# **Data Format**

Data files are in UTF-8 text and NetCDF formats. NetCDF format file details can be referenced in file headers. Text format files are as described below.

The line feed code is LF. Files contain header records and data records.

### 1. Header records

Header records are created automatically from metadata registered by data contributors. Lengths are variable and defined at the top of the record.

Composition items are as per the table on the following pages.

The information in header records is as of the date indicated by # dataset\_creation\_date.

## Data averaging

Certain types of daily and monthly data are calculated by WDCGG at the request of Contributors. The procedures for such calculation are outlined below.

- 1) Daily mean data are calculated using hourly data.

  Monthly mean data are calculated using daily data.
- 2) Averages are calculated from data whose QC flag status is 1: valid (background) or 2: valid.
- 3) At least two data points must be available for average calculations. If only one data point is available, the average is set to "-999.999."
- 4) Average data are based on the simple arithmetic mean. The Value\_unc of average data is the standard deviation of available data, and the Nvalue is the number of available data points.

Item name	
# header_lines :	
# Data Set Name :	
# Data_Set_Version :	
# Data_Set_Fair_Use :	
# Data_Set_DOI :	
# Data_Set_Citation_Format :	
#	
# GLOBAL ATTRIBUTES	
#	
# site_gaw_id :	
# site_gaw_type :	
# site_name :	
# site_country/territory :	
# site_wmo_region :	
# site_address1 :	
# site_address2 :	
# site_address3 :	
# site_latitude :	
# site_longitude :	
# site_elevation :	
# site_elevation_unit :	
# site_lst2utc :	
# site_climate_zone :	
# site_climate_zone:comment :	
# dataset_creation_date :	
# dataset_parameter :	
# dataset_parameter_large_class :	
# dataset_parameter_small_class :	
# dataset_parameter_name_1 :	
# dataset_parameter_name_2 :	
# dataset_parameter_name_3 :	
# dataset_parameter_name_4 :	
# dataset_parameter_name_5 :	
# dataset_project :	
# dataset_platform :	
# dataset_selection :	
# dataset_selection_tag : # dataset time zone :	
# dataset_start_date :	
# dataset_end_date :	
# dataset_statistic_code: # dataset statistic:	
# dataset_description : # dataset_aim_of_observation_code :	
# dataset_aim_of_observation :	
# dataset_buffer :	
# dataset_buffer:	
# dataset_buffer:comment :	
# dataset_footnote_code : # dataset footnote :	
# dataset_rootnote : # dataset footnote:comment :	

	Example	Num of dia
187		Varia
co2_ryo_surface-insitu_1_9999-9999_hourly		Varia
0001-2012-1001-01-01-9999_2018-03-09-1519		41
offer of co-authorship will be made through person	limited and provided without charge. By their use you accept that an al contact with the contributors whenever substantial use is made of the made to the contributors and to the data centre when these data	Varia
10.50849/WDCGG_0001-2012-1001-01-01-9999		Varia
	by Japan Meteorological Agency , dataset published as CO2_RYO_ -14-1755, https://doi.org/10.50849/WDCGG_0001-2012-1001-01-01- ou downloaded the files.	Vari
MLO		3
GAW Global		Vari
Mauna Loa (HI)		Varia
United States		Vari
REGION V (South-West Pacific)		Vari
P.O. Box 275 Hilo, HI 96720 HAWAII		Vari
		Vari
		Vari
19.5362300873		Vari
-155.5761566162		Vari
3397		Vari
m		1
UTC-10:00		3 о
Сfb		Vari
Warm temperate climate, fully humid, warm summer		Vari
2018-04-05		1
co2		Vari
Greenhouse Gas		Vari
		Vari
CO2		Vari Vari
carbon dioxide		Vari
		Vari
		Vari
surface-flask		Vari
fixed station		Vari
All event data		Vari
event		Vari
UTC-10:00		Vari
1969-08-20T17:55:00Z		20 о
2016-12-27T20:44:00Z		20 o
1		1
contributor		Vari
Air samples were collected into 24 titanium flasks u	using manual air sampling pump.	0-3
1		1
Background observation		Vari
3001		4
		Vari
ccgg		
ccgg NOAA Carbon Cycle Greenhouse Gases		Varia
ccgg NOAA Carbon Cycle Greenhouse Gases 9999 default		Varia Varia

## Description of the item

header length
Character string that uniquely identifies the data set
Version of the data set
This is the WDCCC fair use statement agreed upon by data contributors
This is the WDCGG fair use statement agreed upon by data contributors.
Dataset/data file DOI
Citation format for a WDCGG-issued dataset DOI
3-letter site identification code as defined by GAWSIS for stationary platforms
GAW station category Standard site name
Country/territory in which site is located
WMO Region
-
-
-
Latitude (decimal degree) at representative site location
Longitude (decimal degree) at representative site location
Ground or surface elevation at representative site location
Units are meters above sea level (masl)
Hour conversion from UTC to LST
Koeppen's classification of climate in which site is located
Climatic type
Date when the data set was prepared
Identifies trace gas species included in data set
Large classification of trace gas species included in data set
Small classification of trace gas species included in data set
Identifies trace gas species included in data set
Identifies trace gas species included in data set (alias name)
Identifies trace gas species included in data set (alias name)
Identifies trace gas species included in data set (alias name)
Identifies trace gas species included in data set (alias name)
Typically identies sampling platform and strategy
Fixed or Mobile
Brief description of how data have been selected by data contributor
Short descriptor to help convey how data have been selected by data contributor  This item expresses the differential to LTC.
This item expresses the differential to UTC.  Date of first item in data set (ISO 8601 format). The letter '*' indicates that the time zone is unknown.
Data of last item in data set (ISO 8601 format). The letter '* indicates that the time zone is unknown.
Statistic creator identification number
Statistic creator (contributor or wdcgg)
Brief description of data set contents by data contributor
Identification number of aim of observation
Aim of observation
Identification number necessary for additional observational condition
Identification necessary for additional observational condition
Identification number of data set among same observational condition
Identification name of data set among same observational condition

# dataset processing :	
# dataset_processing .	
# dataset_hr_mean_processing :	
# dataset_da_mean_processing :	
# dataset_mo_mean_processing :	
# dataset_mo_mean_processing.	
# dataset_transition_flag :	
# dataset transition :	
# dataset reference total listed :	
# dataset_reference_#_name :	
# contributor_organization_code :	
# contributor_acronym :	
# contributor_name :	
# contributor_address1 :	
# contributor_address2 :	
# contributor_address3 :	
# contributor_country/territory :	
# contributor_url :	
# contact_total_listed :	
# contact_#_name :	
# contact_#_address1 :	
# contact_#_address2 :	
# contact_#_address3 :	
# contact_#_country/territory :	
# contact_#_organization :	
# contact_#_organization_acronym :	
# contact_#_organization_url :	
# contact_#_email :	
# contact_#_tel :	
# contact_#_fax:	
# collaborator_total_listed :	
# collaborator_#_organization_code :	
# collaborator_#_acronym :	
# collaborator_#_name :	
# collaborator_#_address1 :	
# collaborator_#_address2 :	
# collaborator_#_address3 :	
# collaborator_#_country/territory :	
# collaborator_#_url :	
# collaborator_#_person_total_listed :	
# collaborator_#_person_#_name :	
# collaborator_#_person_#_address1 :	
# collaborator_#_person_#_address2 :	
# collaborator_#_person_#_address3 :	
# collaborator_#_person_#_country/territory :	
# collaborator_#_person_#_email :	
# collaborator_#_person_#_tel :	
# collaborator_#_person_#_fax:	
w deliabelade. In Ibelade i In Italia	

Uncertainty in the measurements of CO2 from discrete samples has not yet been fully evaluated. Key components of it are our ability to propagate the WMO XCO2 scale to working standards, the repeatability of the analyzers used for sample measurement, and agreement between pairs of samples collected simultaneously. Zhao and Tans (2006) determined that the internal consistency of working standards is +/- 0.02 ppm (68% confidence interval). The typical repeatability of the analyzers, based on repeated measurements of natural air from a cylinder, is +/- 0.03 ppm. Average pair agreement across the entire sampling network is +/- 0.1 ppm.  The Pacific Ocean Cruise (POC, travelling between the US west coast and New Zealand or Australia) data have been merged and grouped into 5 degree latitude bins. For the South China Sea cruises (SCS) the data are grouped in 3 degree latitude bins.  Historically, samples have been collected using two general methods: flushing and then pressurizing glass flasks with a pump, or opening a stopcock on an evacuated glass flask; since 28 April 2003, only the former method is used. During each sampling event, a pair of flasks is filled.	0-3500
	0-3500
	0-3500
Monthly means are produced for each site by first averaging all valid measurement results in the event file with a unique sample date and time. Values are then extracted at weekly intervals from a smooth curve (Thoning et al., 1989) fitted to the averaged data and these weekly values are averaged for each month to give the monthly means recorded in the files. Flagged data are excluded from the curve fitting process. Some sites are excluded from the monthly mean directory because sparse data or a short record does not allow a reasonable curve fit. Also, if there are 3 or more consecutive months without data, monthly means are not calculated for these months.	0-3500
0	1
Dataset was made from entire historical data provided from contributor from 2018 new WDCGG website open onward	
3	Variable
Zhao, C., and P.P. Tans (2006), Estimating uncertainty of the WMO Mole Fraction Scale for carbon dioxide in air, J.	0-1000
Geophys. Res. 111, D08S09, doi: 10.1029/2005JD006003.	
Thoning, K.W., T.J. Conway, N. Zhang, and D. Kitzis, 1995, Analysis system for measurement of CO2 mixing ratios in flask lair samples, J. Atmos. and Oceanic Tech., 12, 1349–1356.	0-1000
Thoning, K.W., P.P. Tans, and W.D. Komhyr, 1989, Atmospheric carbon dioxide at Mauna Loa Observatory 2. Analysis of the NOAA GMCC data, 1974–1985, J. Geophys. Res., 94, 8549–8565.	0-1000
2	Variable
NOAA	1-16
Earth System Research Laboratory, NOAA	1-255
R/GMD1	0-255
NOAA/ESRL	0-255
325 Broadway Boulder, CO 80305-3337	0-255
United States	Variable
	<b>-</b>
http://www.cmdl.noaa.gov/index.html	0-255
E	Variable
Firstname LASTNAME	1-100
1-3-4 Otemachi	0-255
Chiyoda-ku	0-255
Tokyo 100-8122	0-255
Japan	Variable
Japan Meteorological Agency	1-255
JMA	1-16
http://www.jma.go.jp/jma/indexe.html	0-255
name@domain	1-100
+81-1-2345-6789	0-50
+81-1-2345-6789	0-50
1	Variable
2	Variable
NOAA	1-16
Earth System Research Laboratory, NOAA	1-255
R/GMD1	0-255
NOAA/ESRL	0-255
325 Broadway Boulder, CO 80305–3337	0-255
United States	Variable
http://www.cmdl.noaa.gov/index.html	0-255
1	Variable
L' Firstnama I ASTNAME	1-100
Firstname LASTNAME	
1–3–4 Otemachi	0-255
Chiyoda-ku	0-255
Tokyo 100-8122	0-255
Japan	Variable
name@domain	1-100
+81-1-2345-6789	0-50
+81-1-2345-6789	0-50

Description of processing procedure for data set preparation	
Details of procedures to make hourly, daily and monthly mean data	
Transition flag indicating dataset was made using the former WDCGG data file or not	
Number indicating how many references to published literature to expect in this file	
Reference provided by data contributor. The letter '#' represents a number from 1 to maximum (dataset_reference_total_listed).	
Contributor identification number	
Contributor abbreviation or acronym	
Contributor name	
-	
- Country/territory name	
URL of contributor	
Number of contact persons associated with the data set	
Contact person name. The letter '#' represents a number from 1 to maximum (contact_total_listed).	
-	
-	
Country/territory name	
Organization name	
Acronym of organization name	
URL of organization	
Email address of contact person	
Telephone number of contact person	
Fax number of contact person	
Number of contributing collaborators associated with the data set	
Collaborator identification number. The letter '#' represents a number from 1 to maximum (collaborator_total_listed).	
Collaborator abbreviation or acronym	
Collaborator name	
Country/territory name	
URL of collaborator	
Number of person in collaborator organizaion associated with the data set	
Collaborator person name. The letter '#' represents a number from 1 to maximum (collaborator_#_person_total_listed).	
-	
-	
-	
Country/territory name	
Email address of collaborator person	
Telephone number of collaborator person	
Fax number of collaborator person	

	Hourly data		
	0-6: no background condition		
ORG_QCflag_description:	7: background condition 9: missing	Variable	Orig
	Daily and Monthly data		`
	2: no valid hourly data		
Carda Indula and Band .	3: valid 9: missing	Verielle	NI.
intake_height_total_listed :		Variable	Nun Hei
intake_height_#:	20	1-6	(int
intake_height_#_units :	m	1	Unit
intake_height_#_start_date:	1993-01-01T00:00:00+09:00	20 or 25	Dat unk
intake_height_#_end_date :	2016-06-01T00:00:00+09:00	20 or 25	Dat
instrument total listed :		Variable	unk Nur
instrument #:	HORIBA, Ltd. GA-360S	0-1000	Pro
instrument_#_measurement_method_type_code :	9	1 or 2	Mea
instrument_#_measurement_method_name :	NDIR	0-1000	-
instrument_#_start_date :	1994-01-01T00:00:00+09:00	20 or 25	Dat unk
instrument #_end_date :	2009-12-31T23:59:59+09:00	20 or 25	Dat
			unk
instrument_#: instrument #_measurement_method_type_code:	Round Science Inc. RGC-1	0-1000 1 or 2	Pro Mea
instrument # measurement method name :	Gas chromatography (FID)	0-1000	- IVIE
	2010-01-01T00:00:00+09:00	<del>                                     </del>	Dat
instrument_#_start_date :	2010-01-01100:00:00-03:00	20 or 25	unk
instrument_#_end_date :	2017-11-01T00:00:00+09:00	20 or 25	Dat unk
scale_total_listed :	1	Variable	Nur
scale_#_code :	1	1-4	Sca
scale_#_name :	WMO CO2 X2007	1-100	sca
scale_#_start_date:	1993-12-01T00:00:00+09:00	20 or 25	Dat unk
scale_#_end_date :	2016-06-01T00:00:00+09:00	20 or 25	Dat unk
observation status code :	1	1	Obs
observation_status :	Operational/Reporting	Variable	Obs
measurement_calibration :	Carbon dioxide (CO2) in ambient and standard air samples is detected using a non-dispersive infrared (NDIR) analyzer. The measurement of CO2 in air is made relative to standards whose CO2 mole fraction is determined with high precision and accuracy. Because detector response is non-linear in the range of atmospheric levels, ambient samples are bracketed during analysis by a set of reference standards used to calibrate detector response.	0-3500	Cali
sampling_frequency_code :		1 or 2	San
sampling_frequency:	weekly	Variable	San
VARIABLE ATTRIBUTES			
site_gaw_id:long_name :	unique_station/mobile_identifiers.	34	site
site_gaw_id:comment :	3-letter site identification code as defined by GAWSIS for stationary platforms	79	-
time_components:_FillValue :	-999 or -9	10	
time_components:long_name :	integer_components_of_LST_date/time	35 38	time
time_components:order : time_components:comment :	year, month, day, hour, minute, second  Air sample collection time (LST) represented as a 6-element array [year, month, day, hour, minute, second]. Calendar	145	min
value; FillValue :	time components as integers999.999	8	$\vdash$
value:_rillValue : value:units :	—999.999 ppm	1-20	
value:long_name :	measured_mole_fraction_of_trace_gas_in_dry_air	0-51	valu
value:comment :	Reported mole fraction, isotope ratio or radioactivity. Units depend on trace gas species.	90	
value_unc:_FillValue :	-999.999	8	
value_unc:units :	ppm	1-20	valı
value_unc:long_name :	estimated_uncertainty_in_reported_value	39	spe
value_unc:comment:	Standard deviation of the reported mean value when nvalue is greater than 1. Units depend on trace gas species.	111	
	-9	2	
nvalue:_FillValue :	number_of_measurements_contributing_to_reported_value	53	nva
		66	
nvalue:Iong_name : nvalue:comment :	Number of individual measurements used to compute reported values.	66	
nvalue:long_name :	Number of individual measurements used to compute reported values999.99999999	14	
nvalue:long_name : nvalue:comment : latitude:_FillValue : latitude:standard_name :	-999.999999999999999999999999999999999	14 8	
nvalue:long_name : nvalue:comment : latitude:_FillValue :	-999.99999999	14	latit

ata flag set by contributor dicating how many kinds of intake heights otherwise "See data part" ove ground at which air sample was collected. The letter '#' represents a number from 1 to maximum ight\_total\_listed). meters above ground level (magl). st item in data during the intake height period (ISO 8601 format). The letter '\*' indicates that the time zone is st item in data during the intake height period (ISO 8601 format). The letter '\*' indicates that the time zone is dicating how many kinds of instruments ame of instrument. The letter '#' represents a number from 1 to maximum (instrument\_total\_listed). ent method identification number st item in data during the instrument period (ISO 8601 format). The letter '\*' indicates that the time zone is st item in data during the instrument period (ISO 8601 format). The letter '\*' indicates that the time zone is ame of instrument. The letter '#' represents a number from 1 to maximum (instrument\_total\_listed). ent method identification number st item in data during the instrument period (ISO 8601 format). The letter '\*' indicates that the time zone is st item in data during the instrument period (ISO 8601 format). The letter '\*' indicates that the time zone is dicating how many kinds of scales. tification number. The letter '#' represents a number from 1 to maximum (scale\_total\_listed). st item in data during the scale period (ISO 8601 format). The letter '\*' indicates that the time zone is st item in data during the scale period (ISO 8601 format). The letter '\*' indicates that the time zone is nt status identification number on situation for determining the mole fractions requency identification number requency of source data : Site gaw id is an abbreviation for the sampling site name. onents: Air sample collection time (LST or UTC) represented as a 6-element array [year, month, day, hour, cond]. Calendar time components as integers. ported mole fraction or isotope ratio. Units depend on trace gas species. Standard deviation of the reported mean value when nvalue is greater than 1. Units depend on trace gas lumber of individual measurements used to compute reported values. \_atitude of sampling location in decimal degrees (north: +; south: -)

Inequitude:standard,name :	# longitude:_FillValue :	-999.999999999
degrees_east longitude.comment: longitude comment: longitude of sampling location in decimal degrees (east: +; west: -) -	longitude:standard_name :	longitude
degrees_east longitude.units: longitude/comment: longitude/comment: longitude of sampling location in decimal degrees (east: +; west: -) longitude of sampling location in decimal degrees (east: +; west: -) longitude of sampling location in decimal degrees (east: +; west: -) longitude of sampling location in decimal degrees (east: +; west: -) longitude of sampling location in decimal degrees (east: +; west: -) longitude of sampling location in decimal degrees (east: +; west: -) longitude of sampling location in decimal degrees (east: +; west: -) longitude of sampling location in decimal degrees (east: +; west: -) longitude of sampling location in decimal degrees (east: +; west: -) longitude of sampling location in decimal degrees (east: +; west: -) longitude of sampling location in decimal degrees (east: +; west: -) longitude of sampling location in decimal degrees (east: +; west: -) longitude of sampling location in decimal degrees (east: +; west: -) longitude of sampling location in decimal degrees (east: +; west: -) longitude of sampling location in decimal degrees (east: +; west: -) longitude of sampling location in decimal degrees (east: +; west: -) longitude of sampling location in decimal degrees (east: +; west: -) latitude location in decimal degrees (east: +; west: -) latitude location in decimal degrees (east: +; west: -) longitude of sampling location in decimal degrees (east: +; west: -) longitude of sampling location in decimal degrees (east: +; west: -) longitude of antitude in interes above good of antitude interes above good of east location. longitude of east location in decimal degrees (east: +; west: -) longitude of east location in decimal degrees (east: +; west: -) leavation of east location in decimal degrees (east: +; west: -) leavation of east location in decimal degrees (east: +; west: -) leavation of east location in decimal degrees (east: +; west: -) leavation of east location in decimal degrees (east: +; west: -) leavation of east location in decimal degrees (east: +; west: -) leavati	# longitude:long name :	sample_longitude_in_decimal_degrees
Longitude comment :     Longitude of sampling location in decimal degrees (east: +; west: -)   -999.999		
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# altitudecomment : # altitude (elevation + intake height) of air sample collection. Units are meters above sea level (mas)). # altitude (elevation - intake height) of air sample collection. Units are meters above sea level (mas). # altitude (elevation - intake height) of air sample collection. Units are meters above sea level (mas). # altitude (elevation - intake height) of air sample collection. Units are meters above sea level (mas). # altitude (elevation - intake height) of air sample collection. Units are meters above sea level (mas). # altitude (elevation - intake height) of air sample collection. Units are meters above sea level (mas). # altitude (elevation - intake height) of air sample collection. Units are meters above sea level (mas). # altitude (elevation - intake height) of air sample collection. Units are meters above sea level (mas). # altitude (elevation - intake height) of air sample collection. # altitude (elevation - intake height) of air sample collection. # altitude (elevation - intake height) of air sample collection. # altitude (elevation - intake height) of air sample collection. # altitude (elevation - intake height) of air sample collection. # altitude (elevation - intake height) of air sample collection. # altitude (elevation - intake height) of air sample collection. # altitude (elevation - intake height) of air sample collection. # altitude (elevation - intake height) of air sample collection. # altitude (elevation - intake height) of air sample collection. # altitude (elevation - intake height) of air sample collection. # altitude (elevation - intake height) of air sample collection. # altitude (elevation - intake height) of air sample collection. # altitude (elevation - intake height) of air sample collection. # altitude collection. # altitude (elevation - intake height) of air sample collection. # altit		
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elevation.standard.name : elevation.in.meters.above.gea.level  m  Station height (m) above sea level  -999.999 sample intake.height.in.meters.above.ground.level m  Sampling height (depth) of air (seawater) above ground (below sea level) (height: +; depth: -) (m) -999.999 sample intake.height.in.meters.above.ground (below sea level) (height: +; depth: -) (m) -999.999 sample intake.height.in.meters.above.ground (below sea level) (height: +; depth: -) (m) -999.999 sample intake.height.in.meters.above.ground (below sea level) (height: +; depth: -) (m) -999.999 sample intake.height.in.meters.above.ground (below sea level) (height: +; depth: -) (m) -999.999 sample intake.height.in.meters.above.ground (below sea level) (height: +; depth: -) (m) -999.999 sample intake.height.in.meters.above.ground (below sea level) (height: +; depth: -) (m) -999.999 sample intake.height.in.meters.above.ground (below sea level) (height: +; depth: -) (m) -999.999 sample intake.height.in.meters.above.ground (below sea level) (height: +; depth: -) (m) -999.999 sample intake.height.in.meters.above.ground (below sea level) (height: +; depth: -) (m) -999.999 sample intake.height.in.meters.above.ground (below sea level) (height: +; depth: -) (m) -999.999 sample intake.height.in.meters.above.ground (below	faltitude:comment :	Altitude (elevation + intake height) of air sample collection. Units are meters above sea level (masl).
# elevation/ong name : # elevation/units : # elevation/comment : # elevation/comment : # clevation/comment : #	ł elevation:_FillValue :	-999.999
# elevation:comment: # elevation:comment: # intake_height:FillValue : # intake_height:Dog.name : # flask_no:comment : # flask_no:comment : # COG.OGlag_FillValue : # ORG_OGlag_FillValue : # ORG_OGlag_comment : # ORG_OGlag_	‡ elevation:standard_name :	elevation
# elevation:comment: # intake, height.ErillValue: # intake, height.comment: # intake, height.comment: # intake, height.comment: # flask, no:.FillValue: # flask, no:.FillValue: # oRG_QCflag: FillValue: # ORG_QCflag: FillValue: # ORG_QCflag: FillValue: # ORG_QCflag: omment: # ORG_QCflag:	‡ elevation:long_name :	surface_elevation_in_meters_above_sea_level
# intake_height_FillValue : # intake_heightLong_name intake_height_in_meters_above_ground_level # intake_height_in_height_level # intake_height_in_meters_above_ground_level # intake_height_in_height_level # intake_height_	‡ elevation:units :	m
# intake_heightLong_name : # intake_heightunits : # intake_height_in_meters_above_ground level # intake_height_in_meters_above_ground level # intake_height_in_meters_above_ground_level # int	# elevation:comment :	Station height (m) above sea level
# intake_heightLiong_name: # intake_heightunits: # intake_heightunits: # intake_heightunits: # flask_nc:_FillValue: # flask_nc:_FillValue	‡ intake height: FillValue :	-999.999
# intake_heightcomment: # intake_heightcomment: # flask_no.:FillValue: # flask_no.intog_name: # instrument_flitog_name: # instrument_flitog_name: # instrument_flitog_name: # numerio_flitog_name: # numerio_f		sample intake height in meters above ground level
Sampling height (depth) of air (seawater) above ground (below sea level) (height: +; depth: -) (m)   1		
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	_	·
A numeric field that identifies the calibration scale. Measurements are relative to reported calibration scale.	9-	
<u>'</u>	· scale.comment :	numeric neid that identifies the calibration scale. Measurements are relative to reported calibration scale.
VARIABLE ORDER	VARIARI E ORDER	

longitude : Longitude of sampling location in decimal degrees (east: +; west: −)	
altitude : Altitude (elevation + intake height) of air sample collection. Units are meters above sea level (masl).	
elevation : Station height (m) above sea level	
intake_height : Sampling height (depth) of air (seawater) above ground (below sea level) (height: +; depth: -) (m)	
flask_no : Identification code (or number) of flask used for observation	
ORG_QCflag : Details of original data quality control flags should be specified by contributors in metadata.	
QCflag: Quality control flag value that are delivered from data centers to users. (1:Data considered "background", 2:Data considered valid other than "background," or all valid data without categorization, 3:Data considered unfit fo (questionable/erroneous/absent data))	
instrument: : A numeric field that identifies the instrument.	
measurement_method : A numeric field that identifies the measurement method.	
scale : A numeric field that identifies the calibration scale. Measurements are relative to reported calibration scale.	

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<sup>#</sup> site\_gaw\_id year month day hour minute second year month day hour minute second value value\_unc nvalue latitude longitude altitude elevation intake\_height flask\_no ORG\_Qcflag QCflag instrument measurement\_method scale

### 2. Data record format

Data records in the new WDCGG file format are as follows ("+" represents a space): [Site\_gaw\_id]+[Year]+[Month]+[Day]+[Hour]+[Minute]+[Second]+[Year]+[Month]+[Day]+[Hour]+[Minute]+[Second]+[Value]+[Value]+[Value]+[Nvalue]+[Latitude]+[Longitude]+[Altitude]+[Elevation]+[Intake\_height]+[Flask\_no]+[ORG\_QCflag]+[QC flag]+[Instrument]+[Measurement\_method]+[Scale].

## Example:

# site\_gaw\_id year month day hour minute second year month day hour minute second value value\_unc nvalue latitude longitude altitude elevation intake\_height flask\_no ORG\_QCflag instrument measurement\_method scale

RYO 1987 01 01 00 00 00 -999 -9 -9 -9 -9 -9 353.15 0.959 227 39.033000946 141.8170013428 280 260 20 -999.999 3 2 1 9 1

Composition items are as per the table below.

Table. Data record elements

Item	Number of digits	"No Data" expression	Content	Detail
Site_gaw_id	3	-	Site code	3-letter site identification code as defined by
37	1	000	Q <sub>1</sub> , t	GAWSIS for stationary platforms
Year	4	-999	Start year	Initial calendar year of observation
Month	2	-9	Start month	Initial calendar month of observation
Day	2	-9	Start day	Initial day of observation
Hour	2	-9	Start hour	Initial hour of observation
Minute	2	-9	Start minute	Initial minute of observation
Second	2	-9	Start second	Initial second of observation
Year	4	-999	End year	Final calendar year of observation
Month	2	-9	End month	Final calendar month of observation
Day	2	-9	End day	Final day of observation
Hour	2	-9	End hour	Final hour of observation
Minute	2	-9	End minute	Final minute of observation
Second	2	-9	End second	Final second of observation
Value	Variable	-999.999	Observation value	Reported mole fraction, isotope ratio or radioactivity. Units depend on trace gas species.
Value_unc	Variable	-999.999	Uncertainty based on standard deviation	Standard deviation of the reported mean value when Nvalue is greater than 1. Units depend on trace gas species.
Nvalue	Variable	-9	Number of measurements	Number of individual measurements used to compute reported values
Latitude	Variable	-999.999999999	Latitude	Latitude of sampling location in decimal degrees (north: +; south: -)
Longitude	Variable	-999.999999999	Longitude	Longitude of sampling location in decimal degrees (east: +; west: -)
Altitude	Variable	-999.999	Elevation + intake height	Altitude (elevation + intake height) of air sample collection. Units are meters above sea level (masl).
Elevation	Variable	-999.999	Station height	Station height (m) above sea level
Intake_height	Variable	-999.999	Sampling height	Sampling height (depth) of air (seawater) above ground (below sea level) (height: +; depth: -) (m)
Flask_no	Variable	-999.999	Flask identifier	Identification code (or number) of flask used for observation
ORG_QCflag	Variable	-999.999	Original data quality control flag	Details of original data quality control flags should be specified by contributors in metadata.
QCflag	Variable (1 or 2)	-9	WDCGG data flag	1 Valid (background) data considered "background" 2 Valid data considered valid other than "background," or all valid data without categorization 3 Invalid data considered unfit for use (questionable/erroneous/absent data) Details of correspondence between original data quality control flags and WDCGG data flags should be specified by contributors in

				metadata.
Instrument	Variable (1 or 2)	-9	Instrument number	Instrument specification indicated in header
Measurement_method	Variable (1 or 2)	-9	Measurement method code	Measurement method employed.
Scale	Variable (1 to 4)	-9	Scale code	Employed scale in observation

# [Revision history]

2018-08-31 : Format Version. 1.0: Manual publication

2021-03-25: Format Version. 2.0: Addition of DOI and data citation format in header information