

# HEC-DSS System, Utilities and Programs

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# What is DSS ?

- USACE Hydrologic Engineering Center Data Storage System (HEC-DSS)
- HEC-DSS is a data base system designed primarily for Water Resources applications
- Data can be stored, retrieved, manipulated, modified and displayed through utilities or programs
- HEC-DSS uses a block of sequential data as the basic unit of storage

# What is DSS ?

- The HEC-DSS system consists of:
  - Package of high-level language subroutines or functions to interface with computer programs
  - Set of support utilities
  - DSS files (direct access files)
- Data is stored in records or blocks within the file
- Records are identified by pathnames
- Header array stores additional information

# What is DSS ?

- HEC-DSS pathnames
  - Up to 80 characters
  - Separated in six parts:
    - /A/B/C/D/E/F/
    - /SFWMM/S8/FLOW/01JAN1965/1DAY/SIMULATED
  - Pathnames are used to index position within the DSS file

# What is DSS ?

- HEC-DSS stores time series data for regular and irregular intervals
- HEC-DSS stores paired data such as rating curves, frequency curves, etc.

# HEC-DSS Data Types

(from Jose Otero notes)

<b><u>Keyword</u></b>	<b><u>Meaning</u></b>	<b><u>Example</u></b>
PER-AVER	Period Average	Daily flow
PER-CUM	Period Cumulative	Monthly flow (volume)
INST-VAL	Instantaneous	Breakpoint stage
INST-CUM	Instantaneous Cumulative	Rain mass curve

# Regular Intervals

(from Jose Otero notes)

<u>Valid data interval</u>	<u>Block Length</u>
1MIN, 2MIN, 3MIN, 4MIN, 5MIN, 10MIN, 20MIN, 30MIN	One day
1HOUR, 2HOUR, 3HOUR, 4HOUR, 6HOUR, 12HOUR	One month
1DAY	One year
1WEEK, 1MON	One decade
1YEAR	One century

# The DSS Catalog

- The Catalog is a list of the pathnames stored in a DSS file
- In UNIX, catDSS will produce and show the Catalog on the screen
- The reference number and the tag number in the Catalog can be used in place of the pathname
- Tags are not unique ! Default is Tnnnnnnnn (e.g. T1, T34567, etc.)



# Catalog \*.dssc

```
Terminal
Window Edit Options Help
peashooter-->/vol/hsm2/data/sfwmm/OP_PLN/0_AUG02_PA_1>m str2x2.dssc
HECDSS Complete Catalog of Record Pathnames in File str2x2.dssc
Catalog Created on Aug 1, 2002 at 17:49      File Created on Aug 1, 1902
Number of Records: 15128                    DSS Version 6-JF
Sort Order: ABCFED

Ref. Number  Tag      Record Pathname
1  T358    /SFWMM/298ST2/FLOW/01JAN1965/1DAY/SIMULATED/
2  T846    /SFWMM/298ST2/FLOW/01JAN1966/1DAY/SIMULATED/
3  T1334   /SFWMM/298ST2/FLOW/01JAN1967/1DAY/SIMULATED/
4  T1822   /SFWMM/298ST2/FLOW/01JAN1968/1DAY/SIMULATED/
5  T2310   /SFWMM/298ST2/FLOW/01JAN1969/1DAY/SIMULATED/
6  T2798   /SFWMM/298ST2/FLOW/01JAN1970/1DAY/SIMULATED/
7  T3286   /SFWMM/298ST2/FLOW/01JAN1971/1DAY/SIMULATED/
8  T3774   /SFWMM/298ST2/FLOW/01JAN1972/1DAY/SIMULATED/
9  T4262   /SFWMM/298ST2/FLOW/01JAN1973/1DAY/SIMULATED/
10 T4750   /SFWMM/298ST2/FLOW/01JAN1974/1DAY/SIMULATED/
11 T5238   /SFWMM/298ST2/FLOW/01JAN1975/1DAY/SIMULATED/
12 T5726   /SFWMM/298ST2/FLOW/01JAN1976/1DAY/SIMULATED/
13 T6214   /SFWMM/298ST2/FLOW/01JAN1977/1DAY/SIMULATED/
14 T6702   /SFWMM/298ST2/FLOW/01JAN1978/1DAY/SIMULATED/
15 T7190   /SFWMM/298ST2/FLOW/01JAN1979/1DAY/SIMULATED/
16 T7678   /SFWMM/298ST2/FLOW/01JAN1980/1DAY/SIMULATED/
17 T8166   /SFWMM/298ST2/FLOW/01JAN1981/1DAY/SIMULATED/
18 T8654   /SFWMM/298ST2/FLOW/01JAN1982/1DAY/SIMULATED/
19 T9142   /SFWMM/298ST2/FLOW/01JAN1983/1DAY/SIMULATED/
20 T9630   /SFWMM/298ST2/FLOW/01JAN1984/1DAY/SIMULATED/
21 T10118  /SFWMM/298ST2/FLOW/01JAN1985/1DAY/SIMULATED/
22 T10606  /SFWMM/298ST2/FLOW/01JAN1986/1DAY/SIMULATED/
23 T11094  /SFWMM/298ST2/FLOW/01JAN1987/1DAY/SIMULATED/
24 T11582  /SFWMM/298ST2/FLOW/01JAN1988/1DAY/SIMULATED/
25 T12070  /SFWMM/298ST2/FLOW/01JAN1989/1DAY/SIMULATED/
26 T12558  /SFWMM/298ST2/FLOW/01JAN1990/1DAY/SIMULATED/
27 T13046  /SFWMM/298ST2/FLOW/01JAN1991/1DAY/SIMULATED/
28 T13534  /SFWMM/298ST2/FLOW/01JAN1992/1DAY/SIMULATED/
29 T14022  /SFWMM/298ST2/FLOW/01JAN1993/1DAY/SIMULATED/
30 T14510  /SFWMM/298ST2/FLOW/01JAN1994/1DAY/SIMULATED/
--More--(0%)
```

# Catalog Condensed Version \*.dssd

```
Terminal
Window Edit Options Help
peashooter-->/vol/hsm2/data/sfwm/OP_PLN/0_AUG02_PA_1>m str2x2.dssd
HECDSS Condensed Catalog of Record Pathnames in File str2x2.dss
Catalog Created on Aug 1, 2002 at 17:49      File Created on Aug 1, 1902
Number of Records: 15128                    DSS Version 6-JF
Sort Order: ABCFED

Tag      A Part  B Part  C Part  F Part  E Part  D Part
T358    SFWMM   298ST2  FLOW    SIMULATED 1DAY    01JAN1965 - 01JAN1995
T357    - - -   298ST3  FLOW    SIMULATED 1DAY    01JAN1965 - 01JAN1995
T279    - - -   332BOV  FLOW    SIMULATED 1DAY    01JAN1965 - 01JAN1995
T278    - - -   332SP1  FLOW    SIMULATED 1DAY    01JAN1965 - 01JAN1995
T427    - - -   333FCN  FLOW    SIMULATED 1DAY    01JAN1965 - 01JAN1995
T426    - - -   333FCR  FLOW    SIMULATED 1DAY    01JAN1965 - 01JAN1995
T409    - - -   333FLC  FLOW    SIMULATED 1DAY    01JAN1965 - 01JAN1995
T307    - - -   351RG   FLOW    SIMULATED 1DAY    01JAN1965 - 01JAN1995
T333    - - -   351WS   FLOW    SIMULATED 1DAY    01JAN1965 - 01JAN1995
T308    - - -   352RG   FLOW    SIMULATED 1DAY    01JAN1965 - 01JAN1995
T428    - - -   352TLK  FLOW    SIMULATED 1DAY    01JAN1965 - 01JAN1995
T334    - - -   352WS   FLOW    SIMULATED 1DAY    01JAN1965 - 01JAN1995
T306    - - -   354RG   FLOW    SIMULATED 1DAY    01JAN1965 - 01JAN1995
T332    - - -   354WS   FLOW    SIMULATED 1DAY    01JAN1965 - 01JAN1995
T430    - - -   356GRD  FLOW    SIMULATED 1DAY    01JAN1965 - 01JAN1995
T431    - - -   356L29  FLOW    SIMULATED 1DAY    01JAN1965 - 01JAN1995
T423    - - -   ACCPBR  FLOW    SIMULATED 1DAY    01JAN1965 - 01JAN1995
T422    - - -   ACLWDD  FLOW    SIMULATED 1DAY    01JAN1965 - 01JAN1995
T298    - - -   ACMERF  FLOW    SIMULATED 1DAY    01JAN1965 - 01JAN1995
T299    - - -   ACMEWS  FLOW    SIMULATED 1DAY    01JAN1965 - 01JAN1995
T470    - - -   ADDSLW  FLOW    SIMULATED 1DAY    01JAN1965 - 01JAN1995
T20     - - -   AGQ     FLOW    SIMULATED 1DAY    01JAN1965 - 01JAN1995
T296    - - -   AGQRF   FLOW    SIMULATED 1DAY    01JAN1965 - 01JAN1995
T297    - - -   AGQWS   FLOW    SIMULATED 1DAY    01JAN1965 - 01JAN1995
T416    - - -   ASRBRC  FLOW    SIMULATED 1DAY    01JAN1965 - 01JAN1995
T419    - - -   ASRCA1  FLOW    SIMULATED 1DAY    01JAN1965 - 01JAN1995
T420    - - -   ASRCA2  FLOW    SIMULATED 1DAY    01JAN1965 - 01JAN1995
T421    - - -   ASRCA3  FLOW    SIMULATED 1DAY    01JAN1965 - 01JAN1995
T417    - - -   ASRDAC  FLOW    SIMULATED 1DAY    01JAN1965 - 01JAN1995
T376    - - -   ASRLOK  FLOW    SIMULATED 1DAY    01JAN1965 - 01JAN1995
--More--(7%)
```

# DSS Utilities/Programs

- To run HEC DSS Utilities/Programs in UNIX (SFWMD) need to have:
  - /usr/hec linked to /vol/modelapps/
  - /usr/hec/hectemp linked to /vol/modelapps/tmp/
- List of main DSS Utilities/Programs

– dsstool                      stoDSS  
– catDSS  
– getDSS

**HSM**

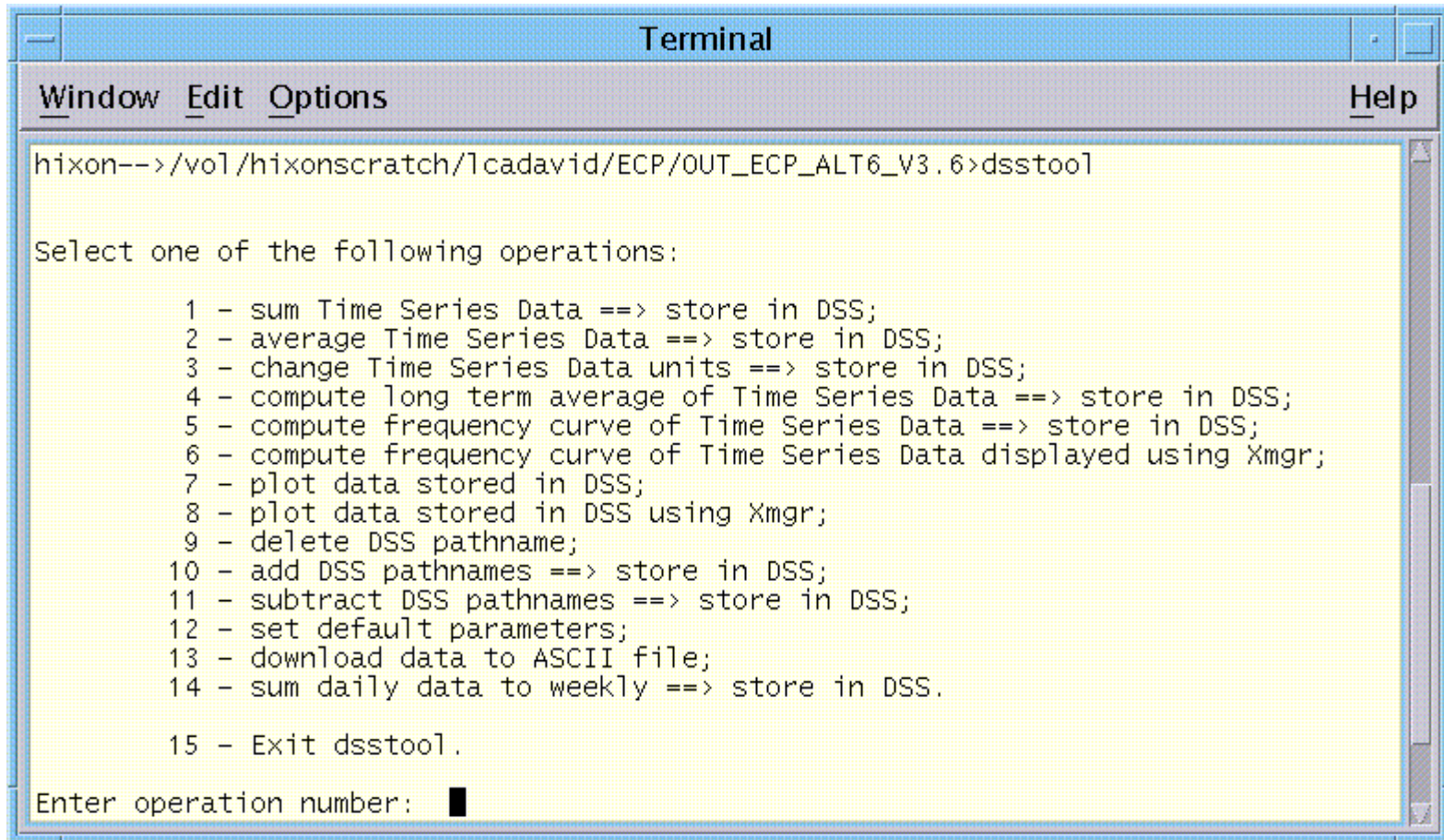
dssutl  
dsplay **USACE**  
dssmath

# DSS files in SFWMM

- Input (Daily):
  - flo\*.dss file: Historical/Boundary flows
  - dmdro\*.dss file: Pre-processed demand and runoff time series
- Output (Daily):
  - str2x2.dss file: Flows at water control structures
  - canal.dss file: Stages in canals
  - stage.dss file: Post-processed stages at key locations for Operational Planning simulations

# dsstool

- Type dsstool at the UNIX prompt

A terminal window titled "Terminal" with a menu bar containing "Window", "Edit", "Options", and "Help". The terminal content shows a user prompt "hixon-->/vol/hixonscratch/lcadavid/ECP/OUT\_ECP\_ALT6\_V3.6>dsstool" followed by a list of 15 operations. The prompt "Enter operation number:" is followed by a cursor.

```
hixon-->/vol/hixonscratch/lcadavid/ECP/OUT_ECP_ALT6_V3.6>dsstool

Select one of the following operations:

    1 - sum Time Series Data ==> store in DSS;
    2 - average Time Series Data ==> store in DSS;
    3 - change Time Series Data units ==> store in DSS;
    4 - compute long term average of Time Series Data ==> store in DSS;
    5 - compute frequency curve of Time Series Data ==> store in DSS;
    6 - compute frequency curve of Time Series Data displayed using Xmgr;
    7 - plot data stored in DSS;
    8 - plot data stored in DSS using Xmgr;
    9 - delete DSS pathname;
   10 - add DSS pathnames ==> store in DSS;
   11 - subtract DSS pathnames ==> store in DSS;
   12 - set default parameters;
   13 - download data to ASCII file;
   14 - sum daily data to weekly ==> store in DSS.

   15 - Exit dsstool.

Enter operation number: █
```

# dsstool

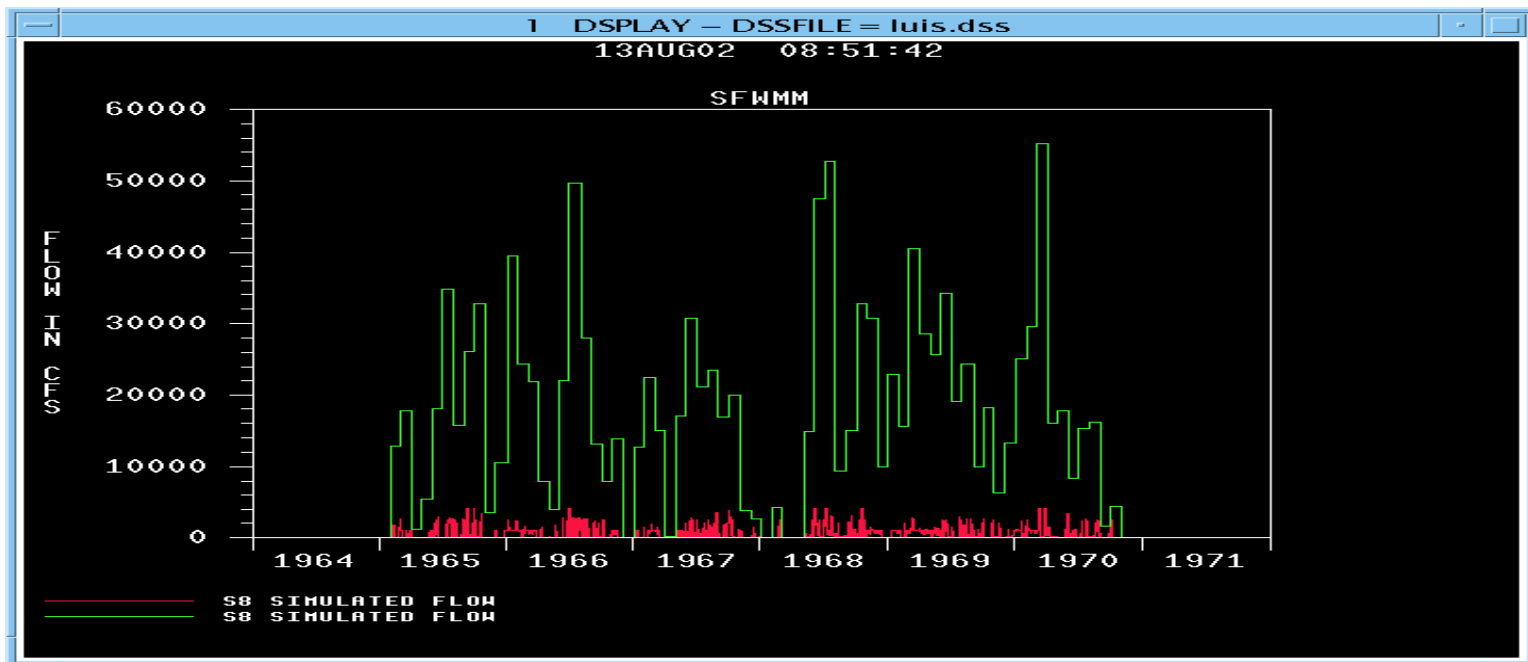
- To use dsstool
  - Select option
  - Define dss file names (several file separated by “ + “). Catalog will appear on screen
  - Select dss tags on which to operate
  - Define time window
  - If required, select output file (ascii or dss)
  - If required, select output dss tags
  - Output is produced

# dsstool warning

- Some options automatically define output DSS tags (pathnames). This may result in over writing previous results if the same output DSS file is used. Options 1, 2, 5 are of this type
- Only options 6, 7 and 8 produce graphical output. All other options go to DSS/ASCII files (Graphs were produced using DISPLAY)

# dsstool

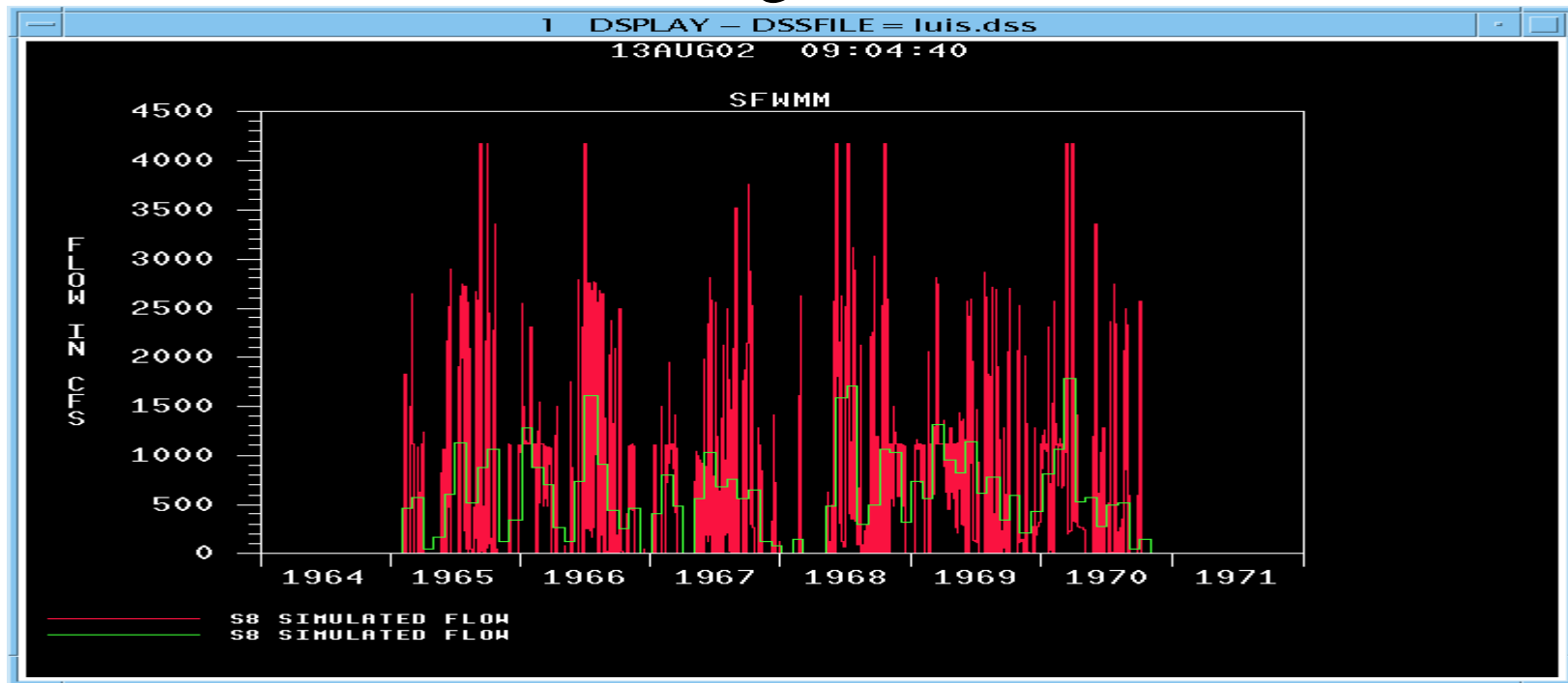
- 1. sum Time Series Data ==> store in DSS
  - Gives monthly and annual volumes in cfs-days
  - Provides long term average value on the screen
  - Not useful for stage data





# dsstool

- 2. average Time Series Data ==> store in DSS
  - Gives mean monthly and mean annual volumes
  - Makes sense for stage data

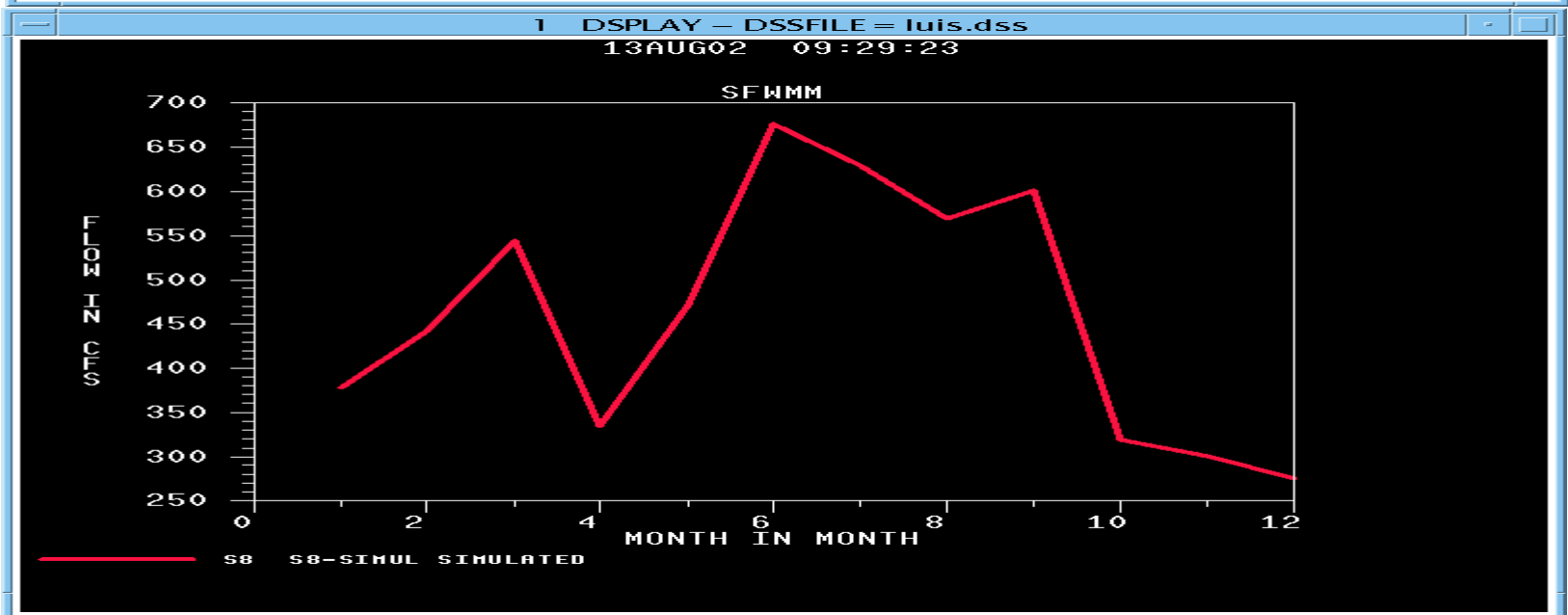
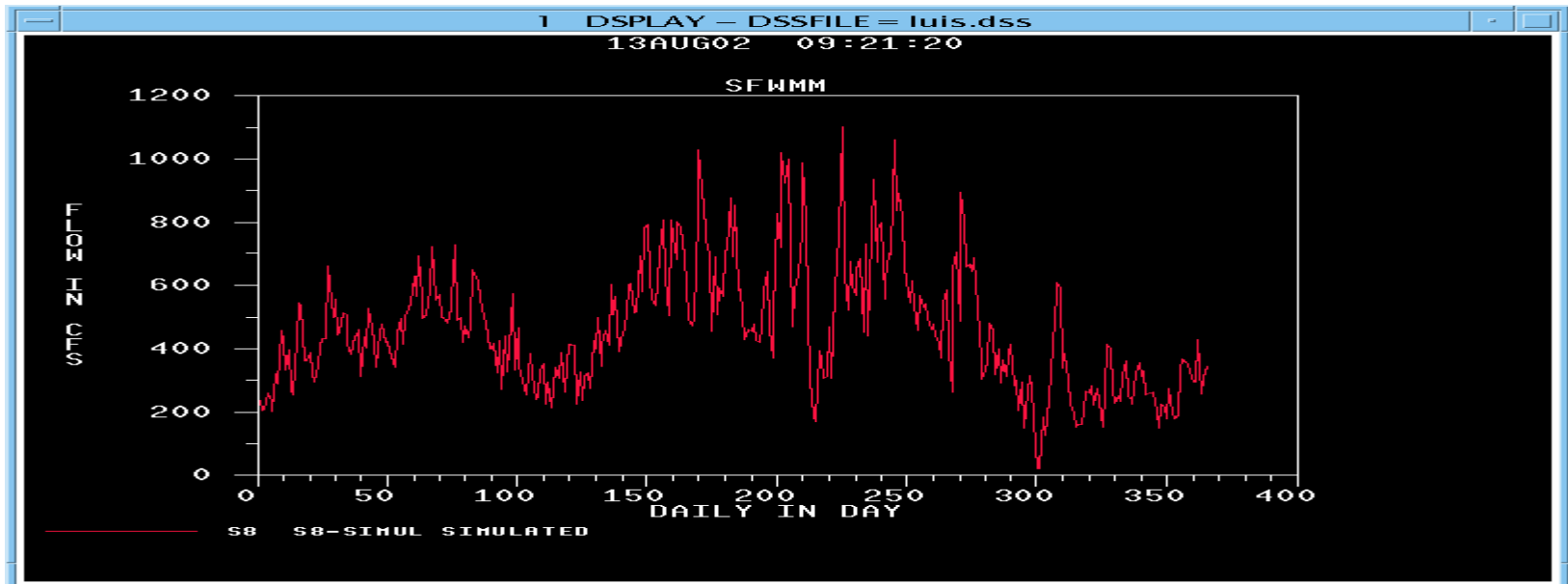


# dsstool

- 3. change Time Series Data units ==> store in DSS: Convert from cfs-days to ac-ft by multiplying by 1.9835
  - User defines resulting units (string) and conversion factor

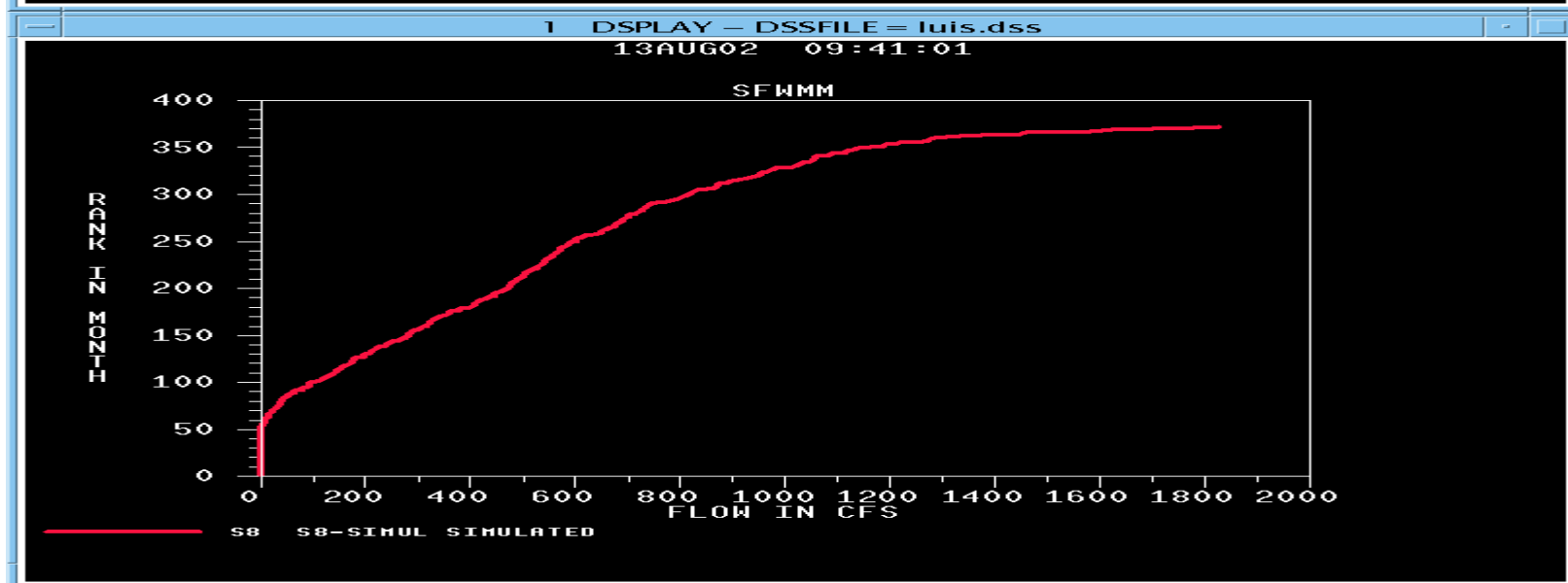
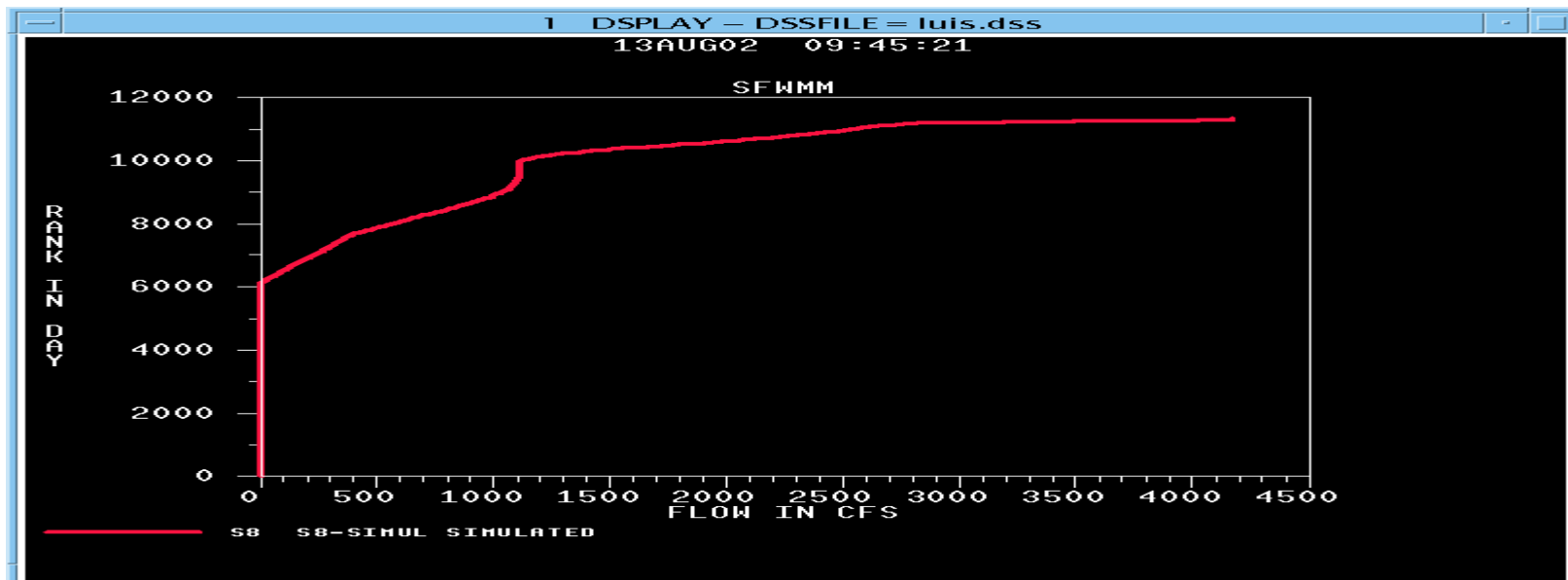
# dsstool

- 4. compute long term average of Time Series Data ==> store in DSS
  - Computes long term mean seasonal values
  - Output tag inherits the same time step as the input time series
  - Works well for daily, weekly and monthly data



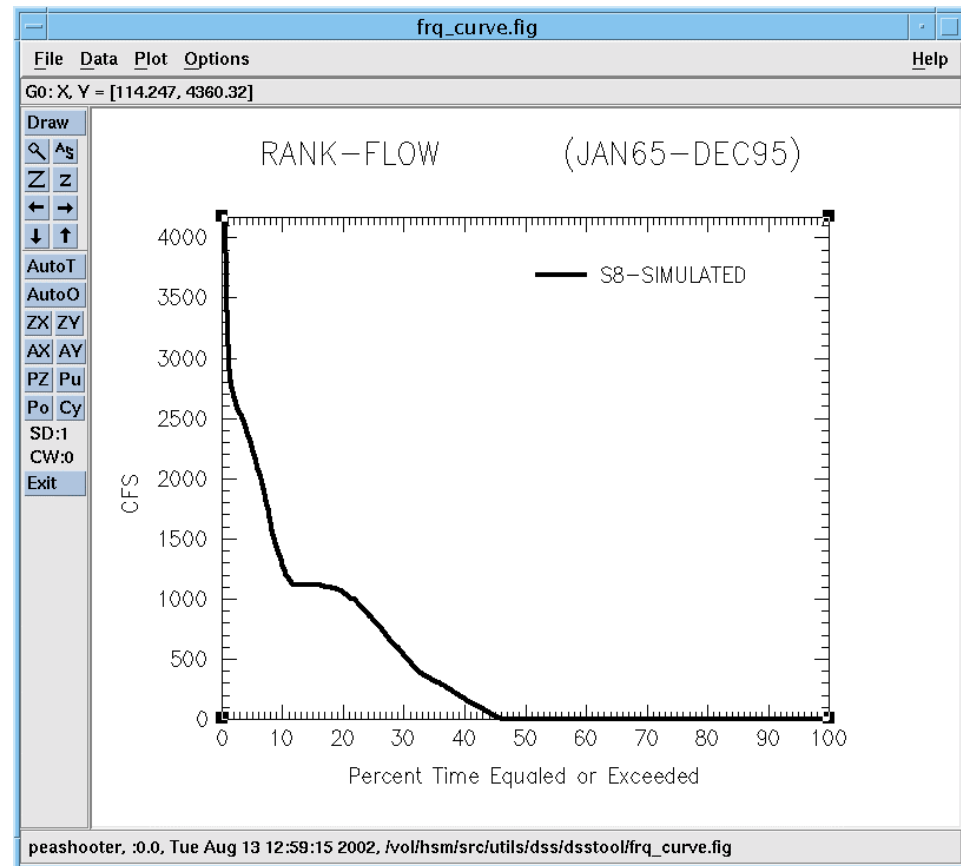
# dsstool

- 5. compute frequency curve of Time Series  
Data ==> store in DSS
  - Works well for daily, weekly, monthly and annual data



# dsstool

- 6. compute frequency curve of Time Series Data displayed using Xmgr
  - Works well for all data (daily, weekly, monthly and annual data)

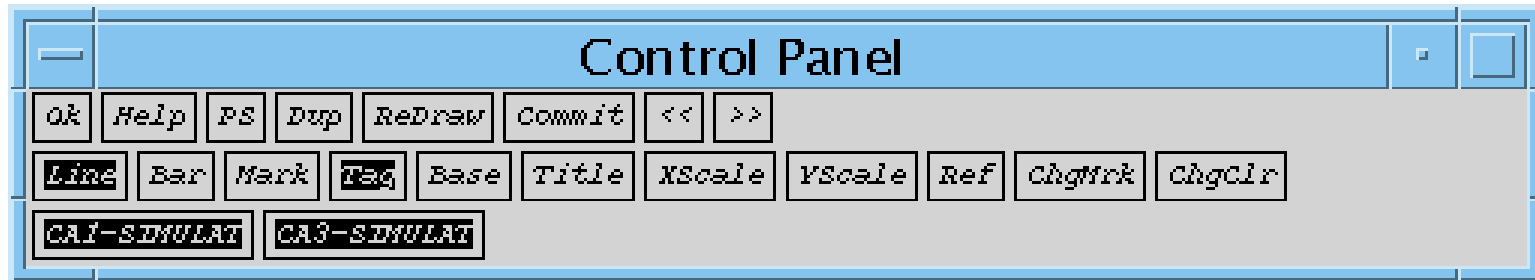


# dsstool

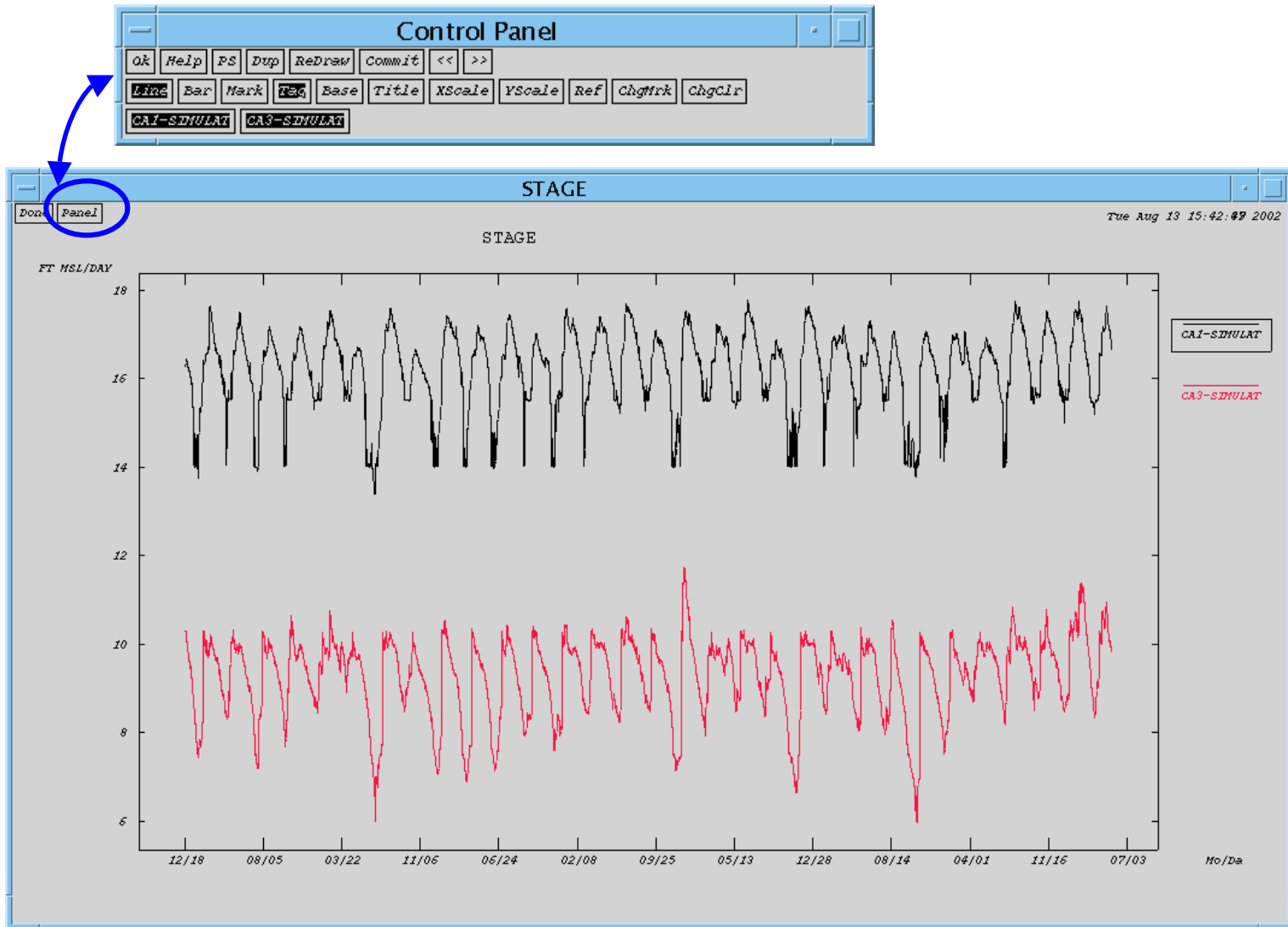
- 7. plot data stored in DSS
  - Uses tsplot (UNIX time series plotting tool)
  - Bring the panel up by clicking on Panel button
  - Trick: Base --> Commit --> Redraw to make all traces plot with the same origin
  - Useful to look at canal.dss file data sets
  - Capability to zoom and move around the graph
    - Commit --> Redraw
  - Read values on the screen as you follow a trace

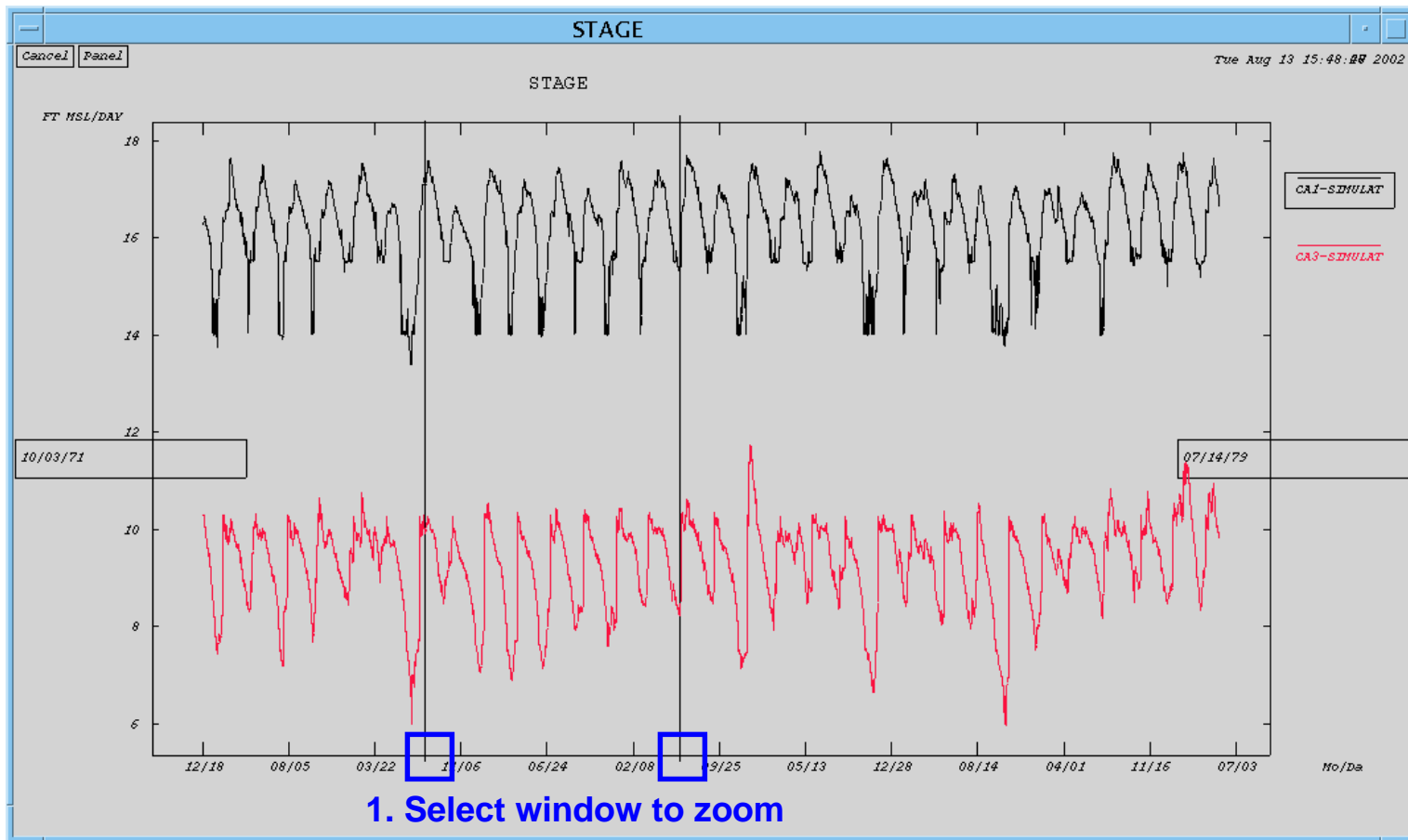
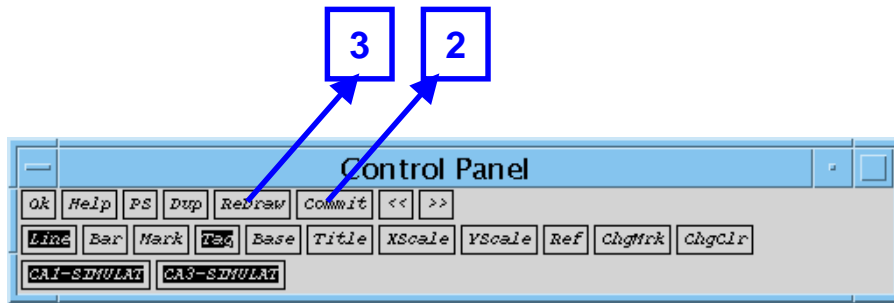


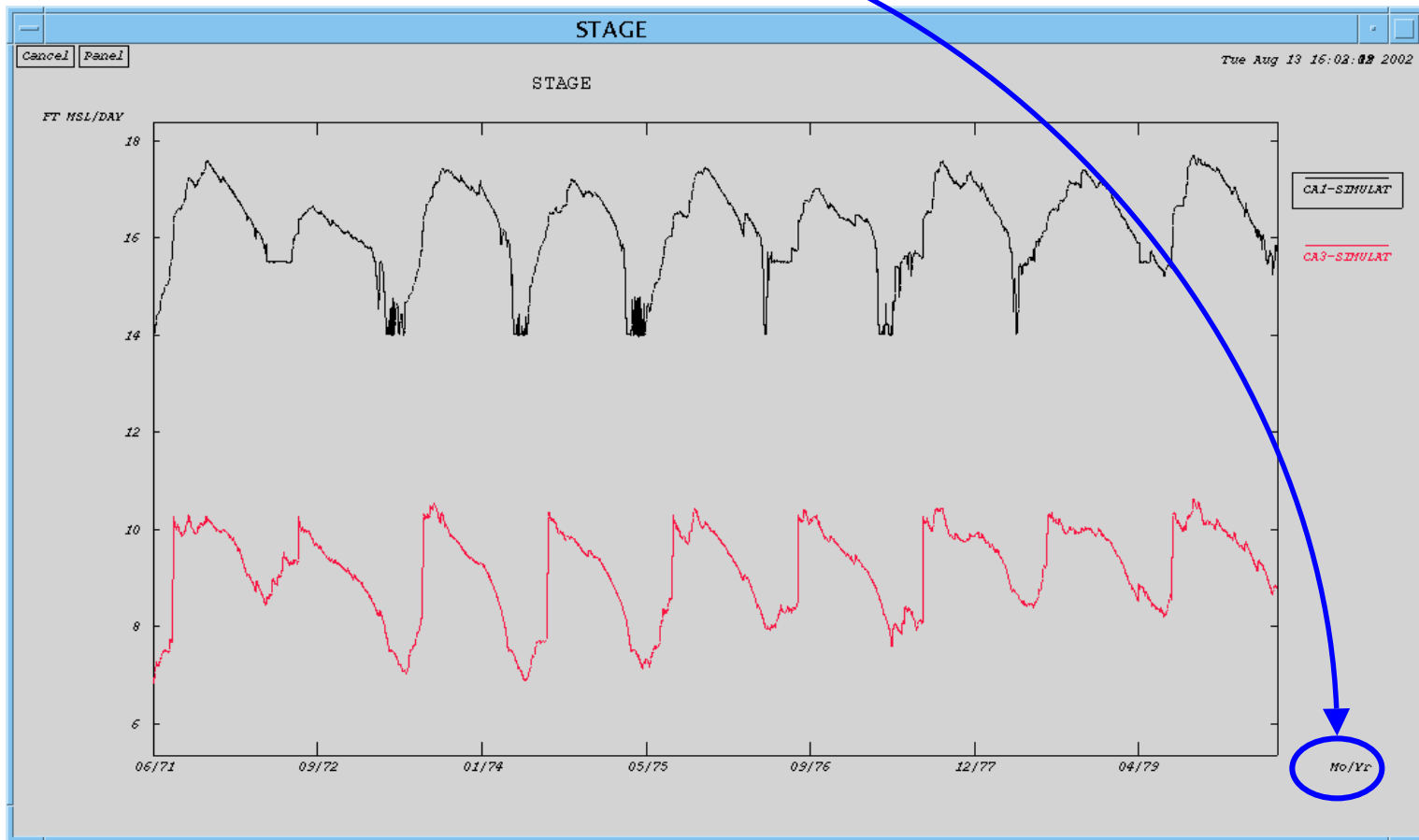
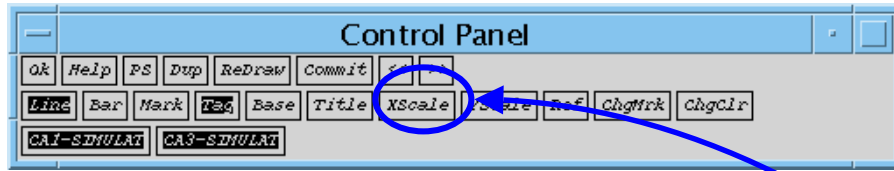
# Control Panel



- Use Commit --> Redraw to make most changes effective
- Active traces are highlighted
- The << and >> buttons scroll the graph
- Use Help

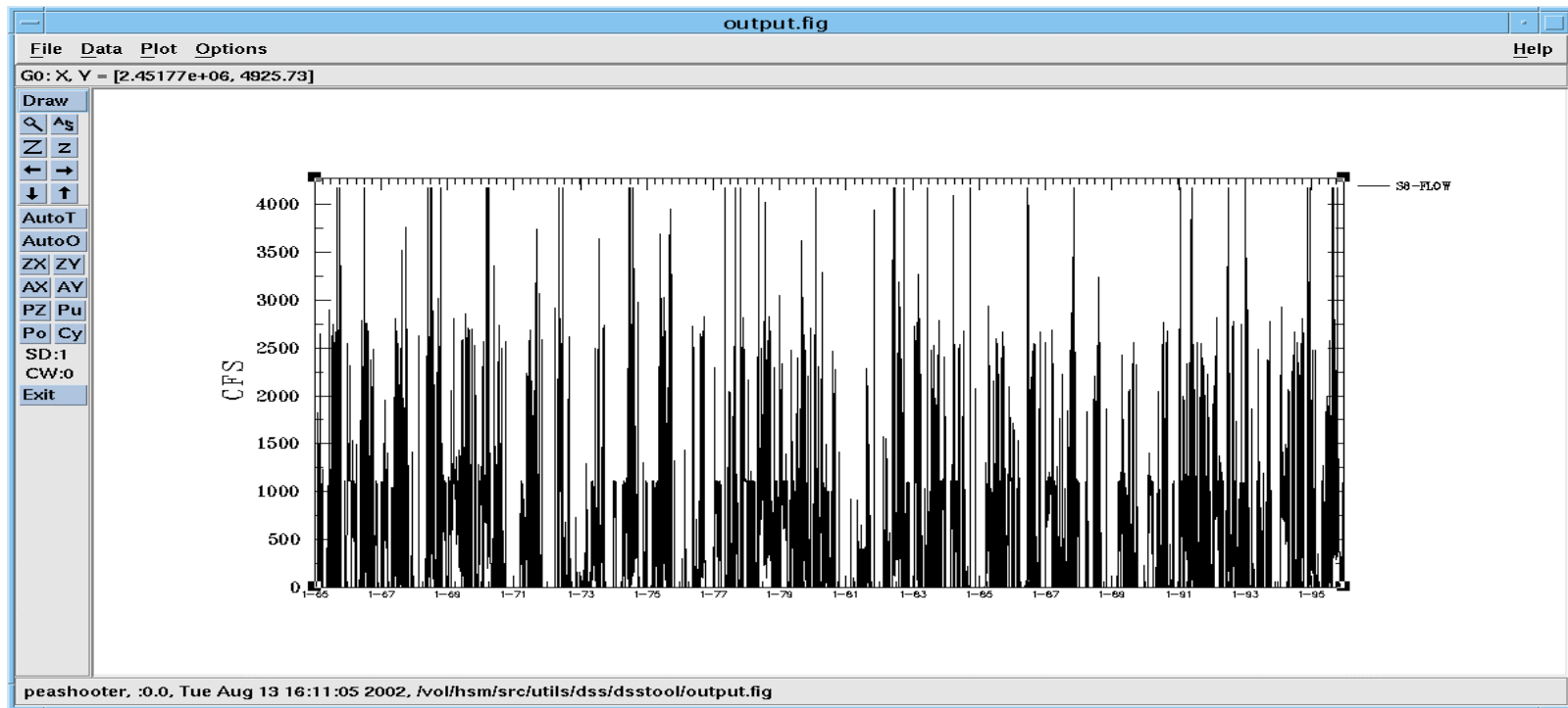






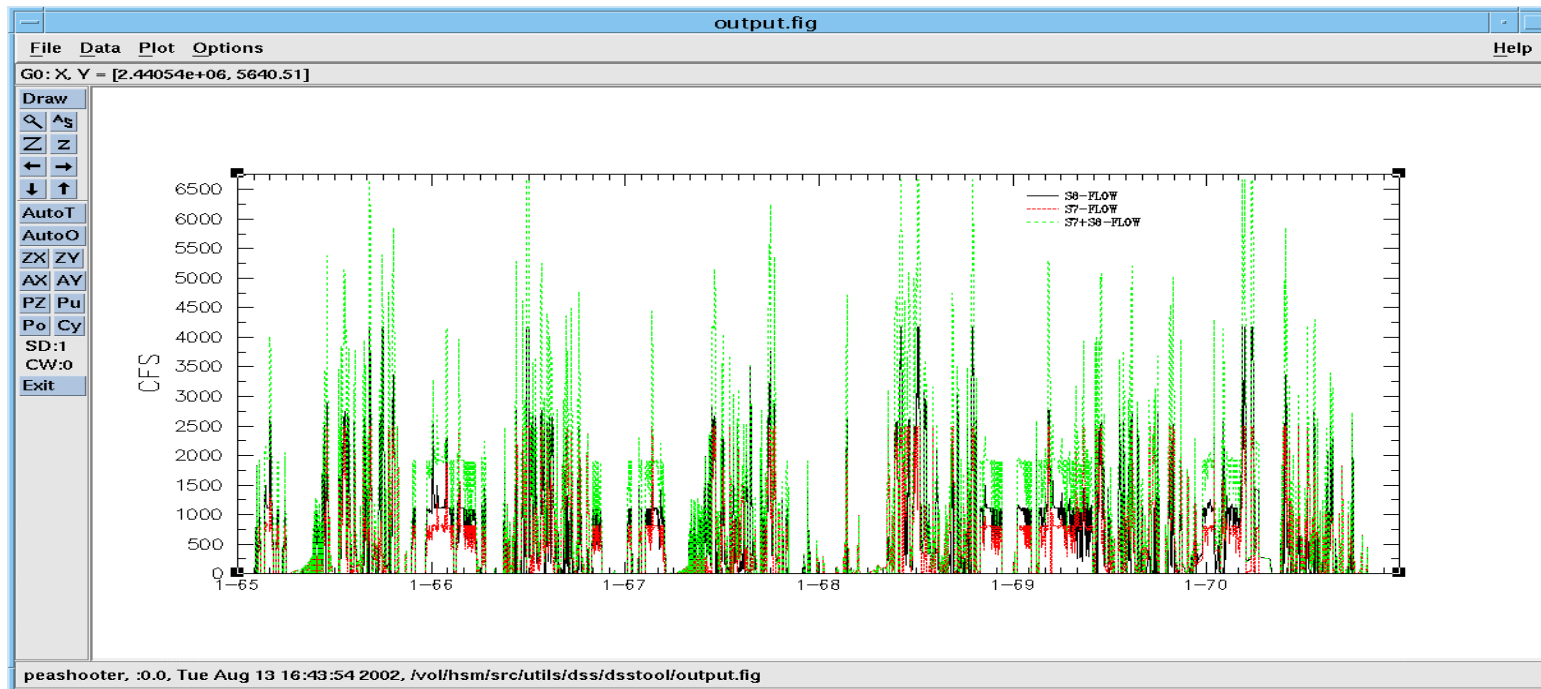
# dsstool

- 8. plot data stored in DSS using Xmgr
  - Works well for daily data
  - Currently has problems working with canal.dss



# dsstool

- 9. delete DSS pathname
- 10. add DSS pathnames ==> store in DSS
  - User defines output DSS pathname (tag)



# dsstool

- 11. subtract DSS pathnames ==> store in DSS
  - User defines output DSS pathname (tag)
- 12. set default parameters
- 13. download data to ASCII file
  - Operates on the last input DSS pathname selected

# dsstool

- 14 sum daily data to weekly ==> store in DSS
- 15 exit dsstool
- Graphs produced with xmgr are easier to manipulate (presentation quality)



# HEC-DSS Utilities

- DSSUTL: copy, delete, rename, or edit data in a DSS file
- DSPLAY: display data from DSS files in tabular or graphical format
- DSSMATH: mathematical manipulation of data stored in DSS files

# DSPLAY

- Use term or xterm
- Type dsplay at the UNIX prompt
- Select input DSS file by using space bar and return
- The command *ca.nc* will produce a new catalog and display it in condensed mode
- The command *ti ddmmyy ddmmyy* defines the time window for the plot
  - e.g. Ti 01jan65 31dec95

# DSPLAY

- The command *dev xterm* will define the graphics output device (necessary in term)
- The command *dev cpost* will output to a local color PostScript file named cpost (revert to xterm)
- The command *pl Tnnnnnnn* will plot the tag
  - e.g. pl t34
- The command *ta Tnnnnnnn* will list values for the tag (use Return to advance; Q to quit)
  - e.g. ta t34

# DSPLAY

- The command *st* will give you the current status in DSPLAY
  - DSS files being used
  - Line definition, etc.
- The command *fi* will exit DSPLAY and return the user to UNIX
- Help is *he*

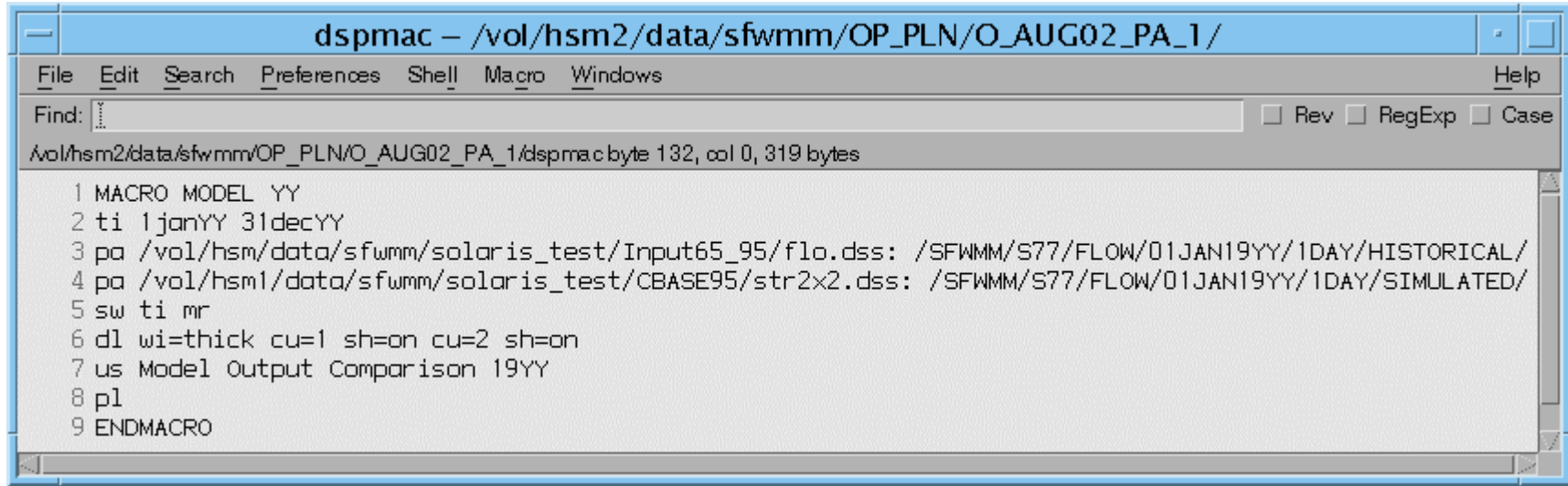
# DSPLAY

- General form of commands
  - command.{options} {arguments}
  - co.{options} {arguments}

# DSPLAY MACROS

- Programs that allow variable definition and use
- All macros need to be saved in a file called dspmac
- The command *!=run* will list all macros in the dspmac file in the local directory
- To execute a given macro:
  - `!run macro_name {input_parameters}`

# DSPLAY MACROS



```
dspmac - /vol/hsm2/data/sfwmm/OP_PLN/O_AUG02_PA_1/
File Edit Search Preferences Shell Macro Windows Help
Find:
/vol/hsm2/data/sfwmm/OP_PLN/O_AUG02_PA_1/dspmac:byte 132, col 0, 319 bytes
1 MACRO MODEL YY
2 ti 1janYY 31decYY
3 pa /vol/hsm/data/sfwmm/solaris_test/Input65_95/flow.dss: /SFWMM/S77/FLOW/01JAN19YY/1DAY/HISTORICAL/
4 pa /vol/hsm1/data/sfwmm/solaris_test/CBASE95/str2x2.dss: /SFWMM/S77/FLOW/01JAN19YY/1DAY/SIMULATED/
5 sw ti mr
6 dl wi=thick cu=1 sh=on cu=2 sh=on
7 us Model Output Comparison 19YY
8 pl
9 ENDMACRO
```

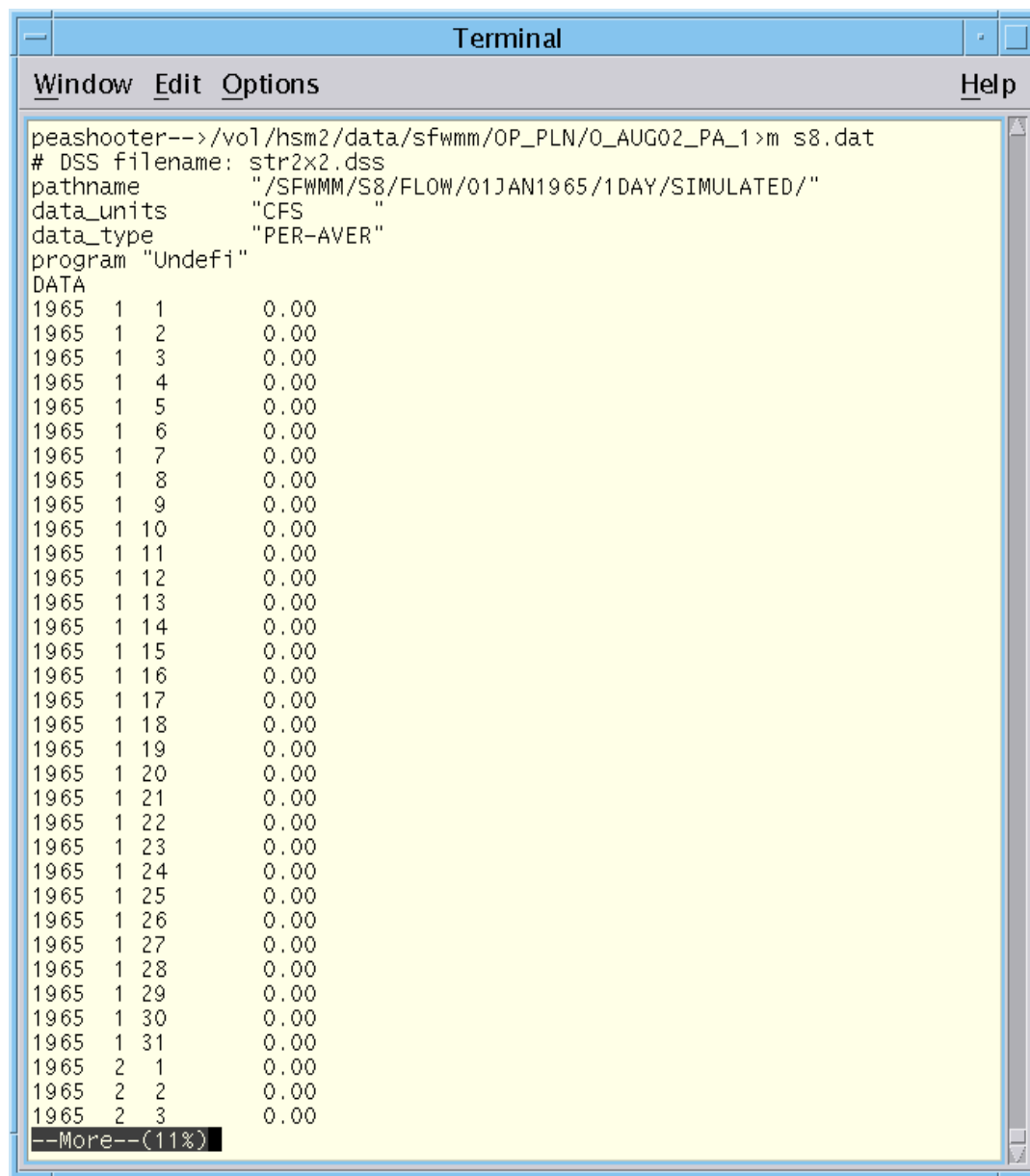
- YY is an input variable (Year to plot)
- This macro will plot two traces from two different DSS files, for the user's selected year
- To run: **!run MODEL 95**

# Other HSM DSS Utilities

- catDSS produces catalog
- getDSS extracts DSS data into an ASCII file name
  - Can be use interactively
  - Command line: `getDSS -s yyyy/mm/dd -e yyyy/mm/dd -t Tnnnnnnnn -d input_dss_file -o output_file -q -h no -f %10.2f -n no`
  - If the output file has header, the same file can be imported back into another DSS file



# getDSS output file



A terminal window titled "Terminal" with a menu bar containing "Window", "Edit", "Options", and "Help". The terminal displays the output of a command to read a DSS file. The output includes file metadata and a data table.

```
peashooter-->/vol/hsm2/data/sfwmm/OP_PLN/0_AUG02_PA_1>m s8.dat
# DSS filename: str2x2.dss
pathname      "/SFWMM/S8/FLOW/01JAN1965/1DAY/SIMULATED/"
data_units    "CFS"
data_type     "PER-AVER"
program      "Un defi"
DATA
1965  1  1      0.00
1965  1  2      0.00
1965  1  3      0.00
1965  1  4      0.00
1965  1  5      0.00
1965  1  6      0.00
1965  1  7      0.00
1965  1  8      0.00
1965  1  9      0.00
1965  1 10      0.00
1965  1 11      0.00
1965  1 12      0.00
1965  1 13      0.00
1965  1 14      0.00
1965  1 15      0.00
1965  1 16      0.00
1965  1 17      0.00
1965  1 18      0.00
1965  1 19      0.00
1965  1 20      0.00
1965  1 21      0.00
1965  1 22      0.00
1965  1 23      0.00
1965  1 24      0.00
1965  1 25      0.00
1965  1 26      0.00
1965  1 27      0.00
1965  1 28      0.00
1965  1 29      0.00
1965  1 30      0.00
1965  1 31      0.00
1965  2  1      0.00
1965  2  2      0.00
1965  2  3      0.00
--More--(11%)
```

# Other HSM DSS Utilities

- stoDSS is used to import data into DSS file
  - Use format or same file as in getDSS
  - Can be run interactively: stoDSS ascii\_input\_file
  - Command line: stoDSS -o dss\_output\_file  
ascii\_input\_file
- Get and Sto provide same functionality, but allow to export/import header information

# Other HSM DSS Utilities

- Some dsstool options have been coded into command line versions:
  - dsstool\_longterm\_mean
  - dsstool\_mean\_monthly
  - dsstool\_sum

# Additional Materials

- Handouts from Jose Otero class
- Working directory from Jose Otero class:
  - /net/peashooter/lcadavid/MY\_CDS/dss (copy locally)
- HEC-DSS User's Guide and Utility Manuals - User Manual - October 1994 - USAC HEC
- Utilities for DOS can be downloaded from <http://www.hec.usace.army.mil/>

# SAMPLE F-CODE TO GET DATA FROM DSS FILE

```
PROGRAM GET_SIMQ
CLMB
C THIS PROGRAM READS FROM A DSS FILE GIVEN THE B-PART OF THE
C   PATHNAME AND TIME WINDOW.
c
C DIMENSION ARRAYS AND SCALARS
C
  DIMENSION IFLTAB(1200)
  DIMENSION VALUE(15000)
  CHARACTER DSSFN*80,SDATE*9,STIME*4,EDATE*9,ETIME*4,CDATE*9
  CHARACTER*80 CA,CC,CE,CF,CPATH,STRNAME,OUTFILE
  CHARACTER*8 CUNITS,CTYPE
  INTEGER*4 JULS,JULE
C
C READ SOURCE DSS FILENAME, STRUCTURE NAME, TIME WINDOW AND OUTPUT
C FILENAME
C
  WRITE (*,'(A,$)') ' Name of input DSS file ==> '
  READ (*,'(A)') DSSFN
  CALL CHRLNB(DSSFN,NFN)
C
  WRITE (*,'(A,$)') ' Structure name ==> '
  READ (*,'(A)') STRNAME
  CALL CHRLNB(STRNAME,NB)
C
  WRITE (*,'(A,$)') ' Starting date ==> '
  READ (*,'(A)') SDATE
  CALL CHRLNB(SDATE,ND)
  STIME='1200'
  WRITE (*,'(A,$)') ' Ending date ==> '
  READ (*,'(A)') EDATE
  ETIME='1200'
C
  WRITE (*,'(A,$)') ' Name of output ASCII file ==> '
  READ (*,'(A)') OUTFILE
C
C OPEN DSS FILE
C
  CALL ZOPEN (IFLTAB,DSSFN,ISTAT)
  IF (ISTAT.NE.0) THEN
    WRITE (*,*) 'Something is wrong with ',DSSFN,!!'
    STOP
  ENDIF
```

# SAMPLE F-CODE TO GET DATA FROM DSS FILE

```
C
C FORM PATHNAME FROM INDIVIDUAL PARTS
C
  CA = 'SFWMM'
  NA = 5
  CC = 'FLOW'
  NC = 4
  CE = '1DAY'
  NE = 4
  CF = 'SIMULATED'
  NF = 10
  CALL ZFPN(CA,NA,STRNAME,NB,CC,NC,SDATE,ND,CE,NE,CF,NF,CPTH,NPATH)
C
C CONVERT CHARACTER DATE TO JULIAN DATE & COMPUTE NUMBER OF RECORDS
TO READ
C
  CALL DATJUL(SDATE,JULS,IERR)
  CALL DATJUL(EDATE,JULE,IERR)
  NREC = JULE - JULS + 1
C
C READ FROM DSS FILE
C
  CALL ZRRTS (IFLTAB,CPTH(1:NPATH),SDATE,STIME,NREC,VALUE,CUNITS,
+           CTYPE,IOFSET,ISTAT)
C
C WRITE TO SCREEN AND OUTPUT FILE
C
  WRITE (*,'(A,I8)') ' Status: ',ISTAT
  IF (ISTAT.LT.10) THEN
    WRITE (*,'(A,I8)') ' No. of records retrieved: ',NREC
    OPEN(10,FILE=OUTFILE)
    DO I = 1,NREC
      CALL JULDAT(JULS+I-1,-11,CDATE,NDATE)
      WRITE(10,'(1X,A8,F12.2)') CDATE,VALUE(I)
    ENDDO
  ENDIF
C
C CLOSE DSS FILE
C
  CALL ZCLOSE (IFLTAB)
CLMB
  STOP
  END
```

# SAMPLE SESSION TO GET DATA FROM DSS FILE

memo:> `get_simq`

Name of input DSS file ==> `str2x2.dss`

Structure name ==> `S9`

Starting date ==> `01DEC1995`

Ending date ==> `31DEC1995`

Name of output ASCII file ==> `sim_s9.out`

-----DSS---ZOPEN: Existing File Opened, File: str2x2.dss

Unit: 71; DSS Version: 6-JF

-----DSS--- ZREAD Unit 71; Vers. 1:

/SFWMM/S9/FLOW/01JAN1965/1DAY/SIMULATED/

Status: 0

No. of records retrieved: 31

-----DSS---ZCLOSE Unit: 71, File: str2x2.dss

Pointer Utilization: 6.18

Number of Records: 12555

File Size: 22134.1 Kbytes

Percent Inactive: 0.0

# SAMPLE SESSION TO GET DATA FROM DSS FILE

```
memo:> cat sim_s9.out
```

12/01/95	156.98
12/02/95	152.96
12/03/95	150.22
12/04/95	152.15
12/05/95	150.67
12/06/95	151.19
12/07/95	152.23
12/08/95	152.12
12/09/95	150.58
12/10/95	151.43
12/11/95	149.29
12/12/95	150.18
12/13/95	149.96
12/14/95	149.76
12/15/95	150.17
12/16/95	152.91
12/17/95	147.35
12/18/95	149.94
12/19/95	147.74
12/20/95	149.40
12/21/95	151.67
12/22/95	151.74
12/23/95	154.16
12/24/95	155.12
12/25/95	156.76
12/26/95	156.49
12/27/95	156.59
12/28/95	154.70
12/29/95	155.52
12/30/95	153.16
12/31/95	152.36



# SAMPLE F-CODE TO STORE DATA IN DSS FILE

```
PROGRAM STO_HISTQ
CLMB
C THIS PROGRAM WRITES INTO A DSS FILE GIVEN DAILY TIME SERIES
C DATA FROM AN INPUT FILE
C
C DIMENSION ARRAYS AND SCALARS
C
  DIMENSION IFLTAB(1200)
  DIMENSION VALUE(15000)
  CHARACTER DSSFN*80,SDATE*9,STIME*4,EDATE*9,ETIME*4
  CHARACTER*80 CA,CC,CD,CE,CF,CPTH,STRNAME,INFILE
  CHARACTER*8 CUNITS,CTYPE
C
C READ INPUT FILENAME AND OPEN FILE
C
  WRITE (*,'(A,$)') ' Name of input ASCII file ==> '
  READ (*,'(A)') INFILE
  OPEN (11,FILE=INFILE,STATUS='OLD')
C
  WRITE (*,'(A,$)') ' Structure name ==> '
  READ (*,'(A)') STRNAME
  CALL CHRLNB(STRNAME,NB)
C
  WRITE (*,'(A,$)') ' Enter destination DSS file ==> '
  READ (*,'(A)') DSSFN
C
C OPEN DSS FILE
C
  CALL ZOPEN (IFLTAB,DSSFN,ISTAT)
  IF (ISTAT.NE.0) THEN
    WRITE (*,*) 'Something is wrong with ',DSSFN,!!'
    STOP
  ENDIF
```

# SAMPLE F-CODE TO STORE DATA IN DSS FILE

```
C
C READ STARTING DATE AND CONVERT IT FROM INTEGER TO CHARACTER
C
  READ (11,*) IYR,IMON,IDAY
  CALL YMDDAT(IYR,IMON,IDAY,104,SDATE,NDATE,IERR)
  IF(IERR.NE.0) STOP
  WRITE (*,'(A)') ' STARTING DATE =',SDATE
  STIME='1200'
C
C READ AND STORE DATA INTO VALUE ARRAY
C
  REWIND 11
  DO J=1,15000
    READ (11,*,END=10) IYR,IMON,IDAY,VALUE(J)
  ENDDO
C
C CALCULATE TOTAL NUMBER OF RECORDS
C
  10 NREC = J - 1
C
C CONVERT ENDING DATE FROM INTEGER TO CHARACTER
C
  CALL YMDDAT(IYR,IMON,IDAY,104,EDATE,NDATE,IERR)
  IF(IERR.NE.0) STOP
  WRITE (*,'(A)') ' ENDING DATE =',EDATE
  ETIME='1200'
C
C DEFINE SOME DSS PARAMETERS AND FORM PATHNAME FROM INDIVIDUAL
PARTS,
C B PART IS STRUCTURE NAME
C
  CUNITS = 'CFS'
  CTYPE = 'PER-AVER'
  CA = 'SFWMM'
  NA = 5
  CC = 'FLOW'
  NC = 4
  CD = SDATE
  ND = 9
  CE = '1DAY'
  NE = 4
  CF = 'HISTORICAL'
  NF = 10
```

# SAMPLE F-CODE TO STORE DATA IN DSS FILE

```
C
C FORM PATHNAME FROM COMPONENT PARTS
C
  CALL ZFPN(CA,NA,STRNAME,NB,CC,NC,CD,ND,CE,NE,CF,NF,CPATH,NPATH)
C
C WRITE TO DSS USE, OPTION TO ALWAYS WRITE OVER EXISTING DATA
C
  IPLAN=0
  CALL ZSRTS(IFLTAB,CPATH,SDATE,STIME,NREC,VALUE,CUNITS,CTYPE,
+          IPLAN,ISTAT)
C
C WRITE TO SCREEN
C
  WRITE (*,'(A,I8)') ' Status: ',ISTAT
  IF (ISTAT.LT.10) THEN
    WRITE (*,'(A,I8)') ' No. of records stored: ',NREC
  ENDIF
C
C CLOSE DSS FILE
C
  CALL ZCLOSE(IFLTAB)
CLMB
  STOP
  END
```

# SAMPLE SESSION TO STORE DATA IN DSS FILE

memo:> **sto\_histq**

Name of input ASCII file ==> **hist\_g136.in**

Structure name ==> **G136**

Enter destination DSS file ==> **hist\_g136.dss**

-----DSS---ZOPEN: New File Opened, File: hist\_g136.dss

Unit: 71; DSS Version: 6-JF

**STARTING DATE =**

**01JAN1965**

**ENDING DATE =**

**31DEC1995**

-----DSS---ZWRITE Unit 71; Vers. 1: /SFWMM/G136/FLOW/01JAN1965/1DAY/HISTORICAL/  
-----DSS---ZWRITE Unit 71; Vers. 1: /SFWMM/G136/FLOW/01JAN1966/1DAY/HISTORICAL/  
-----DSS---ZWRITE Unit 71; Vers. 1: /SFWMM/G136/FLOW/01JAN1967/1DAY/HISTORICAL/  
-----DSS---ZWRITE Unit 71; Vers. 1: /SFWMM/G136/FLOW/01JAN1968/1DAY/HISTORICAL/  
-----DSS---ZWRITE Unit 71; Vers. 1: /SFWMM/G136/FLOW/01JAN1969/1DAY/HISTORICAL/  
-----DSS---ZWRITE Unit 71; Vers. 1: /SFWMM/G136/FLOW/01JAN1970/1DAY/HISTORICAL/  
-----DSS---ZWRITE Unit 71; Vers. 1: /SFWMM/G136/FLOW/01JAN1971/1DAY/HISTORICAL/  
-----DSS---ZWRITE Unit 71; Vers. 1: /SFWMM/G136/FLOW/01JAN1972/1DAY/HISTORICAL/  
-----DSS---ZWRITE Unit 71; Vers. 1: /SFWMM/G136/FLOW/01JAN1973/1DAY/HISTORICAL/  
-----DSS---ZWRITE Unit 71; Vers. 1: /SFWMM/G136/FLOW/01JAN1974/1DAY/HISTORICAL/  
-----DSS---ZWRITE Unit 71; Vers. 1: /SFWMM/G136/FLOW/01JAN1975/1DAY/HISTORICAL/  
-----DSS---ZWRITE Unit 71; Vers. 1: /SFWMM/G136/FLOW/01JAN1976/1DAY/HISTORICAL/  
-----DSS---ZWRITE Unit 71; Vers. 1: /SFWMM/G136/FLOW/01JAN1977/1DAY/HISTORICAL/  
-----DSS---ZWRITE Unit 71; Vers. 1: /SFWMM/G136/FLOW/01JAN1978/1DAY/HISTORICAL/  
-----DSS---ZWRITE Unit 71; Vers. 1: /SFWMM/G136/FLOW/01JAN1979/1DAY/HISTORICAL/  
-----DSS---ZWRITE Unit 71; Vers. 1: /SFWMM/G136/FLOW/01JAN1980/1DAY/HISTORICAL/  
-----DSS---ZWRITE Unit 71; Vers. 1: /SFWMM/G136/FLOW/01JAN1981/1DAY/HISTORICAL/  
-----DSS---ZWRITE Unit 71; Vers. 1: /SFWMM/G136/FLOW/01JAN1982/1DAY/HISTORICAL/  
-----DSS---ZWRITE Unit 71; Vers. 1: /SFWMM/G136/FLOW/01JAN1983/1DAY/HISTORICAL/  
-----DSS---ZWRITE Unit 71; Vers. 1: /SFWMM/G136/FLOW/01JAN1984/1DAY/HISTORICAL/  
-----DSS---ZWRITE Unit 71; Vers. 1: /SFWMM/G136/FLOW/01JAN1985/1DAY/HISTORICAL/  
-----DSS---ZWRITE Unit 71; Vers. 1: /SFWMM/G136/FLOW/01JAN1986/1DAY/HISTORICAL/  
-----DSS---ZWRITE Unit 71; Vers. 1: /SFWMM/G136/FLOW/01JAN1987/1DAY/HISTORICAL/  
-----DSS---ZWRITE Unit 71; Vers. 1: /SFWMM/G136/FLOW/01JAN1988/1DAY/HISTORICAL/  
-----DSS---ZWRITE Unit 71; Vers. 1: /SFWMM/G136/FLOW/01JAN1989/1DAY/HISTORICAL/  
-----DSS---ZWRITE Unit 71; Vers. 1: /SFWMM/G136/FLOW/01JAN1990/1DAY/HISTORICAL/  
-----DSS---ZWRITE Unit 71; Vers. 1: /SFWMM/G136/FLOW/01JAN1991/1DAY/HISTORICAL/  
-----DSS---ZWRITE Unit 71; Vers. 1: /SFWMM/G136/FLOW/01JAN1992/1DAY/HISTORICAL/  
-----DSS---ZWRITE Unit 71; Vers. 1: /SFWMM/G136/FLOW/01JAN1993/1DAY/HISTORICAL/  
-----DSS---ZWRITE Unit 71; Vers. 1: /SFWMM/G136/FLOW/01JAN1994/1DAY/HISTORICAL/  
-----DSS---ZWRITE Unit 71; Vers. 1: /SFWMM/G136/FLOW/01JAN1995/1DAY/HISTORICAL/

**Status: 0**

**No. of records stored: 11322**

-----DSS---ZCLOSE Unit: 71, File: hist\_g136.dss

Pointer Utilization: 0.36

Number of Records: 31

File Size: 70.4 Kbytes

Percent Inactive: 0.0