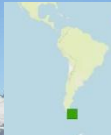


Reactive Gases in the Latin American and Caribbean Region:

A Perspective of the WMO Global Atmosphere Watch (GAW) Program

Institute for Meteorology and Climate Research, Atmospheric Environmental Research, IMK-IFU
Global Atmosphere Watch World Calibration Centre for Volatile Organic Compounds, WCC-VOC
Rainer Steinbrecher, Stephan Thiel

GAW Global Station Ushuaia, Argentina



Focal Areas

To address the needs of the Members related to the environmental issues mentioned above, GAW currently focuses on six groups of variables (also called focal areas):

- Greenhouse Gases
- Ozone
- Aerosol
- Selected Reactive Gases
- Total Atmospheric Deposition
- Ultraviolet (UV) Radiation

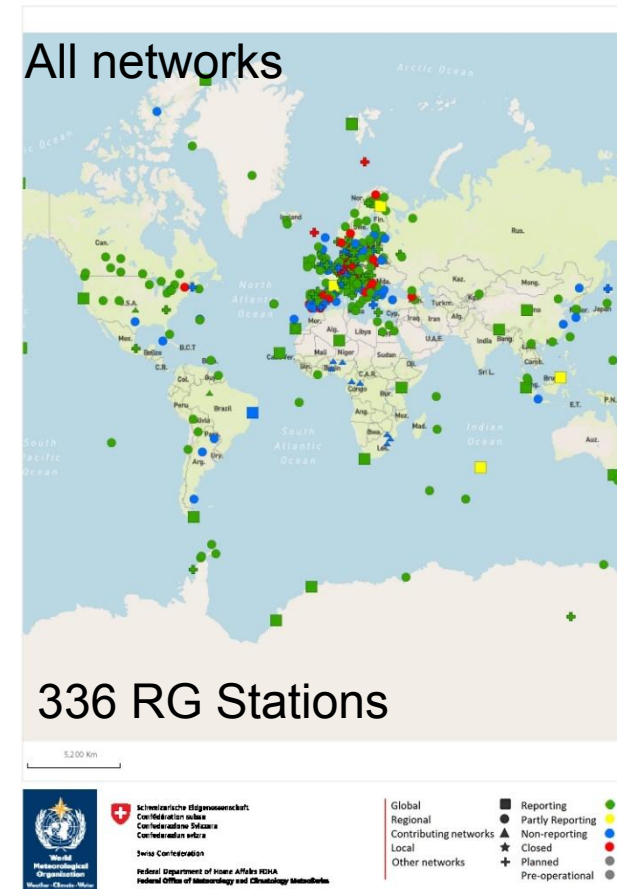
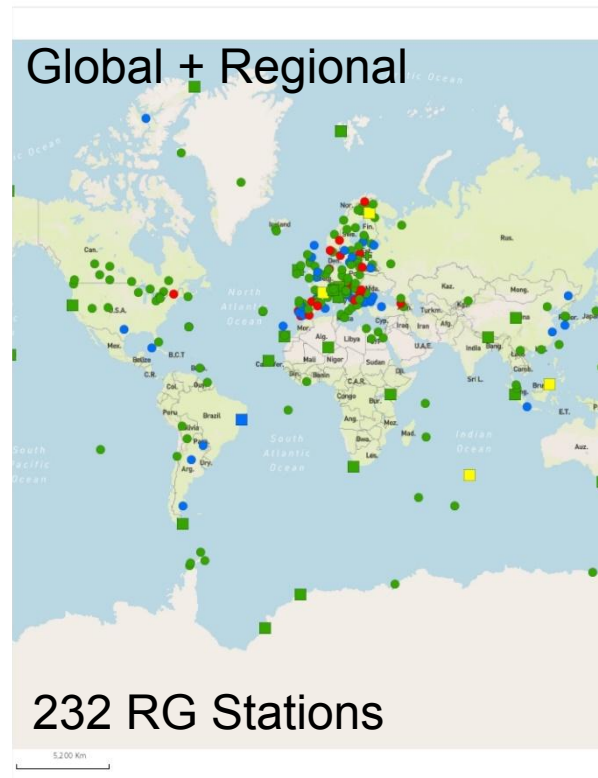
The reactive gases as a group are very diverse and include:

- surface ozone (O_3)
- carbon monoxide (CO)
- volatile organic compounds (VOCs)
- oxidised nitrogen compounds (NO_x , NO_y)
- sulfur dioxide (SO_2)

http://www.wmo.int/pages/prog/arep/gaw/gaw_home_en.html

The Global Atmosphere Watch

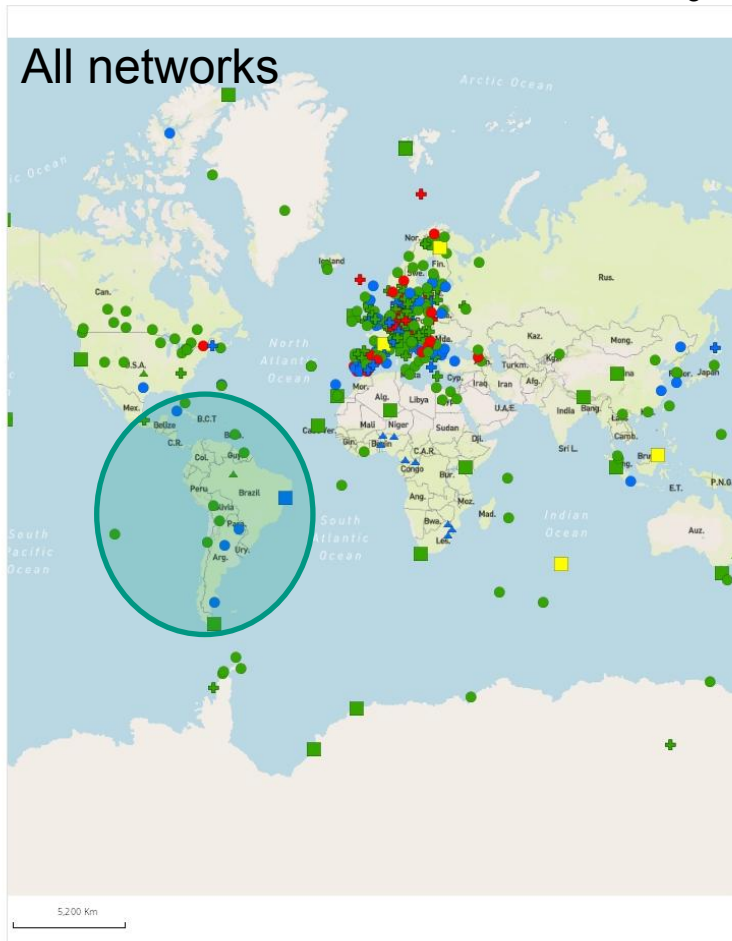
Reactive Gases Network (O_3 , CO, VOCs, NO_x , NO_y , SO_2)



<https://gawsis.meteoswiss.ch/GAWSIS//index.html#/>

The Global Atmosphere Watch

Reactive Gases Network (O_3 , CO, VOCs, NO_x , NO_y , SO_2)



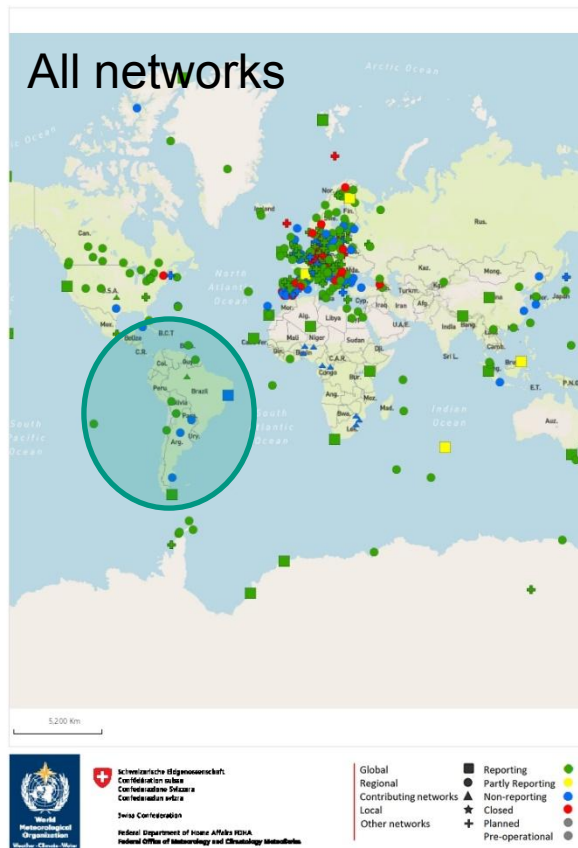
LAC Stations

➤ surface ozone (O_3)	11
➤ carbon monoxide (CO)	9
➤ volatile organic compounds (VOCs)	6
➤ oxidised nitrogen compounds (NO_x , NO_y)	1
➤ sulfur dioxide (SO_2)	0

LAC Reactive Gases and GAW

Data availability through GAW Central Facilities

GAWSIS



World Data Center



WMO Global Atmosphere Watch
World Data Centre for Greenhouse Gases

We have our website renewed on 31 August 2018 and the URL of the new website is following:
<https://gaw.kishou.go.jp/>
Since we stopped updating data on the website, please visit above for checking current information

Welcome to the WDCGG Web Site

The World Data Centre for Greenhouse Gases (WDCGG) is one of the WDCs under the GAW programme. It serves to gather, archive and provide data on greenhouse gases (CO₂, CH₄, CFCs, N₂O, etc.) and related gases (e.g., CO) in the atmosphere and ocean, as observed under GAW and other programmes.

This web site provides information on greenhouse gases, including WDCGG publications and measurement data contributed by organizations and individual researchers around the world. If you would like to submit data for the first time, please refer to the WDCGG Data Submission and Dissemination Guide.

Please let us know if you would like to obtain older versions of archived data.

The WDCGG starts operation as **DCPC (Data Collection and Production Centre)** of WMO Information System.

Note: On any publication using data from this station, the author must contact the data submitters concerning co-authorship or credit assignments, and make proper descriptions on the data sources in their references.

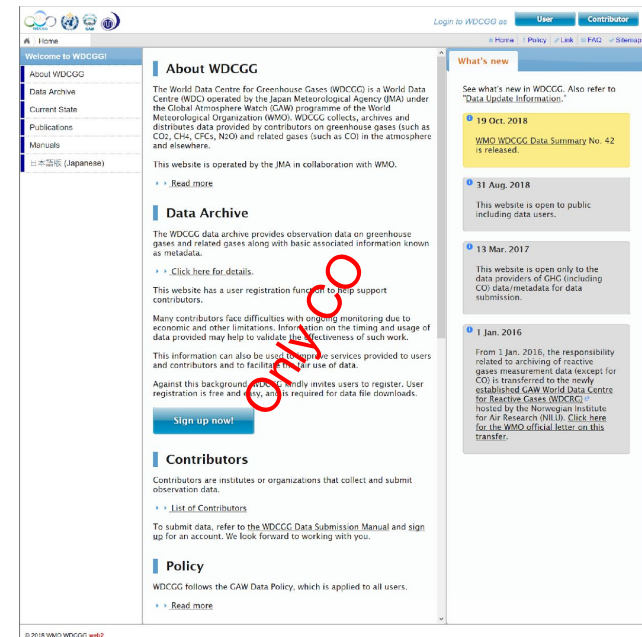
From January 1st 2016, the responsibility related to archiving of reactive gases measurement data (except for CO) has been transferred to the newly established **GAW World Data Centre for Reactive Gases (WDRC)** and hosted by the Norwegian Institute for Air Research (NILU). Click here for the WMO official letter on this transfer.

GAW World Data Centre & GAW Station Information System

- World Ozone and Ultraviolet Data Centre (WUODC), Toronto, Canada
- World Data Centre for Precipitation Chemistry (WDPCPC), College Park, USA
- World Data Centre for Aerosols (WDCA), Kjeller, Norway
- World Data Centre for Reactive Gases (WDRCG), Kjeller, Norway
- World Radiation Data Centre (WRDC), St. Petersburg, Russian Federation
- World Data Centre for Remote Sensing of the Atmosphere (WDC-RSAT), Wessling, Germany
- GAW Station Information System (GAWSIS), Zurich, Switzerland

This site is operated by the Japan Meteorological Agency
in cooperation with the World Meteorological Organization
(Created: 2001/07/02 Updated: 2017/10/26)

WMO World Data Centre for Greenhouse Gases
c/o Japan Meteorological Agency
1-3-4, Oremachi, Chiyoda-ku
Tokyo 100-8122, Japan
Tel: +81-3-3287-3439
E-mail: wdcgg@met.kishou.go.jp



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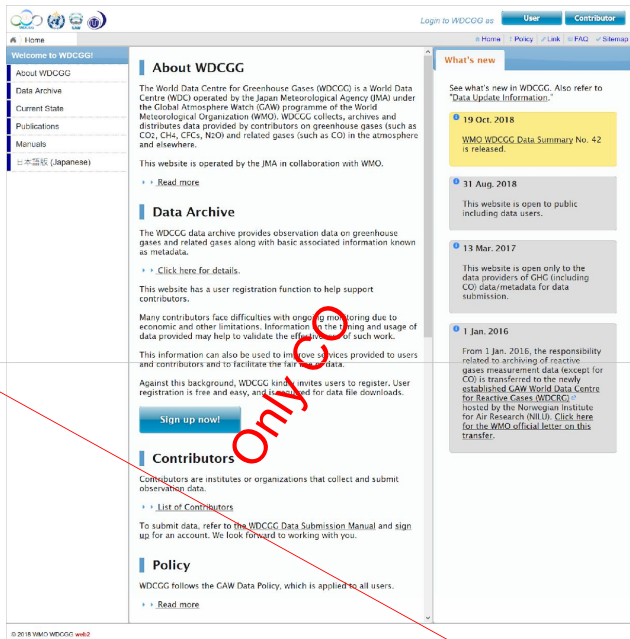
<https://gaw.kishou.go.jp/>

<http://ds.data.jma.go.jp/gmd/wdcgg/>

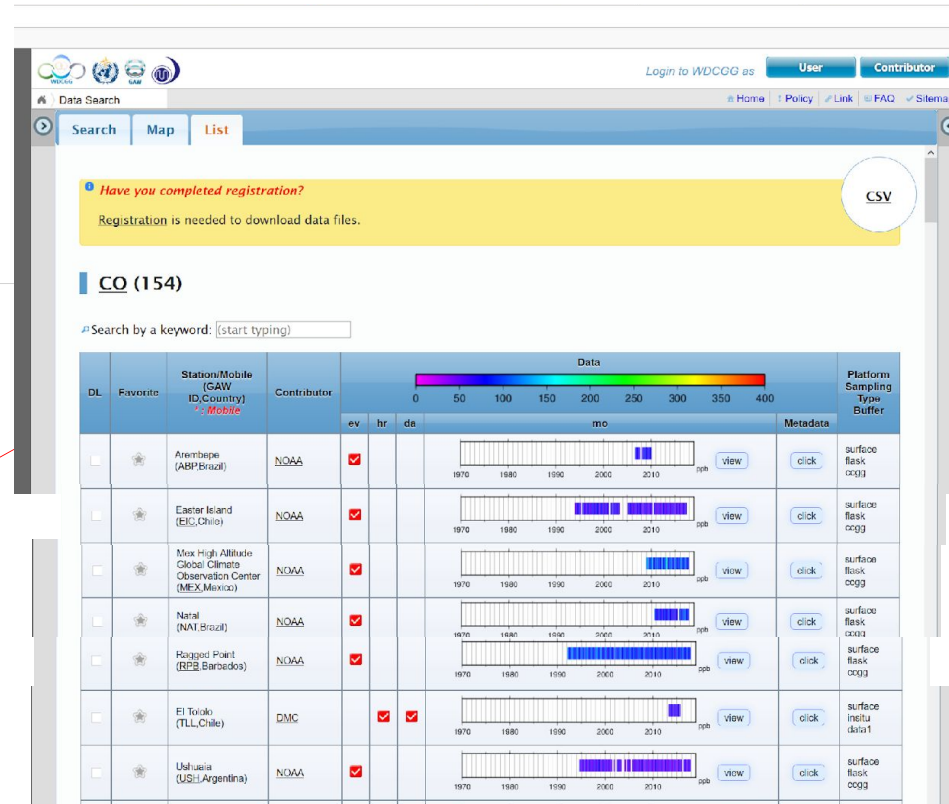
<https://gawsis.meteoswiss.ch/GAWSIS/index.html#/>

LAC Reactive Gases and GAW

Data availability through GAW Central Facilities



CO data availability for the LAC region



<https://gaw.kishou.go.jp/>

LAC Reactive Gases and GAW

Data availability through GAW Central Facilities

World Data Centre Greenhouse Gases (up to 2016)



Surface ozone data

El Tololo (Chile): 1995-11-01 to 2014-11-30

Marambio (Argentina): 2011-01-01 to 2015-12-31

Pilar Observatorio (Argentina): 1995-01-01 to 2013-12-31

Ragged point (Barbados): 1989-04-01 to 2015-07-31

San Julian (Argentina): 1997-01-01 to 2002-12-31

Ushuaia (Argentina): 1994-11-25 to 2014-12-31

<http://ds.data.jma.go.jp/gmd/wdcgg/>

LAC Reactive Gases and GAW

Data availability through GAW Central Facilities

World Data Centre Greenhouse Gases (up to 2016)



VOC data (NMHCs)

Arembepe (Brazil): 2006-10-27 to 2010-01-13

Easter Island (Chile): 2006-07-18 to 2015-06-26

Mex High Altitude Global Climate
Observation Centre (Mexico): 2009-01-09 to 2013-10-17

Natal (Brazil): 2010-09-21 to 2013-07-31

Tierra del Fuego (Argentina): 2004-10-08 to 2013-10-03

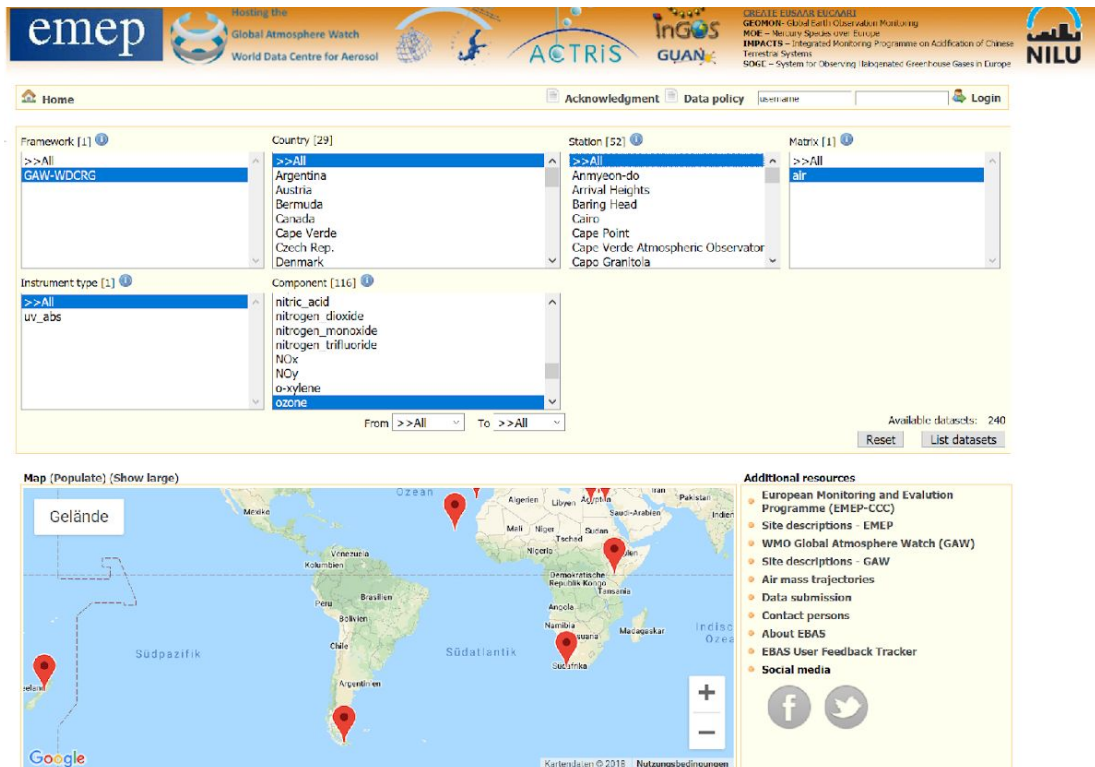
Ushuaia (Argentina): 2004-10-08 to 2015-06-21

<http://ds.data.jma.go.jp/gmd/wdcgg/>

LAC Reactive Gases and GAW

Data availability through GAW Central Facilities

New World Data Centre Reactive Gases (O_3 , VOCs, NO_x , NO_y , SO_2)



So far O_3 data from Ushuaia accessible

NO further quality assured data at present are available for the LAC region

We would like to encourage you to submit your data to the WDCRG

<http://ebas.nilu.no/default.aspx>

Summary and Conclusions

The station network for reactive gases in the LAC region is limited (max. 11 stations for O_3 ; mostly in Argentina).

The data available for the LAC region from data bases operated in the frame of WMO-GAW are very limited (max. 7 sets for CO).



Thus, there is need to increase the geographical network density for reactive gases in the LAC region for a sound analysis of atmospheric trace gas composition trends impacted by land use and climate change.

Thanks for your attention.



We appreciate the funding of the German Environment
Agency with its WMO-GAW QA/SAC.