

## How to ALIGN and Add images in AstroSurface ? Version ERIS

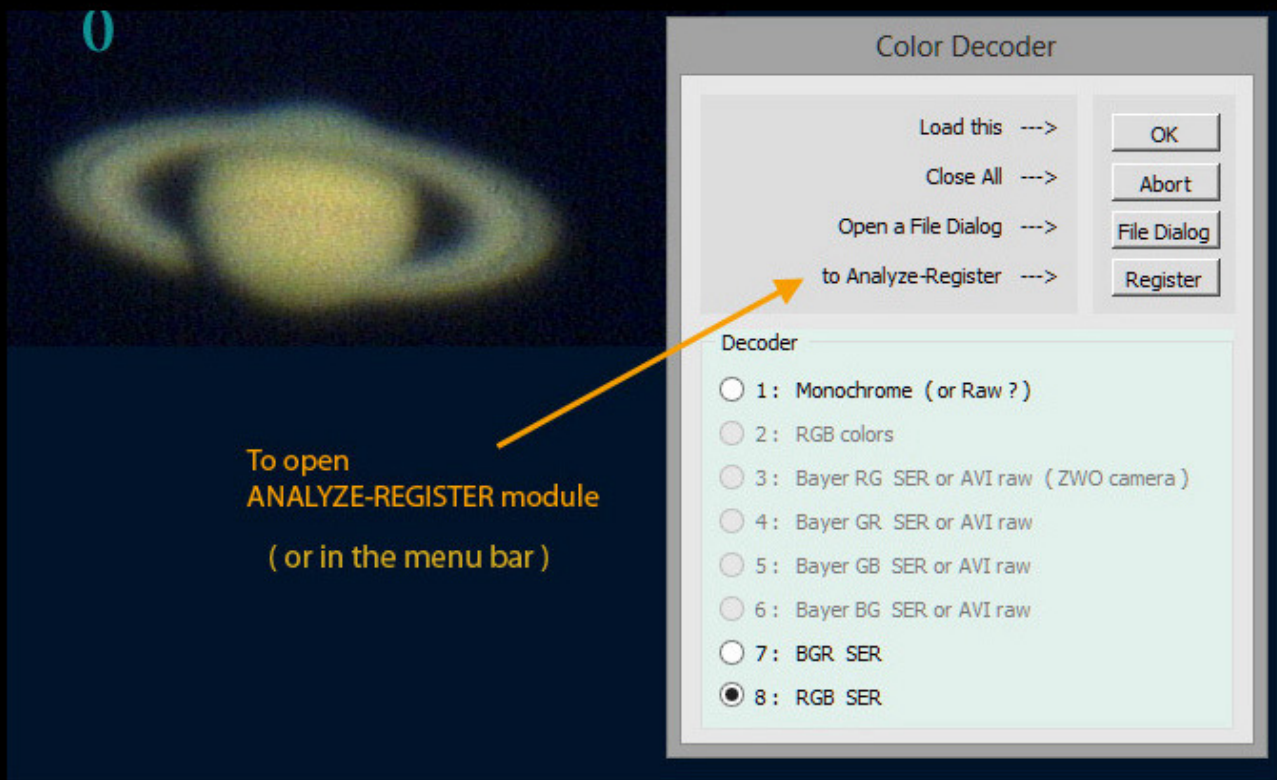
--> we describe the method ANALYZE-REGISTER : for a list of files or AVI or SER videos

See Analyze-Register in the menu bar, or when the Color Decoder is loaded : button Register ( image below )  
( NB : The Color-Decoder as below, is in the menu bar at Configure. It is used to decode Raw SER files )

You can load Files/AVI/SER files **before** or **after** the method Analyze-Register is loaded.  
The method Analyze-Register contains various buttons to do this.

With an optional DARK and FLAT

MasterDark and MasterFlat must be processed before : ready as **single** files with the same format than images !  
These files can be loaded in the menubar **Dark / Flat**, or in the method Analyze-Register (see top buttons)  
Always load MasterDark if needed **before** masterFlat if needed !



2019-Nov-06 AstroSurface E2 SaturneNumero\_BestAligned\_s1\_13.ser

Analyze / Register   Dark / Flat   MathPix   Help   About

Loop ☒ Levels ☐ Stab-display 13

ed   ☐ x   ☐ 3x   ☐ 9x   ☒ Max

1 - N   # ?   Clear >

---> Dark : ---

---> Flat : ---

---> Choose a mode [1] : Disk/Planet or Surface/Roi ...

TEXT WINDOW

To load files or videos

the method it is here !

TIP ; see indications in the text window

When passing mouse cursor on most buttons or adjustments, you get a contextual help

Green = available

Gray = not yet available

Analyze and Register

☐ Advanced mode   Reset All   Reset   1 Dark   2 Flat   Unload   Open Files   OpenVideo   Exit

Define Target

Noise pre-filter   Show   1 Standard

Best for : Deep-Sky and small objects   S : Similarity

Increase if random trajectory or variable transparency   Tracking shift max   40 pix

Default 15   Disk detect ADU   15

1

Disk / Planet   Detect

Surface / Roi   Select

Analyze and select best images

☐ REFERENCE inspection   ☐ Auto open   Limit images

6   Swap   Graph S   13

Images for   Algorithm   Best images   2   Analyze

50% of Stack   Stack

IMAGES TO STACK   %   23.1   46.2   #   3   3   6

Use Graph or enter value

Stacking mode

4   ☐ Global   ☒ Multi-Points

Not for Deep-Sky or small objects or very bad quality images !

----- Multi-Points only -----

Default 0   Tiles coverage +/-   0

Default 48   Tile Size   48 pix

4a   Set

Stacking

Output image size   Your text on filenames   ?

☒ As Video   ☐ Crop !   ?   ☐ Expand

Output format   png

☒ Align RGB channels   Resample Factor   100 %

☒ Create sub-Directory = Aligned

Export   5   Stack

2

0



Follow instructions in the text Window and yellow numbers for basic steps 1 2 3 4 (4a) and 5

TO START ;  
First choose a Target mode 1 :  
Disk / Planet or Surface / Roi,  
then  
follow instructions in the  
text window

ROI = Region Of Interest if an area often  
drawn by user in AstroSurface  
Well contrasted and unique area !

# EXPERT MODE !

## Analyze and Register

☐ Advanced mode
 Reset All

Define Target

Noise pre-filter  1 Standard

Best for : Deep-Sky and small objects
 

S : Similarity

Increase if random trajectory or variable transparency
 

Tracking shift max 40 pix

Default 15
 

Disk detect ADU 15

What Target ?
 

☒ Disk / Planet
 ☐ Surface / Roi

☐ REFERENCE Inspection
 

6

☐ Auto open
 

Swap

☐ Limit images
 

13

Images for

Algorithm S or C

Best images

☐ 50% of Stack
 

Stack

IMAGES TO STACK

% 23.1

46.2

Number of image to Stack

6

Stacking mode

☒ 4
 ☐ Global
 ☒ Multi-Points

Use multi-point or not
 

Not for Deep-Sky or small objects or very bad quality images !

----- Multi-Points only -----
 

Default 0 Tiles coverage +/- 0

Default 48 Tile Size 48 pix

Stacking

Output: image size
 

Your text on filenames ?

☒ As Video
 

Crop ! ?

☐ Expand
 

Output format png

☒ Align RGB channels
 

Resample Factor 100 %

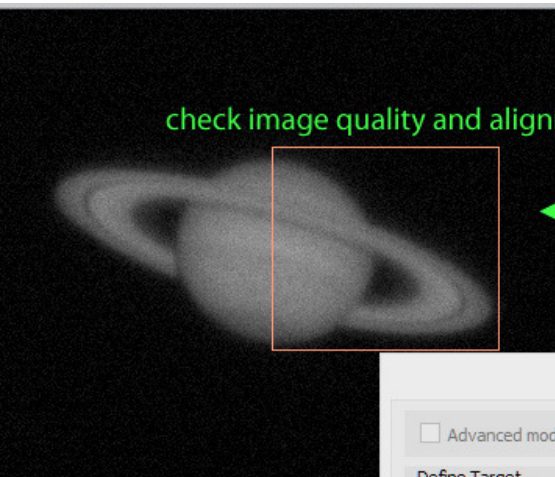
☒ Create sub-Directory = Aligned

Disk / Planet : if for objects with a Disk entirely in the image and not too big !  
Surface / Roi : is for Deep Sky, Stars, or full images of Moon or Sun...

When detected just Double-Click on it  
You have to draw a ROI on image

3





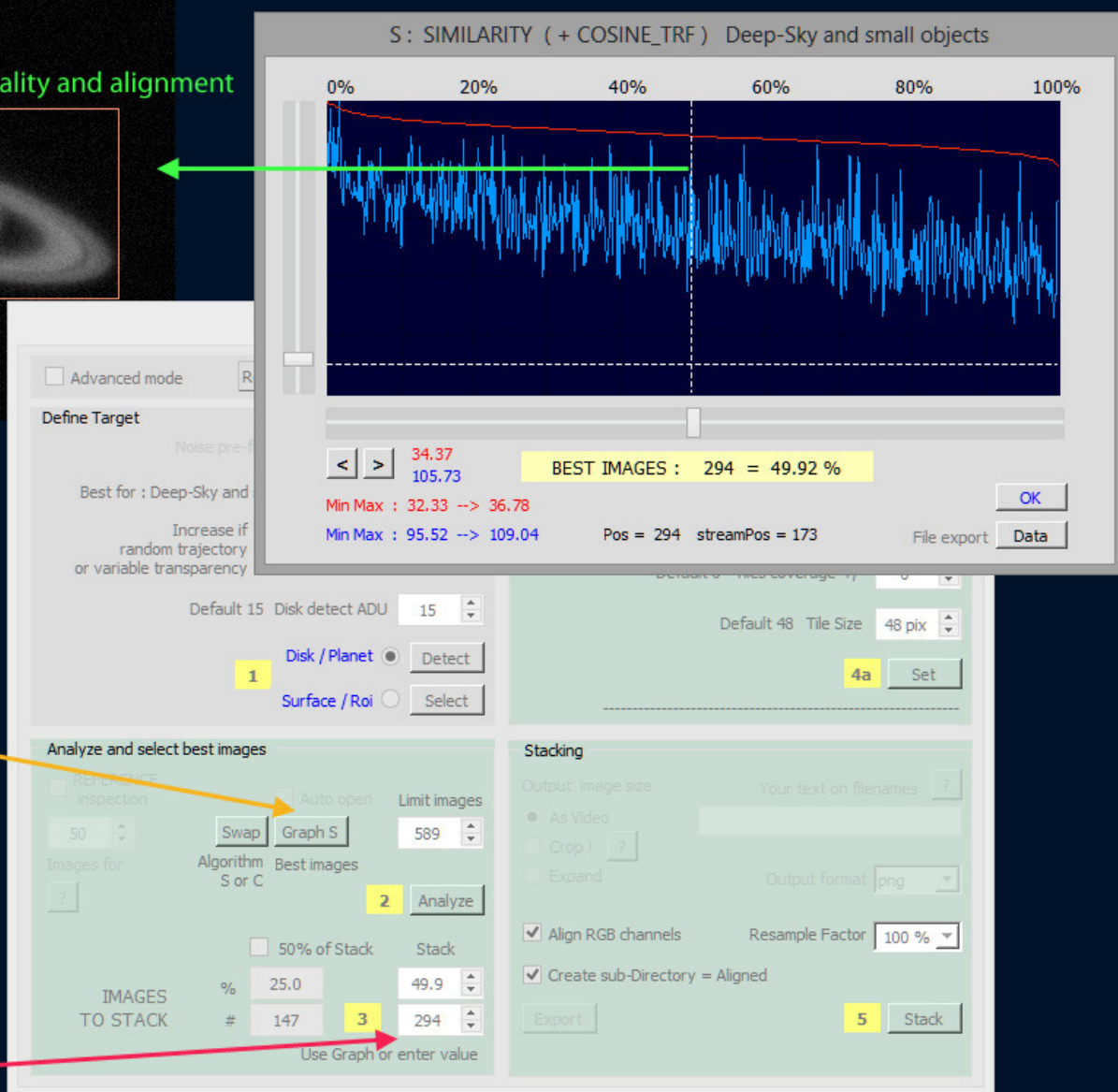
check image quality and alignment

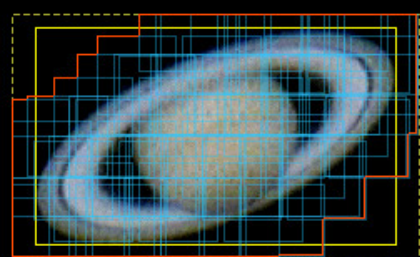
When an Analyze is done (step 2), you can limit the number of best images ( step 3 ) enter a value, or use the Graph !

OPTIONAL GRAPH !

optional Graph to select/Limit best images

LIMIT BEST IMAGES  
BEST IMAGES or %





TILES MULTI-POINTS

After step 3 ( Limit Best Images )  
choose an alignment mode  
for images : step 4 (4A)

For Planetary/Lunar/Solar images  
click multipoints then Set (4a)...  
( Tiles are drawn to cover the planet )

For Deep-Sky or Very small objects  
click Global

Final Addition is done  
by step 5 = Stack = END

### Analyze and Register

☐ Advanced mode
Reset All
Reset
1 Dark
2 Flat
Unload
Open Files
OpenVideo
Exit

**Define Target**

Noise pre-filter Show 1 Standard

Best for : Deep-Sky and small objects S : Similarity

Increase if  
random trajectory Tracking shift max 50 pix

or variable transparency

Default 15 Disk detect ADU 15

**1** Disk / Planet ☒ Detect

Surface / Roi ☐ Select

**Stacking mode**

**4** ☐ Global ☒ Multi-Points

Not for Deep-Sky  
or small objects  
or very bad quality images !

----- Multi-Points only -----

Default 0 Tiles coverage +/- 0

Default 48 Tile Size 48 pix

for multi-points only !

**4a** Set

**Analyze and select best images**

☐ REFERENCE inspection ☐ Auto open Limit images

50 Swap Graph S 192

Images for: ? Algorithm Best images

? S or C **2** Analyze

☐ 50% of Stack Stack

IMAGES TO STACK % 25.0 50.0

# 48 **3** 96

Use Graph or enter value

**Stacking**

Output image size Your text on filenames ?

☒ As Video ?

☐ Crop ! ?

☐ Expand Output format png

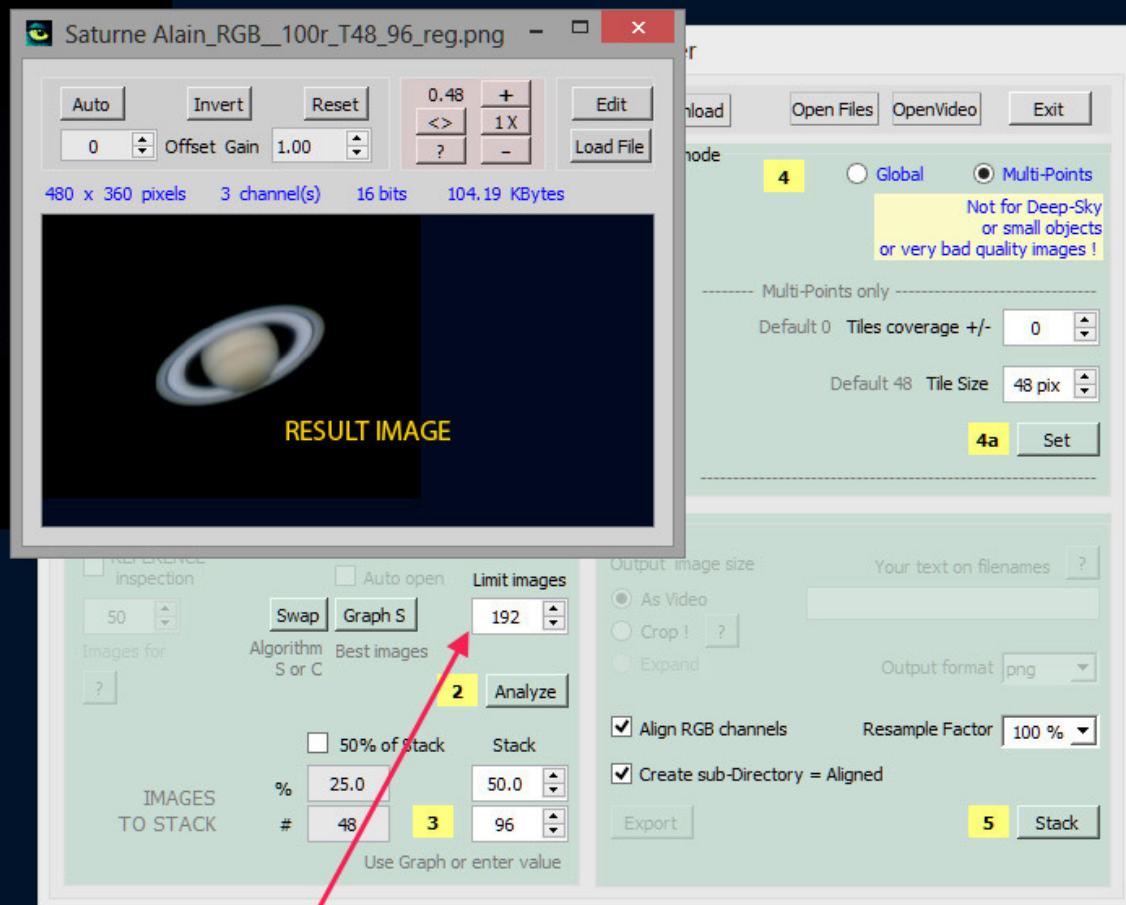
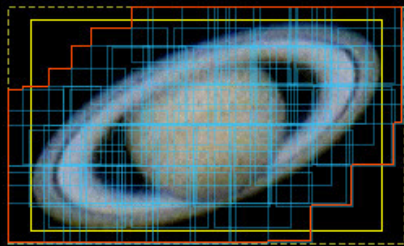
☒ Align RGB channels Resample Factor 100 %

☒ Create sub-Directory = Aligned

Export 5 Stack

END

NB : to get more options, click Advanced Mode  
( top left )



When finished  
a window shows the result.  
You can close it  
or  
Edit image : click on Edit.

Warning : if you do Edit,  
you close Analyze-Register !

Some tips :  
For quick tests you can limit the number of images to process.

You can redo all the process or part of it, without reloading files.  
---> use buttons 'Reset' and 'Reset All' that are for you !

THEN TO IMPROVE PLANETARY IMAGES  
USE WAVELETS METHOD...

## WAVELETS-DECONVOLUTION

To improve stacked images

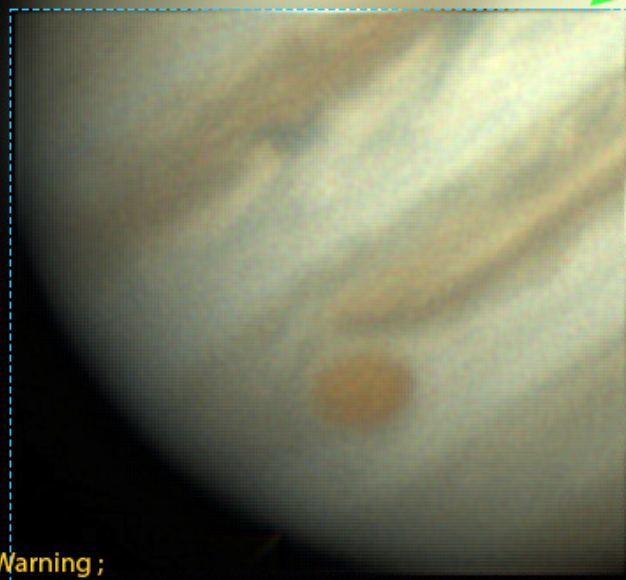
This method is in menu bar Filters  
or directly in the Button Wavelets near the Text Window  
( Not during video mode )

see below :



# WAVELETS-DECONVOLUTION

Last parameters are reloaded !  
Do a Reset if you don't want them !



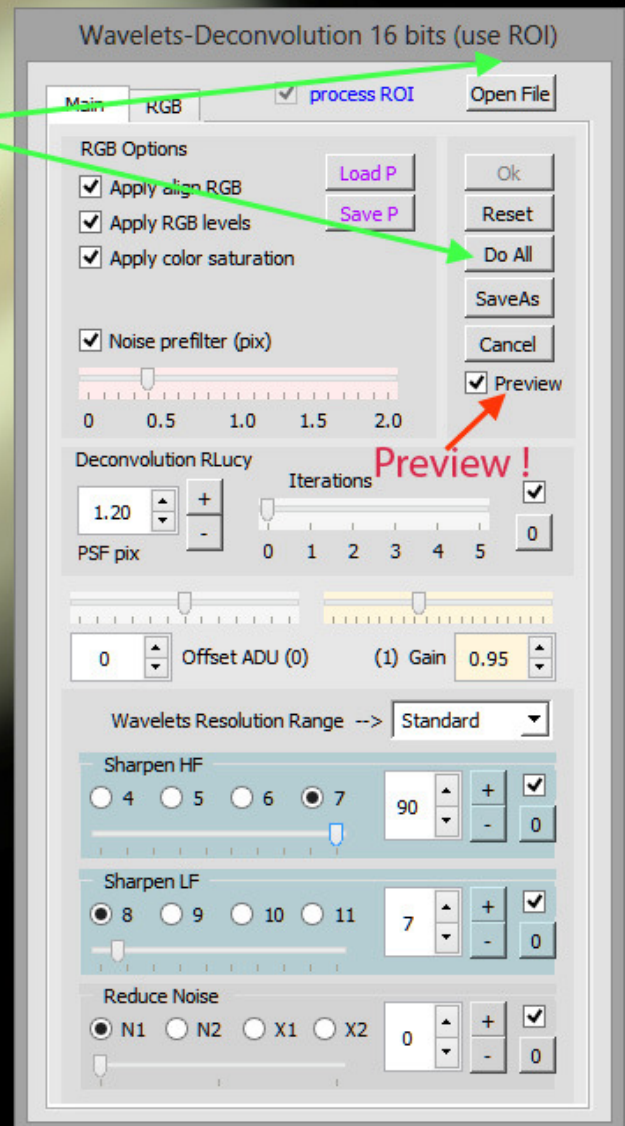
ROI  
required

**Warning ;**  
if **Use ROI** is in the title of dialog, you must draw a ROI  
(Region of Interest ) in the image to make adjustments quickly.  
Then push button **DoAll** to apply to all image.  
This is only for large images.

**TIP :** use **Preview** to view before / after adjustments...

**TIP :** Use Noise-prefilter most of time !

Deconvolution is optional



- 1 Adjust both ; SharpenHF ( find the best strength and range ) AND adjust Noise-Prefilter
- 2 may be add some Deconvolution ?
- 3 add a small amount of Sharpen LF ?
- 4 reduce Noise below ?

You have many other methods :

Align channels,  
Adjust White-Balance  
Contrast  
Rotation  
Crop...  
Conversions...