

NIES-GOSAT2-SYS-20230331-028-01

Release Note

GOSAT-2 TANSO-FTS-2 SWIR L2
Chlorophyll Fluorescence and Proxy-method Product

Product version 02.00

July 2023

National Institute for Environmental Studies
GOSAT-2 Project

Revision History

Version	Revised on	Page	Description
00	Apr. 2023	-	-
01	Jul. 2023	p.3	Added that released to General users

1 Introduction

The purpose of this document is to provide considerations for the Greenhouse gases Observing SATellite-2 (hereinafter referred to as "GOSAT-2") products generated by the National Institute for Environmental Studies, Japan (hereinafter referred to as "NIES").

Table 1-1 shows the product and its version described in this document.

Table 1-1 Product and version explained in the document

Product name	Product version
GOSAT-2 TANSO-FTS-2 SWIR L2 Chlorophyll Fluorescence and Proxy-method Product	02.00

2 Difference from the previous version

Difference between the previous version (01.07) and this version (02.00) is shown below.

2.1 Change of algorithm

The change of processing algorithm is shown below.

- (1) A zero-level offset and an ILS stretch factor are introduced to the state vector of each retrieval processing.
- (2) With the changes in Section 2.1(1) and 2.2, the coefficient of empirical noise is reevaluated.
- (3) With the changes in Section 2.1(1) and (2), and 2.2, some of the post-screening criteria are changed.

2.2 Change of input data

The change of input data is shown below.

- (1) TANSO-FTS-2 L1B Product as the input product was updated. For more information, refer to the release note of TANSO-FTS-2 L1B Product (GST-200008).
- (2) The TSIS-1 Hybrid Solar Reference Spectrum is used for the solar irradiance data used in the retrieval processing.
- (3) Fix the bug that the wavenumber grid of the FTS-2 Band1 O₂ absorption cross section look-up-table used in the retrieval processing was off by one point (0.01 cm⁻¹).
- (4) The SEOM Improved Atmospheric Spectroscopy Databases is used as the line parameter of the FTS-2 Band3 CH₄ to calculate the absorption cross section look-up-table used in the retrieval processing.

2.3 Change of product format

The change of File Format is shown below.

- (1) Newly added the following datasets.
 - RetrievalResult_*/zero_level_offset_*
 - RetrievalResult_*/ils_stretch_factor_*

3 Important information

The important information for this product version is shown below.

- (1) The L1 product version corresponding to this product version is shown below.
 - TANSO-FTS-2 L1B Product: 210.210

Note: The spectra before sensitivity correction stored under SoundingData/RawSpectrum is used in the retrieval processing of this product. The instrument characteristic information used in retrieval processing of products of this version is the same those used for the conversion of the sensitivity-corrected spectra stored under SoundingData/Radiance of TANSO-FTS-2 L1B V210.210.
- (2) In this version, in retrieval processing, ground surface was treated as Lambertian surface in all cases.
- (3) In this version, in retrieval processing, the following TANSO-FTS-2 Instrument characteristic information was used.
 - Instrument line shape function (ILSF) date version: May 25, 2020
 - radiance conversion coefficient (Rad_CNV) date version: Jan. 11, 2022
 - time-dependent radiance correction coefficient (RAD_Time_Wave_Deg) date version: May 25, 2020
 - complex refractive index of the scanner mirror (SCANNER_REFRACTION) date version: Oct. 10, 2018
- (4) The following datasets store invalid value.
 - CloudInformation/FTS-2_TIR
 - RetrievalResult_*/wind_speed_*
 - RetrievalResult_B1_*/fluorescence_*
- (5) Only each data of “Good” quality flag should be used, although XCH4_proxy_quality_flag, XCO_proxy_quality_flag under GasColumn_Proxy and SIF_quality_flag under SolarInducedFluorescence store four-level quality flags: “Good”, “Fair”, “Poor”, and “NG”.

4 Version-upgrade history

Table 4-1 shows the version-upgrade history of this product.

Table 4-1 Version-upgrade history

Product version	Date	Remarks
01.02	Dec. 2019	Released to RA users
01.03	Apr. 2020	Changed algorithm Changed product format Released to RA users
	Nov. 2020	Released to General users
01.04	Jul. 2021	Changed algorithm Changed input data Changed important information Released to RA users
	Dec. 2021	Released to General users
01.07	Oct. 2021	Changed input data Changed important information Released to RA users
	Dec. 2021	Released to General users
02.00	Apr. 2023	Changed algorithm Changed input data Changed important information Released to RA users
	Jul. 2023	Released to General users