MODIS DATA SYSTEM STUDY

TEAM PRESENTATION

October 28, 1988

AGENDA

1. Work Plan for Producing the MODIS/HIRIS Data System Commonality Document

- Level-I (System) Functional Requirements
- Level-II Functional and Performance Requirements
- Operational Concepts
- System Specification and Conceptual Design
- Study Plan

COMMONALITY BETWEEN THE MODIS AND HIRIS DATA SYSTEMS

1. INTRODUCTION

- EosDIS is requiring that GSFC and JPL collaborate in defining common elements of the HIRIS and MODIS data systems, and in designing the data systems to maximize the degree of commonality, particularly from the point of view of the user.

- The joint documentation to be produced includes the following: (a) Level-I (System) Functional Requirements; (b) Level-II Functional and Performance Requirements; (c) Operational Concept and Scenarios; and (d) Preliminary System Specifications Conceptual Design.

- A second meeting was held between the MODIS and HIRIS data system study teams at GSFC on October 25, during which the independently derived requirements documents, operations concepts, and system specifications were reviewed.

- The joint documentation will be produced during November, with the next meeting set for November 15 at Santa Barbara.

- The results of this analysis are to be delivered to the EosDIS project by the beginning of December.

2. LEVEL-I (SYSTEM) SCIENCE FUNCTIONAL REQUIREMENTS

- The purpose of the Level-I (System) Functional Requirements Document is to address, at the system level, the fundamental scientific needs and objectives around which the major functions of the MODIS and HIRIS data systems must be developed.

- One joint Level-I Document will be produced collaboratively by the MODIS and HIRIS teams.

- At this time, the HIRIS study team has produced a Preliminary Level-I HIRIS version.

- The MODIS study team is reviewing the document and is corresponding with Barbara Anderson at JPL via NASAMAIL.

- A joint document will be produced prior to the November 15 meeting.

- The outline of the document will be:

I Overview

A. Scope
B. Assumptions

II Functional Science Requirements

A. Planning and Scheduling Requirements
B. Control and Monitoring Requirements
C. Data Acquisition and Production Requirements
D. Calibration and Validation Requirements
E. Archive, Catalog, and Distribution Requirements
F. User Access Requirements

III Performance Requirements

A. General Requirements
B. Timeliness Requirements
C. Volume and Sizing Requirements
D. Interface Requirements
E. Transmission and Delivery Requirements

IV References

3. LEVEL-II SCIENCE FUNCTIONAL AND PERFORMANCE REQUIREMENTS COMMONALITY

- The purpose of the Level-II Functional and Performance Requirements Documents are to address, at the level of the individual data system elements, the fundamental scientific needs and objectives around which: (1) the major functions and (2) the major performance goals of the MODIS and HIRIS data systems must be developed.
- Separate Level-II documents have already been produced individually by the MODIS and HIRIS data system study teams.

- Here, we consider the common points and requirements that the two data system concepts share.

- A commonality report will be produced outlining the points of agreement, and the points of disagreement between the two data system studies.

- The two individual functional requirements documents documents will be incorporated by reference.

- The outline of the document will be:

I Overview

A. Scope
B. Assumptions

II Common Functional Science Requirements

A. Common Investigator Support Terminal Requirements
B. Common Instrument Control Center Requirements
C. Common Team Member Computing Facility Requirements
D. Common Central Data Handling Facilitya Requirements
E. Common Data Archive and Distribution System Requirements

III Common Performance Requirements

A. Common Investigator Support Terminal Requirements
B. Common Instrument Control Center Requirements
C. Common Team Member Computing Facility Requirements
D. Common Central Data Handling Facilitya Requirements
E. Common Data Archive and Distribution System Requirements

IV References

4. OPERATIONS CONCEPT

- The purpose of the MIDACS Operations Concepts document is to describe how the MODIS data system will operate as an element of Eos within the EosDIS environment, and to provide a basis of mutual understanding between the users and designers of MIDACS.

- It considers the operational concepts associated with the uplink and downlink portions of the system, from the observation planning stage through the archival of the certified data products.

- Scenarios of routine, near-real-time, and real-time data processing, planning and scheduling, calibration, and user access are included to exercise the operations concepts under realistic conditions.

- The outline of the document will be:

I. Introduction

II. MIDACS Operating Environment

III MIDACS Operations

A. Planning and Scheduling Operations Concept
B. Control and Monitoring Operations Concept
C. Data Acquisition and Production Operations Concept
D. Calibration and Validation Operations Concept
E. Archive, Catalog, and Distribution Operations Concept
F. User Access Operations Concept

IV MIDACS Scenarios

A. Planning and Scheduling Scenarios
B. Routine Processing Scenarios
C. Near-Real-Time Processing Scenarios
D. Real-Time Processing Scenarios
D. Calibration Scenarios
F. User Access Scenarios

V References

5. PRELIMINARY SYSTEM SPECIFICATIONS AND CONCEPTUAL DESIGN

- The purpose of the Preliminary System Specifications and Conceptual Design document is to outline the design of the MODIS data system and its five fundamental components: the IST, ICC, TMCF, CDHF, and DADS. The outline of the document will be:

I Introduction

II Requirements

A. Functional Requirements
B. Science Requirements

III Introduction to the Design

A. MIDACS
B. Functional Allocation

IV Technology Survey

A. Introduction
B. General Considerations
C. Technologies

V Design of the Investigator Support Terminal

- A. Functional Design
- B. Interfaces
- C. Architectural Design

VII Design of the Instrument Control Center

[This section only has been broken down 1 level more.]

- A. Functional Design
  - 1. Design Parameters
  - 2. Hours of Operations
- B. Interfaces
  - 1. Interfaces to EosDIS
  - 2. Interfaces to Other MIDACS Elements
  - 3. Traffic Analysis
    - a. Planning
    - b. Scheduling
    - c. Commanding
    - d. Real-Time Commanding
    - e. Emergency Commanding
    - f. Monitoring
    - g. Training and Test
    - h. System Input/Output
    - i. External Interfaces
- C. Architectural Design
  - 1. Functional Partitions
  - 2. Hardware Architecture
  - 3. Softwave Architectural Design

VIII Design of the Team Member Computing Facility

- A. Functional Design
- B. Interfaces
- C. Architectural Design

IX Design of the Central Data Handling Facility

- A. Functional Design
- B. Interfaces
- C. Architectural Design

X Design of the Data Archive and Distribution System

- A. Functional Design
- B. Interfaces
- C. Architectural Design

XI References

6. STUDY PLAN

I. LEVEL-I (SYSTEM) SCIENCE FUNCTIONAL REQUIREMENTS

- A HIRIS document exists.
- The MODIS requirements exist.
- A revised format has been agreed upon.
- GSFC and JPL are to collaborate over electronic mail to produce a single common document prior to the November 15 meeting.

II. LEVEL-II SCIENCE FUNCTIONAL AND PERFORMANCE REQUIREMENTS

- MODIS and HIRIS documents exist.
- GSFC and JPL are to collaborate over electronic mail to produce a set of common requirements for the two data systems in a new-final form prior to the November 15 meeting.

III. OPERATIONAL CONCEPT

- A preliminary MIDACS Operational Concept document was delivered in August.
- A draft HIRIS Operations Concepts document was completed on October 20.
- To exercise the operations concepts, realistic scenarios will be developed.
- The MIDACS Operational Concept document will be brought to draft form prior to the November 15 meeting, and will be ready for "red team" review on Wednesday, November 9.

IV. PRELIMINARY SYSTEM SPECIFICATIONS AND CONCEPTUAL DESIGN

- A draft HIRIS System Specification document was completed on October 21.
- To realistically specify the CDHF, algorithms will be identified and sized for the set of candidate Level-1 through Level-4 MODIS data products.
- The MIDACS Preliminary System Specification and Conceptual Design document will be delivered prior to the November 15 meeting, and will be ready for "red team" review on Wednesday, November 9.