

## Release notes:

### Version 0.1.5

#### 1. New operations

backgrounds	determine averages of subareas
mode	set some behaviors of EMIRA
multiply	multiply two images
multiply conjugate	Multiply two Fourier transforms
new2olddoc	convert new format doc-file to old format for spider 5.0
peak3	find maximum in 3D file
pickslice	extract slice from 3D
plotsscatter3D	3D scatter plot
rad2d3dali	align volumes using 2d reference projections (this replaces the previous volume alignment that used pba3. Here the volume is turned so that all angular cross-correlation functions directly show the angle of the reference volume. The peakfiles can be averaged like any other average. PBA3 now obsolete.)
radextract	extract 2D Radon transform from 3D transform.
rot3d	rotate 3d volume.
msa nlm	nonlinear mapping for application after correspondence analysis.

#### 2. Changes:

vismap	maximum map dimensions set to 4096
msanlm	Program nltfile.f changed so that the last value in each line of the output IMC file has the value 1. important for later usage of classidday on the output cluster file.
pickstickturn	has been reworked

#### 3. Other:

Manual chapters have been reworked, even though there may still be some minor mistakes. The manual is now available as a single PDF and as an e-book (adjust page width for best readability). The "ask" operations have been revised and should work now. Instructions for recompiling EMIRA have been revised on the installation instructions.

### Version 0.1.4

#### 1. New operations:

docalc	Carry out calculations on document file columns.
frc	calculate Fourier Ring Correlation
oldimc2doc	Convert IMC image coordinate file from older coran to doc file

plotmlines	Plot lines from multiple document files.
predictresolution	predict resolution for conical or single axis 3D reconstr.
rad3dcopycounter	copy counter of 3D Radon transform
sqrt	square root of an image
square	square an image
subtract	subtract 2 images

## 2. New procedure mechanism:

For writing procedures, similar to the ones know from spider the operations askfilename, asknumber and asktext have been introduced these operations allow input to the procedures from the calling process, which can be either the terminal in an interactive session or the batch file that call the procedure. For details see manual. (This mechanism has only been used a few times up to now, so some problems may still be undiscovered).

## 3. Improvements:

Some bugs have been eliminated in the FORTRAN code.

The wrapper module adm\_makeargseot is new. This module creates the argument list for use with MRC style input (on cards following the program call).

## Version 0.1.3

1. Introduced autodisplay for operations where this makes sense. By default output images of an operation are displayed in geeqie ( gpl licensed viewer also available in most linux distributions). Implemented through an additional new wrapper function:

```
adm_showpict(<filename>,'<type>','<in' or 'out'>)
```

```
example: adm_showpict('image001.tst','spi','in')
```

The last argument controls the display behavior. 'in' specifies that this is an input image, 'out' specifies that this is an output image.

The behavior is controlled by the operation 'mode', which has the options:

display on (display all output images), display off (selfexplanatory) and display inout (display input and output images).

If a batch file (script) is run, the display function is turned off. It can be turned on in the batch file, however, the speed in which images are send to geeqie may be too fast, resulting in the creation of multiple instances of the program.

2. User written operations:

By default each user can now add their own operations to emira by placing the corresponding wrapper in the directory emira\_plugins as subdirectory of their home directory (/home/<user>/emira\_plugin). This

can be adjusted systemwide if you either change the definition in the file "emira" or define your own pythonpath in your login sequence. At this time the user directory is explored first when an operation is entered. If you define an additional Pythonpath in your login, this will be searched last.

3. Remark: EMIRA is being developed using the bash shell. I would highly appreciate if somebody who uses another shell (csh etc) to translate the login sequence definitions and try if adding `#!/bin/bash` or `#!/bin/sh` in the first line of the file "emira" will keep everything working. It will be highly appreciated if you could forward the tested changes to be included in future distributions.
4. New operations:  
mode ; change auto display more (see 1.)  
putpoints ; place points defined in a document file into an image.
5. Bugs fixed:  
adm\_run1.py now properly returns only the first occurrence of a requested value.