The Bureau of Meteorology

The WMO Global Atmosphere Watch Ozone Observing System

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WMO/UNEP Ozone Research Managers of the parties to the Vienna Convention for the Protection of the Ozone Layer

Twelfth Meeting Geneva, 24-26 April 2024

Outline

- Background
- Status of networks
- Dobson calibration
- Some recent highlights

Part 1 - Background

Vienna Convention

Article 3: Research and systematic observations

2.The Parties undertake to promote or establish, as appropriate, directly or through competent international bodies and taking fully into account national legislation and relevant ongoing activities at both the national and international levels, joint or complementary programmes for systematic observation of the state of the ozone layer and other relevant parameters, as elaborated in annex I.

Annex I (d)
Systematic observation on:

The status of the ozone layer (i.e. the spatial and temporal variability of the total column content and vertical distribution) by making the Global Ozone Observing System, based on the integration of satellite and ground-based systems, fully operational;

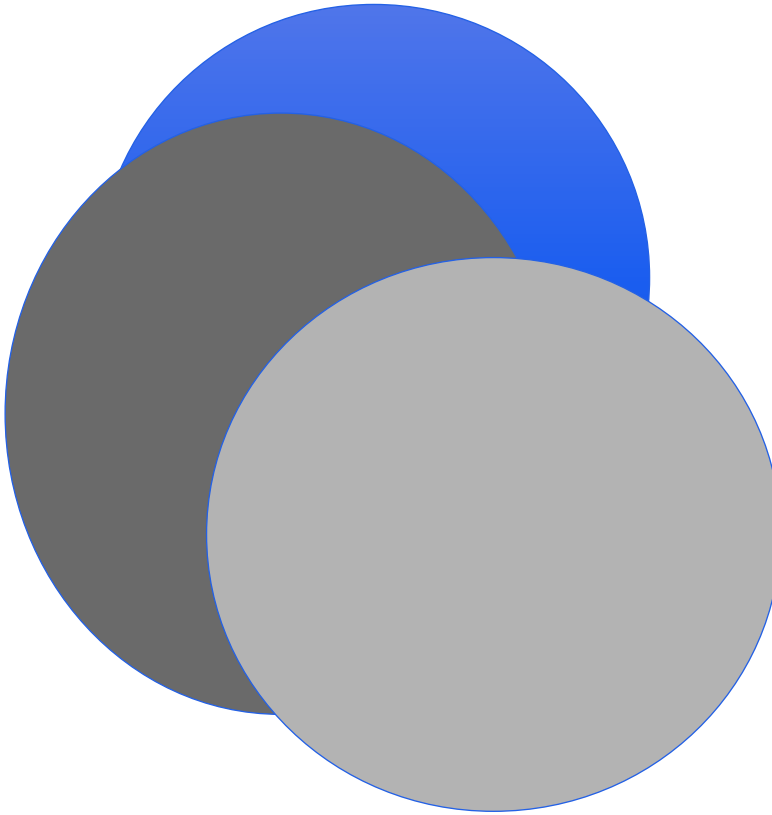
Global Atmosphere Watch (GAW)

- The Global Ozone Observing System (GOOS) developed in the years around the International Geophysical Year (1957) when WMO took on the role of encouraging expansion of the fledgling Dobson network, as well as the standardisation of observations and the central collection of data.
- Since 1960, the World Ozone & Ultraviolet Data Centre has been hosted by Environment & Climate Change Canada
- In 1987, the GOOS was merged with the Background Air Pollution Monitoring Network (BAPMoN) to form Global Atmosphere Watch (GAW).
- Stratospheric Ozone & UV are only one focus area in GAW these days

Part 2 – Status of networks

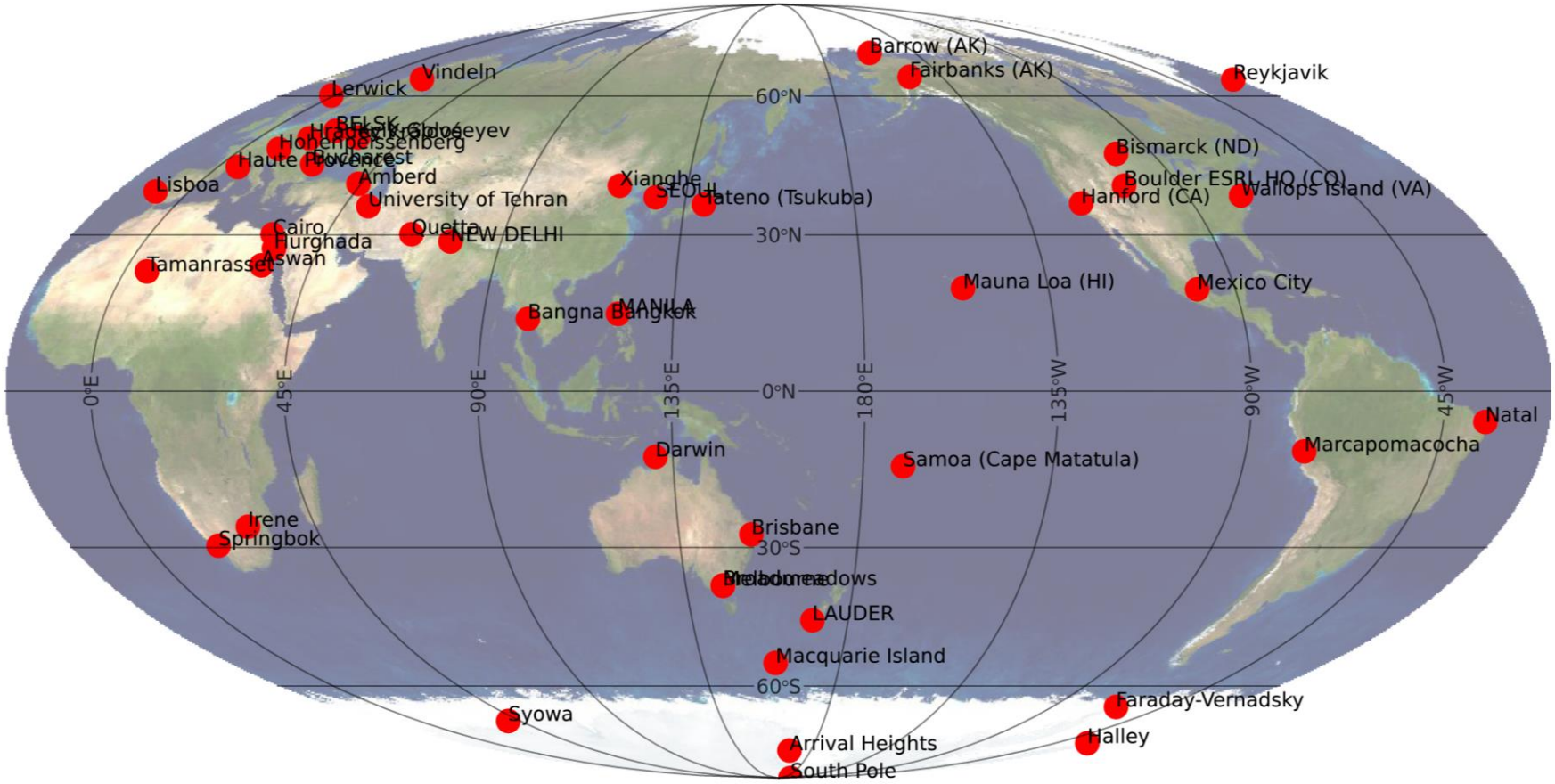
Multiple overlapping networks

- Dobson **(GAW, NDACC)**
- Brewer **(GAW, NDACC, EUBrewNet)**
- Ozonesonde **(GAW, NDACC, SHADOZ, NOAA-GML, GRUAN)**
- SAOZ **(GAW, NDACC)**
- LIDAR, FTIR, DOAS (primarily **NDACC)**



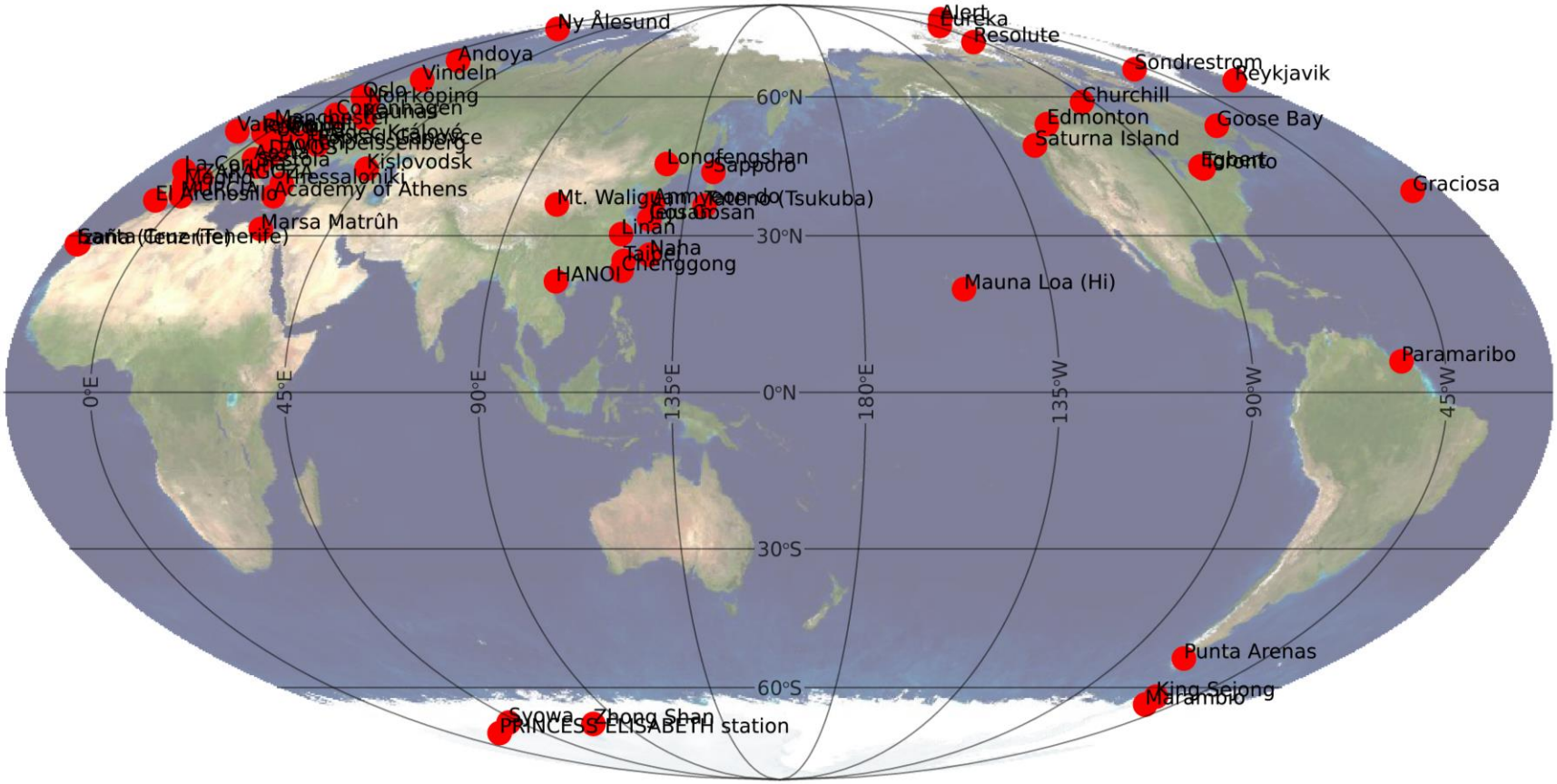
- Relations between networks are generally very friendly and collaborative but difficulties still remain for both data providers and data users

Dobson data at WOUDC (2020-2024)

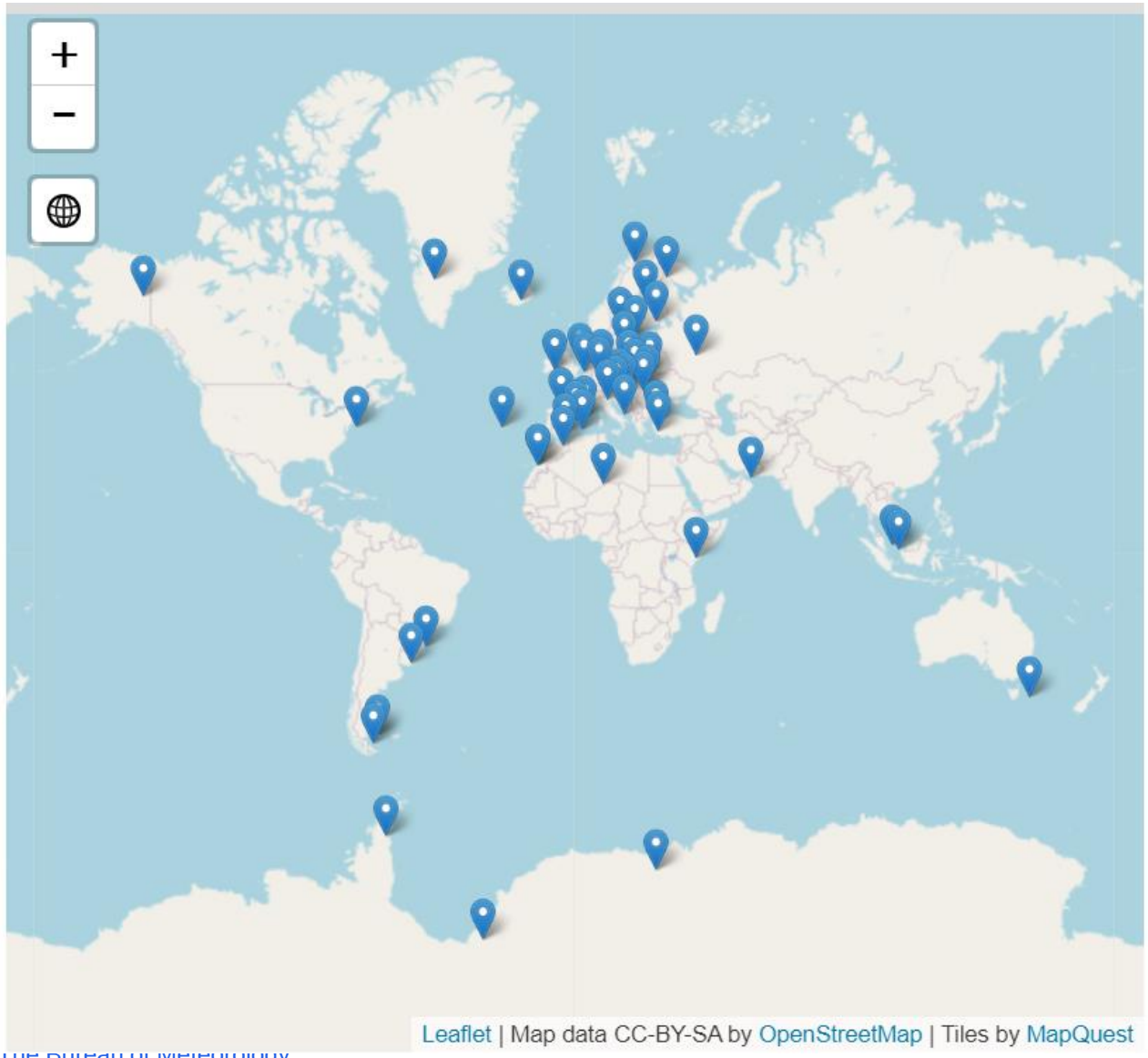


Japan - Some Dobsons replaced by Brewers from 2018. Athens working with WMO to re-start operations. Argentina – 4 stations haven't submitted data for the last few years. Caribou (USA) not currently operating

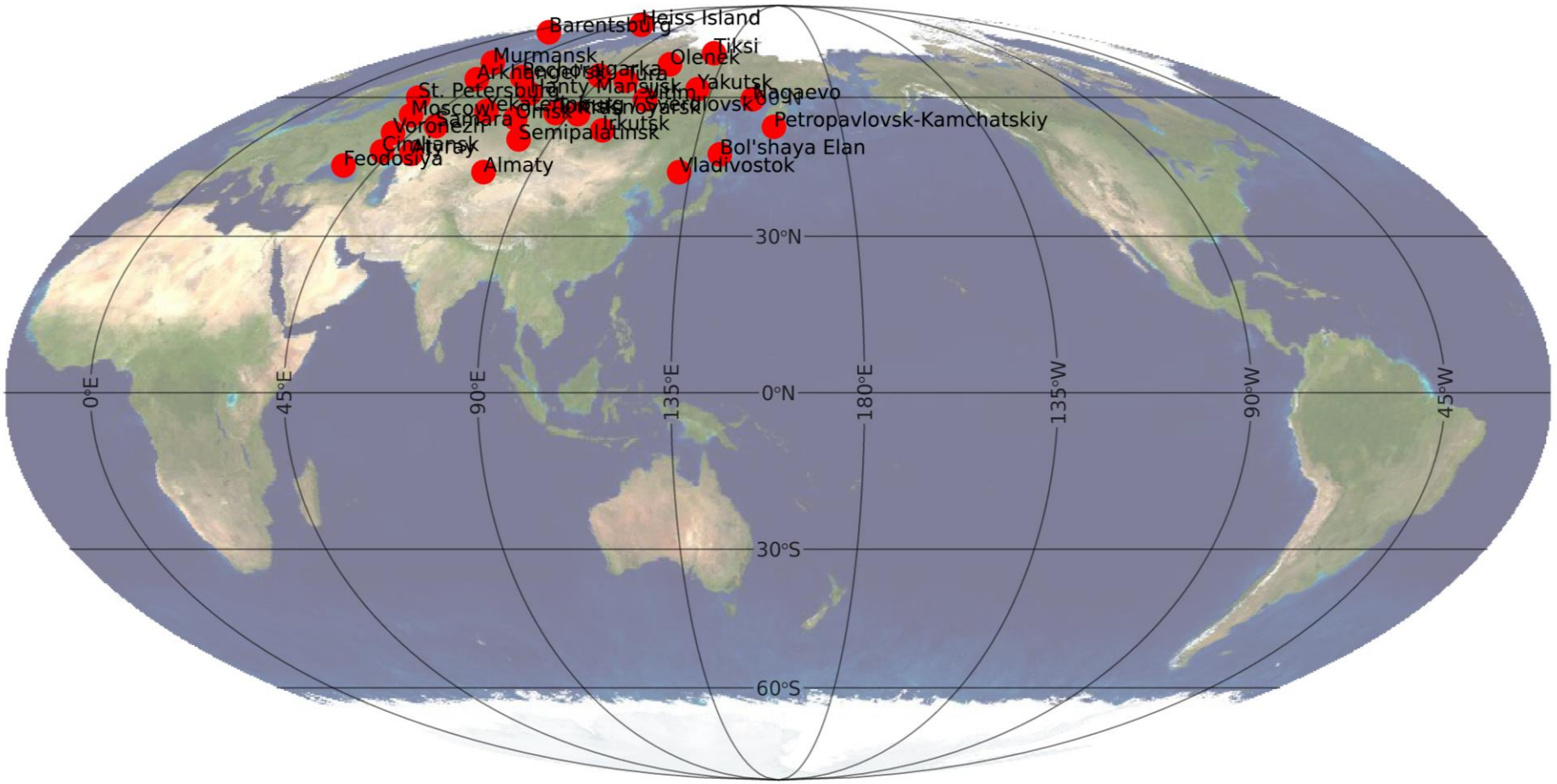
Brewer data at WOUDC 2020-2024



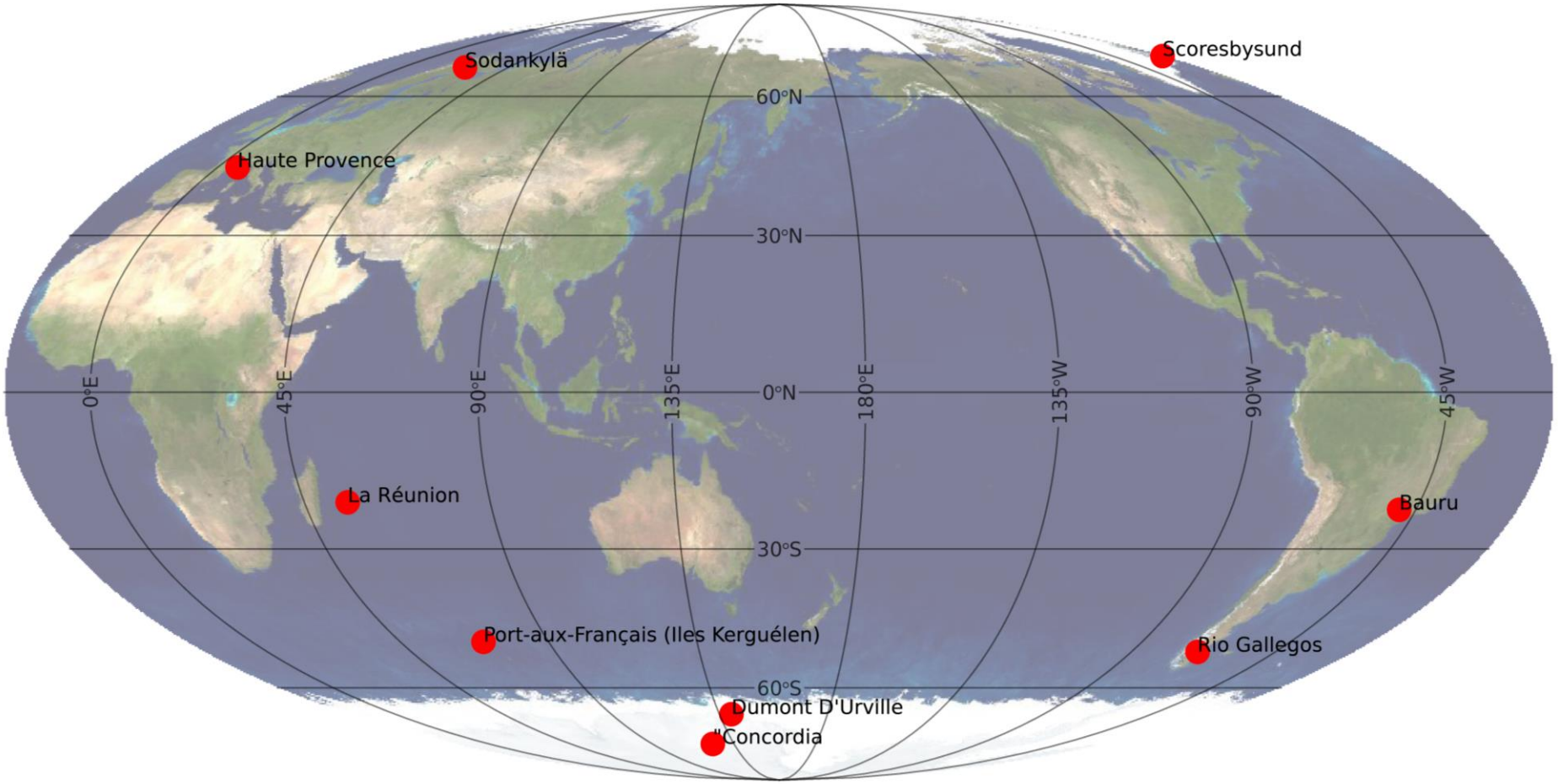
EUBREWNET sites discoverable at WOUDC



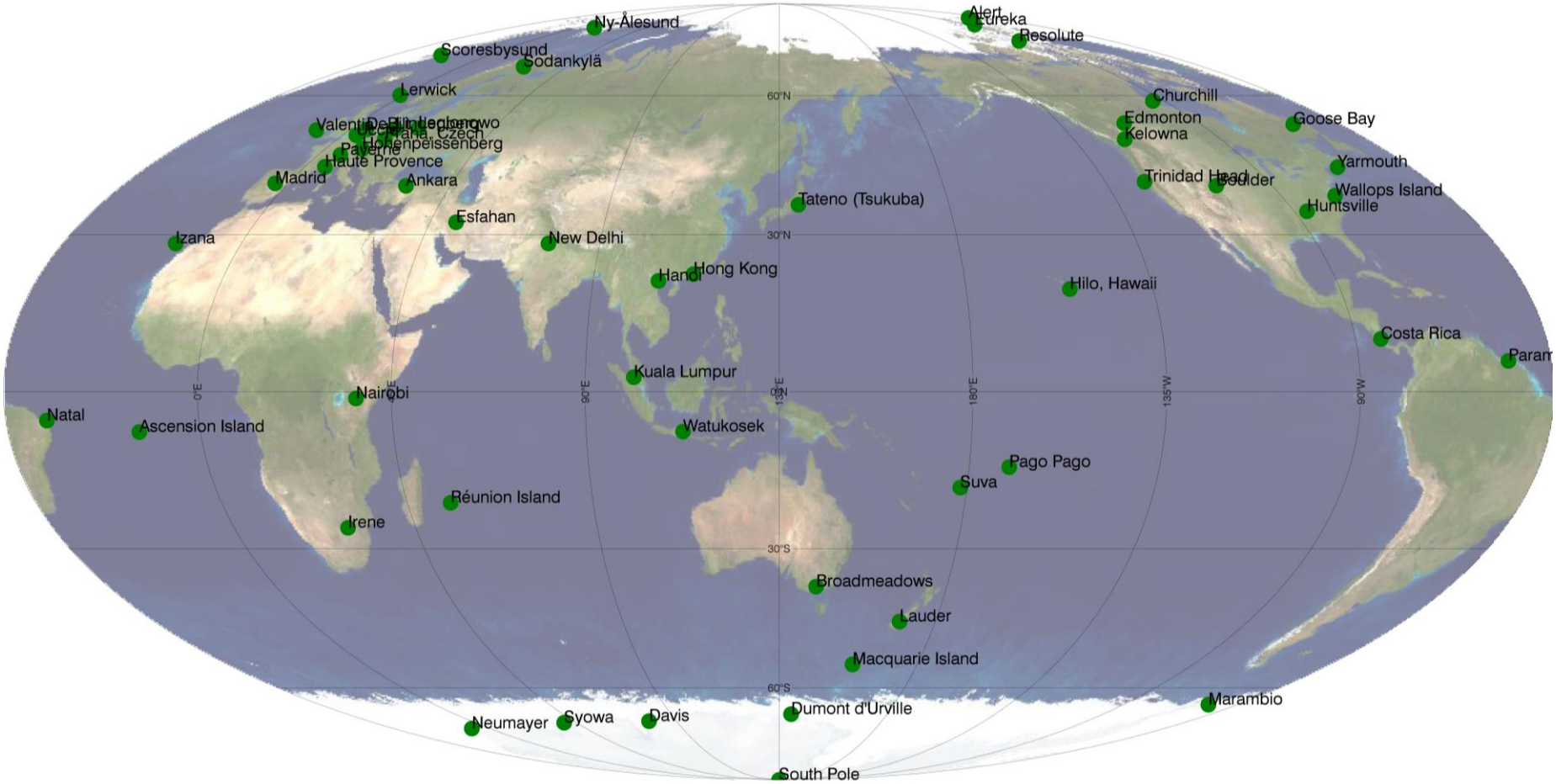
Filter data at WOUDC 2020-2024



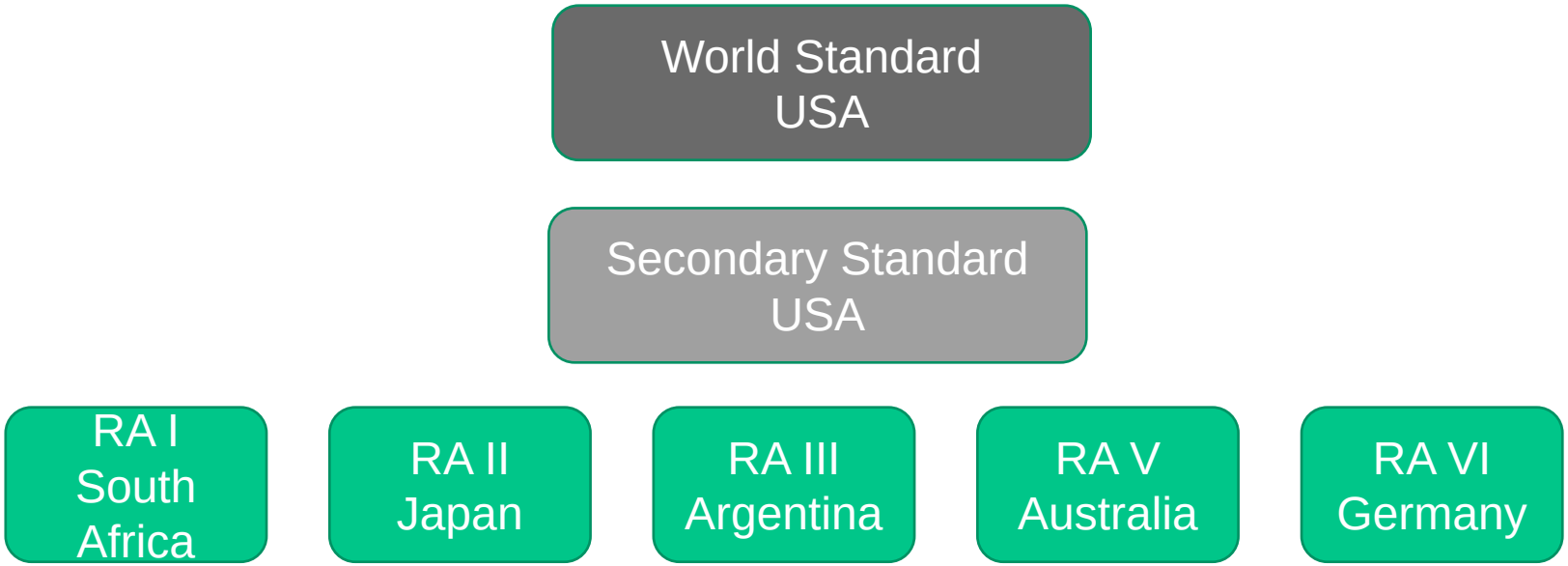
SAOZ data at WOUDC 2020-2024



Estimate of active Ozonesonde sites (WOUDC+NDACC+SHADOZ+NOAA)



Part 3 - Dobson calibrations



Regional Dobson Calibration Centres *should be a resource for instrument operators in their Region but not all have full capacity*

GLOBAL NETWORK INSTRUMENTS

Dobson intercomparison campaigns supported by the Vienna Convention Trust Fund for Research & Systematic Observations

2016 Tsukuba (Japan) – China, Thailand, Pakistan
2017 Broadmeadows (Australia) - Philippines
2017 El Arenosillo (Spain) – Uganda, Egypt
2019 Buenos Aires (Argentina) – Cuba, Argentina, Peru, Brazil, Mexico, Uruguay
2019 Hurghada (Egypt) - Egypt
2019 Irene (South Africa) - Botswana, Kenya, India

- In-kind support from World and Regional Dobson Centres
- Non-article 5 countries expected to pay their own way

- Upcoming Dobson intercomparisons are now being discussed for Africa, South America and Asia

Part 4 – Recent highlights

Implementation of new cross sections for Dobsons and Brewers incorporating stratospheric temperature

Atmos. Meas. Tech., 17, 2277–2294, 2024
https://doi.org/10.5194/amt-17-2277-2024

Atmospheric Measurement Techniques
Open Access
EGU

The transition to new ozone absorption cross sections for Dobson and Brewer total ozone measurements

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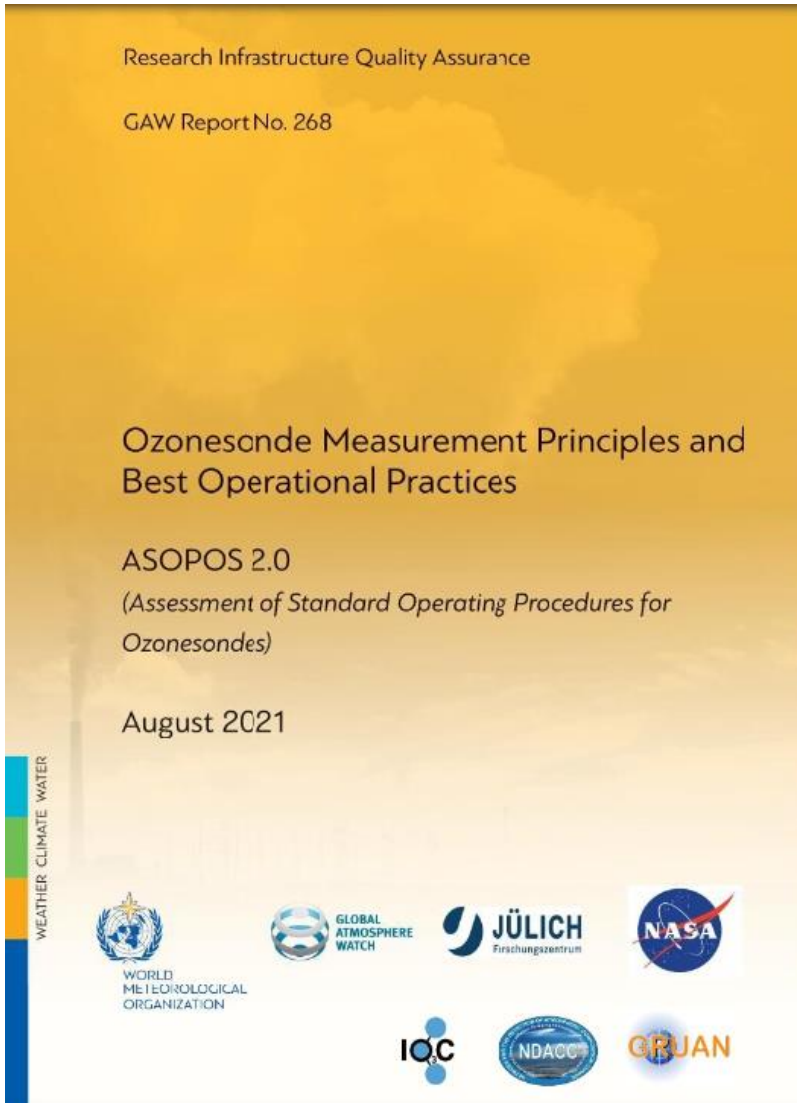
Ozonesondes – GAW Report #268 ASOPOS 2.0



New annual, global WMO Ozone and UV Bulletin

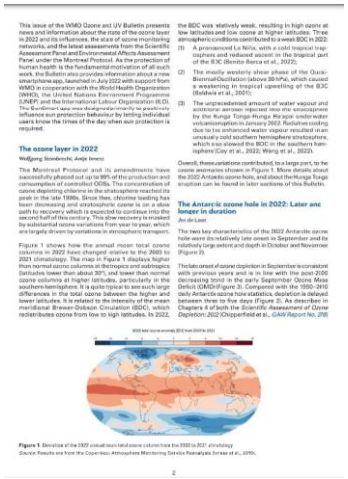

WORLD METEOROLOGICAL ORGANIZATION
GLOBAL ATMOSPHERE WATCH

No 1 – JUNE 2023

WMO OZONE AND UV BULLETIN

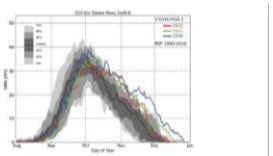
Foreword

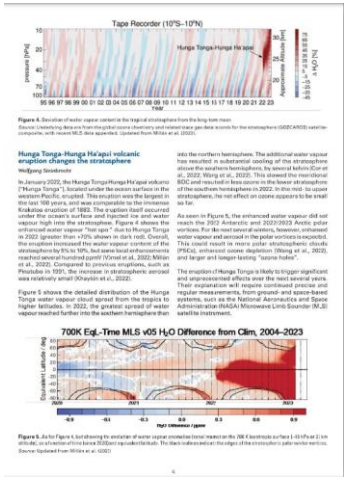
Introduction


This issue of the WMO Ozone and UV Bulletin presents news and information about the state of the ozone layer in 2022 and its influences, the size of ozone monitoring networks, and the latest assessments from the Scientific Assessment Panel and Environmental Effects Assessment Panel under the Montreal Protocol. As the protection of human health is the fundamental motivation of all such work, the Bulletin also provides information about a new smartphone app, launched in July 2022 with support from WMO in cooperation with the World Health Organization (WHO), the United Nations Environment Programme (UNEP) and the International Labour Organization (ILO). The SunSmart app was designed primarily to positively influence sun protection behaviour by letting individual users know the times of the day when sun protection is required.

The ozone layer in 2022

The Antarctic ozone hole in 2022: Later and longer in duration

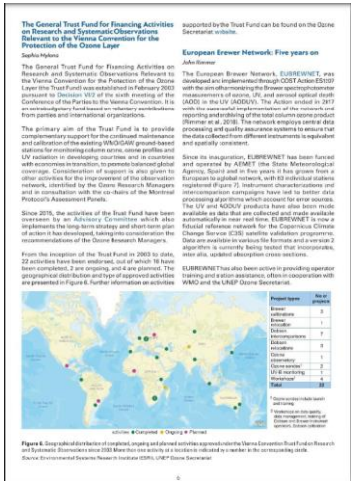




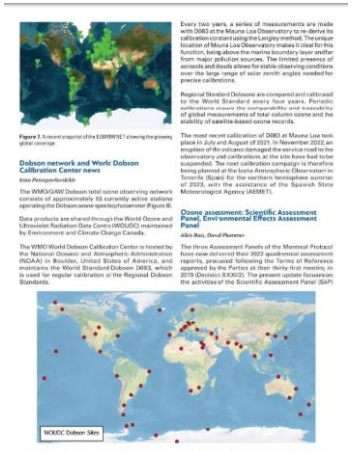
Hunga Tonga-Hunga Ha'apai volcanic eruption changes the stratosphere


The SunSmart Global UV app: Increasing UV awareness and sun protection habits across the globe using the Global Solar UV Index

Features


The General Trust Fund for Financing Activities on Research and Systematic Observations Relevant to the Vienna Convention for the Protection of the Ozone Layer

European Environment Network: Five years on


Dobson network and Work Dobson Calibration Center news

Ozone assessment: Scientific Assessment Panel, Environmental Effects Assessment Panel

The Bureau of Meteorology

Thank you

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