NIES-GOSAT2-SYS-20251028-016-00

Release Note

GOSAT-2 TANSO-CAI-2 L1B Product

Product version 03.20

November 2025

National Institute for Environmental Studies
GOSAT-2 Project

Revision History

Version	Revised	Page	Description
00	Nov. 2025	-	-

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.
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 TANSO-CAI-2 L1B Product	03.20

2 Difference from previous version

The difference between the previous version (03.13) and this version (03.20) is shown as follows:

2.1 Change of processing algorithm

The change in the processing algorithm for generating this product is shown as follows:

(1) Changed to apply dark output for each band and each pixel calculated periodically using dark calibration mode observation data in the processing. Updates are performed once a year, in January.

(2) Added the processing to detect instantaneous spikes in the prescan pixels (even 4 pixels, odd 4 pixels) of daytime observation (instantaneous spike evaluation), and added the processing to exclude detected pixels from the average calculation in the dark correction formula.

2.2 Change of input data

The change in the input data is shown as follows:

(1) TANSO-CAI-2 L1A Product as the input product was outdated. For more information, refer to the release note of TANSO-CAI-2 L1A Product (GST-200004).

2.3 Change of file format

There is no change in the file format of the product.

3 Important information

The important information for this version is shown as follows:

(1) The input product version corresponding to this version is shown below.
- TANSO-CAI-2 L1A Product: 102.102

(2) As post-launch radiance evaluation, the sensitivity degradation factors are calculated based on evaluation results from the vicarious calibration experiment at the US Railroad Valley (basically once a year), the inter-satellite cross calibration, and the lunar calibration (once a month), and are provided at the URL below. The sensitivity degradation factors are basically updated twice a year, in April and October. The calibrated radiance is calculated by users using the sensitivity degradation factors. For details, refer to the file at the URL below.

Source of TANSO-CAI-2 sensitivity degradation factors
https://prdct.gosat-2.nies.go.jp/documents/documents.html.en

The above corresponding group is shown below.
- ImageData_FWD
- ImageData_BWD

(3) Geometry is calculated by using the post-launch initial calibration result. Geometric information based on ellipsoidal earth model is recorded Band 4 for forward-viewing bands, Band 9 for backward-viewing bands as reference. The CAI-2 L1B geometric accuracy is as follows.
Absolute geometry (evaluated by using the AVNIR-2 reference image)
B4: 128 m, B9: 115 m (1σ)
Relative geometric accuracy (registration evaluated to B4 for forward-viewing bands and B9 for backward-viewing bands)
B1, B2, B3, B6, B7, B8 (500 m bands): 1/3 pixel (1σ)
B5, B10 (1 km bands): 2/3 pixel (1σ)

The above corresponding group is shown below.
- ImageGeometry

4 Version upgrade history

The version upgrade history of the product described in this document is shown in Table 4-1.

Table 4-1 Version upgrade history

Product version	Date	Remarks
02.00	Apr. 2019	Release to RA users
03.00	Jul. 2019	After initial calibration version (L+9M) Released to General users
03.10	Sep. 2019	Changed input data Released to General users
03.11	Dec. 2019	Changed processing algorithm Release to General users
03.12	Aug. 2020	Changed processing algorithm Changed input data Changed file format Release to General users
03.13	May 2022	Changed input data Release to General users
03.20	Nov. 2025	Changed processing algorithm Changed input data Changed important information Release to General users