

## Development of JEM/SMILES Level 2 Data Processing System

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The Superconducting Submillimeter-wave Limb-Emission Sounder (SMILES) is planned to be launched in 2009 and will be on board the Japanese Experiment Module (JEM) of the International Space Station (ISS). The SMILES carries 4 K cooled Superconductor-Insulator-Superconductor (SIS) mixers to carry out high-sensitivity observations for submillimeter limb-emission sounding. Since the system noise temperature of the SMILES is less than 700 K, the sensitivity of the SMILES is a few times higher than that of similar sensor in orbits, such as Aura/MLS and Odin/SMR. The SMILES measures the atmospheric limb emission from stratospheric minor constituents in the submillimeter-wave range. The target species of the SMILES are O<sub>3</sub>, ClO, HCl, HNO<sub>3</sub>, HOCl, CH<sub>3</sub>CN, HO<sub>2</sub>, BrO, and O<sub>3</sub> isotopes (<sup>18</sup>OOO, <sup>17</sup>OOO, and O<sup>17</sup>OO).

As a part of the ground system for the SMILES, a level 2 data processing system (DPS-L2) has been developed. It retrieves the density distributions of the target species from calibrated spectra in near-real-time. Since DPS-L2 must provide the most accurate basis for results and be implemented under limited computing resources, DPS-L2 algorithm for an operational code has to be accurate and fast. We show the development of the DPS-L2 along with the details on its algorithm and the algorithm performance.