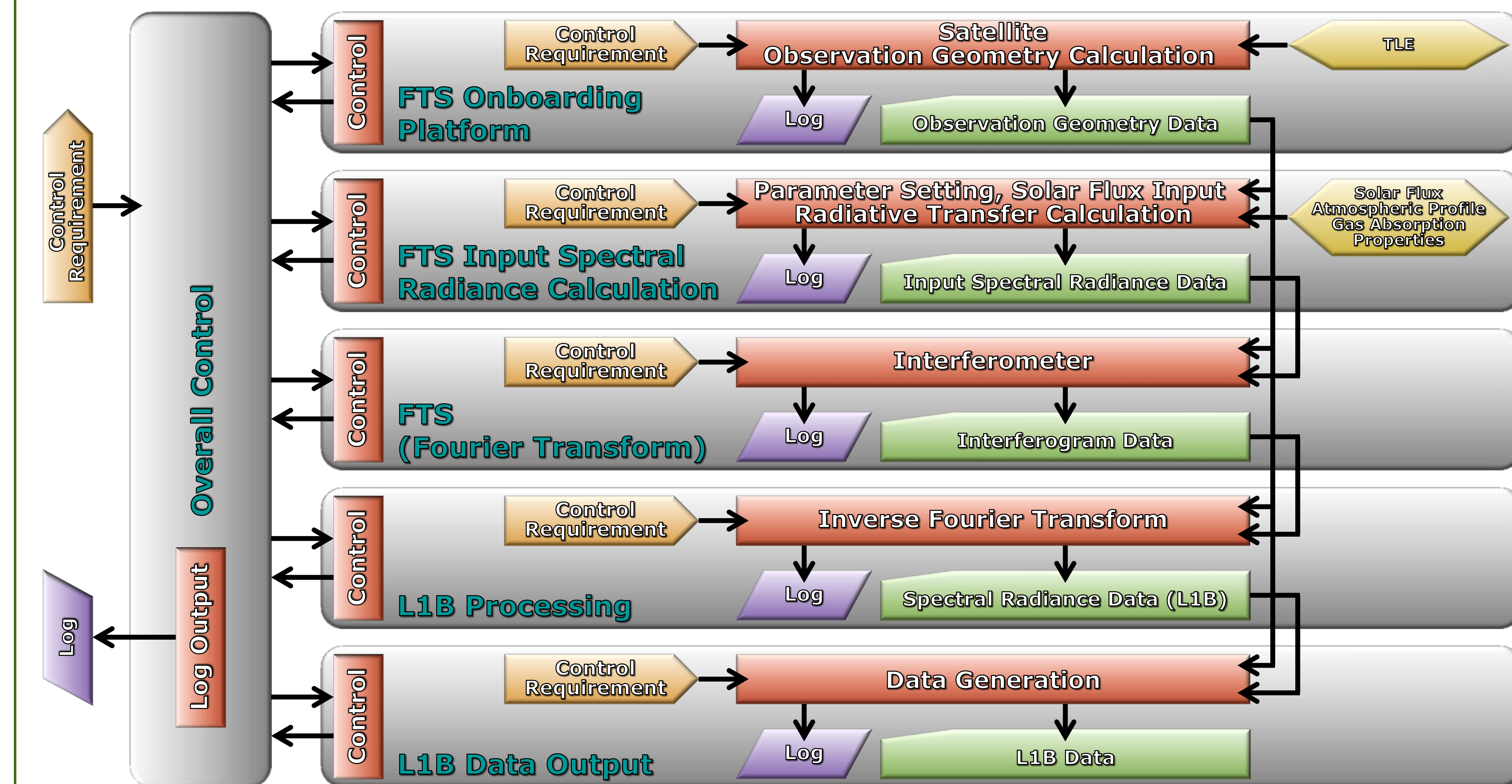




Abstract

The Greenhouse Gases Observing Satellite 2 (GOSAT-2), which is a successor mission to the GOSAT, is planned to be launched in FY 2017. The Fourier Transform Spectrometer (FTS) onboard the GOSAT-2 is a primary sensor to observe sunlight reflected from the Earth's surface and retrieve column amounts of carbon dioxide (CO_2) and methane (CH_4) from the obtained radiance spectra. We have been developing a tool, named GOSAT-2 FTS simulator, which is capable to simulate the spectral radiance data observed by the FTS using Pstar2 code for radiative transfer calculation. The purpose of the GOSAT-2 FTS simulator is to obtain data for utilizing the sensor specification, the optimization of parameters for Level 1 processing, and the improvement of Level 2 algorithms. The GOSAT-2 FTS simulator, composed of the six components: 1) overall control, 2) FTS onboarding platform, 3) FTS input spectral radiance calculation, 4) FTS (Fourier transform), 5) L1B processing, and 6) L1B data output, has been installed on the GOSAT Research Computation Facility (GOSAT RCF). We present an overview and initial results of the GOSAT-2 FTS Simulator.

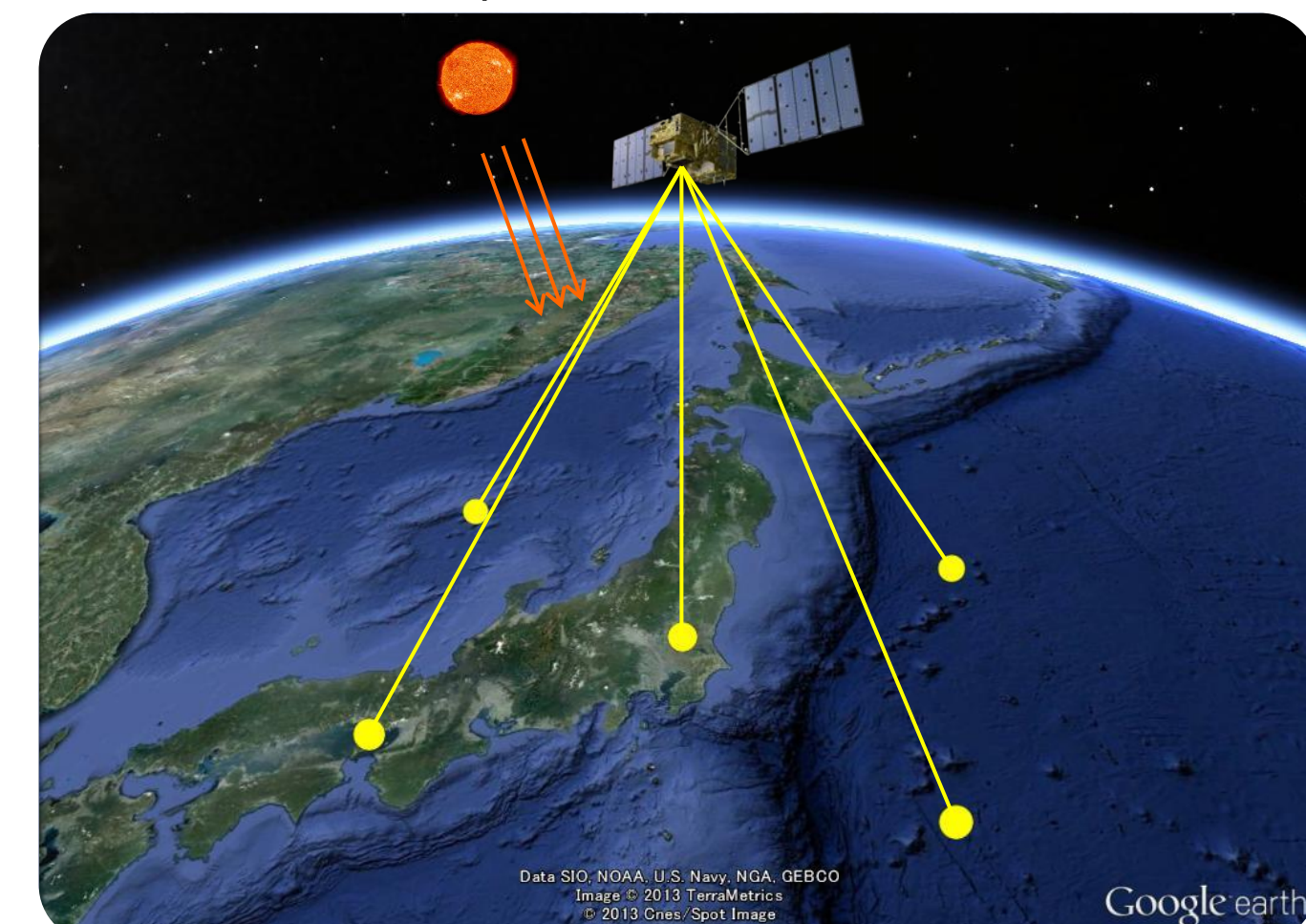
GOSAT-2 FTS Simulator



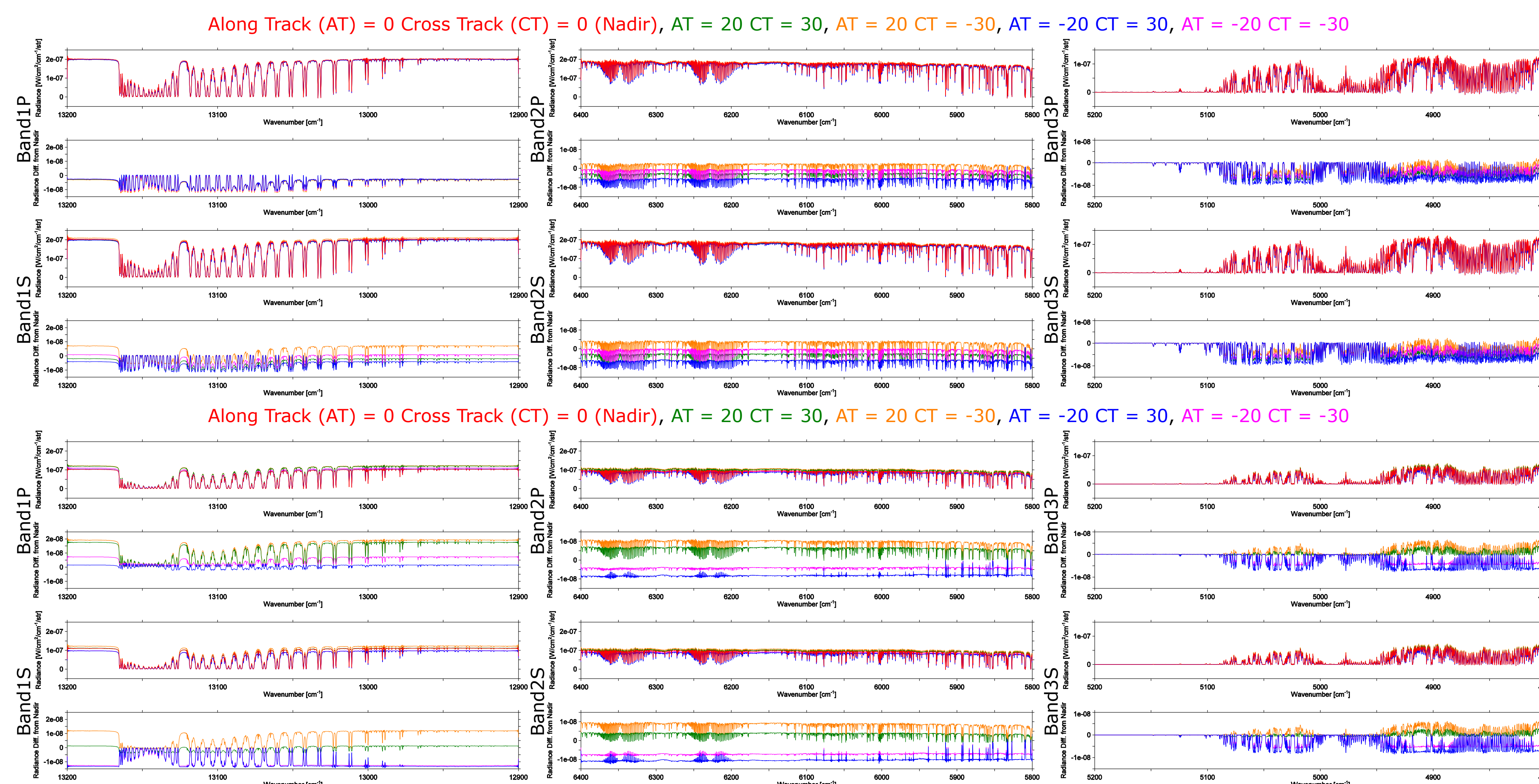
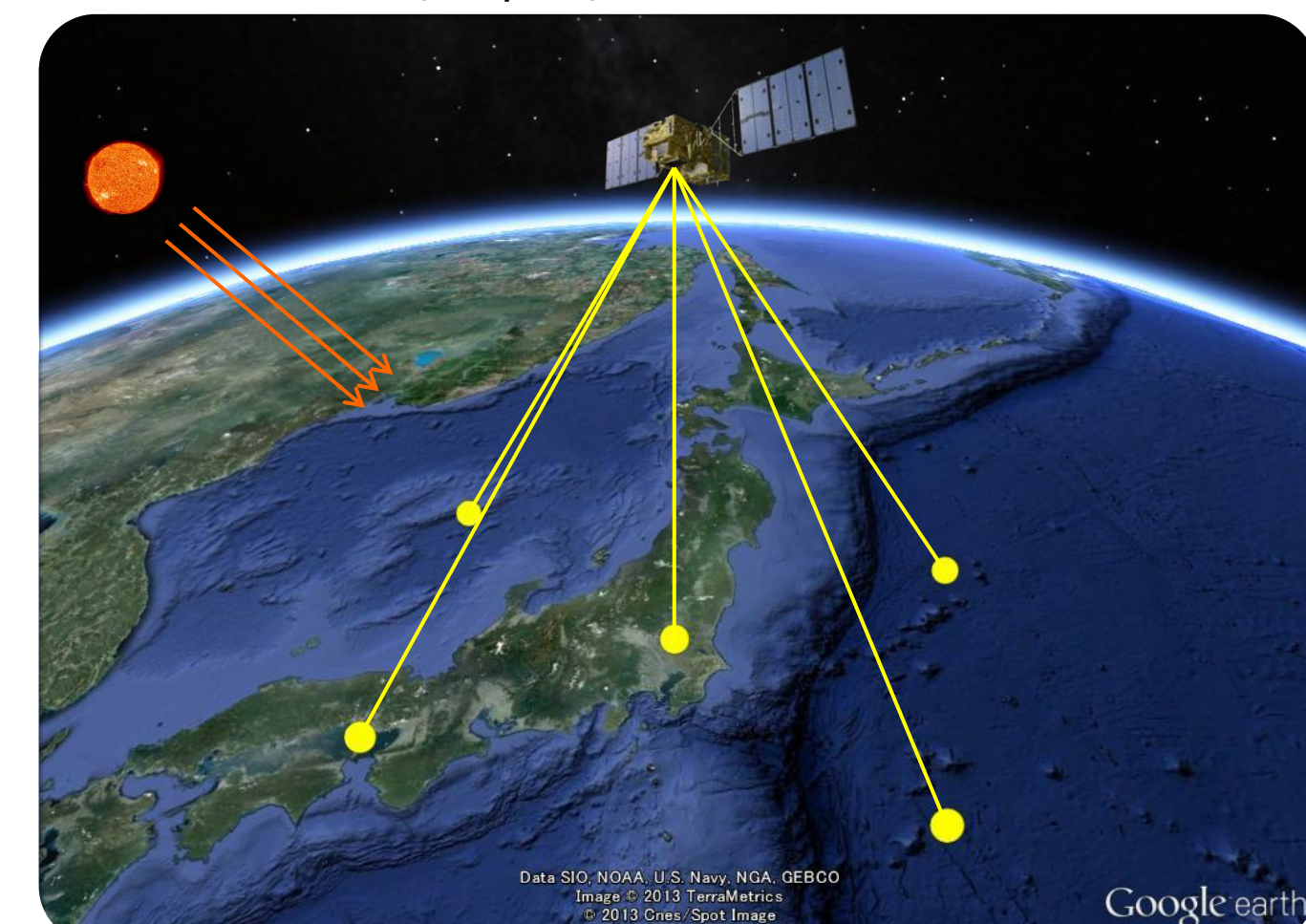
GOSAT RCF
(GOSAT Research Computation Facility)

Initial Results

@Tsukuba, Japan; Summer Solstice of 2012



@Tsukuba, Japan; Winter Solstice of 2012



Summary and Outlook

As a results of checking the operation of the GOSAT-2 FTS simulator in the GOSAT RCF, we have confirmed that it is working properly. In the present study, we have outlined the GOSAT-2 FTS simulator and demonstrated some initial results of simulating the spectral radiance observed over Tsukuba, Japan on the summer solstice and winter solstice of 2012 at nadir and off-nadir with along track and cross track limits by the FTS SWIR onboard the GOSAT.

In the future, we are planning the following:

- Improvement of the GOSAT-2 FTS simulator
- Development of the unimplemented parts
- Comparison with the other radiative transfer simulation results such as MODTRAN
- Refinement of the FTS component by the sensor specification details
- Sensitivity analysis on the L1 and L2 processing
 - Technical parameters
 - A priori values and initial values
 - Aerosols and clouds