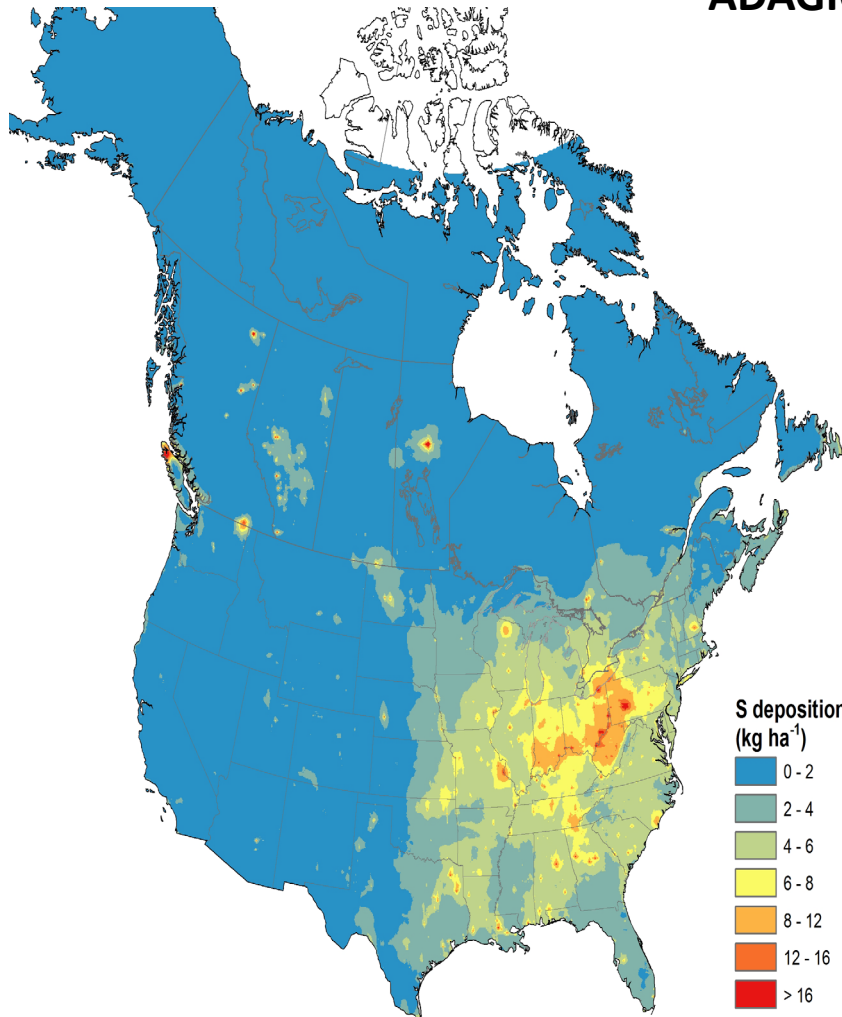
Goal 2 (Long Term) Ongoing operational/semi-operational re-analysis using data assimilation (ECMWF/Copernicus)

Regional MMF maps: ADAGIO and Tdep, S deposition



ADAGIO

TDep



Schwede, D., A. S. Cole, R. Vet, G. Lear. Ongoing US-Canada collaborations on nitrogen and sulfur deposition, Environmental Management, June 2019 (anticipating...)

SDG 3: Ensure healthy lives and promote well-being for all at all ages



Joint WHO and WMO Health, Environment, and Climate Action Plan

MoU between WMO and WHO was signed in May 2018

Agreed to develop **5 year Joint Workplan on Climate, Health, Environment**, and inform proposals for Integrated Health Services to WMO Congress-18

Objective: Enhance capacity building, technical support, and coordination for WHO and health partners to co-develop, access and use climate, weather, and environmental information.



Health Needs for Data Services,
Research, Operational Services span
four thematic areas:

Climate and Climate Services

Air Pollution

Extreme Weather

Water

Two geographic focus areas of
common interest:

- i) **small island developing states**
- ii) **urban areas**

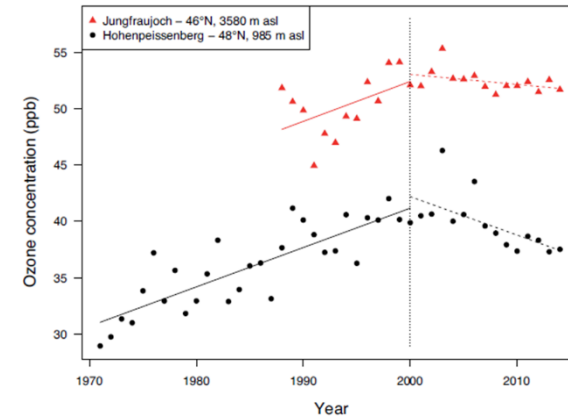


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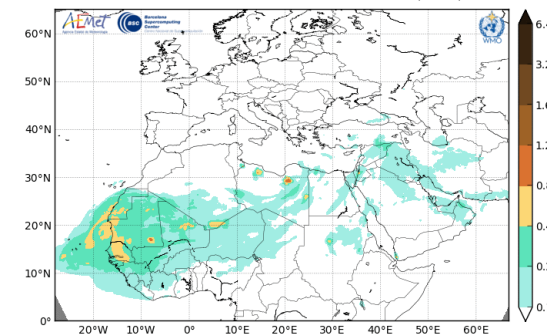
WMO commitments at the First WHO Global Conference on Air Pollution and Health

- providing scientific basis for policy-making and evidence-based monitoring of pollution via enhancing observations and communication, assessments and reports;
- providing tools to reduce risk via forecasts, warning and advisory services (including integrated urban and health services);
- enhance the capacity of the countries to support health sector in close collaboration with WHO


Development of the Global Air Quality Forecasting Services was initiated to support these commitments



Barcelona Dust Forecast Center - <http://dust.aemet.es/>
NMMB/BSC-Dust Res:0.1°x0.1° Dust AOD
Run: 12h 24 OCT 2018 Valid: 12h 24 OCT 2018 (H+00)

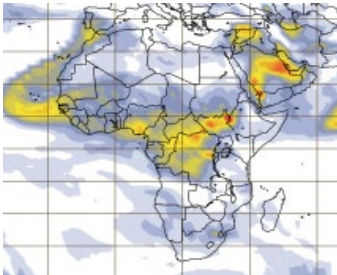


Towards Integrated Air Quality Forecast Systems in Africa

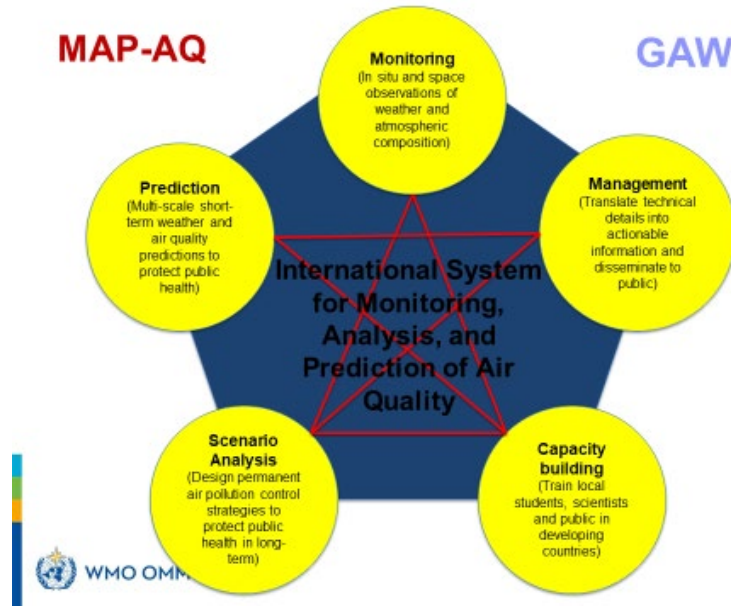


World Meteorological Organisation (WMO)
Global Atmosphere Watch (GAW)

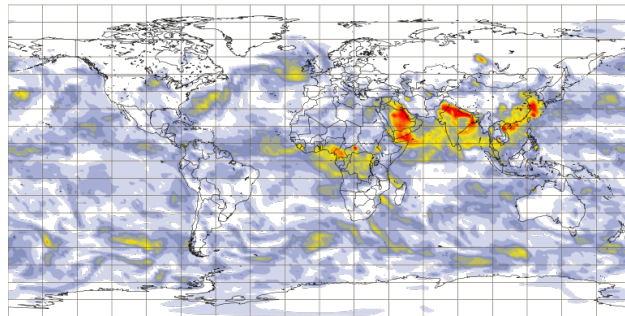
WMO Report on
International Workshop
"Seamless Prediction of Air Pollution for Africa:
from Regional to Urban"



March 2018



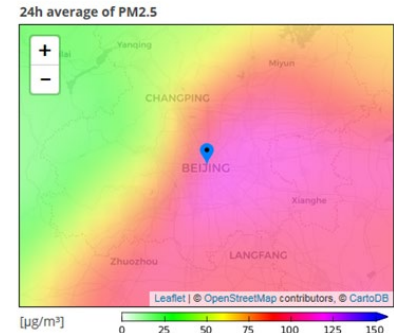
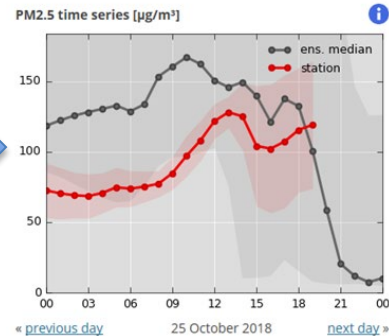
The workshop of the project and related air quality modelling training will take place in October in Nairobi



CAMS global forecast



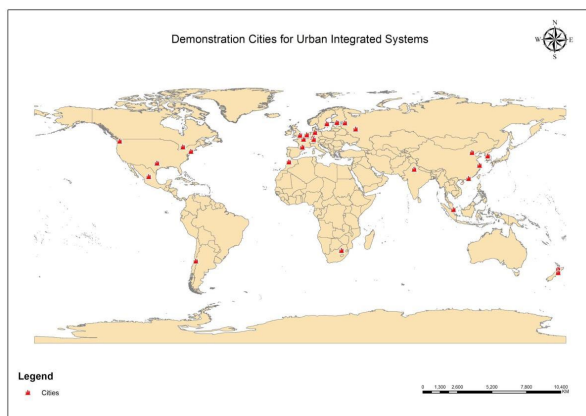
Air Quality Forecast for Beijing



MAP-AQ project forecast for China cities:
<http://www.marcopolo-panda.eu/forecast/>

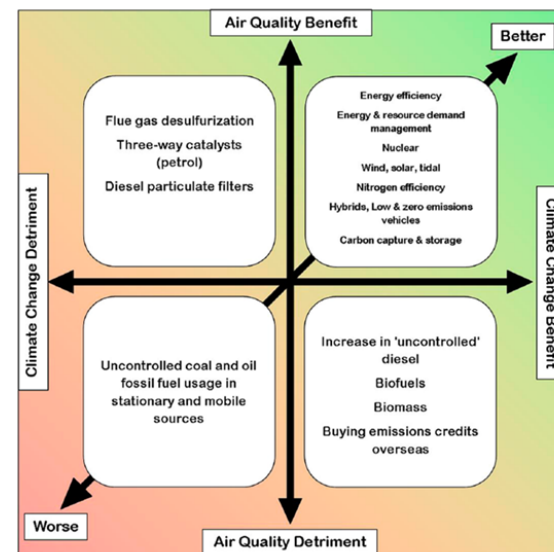
Integrated Urban and Health Services

- Cg-18 adopted resolutions on integrated urban and health services that articulate the need for the development of the framework within WMO and with the external community that would allow for development and delivery of these type of services



- Guidance on Integrated Urban Hydrometeorological, Climate and Environment Services, Volume II: Demonstration Cities was finalized

- WMO-WHO 5 year joint plan of work was adopted
- Air Quality and Climate connection was **included** as one of the sidebars in the recent WMO Climate Statement



Publications and capacity development

- **Second WMO Reactive Gases Bulletin highlights tropospheric ozone**

Main UN account, with 10 million followers also tweeted the ozone pollution report, with a link directly to our press release.

35th GAWTEC session , 7 - 20 October 2018: on reactive gases

36th GAWTEC session (Aerosols), 30 March- 13 April 2019, Schneefernerhaus, Zugspitze, Germany



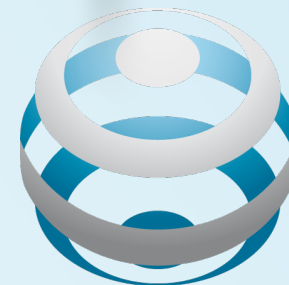
Thank you! Merci!

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TEMPS CLIMAT EAU



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**GLOBAL
ATMOSPHERE
WATCH**