

NIES-GOSAT2-SYS-20200826-006-00

Release Note

GOSAT-2 TANSO-CAI-2 L1B Product

Product version 03.12

August 2020

National Institute for Environmental Studies
GOSAT-2 Project

Revision History

Version	Revised on	Page	Description
00	Aug. 2020	-	-

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-CAI-2 L1B Product	03.12

2 Difference from the previous version

Difference between the previous version (03.11) and this version (03.12) is shown below.

2.1 Change of algorithm

The change of processing algorithm is shown below.

- (1) Updated of the saturation DN (Digital Number) threshold by evaluating on-orbit lunar calibration (Band 4 and 7).

The datasets that the stored value could be changed due to this update are shown below.

- ImageData_FWD/saturationFlag_FWD
- ImageData_BWD/saturationFlag_BWD

- (2) Updated of pixel-to-pixel sensitivity by evaluating on-orbit lunar calibration (Band 3 and 8).

The datasets that the stored value could be changed due to this update are shown below.

- ImageData_FWD/band03
- ImageData_BWD/band08

- (3) Changed to output Pixel/Line number index (FWD) and Pixel/Line number index (BWD) in case of the partial data loss.

The datasets that the stored value could be changed due to this update are shown below.

- ForwardBackwardCollocation/index_BWD_pixel
- ForwardBackwardCollocation/index_BWD_line
- ForwardBackwardCollocation/index_FWD_pixel
- ForwardBackwardCollocation/index_FWD_line

2.2 Change of input data

The change of input data is show below.

- (1) The version of TANSO-CAI-2 L1A Product as the input product is updated. For more information, refer to the release note of TANOS-CAI-2 L1A Product (GST-200004).

2.3 Change of product format

The change of product format is shown below.

- (1) Changed “Group / Dataset” of the following datasets.
 - (Before) LineAttribute/PreAmpTempQuality_FWD
 - (After) LineAttribute/preAmpTempQuality_FWD
 - (Before) LineAttribute/PreAmpTempQuality_BWD
 - (After) LineAttribute/preAmpTempQuality_BWD

3 Important information

The important information for this product version is shown below.

- (1) The input product version corresponding to this product version is shown below.
 - TANSO-CAI-2 L1A Product: 102.102
- (2) Radiance calibration factor is estimated from the vicarious calibration experiment at the US Railroad Valley in July 2019. The CAI-2 L1B radiance is calculated by using the radiometric conversion coefficient based on the pre-flight test result. The calibrated radiance is calculated by users as follows.

$$\text{Calibrated_Radiance} = \text{L1B_Radiance} \times \text{Calibration_Factor}$$

Calibration_Factor (FWD-viewing bands)

B1	B2	B3	B4	B5
0.977	0.926	1.003	1.041	1.159

Calibration_Factor (BWD-viewing bands)

B6	B7	B8	B9	B10
1.052	1.108	1.047	1.086	1.036

Time-series degradation is not shown from the lunar calibrations and inter-satellite comparisons.

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: 128m, B9: 115m (1 σ)

Relative geometric accuracy (registration evaluated to B4 for FWD-viewing bands and B9 for BWD-viewing bands)

B1, B2, B3, B6, B7, B8 (500m bands): 1/3 pixel (1 σ)

B5, B10 (1km bands): 2/3 pixel (1 σ)

The above corresponding group is shown below.

- ImageGeometry

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
02.00	Apr. 2019	Released 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 algorithm Released to General users
03.12	Aug. 2020	Changed algorithm Changed input data Changed product format Released to General users