



makemask

April 16, 2023

Abstract

This task is called by *cheese* to create a cheese mask from the filtered source list. It can also be run standalone if the correct file types exist. This task was originally a subtask of the SAS *esas* task named *make_mask* prior to SAS-21 and retains all of its functionality.

1 Instruments/Modes

Instrument	Mode
EPIC	Imaging

2 Use

pipeline processing	no
interactive analysis	yes

3 Description

makemask is called by *cheese* to create a cheese mask from the filtered source list. It can also be called standalone if the input files are deemed valid.

Warning and requirements: *makemask* was part of the *esas* package integrated into SAS, and was limited to work within the *esas* data reduction scheme. Generally, it is assumed that another former *esas* task, e.g., *espfilt*, has already been successfully run (in particular, for the input file's exposure to be used).

4 Parameters

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

Parameter	Mand	Type	Default	Constraints
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imagefile	yes	string		
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Input image corresponding to the exposure, from cheese.

maskfile	yes	string		
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The exposure mask from cheese.

cheesefile	yes	string		
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Output file name for the cheese mask.

regionfile	yes	string		
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The filtered source region list from cheese.

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.

badInstrument (*error*)

INSTRUME not EMOS1, EMOS2, or EPN

missingAttribute (*error*)

input file missing key attribute

badOutFile (*error*)

Output cheese mask can't be opened, read

noREGIONext (*error*)

Missing or empty region extension

wrongShape (*warning*)

input array is not 900x900

corrective action: attempt to continue

6 Input Files

1. Filtered EMOS1/EMOS2/EPN image.
2. Exposure mask from emask.
3. Region file from cheese or elsewhere.



7 Output Files

1. Cheese mask.

Note: default output file name for the cheese mask takes the form: inst + expid + cheese + band + .fits, e.g. mos1S001-cheeseh.fits for a MOS1 hard band file. Other bands include t for total and s for soft.

8 Algorithm

1. Read in parameters.
2. Open and read input image.
3. Extract coordinate keywords from input image.
4. Open and read input mask.
5. Extract coordinate keywords from input mask.
6. Loop through region rows to create mask array.
7. Apply mask to input image array.
8. Open output cheese mask for write.
9. Clone coordinate keywords from input to output.

9 Comments

The original code for this task appeared in the *esas* task 2009-2021 as the subtask *make_mask*. It was removed from the task *esas*, and modularized as a single task for SAS-21. The *esas* task was removed in SAS-21.

References