GOSAT-2 Product Overview Description

- **Level 1 Products**
  - **GOSAT-2 TANSO-CAI-2 L1B Product**
    
    GOSAT-2 TANSO-CAI-2 L1B Product contains spectral radiance data per pixel converted from sensor outputs stored as digital values in TANSO-CAI-2 L1A Product. Band-to-band registration of each forward- and backward-viewing band is applied to this product. In addition, ortho-correction is performed to observation location data based on an earth ellipsoid model, which are decimated and stored in TANSO-CAI-2 L1A Product, using digital elevation model data to put information of observation location with regard to elevation to all pixels.

  - **TANSO-FTS-2 L1B Product - SWIR**
    
    TANSO-FTS-2 L1B Product contains spectrum data derived by performing Fourier transformation and other corrections to raw interferogram data in TANSO-FTS-2 L1A Product, as well as data of observation footprint.

    The SWIR observations are conducted only during daytime and the files stored SWIR specific data including spectrum (SWIR files) are not generated for the night time. In SWIR files, both spectrum data before and after the sensitivity correction are stored in V/cm\(^1\) and W/cm\(^2\)/str/cm\(^{-1}\), respectively.

  - **TANSO-FTS-2 L1B Product - TIR**
    
    TANSO-FTS-2 L1B Product contains spectrum data derived by performing Fourier transformation and other corrections to raw interferogram data in TANSO-FTS-2 L1A Product, as well as data of observation footprint.

    TIR files contain TIR specific information (e.g. spectrum) where spectrum data after sensitivity corrections using blackbody and deep space calibration data as well as those after the finite field of view correction are stored in W/cm\(^2\)/str/cm\(^{-1}\).

- **Level 2 Products**
  - **GOSAT-2 TANSO-CAI-2 L2 Cloud Discrimination Product**
    
    GOSAT-2 TANSO-CAI-2 L2 Cloud Discrimination Product stores clear-sky confidence levels per pixel, which are calculated by combining the results of threshold tests for multiple features such as reflectance ratio and Normalized Difference Vegetation Index (NDVI), obtained from spectral radiance data in GOSAT-2 TANSO-CAI-2 L1B Product.

    This product also stores cloud status bit data, in which results of individual threshold tests and quality flags for cases liable to be erroneously recognized, are summarized.
**GOSAT-2 TANSO-CAI-2 L2 Aerosol Property Product**

GOSAT-2 TANSO-CAI-2 L2 Aerosol Property Product stores aerosol property data retrieved from spectral radiance data in GOSAT-2 TANSO-CAI-2 L1B Product using MWP method*: over the ocean, data derived from the 5 bands in the sight direction that are not affected by sunglint (specular reflection of sunlight), and on land, data from the 10 bands of forward- and backward-viewing are utilized. The spatial resolution of this product is approximately 2 km for some specified areas including Asia, and approximately 5 km for other areas.

*MWP method : multi-wavelength multi-pixel method

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

GOSAT-2 TANSO-FTS-2 SWIR L2 Chlorophyll Fluorescence and Proxy-method Product is a dataset of multiple individual retrieval results under the assumption of clear-sky condition from radiance spectrum data in TANSO-FTS-2 L1B Product (L1B Product) using MAP method*. This product stores solar-induced chlorophyll fluorescence data retrieved from Band 1 radiance spectrum in L1B Product as well as column-averaged dry-air mole fraction of atmospheric gases retrieved from Band 2 and 3 radiance spectrum in L1B Product. In principle, all TANSO-FTS-2 SWIR data are subject to process to generate this product.

*MAP method : maximum a posteriori method

**GOSAT-2 TANSO-FTS-2 SWIR L2 Column-averaged Dry-air Mole Fraction Product**

GOSAT-2 TANSO-FTS-2 SWIR L2 Column-averaged Dry-air Mole Fraction Product stores column-averaged dry-air mole fraction of atmospheric gases retrieved by a full-physics method from Band 1-3 radiance spectrum data in TANSO-FTS-2 L1B products using MAP method*. TANSO-FTS-2 SWIR data acquired under the condition where no cloud or only optically thin cirrus clouds are present within the TANSO-FTS-2 instantaneous field of view, are used to generate this product.

*MAP method : maximum a posteriori method

**GOSAT-2 TANSO-FTS-2 TIR L2 Cloud and Aerosol Property Product**

GOSAT-2 TANSO-FTS-2 TIR L2 Cloud and Aerosol Property Product stores the clear-sky discrimination results from the threshold method, the slicing method and the split-window method, as well as cloud and aerosol properties for cloudy cases, which are retrieved from Band 4-5 radiance data in TANSO-FTS-2 L1B Product. In principle, all data of TANSO-FTS-2 TIR are subject to process to generate this product.

**GOSAT-2 TANSO FTS-2 TIR L2 Temperature and Gas Profile Product**

GOSAT-2 TANSO-FTS-2 TIR L2 Temperature and Gas Profile Product stores vertical profiles of air temperature and gas concentrations retrieved from Band 4-5 radiance spectrum in TANSO-FTS-2 L1B Product using MAP method*. This product is generated only in cases cloud free condition within the instantaneous field of view of TANSO-FTS-2.

*MAP method : maximum a posteriori method