regionstats

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Abstract

Compute statistics for an arbitrary region in an image.

1 Instruments/Modes

Not applicable. The task operates on any image.

Instrument	Mode

2 Use

pipeline processing	no
interactive analysis	yes

3 Description

This task evaluates a number of statistics for a given region of interest. These are:

- centroid position
- position and value of maximum and minimum
- mean and standard deviation
- total number of counts
- number of pixels and number of bad pixels in the region

The corresponding statistical uncertainties are given as well.

The region is given in input as an saoimage compatible region file. If this file is not specified, the whole image is used.

The user can optionally specify a quality data set to be used to mask the region of interest.

Output positions are expressed in pixels and in WCS coordinates, if the appropriate information is present.

4 Parameters

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

Parameter	Mand	Type	Default	Constraints
imageFile	yes	string		

name of the data set containing the image

imageName	yes	string	IMAGE	

name of the block containing the image

regionFile	yes	string		

name of the data set containing the region to be analyzed.

qualityFile	no	string		

name of the data set containing the quality data.

qualityName	no	string	QUALITY	

name of the block containing the quality data

errorFile	no	string	IMAGE	

name of the block containing the error data

qualityName	no	string	ERROR	

name of the block containing the error data

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.

6 Input Files

1. Any data set containing an image and, optionally, a quality and error arrays. Quality and error data can also be stored in separate data sets.
2. Saoimage region definition file.

7 Output Files

None.

8 Algorithm

```
subroutine regionstats

end subroutine  regionstats
```

9 Comments

- The centroid will be meaningless if the region does not contain a point like source.
- The format and name of the quality and error data have not been agreed yet.
- The region selection should be carried out by first unfurling the image in a pseudo event list, then making a call to `evselect` (there will be an f90-callable interface), then computing the relevant statistics on the filtered pseudo event list.

10 Future developments

References