

## 3.3 WDCGG



*WMO World Data Centre for Greenhouse Gases*



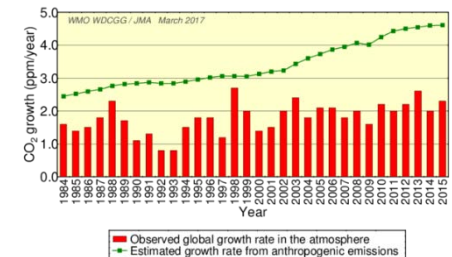
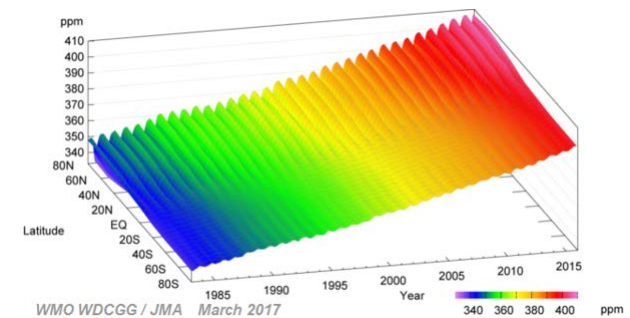
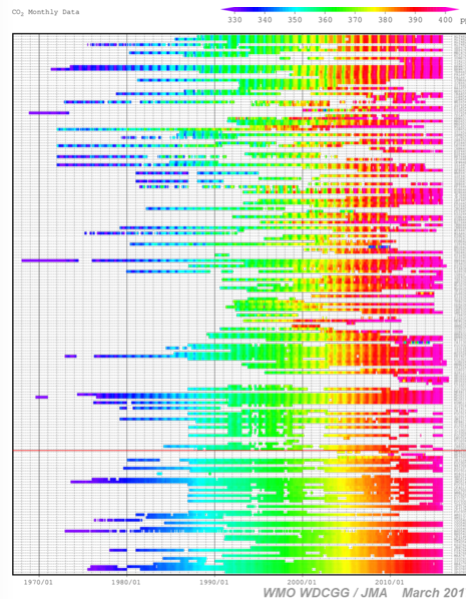
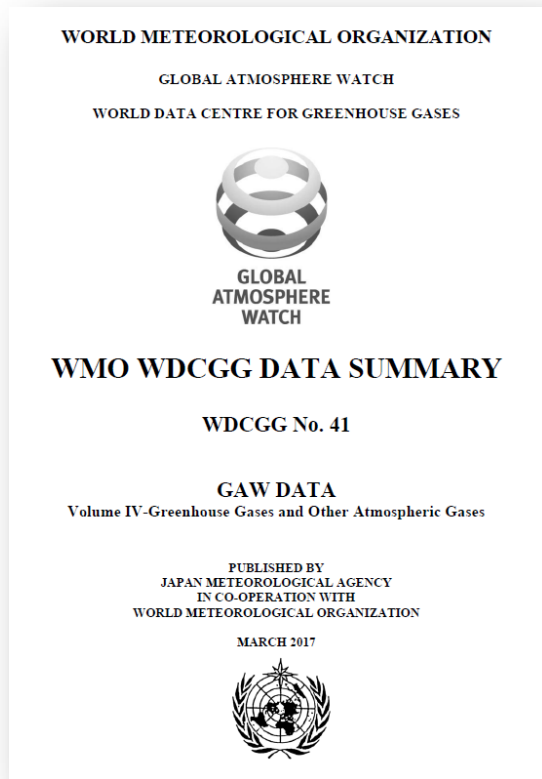
Mikio Ueno  
*Japan Meteorological Agency*

# Contents of this report

1. WDCGG Data Summary
2. WMO GHG Bulletin
3. Renewal of WDCGG Website
  - Timeline
  - What will be improved?
  - Starting to provide satellite data at WDCGG

# 1. WDCGG Data Summary

WDCGG Data Summary No.41 was published on 25 April, 2017 on the WDCGG website.



# 1. WDCGG Data Summary

Chapters of reactive gases except CO were removed.

## Contents (No.40)

Summary  
1.Introduction  
2.Analysis  
3.Carbon Dioxide  
4.Methane  
5.Nitrous Oxide  
6.Halocarbons  
7.Surface Ozone  
8.Carbon Monoxide  
9.Nitrogen Oxides  
10.Sulfur Dioxide  
11.Volatile Organic Compounds

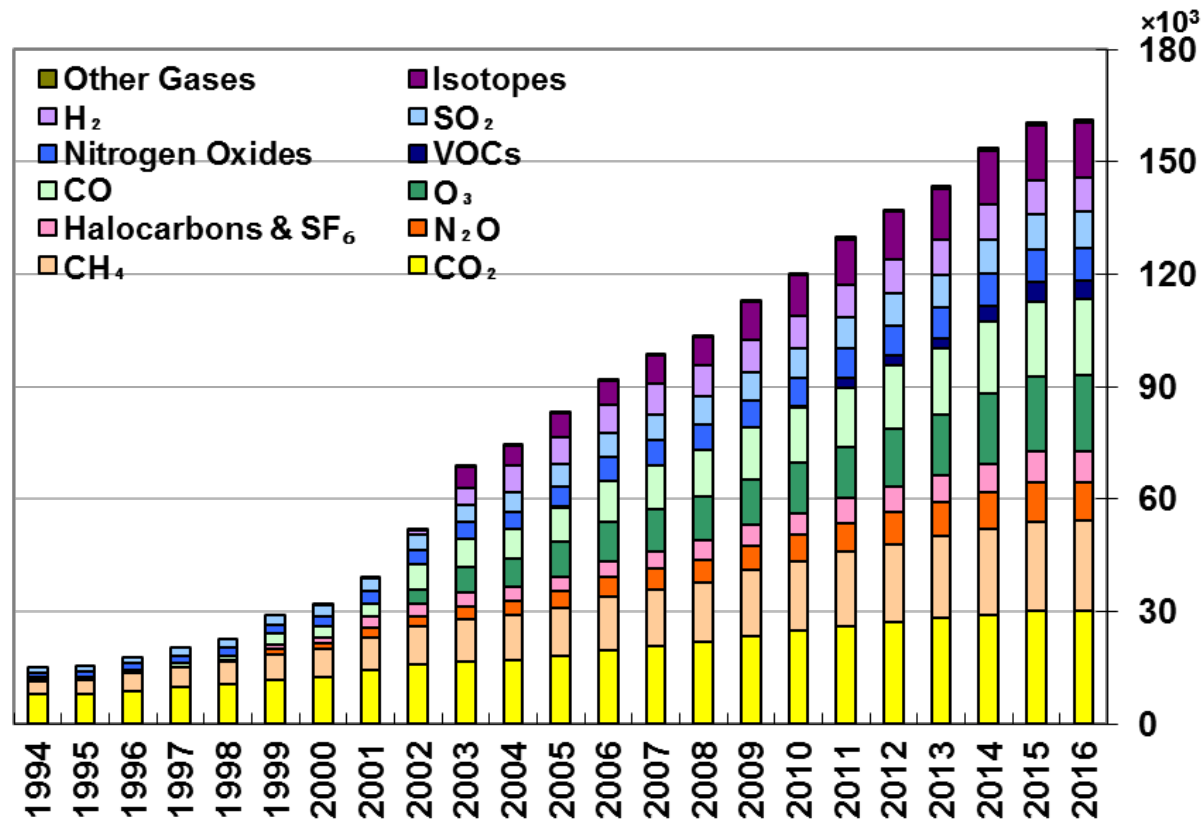


## Contents (No.41)

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6.Halocarbons  
7.Carbon Monoxide

# 1. WDCGG Data Summary

Number of data accumulated in the WDCGG database



# 2. WMO GHG Bulletin

GHG Bulletin No.13 was published on 24 October, 2016.

**WMO GREENHOUSE GAS BULLETIN**  
The State of Greenhouse Gases in the Atmosphere  
Based on Global Observations through 2015  
No. 12 | 24 October 2016

**2015: Changes in greenhouse gas concentrations influenced by El Niño**  
In 2015, Earth experienced an El Niño event of the climate system which accumulates on the equator events are associated with an increase in greenhouse gas concentrations. The El Niño event in 2015 was the eighth strongest since 1950, 10 consecutive months of record with the magnitude of the event. The El Niño event in 2015 was the eighth strongest since 1950, 10 consecutive months of record with the magnitude of the event. The El Niño event in 2015 was the eighth strongest since 1950, 10 consecutive months of record with the magnitude of the event.

**Figure 1. Atmospheric radiative forcing, relative to 1750, of LLGHGs and the 2015 update of the NOAA Annual Greenhouse Gas Index (AGGI) [8, 9]**

**Table 1. Global annual surface mean abundances (2015) and trends of key greenhouse gases from the WMO/GAW global greenhouse gas monitoring network. Units are dry-air mole fractions, and uncertainties are 68% confidence limits (1σ); the averaging method is described in [11].**

	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O
Global abundance in 2015	400.00 ± 0.1 ppm	1866 ± 2 ppb	328.0 ± 0.1 ppb
2015 abundance relative to year 1750 <sup>a</sup>	144%	264%	19%
2014-2015 absolute increase	2.3 ppm	11 ppb	1.0 ppb
2014-2015 relative increase	0.58%	0.60%	0.33%
Mean annual absolute increase during last 10 years	2.0 ppm yr <sup>-1</sup>	6.0 ppb yr <sup>-1</sup>	0.8 ppb yr <sup>-1</sup>

<sup>a</sup> Assuming a pre-industrial mole fraction of 278 ppm for CO<sub>2</sub>, 722 ppb for CH<sub>4</sub> and 270 ppb for N<sub>2</sub>O. Values used for the analysis numbered 126 for CO<sub>2</sub>, 123 for CH<sub>4</sub> and 33 for N<sub>2</sub>O.

<http://ds.data.jma.go.jp/gmd/wdcgg/pub/global/globalmean.html>

**WMO Global Atmosphere Watch**  
**World Data Centre for Greenhouse Gases**

## Global mean mole fractions

Updated : 2016/10/24 (Next update scheduled for Nov. 2017)

Contents of this page correspond to WMO Greenhouse Gas Bulletin No. 12 : October 2016.  
<http://www.wmo.int/pages/prog/arep/gaw/ghg/GHGbulletin.html>

**CONTENTS:**

- Global annual mean mole fractions
- Global monthly mean mole fractions
- Global analysis in WDCGG
- Information about citation
- List of contributors

**NOTICE:**  
Global mean mole fractions data can be updated retrospectively or other quality control procedures of the data. Usually expected changes are minor, but WDCGG records

**Global monthly mean mole fractions**

Download csv data files

	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O
Data (csv file)	<a href="#">Mole fraction, Growth rate</a>	<a href="#">Mole fraction, Growth rate</a>	<a href="#">Mole fraction, Growth rate</a>

**Mole fraction**

**Growth rate**

<http://www.wmo.int/pages/prog/arep/gaw/ghg/GHGbulletin.html>

# 3. Renewal of WDCGG Website

## Current Status

- New WDCGG Website opened on 13 March, 2017  
(URL: <https://gaw.kishou.go.jp/>)
- Website security audits are undergoing
- Available only to data contributors
  - ✓ Access is restricted by each contributor's public(global) IP addresses until the website is open to data users.
  - ✓ ID and the password for login to data submission page is provided.

# 3. Renewal of WDCGG Website

The screenshot shows the homepage of the World Data Centre for Greenhouse Gases (WDCGG). The browser address bar displays the URL <https://gaw.kishou.go.jp>. The page features a navigation menu on the left with links to Home, About WDCGG, Data Archive, Contributors, Policy, WMO GHG Bulletin, and WDCs. The main content area is divided into three sections: 'About WDCGG', 'Data Archive', and 'Contributors'. The 'About WDCGG' section describes the center's role in gathering and providing data on greenhouse gases. The 'Data Archive' section explains the archive's purpose and mentions a new user registration process. The 'Contributors' section defines the role of contributors and provides a link to the list of contributors. A 'What's new' sidebar on the right highlights two recent updates: one from 2017-03-13 regarding data submission access, and another from 2016-01-01 regarding the transfer of reactive gases measurement data to the newly established GAW World Data Centre for Reactive Gases (WDCRG).

**Welcome to WDCGG!**

- About WDCGG
- Data Archive
- Contributors
- Policy
- WMO GHG Bulletin
- WDCs

**About WDCGG**

The World Data Centre for Greenhouse Gases (WDCGG) is one of the World Data Centres(WDCs) under the Global Atmosphere Watch(GAW) programme. It serves to gather, archive and provide data on greenhouse gases (CO<sub>2</sub>, CH<sub>4</sub>, CFCs, N<sub>2</sub>O, etc.) and related gases (CO, etc.) mainly in the atmosphere, as measured under GAW and other programmes.

This website is operated by the Japan Meteorological Agency(JMA) in cooperation with the World Meteorological Organization(WMO).

[Read more](#)

**Data Archive**

The WDCGG data archive provides measurement data of greenhouse gases and their basic information, called metadata here. Click [here](#) to search data.

User Registration is newly introduced to respond to a request from contributors because they need to know a history of downloaded data to continue thier precise measurement. To download data, User Registration is required. It's free and easy!

[Sign up NOW](#)

**Contributors**

The Contributor is an institute(s) or organization(s) that obtains and submits the observation data.

[Here](#) is the list of Contributors.

**What's new**

This page provides up-to-date information on WDCGG. Update information on data is [here](#).

**2017-03-13**

This website is open only to the data providers of GHG (including CO) data/metadata for data submission.

**2016-01-01**

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

© 2016 WMO WDCGG web2

New home page(URL: <https://gaw.kishou.go.jp/>)

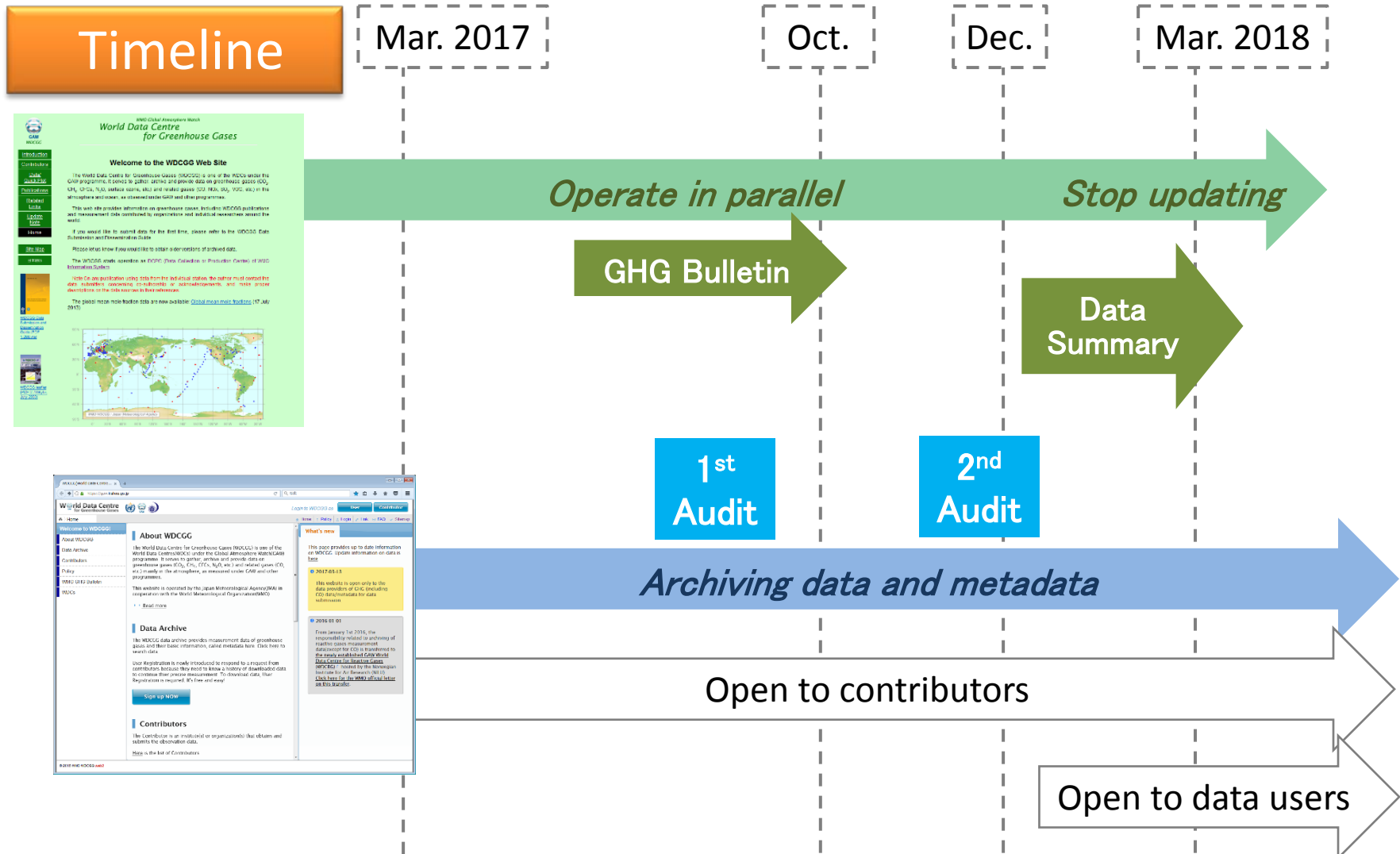


## 3. Renewal of WDCGG Website

### Website Security Audits

- Security audits of the new WDCGG website are needed in order to detect and deal with vulnerabilities of the web applications.
- The first audit was conducted from mid-August to mid-September. Correction of the vulnerabilities will be made according to the audit report.
- The second audit will be conducted around December 2017.
- And then the new WDCGG website will be open to users.

# 3. Renewal of WDCGGG Website



## 3. Renewal of WDCGG Website

### What will be improved ?

#### to DATA CONTRIBUTORS:

- Feedback of download notice and statistical information
- Reduced burden of editing metadata and data submission
- Management of information on each contributor's page

#### to DATA USERS:

- Machine readable metadata
- Easier web interface
- Data with consolidated flags and versions

# Contributor's benefit

## For Data Contributors

ID

Password

Sign in

Remember me

Forgot your password?

World Data Centre for Greenhouse Gases

Contributor's Page

Home

- Contributor
- Contact Person
- WDCOG Status
- WDCOG parameter

Submission

Access log

What's new

History

YYYY-MM-DD \*\*\*

YYYY-MM-DD \*\*\*

World Data Centre for Greenhouse Gases

JMA Contributor's Information

NO	18
Name	Japan Meteorological Agency
Acronym	JMA
Address_1	Global Environment and Meteorology Department
Address_2	Atmosphere Environment Change
Address_3	1-3-4 Oiwakebashi, Chiyoda-ku, Tokyo 100-8122
Country/Territory	JAPAN
Website	http://www.jma.go.jp/mmc/mhmc.html

World Data Centre for Greenhouse Gases

JMA Contact Person's Information

Details of contact persons will be updated shortly.


Name	Mitsuo Fukuda
E-mail	mfukuda@met.fukui.go.jp
Organization	Japan Meteorological Agency
Address_1	1-3-4 Oiwakebashi
Address_2	Chiyoda-ku
Address_3	Tokyo 100-8122
Country	JAPAN
Tel	+81 3 3211 8409
Fax	+81 3 3211 8408
Registration date	2014-01-01

World Data Centre for Greenhouse Gases

JMA

Japan Meteorological Agency

Map



## Contributor's Page

Access Log and Statistics

World Data Centre for Greenhouse Gases

JMA

Japan Meteorological Agency

Submission from Website

Step1: Select site and parameter

Step2: Scientific use

Step3: User name

Step4: Contact person

Step5: Sampling frequency

Step6: Sampling method

Step7: Sampling frequency

Step8: Original data file

Step9: Background

Step10: Description

Step11: Coordinates

Step12: Attachment

World Data Centre for Greenhouse Gases

JMA

Japan Meteorological Agency

Edit Metadata

Parameter	Additional info	Current	Updated
ts06	Risk	Background observation	Background observation
ts07	Risk	Background observation	Background observation
ts08	Risk	Background observation	Background observation
ts09	Risk	Background observation	Background observation
ts10	Risk	Background observation	Background observation

World Data Centre for Greenhouse Gases

JMA

Japan Meteorological Agency

Upload Data files

Action buttons

Upload

Cancel

Done

Upload

## Interface design for data and metadata submission

# User's benefit

- Machine readable metadata

## Current

```

C01 TITLE: CO2 hourly mean data
C02 FILE NAME: ryo239n00.jma.as.cn.co2.nl.hr2013.dat
C03 DATA FORMAT: Version 1.0
C04 TOTAL LINES: 5120
C05 HEADER LINES: 32
C06 DATA VERSION: 201307
C07 STATION NAME: Ryori
C08 STATION CATEGORY: Regional
C09 OBSERVATION CATEGORY: Air sampling observation at a stationary platform
C10 COUNTRY/TERRITORY: Japan
C11 CONTRIBUTOR: JMA
C12 LATITUDE: 39.03
C13 LONGITUDE: 141.82
C14 ALTITUDE: 260
C15 NUMBER OF SAMPLING HEIGHTS: 1
C16 SAMPLING HEIGHTS: 20
C17 CONTACT POINT: y-fukuyama@met.kishou.go.jp
C18 PARAMETER: CO2
C19 COVERING PERIOD: 2013-01-01 2013-07-31
C20 TIME INTERVAL: hourly
C21 MEASUREMENT UNIT: ppm
C22 MEASUREMENT METHOD: NDIR
C23 SAMPLING TYPE: continuous
C24 TIME ZONE: Local time UTC+9
C25 MEASUREMENT SCALE: WMO X2007 scale
...
C30 COMMENT:
C31
C32 DATE TIME    DATE TIME    CO2  ND   SD   FCS  REM
2013-01-01 01:00 9999-99-99 99:99  401.78  105  0.119  -7  0 -999999999
2013-01-01 02:00 9999-99-99 99:99  401.20  101  0.195  -7  0 -999999999
    
```

## New

```

# ----->>>>
# Data Set Name : co2_mnm_surface-insitu_19_9999_HourlyData
# Data_Set_Version : 2014-04-18
#
# GLOBAL ATTRIBUTES
#
# site_code : MNM
# site_gaw_id : MNM

# header_lines : 180
#
# VARIABLE ATTRIBUTES
#
# site_code:long_name : site_name_abbreviation.
# site_code:comment : Site code is an abbreviation for the sampling site name.
#
#
#
#
#
#
# VARIABLE ORDER
#
# site_code year month day hour minute second year month day hour minute second
value value_unc nvalue latitude longitude altitude elevation intake_height instrument
Qcflag measurement_method scale flask_no
MNM 1992 12 31 15 0 -9 -9 -9 -9 -9 -9 -999.999 -999.999 0 24.28520012 153.9812927
28 8 20 8 0 9 3 -9
MNM 1992 12 31 16 0 -9 -9 -9 -9 -9 -9 -999.999 -999.999 0 24.28520012 153.9812927
28 8 20 8 0 9 3 -9
    
```

SAMPLE

# User's benefit

- Easier web interface

The screenshot displays the World Data Centre for Greenhouse Gases website. On the left, there is a search sidebar with filters for GAW ID, Site Category (Stationary), WMO Region, Country, Parameter (CO2), Sampling type, Status, and Contributor. A red circle highlights the 'List' button in the 'Details' section, with a red arrow pointing to the search results window on the right.

The search results window shows a table with columns: check, favorite, site (GAW ID/country), contributor, event, hourly, daily, data (monthly), and scale. The table lists several sites with their respective data ranges and scales.

check	favorite	site (GAW ID/country)	contributor	event	hourly	daily	data (monthly)	scale
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Aspenberg (AEP/Denmark)	IPEN	<input checked="" type="checkbox"/>			1960 1976 1980 1990 2000 2010 2020	WMO CO2 mole fraction scale
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Aspenberg (AEP/Spain)	NOAA	<input checked="" type="checkbox"/>			1960 1976 1980 1990 2000 2010 2020	WMO CO2 mole fraction scale
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Alert (ALT/Canada)	EC	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		1960 1976 1980 1990 2000 2010 2020	WMO CO2 mole fraction scale
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Alert (ALT/Canada)	EC	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		1960 1976 1980 1990 2000 2010 2020	WMO XE3 scale
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Alert (ALT/Canada)	NOAA	<input checked="" type="checkbox"/>			1960 1976 1980 1990 2000 2010 2020	WMO CO2 mole fraction scale
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Alert (ALT/Canada)	CECR	<input checked="" type="checkbox"/>			1960 1976 1980 1990 2000 2010 2020	WMO X2007
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Antarctica Island (AME/France)	LSCE	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		1960 1976 1980 1990 2000 2010 2020	WMO X20 scale and from 2008 WMO X2002 scale

Improved Discovery Access and Retrieve (DAR) function

## 3. Renewal of WDCGG Website

Starting to gather/provide satellite data at WDCGG

To serve as a one stop for GHG observational data

- column values ( $XCO_2$ ,  $XCH_4$ , ...)
- file format (HDF)
- data mirroring from the primary data sources for data users
- Information on QC, uncertainty, etc.
- a priori information of retrieval, product version, etc.

We are planning to start around March 2018....

## 3. Renewal of WDCGG Website

Starting to gather/provide satellite data at WDCGG

- WDCGG started discussion on this plan with the project leader for the GOSAT mission (Dr Matsunaga of NIES) in spring 2017.
- Our plan was informed to the science team leader of the OCO mission (Dr Crisp of JPL/NASA) and the discussion is about to start.

NIES: National Institute for Environmental Studies



# Thank you for your attention!



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