dpsssrc

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Abstract

The task **dpsssrc** is part of the automatic validation process of the Data Product Screening System (DPSS). The task creates a copy (with the prefix flag_) of a EPIC Maximum-Likelihood detection list. The task is designed to speed up the work of the subsequent visual verification step based on the DPSS GUI. Three columns are created by the task: (i) `IND_SOL`, (ii) `VER_FLAG` and (iii) `VER_COMM`. These three columns are necessary for the work with the DPSS GUI. The column `IND_SOL` is filled with a running number, starting from 1 to the number of rows in the source table. The column `VER_FLAG` contains the source flag setting. The column `VER_COMM` is expected to contain source comments, which will be applied during the visual verification step. The source flag `source likelihood below a certain threshold` (position 2 of the column `VER_FLAG`) is set to `T`, when the source likelihood listed in the column `DET_ML` of the EPIC Maximum-Likelihood detection list is below a certain threshold. In addition the columns `A`, `E`, `N`, `P`, `G`, `X` are created, containing individual source flags.

1 Instruments/Modes

Instrument	Mode
EPIC	IMAGING, TIMING, BURST

2 Use

pipeline processing	yes
interactive analysis	no

3 Description

The SAS task **dpsssrc** is part of the Data Product Screening System (DPSS), which is divided into an automatic step (described here) and a subsequent visual verification step based on Graphical User Interfaces. The separation into an automatic validation and a visual verification process has been proven as an effective and powerful method to secure a high quality of data products produced by a standard analysis software. The SAS task **dpsssrc** is designed to speed up the work of the visual verification step by creating a copy of the EPIC Maximum-Likelihood source list containing three new column necessary for the work with the DPSS GUI. The columns created by the task are named as: (i) `IND_SOL`, (ii) `VER_FLAG` and (iii) `VER_COMM`. The column `IND_SOL` (data format: 4-byte INTEGER) is filled with a running number,

starting from 1 to the number of rows in the source table. The column `VER_FLAG` (data format: A10) contains the source flag setting (the preflag setting is: `FFFFFFFFFF`, i.e. none of the source flags is given to a source). In addition the columns `A`, `E`, `N`, `P`, `G` and `X` are created containing the flag setting of individual source flags. The column `VER_COMM` (data format: A20) is created to be filled with source comments during the visual verification step. The source flag `source likelihood below a certain threshold` (position 2 of the column `VER_FLAG`) is set to `T`, when the source likelihood listed in the column `DET_ML` is below a certain threshold.

4 Parameters

This section documents the parameters recognized by this task (if any).

Parameter	Mand	Type	Default	Constraints
set	yes	string	P0123700101PNS003EMSRLI0000.FIT	applies only for EPIC Maximum-Likelihood detection lists

EPIC Maximum-Likelihood source list, identifier TTTTTT = EMSRLI

maxlikthresh	no	real value	50.	must be greater than 0.

threshold to set the source flag '`source likelihood below a certain threshold`' to `T`

prefix	no	string	flag_	applies only for EPIC Maximum-Likelihood detection lists

prefix for output name (`prefix_set`)

5 Errors

This section documents warnings and errors generated by this task (if any). Note that warnings and errors can also be generated in the SAS infrastructure libraries, in which case they would not be documented here. Refer to the index of all errors and warnings available in the HTML version of the SAS documentation.

error (FITSIO), FITS error 104: could not open the named file *(error)*
The fits file does not exist or does not have read permission

error (badInput), input PPS file is not the EPIC M-L detect list *(error)*
The input file is not a EPIC M-L detection list. The identifier `TTTTTT` of the input PPS file (naming convention is given in [1] and SSC-LUX-TN-0038) is not equal to `EMSRLI`.

6 Input Files

1. POOOOOOOOOODDSEEEEMSRLISXXX.FIT EPIC Maximum-Likelihood detection source List. The identifier for `TTTTTT` must be equal to `EMSRLI`. The naming convention given above is according to [1] and SSC-LUX-TN-0038.

7 Output Files

1. flag_POOOOOOOOOODDSEEEEMSRLISXXX.FIT

   Copy of a EPIC Maximum-Likelihood detection list. Three new column are created and the source flag setting for sources below a certain detection threshold is performed.

8 Algorithm

```
*** test, if M-L detect list is called TTTTTT = EMSRLI
xxx = stringParameter("set")
tttttt = xxx(17:22)
if (tttttt .eq. "EMSRLI") then
else
      call error("badInput", "input PPS file is not the EPIC M-L detect list")
      return
endif

*** make a copy of the input file with prefix flag
write (outname,'(a,a)') "flag_",trim(stringParameter("set"))
call copyDataset(stringParameter("set"),outname)

*** pointer to file and table
outfile = dataSet(outname,MODIFY)
outtab  = table(outfile,"SRCLIST")

*** create new columns
ind_sol  = addColumn(outtab,"IND_SOL",INTEGER32,units="I",comment="running number")
ver_flag = addColumn(outtab,"VER_FLAG",String," ",(/10/))
ver_comm = addColumn(outtab,"VER_COMM",String," ",(/20/))

*** pointer to column ind_sol and to entries in column
indsol => int32Data(ind_sol)

*** pointer to column ind_sol and to entries in column
det_ml = column(outtab,"DET_ML",READ)
p_detml => real32Data(det_ml)

*** write column ind_sol
do i = 0, numberOfRows(outtab) - 1
   indsol(i) = i + 1
enddo
```

```
*** write column ver_flag
pnflag1 = "FFFFFFFFFF"
do i = 0, numberOfRows(outtab) - 1
   call setStringCell(ver_flag, i, pnflag1);
enddo

*** write column ver_comm
comment = ".                    "
do i = 0, numberOfRows(outtab) - 1
    call setStringCell(ver_comm, i, comment);
enddo

*** make flag setting for not_checked sources
thresh = realParameter("maxlikthresh")
pnflag3 = "FTFFFFFFFF"
do i = 0, numberOfRows(outtab) - 1
  if (p_detml(i) < thresh) then
       call setStringCell(ver_flag, i, pnflag3);
  endif
enddo
```

9 Comments

- This task only applies for EPIC Maximum-Likelihood detection lists.

10 Future developments

The command line parameter 2 (`maxlikthresh`) used for the flag setting of sources below a certain detection threshold has to be defined on basis of in-flight data.

References

[1] SSC. XMM Survey Science Centre to Science Operations ICD for SSC Products. Technical Report XMM-SOC-ICD-0006-SSC Issue 2.1, SSC, Mar 2000.