



fitsstat

January 27, 2025

Abstract

This task calculates the statistical information of the input FITS and prints it to STDOUT.

1 Instruments/Modes

fitsstat is not XMM-specific: it can be applied to any FITS file.

2 Use

| | |
|----------------------|-----|
| pipeline processing | no |
| interactive analysis | yes |

3 Description

This task calculates the statistical information of the input FITS for the given conditions (area, values etc) and prints it to STDOUT. See the section of ‘General-purpose FITS-processing utilities’ in the document of **sslib** for detail.

4 Parameters

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

| Parameter | Mand | Type | Default | Constraints |
|-----------|------|------|---------|-------------|
|-----------|------|------|---------|-------------|

| | | | | |
|------------|-----|---------|--|--|
| set | yes | dataset | | |
|------------|-----|---------|--|--|

Name of the input FITS data set. If **datatype**=‘column’, the table name should be added, following the ‘:’, such as, ‘input1.ds:SRCLIST’.

| | | | | |
|-----------------|----|--------|-------|--------------|
| datatype | no | string | image | image—column |
|-----------------|----|--------|-------|--------------|

The datatype of interest in the input FITS file.



| | | | | |
|---------------|-----|--------|--|--|
| column | yes | string | | |
|---------------|-----|--------|--|--|

This parameter is read only if **datatype**='column'. This specifies the name of the column of interest.

| | | | | |
|-------------------|----|---------|----|--|
| withregion | no | boolean | no | |
|-------------------|----|---------|----|--|

If set, the task reads **regionstyle** and relevant parameters to determine the region to calculate the statistics. Note the two parameters **minareacoords** and **maxareacoords** are completely independent of this switch.

| | | | | |
|--------------------|----|--------|--------|----------------|
| regionstyle | no | string | circle | circle—annulus |
|--------------------|----|--------|--------|----------------|

This parameter is read only if **withregion**=yes. This specifies the shape of the region. At the moment, only **circle** and **annulus** are allowed, and they mean practically identical.

| | | | | |
|---------------------|-----|-----------|--|--|
| centrecoords | yes | real list | | |
|---------------------|-----|-----------|--|--|

This parameter is read only if **withregion**=yes. It is the list of the image pixel coordinates for the (x,y) axes.

| | | | | |
|--------------|-----|-----------|--|--|
| radii | yes | real list | | |
|--------------|-----|-----------|--|--|

This parameter is read only if **withregion**=yes. It specifies a radius (or maybe radii in the future) of the region.

| | | | | |
|-------------------|----|-----------|-----|--|
| radiiinner | no | real list | 0.0 | |
|-------------------|----|-----------|-----|--|

This parameter is read only if **withregion**=yes. It specifies a inner radius (or maybe radii in the future) of the annular region.

| | | | | |
|---------------------|----|---------|----|--|
| withincoords | no | boolean | no | |
|---------------------|----|---------|----|--|

If set, the task reads **minareacoords**.

| | | | | |
|----------------------|----|-----------|--|--|
| minareacoords | no | real list | | |
|----------------------|----|-----------|--|--|

This parameter is read if **withincoords**=true. The area where the coordinates are equal to or larger than these will be taken into account in the calculation of the statistics.

| | | | | |
|----------------------|----|---------|----|--|
| withmaxcoords | no | boolean | no | |
|----------------------|----|---------|----|--|

If set, the task reads **maxareacoords**.

| | | | | |
|----------------------|----|-----------|--|--|
| maxareacoords | no | real list | | |
|----------------------|----|-----------|--|--|

This parameter is read if **withmaxcoords**=true. The area where the coordinates are equal to or smaller than these will be taken into account in the calculation of the statistics.

| | | | | |
|---------------------|----|---------|----|--|
| withvallower | no | boolean | no | |
|---------------------|----|---------|----|--|

If set, the task reads **vallower**.

| | | | | |
|-----------------|----|------|--|--|
| vallower | no | real | | |
|-----------------|----|------|--|--|

This parameter is read if **withvallower**=true. The pixels of which the value is equal to or larger than this value will be taken into account in the calculation of the statistics.

| | | | | |
|---------------------|----|---------|----|--|
| withvalupper | no | boolean | no | |
|---------------------|----|---------|----|--|

If set, the task reads **valupper**.

| | | | | |
|-----------------|----|------|--|--|
| valupper | no | real | | |
|-----------------|----|------|--|--|

This parameter is read if **withvalupper**=true. The pixels of which the value is equal to or smaller than this value will be taken into account in the calculation of the statistics.



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.

wrongNumberMinAreaCoords (*error*)

`set` and `minareacoords` have different dimensions.

wrongNumberMaxAreaCoords (*error*)

`set` and `maxareacoords` have different dimensions.

inconsistentMinMaxAreaCoords (*error*)

One or more elements in `minareacoords` is smaller than those in `maxareacoords`.

wrongParamNumberCentreCoords (*error*)

Not enough number of values are specified in `centrecoords`. It has to be 2 values, namely (x,y).

largerInnerRadiusThanOuter (*error*)

The specified `radii` are smaller than `radiiinner`.

invalidRegionStyle (*error*)

The specified `regionstyle` is not supported.

convertToDouble (*warning*)

corrective action: Unsigned Integer or Boolean data are converted into Double in the calculation.

6 Input Files

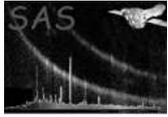
The input FITS needs not be XMM images and can be of any numeric data type output by `evselect`, eg `int8`, `int16`, `int32`, `real32` or `real64`.

1. (Mandatory) `set`: the input FITS.

7 Output Files

Nil (all the outputs are printed to STDOUT).

8 Algorithm



9 Comments

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References