National Aeronautics and
Space Administration

Goddard Space Flight Center
Greenbelt, Maryland
20771

NASA

Reply to Attn of: 925

April 9, 1993

TO: Distribution

FROM: Phil Slater, UAZ
Chair, MODIS Calibration Peer Review Panel

SUBJECT: MODIS Calibration Peer Review on May 20-21st

As recommended at the MODIS Science Team Meeting on March 24-26, I am convening a MODIS Calibration Peer Review Panel Meeting for May 20 and 21st at GSFC (Rm. 242/Bldg. 16) from 8:00 a.m. to 5:00 p.m.

The agenda for this meeting will include discussion of the committee's mandate. This mandate is to review the components of the MODIS Level-1 Calibration Plan provided by the MODIS Characterization Support Team (MCST) and reviewed by me. The intention is to provide a thorough understanding of the MODIS Level-1 Calibration Strategy & Methodology, including an understanding of the Alpha-Level MODIS Calibration algorithm delivered to the MODIS Science Data Support Team (SDST) by MCST on February 5, 1993. If a draft of the Theoretical Basis document is available at this time, it will be used as the primary means of review.

Please inform me if you are unable to attend this meeting. Thank you for your participation in this critical activity.

Phil Slater

cc:
<u>Members</u>
Robert Evans/U of Miami
Howard Gordon/U of Miami
Alfredo Huete/UAZ
Yoram Kaufman/GSFC/913
Hugh Kieffer/USGS

Attach. #1

Marvin Maxwell/Swales & Assoc.
Paul Menzel/NOAA/NESDIS
Jan-Peter Muller/U of London

Ex Officio Members

Bill Barnes/GSFC/970
Bob Barnes/GSFC/824
Jack Engel/SBRC
Wayne Esaias/GSFC/970.2
Bruce Guenther/GSFC/925
Warren Hovis/TBR
Chris Justice/GSFC/923
Michael King/GSFC/913
Chuck McClain/GSFC/971
Zhengming Wan/UCA

MCST Organizational Structure

Management

Civil Servant
John Barker, Head
Joann Harnden, Deputy

MCST Administration & Planning

Contractor
Paul Anuta, Manager

MCST Administrative Support

Contractor
Baden, Joan*
Knowles Jr., Dan
Nall, Janie#
Richard, Lisa#

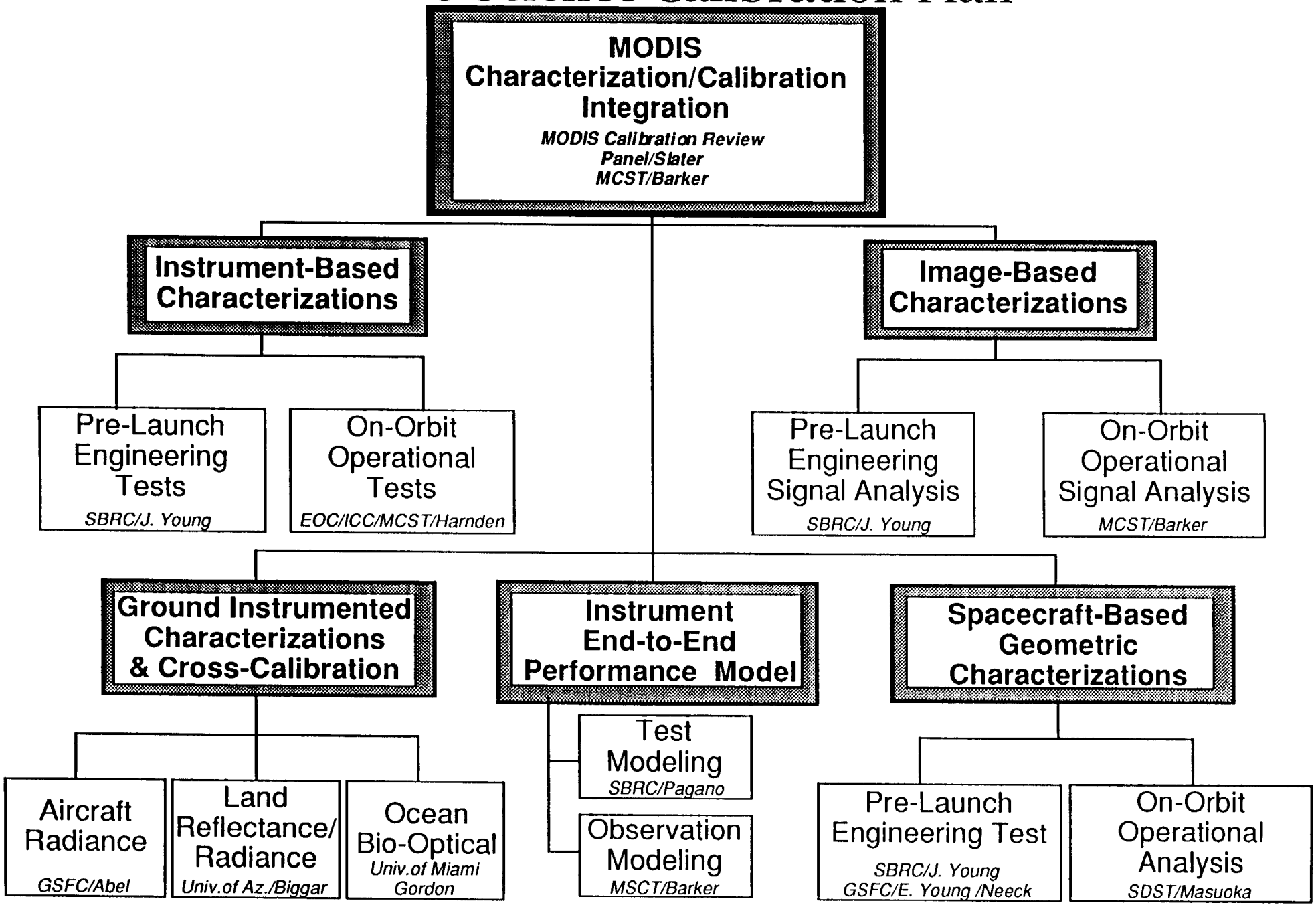
Tasks

CAM	MIC	MOM	MIM
Calibration Algorithms for MODIS	**MODIS Instrument Characterization**	**MODIS (System Performance Product Sensitivity) Modeling**	**MODIS Image-Based Monitoring for Flight Ops**
Civil Servant Brown, Ken# Harnden, Joann* **Contractor** Ardanuy, Phil# Hoyt, Doug# Kvaran, Geir Smid, Jon	**Civil Servant** Brown, Ken# Harnden, Joann*, Acting Neeck, Steve# **Contractor** Knight, Edward (Arrives May, 1993)	**Civil Servant** Markham, Brian# Ungar, Stephen* # **Contractor** Burelbach, Jon	**Civil Servant** Harnden, Joann* **Contractor** Bryant, Tom Engel, Jack# Maxwell, Marv#

*** Task Leader # Part-Time Support**

File: MCST Org Struc Produced By: JBarker/NASA/GSFC/925/MCST 7APR93

MODIS Science Calibration Plan



Filename: MODIS Science Cal. Method #2

John Barker / MCST / 04MAR93 / 12:00:00
NASA / GSFC / 925 , Greenbelt, MD 20771

National Aeronautics and
Space Administration

Goddard Space Flight Center
Greenbelt, Maryland
20771

NASA

Reply to Attn of: 925

April 9, 1993

TO: Distribution

FROM: 925/John Barker/MCST
Coordinator for the MCST Internal Steering Committee

SUBJECT: MCST Steering Committee Meeting on April 19th

In order to review and provide guidance to the MODIS Characterization Support Team (MCST), I am convening an MCST Internal Steering Committee and invite your participation as a member on the Steering Committee. Our first meeting is scheduled for Monday afternoon (1-4 p.m.), April 19th, in the 900 Directorate Conference Room (Bldg16/Rm242).

The agenda for this meeting will include discussion of the committee's mandate, which is to review the proposed MCST tasks funded under the MODIS Team Leader's budget. The primary objective of the meeting will be to review the proposed tasks from the standpoint of preparing for the MODIS Level-1 Calibration Peer Review currently scheduled for a 2-day period, May 20 and 21st, from 8:00 a.m. to 5:00 p.m..

The intention is to provide an opportunity for thoroughly understanding the Alpha-level MODIS Calibration Algorithm delivered to MODIS Science Data Support Team (SDST) by MCST on February 5, 1993.

Please inform me if you are unable to attend this meeting. Thank you for your participation in this critical activity.

John L. Barker

cc:
Members:
Bill Barnes /GSFC/970
Al Fleig /GSFC/920
Joann Harnden/GSFC/925

Attach. #2
Tech Team mtg - 4/15/93

Harry Montgomery/GSFC/402
Stephen Ungar /GSFC/923

Ex Officio Members:

Wayne Esaias/GSFC/970.2
Bruce Guenther/GSFC/925
Chris Justice/GSFC/923
Yoram Kaufman/GSFC/913
Ed Masuoka/GSFC/920.2

Support:

Geir Kvaran/RDC
Jon Smid /RDC

July 2, 1992

MODIS SCIENCE VISUAL SUMMARY

BACKGROUND

Archivist: David Herring (Code 920, 301-286-9515)
Technical Assistance: David Toll (Code 974, 301-286-9256)

A. OVERVIEW, OBJECTIVES AND INSTRUMENTATION

1. EOS MODIS: Global surface productivity and information overlay (C430.01 BD13).

2. MODIS Instrumentation: Sensor illustration and description (D614.001).

3. MODIS Measurement Objectives: Global productivity and measurement objectives (C351.02 BD31).

B. LAND

1. Solar radiation: Surface solar irradiance with atmospheric absorption & land bands (C351.010).

2. Surface Reflectance: Land surface spectral reflectance (0.4-2.3 mm) (C351.011).

3.Solar Radiation: B1 and B2 combined (C351.004).

4. Thermal Radiation: Atmospheric absorption and land emissivity (C351.006).

C. OCEAN

1. Solar Radiation: Surface solar irradiance with ocean bands (D351.004).

2. Absorption Properties: Chlorophyll, accessory pigments, water, and colored organic material absorption (G351.002).

3. Solar Radiation: C1 and C2 combined (D351.005).

4. Radiance above Surface and Top of Atmosphere (G351.001).

5. MODIS-N Sea Surface Temperature (H351.001).

~~MODIS Visual Summary - Page 2~~

D. ATMOSPHERE

1. Solar Radiation: Surface solar irradiance with atmospheric absorption & MODIS bands (C351.012).

2. Water Droplet and Vapor Spherical Albedo (C351.013).

3. Solar Radiation: D1 and D2 Combined (C351.008).

4. Thermal Radiation: Atmosphere absorption and tropospheric temperature, humidity and cloud properties (E351.002).

5. IR Cloud Spectra (F351.001).

6. Clear Sky Thermal Emission (F351.002).

Attach #3
Tech. Team mtg 4/15/93

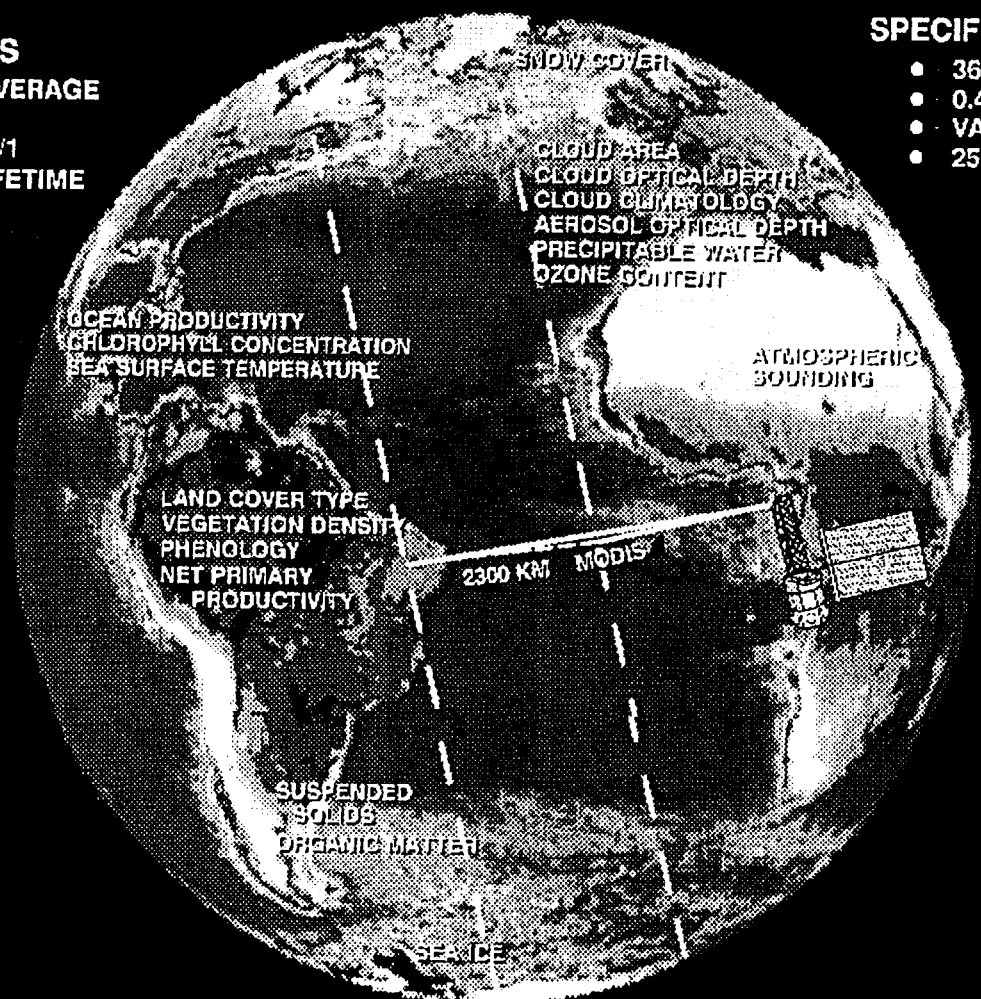
EOS MODERATE RESOLUTION IMAGING SPECTRORADIOMETER (MODIS)

OVERALL FEATURES

- 1-2 DAY GLOBAL COVERAGE
- 12 BIT RADIOMETRY
- SIGNAL/NOISE > 500/1
- 15 YEAR MISSION LIFETIME

SPECIFIC FEATURES

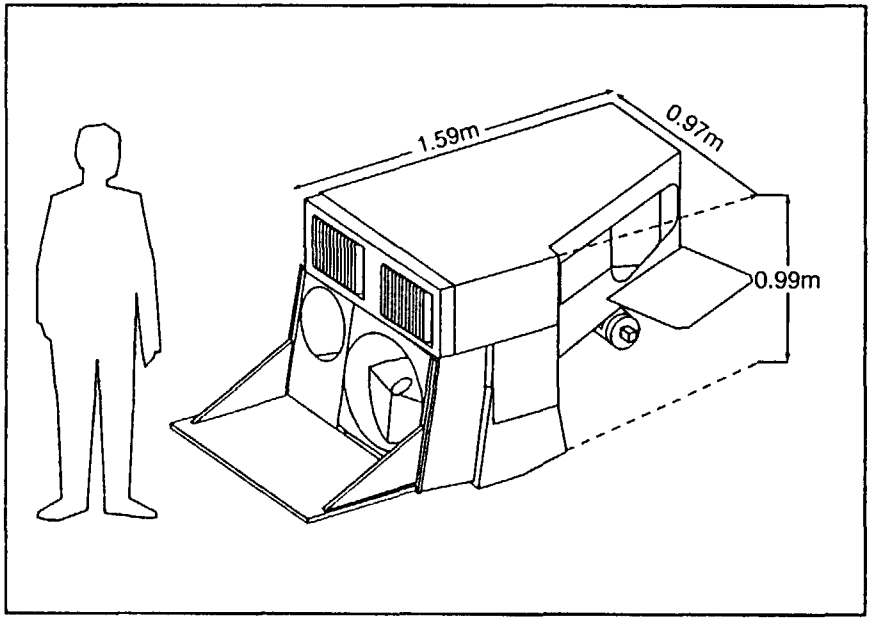
- 36 BANDS
- 0.4-14 MICROMETERS
- VARIOUS BANDWIDTHS (10-500 nm)
- 250m-1000m SPATIAL RESOLUTION



C430.01 BD13

MODIS
MODERATE RESOLUTION IMAGING SPECTRORADIOMETER

EOS



INSTRUMENTATION

MEASUREMENT

- ATMOSPHERE, LAND AND OCEAN PROCESSES

SPECTRAL RANGE 0.4 - 14.2μm

36 SPECTRAL BANDS (10 TO 500 nm BANDWIDTHS)

2 @ 250m IFOV	BOUNDARY (LAND, WATER AND CLOUDS)(650 & 860nm)
5 @ 500m IFOV	LAND AND CLOUDS(469-2130nm)
9 @ 1000m IFOV	OCEANS (412-869nm)
3 @ 1000m IFOV	ATMOSPHERE (905, 936 & 940nm)
17 @ 1000m IFOV	ATMOSPHERE & SURFACE TEMPERATURE (3.7-14.2μm)

S/N 500 OR GREATER

5.4 Mbps ORBITAL AVERAGE DATA RATE

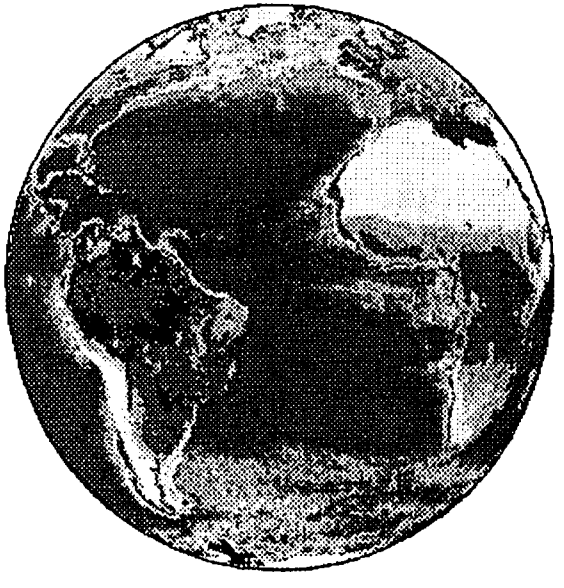
2330 KM SWATH WIDTH

$\pm$55° VIEW ANGLE

D614.001

MODIS MEASUREMENT OBJECTIVES

EOS

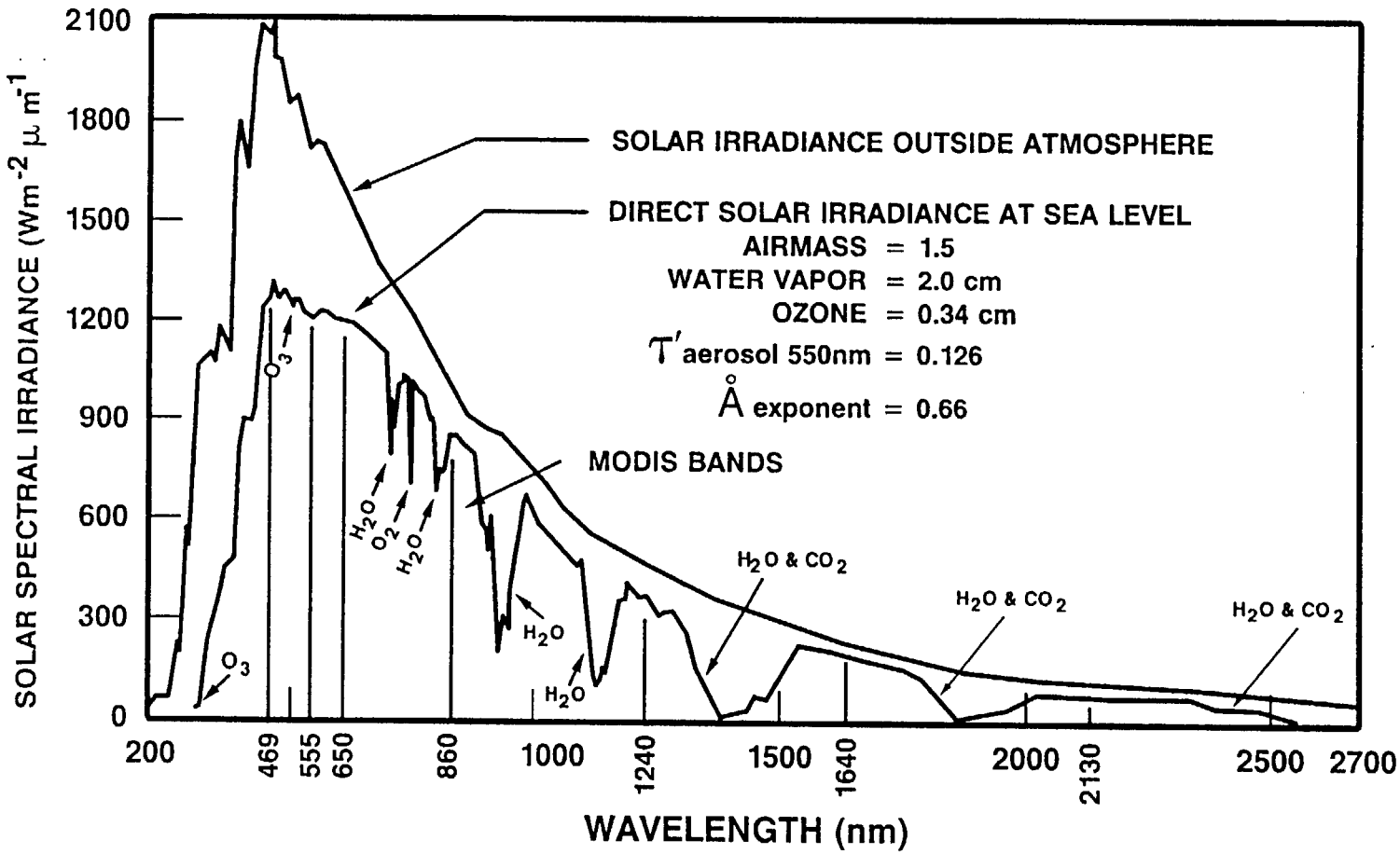


- SURFACE TEMPERATURE (LAND AND OCEAN)
- OCEAN COLOR (SEDIMENT, PHYTOPLANKTON)
- GLOBAL VEGETATION MAPS
- GLOBAL CHANGE (DEFORESTATION AND DESERTIFICATION)
- CLOUD CHARACTERISTICS
- AEROSOL CONCENTRATIONS, PROPERTIES
- TEMPERATURE AND MOISTURE SOUNDINGS
- SNOW AND ICE COVER CHARACTERISTICS
- OCEAN CURRENTS

C351.02 BD31

LAND-SOLAR RADIATION

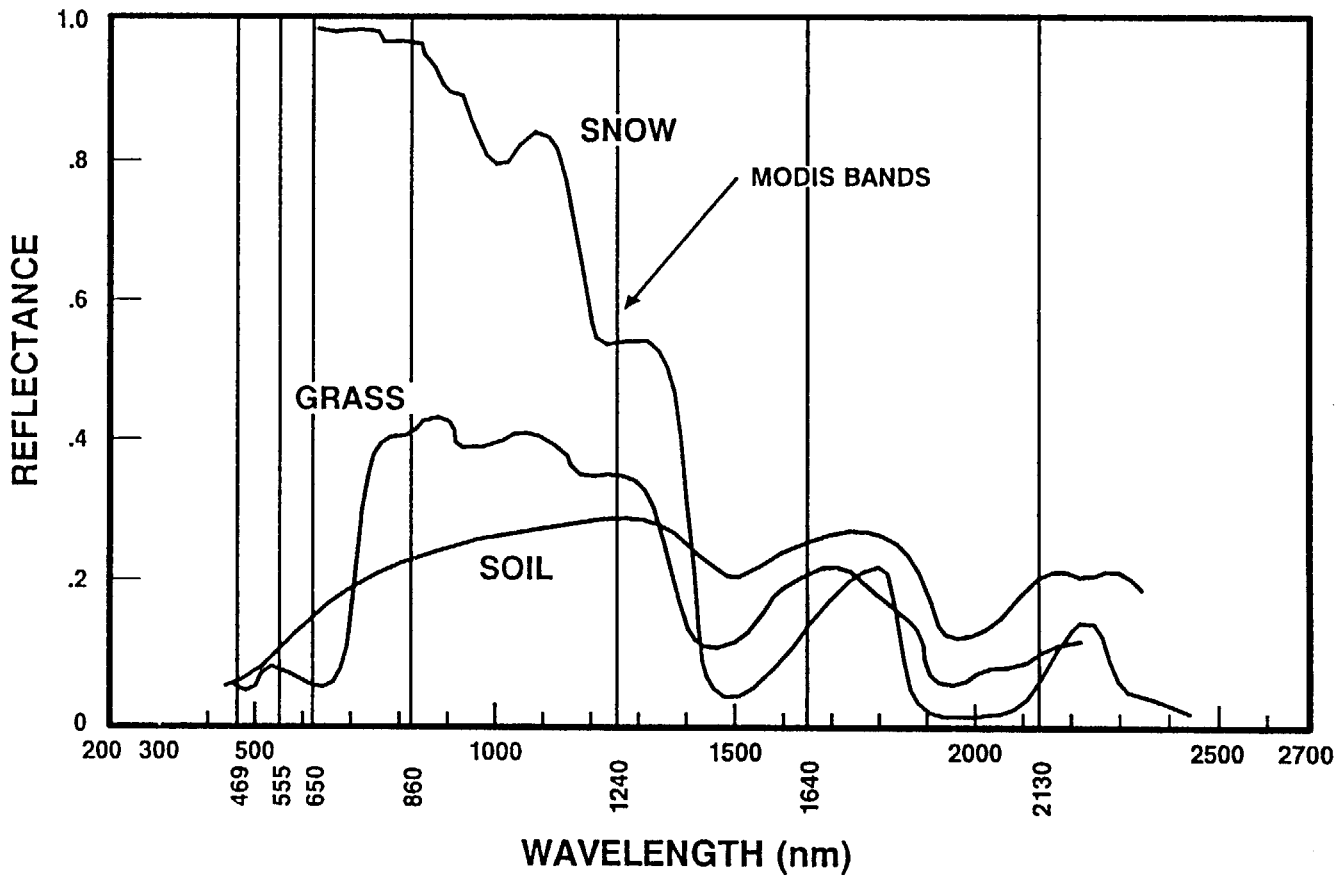
EOS



C351.010

LAND - SURFACE REFLECTANCE

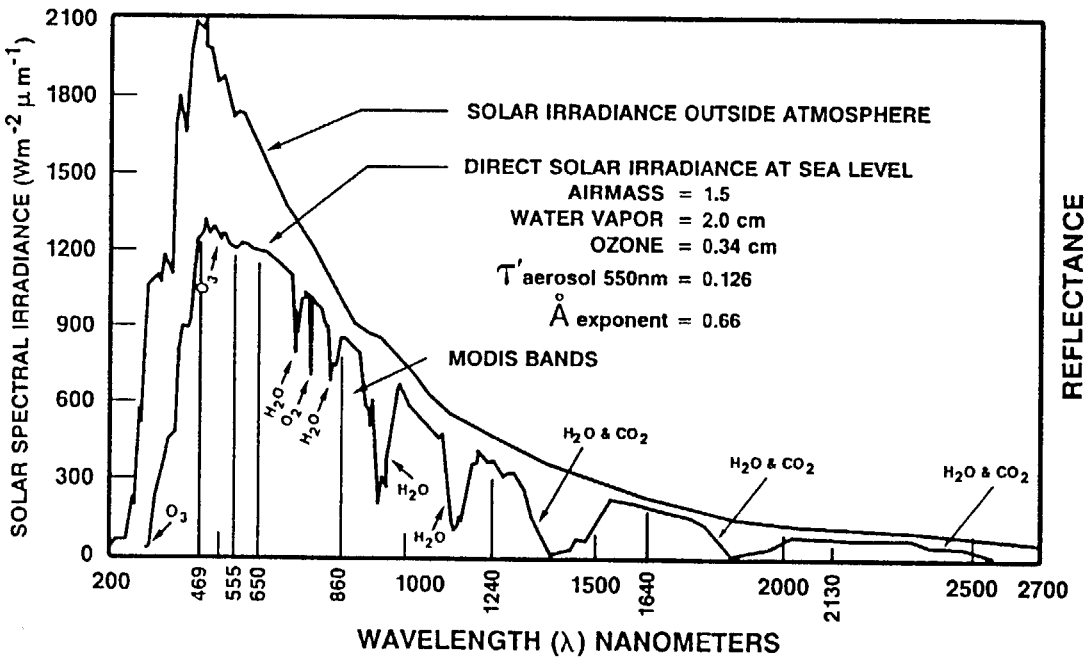
EOS

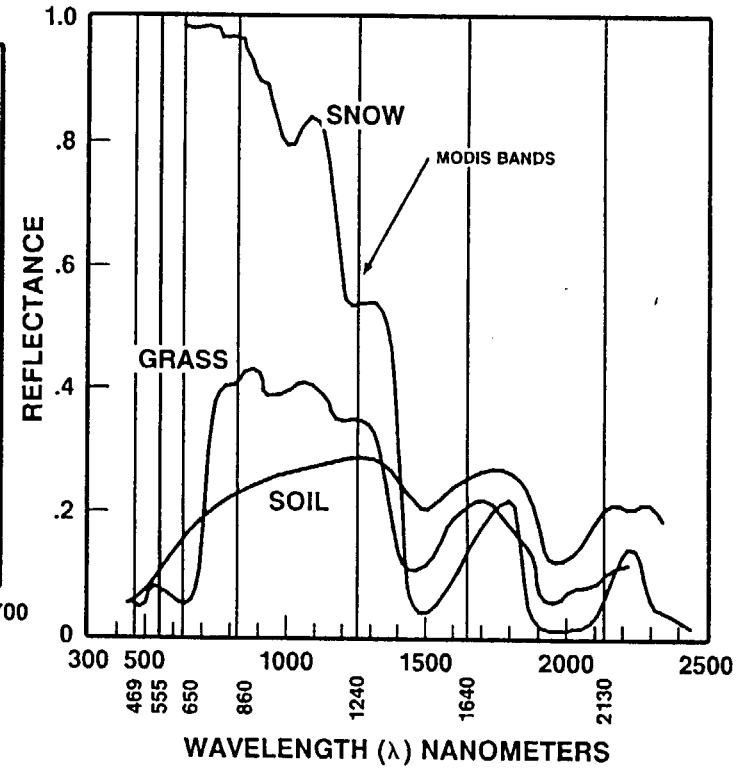


C351.011

LAND-SOLAR RADIATION

EOS

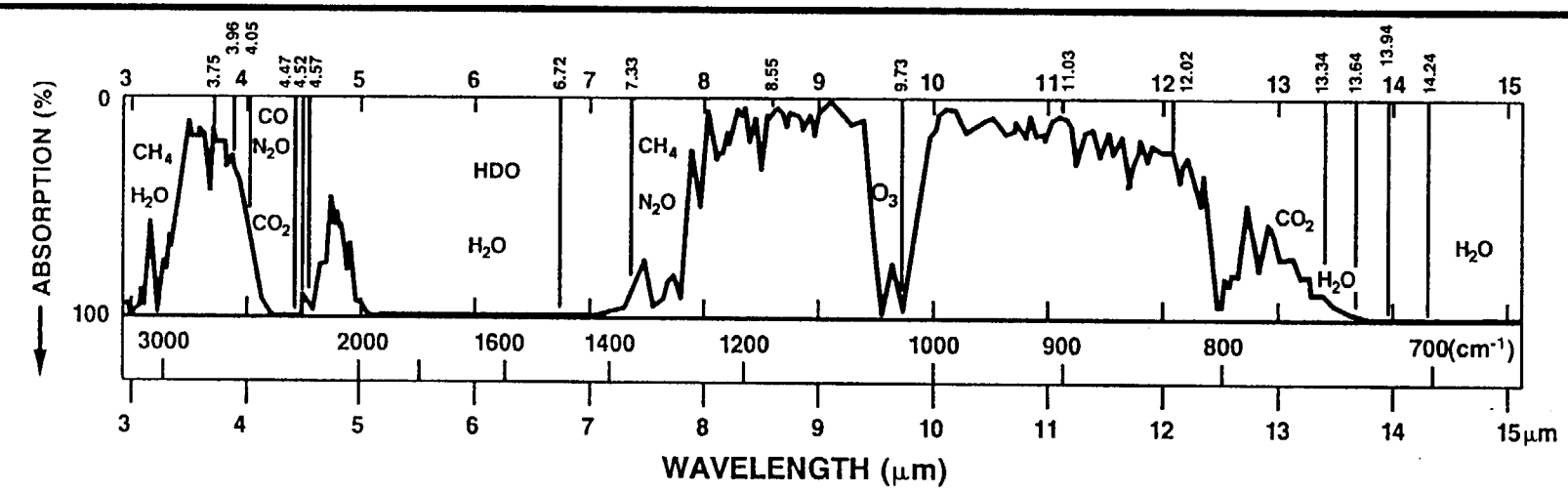


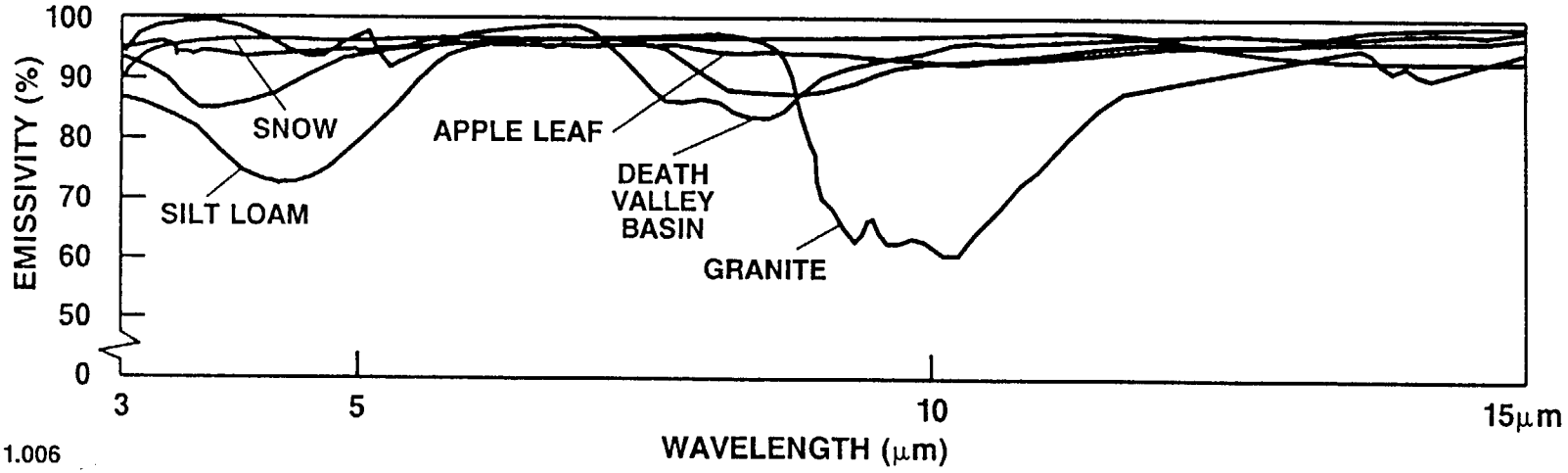


C351.004

LAND - THERMAL RADIATION

EOS

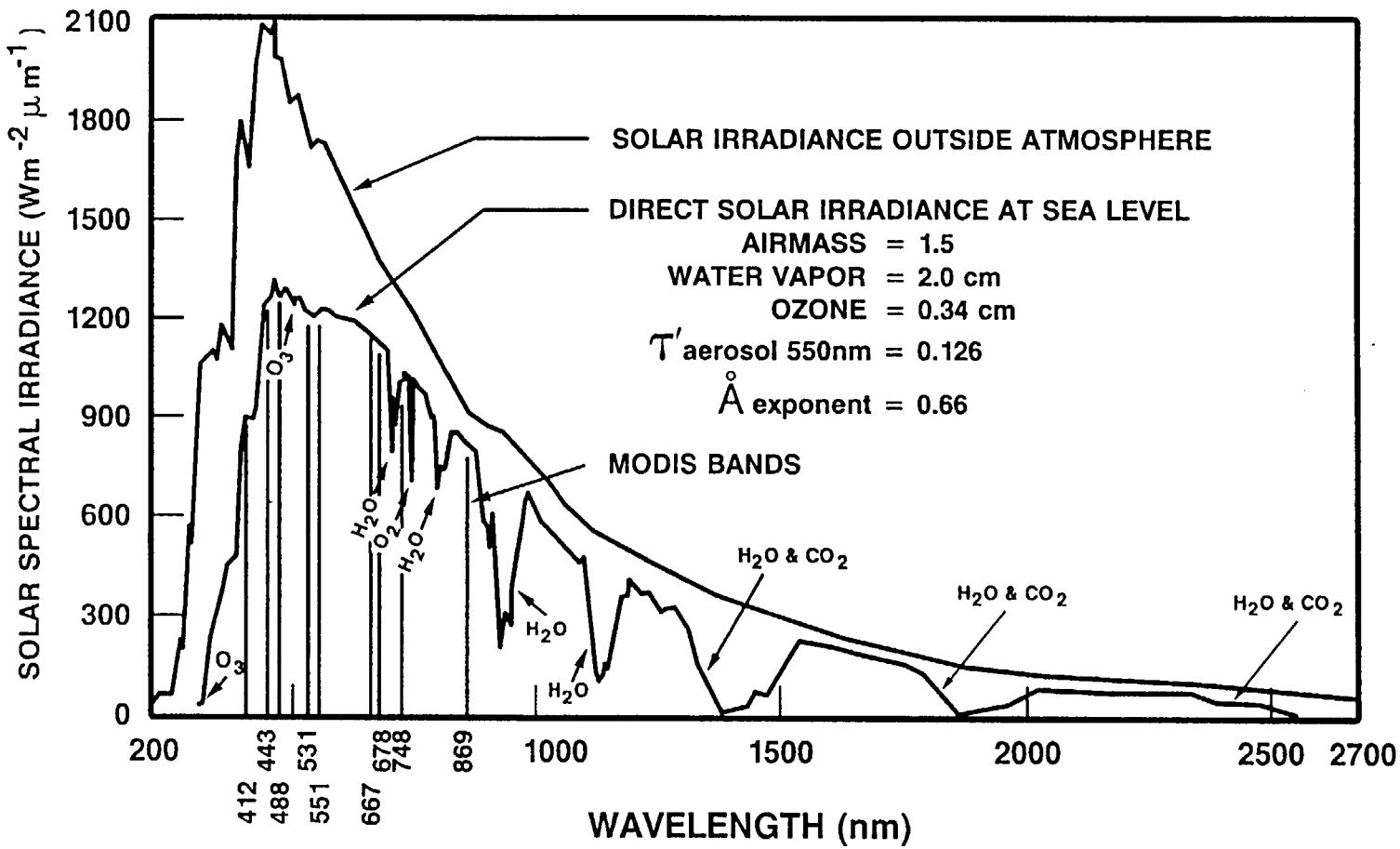




C351.006

OCEAN-SOLAR RADIATION

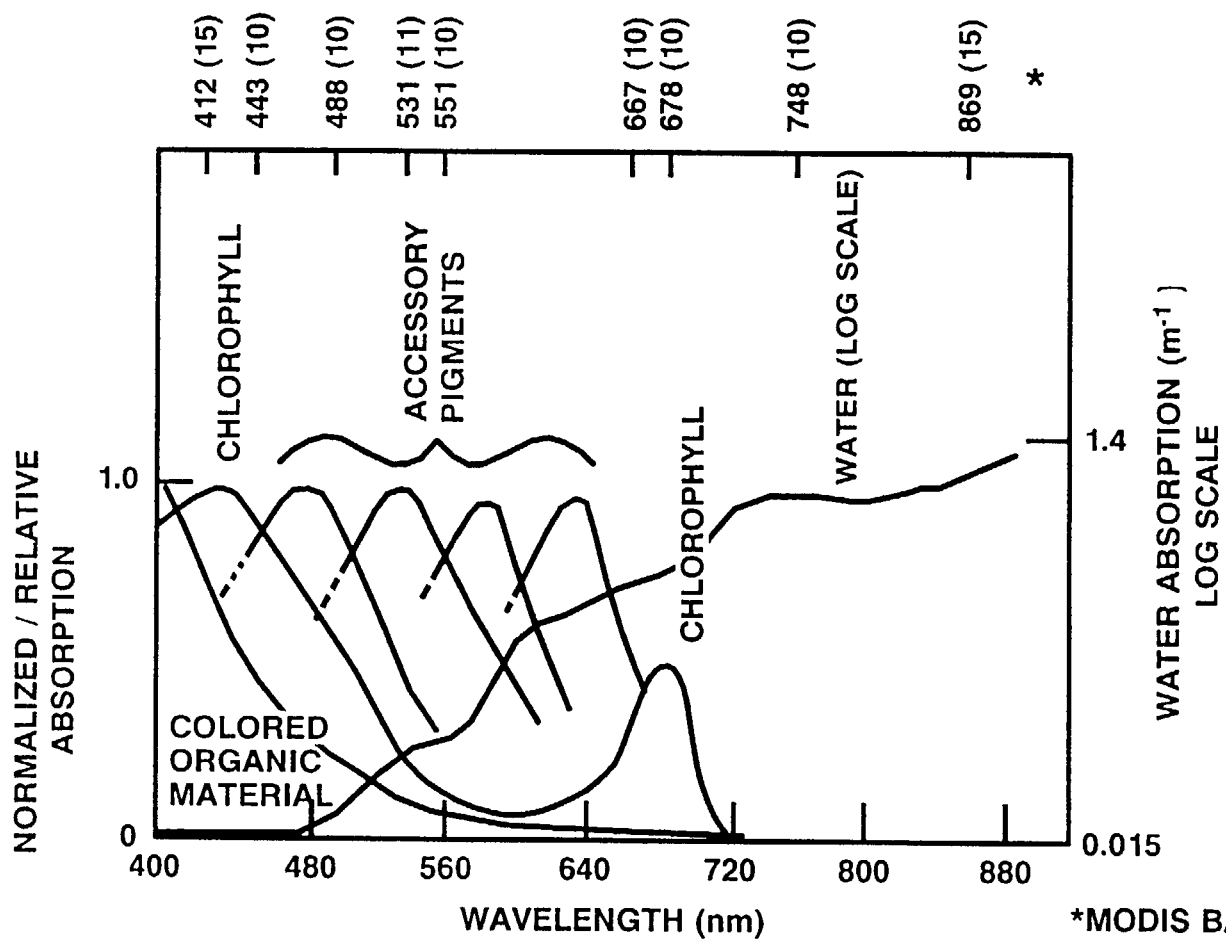
EOS



D351.004

OCEAN-ABSORPTION PROPERTIES

EOS

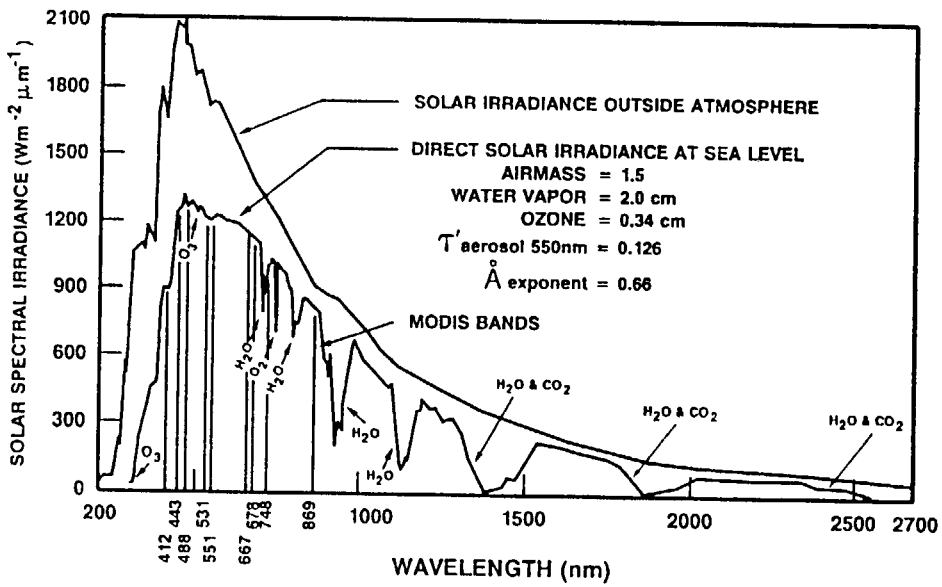


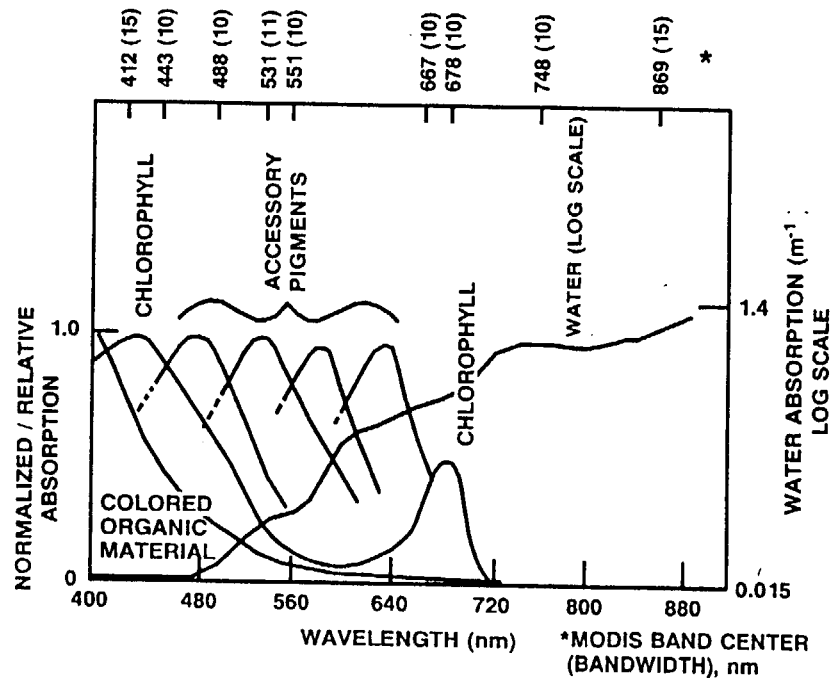
*MODIS BAND CENTER (BANDWIDTH), nm

G351.002

OCEAN-SOLAR RADIATION

EOS

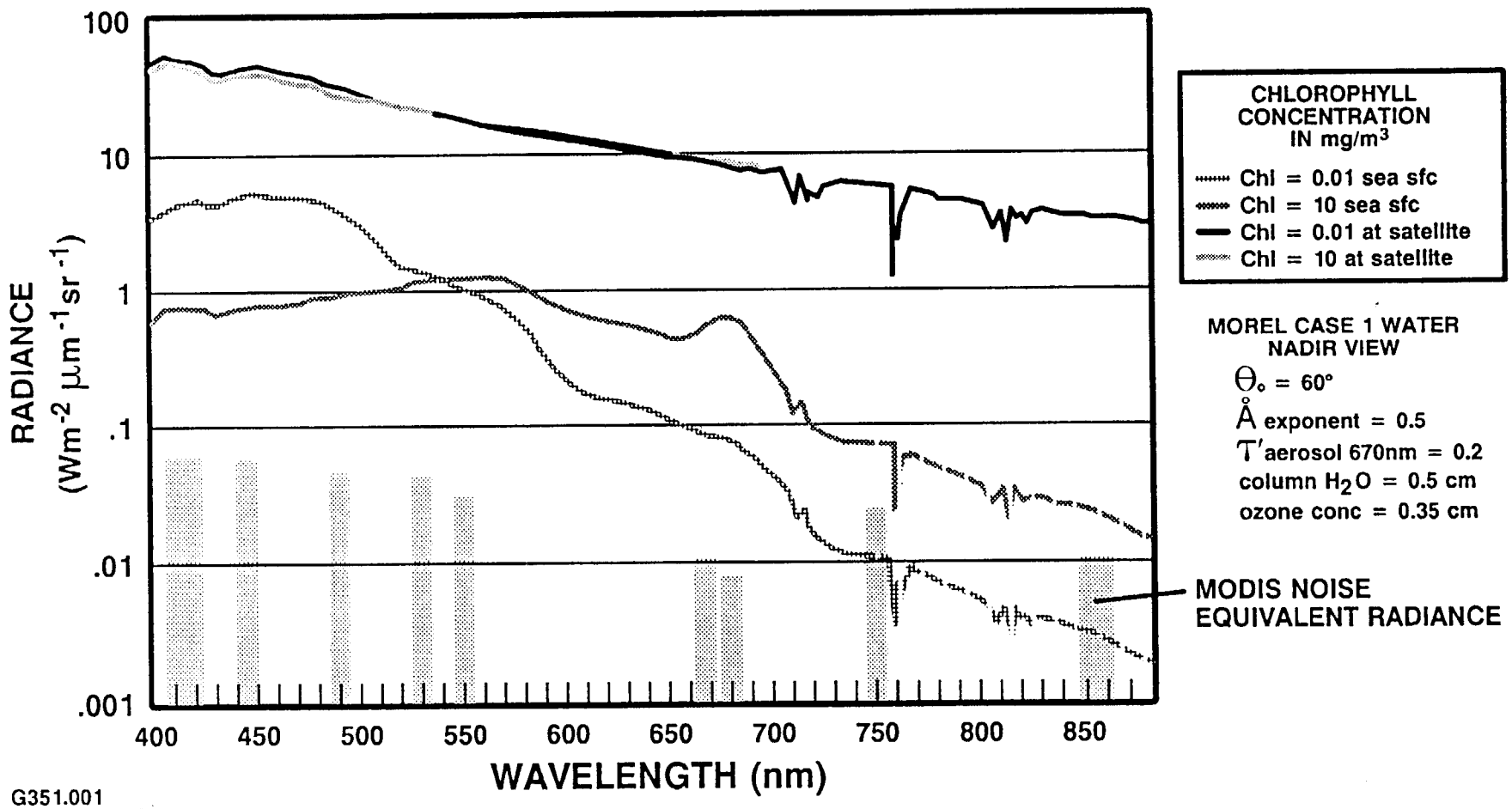




D351.005

OCEAN RADIANCES ABOVE SURFACE AND TOP OF ATMOSPHERE

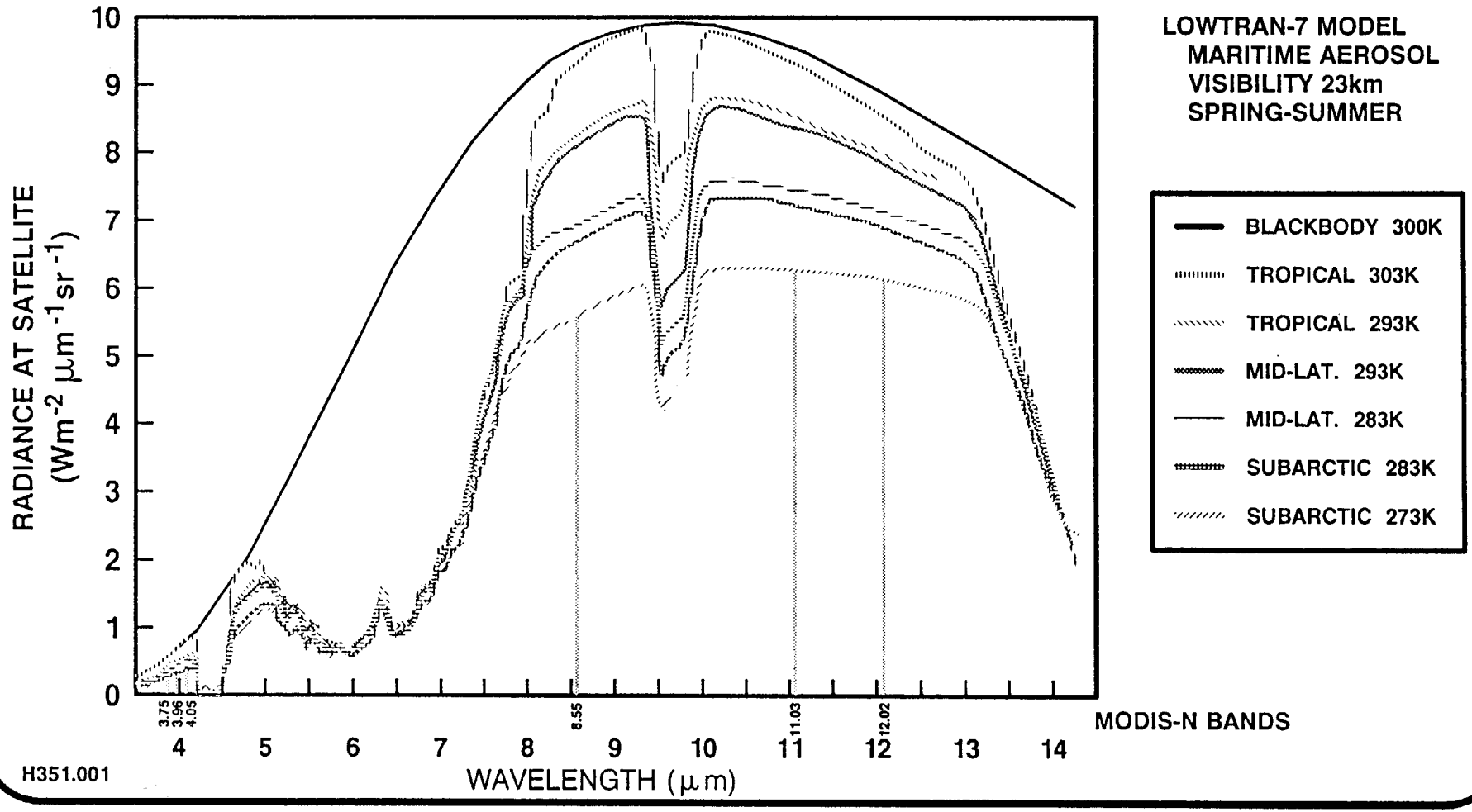
EOS



G351.001

MODIS SEA SURFACE TEMPERATURE

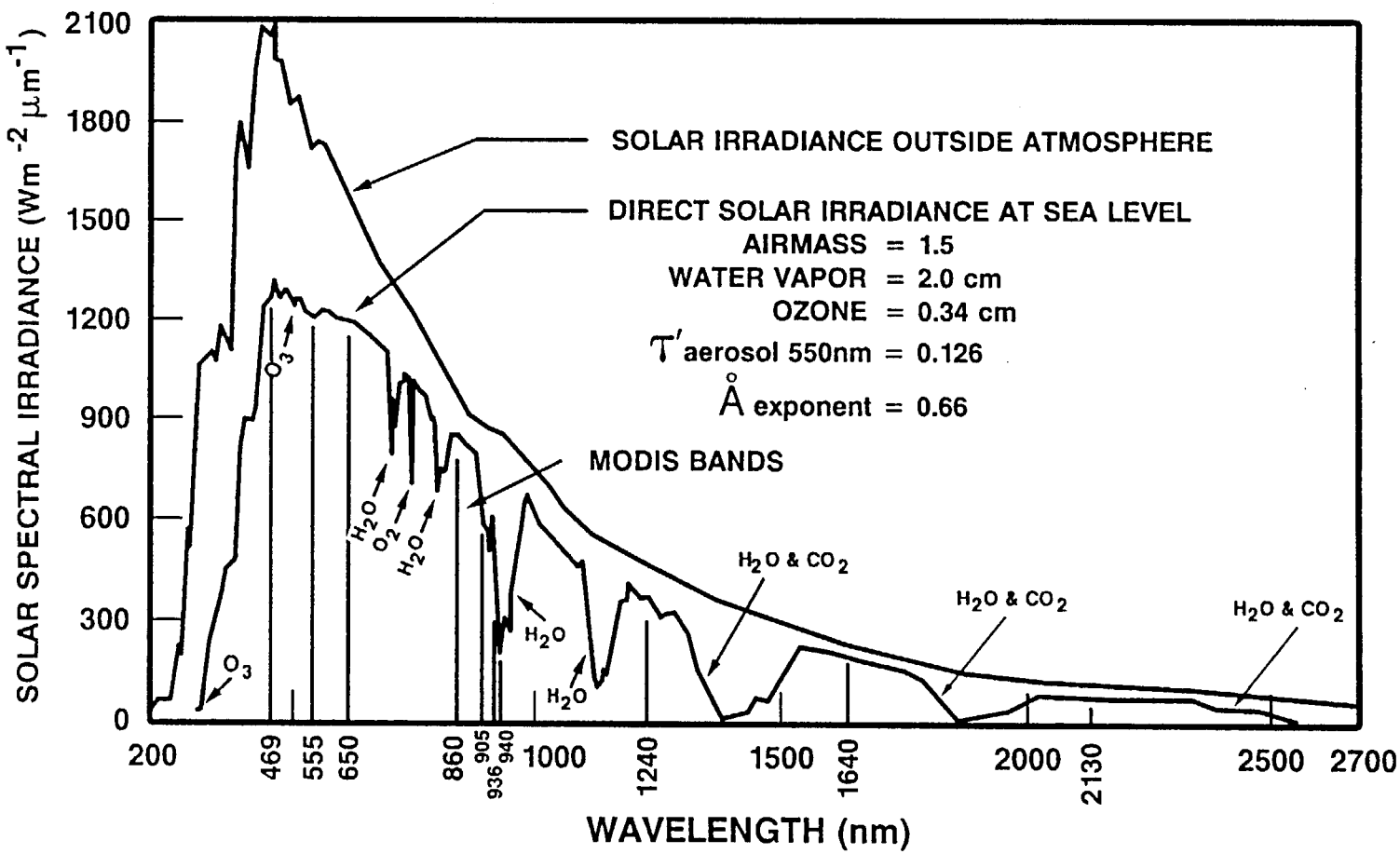
EOS



H351.001

ATMOSPHERE-SOLAR RADIATION

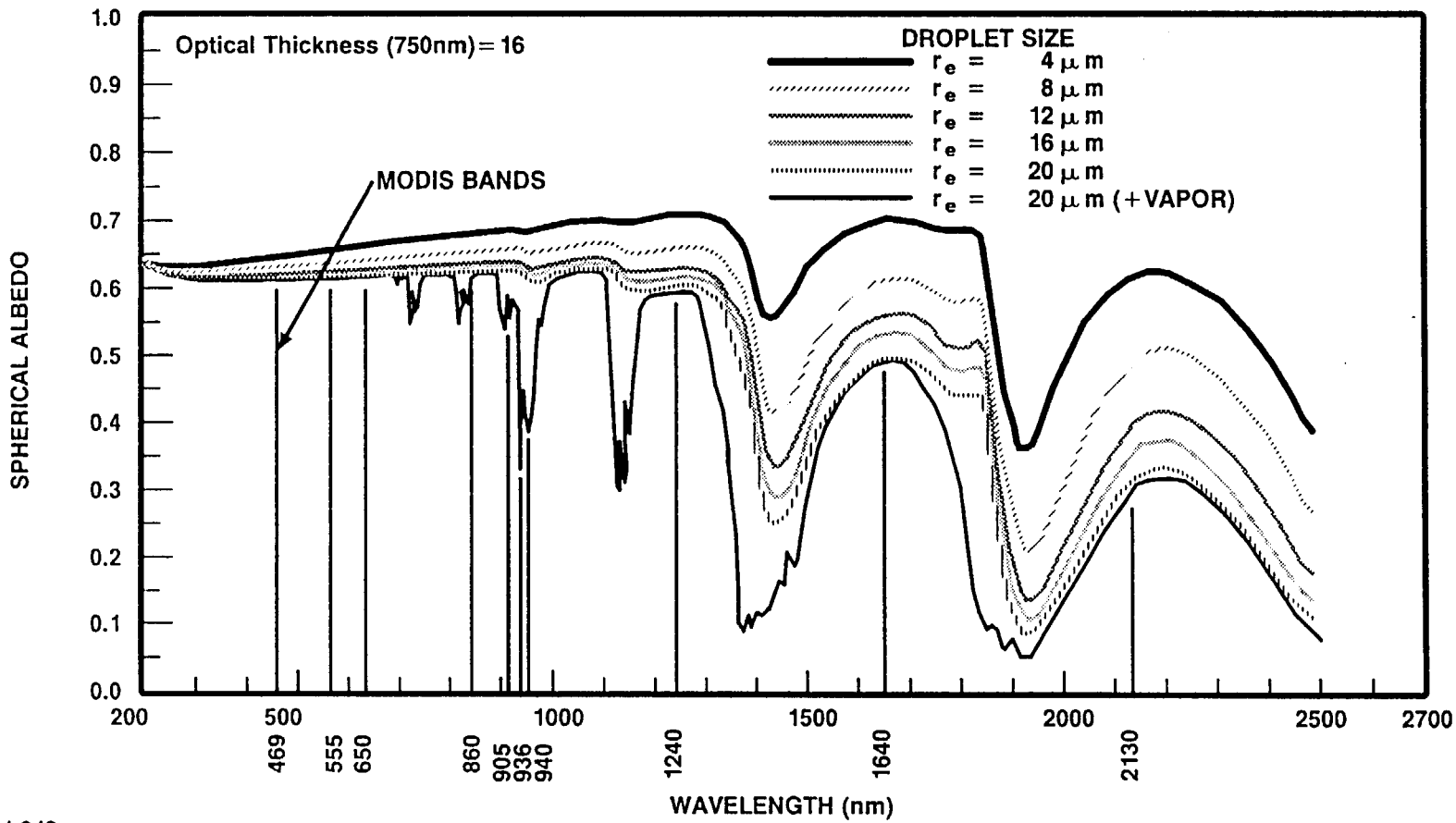
EOS



C351.012

ATMOSPHERE-WATER DROPLET AND VAPOR SPHERICAL ALBEDO

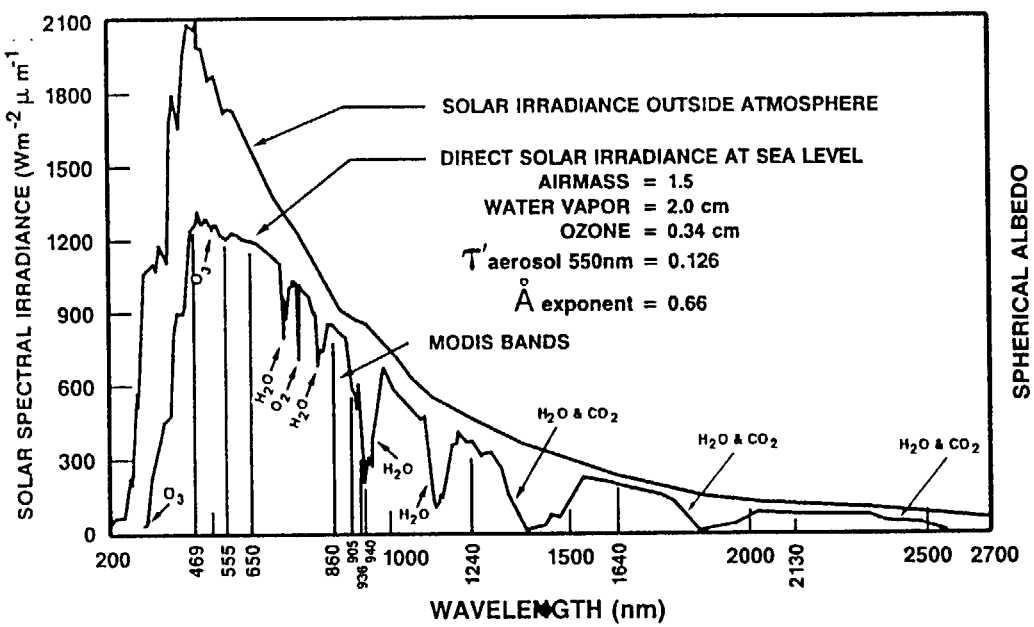
EOS

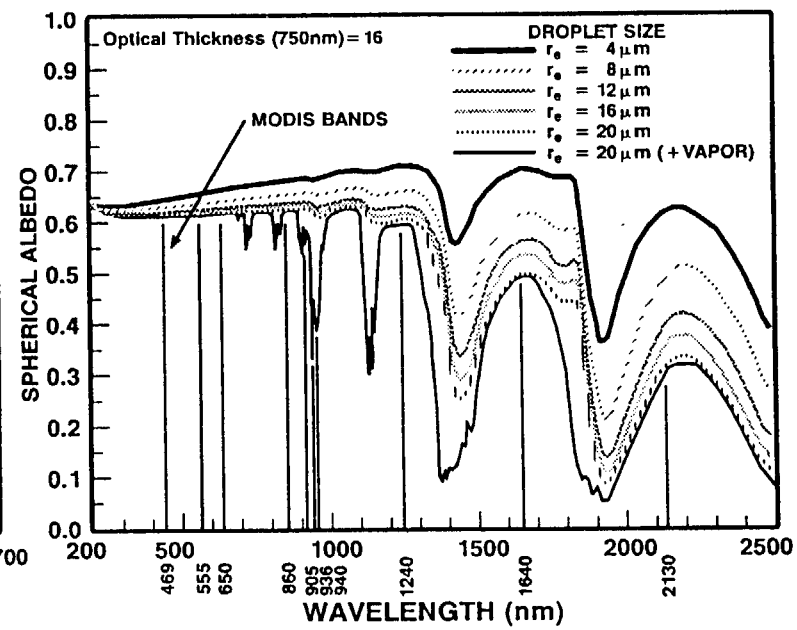


C351.013

ATMOSPHERE-SOLAR RADIATION

EOS

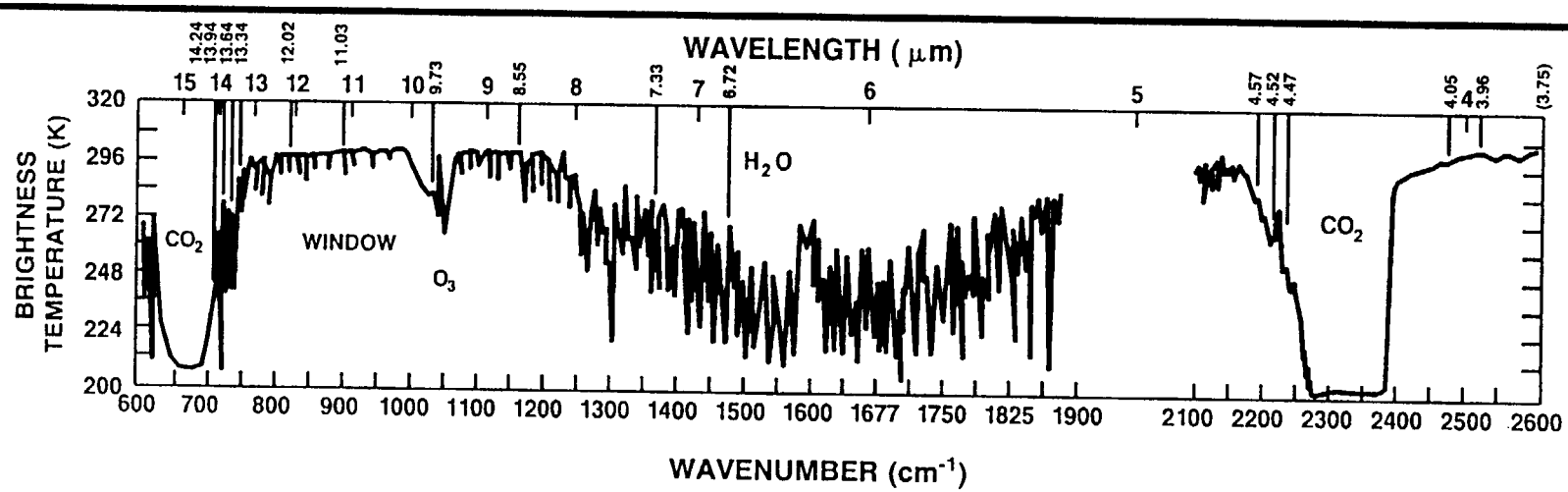


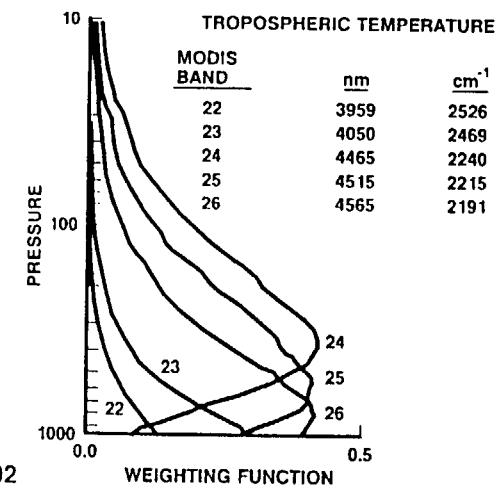


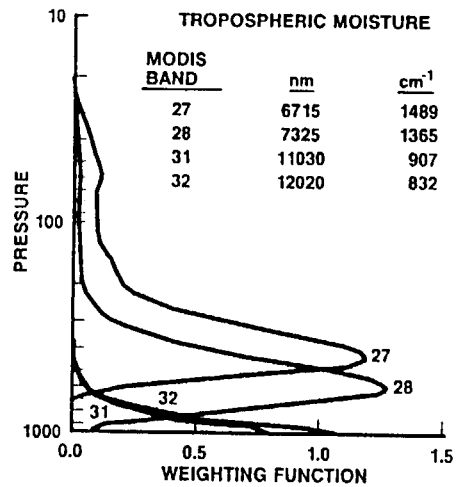
C351.008

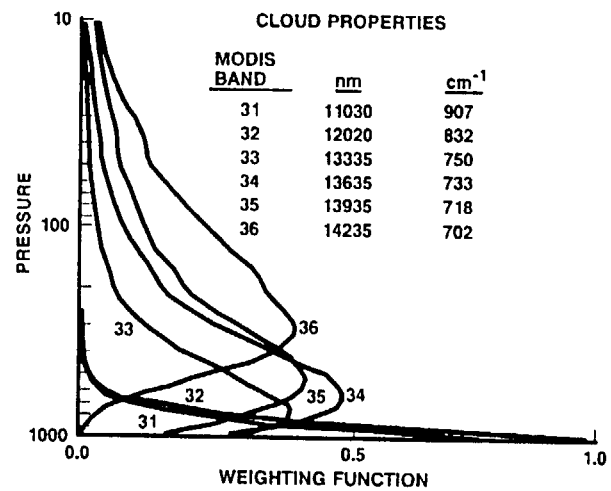
ATMOSPHERE - THERMAL RADIATION

EOS





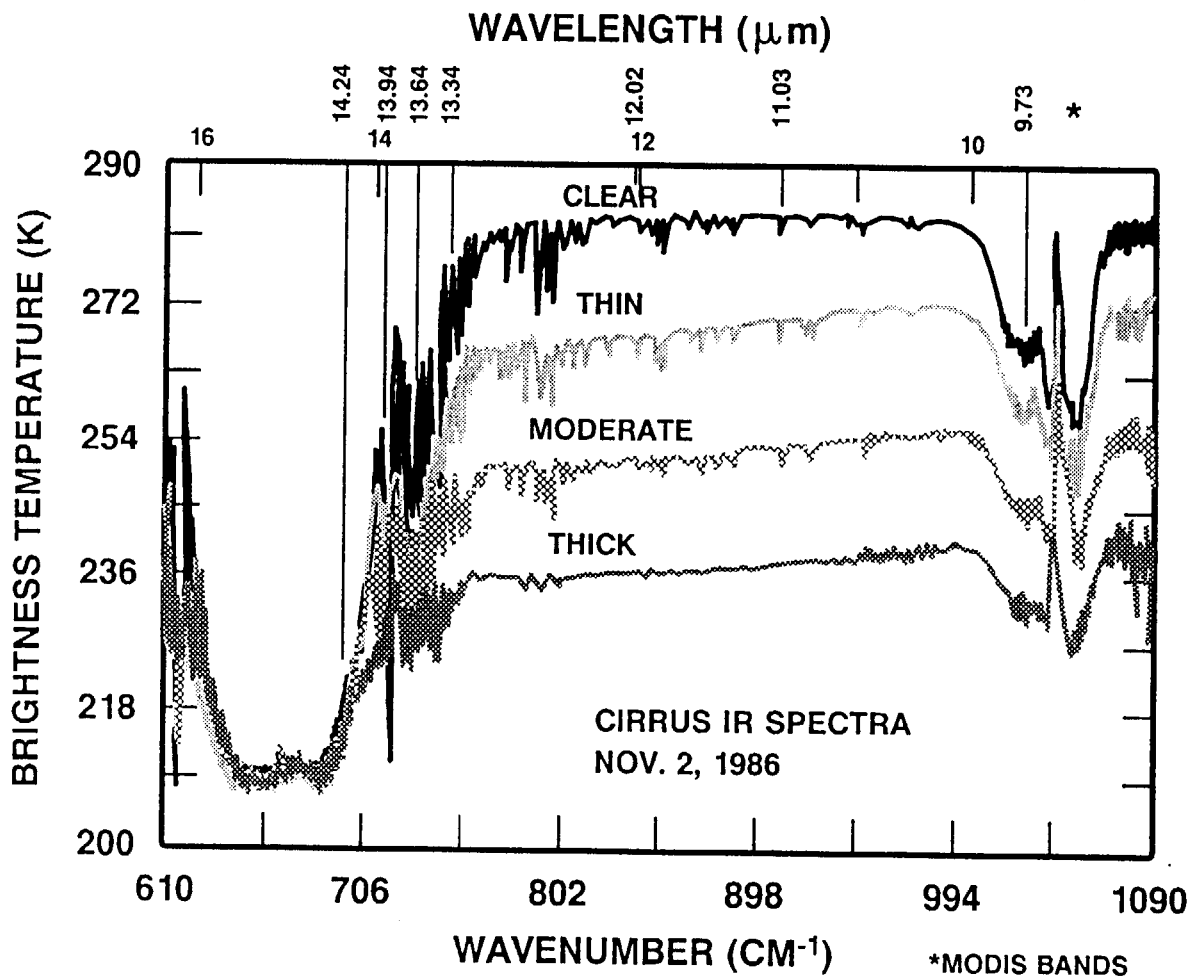




E351.002

ATMOSPHERE - IR CLOUD SPECTRA

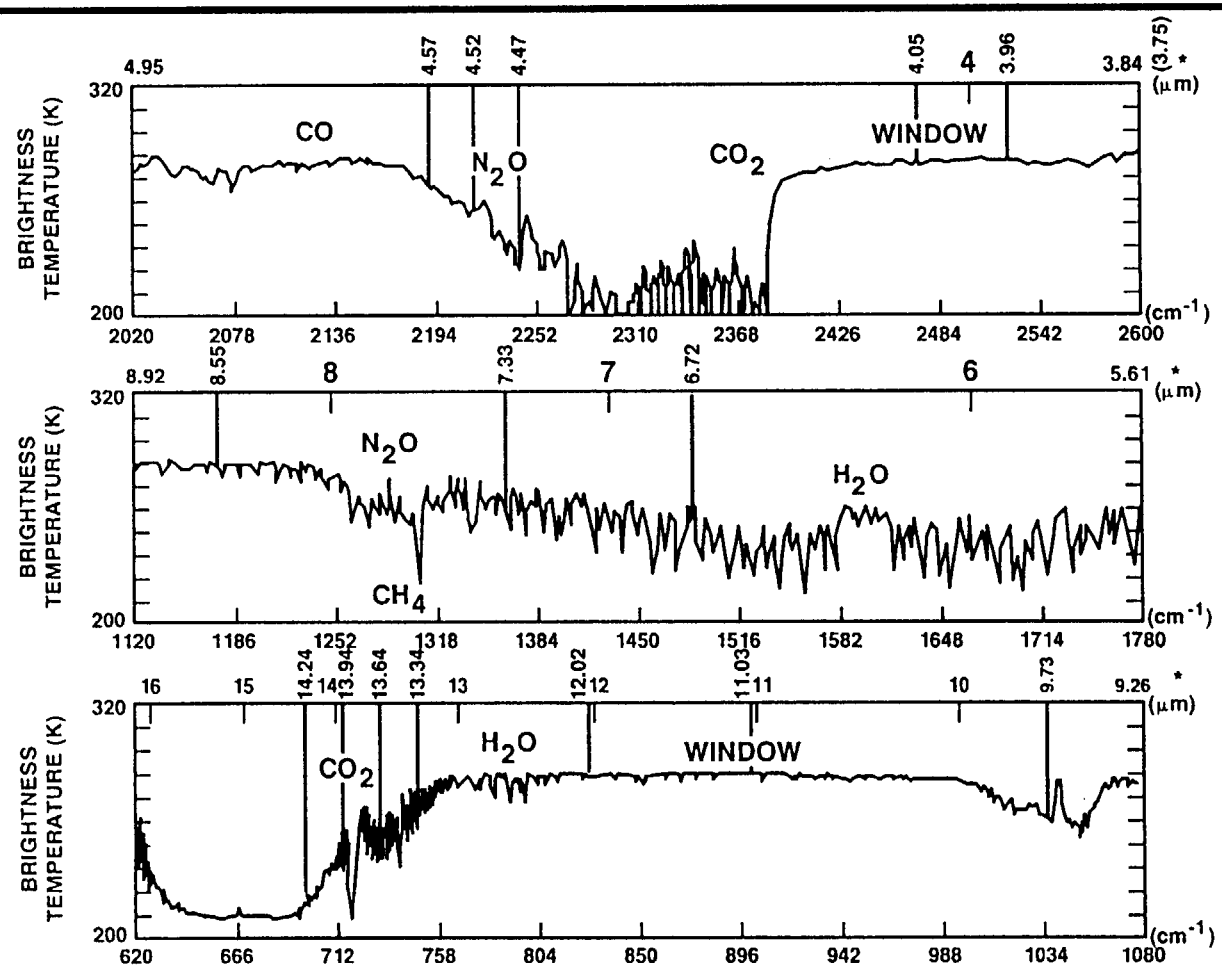
EOS



F351.001

ATMOSPHERE - CLEAR SKY THERMAL EMISSION

EOS



F351.002

*MODIS BANDS