MODIS
SCIENCE DATA SUPPORT TEAM
PRESENTATION

March 25, 1994

AGENDA *Page*

1	ACTION ITEMS	1
2	MODIS Land Prototype	3
3	MODIS Airborne Simulator (MAS) Status	5
4	MODIS Level 2 Software Integration	8
5	Algorithm Transfer	11
6	Documentation Schedule	14
7	Calendars	15

ACTION ITEMS

No.	Due Date Old Due Date	Item
1	3/18/94 1/13/94	[Fleig] Develop a plan and schedule for test data set and simulated data set generation consistent with Beta software delivery schedule. STATUS: Open. (Assigned 11/12/93.)
2	3/18/94	[Samadi, Solomon] Get price and speed for solid state memory per Gbyte. STATUS: Open. (Assigned 3/11/94.)
3	3/25/94	[Crocker, Solomon] Prepare a list of books critical to our software development. STATUS: Open. (Assigned 2/25/94.)
4	3/25/94	[Masuoka] Refine our concept of the Level 1A granule size including: 1) the staging of data to on line disk, 2) actual data in memory or RAM disk during processing, and 3) size of the output granule. STATUS: Open. (Assigned 3/11/94.)
5	3/25/94	[Hubanks] Schedule a meeting with Liam Gumley, Fleig, Masuoka, and himself, to decide how to make our MAS output tapes compatible with Menzel's program. STATUS: Open . (Assigned 3/11/94.)
6	3/31/94	[Kaltenbaugh] Plan and coordinate the preparation of a set of Software Standards for SDST. STATUS: Open. (Assigned 2/18/94.)
7	3/31/94	[Wolfe] Prepare a Geolocation ATBD. STATUS: Open. (Assigned 3/04/94.)
8	4/01/94	[Kaltenbaugh] 1)Pursue the question of "imake/make" files with Stan Scott to determine what the Project will do, 2)Identify the cognizant persons at Hughes, 3) prepare the "imake/make" issue for the Data Processing Focus Team (DPFT) meeting in April. STATUS: Open. (Assigned 3/11/94.)
9	4/08/94	[Sue] Consider how to manage and track those changes which the SDST is required make to Science algorithms. STATUS: Open. (Assigned 2/25/94.)

10	4/1/94	[Hucek, Kaltenbaugh] Delineate what type of software changes the SDST will undertake and which software changes will be referred to the algorithm authors. STATUS: Open . (Assigned 3/18/94.)

ACTION ITEMS (continued)

No.	Due Date Old Due Date	Item
11	4/8/94	[Solomon, Kaltenbaugh, Hucek] Propose a plan to meet schedule. STATUS: Open . (Assigned 3/18/94.)
12	4/08/94	[Goff] Describe the non adherence to ANSI standards among compilers. STATUS: Open . (Assigned 3/18/94.)
13	4/15/94	[Crocker] Apply the Cadre RqT Facility to track Level 1A Requirements. STATUS: Open. (Assigned 2/25/94.)

MODIS Land Prototype

Ruiming Chen

1. Land Cover Test Sites Prototype

1991 AVHRR	AVHRR images	NDVI images
Images processed previously	40	0
Images processed this week	**20**	**5**
Total Processed images	125	21
Unprocessed images	0	0
Total	125	21

1990 AVHRR	AVHRR images	NDVI images
Total Processed images	95	19
Unprocessed images	0	0
Total	95	19

2. Snow Cover Prototype

- A 7-day snow cover composite (Jan. 1 - 7, 1989) was finished using the revised snow algorithm from last week. Adding compositing in the algorithm, the program takes 14 minutes to finish one composite. I also finished a C program to generate a 7-day composite of the clear pixels for the review of the composite result. George Riggs has reviewed the composite. The algorithm extracts the snow cover on the Antarctica. But it did not pick up the snow cover in the high latitude (e.g. Northern Canada) and the high mountain regions in the northern hemisphere (e.g. Rocky Mountain region). I finished a program to generate some samples from area which is supposed to have snow in January. George will examine the channel 1 and channel 3 reflectance of these sample areas to decide how to revise the algorithm.

- I am continuing to work on the C program to transfer the Goode Homolosine Projection to the Polar Stereographic Projection. According to George Riggs, we need to use the same Polar Stereographic Projection parameters used by NSIDC. I contacted NSIDC and am waiting for their response.

- Timing of the process

Processing Steps	Time	Comments
Read files from Tape	2.5 hrs/file **17.5 hrs/7 files**	1 file contains 1 day's data
Uncompress file	20 min/file **2.4 hrs/7 files**	
Extract single band from the file	15 min/band, **12.25 hrs/ 7 files**	band 1, 3, 4, 5, Cloud/Clear Flag and Solar Zenith Angle is needed in the snow alg.
Run snow program in C	2 min/file **14 min/Composite**	1 database per composite
Total	**31.4 hrs**	Not including map transformation

3. Global Fire Product Prototype

- I had a meeting with Ed Masuoka on processing the Global Fire Product. According to the previous request of Dr. Chris Justice, we plan to generate a 10-day Global Fire Composite. We have 10 days AVHRR LAC data from EDC which will be used to generate the prototype composite. I requested and have received a copy of GMS (GIMMS Mapping System) User's Guide from Kashka Donaldson and reviewed it. I also consulted Tom Goff and Virginia Kalb about the GMS software. According to Kashka, the interface of the version on the SGI will not take the result from any other algorithms (e.g. fire algorithm) to make the composite. It takes only level 1b data, extracts individual bands, does calibration and navigation, and produces NDVI composites. So, some revision of the program is needed to make it useful for the global fire product prototype. The system will not mosaic different orbits to generate a global image either. The "mosaic" function in PCI will be used to do the mosaic.

MODIS Level 2 Software Integration

Jon Robinson

The pathfinder Goldenday was processed with the pathfinder program linked with the latest revision of hdf (3.3r3p0). The output results were identical to previous runs using hdf (3.3r2) on the modis-xl.

The difference between the modis-xl runs and the original pathfinder runs consists of 3 pixels different in layer 9 and 4 pixels different in layer 10 -- otherwise the results of modis-xl and the pathfinder golden day were identical.

Timing runs using cvusage were started on Monday March 21, 1994. The first run was terminated prematurely by a modis-xl crash about 12:11 pm.

Algorithm Transfer

Richard Hucek

Several different McIDAS data structures are used in the code delivered to the SDST by Paul Menzel and his group at the University of Wisconsin (UW). One type of structure, an area file, is used to store raw satellite or airborne instrument data counts in an image file format. This type of data structure is used for input to the cloud phase algorithm.

We have investigated the detailed structure of the area file sent to us, and have succeeded in restructuring it as an ASCII formatted data file suitable for FORTRAN input. We are now attempting to calibrated, navigate, and average the data from the reformatted file using much of the orginal software code. The only changes are in the area of input and output. Unlike work reported last week, we are now reading the uncalibrated McIDAS data that was produced at UW, not an HDF file provided by the SDST.

Documentation Schedule

John Crocker

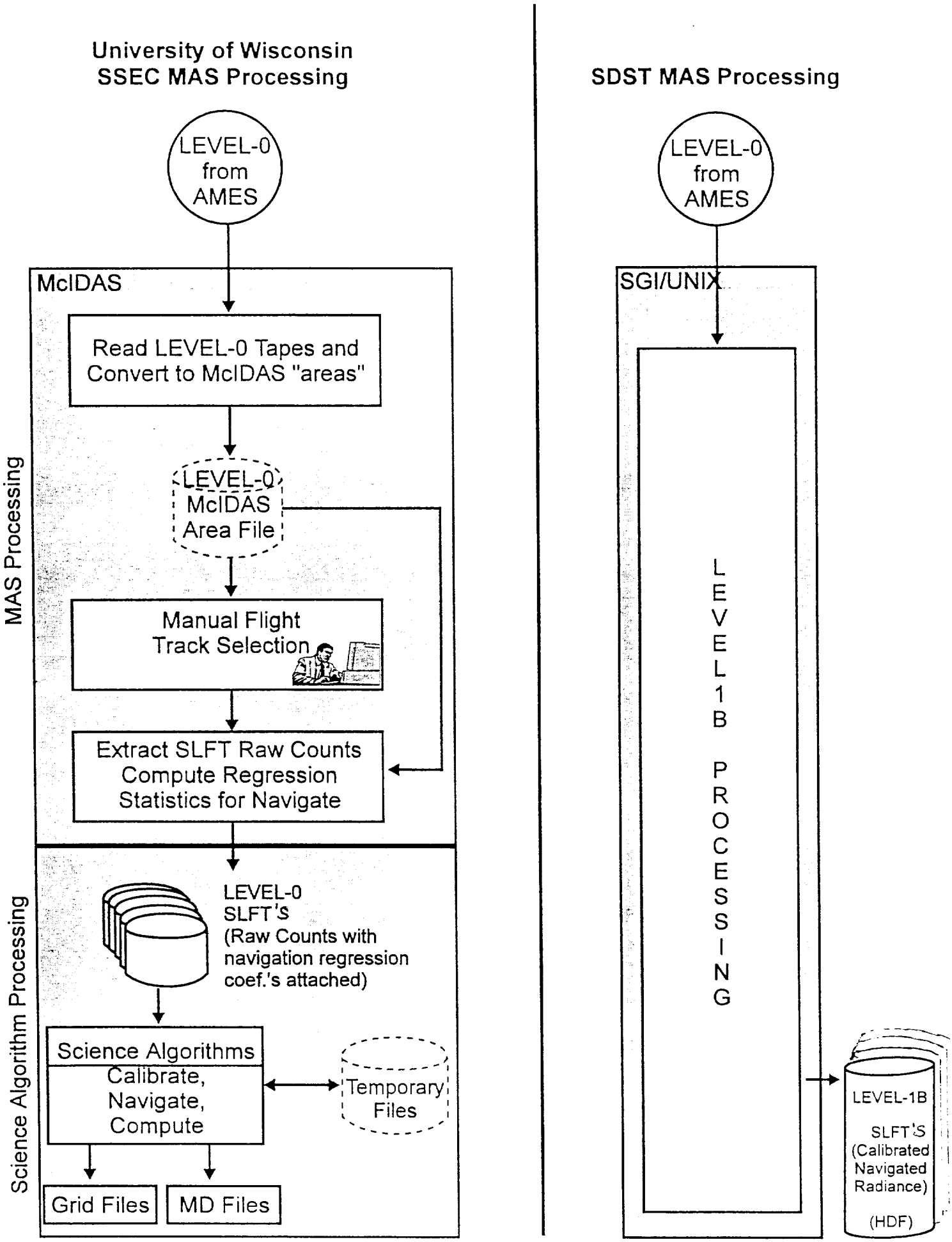
Document	Status	Scheduled Completion	Estimated Completion	Responsible Individuals
ATBD meta-documentation	completed			Al
Configuration Management Plan	draft			Sue
Level 1A Preliminary Design Report	draft	March 31	March 31	Tom, Robert, John
Level 1A Baseline Requirements	completed			Lloyd, Tom, Carl, Jim
Level 2 Shell Requirements Report	draft			J.J., John C.
MAS Level 1B Data Processing Guide	draft	April 30	April 30	Paul Hubanks
MAS Level 1B Data User's Guide	draft			Paul Hubanks
MODIS Earth Location Error Report	completed			Al, Jim, Paul
Operations Concept	revision			John, Carl, J.J., Robert, Tom
Prototyping Plan	outline submitted			Ed, Phil
Quality Assurance Plan	draft		March 31	Sue
Science Computing Facility Plan	completed			Ed Masuoka
Software and Data Management Plan	completed			Carl, Ed, Al, Lloyd
Software Guidelines/Programming Standards	draft	March 31	March 31	Sue
Software Test Plan	draft	June 30	June 30	Sue, Phil

March 1994

Monday	Tuesday	Wednesday	Thursday	Friday
Mtg. A: Masuoka, Fleig, Carpenter, Solomon Mtg. B: Masuoka, Fleig, Guenther	1	3:30-4:30p: A 2	3-4p: Tech Team 3	10a:SDST, B22, Rm G95 4
4-5p: B 7	8	3:30-4:30p: A Oceans Team Meeting Monterey, CA 9	3-4p: Tech Team Oceans Team Meeting Monterey, CA 10	10a:SDST, B22, Rm G95 Oceans Team Meeting Monterey, CA 11
4-5p: B 14	15	3:30-4:30p: A 16	3-4p: Tech Team 17	10a:SDST, B22, Rm G95 18
4-5p: B 21	22	3:30-4:30p: A L1A PDR Dry Run 23	3-4p: Tech Team 24	10a:SDST, B22, Rm G95 25
4-5p: B Level 1A PDR Dry Run 28	29	3:30-4:30p: A 30	3-4p: Tech Team Level 1A PDR B22, Rm 365 31	

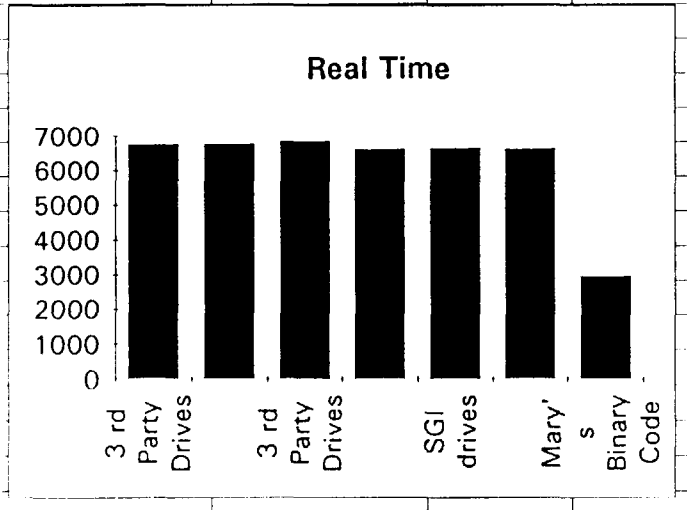
April 1994

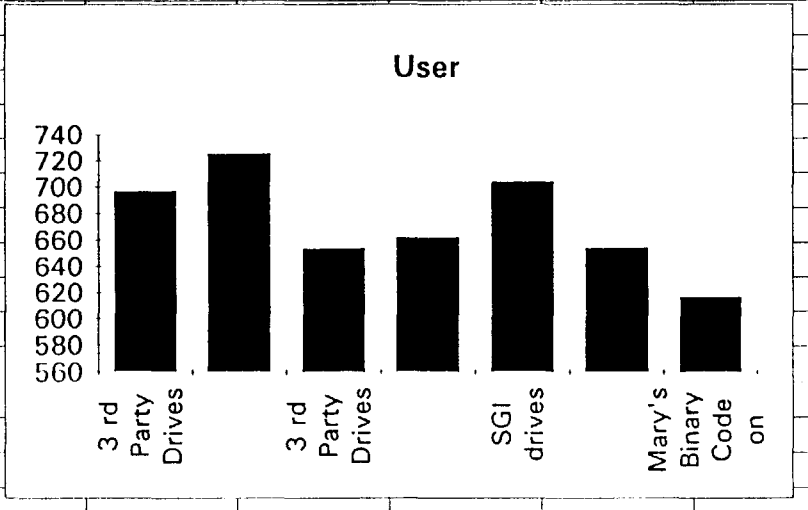
Monday	Tuesday	Wednesday	Thursday	Friday
Mtg. A: Masuoka, Fleig, Carpenter, Solomon Mtg. B: Masuoka, Fleig, Guenther				10a:SDST, B22, Rm G95 1
4-5p: B 4	5	3:30-4:30p: A DPFT mtg. 6	3-4p: Tech Team DPFT mtg. 7	10a:SDST, B22, Rm G95 8
4-5p: B 11	12	3:30-4:30p: A 13	3-4p: Tech Team 14	10a:SDST, B22, Rm G95 15
4-5p: B 18	19	3:30-4:30p: A 20	3-4p: Tech Team 21	10a:SDST, B22, Rm G95 22
4-5p: B 25	26	3:30-4:30p: A 27	3-4p: Tech Team 28	10a:SDST, B22, Rm G95 29

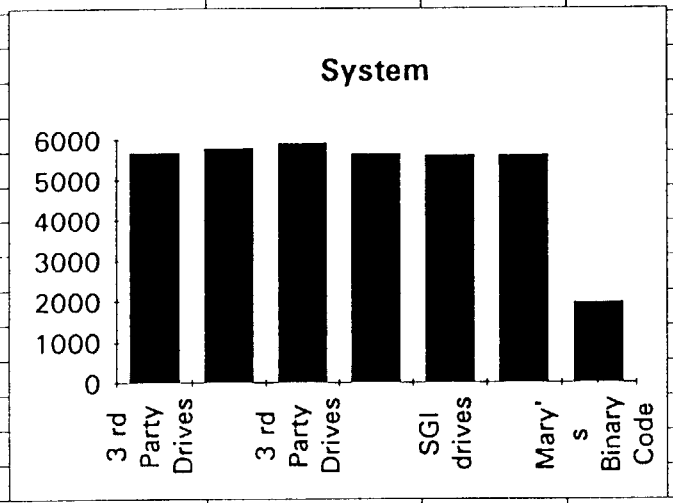

University of Wisconsin
SSEC MAS Processing
LEVEL-0 from AMES
McIDAS
Read LEVEL-0 Tapes and Convert to McIDAS "areas"
LEVEL-0 McIDAS Area File
Manual Flight Track Selection
Extract SLFT Raw Counts Compute Regression Statistics for Navigate
MAS Processing
LEVEL-0 SLFT'S (Raw Counts with navigation regression coef.'s attached)
Science Algorithms
Calibrate, Navigate, Compute
Temporary Files
Grid Files
MD Files
Science Algorithm Processing
SDST MAS Processing
LEVEL-0 from AMES
SGI/UNIX
LEVEL1B PROCESSING
LEVEL-1B SLFT'S (Calibrated Navigated Radiance) (HDF)

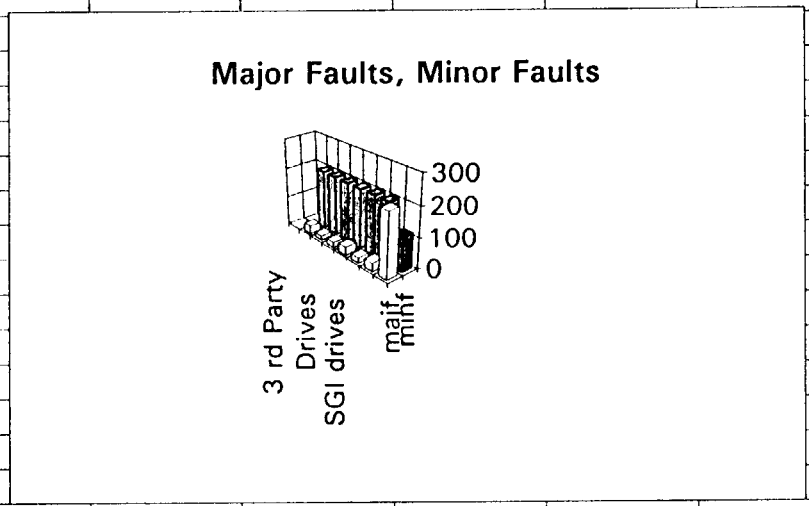
PATHTIME.XLS

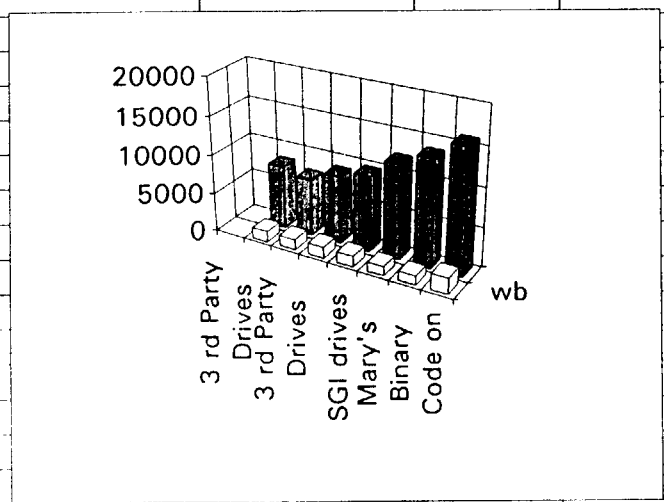
	real	user	sys	majf	minf	sw	rb	wb	vcx	icx
3 rd Party Drives	6743.336667	696.65	5667.89	27	201	0	15344	1343	8189	225321
3 rd Party Drives	6775.56	725.59	5791.39	16	201	0	14433	1366	7336	227283
3 rd Party Drives	6848.48	653.84	5911.22	17	201	0	16054	1409	8690	233045
3 rd Party Drives	6605.97	661.97	5639.15	27	201	0	15796	1369	9604	227538
SGI drives	6632.64	703.81	5611.94	17	201	0	14298	1178	12097	212879
SGI drives	6626.79	654.47	5616.6	27	201	0	16067	1152	13654	217404
Mary's Binary Code	2963.84	616.43	1975.12	214	113	0	17060	2038	15951	103413

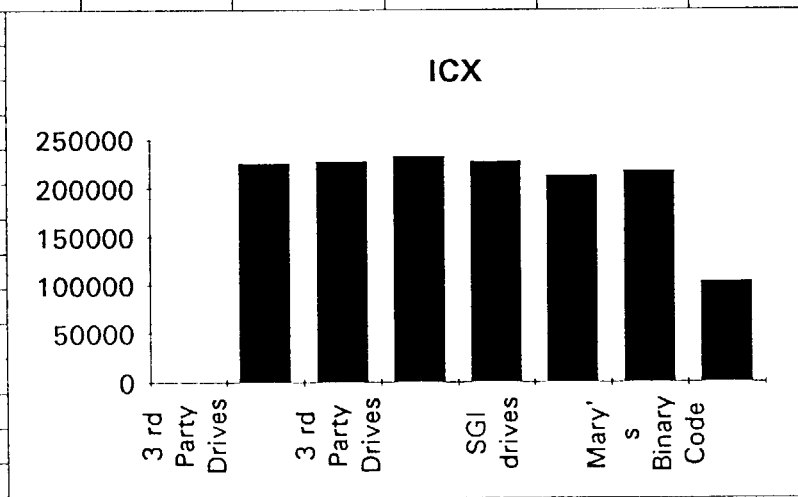





System
6000
5000
4000
3000
2000
1000
0
3 rd Party Drives
3 rd Party Drives
SGI drives
Mary's Binary Code


Major Faults, Minor Faults
300
200
100
0
3 rd Party Drives
SGI drives
majf
minf


20000
15000
10000
5000
0
3 rd Party Drives
3 rd Party Drives
SGI drives
Mary's Binary Code on
wb


ICX
250000
200000
150000
100000
50000
0
3 rd Party Drives
3 rd Party Drives
SGI drives
Mary's Binary Code

STATUS OF ALGORITHMS

Investigator	Product	Name	Initial Delivery			Current Status	Status Change
			Beta 1*	Beta 2**	Beta 3		
Salomonson	1()	L1A					
Salomonson	2(1)	L1B	Rec. 1/6/94			Tested successfully	
Salomonson	2(2)	Class. Masks					
ATMOSPHERES (Hucek)							
Kaufman,Tanre	4(1)	Aerosol Optical Depth Spectral	Rec. 2/94			Tested successfully	
Tanre,Kaufman	4(2)	Aerosol Optical Depth Spectral					
Kaufman,etc	5()	Precipitable Water					
Menzel,King	6(1)	Cloud Cover					
Menzel	6(2)	Cloud Drop Phase	Rec. 1/5/94			McIDAS data structures and subroutine calls included	
King,Menzel	6(3-4)	Cloud Drop Size/ Optical Depth	Exp 4/94				
Menzel	6(5)	Cloud Properties					
Menzel	7()	O3 Total Burden					
Menzel	8()	LI					
Menzel	30(1)	Temperature Profile					
Menzel	30(2)	Water Vapor Profile					
Menzel	38()	Water Vapor, Atmospheric					
LAND (Berrick)							
Kaufman,etc.	9()	Surface Reflectance					
Strahler	9(2-5)	BRDF	Rec. 1/12/94			Tested successfully on Itsun; not on modis-xl or hp	
Salomonson,Hall	10()	Snow Cover	Rec. 1/7/94			Tested successfully	
Wan	11(1)	LST	Exp. 3/94				
Wan	11(2)	LST					
Strahler,Huete	12(1-2)	Land Cover					
Justice,Huete	13(1)	NDVI					
Justice,Huete	13(2)	MVI					
Kaufman,Justice	14()	Thermal Anomolies					
Running	15()	LAI and FPAR	Exp 5/94				
Running	16(1)	Evapotranspiration					
Running	16(2)	Evapotranspiration - Sfc. Resis					
Running	17(1)	NPP					
Running	17(2)	Photosynthesis - Respiration					
Salomonson,Hall	29()	Sea Ice Max Extent					
Salomonson,Hall	33()	Gridded Snow Cover					
Justice,Huete	34(1)	Max NDVI					
Justice,Huete	34(2)	Max MVI					
OCEAN (Li)							
Gordon	18()	Water Leaving Radiances	Exp. 2/94				
Gordon,Clark	19()	CZCS					

* Unless noted, no Beta 1 delivery is planned nor required

** Beta 2 deliveries are mandatory and planned for 10/94

STATUS OF ALGORITHMS

Investigator	Product	Name	Initial Delivery			Current Status	Status Change
			Beta 1*	Beta 2**	Beta 3		
Oceans	20(1-3)	Chlorophyll Fluorescene					
Oceans	21(1-2)	Chlorophyll_a Pigment	Exp. 2/94				
Oceans	22(1-2)	PAR					
Clark	23()	Suspended Solids					
Oceans	24(1-2)	Organic Matter Concentration					
Gordon	25()	Coccolith Cone					
Clark,Gordon	26(1-2)	Ocean Water Attenuation Coef.					
Abbott,Esaias	27(1-2)	Ocean Productivity					
Brown,Barton	28()	Sea Surface Temp	Exp. 2/94				
Hoge	31()	Phycoerythrin Conc.					
Evans	32()	Calibration Data					
Gordon,Parslow	35()	Ocean Water Backscatter Coef					
Carder	36()	Absorption Coef					
Gordon	37(1-2)	Ocean Aerosol Properties					
SEAWIFS (Li)			FTP'd to modis-xl 2/23/94			Successfully generated HDF and netCDF libraries; and SeaWiFS executable	
LAND PATHFINDER (Robinson)			Rec. 2/28/94			First test completed; some problems encountered	
VOLCANO CODE							

* Unless noted, no Beta 1 delivery is planned nor required

** Beta 2 deliveries are mandatory and planned for 10/94