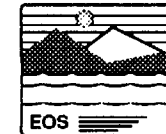


EOSDIS



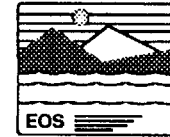
Earth Observing System (EOS) Data and Information System (EOSDIS)

Project Status

MODIS Science Team Meeting

**Earth Science Data and Information System
(ESDIS) Project
NASA/Goddard Space Flight Center**

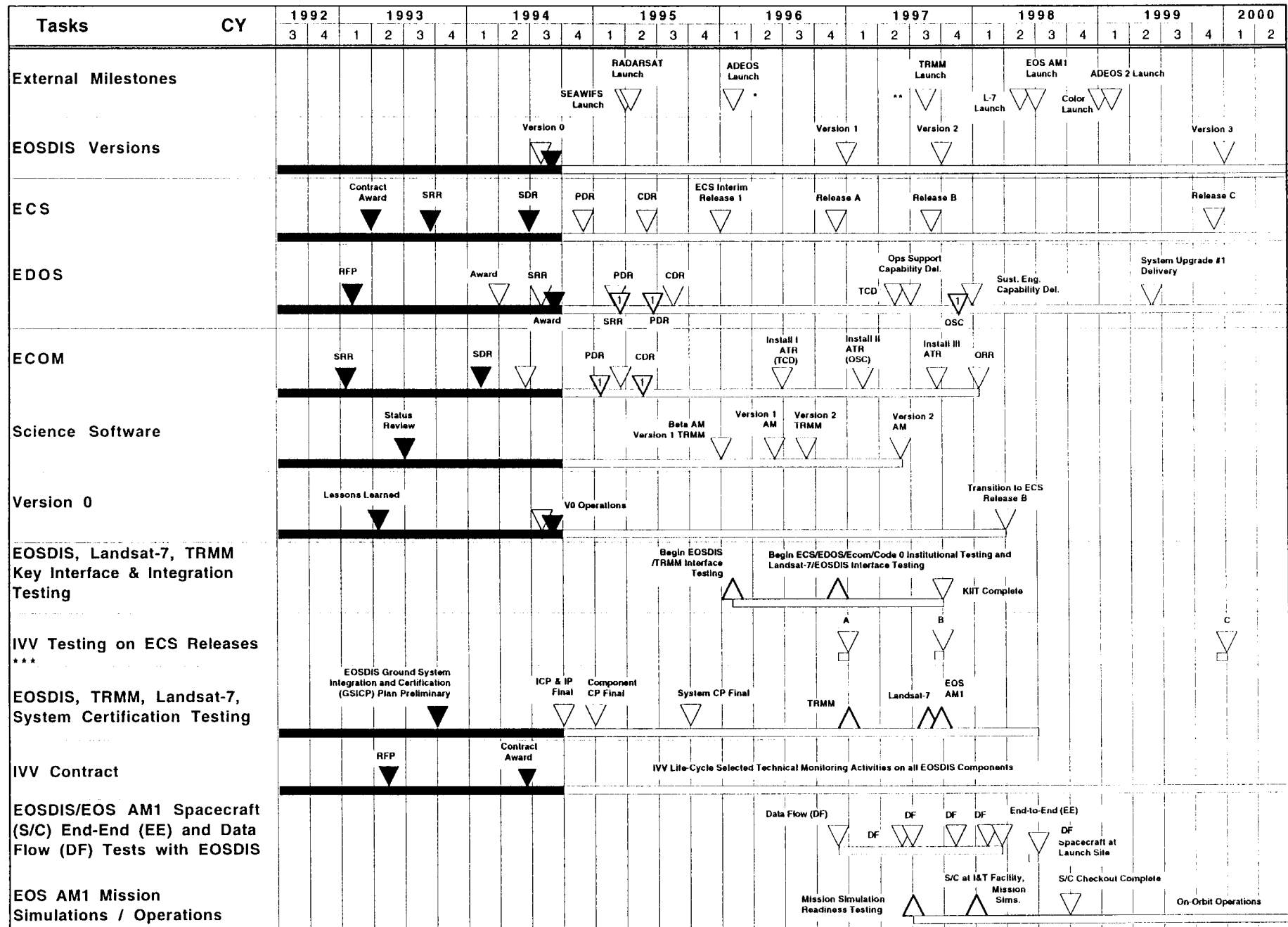
October 12, 1994



- ☐ **EOSDIS Status**
 - **Schedule**
 - **Systems Status**
 - **Version 0**
- ☐ **EOSDIS Rebaselining Impacts**
- ☐ **Challenges and Issues**
- ☐ **PDR Technical Baseline**
- ☐ **PDR Process**
- ☐ **Independent Architecture Studies**

EOSDIS Development, Integration and Certification

STATUS AS OF 9/26/94
LAST CHANGE 9/26/94

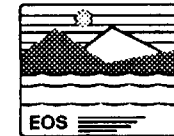


• EOS Instruments; NSCAT, TOMS
 .. EOS Instruments; CERES, LIS
 ... IVV testing also performed on each EDOS and ECOM release

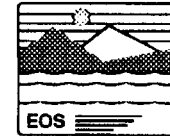
† Updated Activity
 Δ Activity Start

J. Gainsborough

Printed: Sept 23, 94
 Rev. 5



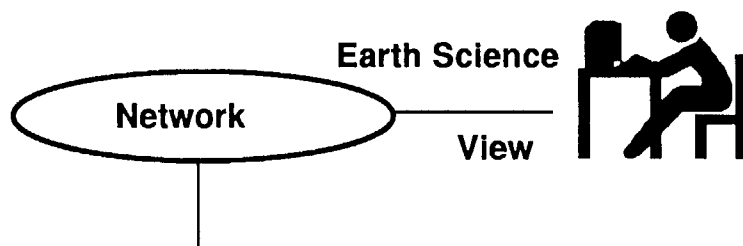
- **EOSDIS Core System (ECS)**
 - **System Design Review Held June 27-29**
 - **Six “Key Issue” RIDs Being Addressed**
 - **Second Release of PGS Toolkit Delivered to Investigator Teams**
- **EOS Data and Operations System (EDOS)**
 - **Contract Awarded to TRW**
 - **Assessing Alternatives to Meet EOS Baseline Reductions**
- **EOS Communications (Ecom)**
 - **In-House Development**
 - **Preliminary Design Review (PDR) Rescheduled to January 1995**
 - **Mass buy “Science and Engineering Workstation Procurement (SEWP)” contract enables shortened procurement time and extended prototyping with ATM**



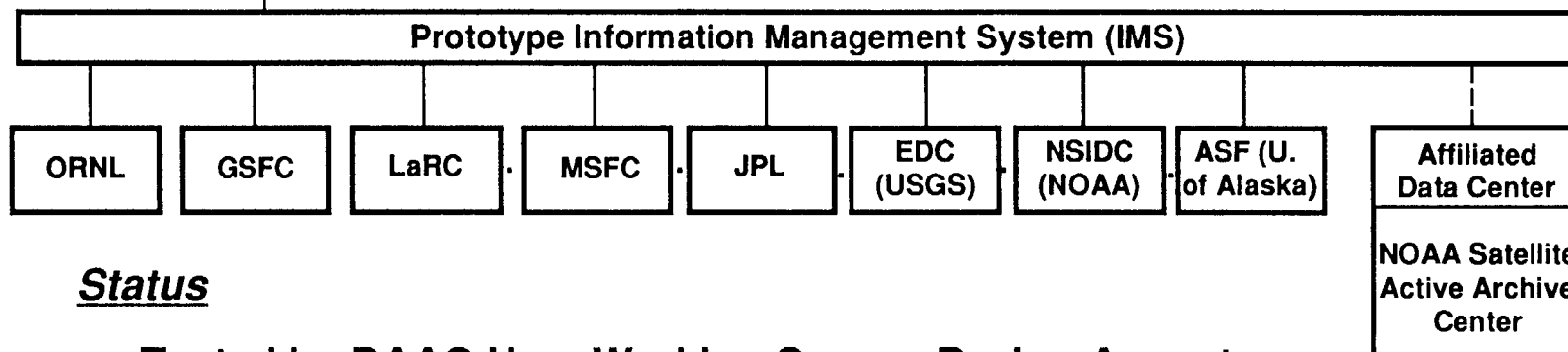
- **Independent Verification and Validation (IV&V)**
 - **Contract Awarded to Intermetrics in June**
 - **Initiated Assessment of V0**
- **EOSDIS Test System**
 - **Scheduled for Development by December 1996**
 - **In-House Development**
 - **Functions:**
 - **Generate RS-Encoded Virtual Channel/Packet Data Streams at 150 Mbps for Input to EDOS**
 - **Simulate EDOS-Produced Datasets for Input to DAACs**
 - **Receive and Validate Commands, Generate Simulated Low-Rate Telemetry in Response to Commands (COP-1 Protocol)**

EOSDIS

Version 0 Operational Prototype

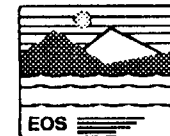


- Joint development of system level functions to distribute queries and integrate results across existing DAAC systems
- DAAC development of unique data functions



Status

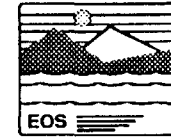
- Tested by DAAC User Working Groups During August
- Opened for Earth Science Community Use August 31
 - Catalog of 100 Datasets Accessible Across 8 DAACs
 - Search and Order from 8 DAACs
 - Browse from 5 DAACs



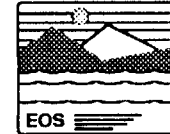
- **Remove Requirements for 24-Hour Production of Data Products at Each Level of Processing**
 - **Allow More Flexibility in Buffering/Communications Link/Media Shipment Trades**
 - **Allow Substitution of Buffering and Processing Capacity To Reduce System Complexity**
- **Delete Quicklook Capability**
- **Reduction of DAAC Operations for Non-Prime Shifts – Some “Lights-Out” Operation**
- **Data Acquisition Request (DAR) Support Deleted From EOS Operations Center (DARs for ASTER Assumed To Be Supported by Japan’s ASTER Ground System)**

EOSDIS

EOS Rebaselining Impacts (Continuing)



- **Full Standard Data Product Capacity Deferred (To Support Algorithm Integration and Test (1X), Primary Production (1X), and 2x Primary Production Capacity for Reprocessing)**
 - **At Launch Capacity Limited to Primary Production Capacity, But Must Support Both I&T and Product Generation**
 - **Full (4x) Capacity 2 Years After Launch**
- **Consolidation of EDOS Functions at Fairmont, WVA**
- **Reduction in Project Prototyping Budget**
- **ECS System Scheduling Optimization To Reduce Waiting Storage**
- **Flight Operations Segment To Use Existing Interfaces to TDRSS Network Control Center**



1. Science Requirements Management

Actions:

- Ad Hoc Working Group on Production Plans formed to improve characterization of product generation process and dependencies, and to validate parameters. Co-chairs: Mel Banks, Bruce Barkstrom
- EOSDIS Project Scientist (Steve Wharton) leading science definition of phasing of products from experimental to routine production

Next Steps:

- Develop ECS cost estimate for product set and iterate with project scientist if not with budget envelope
- Establish resource bounds for instruments and products

2. Implementing the EOS Rebaseling

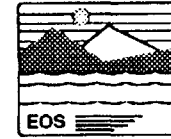
Action:

- HQ Program Control Board Meeting held October 5 to baseline Level 1 requirements changes. Few clarification issues being worked

Next Step:

- Translate Level 1 changes to Level 2 and Level 3 requirements

Issues and Challenges (Continued)



3. EDOS Schedule

Action:

- Assure readiness to support AM-1 given delays in contract award

Next Step:

- Identify critical path

4. Proposed Rescheduling of Development Milestones for Science Data Processing Segment (SDPS) of ECS

- Slip in PDR from December 1994 to February 1995, with offsetting compression of code and unit test phase

Action:

- Assessing feasibility of schedule based on experience in comparable projects

5. Science Community Perception of EOSDIS Cost as "Impenetrable"

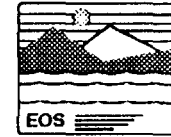
Action:

- Presented details of project and ECS budget after SDR

Next Steps:

- Understand science perceptions of EOSDIS functions and map cost breakdowns into terms better understood by the community

Issues and Challenges (Continued)



6. Minimize Functions and Costs That Do Not Directly Support Science

Action:

- Derived requirements scrubbed in program rebaselining process

Next Step:

- Continue to identify efficiencies and question derived requirements to reduce cost

7. Version 0 Network Performance — Users View of Version 0 Performance Is Dependent on Performance of Internet Links Needed To Connect to the DAAC

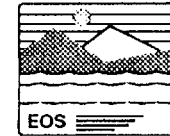
Action:

- Determining minimum effective throughput needed for reasonable response, and advising user services representatives at DAACs

Next Step:

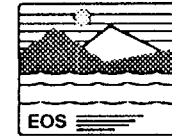
- Port Version 0 client for downloading to user sites

ECS PDR Technical Baseline



- **Need to Freeze Baseline for Purposes of PDR**
 - Budget limits at launch processing and archive capacity to approximately the production capacity for the February 1994 version of the standard data product list
 - At-launch product baseline will be a combination of full products and reduced (i.e., temporal, spatial, or spectral resolution) products, with system capacity increased to support full resolution products 2 years after launch
 - Steve Wharton has worked with investigators to develop a reduced product set and phase-in plan
 - Bruce Barkstrom's Ad Hoc Working Group on Production Plans has developed a more detailed characterization of the production process (files, product generation executables, and activation scenarios)
 - Hardware to support baseline will be estimated using cost model. If cost exceeds budget profile, adjustments to the baseline will be required

Changes to ECS Design Review Process



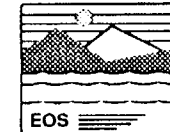
Objective:

- Reduce cost of review process

Changes:

- Replace formal presentations to broad community with system segment design reviews by small teams of technical experts
- Separate reviews will be held for Science Data Processing, Communications and System Management, and Flight Operations Segments
- Small Board, including science and DAAC representatives, will evaluate :
 - Findings of segment technical teams
 - System level design readiness, presented by Hughes and the project
- Alternative approaches will need to be established to communicate progress to the science community

Independent Architecture Studies



Study Objectives:

- Identify alternative architectures for ECS, considering future Earth science data and information needs and future technology projections in computer science and information systems
- University of California, North Dakota, and George Mason teams presented study results to “Evaluation Panel” on September 21-22
- Teams approached the problem from different perspectives
 - University of California : DBMS-centric approach
 - North Dakota: Applications users
 - George Mason: System extensions to Global Change
- Evaluation Panel included Data Panel, computer science, DAAC, HQ, Project, and Hughes representatives
- Evaluation Panel categorized ideas and recommendations, and identified actions needed, with support from Hughes Research Lab
 - Items to be considered during PDR (must fit within schedule and budget)
 - Evolvability target—Items which should be considered in future generations for the architecture
 - Items needing further research
 - Items requiring changes in program scope