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NIES GOSAT-2
Product File Format Descriptions
(Product edition)

Vol.10

GOSAT-2 L4B Global CO_2 Distribution Product

March 2024

National Institute for Environmental Studies
GOSAT-2 Project

Revision History

Version	Revised	Page	Description
00	Oct. 2022	-	-
01	Mar. 2024	Entire	Modified document format (No revision line)
		p.1	Changed product version
			Fixed the product description
			Fixed the major contents
		p.2	Added the following variable • Near surface CO_2 concentration
		p.3	Added the following variable • conc_sfc

Table of Contents

1 Introduction

1.1 Purpose

The purpose of this document is to define the file format of GOSAT-2 L4B Global CO_2 Distribution Product which is one of the Greenhouse gases Observing SATellite-2 (hereinafter referred to as “GOSAT-2”) products generated by the National Institute for Environmental Studies, Japan.

1.2 Product and version

The product and its version described in this document are listed in Table 1-1.

Table 1-1 Product and version

Product name	Product version
GOSAT-2 L4B Global CO_2 Distribution Product	01.02

01

2 GOSAT-2 L4B Global CO_2 Distribution Product

(1) Product description

GOSAT-2 L4B Global CO_2 Distribution Product stores global three-dimensional distributions of CO_2 concentration estimated from GOSAT-2 L4A Global CO_2 Flux Product using an atmospheric transport model.

01

(2) Major contents

Global three-dimensional distributions of CO_2 concentration (2.5-degree mesh, 17 vertical levels, 6-hourly)

01

(3) Category

Standard

(4) Unit

Annually

(5) Format

NetCDF

(6) File naming convention

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
G	O	S	A	T	2	Y	Y	Y	Y	M	M	y	y	y	y	m	m	_	4	B	C	O	2	C	V	M	M	N	N	R	R	o	o	o	o	.	n	c

GOSAT2: Satellite name (Fixed)
YYYYMM: Start month of concentration distribution calculation (Year, Month) (UTC)
yyyymm: End month of concentration distribution calculation (Year, Month) (UTC)
4B: Processing level (Fixed)
CO2C: Product code (Fixed)
V: Processing identifier (V: Steady, T: Test), added as necessary
MMNN: Product version (MM: Major version, NN: Minor version)
RR: Revision
oooo: Input data version
nc: Extension (Fixed)

(7) File size

Approx. 1090 MB

3 File format

3.1 Components

The components of the product are shown in Table 3-1.

Table 3-1 Components of GOSAT-2 L4B Global CO_2 Distribution Product

Dimensions	• Number of grid points along the longitudes • Number of grid points along the latitudes • Number of pressure levels • Number of time steps
Variables	• Longitude • Latitude • Pressure • Time • CO_2 concentration • Near surface CO_2 concentration • Surface pressure

01

3.2 File format details

The file format details of the product are shown in Table 3-2.

Table 3-2 File format of GOSAT-2 L4B Global CO_2 Distribution Product

DIMENSIONAL VARIABLE / DATA VARIABLE / GLOBAL ATTRIBUTE	DIMENSION	ATTRIBUTE (属性)		DATA TYPE	VARIABLE NAME / GLOBAL ATTRIBUTE NAME	DESCRIPTION
		ATTRIBUTE NAME	CONTENT			
dimensions						
lon	-	-	-	-	Number of grid points along the longitudes	144
lat	-	-	-	-	Number of grid points along the latitudes	72
pres	-	-	-	-	Number of pressure levels	17
time	-	-	-	-	Number of time steps	Number of six-hourly data
variables						
lon	lon	units	degrees_east	float	Longitude	East longitude as positive, west longitude as negative
		standard_name	longitude			
lat	lat	units	degrees_north	float	Latitude	North latitude as positive, south latitude as negative
		standard_name	latitude			
pres	pres	units	hPa	float	Pressure	975, 925, 900, 850, 700, 600, 500, 400, 300, 250, 200, 150, 100, 70, 50, 30, 10 hPa pressure levels
		long_name	pressure			
time	time	units	hours since YYYY-1-1 00:00:00	float	Time	Hour since 00:00:00 UTC on January 1st of the respective year
		standard_name	time			
conc	time, pres, lat, lon	units	mol mol-1	float	CO2 concentration	CO2 concentration at each grid point
		missing_value	-9999.0			
		long_name	mole fraction of carbon dioxide in dry air			
conc_sfc	time, lat, lon	units	mol mol-1	float	Near surface CO2 concentration	Near surface CO2 concentration at each grid point
		missing_value	-9999.0			
		long_name	mole fraction of carbon dioxide in dry air near the surface			
ps	time, lat, lon	units	hPa	float	Surface pressure	Surface pressure at each grid point
		missing_value	-9999.0			
		long_name	surface pressure			
global attributes						
title	-	-	-	char	Product name	GOSAT-2 L4B Global CO2 Distribution Product
product_version	-	-	-	char	Product version	VMM.NN (MM: Major version, NN: Minor version)
source	-	-	-	char	Source data	GOSAT-2 L4A Global CO2 Flux Product VMM.NN (MM: Major version, NN: Minor version)
history	-	-	-	char	Data production date	YYYY-MM-DD
references	-	-	-	char	References	Reference information about the product
comment	-	-	-	char	Product description	Six-hourly global CO2 concentrations based on GOSAT-2 L4A Global CO2 Flux Product
institution	-	-	-	char	Data producing agency	National Institute for Environmental Studies
email	-	-	-	char	E-mail address	gosat-2_desk@nies.go.jp
Conventions	-	-	-	char	NetCDF Climate and Forecast Metadata Conventions	CF-1.6

01