Calibration processing of GOSAT TANSO

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Greenhouse gases Observing SATellite (GOSAT) is aimed at observing the greenhouse gases, such as CO_2 and CH_4, from space. Thermal And Near infrared Sensor for carbon Observation (TANSO) is carried on the GOSAT satellite. TANSO is composed of 2 instruments, Fourier Transform Spectrometer (FTS) for measuring greenhouse gases absorption spectra, and Cloud and Aerosol Imager (CAI) for cloud detection and the correction of cirrus and aerosol interference within the FTS field of view. The interferogram data (L1A) is converted into calibrated spectra data (L1B) at ground processing system. The processing algorithm is developed through analyzing the laboratory experimental data Main procedure of calibration processing is phase correction of interferogram pairs between observation and calibration data. Spectral accuracy is related with stability of sampling laser wavelength. When the laser wavelength is estimated precisely, the calibrated wavelengths are in good agreement with the atmospheric absorption lines. Other issue is remained in instrument line shape (ILS), which is required by the simulation of observed spectra for TANSO optics. After launching, the ILS of 1.6 micron band is validated by using onboard 1.55 micron diode laser. The ILS of the other channels is validated by using solar spectra. The processed data after the onboard calibrations will be evaluated by vicarious method using accumulated observation data. The vicarious calibration for radiance is studied by preparing the appropriate targets on the earth by using current satellite dataset, such as MODIS, which observes the equivalent wavelengths of the GOSAT observation band. The calibration sites can be used for the radiance comparison with the other satellite observation data. As for SWIR targets, deserts, forests, and snowfield will be selected. As for TIR targets, sea surface temperature is well known by other sensor observations or reliable dataset. This presentation shows the overview of processing

system of calibration for GOSAT sensors.