MODIS SEMIANNUAL REPORT
- MARCH 1994 -

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RSMAS/MPO

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NAS5-31362

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Due to the interlocking nature of a number of projects, this and subsequent reports will contain coding to reflect the funding source. Modis funded activities are designated with an M, SeaWIFS with an S, and Pathfinder with a P. There are several major sections within this report; Database, client/server, matchup database, and DSP support.

A. NEAR TERM OBJECTIVES

A.1. Modis Objectives (M)

A.1.1. Continue to develop and expand the processing environment

- a. increase computational efficiency through concurrent operations
- b. determine and apply more efficient methods of data availability for processes

A.1.2. Begin extensive testing using global CZCS and AVHRR GAC data with database processing to test the following:

- a. algorithm capability
- b. machine and operating system stability
- c. functionality required for the processing and analysis environment

A.2. SeaWIFS Objectives (S)

A.2.1. Continue testing of processing methodology.
A.2.2. Continue to develop relationship between database and in-situ environment.

A.3. Pathfinder Objectives (P)

A.3.1. Expand matchup database as applicable.
A.3.2. Continue testing of methodology.
A.3.3. Train and integrate new personnel into Matchup Database processing scheme.

A.4. DSP Objectives (M)

A.4.1. Continue testing of processing methodology.
A.4.2. Continue to expand the number of sites supported.
A.4.3. Expand the supported hardware/software platforms

B. OVERVIEW OF CURRENT PROGRESS

B.1. Automatic Processing Database (P)

B.1.1. Operational Testing

B.1.1.1. January Operational Testing

Jan. 1988 was processed multiple times, using the Walton NLSST SST algorithm and some modifications.

January Product Production and Dissemination:

a. Daily and weekly ascending and descending AVHRR product files from the Nov./Dec. runs were made available for weeks 8801-8844, in several sizes and formats.
b. The files were in three forms: as binned data (what we call the PST files), as DSP images (we are currently mapping into a global cylindrical rectangular coordinate system), or as simple 2 X 2 files (no header data) that can be imported into foreign display systems.
c. Ascending and descending data (day and night) are stored separately, and all files are global, with land masked out.

When files are mapped, there are three "qualities" available:

alpx = all pixels, regardless of data quality
good - pixels flagged good (cloud-free) BEFORE reference masking
dcld - pixels flagged good AFTER reference masking

Files made were:
9 km resolution PST files - daily and weekly 4096 X 2048
DSP images of the daily files - alpx and dcld
(made from the 9 km files above)
18 km resolution PST files - daily and weekly 2048 X 1024
DSP images of the daily and weekly files - alpx, good and dcld
((made from the 18 km files above)
2048 X 1024 noheader files of the 2048's above
1-degree resolution PST files - weekly only
360 X 180 images of the weekly files - for this set, we have mapped SST, standard deviation and count (these are the files corresponding to the Reynolds fields)
2-degree resolution PST files - daily only (for comparison at some point with the new release of the COADS climatology.
A subset of the products was also made available for the one-month tests of the Walton NLSST calculation.

B.1.1.2. February Operational Testing

The operating environment was adjusted to take advantage of software and hardware upgrades. Some jobs have been consolidated

and others eliminated. For example, previously there were three jobs that handled the orbital binned files, one to product them, one to copy them from the local processing disk to the post-processing disk, and one to perform cleanup. Due to improvements in the communications between the processing machines and the post-processing machine, these three have been combined into one job.

Here is the new, streamlined scheme:
1. As before, ingatcor and spacebin on the alphas.

2. One job now runs pathtime, to produce the asc and dsc files for the orbit. These are now written directly to /h/modis4, instead of being written to a local disk. This job also cleans up all intermediate and input files. Previously, there were separate jobs to make the orbital file, copy it to the next step, and clean up.

3. The daily job (currently run on an SGI Challenge) now copies the daily files to the appropriate remote data disk, eliminating the second copy job. These disks are now mounted on three DEC alpha machines for the time being.

Another run was made, of days 88001-88120, during the latter part of the month.

B.1.1.3. March Operational Testing

Early 1988 was calculated several times to test enhanced cloud masking strategies using the Reynolds climatology, correcting some problems that had occurred due to the 1 degree resolution of those fields.

Near the end of the month, a new run was started, and will be continued in April.

B.1.2. Development

B.1.2.1. January Development.
System installation at Jet Propulsion Laboratory.

The database schema were modified to reduce the size of a major field in the PROCESS_CONTROL table. One of the most commonly queried fields, PROCESS_STATUS was reduced from 20 to 3 characters. This improved the efficiency of the string comparison on this field.

Adjustments were made in the SATELLITE and SENSOR tables, and the database interface was modified to hold these static tables in memory, to avoid excessive I/O activity.

Many minor adjustments were made in the interface and DSP command files.

B.1.2.2. February Development

Using a new DSP function, stat, the sizes of input and output files will be compared for file copying jobs, to ensure that the copy completed successfully. More tables are being streamlined and taken into the server memory.

B.1.2.3. March Development.

A large number of the command files used for post-processing and product production were consolidated and condensed. For example, there were several files used to produce various sizes of maps of SST or ST/standard deviation or count. These were consolidated into two files, pmp-loop.dsp, which sets up the mapping of a number of files, then calls pmp-run.dsp, which creates one map. This consolidation was also performed for files to produce composited (pathcomp-loop), median filtering of PST files (pflt-loop), spatial reduction of PST files (pspc-loop) and image remap (rmp-loop).

The database interface was modified so that all static database tables are now held in memory.

The interface was also modified to permit control over individual client computers. When a work request is received by the interface, a logical symbol is now checked for that computer. If the symbol for that computer is "R," then operation continues normally. If the symbol is "S," the "stop" signal is returned to the client MCP program, telling it to exit. If it is "P," then the "no work, sleep" signal is returned to the requesting mcp. If it is "F," then processing continues for all jobs except the "init" procedure, to which a stop signal is sent. Since the 'init' job assigns a new orbit file to that computer. this results in completing processing on all files currently assigned to that computer, but assigning no more new ones.

B.2. Client/Server Status (S)

B.2.1. 1st Quarter Client/Server Development

The following is basically what was accomplished for the 1st quarter concerning Client/Server processing:

1. Port the VDC from IRIX version 4 to IRIX version 5, which involves the services functions for the Sybase.

2. The porting of VDC was not complete because the portion of the program written in perl was not functional. Dalu Li contacted Mark and Jibu who are responsible for that program. He was told that they are rewriting that part in C instead of perl and that the program would be provided to RSMAS after testing and check in for version control are completed.

Dalu also installed the browse code that has not been ported to version 5 in SGI 4D/480, under IRIX version 4.

The ap graphics interface is being designed to monitor the data processing activities. The design is planned for three parts, the first part is a general command window, which is basically a key stroke reduction program; clicking buttons to execute commands. The second part oversees network activities, the status of the Ethernet, connectivity to each node, and the loading of each machine (this part is to be added). The third part will monitor the data file processing, which should provide much better visual indication of the current data file processing status recorded in the RDB database.

These graphics interface programs are related to some extent to VDC's counterpart and were written in C++ to make them easier to modify.

B.3. Matchup Database (P)

B.3.1. 1st Quarter Matchup Activities

During this quarter, we continued the collection of in situ sea surface temperature (SST) data from various sources, to be used in extending the temporal and geographic coverage of the matchup data bases. With the cooperation of NOAA's National Oceanographic Data Center (NODC), we extended our inventory of data from moored buoys off the US coasts to December 1993. Similarly, drifting buoy data were obtained from NOAA's Atlantic Oceanographic and Meteorological Laboratory (AOML) for 1992 and 1993.

A list of times and locations at which NOAA-11 AVHRR data were to be extracted was built from in situ SST data. The extractions were completed, and the matchup database was assembled for this year. This currently gives us an approximately three-year long (December 1988 - December 1991) global matchup database that will be used to develop and validate SST algorithms for NOAA-11. This activity will begin in the near future, and it will include an examination of the transition between the end of the NOAA-9 and the beginning of the NOAA-11 data series.

As detailed in the last report, we also experimented with the addition of integrated atmospheric water vapor concentrations to the matchup database. The water vapor estimates were derived from data collected by the Special Sensor Microwave/Imager (SSM/I). In the last report, we described a procedure by which three days of SSM/I data were used in a sub-optimal interpolation scheme to produce daily water vapor fields.

The three-day fields ensured almost complete global coverage and captured the large-scale characteristics of the water vapor distribution. However, when examining the association between the 3-day water vapor values and the difference in brightness temperatures in AVHRR channels 4 and 5 (T4 - T5), we noticed a

significant amount of spread. It was unclear whether that variability originated in a truly limited association between these two quantities, or, on the other hand, it simply reflected the influence of mesoscale meteorological variability. That is, we were comparing 3-day fields with instantaneous measurements. Passage of fronts within the 3-day period could introduce significant variability in water vapor values, as it was confirmed from an examination of daily weather charts and SSM/I extractions at the moored buoys.

To examine the importance of mesoscale variability, we used SSM/I water vapor values extracted from the passes closest in time and the pixels closest in space to observations from the moored buoys off the US east coast and in the Gulf of Mexico. These SSM/I values were provided by collaborators at NASA's Goddard Space Flight Center. We compared these instantaneous SSM/I extractions with (a) daily median-filtered fields, in which the ascending and descending passes over a grid cell were used together, and (b) the 3-day SSM/I fields described previously. As expected, there is considerable more difference between the instantaneous water vapor values and the 3-day fields than between the instantaneous measurements and the daily fields. The quantification of these differences is currently in progress. Preliminary results suggest that daily water vapor values should be used in SST algorithm work, as the difference between daily and 3-day fields is too large.

Finally, during this period we also initiated a new research line involving the use of atmospheric radiative transfer models. Two radiative transfer models were obtained and implemented: the first was LOWTRAN and the second one was a model developed by the Rutherford-Appleton Laboratory (RAL) in the United Kingdom. The RAL model was tested against using standard atmospheric profiles included with the LOWTRAN code. We expect to be able to report more on the modelling activity in the next quarter, as this effort is just beginning.

B.4. DSP Support (M)

B.4.1. Testing:

None listed

B.4.2. Modifications/Additions to DSP:

MIA2PICT: Program to convert a DSP image file to PICT.
ANLY7D: Merge in support for new ancillary read routines.
COLORSHR7: Merge in new ancillary read routines. Start building 8-channel versions of some files (/usr/dsp/cal/sea*pol.*).
ANLY8D, COLORSHR8: New HDF version.
MAKEPPT7: New orbital element utility. Used to create element data file from ascending time ordered text file of one line elements.
DSP: Add new DSP function "stat" to get information about files.
PATHBIN: Add reference longitude to bin9kminit routine. This is

the longitude of the center of the binned image. E.g., ref=0 means left edge is -180 and right edge is +180; ref=+90 means left edge is -90 and right edge is 270 (-90); ref=-180 (or +180) means left edge is 0 and right edge is 360 (0).
JHIST: Add output of ASCII file with histogram data.
JWA: New ingester for Japan format.
LIB/IO/S_RINT.C: Initial release. This adds the missing "rint" function to Apple's A/UX.
PATHFILL: New program to fill in missing and bad data in a PST file.
PATHSPC, PATHMOS, PATHMAP, PATHFLT, PATHCLOUD, PST2OA:
Add the reference quality as the fourth quality value (bits 6,7) in the quality band.
No longer build TCL and TK libraries.

B.4.3. Problems fixed:
MIA2PICT: Get rid of inversion logic. Works now for both b/w and color palettes on Mac. Add fixrec for VMS. Acknowledge SGI as origin of PICT output routines.
All Utilities: Modify for dual FORTRAN/explicit FORTRAN main program on OSF.
Change makefiles for either C or FORTRAN main programs and use new make.c-util vs make.util include file.
PATHMOS, PATHMASK, PATHFLT, PATHCOMP, PATHCLOUD,
IMG2PST, IMG2BIT, CZCSMAP9, CSBIN, CMOS, CMAP9, BIT2IMG,
PATHTIME, PATHMAP, PATHBIN, PATHSPC, PST2OA, GSFCBIN9,
MOSAIC9: Changes for seam longitude.
APP2PPT7: Correct writing of records to orbital element data file.
  Fixes so it builds on Sparcs.
TWOLINE2PPT7: Remove blanks (inserted for debugging) in output record. Add VMS command line file redirection. Fixes for OSF.
Add non-ANSI C support.
  Allow records to not have checksum character.
LIB/FB/X-LIB.C: Don't use alloca with gcc anymore.
  All the ntoh and hton routines are defined by BSDI.
  Don't use alloca with gcc anymore.
LIB/FB/WRKTLK_LINK.C: Fix major typo.
LIB/FB/MAKEFILE: Define SRCDIR since we include "make.0".
CALLER:
  Don't need the special malloc library anymore.
  Block signals when calling malloc. Don't block signals if doing so already.
  Don't call "HoldSignals" on Unix, they are already held.
  Loop on the wait3 call to reap all dead child processes.
  Add libwrktlk since we're using make.c-util now.
  Apple's AUX doesn't have the "atexit" call, fake one up.
  Use "make.c-util" instead of "make.util".
DSP:
  Use our internal popen on all architectures.
  Explicitly refer to RTLIBSHR in the link procedure.
  Code around problem with OpenVMS 2.0's getenv function.
  Reload termcap database after changing terminal type.
  Allocate the memory for the code array before attaching to the shared memory regions. On A/UX, there's something funny going

on with shared regions.
  Use "make.c-util" instead of "make.util".
  Use "void *" instead of "char *" for return type of gchunk.
RATFOR: OSF 2.0 has a different prototype for getopt.
PATHTIME: Add messages when a file is closed.
DBMAN: Add debugs and error messages. Initialize TTY to true. Fix string handling; take out Angels testing of TTY.
NDVI: Force type casting.
SMAKE: Fix error and string handling.
TRACE: Fix error message.
MUL: Fix strings.
SCRIPP: Fix strings.
SLD: Take out box outline (since couldn't get color right).
ORBIT: Fix string handling; get around passing two double arrays to dmod.
  Add to error message which decode failed.
11111/PPT7A.F: Get around the Fortran problem with two double arrays passed to dmod.
MIA2TIFF: Don't include some unknown header file.
TBUS2PPT7: Fixes for OSF. Add non-ANSI C support.
PRINTPPT7: Fixes for OSF. Add non-ANSI C support.
LIB/DISPLYSHR: We need REV512 on the Alpha (.opt).
On SGI, use BSD type signal semantics.
  Add casts to the netread/netwrite calls to keep the C compiler quiet.
  In makefile, define SRCDIR since we include "make.0".
LIB/IO/VAX_EXTRACT.C: u_char is already defined on OSF/1 T2.0
LIB/IO/UTILS.C: Use lib$get_vm to allocate memory, don't mix and match.
  MAKE-BSD: Add code to support non-ANSI compilers.
  BSDI defines the 1st argument of wait3 as an int.
  BSDI defines strcasecmp in one of its header.
  In makefile, don't define RANLIBMAG on BSDI, it's already defined.
LIB/IO/ASSOC.C: When copying associated data blocks, we need to allocate an even number of bytes, RMS can't read an odd number.
Add ASCII descriptions for new associated data types in "AssType".
PATHNLC:
  Add NLSST option; uncomment reference image check.
  Valid sst is within 2 deg of reference image (was 3).
  Add second channel 5 uniformity test.
  Change Reynolds interpolation for ".5" pixel centers and correct north pole and south pole grid rows.
  Handle boundary values better for Reynolds interpolation.
  Use 2-d interpolation for one degree Reynolds climatology data.
  Change to new non-linear radiance coefficients (4 Jan. 94 memo from Rao) for NOAA-10, NOAA-11, and NOAA-12.
PATHBIN: Conditionalize debugs; fix I/O status buffer checks.
  Split out AABINS: useful in own right. Clean up code in getmask.
  Rename bin9kmf_def.rat to bin9km_def.rat. Clean up open/get mask routines.
  Quality two is now second channel 5 uniformity is ok, sst is ok,

and zenith angle is ok.
CDR: Include <string.h>.
ZIPINVEN, ZIP, TIROS, SHARP, SCRIPP, SATMOS, RLREAD,
NMFSSCAN, NMFS, DLR, CZCS:
  Don't call "errset", not portable. Changes for OpenVMS.
TIROSSCAN, NMFSSCAN, SHARP, SATMOS, NMFS, DLR:
  Fix variables being doubly declared.
  Fix up double declaration of IFR.
TIROS, SCRIPP: Added ORBITSHR support for VMS platform.
ORBITSHR:
  Add alpha/VMS and (proto) VAX/VMS shared image support for
orbit shared image.
  Comment character in ORBITSHR-ALPHA.OPT-PROG is "!".
TIROS, SHARP, SCRIPP, SATMOS, RLREAD, NMFSSCAN, NMFS, DLR,
CZCSSCAN:
Add changes for ORBITSHR.EXE on VMS platforms.
RLREAD: Fix maximum buffer size.
CZCS: Don't use "flag" use "logical".
COLORSHR7:
  Add HDF support for alpha/OSF platform.
  Assume ancillary datasets are accessed through
usr/dsp/cal/ancillary instead of using a hard-coded local path
name.
  Add whitecap parameter value correction.
  Add debugging. Add support for daily ancillary files.
  Fix comments.
Multiple file dimensions not handled properly.
Add caldob, clean up code 'a la' colorsub8.c.
COLORSHR: removeComma is now separate.
 ANLY7D:
  Added bands for bounding model numbers.
  Add whitecap parameter value correction. Add new output band
(ratio).
INGEST/LIB/NETSTUFF.MAR: Modify code to 'assemble' on
axp/vms.
LOADNOHED: Add overwrite option.
TIROSSCAN, SATMOS, CZCSSCAN: No longer need sublib.olb on VMS.
INGEST/LIB/ASCEBC.C,EVCASC.C: Add new routines needed by the
ingesters that are usually found in sublib.olb on VMS.
OFEN: Don't restore terminal; fix subroutine common areas.
LIB/SATELLITE/GREJUL.RAT: Can't use nargs, so always use grejul
as a function.
SSBIN: Use grejul as a function. The 4 argument call is passe.
SMAP9: Use grejul as a function. The 4 argument call is passe.
GETCOM: Alpha/VMS page size is different and sys$crmpsc was
changed to care about it. Don't define htonl on BSDI.
  Fix for Vax/VMS.
LIB/DISPLYSHR/MPSECT.C: Alpha/VMS page size is different and
sys$crmpsc was changed to care about it.
  Fix up for Vax/VMS.
LIB/WRKTLK/MKSECT.C, MPSECT.C: Alpha/VMS page size is
different and sys$crmpsc was changed to care about it. Fix up for
Vax/VMS.
LIB/WRKTLK/WRKSPC.H: Apple's AUX needs <time.h> to define the

"tm" structure.
LIB/WRKTLK/LOCK.C: Retry the lock if we get interrupted.
LIB/WRKTLK/MAKEFILE: Define SRCDIR since we include "make.0".
LIB/IO/MATH.C: Only use these routines on a Vax running VMS.
LIB/IO/UTILS.C: Use the dumb emalloc routines on Alpha.
LIB/IO/CALEVAL.C: Use the Fortran versions of the math routines, just as in evlcal.
LLIB/IO/MAKEFILE: Use "s_rint.c" on Apple's A/UX.
IB/IO/HEADER.C,IMAGEWRITE.C,MAKEFILE: Suppress compile warnings. Correct make include path.
XAMIN: Fix to print last character of audit records.
TIROS: Add unpacked GAC and lac formats.
    One logical record per physical record for packed and unpacked.
LIB/TCL/TCLUNIX.H: Small change for IRIX 5.
LIB/TK/TKCONFIG.H: Small change for IRIX 5.
XFBD: Define the macro sigmask if not defined by the system headers.
   Make the action for SIGIO "ignore" rather than "default". We really want ignore.
  Don't re-enable SIGIO after it has been set to "ignore". Fix up #endif's.
SMAP9-HDF: New fake HDF routines.
SSBIN-HDF: Add the fake HDF routines. Change the output to not reverse the order of the input bands.
PATHFILL: Access correct input band. Speed up filling. Terminate looping at 1/2 bit error level.
MIA2CDF: Malloc really needed to be declared. Don't need to declare malloc().
LIB/SPHLIB: Remove -O0 from makefile. Add debugging code. Correct make include path.
ANLY8D: Checkpoint changes. Most of calibration integrated. HDF coding continues. Various speed ups: only compute cos(x)'s once, collapse other simple factors. Complete separation of navigation & I/O from processing code. Add manual page. Split out navigation. Make more HDF compatible.
  Continue reorganizing program.
COLORSHR8: Split out navigation (pointing calculations). Make more HDF compatible. Complete separation of navigation into separate module.
  Add caldob routine. Clean up code.
  Need SeaWIFS version of raygetpol.rat.
COLORSHR5: Add removecomma.c from colorshr. Add removecomma.c from colorshr.
HLPDS: Use the shorter name of libscreendpy.a on Apple's AUX.
LIB/SCREEN/MAKEFILE: Truncate the name of the library on Apple's AUX.
LIB/SATELLITE/MAKEFILE: Truncate the name of the library on Apple's AUX.
WRKSPC: Apple's AUX doesn't have the atexit call, fake one up.
BANDLIST: OSF doesn't need the declaration of malloc.
MIA2HDF: Those "useless" defines were really needed.
LIB/HDF/DFI.H: On OSF/1, malloc returns "void *".
MICE: Use make.c-util.

LIB/TK/TKBIND.C: IRIX 5.2 hides some of the X structures like OSF.
VHRR: Fix string handling.
GRID: Remove unused common block (conflicts on OSF V2.0).
INGEST/LIB/LGNGST.RAT: Fix string handling.
HIST: Conditionalize the NCAR calls. Only available on Vax/VMS for now.
JULIAN: Fix string handling.

B.5. Direct Project Support

B.5.1. SeaWIFS (S)

B.5.1.1 1st Quarter Efforts

Received new ancillary data routines. Jim integrated into ANLY, discovered problems with HDF routine when trying to access all 4 data fields, routine returned zero data. SeaWiFS resolved problems and new routines successfully integrated.

Received new L1 and L2 HDF routines. Working with SeaWiFS project to resolve difficulties in linking routines with ANLY.

3/23 Carder Telecon algorithm code to be available by end of march - Steve (SKA)

3/17 Jim able to link test program with HDF routines, sue to continue working with test program to verify L2 read and write with typical ANLY files.

Jim is restructuring ANLY to separate program sections dealing with calibration, navigation, I/O, atmospheric correction, and product generation. This will allow program to use either CZCS or SeaWiFS I/O and data.

Jim computed Rayleigh tables for all SeaWiFS bands, added ozone tau coefficients, Rayleigh tau coefficients, and computed data day limits for SeaWiFS project.

Jim added capability to change reference longitude for equal area coordinate conversion routines. Use 180 for Pathfinder and SeaWiFS.

ANLY adjusted to work with eight bands, SeaWiFS ozone, Rayleigh. For new coefficients correct for most of out of band radiance.

ANLY extended to 8 bands from 4 using single -> multi scattering doubled run time, ran experiment where fourier order reduced from 15 to 10, suggests that ~60% of time spent in calculating aerosol_rayleigh aerosol contribution. Howard working on new method to compute this section; it will likely double required table space.

Gordon's u/v wind component glitter algorithm integrated with u/v

wind field from ancillary data file.

We received the Challenge upgrade to 480. We installed IRIX 5.2 operating system and returned 480 to SGI.
Ported dsp to new version of IRIX.
Need fb program.

We received Sybase for 5.2 and installed. converted VDC to 5.2, Dalu sent copy of changes to mark, need conversions to scheduler for 5.2

SGI tape problems: SGI changed standard format definitions between v4 and v5 IRIX, e.g. DAT and Exabyte fixed and variable files. SGI new compilers: To date, there has been no improvement in run times. We requested IRIX 6, tfp class compilers and Fortran 90 implementation.

We continue to run ANLY timings

ATM availability: Circuits should be installed beginning of June. Fore switch at NRL being tested with their network.

Submitted request to purchase raid disk system and high density data tape drives.

B.5.1.2 Outstanding items:
continue to integrate l1 and l2 routines,

have received SeaWiFS calibration subroutine, need to integrate
need to include calibration equations from Barnes' report specifying scan dependent calibration modification.
Need to get copies of McClain et al and Woodward et al.from Gordon
Need out of band radiance corrections .(eps calculations)
O2 corrections for 760 band (long term)
Tau 865 algorithm

add code to compute percent data rejected

Will need to restructure chlorophyll algorithm (from Carder), interfacing with the Carder algorithm, pi factor, what about band 6 la/lw

Processing scripts vs what programs need, e.g. ancillary file, cal file, setting of workspace symbols

Data day limits for space bin.

We need to discuss flag algorithms with cal/val group at GSFC

Sue is trying to test l2 HDF routines with simple program before integrating with ANLY and space bin programs. Sue's test does not include valid nav vector.

time/GAC scan line = 2.7 sec.
timing = 180 pixels/sec l2read
processing 130 pixels/sec actual data, 2x including clouds/land on Challenge
Next tests are with SeaWiFS Program and simulated GAC data.

3/23 Jim copied HRPT HDF file, also needs GAC test file

B.5.1.3 Darzi Masks and Flags

*miami -- Lt over knee (which Lt, 865,765,665,440,5xx), set flag, do not compute (mask) one
.
*ghost -- fixed number of pixels around knee pixels, before and after, need number. calval (mask until correctable) two

*land mask -- from wdb II, done, need to integrate (mask) three built land and water depth mask for SeaWiFS at 9km resolution.
land- from land mask
shallow water-from land mask

*ice mask -- need ice mask from calval, (mask) four

bathy -- done, set flag (compute??) five

glitter -- uses u/v wind field, set flag six

if mask set, move L1 data to output, set L1 flag?
else compute L2 data.

invalid Lw, Lw <0 flag calval seven
quality flag, tau 865>threshold (from Gordon, need t algorithm) eight

cocco flag - from Gordon, Balch, C.Brown, need coccolithephore algorithm and flag algorithm. flag. nine

turbid case 2, Bricaud & morel: nlw550> threshold and no coccolithphore. need algorithm. flag ten

tilt - 2 bits flag, need to define bit selection for forward, down, back eleven, twelve

aerosol - 2 bits useless twelve models (2 bits)
compute pigments.
---
variables for ANLY output 16 bit, HDF 12 product and 15 QC
need 13 product and 12 qc
nlw 1-6
la 670, 865
CZCS pigment
chlor-a Carder
k490
flags

---
2 8 bit fields
tau-a 865
eps from selected model

----
qc products, real
u component of wind
v component of wind
relative humidity
pressure
ozone
lat
lon
sat zenith
sat azimuth
solar zenith
solar azimuth
la 750

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availability of other routines:

lat,lon <-> scan,elt
read routine for l2qc fields.

B.5.2. MODIS (M)

ATBD was revised and submitted

Purchase Requests: The request for purchase approval was submitted for high speed networking (ATM) using a 10 gigabit/sec switch and 155 Mbit/sec channels to the computers. Requested approval to purchase additional disk channels and memory for SGI Challenge; this machine will provide file server access to the distributed workstations.

RRSL received a test version of a Fortran 90 compiler for DEC OSF alphas. We are examining programming strategy for visible and infrared routines. We will use Pathfinder sst program for the initial coding.

Bob Evans and Pete Evans attended EOS architecture meeting March 7,8. Hughes is adopting an object oriented approach. Bob suggested that PGS toolkit needed to reflect a similar approach.

Jim Brown participated in Dennis Clark's Feb. cruise.

B.5.3. Pathfinder (P)

Jim Brown added capability to change reference longitude for equal area coordinate conversion routines. Use 180 for Pathfinder and SeaWiFS.

The March 9, 94 Pathfinder Science Working Group meeting. Accepted the algorithm approach presented in the Pathfinder report.

Bob Evans presented path approach at Navy/NOAA shared processing meeting at San Diego AGU; it was well received and reviewed by John Bates, NOAA, Peter Minnet, and Bill Emery

B.6. Team Interactions

Bob Evans Peter Evans participated in both the DOAFT and DPFT sessions and a EOSDIS architecture reviews and teleconferences.

Robert Evans attended a meeting of the Data Processing Focus Team.

A number of teleconferences and phone conferences have occurred on support of SeaWiFS.

C. FUTURE ACTIVITIES

C.1. Database Future Work

C.2. Client/Server Future Work
Continue development of programs to support SeaWiFS in the VDC environment.

C.3. Pathfinder (P)
C.3.1. Continue development with 1 deg (360x180) spatial resolution maps produced by Dick Reynolds.
C.3.2. Continue algorithm tests and Pathfinder-Reynolds comparisons.

C.4. Modis (M)
C.4.1. Create tools to assist in result's interpolation.
C.4.2. Verify workstation DSP (SGI, SUN, DECstation, VAXstation) by comparing each program's output with the Adage system.
C.4.3. Use test data sets developed to continue test criteria.
C.4.4. Continue ATBD exchanges and reviews.

C.5. SeaWIFS (S)
C.5.1. Continue testing of Gordon's algorithms and its interaction with HDF ancillary routines.
C.5.2. Continue timing tests with CZCS and SeaWiFS algorithms.

D. PROBLEMS

D.1. Database Problems

None listed separately

D.2. Client/Server Problems

None listed separately

D.3. Matchup Database Problems

None listed separately

D.4. DSP Related Problems

None listed separately