A I P S L E T T E R

Volume I, Number 1: November 1, 1981

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This AIPSLETTER is a, by now long overdue, attempt on the part of the NRAO AIPS group to unite the members of the Astronomical community now using the AIPS software system. It will provide us a means to inform you of the continuing corrections and enhancements being done at the NRAO. Hopefully, it will also provide you a forum to relate your experiences with, and developments in, AIPS. Of particular interest to the community would be new areas of application software and the use of AIPS on different operating systems and peripherals. This newsletter will be aimed principally toward those groups already operating an AIPS system and will deal primarily with the technical details of maintaining and upgrading the software. As currently envisioned, the AIPSLETTER will contain two regular contributions - a summary of the changes in the Charlottesville AIPS and a detailed listing of the additions to the CHANGE.DOC file since the previous AIPSLETTER. We hope to include other, less regular contributions from both outside groups and the NRAO staff.

In order to get this newsletter of the ground we need to hear from you on three subjects. The first subject is our mailing list. As an initial guess, we are sending this issue to those people to whom we have addressed tapes of the source code. In many cases, it may be more appropriate for us to address the AIPSLETTER to someone else in your group instead of (or in addition to) the person to whom we've addressed this issue. Please let us know if you wish to receive this AIPSLETTER and to whom we should address it.

The second subject is the question of how to provide you with updates to the source code. The rate of change in the software is too high to provide the complete details in the newsletter (or even in our internal documentation). The entries in CHANGE.DOC are seldom more than summaries of the changes. Perhaps we should mail out, at

intervals like 3 months, automatic update tapes to all active groups.
However, the cost of doing this - the tapes, postage, and, most
importantly, the manpower - makes such a global process unattractive.
We will soon have a complete DECNET capability with dial-up modems on
our Vaxes at Charlottesville and at the VLA. It seems attractive to
have user groups handle their own updates via the lists of changed
routines and a telephone link. This would allow the groups to advance
their systems selectively and at rates appropriate to their needs with
only a small additional load on our personnel. Please let us know your
thoughts on this subject and, in particular, whether and how your
system will be equipped for computer to computer links.

The third subject on which we would like to hear from you is
related to your use of AIPS. Have you brought it up on your system, in
part or as a whole? Have you had any problems you would like to
report? We enclose a copy of our bug/suggestion form. Please copy it
and send us as many complaints/suggestions as you like. We will,
ultimately, respond to all of them. Have you given AIPS to other
groups who might wish to be on our mailing lists? How many users do
you have for AIPS and what load do they pose for your system? In other
words, please tell us your reactions to AIPS and help us to make it a
better product.

The NRAO personnel associated with the group on a part- or full-time
basis and their main responsibilities in the group's activities are

Al Braun	VLA	DEC/NET and Systems work
David Brown	CV	Vax/Modcomp systems, AIPS on the IBM
Bob Burns	CV	Overall NRAO computer capability
Tim Cornwell	VLA	VLA Vax manager/friend
Bill Cotton	CV	U-V software, liason with VLBI
Ron Ekers	VLA	Overall AIPS priorities
Gary Fickling	CV	Vax system, installation, general software
Ed Fomalont	CV	AIPS project manager, AIPS priorities
Eric Greisen	CV	Software manager
Kerry Hilldrup	CV	IBM and general user support
Arnold Rots	VLA	VLA/AIPS spectral line coordinator
Fred Schwab	CV	Applied mathematics
Don Wells	CV	Measuring engine, liason with optical

It should be noted that most of the above people spend a small portion
of their time on the AIPS system.

SUMMARY of Changes: June 1 to Sep   r 18, 1981

On September 18, 1981 we prepared a considerable number of software tapes. The present section will provide a general overview of changes made in the three and a half months preceding that date. Later sections will provide more detailed information on the period September 18 to October 31, 1981.

We were "fairly" busy from June 1 - September 18; the CHANGE.DOC file for the period runs to 1639 lines. One of the more massive changes affected the computation of positions and, thence, all axis labeling routines. The change was required to handle transpositions of three dimensional imagery, e.g. position-position-velocity. The capability to build such images (task MCUBE), convert between floating and integer formats (CNVRT), and to transpose them in very general ways (TRANS) was also created. Axis labeling was consolidated, generalized, and improved in other ways as well. The hidden line algorithm in PROFL was improved. The ROAM algorithm and displays of step wedges were add to the TV routines. Task IMEAN had a plot a histogram option added.

Another massive change was made to the UV data base programs. A more flexible, floating-point format was adopted. All tasks were converted to it with numerous corrections and improvements. Rotation of coordinates was added. New tasks to edit data (UVFLG), save data on tape (UVIBM), subtract components (UVSUB), an' correct frequencies (CORFQ) were added. The sort alogorithm was speeded up greatly, at least for Vaxes. The self-calibration task (ASCAL) has received major improvements ranging from bug removal to a new, more stable solution algorithm and better solution control and automatic data flagging.

The mapping task (UVMAP), besides conversion to floating point, had its short-spacing gridding corrected and the ability to map the second channel at a different frequency from the first was added. The Clean task (APCLN) uses a more stable beam fit, gives the user better control of the beam patch and major/minor cycle cutoff, and uses a new generalized format for the clean components file. The other clean components tasks (i.e. CCMOD, PRTCC) also support the new format.

The advent of true n-dimensional imagery led to other improvements as well. The map format on disk now allows an integer number of rows per sector as well as an integer number of sectors per row. (All 2-dimensional planes begin on a sector boundary.) This saves large amounts of disk if the rows are short. The map IO routines are now smarter in their handling of small subimages. Map combination (task COMB) will now combine 2 n-dimensional images or each plane of an n-dimensional image with a 2-dimensional image.

In addition to these rather global changes, we have also corrected numerous errors and/or irritations. Error handling has been improved in numerous tasks, display formats improved, and lesser capabilities (e.g. DISKUSE, EXTLIST,...) extended. The Vax installation procedures have been made clearer and more powerful and Vax error handling (i.e. integer overflow) now puts one of its message copies to a file called ERROR.DAT. A POPS compiler bug was fixed, as was BATER's minimum match methods. Catalog handling was clarified and routines like MDESTR, ZEXPND, et al. were made smarter. Some new routines for very powerful gaussian fitting of slices and maps were begun.

SUMMARY of Changes: September 18 - October 31, 1981

These changes are listed in detail in the CHANGE.DOC file reproduced later in the AIPSLETTER. The period reflects several major thrusts: (1) correction of spectral-line oriented routines, (2) correction of recent changes for clean components files, (3) standardization of two major areas, (4) generalization of slice file formats, (5) enhancement of TV options, and (6) new UV and analysis routines.

In the spectral line (real y images of > 2 real dimensions) errors and poor default handling were improved in SUBIM, CNVRT, and display routines such as CNTR. Bugs in TRANS and PRTIM were corrected. The routines EXTINI and EXTIO are extremely general and were found, in the field, to have several subtle problems. These affected APCLN and have been corrected.

Two major sets of routines were revised to bring the software up to our formal standards. These are the UV data base routines (e.g. UVLOD, UVSRT, PRTUV, et al., but not UVMAP) and the so-called "WaWa" or "easy" IO package. The latter required major retyping and numerous corrections, but, hopefully, this easier-to-use IO and catalog management package now functions as its author intended. The slice file format was converted to floating point with generalizations for model fits and displays of data, models, and residuals. Several bugs, not noticed on our Vax, were fixed.

The TV area received a variety of improvements. The image catalog are tied more tightly to individual devices through the addition of 2 parameters (NTVACC, NTKACC) to the DCH common. Now, if for example there are 2 tvs, NPOPS #1 talks to TV #1 and NPOPS #2 through NTVACC

talk to TV #2 with no need to lie to SETPAR about the number of TV devices. The ROAM algorithm now handles 2048 by 512 et al. imagery and wedges may be correctly labeled. A new routine, TVFIND, removes the need to ask the user to select an image when only one image is currently visible on the TV. Additional color contours are selectable. Two image blinking algorithms and an interactive display of image values under the cursor are now available.

Several new capabilities have appeared. They include:

PBCOR : Primary beam correction
GREYS : A contour overlay option added by Stuart Button (University of Toronto)
ZTQSPY : Generalized by Stuart Button (U. of Toronto) to provide much more information
PRTCC : Control of which components are printed
CLIP : Flags UV data of large amplitude
FUDGE : General UV task - use it to build your own UV tasks
IMFIT : Gaussian fitting of maps
SLFIT : Gaussian fitting of slices

A short, intoductory manual ("cookbook") originally written by Alan Bridle is now available in the [DOC] area. It is aimed primarily toward users at the VLA site, but should be useful to other users as well. It has been revised to include many of the new routines.

In this section we give a listing of all groups to which we have sent the AIPS source code and/or documentation.

AIPS "Users' Group"

Category A: Receipents of transport tapes

United States

Arizona: Tempe   tape not yet written
    Dr. Peter Wehringer
    Arizona State University
    Department of Physics
    Tempe, AZ   82581

Arizona: Tucson   sent November 7, 1980
    Dr Donald C. Wells   MS-7
                              sent June 29, 1981
    Earl J. O'Neil, Jr.
    Kitt Peak National Observatory
    P.O. Box 26732
    Tucson, AZ 85762

California: Berkeley   sent June 11, 1981 (manual only)
                              tape written September 21, 1981
    Wilson Hoffman
    Astronomy Department
    University of California
    Berkeley, CA 94720

California: Pasadena   sent November 21, 1980
    Tim Pearson
                              tape written September 21, 1981
    Dr. Glen Berge
    Owens Valley Radio Observatory
    California Institute of Technology
    Pasadena, CA 91125

California: Santa Cruz   sent July 1, 1981
    Bob Kibrick
    Lick Observatory
    University of California
    Santa Cruz, CA 95064

Colorado: Boulder   tape not yet written
    Dr. George A. Dulk

Department of Astrophysics
University of Colorado
Duane F917, Campus Box 391
Boulder, CO 80309

District of Columbia   tape written September 21, 1981
    Dr. John Spencer
    Code 7134.2
    Naval Research Laboratory
    4555 Overlook Avenue SW
    Washington, D.C. 20375

Illinois: Evanston   Written Sept 29, 1981 from VPOPS (9/21 code)
    Melville Ulmer
    Department of Physics and Astronomy
    Northwestern University
    Evanston, IL 60201

Iowa: Iowa City   tape written September 21, 1981
    Dr. Robert Mutel
    Department of Physics and Astronomy
    University of Iowa
    Iowa City, IA 52242

Massachusetts: Cambridge   sent November 13, 1980
    Mark Love

                              sent June 29, 1981

    Shoshanna Rosenthal
    Smithsonian Astrophysical Observatory
    60 Garden Street
    Cambridge, MA 02138

Michigan: Ann Arbor   sent November 21, 1980 (manual)
    Dennis Hegy

                              sent June 11, 1981 (manual)
                              sent June 29, 1981 (tape)

    Donald Gudehus
    Randall Laboratory
    University of Michigan
    Ann Arbor, MI 48109

Minnesota: Minneapolis   sent June 26, 1981
    Frank D. Ghigo
    Department of Astronomy
    University of Minnesota
    116 Church Street S.E.
    Minneapolis, MN 55455

New Mexico: Albuquerque   written July 19, 1981 at VLA

Jack O. Burns, Jr.
Department of Physics and Astronomy
The University of New Mexico
Albuquerque, NM 87131

Dennis Ghiglia
Division 2644
Sandia National Labs
Albuquerque, NM 87185

Texas: Austin   tape written September 21, 1981
    Dr. Frank N. Bash
    Astronomy Department
    University of Texas at Austin
    R.L. Moore Building
    Austin, TX 78712

Wisconsin: Madison   sent November 13, 1980
    Mike Dearing
    University of Wisconsin - Astronomy
    MADRAF 5507 Stirling Hall
    Madison, WI 53706
                                  tape written September 21, 1981
    Edward B. Churchwell
    Washburn Observatory
    University of Wisconsin
    475 N. Charter Street
    Madison, WI 53706

Outside the United States

Canada: Toronto   sent August 28, 1981 (and earlier ones)
    Stuart Button, Philipp P. Kronberg
    Scarborough College
    University of Toronto
    West Hill
    Toronto, ON M1C
    1A4 Canada

France: Meudon   sent November 7, 1980 (Rancid)
    Diego Cesarsky
    DERAD
    Observatoire de Meudon
    ?2190 Meudon, France

Germany: Bonn   tape written September 21, 1981
    Dr. Hans Andernach

~-Plank Institut fur Radioastronomie
Auf dem Hugel 69
D-5300, Bonn 1
West Germany

Germany: Garching   sent manuals March 31, 1981
    Dr. Philippe Crane
                                   tape not yet written
    Dr. Peter Shaver
    European Southern Observatory
    Karl Schwarzchild Strasse 2
    D-8046 Garching, West Germany

Great Britain: London   sent August 3, 1981
    Ray Gorley
    Laboratory for Planetary Atmospheres
    Department of Physics and Astronomy
    University College London
    Gower Street, London WC1E 6BE

Holland: Dwingeloo   sent manual December 11, 1980
    Dr. Ernst Raimond
                                wrote tapes August 7, 1981
    Ronald H. Harten, Johan Hamaker
    Netherlands Foundation for Radio Astronomy
    Postbus 2
    Hoogeveensedijk 4
    Dwingeloo 7990 AA
    The Netherlands

    ly: Bologna   sent July 31, 1981
    Parma Fanti
    Laboratorio di Radioastronomia
     /o Istituto di Fisica "A. Righi"
     ia Irnerio 46
     3126 Bologna, Italy

       : Onsala   written August 10, 1981
       s B. Baath
       sala Space Observatory
       3900 Onsala
       en

United States

Maryland: Baltimore   taken June 19, 1981
    Rudolph Albrecht
    Space Telescope Science Institute
    Homewood Campus
    Baltimore, MD 21218

New Jersey: Princeton   sent manuals February 6, 1981
    Dr. G. R. Knapp
    Department of Astrophysical Sciences
    Peyton Hall
    Princeton University
    Princeton, NJ 08540

Puerto Rico: Arecibo   sent April 3, 1981
                              sent December 11, 1980

    Dr. Peter Shames
    Arecibo Observatory
    P.O. Box 995
    Arecibo, PR 00612

Outside the United States

Canada: Ottawa   manuals sent October 28, 1981
    Sun Kwok
    National Research Council of Canada
    Herzberg Institute of Astrophysics
    100 Sussex Drive
    Ottawa, Canada
    K1A 0R6

Holland: Leiden   sent December 11, 1980
    Dr. George Miley
    Sterrewacht te Leiden
    Wassenaarseweg 78
    Leiden, The Netherlands

Sweden: Gothenburg   sent December 11, 1980
    Leif Andreasson
    Chalmers University of Technology
    Electronic Physic II S41296
    Gothenburg, Sweden

PART 2 of 1981.   Part 1 stored as CHANGED.81A.

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391.   Sept. 21, 1981   ZMSGOP, ZMSGCL, ZMSGDK (Vax)   Eric
                          MSGWRT
       Fixed typing, error handling (in the Z's)
       Moved to VLA Oct 5 (by link), to Modcomp Oct 7.

392.   Sept. 21, 1981   HIIO   Eric
       Correct machine dependent parameter to independent parm
       Moved to VLA Oct 5 (by link), to Modcomp Oct 7..

 393.   September 24, 1981   Several   Eric
         Mostly an attempt to standardize the UV tasks
         CHIS.inc : minor typing
         DHIS.inc : minor typing
         DUIN.inc : add parms
         CUIN.inc : add parms
         DSRT.inc : Remove parts now in DUVH
         CSRT.inc : Remove parts now in CUVH
         DFIL.inc : Minor typing corr

         CHCOPY   : Add fast copy when everything lines up w reals
         [INPUTS]UVFLG : Change YPARM to APARM (since YPARM for maps)
         [HELP]UVFLG   :   "   "   "
         [INPUTS]APCLN, CCMOD : Correct range on INVER
         [HELP] APCLN, CCMOD : Clarify INVER defaults.
         APCLN   : Add call to FNDEXT to support INVER default with
                     new EXTINI defaults.
         CCMOD   : As for APCLN
         UVSUB   : Change to new call sequence for UVCREA

         Routines below moved from [.NOTST] to [.AIPS]
         UVPGET   : Standardize, make fusier, use DUVH, CUVH
         UVCREA   :   "   , change call sequence
         UVINIT   :   "   (just minor typing)
         UVDISK   :   "   (just minor typing)
         GREG   : Standardize
         PERMAT   : Standardize, simplify logic a bit
         OSORT   : Standardize (mostly change indentation)
         LSORT   :   "   "   "   "
         SHSORT   :   "   "   "   "

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MERGE      :
EXTINI     : Standardize, correct size computation
             Changed meaning of default input version # (writes)
EXTIO      : Standardize, correct extension order,....
JULDAY     : Standardize
VBOUT      : Standardize
PRTUV      :                    , use DUVH, CUVH
UVLOD      : Standardize, add stubs for FITS tapes
UVFLG      : Standardize
UVSRT      : Standardize, make it use DUVH..
UVIBM      : Standardize, use DUVH, CUVH
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[DOC]WHATSUP,IOSUP,UTILSUP,TASKSUP : Reflect above status
                                               changes
FORS.CT1, FORS.CT5, EXES.CT1, EXES.CT5 : changes to reflect
             above movement of code.
Moved to VLA Oct 5 (by link), to Modcomp Oct 7.

394. Sept 28, 1981   AU9B, TKGMSL (new), TKRSPL (new) Gary
                    [TEST.HELP]POPSDAT.
      Added verbs TKMODEL, TKAMODEL, for printing, reprinting
      Gaussian models directly to the TEK 4012. And TKRESID
      and TKARESID for printing, reprinting residuals of slice
      model to the TEK 4012.
      Moved to Modcomp Oct 7, nowhere else.

395. Sept 28, 1981   AU8A   Gary
      Updated to list gaussian model with slice file.
      Moved to Modcomp Oct 7, nowhere else.

396. Sept 28, 1981   [TEST.APL]TIMDAT   Gary
      Convert integer array form of time and date to expanded
      character string form for printing.
      Moved to Modcomp Oct 7, nowhere else.

397. Sept 28, 1981   CHCOPY, LABINI   Eric/Gary
      Fixed bug. Needed data statement for N1.
      Moved to VLA Oct 5 (by link), to Modcomp Oct 7.

398. Sept 28, 1981   [TEST.HELP]TKMODEL   [TEST.INPUTS]TKMODEL Gary
                      [TEST.HELP]TKAMODEL [TEST.INPUTS]TKAMODEL
                      [TEST.HELP]TKRESID   [TEST.INPUTS]TKRESID
                      [TEST.HELP]TKARESID [TEST.INPUTS]TKARESID
      Helps, inputs for new verbs.
      Moved to Modcomp Oct 7, nowhere else.

399. Sept 28, 1981   LMSTR, LMSTR1, RWUPDT   Gary
      Retyped these Argonne routines to approximate AIPS standards.
      Moved to Modcomp Oct 7, nowhere else.
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400.  Sept. 23, 1981    ASCAL                              Fred
      I made a sufficient number of changes in ASCAL for itr o
      fit into the Modcomp and to run there.  I moved this version
      to the Modcomp.  It remains unadulterated on the Vax's.

401.  Sept 29, 1981        WRPLAN                          Eric
      Removed bug when subimaging
      Moved to VLA this date, to Modcomp Oct 7

402.  Sept 30, 1981        COMB,[.HELP]COMB,[.INPUTS]COMB   Eric
      Removed major error which made it arbitrary whether or not
      blanked maps actually came out.  XPARM -> APARM.
      Moved to VLA Oct 5 (by link), to Modcomp Oct 7.

403.  Sept 30, 1981        SUBIM                           Eric
      Fixed major error on magic-value blanked maps
      Moved to VLA Oct 5 (by link), to Modcomp Oct 7

404.  Sept 30, 1981        ZDESTR.MAR                      Gary
      Fixed to return error code of 1 for file not found.
      Internal error code was in decimal instead of hex.
      Moved to VLA by Bill.

405.  Sept 30, 1981        POPSDAT.                        Gary
      Added verbs TKGUESS and TKAGUESS for plotting initial
      guesses in slice fitting.  Added adverbs DOSLICE, DOMODEL,
      DORESID for SL2PL.
      Moved to Modcomp Oct 7, nowhere else.

406.  Sept 30, 1981        [TEST.AIPS]TKGGPL(new) AU9B     Gary
      Verbs TKGUESS, TKAGUESS for plotting initial guesses.
      Moved to Modcomp Oct 7, nowhere else.

407.  Oct. 1, 1981        ASCAL                            Fred
      I modified the subroutine CNV in order to recognize data
      points that are labeled with bad antenna numbers (less
      than 1 or greater than 28).  The change to CNV prevents
      such points from going into the gain solution routine
      and also causes them to be flagged when the new data
      file is written.  I have a data base in which the first
      visibility record, which contains data that look ok,
      has a baseline number that decodes as 16-0.  These
      points flowed into the gain solution routine.  I made
      these changes both in the TEST area on the CV Vax and
      on the Modcomp.

408.  October 2, 1981            Several                   Eric
      An attempt to clean up the typing, character handling, etc.

in the so-called WaWa "easy" IO package. A more uniform
set of error codes have been adopted.
CATDIR     :  Change error handling on CSTA operation
CATIO      :  Revise status error meanings
CHSTAT     :  Enhance meaning of error codes (& change them)
MCREAT     :  Change to use catlg physical type rather than MA
              default is MA if catlg is blank.
              Also clears extension file area in CATBLK
MDESTR     :  Use input INDEST = -32000 to suppress normal
              messages


IITB.INC, DITB.INC, CITB.INC : retype, change com name
IBU1.INC, IBU2.INC, IBU3.INC, IBU4.INC, IBU5.INC : new
              declares buffer and filtab in desired real size
CBUF.INC, EBUF.INC   : retype, change com name
DCAT.INC, CCAT.INC, ECAT.INC : retype, com name -> MAPHDR


The routines below have been moved from [.NOTST] to [.APL]
CLENUP     :  Retype
FILCLS     :  Retype
FILCR      :  Retype, clean out debug, extra catlg handling
FILDES     :  Rewrite to use MDESTR
FILIO      :  Retype, set read into catlg on first call
FILOPN     :  Retype, use FILTAB(PODEP+6,.) for blanking parm
GETHDR     :  Retype
HDRINF     :  Rotype, add C*8 data type
IOSET1, IOSET2, IOSET3, IOSET4, IOSET5 : new include, retype
MAPCR      :  Rewrite to use MCREAT, change to return correct
              sequence number in case 0 was input.
MAPFIX     :  Retype, handle blanking, alter overflow handling
MAPIO      :  Retype, correct call to COMOFF, correct setting
              window into depth (2 places), add MDISK (FINI at
              change of planes. Move COMOFF call to catch change
              of operation also.
MAPMAX     :  Retype, handle blanking
MAPWIN     :  Retype, no alter PODEP+6
MAPXY      :  Retype, make it do what it says not full image
OPENCF     :  Retype
PRENAM     :  Retype
PRTNAM     :  Whole new version of name print out
SCRNAM     :  Retype, make name more compact, simplify
SUMIM      :  Retype, add history file operations, add error
              checking, correct default scaling, out names
TSKBE1, TSKBE2, TSKBE3, TSKBE4, TSKBE5 : retype, new include
TSKEND     :  Retype add close down messages
UNSCR      :  Retype, add error message
Moved to VLA Oct 5 (by link), to Modcomp Oct 7.

409. Oct. 2, 1981          ASCAL                    Fred

GCALC1 had an error in connection with choice of
reference antenna. All corrections for antennas
numbered lower than the reference antenna were wrong.
For ref. ant.=1, the routine was working properly.
Changed in the TEST area in the CV Vax and on the
Modcomp.

410.    October 2, 1981     several                          Eric
        DELEXT, MAPCLS, AU3, AU7 : correct CATIO error handling
        AU3A : fix bug in map size computation
        TKPL : Minor typing corrections
        [DOC]WHATSUP, IOSUP, TASKSUP : Remove non-standard marks
            from WaWa routines (see #407).
        Moved to VLA Oct 5 (by link), to Modcomp Oct 7.

412.    Oct. 3, 1981        ASCAL                            Fred
        The variable GS was unitialized. This is used to
        normalize the gain solutions so that the mean modulus
        of the gain solutions is unity. The problem only af-
        fected the Modcomp version. Correction was made both
        on the CV Vax and on the Modcomp.

411.    Oct. 3, 1981        Several                          Eric
        IITB.INC, DITB.INC, CITB.INC : add parameter INDEF
        IOSET1, IOSET2, IOSET3, IOSET4, IOSET5 : define INDEF
        MAPFIX      :   Remove local decl of INDEF
        MAPIO       :       "       "     "        "
        MAPMAX      :       "       "     "        "
        PRTNAM      :   Make format larger for user number
        SUMIM       :   Add window capability, remove local decl INDEF
        [.HELP]SUMIM    :   Add BLC, TRC
        [.INPUTS]SUMIM  :   Add BLC, TRC
        HDRWIN      :   NEW: WaWa IO window a header making output hdr
        [DOC]WHATSUP    :   Add HDRWIN
        [DOC]IOSUP      :   Add HDRWIN
        TKPL        :   Better handling of CATIO error codes
        TVPL        :       "       "     "        "    "    "
        PRTPL       :   Ditto and retype a little
        Moved to VLA Oct 5 (by link), to Modcomp Oct 7

413.    Oct 3, 1981             SUBIM                        Eric
        Fixed error: N-dim looping point missing! Fixed potential
        zero divide as well.
        Moved to VLA Oct 5 (by link), to Modcomp Oct 7.

414.    Oct 5, 1981        [TEST.HELP]several                Gary
        XYRATIO     CNTR            PCNTR           GREYS           GPOS
        GWIDTH      DOSLICE (new)   DOMODEL (new)   DORESID (new)
        Explained new XYRATIO defaults; added 1D fitting info, and new

logical values for SL2PL.
Moved to Modcomp Oct 7, nowhere else.

415.  Oct 5, 1981        CAPL.INC   DAPL.INC                Gary
      Added adverbs DOSLICE, DOMODEL, DORESID.
      Moved to Modcomp Oct 7, nowhere else.

416.  Oct 5, 1981        [DOC]                             Gary.
      POPSUP added TKGMSL, TKGGPL, TKRSPL
      WHATSUP added TIMDAT, FNDEXT
      UTILSUP added TIMDAT
      Moved to VLA Oct 5 (by link), to Modcomp Oct 7.

417.  Oct 5, 1981        Several                           Eric
      FORS.CT1, EXES.CT1, FORS.CT5, EXES.CT5 : changed lists to
              account for WaWa IO standardization, HDRWIN
      EXTINI   :  Removed several fatal bugs in my version, also
                 add correction from Bill on init size
      EXTIO    : Removed infinite loop in my version, corrs from
                 Bill on expansion test, etc
      CNTR     : Improved handling of default XYRATIO
      PCNTR    :       "          "          "         "
      GREYS    :       "          "          "         "
      PROFL    :       "          "          "         "
      TRANS    : Improved messages, correct subimg/rowswap error
      PRTIM    : Correct formats, finding of clean beam, setting of
                 BLC(!)
      MINIT    : Correct error on backward, short row IO
      Moved to VLA Oct 5 (by link), to Modcomp Oct 7

418.  Oct. 6, 1981       LSCAL , ASCAL                      Fred
      I invented a new task, for use on the Vax's only, which
      is identical to ASCAL except that larger data arrays
      are provided.  This allows one to avoid averaging when
      a long solution interval is used.  21411 visibility
      points can be held in the arrays.  This is 10m10s of
      10 second Filler data.
           Also, in the least-squares gain solution routine,
      I increased the iteration limit ITMAX from 30 to 40.
      Usually when one hits this limit, the data are bad or
      the model is bad.  In very low S/N cases, or with a
      translated model, the limit of 30 sometimes was legiti-
      mately encountered.  This change was made only in the
      TEST area on the CV Vax.
           Additional change, again only on CV Vax: GCALC,
      with the print option turned on, now prints the rms
      residual (Jy) at each iteration.  GCALC1 prints a
      quantity which is essentially (i.e., for small epsilon)
      equal to the mean absolute residual.

Also, a minor change to GCALC1: I changed the three
values of epsilon from 50, 5, and .5 mJy to 5, .5, and
.05 -- these are the values which I thought I had been
using.

419. October 6, 1981     Plot programs                          Eric
TKPL   :  Make arcsec/mm work only when suitable
PRTPL  :           "          "    "      "      "
CNTR   :  Correct bug causing first 5 words of buffer to be bad
GREYS  :  As CNTR, this bug inserted yesterday as part of
             fix to correct XYRATIO default
Moved to VLA by link Oct 6,to Modcomp Oct 7.

420. Oct 6, 1981    [TEST.NOTST]SLICE                          Gary
Was reading 1 too many lines of data in most circumstances.
Would hang up with new MDISK.
Moved to Modcomp Oct 7, to VLA Oct 6

421. Oct 5, 1981    [TEST.INPUTS]several                       Gary
CNTR  GREYS  PCNTR  SL2PL
Changed description of XYRATIO.
Moved to Modcomp Oct 7, nowhere else.

422. Oct. 7, 1981       ASCAL, LSCAL                          Fred
    On the CV Vax I made a few changes that were required
in order to use the modified UVCREA.
    I also made a few changes that make it easier to
transport ASCAL to the Modcomp.  The Modcomp doesn't
allow COMPLEX comparisons in IF statements, and it has
trouble compiling and assembling statements that in-
volve too much complex arithmetic, at least when some
of the variables are passed into a subroutine in the
argument list.  The Modcomp still requires a special
version of ASCAL, with decreased array dimensions and
with the double precision complex arithmetic stripped
out of GCALC1.

423. Oct. 7, 1981      SL2PL                               Gary
New inputs and options DOMODEL, DORESID.
Moved MODCOMP this date, nowhere else..

424. October 7, 1981        Several                          Eric
The following errors were found by the Modcomp compiler:
TKRSPL  :  FBLANK not initialized
EXTIO   :  WRITE misspelled in error message
FILCR   :  Lacked includes of DCH common, undeclared logical
HDRINF  :  WTYPE misspelled
MAPFIX  :  REED misspelled in error message
RWUPDT  :  Comment with lower case C

```
      MOMFT    :  Program statement gave wrong name, Modcomp version
                  had no relation to more recent(?) Vax version
      SLFIT    :  Blank line
      SL2PL    :  FBLANK not initialized
      UVSUB    :  Lacked include HDR common in SUBHIS subroutine
      Moved from Modcomp to CV vax Oct 9, nowhere else.
```

425.   October 9, 1981   Several   Eric
        The following errors were detected while testing on Modcomp
        CCMOD   : Dimension of PIXXY corrected to 7.
        EXTIO   : Integer overflow possible
        AU7   : Resetting adverb FACTOR unneccessarily
        PRTCC   : Buffer 512 bytes too small
        APCLN   : ZERO misspelled twice.
        Moved from Modcomp to CV Vax Oct 9, nowhere else.

426.   October 9, 1981   [DOC]   Eric
        TASKSUP : Correct listing using info from Modcomp (VET file)
        Moved to Modcomp Oct 13, nowhere else.

427.   Oct. 11, 1981   UVMAP(.FOR and .EXE)   Fred
            In trying to track down the CV Vax line 223 problem,
        I found that in GRDTAB the pseudo I*4 variable ITAB was
        simply declared ITAB, not ITAB(2). I changed the delcla-
        ation in the TEST.NOTST area and relinked in the TEST area.
        I didn't change CSMAP because I wasn't sure whether I
        should go into the VPOPS area, and I wasn't sure which link
        procedure(s) to us . I doubt, though, that this oversight
        caused any problem.
        Moved to Modcomp Oct 22, nowhere else.

428.   Oct. 12, 1981   [TEST.NOTST]SLICE   Gary
        Fixed rounding problem. .99999 => .999
        Fixed destroy SL file on error (added ZPHFIL).
        Moved to Modcomp Oct 13, nowhere else.

429.   Oct. 12, 1981   AU9C   Gary
        Superfluous variable in argument list of call to SET1DG.
        Moved to Modcomp Oct 13, nowhere else.

430.   Oct. 12, 1981   MSCALI   Eric
        Fixed bug affecting >2 - dimensional maps (no loop point)
        Moved to VLA this date (by link), Modcomp Oct 13.

431.   Oct 12, 1981   FILCR   Eric
        Failed to VER for catlg scratch files
        Moved to Modcomp Oct 13, nowhere else

432.   Oct 12, 1981   DESCR (newish), AU3A   Eric

[.HELP]SCRDEST.
Implement scratch file destroy by task name. Old DESCR in
[.NOTST] is replaced (it would not have worked anyway).
Moved to Modcomp Oct 13, nowhere else.

433.   Oct. 12, 1981   UVMAP(.FOR and .EXE)   Fred
In the subroutine CONGRD the variable EEND1 ought to
have been declared REAL*8. I corrected the error on the
CV Vax (in the TEST area only). It caused no evident ill
effect.
Moved to Modcomp Oct 22, nowhere else.

434.   Oct. 13, 1981   [DOC]MV2C06SL.   Gary
Updated for new slice file format.
Moved to Modcomp Oct 13, nowhere else.

435.   Oct. 13, 1981   UPDATE0.COM   Gary
New. Replaces INSTALL for update procedure.
Moved nowhere.

436.   Oct. 13, 1981   [DOC]MV2C1004.   Gary
Updated UPDATE procedure instructions.
Moved to Modcomp Oct 13, nowhere else.

437.   Oct. 13, 1981   SLBINI   Gary
Initialized TEXT array.
Moved Modcomp Oct 15, nowhere else.

438.   Oct. 13, 1981   [TEST.AIPS]TKSLIN   Gary
Would try to do model no. zero if requested and no models
in the header.
Moved Modcomp Oct 15.

439.   Oct 14, 1981   UVMAP   Eric
Correct branch which ignored last few UV points (2 places)
Moved from VLA this date (per Bill), to Modcomp Oct 22.

440.   Oct 14, 1981   [.HELP]POPSDAT   Eric
                            DAPL.INC, CAPL.INC
Add adverb ROMODE to support new roam modes
Moved to Modcomp Oct 22, nowhere else.

441.   Oct. 15, 1981   [.HELP]ROAM,SETROAM,TVROAM   Eric
                            [.inputs]SETROAM,TVROAM
                            [.help]ROMODE (new)
Add description of new adverb and correct TVCHAN description
for code which will be installed soon.
Moved to Modcomp Oct 22, nowhere else

442. Oct. 16, 1981   [TEST.AIPS]ZACTV9.MAR   Gary
      Changed to allow different AIPS terminals to have different
      message terminals for their respective shed tasks.
      The AIPS terminal names are hard coded in this program,
      the message terminals are group logical assignments.
      Moved to [TEST] at VLA.

443. October 19, 1981   [.HELP]TVLABEL, TVTRANSF,   Eric
            [.HELP]TVNAME, IMWEDGE, TVWEDGE
            [.INPUTS]TVTRANSF, TVNAME, IMWEDGE, TVWEDGE
      Modify descriptions for upcoming changes in algorithms
      Moved to Modcomp Oct 22, nowhere else

444. October 20, 1981   [.HELP]POPSDAT, IMPWEDGE   Eric
            [.HELP]TVBLINK, CURBLINK, TVMBLINK
            [.INPUTS]IMPWEDGE, TVBLINK, CURBLINK, TVMBLINK
      New verbs: imwedge from clip min to max rather than from
      map min to max, blinking with enhancement options, switch
      cursor between blinking and steady modes.
      Moved to Modcomp Oct 22, nowhere else

445. Oct. 20, 1981   [TEST.AIPS]ZACTV9.MAR   Gary
      Another pass (see 442). AIPS terminal names are now
      group logical assignments (AIPSTT1 and AIPSTT2) instead of
      hard coded names.
      Moved nowhere.

446. Oct. 20, 1981   [.NOTST]GREYS   Stuart
            [.HELP]GREYS, [.INPUTS]GREYS
            [.AIPS]AU8A.FOR
      Modified GREYS to allow optional contours superimposed on
      grey scale. Modified AU8A so that EXTLIST will properly
      report parms from new grey scale PL file.
      Moved to Modcomp Oct 22, nowhere else.

447. Oct. 20, 1981   [.AIPS]ZTQSPY   Stuart
      Installed modified version of SPY. Will report all AIPS
      tasks in system with name, cpu, state, prio, and i/o.
      Moved nowhere.

448. Oct. 20, 1981   [TEST]AIPS.COM   Stuart
      Command file changes terminal characteristics from /VT100
      to /UNKNOWN/FULLDUP. This allows tasks to send TSKTT
      messages to TT without WAITTASK or waiting for CR/LF
      from AIPS. Resets /VT100 on exit.
      Moved nowhere.

449. Oct. 20, 1981   LOGIN.COM   Gary
      Change hardcoded disk names to logical names.

Moved to [AIPS]

450   Oct. 20, 1981   AIPS.COM   Gary
Removed some old stuff to keep from confusing importers.
Moved to [AIPS]

451.   Oct. 20, 1981   [DOC]MV2C1002.   Gary
Updated, corrected, and made additions to our installation
instructions.
Moved nowhere.

452.   Oct. 20, 1981   COMPILE.COM, COMPIL2.COM, LINKA.COM Gary
Added deletion of object modules where missing.
Moved nowhere.

453.   Oct. 20, 1981   TRANSPRT.COM   Gary
Procedure was copying [AIPS]*.COM stuff to tape twice.
Moved nowhere.

454.   October 22, 1981   Several   Eric
A considerable number of changes to the TV handling as follows:

IDCH.INC, DDCH.INC, CDCH.INC : Add parameters to give number
                of AIPS allowed access to TV and TK devices
DTVC.INC. CTVC.INC : Minor typing fix
DTVD.INC, CTVD.INC : Minor typing fix, add TVSPLC (split chans)

ICINIT   :   Change call to ICOPEN, clean up typing a little
ICOPEN   :   New call sequence. Tests whether access is allowed
             opens file # min0 (NPOPS, NTVDEV) or TK
ICREAD   :   Change call to ICOPEN, fix up error handling
ICWRIT   :   change call to ICOPEN, fix up typing a little
             Move directory update outside loop (failed to remove
             overlaid images otherwise)
LABINI   :   Add hidden label type 7 (no top line)
TVINIT   :   Use NTVACC rather than NTVDEV
TVOPEN   :   Use new NTVACC parameter rather than NTVDEV
TVPL   :   Use new NTVACC parameter rather than NTVDEV
WINDOW   :   Limit BLC to NPTS before ILL Window test
YTVCIN   :   Set new TVSPLC roam channel parameter to 0
ZDCHIN   :   Add new access numbers to code and to read from
             parameter disk file

AU5   :   Use new TVFIND to perform verb TVNAME
             Set INDISK on TVNAME, do CURBLINK
AU5A   :   Modify to handle new adverb/parms ROMODE and to be
             able to load 4x1, 3x1, 1x3, and 1x4 roam images as
             well as the previous 2x1, 1x2, and 2x2.
AU5B   :   Use new TVFIND routine to determine which image

```
                    Add wedge label call to IAXIS1
        AU5C     :  Use new TVFIND routine to determine which image
                    Fix up img catalog more for labeling wedges
                    Do IMPWEDGE
        AU6      :  Add cycle color contour types in TVPSEUDO
        AU6A     :  Do Blink algorithm with image enhancement
        AU6B     :  (NEW) Do graphics display of values under cursor
        COMPIL   :  Remember to reinit another counter on ; operator
        IAXIS1   :  Add hidden label type 7: no top, extra bot lines
                    Add arg. to clear full graphics planes not part
        ICOVER   :  (NEW) Finds if there are partly overlapped images
                    currently visible on the TV
        IENHNS   :  Use grch 1 for plot, no background, starts off
        IMCCLR   :  Add cycle color contour types, mod green level
                    of Dutch orange, add 2 IMPS schemes (per M. Lesser)
                    The options are nice, but the colors should be
                    improved.
        SETPAR   :  Add new access numbers (NTVACC, NTKACC)
        TVBLNK   :  (NEW) Run the basic blink algorithm
        TVFIND   :  (NEW) Return the plane number and image catalog
                    of a desired image (either only one on or ask user
                    to point at it via TV cursor)
        TVROAM   :  Correct setting of split point, generalize to
                    handle 4x1, 3x1, etc. modes
        TVWIND   :  Support 4x1, 3x1, 1x3, 1x4 roam modes also
        VERBS, VERBSB, VERBSC  :  Add AU6B
        ZSTRTA   :  Use NTVACC et al.
        Moved to Modcomp Oct 22, nowhere else

455.    October 22, 1981          Several                     Eric
        AU9A     :  Add test on NTKACC
        AU9B     :    "    "    "       "
        AU9C     :    "    "    "       "
        OERROR   :  Add message to go with TEKS IN USE
        TKPL     :  Change NTKDEV to NTKACC in usage test
        APCLN    :  Change NTVDEV to NTVACC in usage test
        UVMAP    :    "       "       "       "       "    "
        APMAP    :  Add usage test on NTVACC
        NTERP    :  Add usage test on NTVACC
        Moved to Modcomp Oct 22, nowhere else.

456.    Oct. 22, 1981    AU9A, AU9B, AU9C, TKCURS, SET1DG,  Gary
                         TKSLIN, TKSLAC
        Fixed bugs found on Modcomp.  TKPOS, TKBUFF not initialized.
        TKBUFF not dimensioned correctly.
        Moved to CV Modcomp and VAX, nowhere else

457.    October 22, 1981  [.HELP]CURVALUE, CURMVALU          Eric
                          [.INPUTS] CURVALUE, CURMVALU
```

For new verbs of AU6B.
Moved to Modcomp Oct 22, nowhere else.

****
* CHANGE.DOC brought from the VLA 23 Oct. 1981 W.D.C.
****

2   Sept. 23 1918   FUDGE   Bill
    New task. Has user provided routine to modify a uv data
    base. The suggested mode of use is to rename FUDGE to
    some other name to aviod confusion. This could lead to
    a large number of temporary user defined tasks.
    Also: [TEST.INPUTS] and [TEST.HELP]FUDGE
    Moved: CV Vax 23 Oct. 1981

8. Sept. 30, 1981   IMEAN   Ed
    Fixed a bug. Conversion factor to get to integrated
    flux density was 1.33. It was changed to 1.133 which
    is now correct.
    Moved to CV Vax Oct 23, nowhere else.

9. Sept. 30, 1981   PRTCC   Bill
    Added BITER, NITER, XINC to adverb list. Now tells the
    number of the first negative component.
    ALSO changed: [TEST.INPUTS] and [TEST.HELP]PRTCC.
    Moved: CV Vax 23 Oct. 1981, nowhere else

10. Oct. 1, 1981   OLDLD   Bill
    "New" task. Is really the I*2 UVLOD. Also:
    DOIN.INC, COIN.INC, [TEST.INPUTS and HELP]OLDLD
    The use of this task is to allow sorting in the I*2
    format if disk space is very tight.
    Moved: nowhere.

11. Oct. 1, 1981   OLDSR   Bill
    "New" task. Is really the I*2 UVSRT. Also:
    DOSR.INC, COSR.INC, [TEST.INPUTS and HELP]OLDSR.
    See above (item #10).
    Moved: nowhere.

13. Oct. 2, 1981   FUDGE   Bill
    Fixed bugs which sent incorrect values to DIDDLE.
    Also should now write onto input file.
    Moved: CV Vax 23 Oct. 1981, nowhere else

14. Oct. 2, 1981   CLIP   Bill
    New task. Flags all data whose amplitudes is greater than
    a given level. ALSO:
    [TEST.INPUTS and HELP]CLIP.

[TEST.HELP]TASKS, MAPCLEAN, WHATSNEW
Moved: CV Vax 23 Oct. 1981, nowhere else

15. Oct. 3, 1981   HELP files   Ed
    Made minor changes in [test.help] and [help]
    files for TASKS, APPLIC and WHATSNEW
    Moved CV Vax Oct 23, nowhere else

16. Oct. 8, 1981   PBCOR   Ed
    Finished debugging PBCOR task to apply the primary
    beam correction to a map. The code now resides in
    [TEST.NOTST] and the EXE file has been copied to
    [VPOPS]. The relevent .DOC files have also been
    updated, as well as the relevent HELP files.
    Moved CV Vax Oct 23, nowhere else

17. Oct. 13, 1981   [TEST.PSAP]GRDFIN   Bill
    Changed core sucker GRDFIN so that it now treates
    VPOL the same as IPOL/IBEM; that is when the VPOL
    gridded data files are transformed, the beam comes out
    in the imaginary part.
    Moved: CV Vax 23 Oct. 1981, nowhere else

21. Oct. 13, 1981   UVMAP   Bill
    Put trap in VISRD to catch the case when no unflagged
    data was found. Previously the program died a horrible
    death with no clue as to the problem.
    Moved: CV Vax 23 Oct. 1981 nowhere else

22. Oct. 16, 1981   CLIP,FUDGE,ASCAL   Bill
    Removed CATBLK from call to UVCREA; in ASCAL added
    COMMON /MAPHDR/ to the routine which called UVCREA.
    Moved: nowhere.

23. Oct. 16, 1981   [TEST.HELP]NEWTASK   Bill
    This HELP file outllines the procedure for creating and
    installing a new task.
    Moved: CV Vax 23 Oct. 1981, nowhere else

****
* End of CHANGE.DOC brought from VLA 23 Oct. 1981.
* Start numbering at #458
****

458. Oct 23, 1981   [DOC]TVSUP, POPSUP, MV2C0302   Eric
                      MV2C0303., MV2C0305., MV2C0502.
                      MV2C0503., MV2C03L0.
    Add new TV routines, Fix up WaWa IO description.
    Correct to floating point UV, multi-row/sector maps

Correct new code install instructions, add misc help coding
info, and rename LOCATI.DOC so it will appear in manual
Moved nowhere

459.   Oct 27, 1981   UVMAP   Bill
        Fixed misspelling of P4TOR8 in unif. (Spelled with a zero)
        Moved: Modcomp this date.

460.   Oct. 27, 1981   UVMAP   Bill
        Fixed GRDTAB, WRK (a P*4) now initilized to 0,0
        Moved: Modcomp this date

461.   Oct. 27, 1981   PRNTMN   Eric
        Fixed up option to do one member at a time to do full source
        code listings one at a time (only)
        Moved nowhere

462.   October 27, 1981   VERBSC   Eric
        Allow it to call AU1(2 and 3) to set EXIT, RESTART error codes
        Moved to VLA via link (Oct 28), nowhere else.

463.   October 29, 1981   AU3A   Eric
        Correct sum disk blocks for full disk (was ok if NBPS=512)
        Moved nowhere

464.   October 30, 1981   DESCR, IMCCLR   Eric
        Fix bug in activity test and add VS files for UVSRT in DESCR,
        Put in actual IMPS 8-color table in IMCCLR
        Moved nowhere

464.   October 30, 1981   EXTINI, MCUBE   Eric
        Fix history card format in MCUBE, fix initial size
        computation & max # logical records in file
        Moved nowhere