Processing EOS MLS Level-2 Data
NASA’s Jet Propulsion Laboratory, Pasadena, California

A computer program performs level-2 processing of thermal-microwave-radiance data from observations of the limb of the Earth by the Earth Observing System (EOS) Microwave Limb Sounder (MLS). The purpose of the processing is to estimate the composition and temperature of the atmosphere versus altitude from ≈8 to ≈90 km. “Level-2” as used here is a specialists’ term signifying both vertical profiles of geophysical parameters along the measurement track of the instrument and processing performed by this or other software to generate such profiles. Designed to be flexible, the program is controlled via a configuration file that defines all aspects of processing, including contents of state and measurement vectors, configurations of forward models, measurement and calibration data to be read, and the manner of inverting the models to obtain the desired estimates. The program can operate in a parallel form in which one instance of the program acts as a master, coordinating the work of multiple slave instances on a cluster of computers, each slave operating on a portion of the data. Optionally, the configuration file can be made to instruct the software to produce files of simulated radiances based on state vectors formed from sets of geophysical data-product files taken as input.

This work was done by W. Van Snyder, Dong Wu, William Read, Jonathan Jiang, Paul Wagner, Nathaniel Livesey, Michael Schwartz, Mark Filipiak, Hugh Pumphrey, and Zvi Shippony of Caltech for NASA’s Jet Propulsion Laboratory. Further information is contained in a TSP (see page 1).

This software is available for commercial licensing. Please contact Karina Edmonds of the California Institute of Technology at (818) 393-2827. Refer to NPO-33188.

Ground Processing of Data From the Mars Exploration Rovers
NASA’s Jet Propulsion Laboratory, Pasadena, California

A computer program implements the Earth side of the protocol that governs the transfer of data files generated by the Mars Exploration Rovers. It also provides tools for viewing data in these files and integrating data-product files into automated and manual processes. It reconstitutes files from telemetry data packets. Even if only one packet is received, metadata provide enough information to enable this program to identify and use partial data products. This software can generate commands to acknowledge received files and retransmit missed parts of files, or it can feed a manual process to make decisions about retransmission. The software uses an Extensible Markup Language (XML) data dictionary to provide a generic capability for displaying files of basic types, and uses external “plug-in” application programs to provide more sophisticated displays. This program makes data products available with very low latency, and can trigger automated actions when complete or partial products are received. The software is easy to install and use.

The only system requirement for installing the software is a Java J2SE 1.4 platform. Several instances of the software can be executed simultaneously on the same machine.

This program was written by Jesse Wright, Kathryn Studervant, and David Noble of Caltech for NASA’s Jet Propulsion Laboratory. Further information is contained in a TSP (see page 1).

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