Global Atmosphere Watch (GAW) Programme

and how its activities are contributing with climate research

WEATHER CLIMATE WATER
TEMPS CLIMAT EAU

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Scientific Officer
Science and Innovation

On behalf of GAW: Greg Carmichael (Chair) and WMO-GAW team

WRCP Meeting, Brussels, 11 May 2023

WMO OMM
World Meteorological Organization
Organisation météorologique mondiale

Global Atmosphere Watch (GAW)

Research Enabling Atmospheric Composition Services

*Advance and enhance **science, services and infrastructure** related to atmospheric composition, and support policies for society through applied research aimed at improving the understanding of the roles of aerosols, reactive gases, stratospheric ozone and greenhouse gases and their interactions in the Earth System.*

Drivers: Global societal needs

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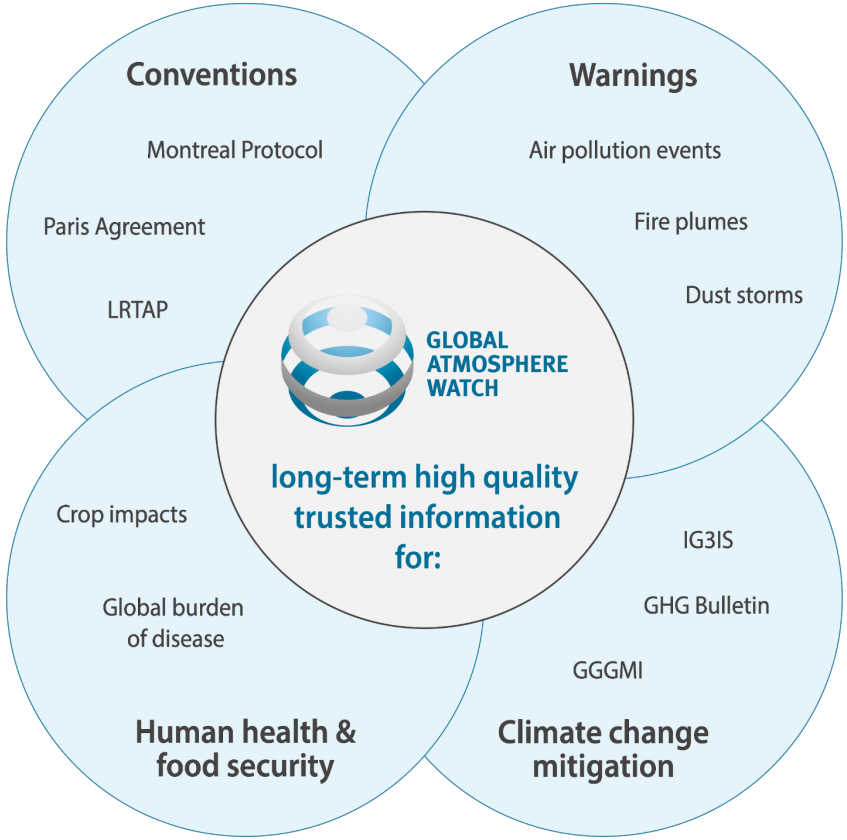
Global Atmosphere Watch (GAW)

- *Based on partnerships involving contributors from **100 countries** (including many contributions from research community)*
- *Maintains and applies **long-term systematic** observations of the chemical composition and related physical characteristics of the atmosphere*
  - *Emphasizes **quality assurance and quality control***
- *Delivers integrated products and services of relevance to society.*



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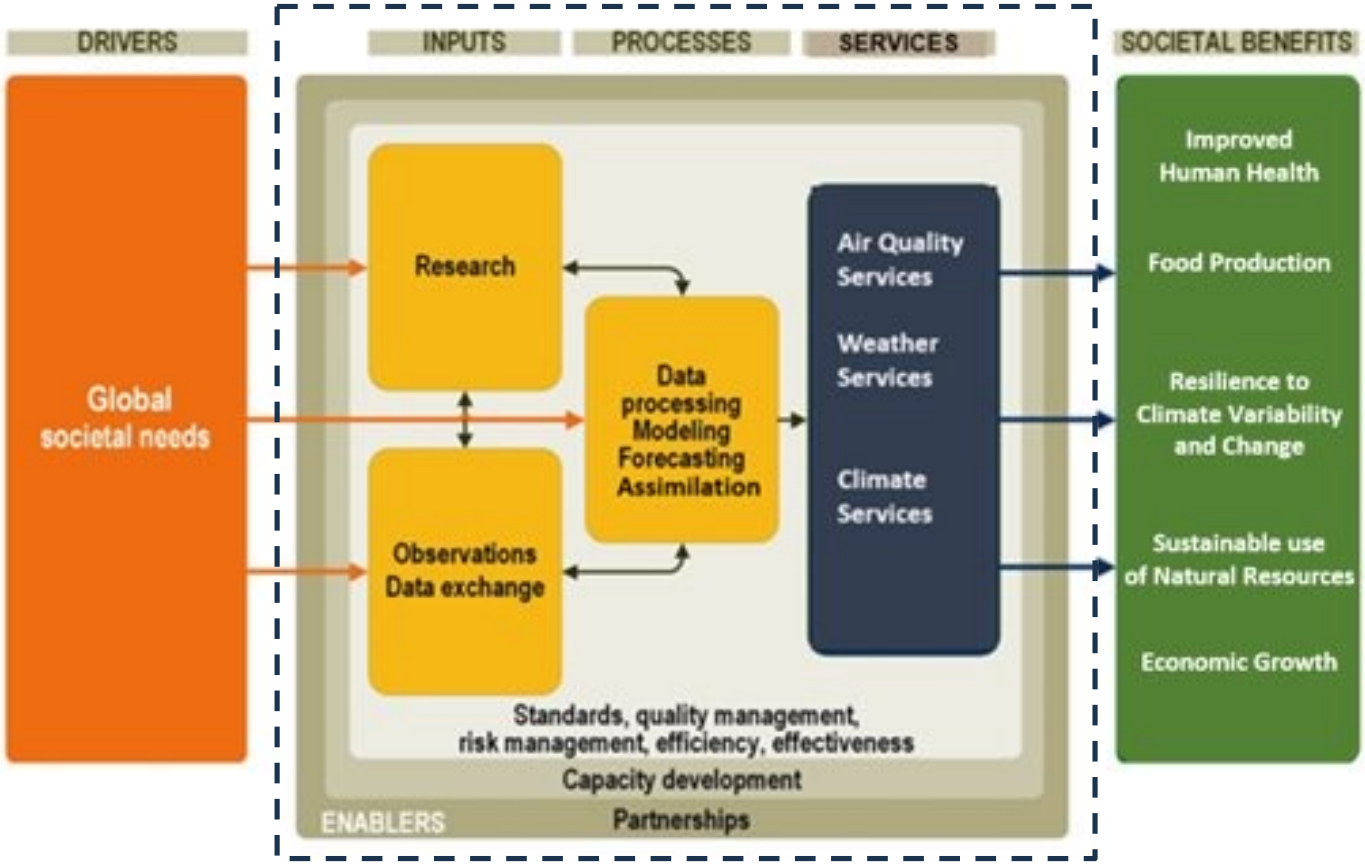
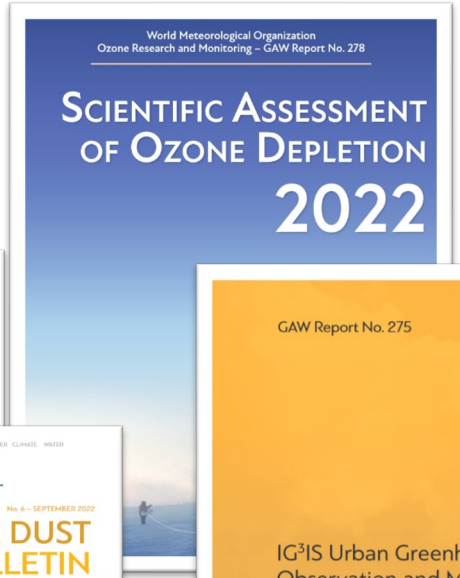
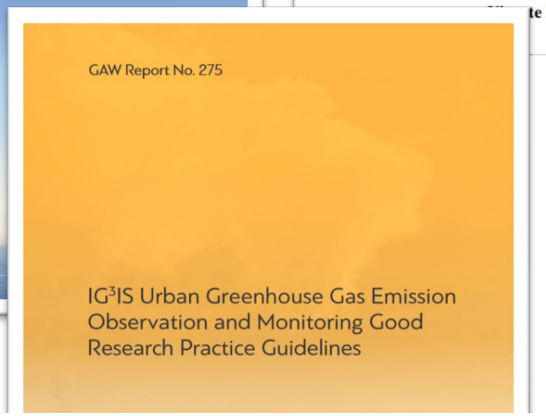
Global Atmosphere Watch (GAW)

Achieving a comprehensive atmospheric composition observing and analysis infrastructure by closely linking operations and research



GAW Achievements

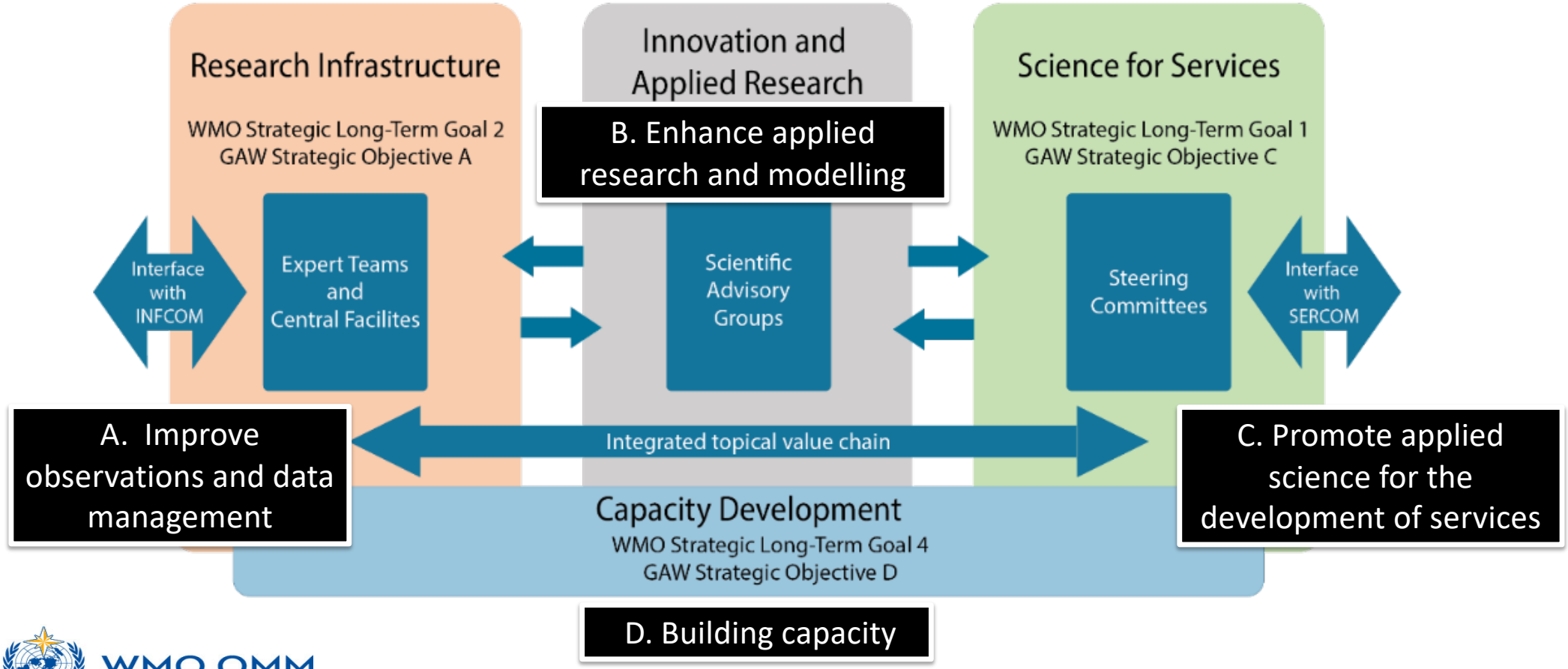




WMO

GAW SIP 2024-2027 Strategic Objectives

Aligned explicitly with new WMO strategic plan



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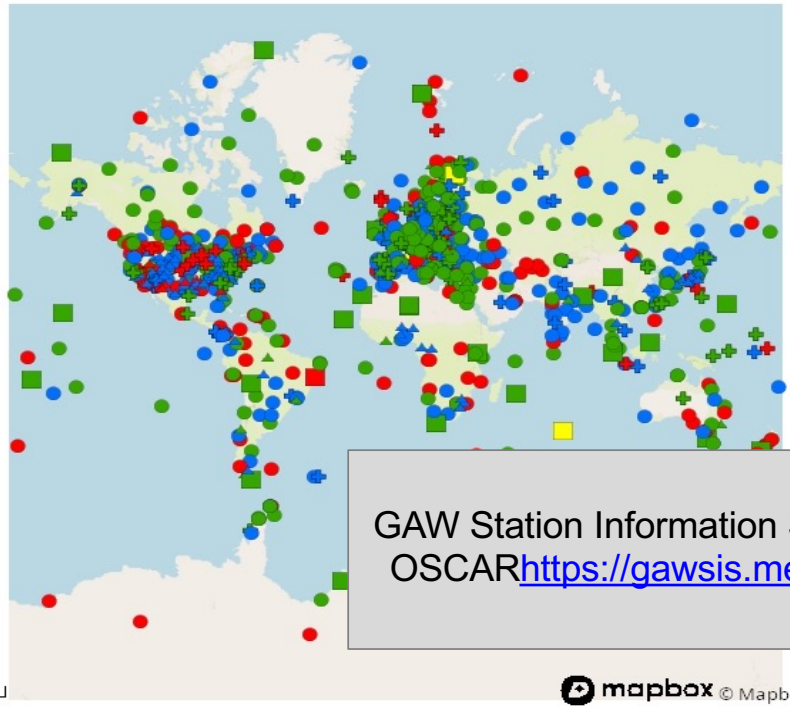
GAW: Observational (research) Infrastructure

Strengthen the atmospheric composition measurement and data infrastructure and contribute to ***understanding trends and variability and extremes.***

- More than 200 parameters
- Intercomparisons
- Measurement guidelines
- World Data Centers



Filling gaps:
LCS and satellites

GAW Station Information System (**GAWSIS**) part of OSCARhttps://gawsis.meteoswiss.ch/GAWSIS/#/

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Confederation

Federal Department of Home Affairs FDHA
Federal Office of Meteorology and Climatology MeteoSwiss

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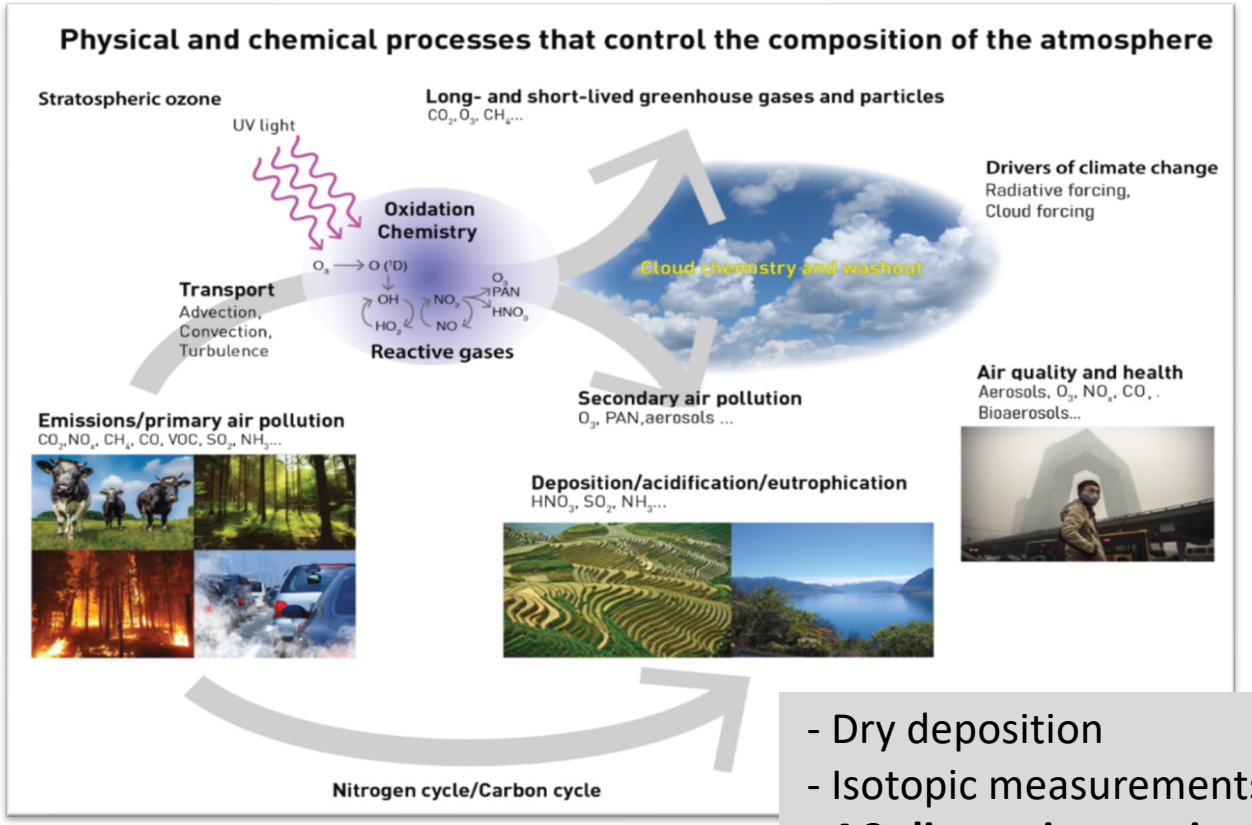
GAW: Innovation and Applied Research

Improve predictive capabilities and analysis through applied research aimed at advancing the understanding of the roles and fate of ***aerosols, reactive gases, stratospheric ozone and greenhouse gases and their interactions*** *in the Earth System.*



- Dry deposition
- Isotopic measurements
- **AC climate interactions**
- Inverse modeling

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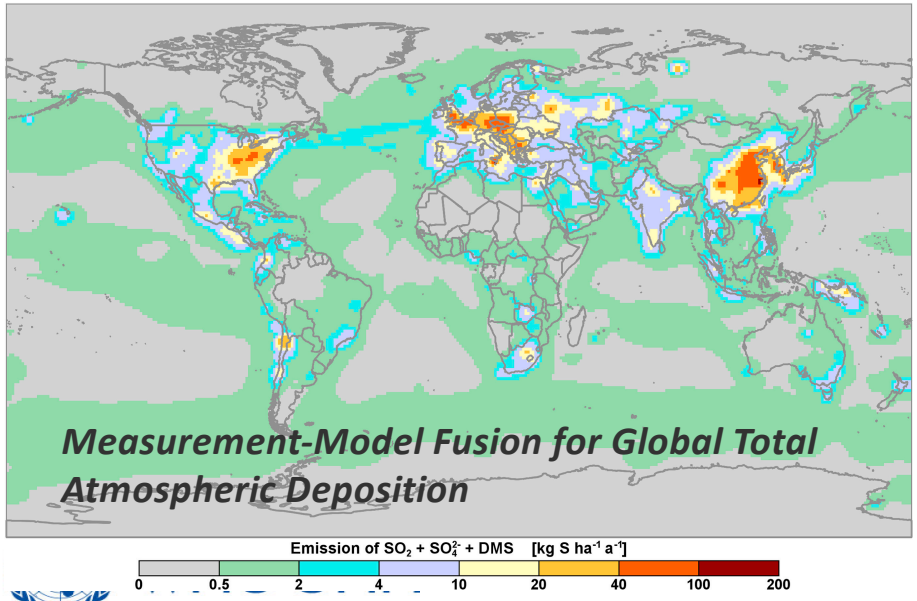
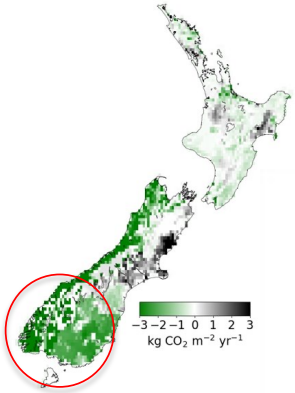
GAW: Science for Services

*Advance the application of atmospheric composition information in support of policies and conventions, and expand societal services related to air quality, human and ecosystem health, **climate change** and food production.*

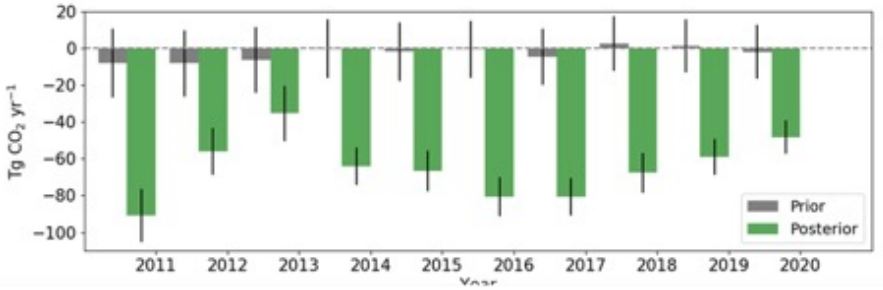
Deposition to ecosystems and crops + climate action



Measurement-Model Fusion for Global Total Atmospheric Deposition



Integrated Global Greenhouse Gas Information System



Aotearoa New Zealand's terrestrial carbon uptake

GAW: Science for Services

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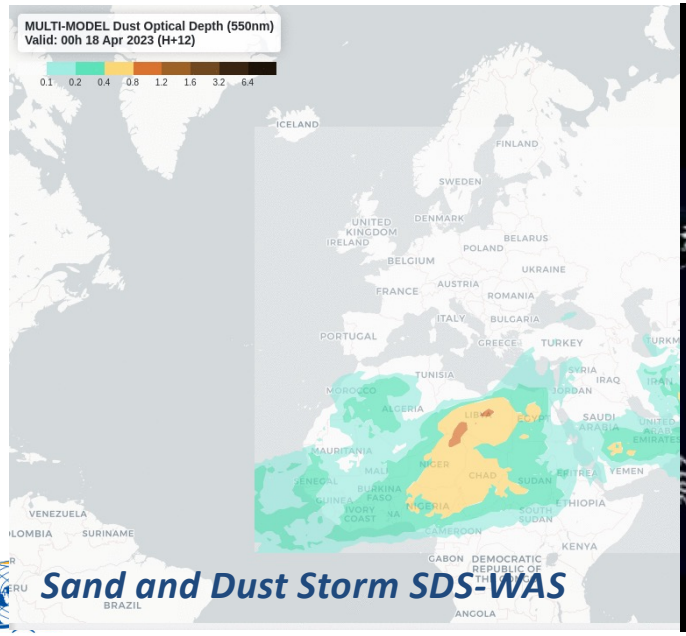
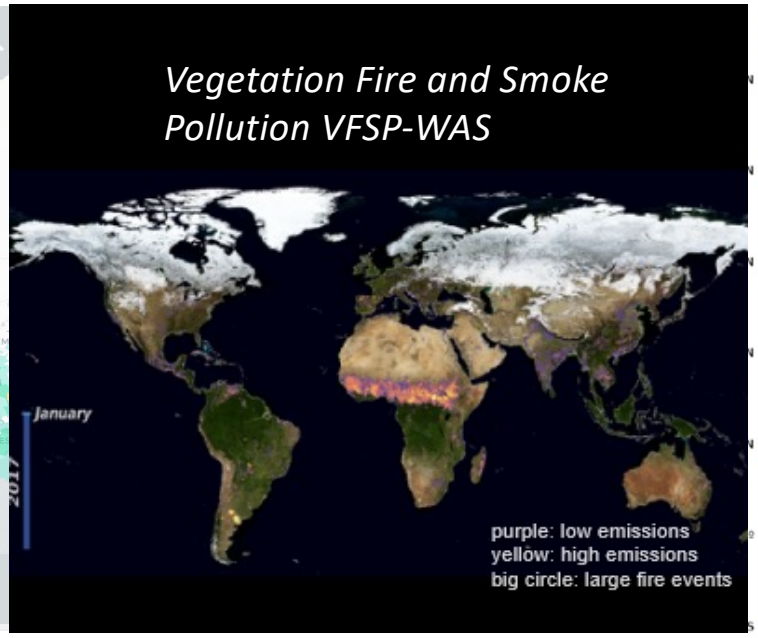
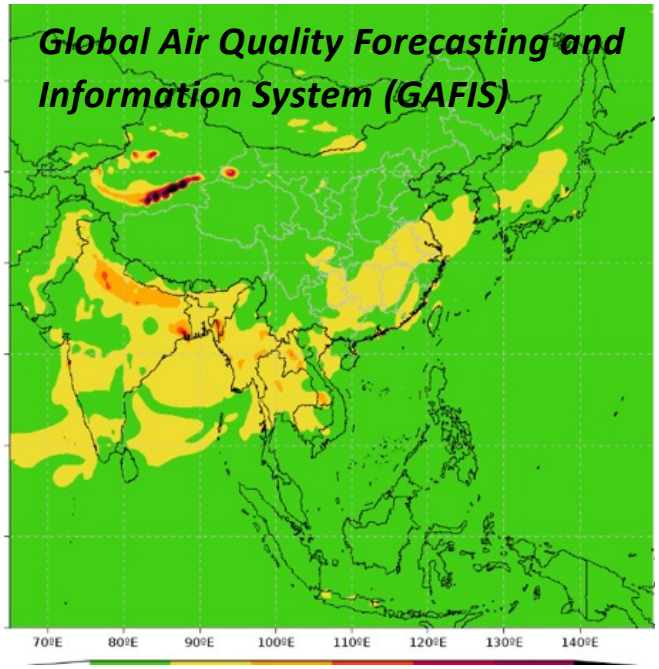
Warnings and Air Quality Services
Model intercomparisons



Sand and Dust Storm SDS-WAS



Vegetation Fire and Smoke Pollution VFSP-WAS



Global Air Quality Forecasting and Information System (GAFIS)

GAW: Capacity Building

Enhance capacity throughout the GAW programme and promote the use of atmospheric composition information.

- *Advocate for the importance of GAW observations, products and services and develop capacity across all levels: from leaders to the youngest.*
- *Extend training capabilities in the regions.*
- *Intensify the use of modern communication technologies to complement in-person and on-site training.*
- *Join forces for capacity building, within WMO, within the UN Organizations and beyond UN.*

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GAW and WRCP connections

Chemistry and Climate

Ozone Depletion

Carbon cycle

Aerosol optical properties – Direct Radiative Forcing

- *Dust Minerology and its role in Climate*
  - *EC-EARTH, ERC FRAGMENT links with NASA EMIT*

Aerosol-cloud-interactions

Ocean Geochemistry – Deposition

- *GESAMP and DOMOS*

WCRP World Climate Research Programme

SPARC Stratosphere-troposphere Processes And their Role in Climate

CLIVAR

Earth System Modelling and Observations (ESMO)
Coupled Modelling (WGCM)

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WEATHER CLIMATE WATER
TEMPS CLIMAT EAU

We looking for enhancinin collaboration
and promote more synergies between us

Thanks for your attentions

https://community.wmo.int/en/activity-areas/gaw

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