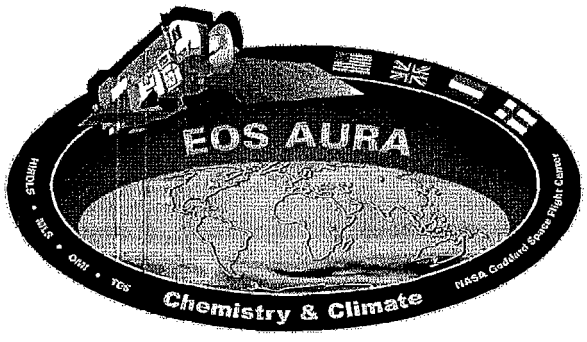
JPL Raytheon **Tropospheric Emission Spectrometer** tes

An Interfaces Approach to TES Ground Data System Processing Design with the Science Investigator-led Processing System (SIPS)

Rose-Marie Kurian

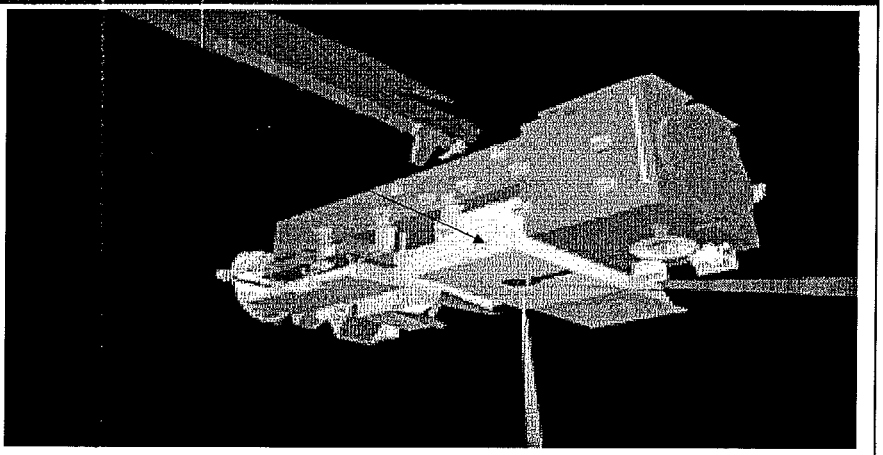
February 28, 2002

JPL Raytheon **EOS-AURA TES** tes



to their understanding

TES on the AURA Platform

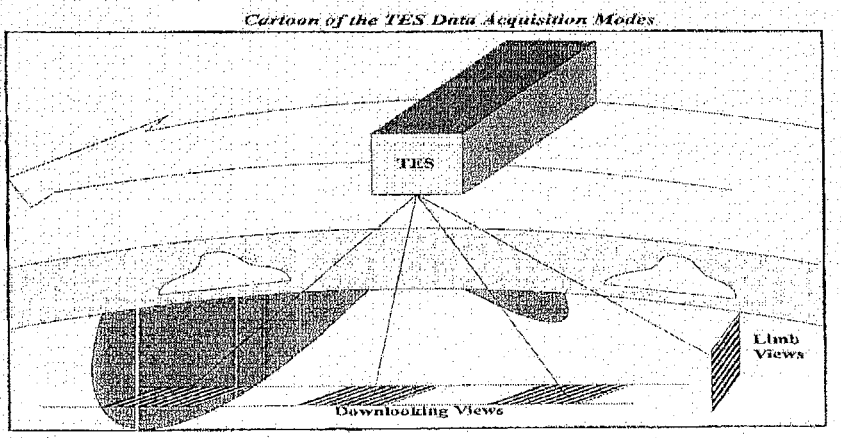


TES on the AURA Platform

Rose-Marie Kurian 3

The TES Experiment Overview

Cartoon of the TES Data Acquisition Modes



Rose-Marie Kurian 4

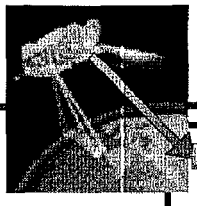
JPL Raytheon

TES GDS Requirements

tes

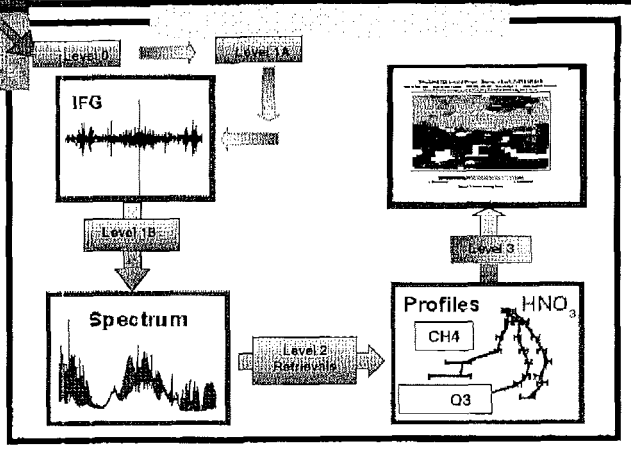
1. Routine Processing of the Global Survey (GS) Observations
2. Processing of Special Research Observations.
3. TES Instrument Mission Planning.

Rosa-Marie Kurian 5



TES Data Processing

tes

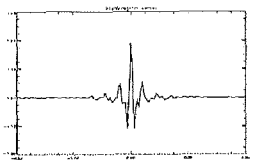


Rosa-Marie Kurian 6

JPL Raytheon

TES Level 1A Processing

tes



Level 1A – Interferogram

All the atmospheric chemical species information is contained in this graph, however the data is not useful until it has been geolocated, calibrated, corrected for instrumental influences, and mathematically transformed into spectral information.

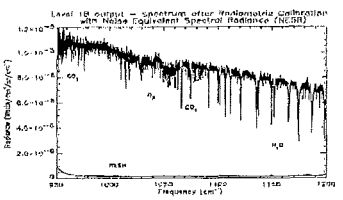
Rose-Marie Kurian

7

JPL Raytheon

TES Level 1B Processing

tes



Level 1B – Spectrum

This spectrum shows the absorption lines of atmospheric gases between 1000 and 1200 cm^{-1}. The atmospheric gases absorb the infrared black body radiation emitted by the earth.

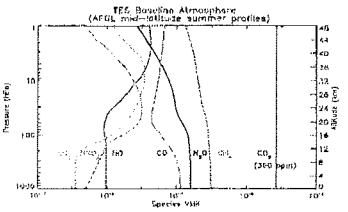
Rose-Marie Kurian

8

JPL Raytheon

TES Level 2 Processing

tes



Level 2 - Molecular profiles

This graph shows 7 atmospheric gas abundances as a function of pressure at one particular geographic location. This plot is calculated by comparing the spectral data with the known spectra of many different gases at different pressures and temperatures

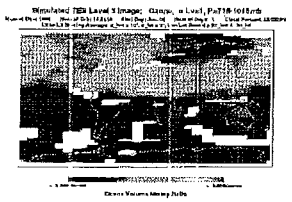
Rose-Marie Kurian

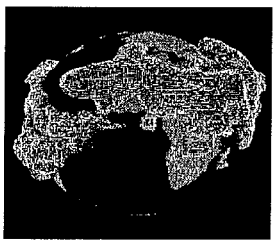
9

JPL Raytheon

TES Level 3 Processing

tes





Level 3 – Global map

Global maps of ozone two dimensional (left) or three dimensional (right) can be produced by combining data at many different geographic locations and at heights ranging from the earth's surface to over 30km

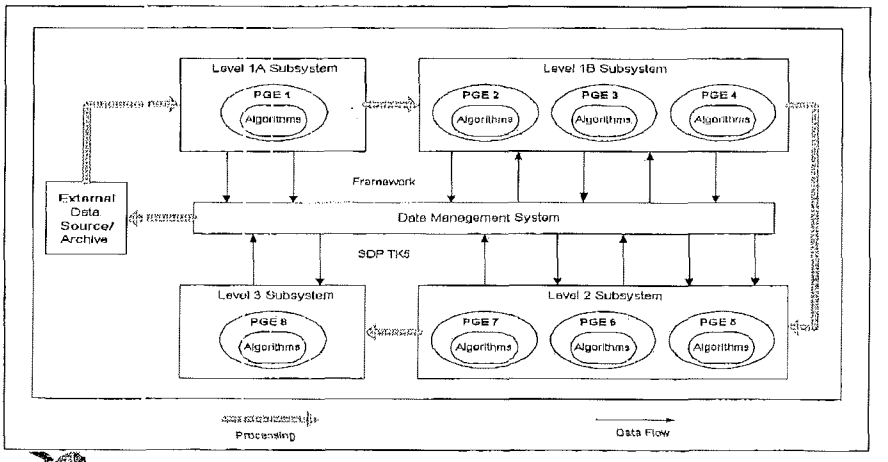
Rose-Marie Kurian

10

JPL Raytheon

TES Science Data Processing System

tes



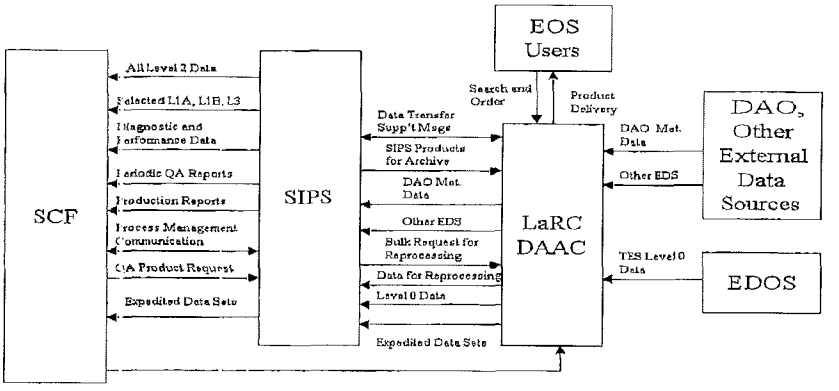
Rose-Marie Kurian

11

JPL Raytheon

TES Ground Data System

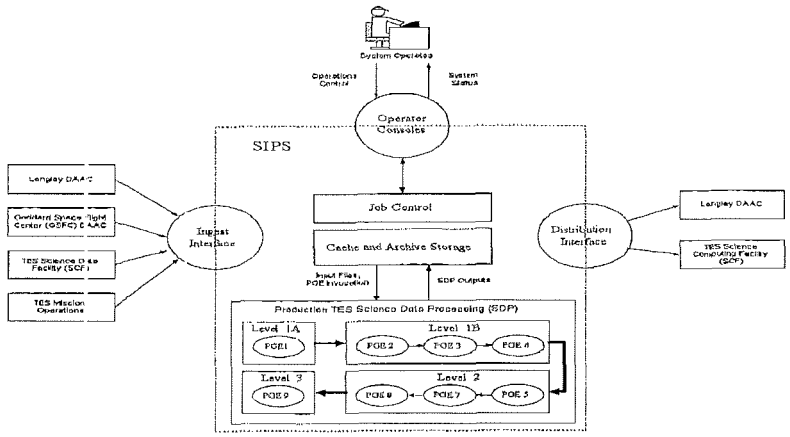
tes



Rose-Marie Kurian

12

SIPS Overview and Interfaces



Rosa-Marie Kurian

13