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The TIMS Investigator's Guide*

Frank D. Palluconi
Jet Propulsion Laboratory
California Institute of Technology**
Pasadena, California 91109

The purpose of this guide is to provide in one location, enough information about the Thermal Infrared Multispectral Scanner (TIMS) that potential investigators can decide whether or not it would provide measurements useful in their research program and to provide a new user of TIMS data sufficient information to begin analysis.

TIMS is a NASA aircraft scanner providing six-channel spectral capability in the thermal infrared region of the electromagnetic spectrum. Operating in the thermal infrared atmospheric window region (8-12 μm) with a sensitivity of approximately 0.1°C TIMS may be used whenever an accurate measurement of spectral radiance or brightness temperature is needed.

The channel locations (full width at half maximum) measured in June of 1984 are: channel (Ch) 1 8.2-8.6, Ch 2 8.6-9.0, Ch 3 9.0-9.4, Ch 4 9.6-10.2, Ch 5 10.3-11.1, Ch 6 11.3-11.7 in micrometers. The peak of ozone absorption is contained within the bandpass of channel 4. The cross-track digitized field-of-view is 76.56°, covered in 638 eight-bit samples (for each channel). Each sample is thus spaced 2.094 mrad from the next. The instantaneous field-of-view is 2.5 mrad. Any one of four scan rates (7.3, 8.7, 12, 25 scans/second) may be selected to provide the desired ground resolution in conjunction with the aircraft speed and altitude. Two temperature controlled reference plates are contained within the instrument. One is sampled at the beginning of every scan and the other is sampled at the end of every scan. This permits scan by scan calibration of the data leading to highly accurate estimates of spectral brightness temperature.

Investigators interested in using TIMS may propose such use through the Earth Science and Applications Division of NASA's Office of Space Science and Applications. The "Guide" provides forms for making specific flight requests, a description of the raw and reduced record formats and a procedure for converting the recorded data to spectral radiance or spectral brightness temperature.

* Infrared Multispectral Scanner (TIMS): An Investigator's Guide to TIMS Data, Palluconi, F. D. and Meeks, G. R., JPL Publication 85-32 (JPL, 4800 Oak Grove Drive, Pasadena, CA, 91109) 32 pp.

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