

# Using Deep Sky Stacker

The screenshot displays the DeepSkyStacker 2.5.4 interface. On the left, there are two main sections: "Registering and Stacking" and "Processing". The "Registering and Stacking" section includes options like "Open picture files...", "Open dark files...", "Open flat files...", "Open offset/bias files...", "Open a File List...", "Save the File List...", "Clear List", "Check all", "Check above a threshold...", "Uncheck all", "Register checked pictures...", "Compute offsets...", and "Stack checked pictures...". The "Processing" section includes "Open picture file...", "Copy current picture to clipboard", and "Save picture to file...". Below these is an "Options" section with "Raw/FITS DDP Settings...", "Show registered stars", and "About DeepSkyStacker...".

The main window shows a list of files being registered. The table below is a representation of the data shown in the interface:

	Path	File	Type	Score	dX	dY	Angle
<input type="checkbox"/>	C:\Documents and Settings\David H...	DSC_6276.NEF	Light	NC	NC	NC	NC 8.
<input checked="" type="checkbox"/>	C:\Documents and Settings\David H...	DSC_6271.NEF	Light	NC	NC	NC	NC 8.
<input checked="" type="checkbox"/>	C:\Documents and Settings\David H...	DSC_6272.NEF	Light	NC	NC	NC	NC 8.
<input checked="" type="checkbox"/>	C:\Documents and Settings\David H...	DSC_6273.NEF	Light	NC	NC	NC	NC 8.
<input checked="" type="checkbox"/>	C:\Documents and Settings\David H...	DSC_6275.NEF	Light	NC	NC	NC	NC 8.

Below the table, there are statistics: "Light Frames:0", "Dark Frames:0", "Flat Frames:0", and "Offset/Bias Frames:0". The main preview window shows a starry field with a central nebula. To the right, there is a histogram and a color calibration panel with "Levels", "Luminance", and "Saturation" sliders. A histogram shows the distribution of pixel values, and a color calibration panel shows the RGB channels.

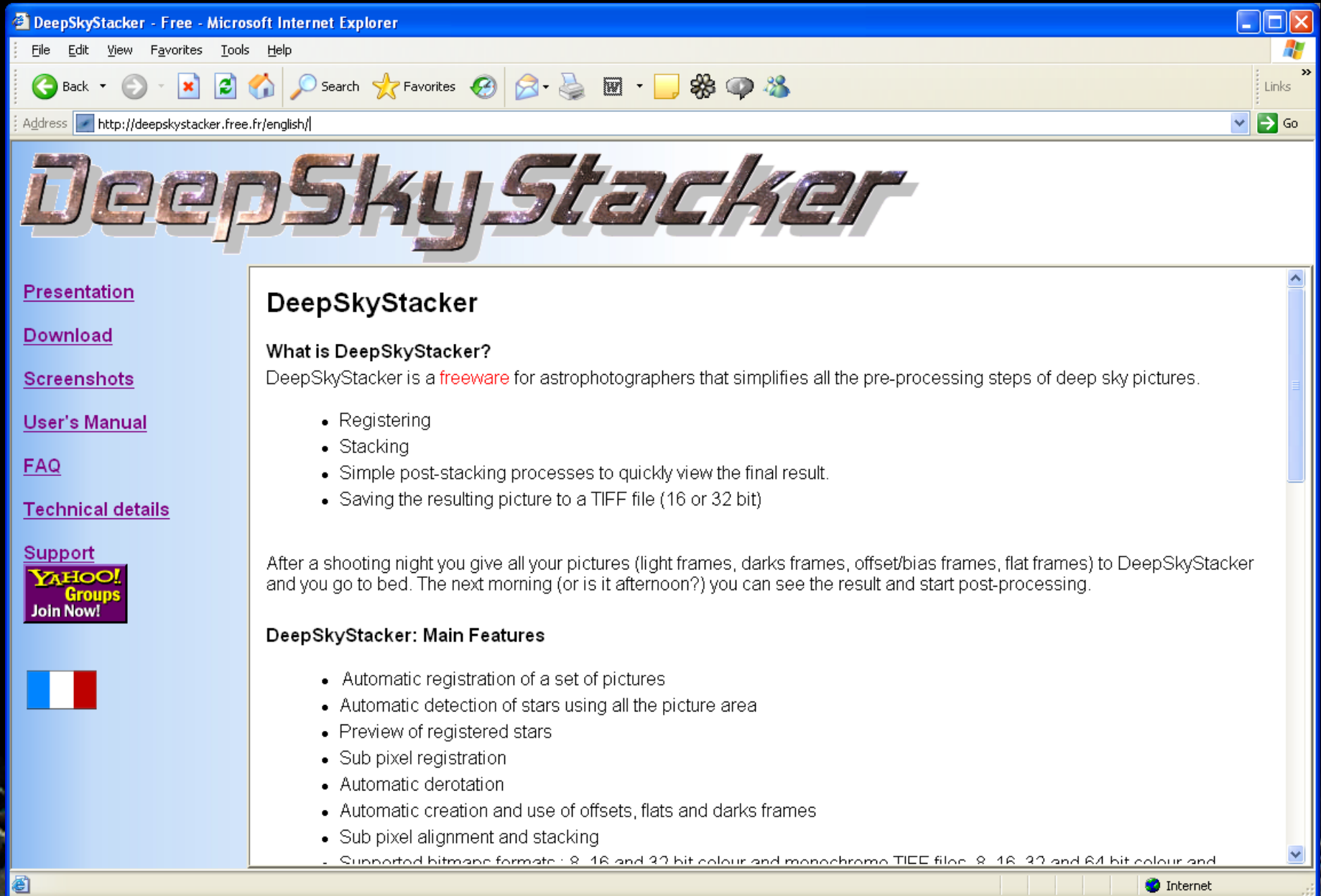
David Haworth

[www.stargazing.net/david](http://www.stargazing.net/david)

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# Deep Sky Stacker by Luc Coiffier

<http://deepskystacker.free.fr/english/>



The screenshot shows a Microsoft Internet Explorer browser window displaying the website for DeepSkyStacker. The browser's address bar shows the URL <http://deepskystacker.free.fr/english/>. The website's main heading is "DeepSkyStacker" in a large, stylized, metallic font. On the left side, there is a navigation menu with links for "Presentation", "Download", "Screenshots", "User's Manual", "FAQ", "Technical details", and "Support". Below the "Support" link is a "YAHOO! Groups Join Now!" button and a small French flag. The main content area features the heading "DeepSkyStacker" followed by the question "What is DeepSkyStacker?". The answer states that DeepSkyStacker is a freeware for astrophotographers that simplifies pre-processing steps. A bulleted list of features includes: Registering, Stacking, Simple post-stacking processes to quickly view the final result, and Saving the resulting picture to a TIFF file (16 or 32 bit). Below this, a paragraph explains the workflow: after shooting, users give all their pictures (light, darks, offset/bias, flat frames) to DeepSkyStacker and go to bed; the next morning, they can see the result and start post-processing. A section titled "DeepSkyStacker: Main Features" lists: Automatic registration of a set of pictures, Automatic detection of stars using all the picture area, Preview of registered stars, Sub pixel registration, Automatic derotation, Automatic creation and use of offsets, flats and darks frames, Sub pixel alignment and stacking, and Supported bitmaps formats: 8, 16 and 32 bit colour and monochrome TIFF files, 8, 16, 32 and 64 bit colour and...

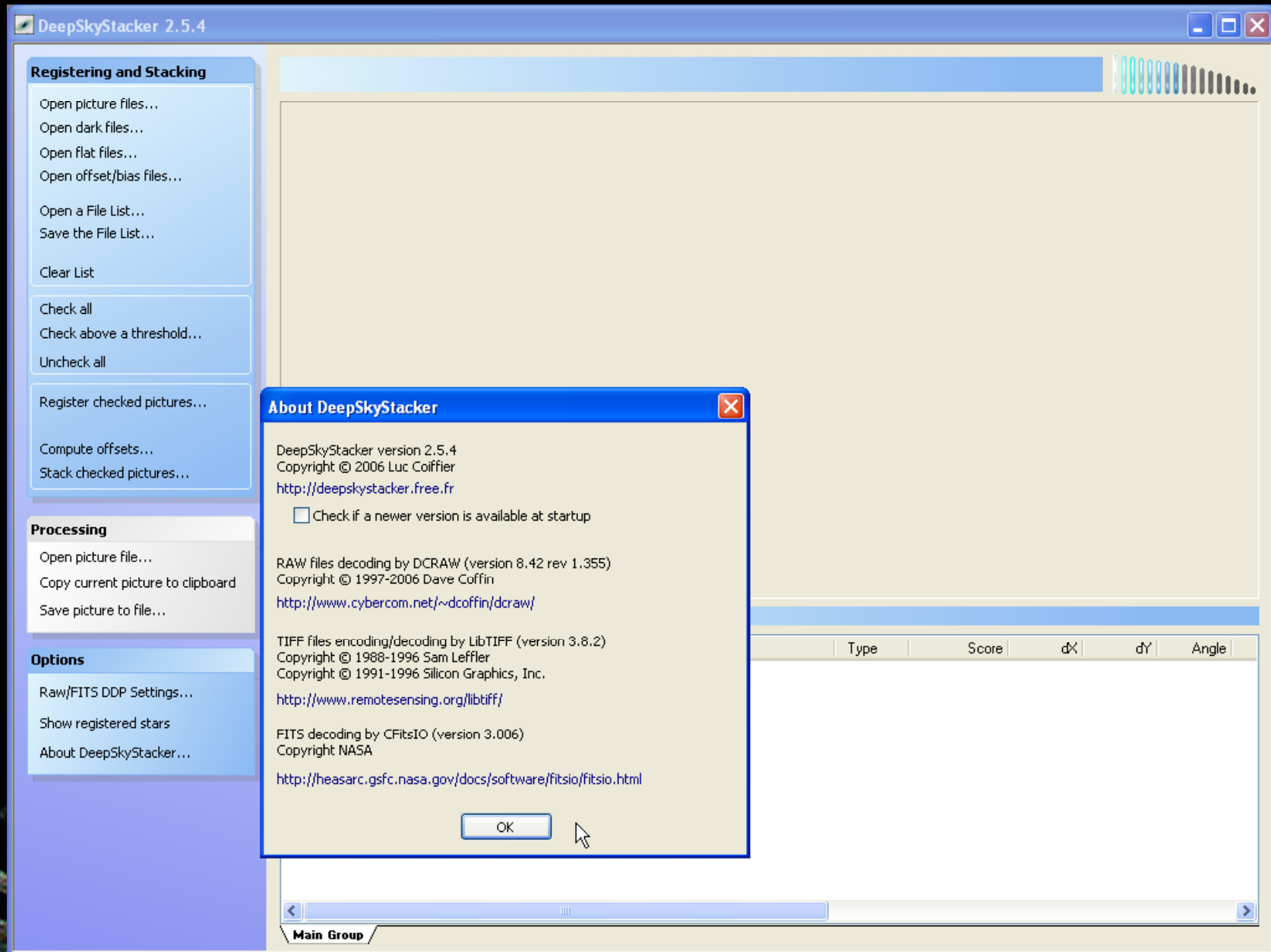
# Simple Stacking Using Nikon RAW

Nikon D70 Digital SLR

- ④ 4 to 5 exposures
- ④ 8 to 4 minute per exposure
- ④ Images taken with noise reduction on
  - ④ No need for darks images
- ④ No darks, flats or bias
  - ④ Need to use Mode 3 for true calibration for Nikon

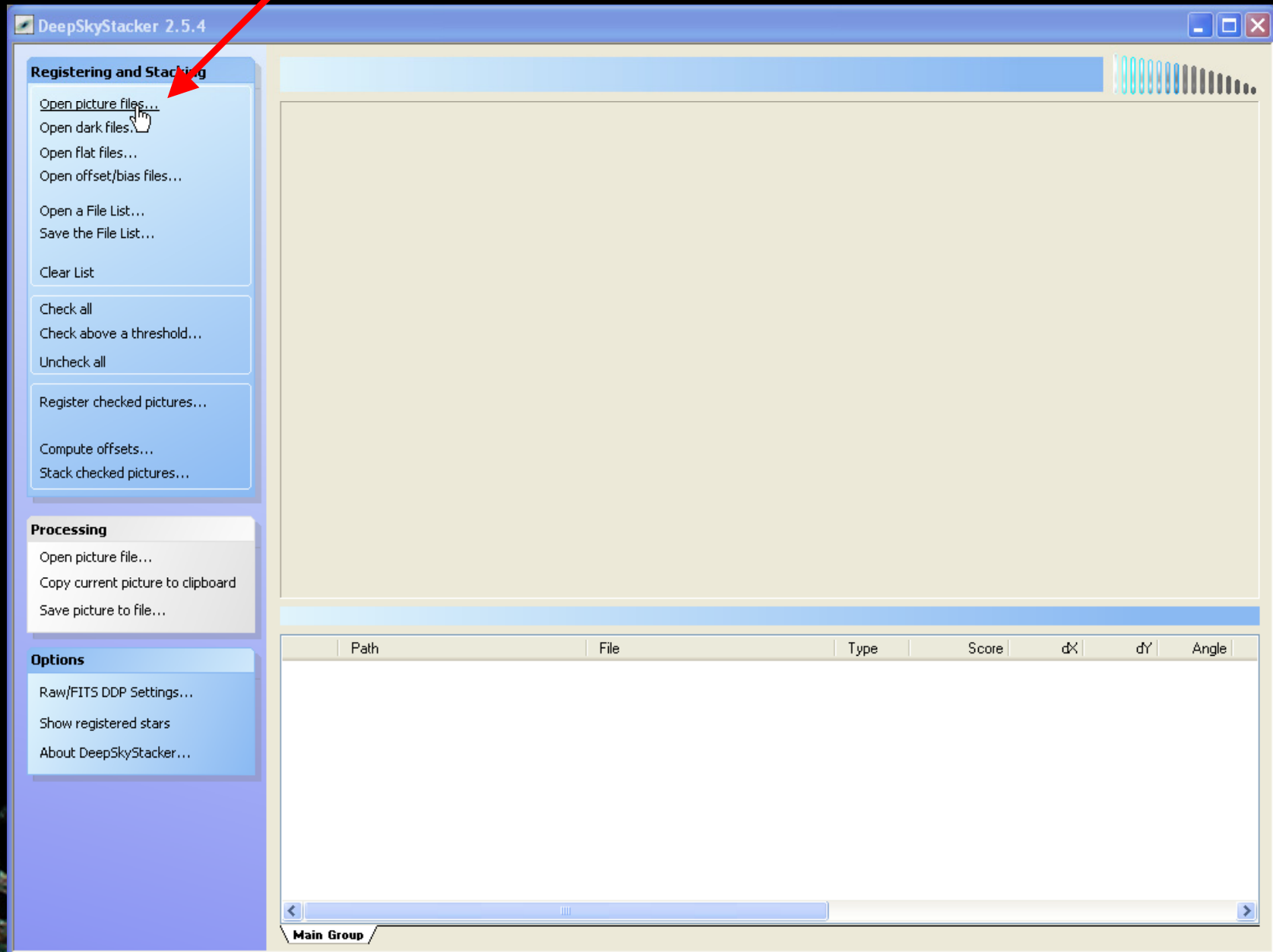
# Deep Sky Stacker

Version 2.5.4



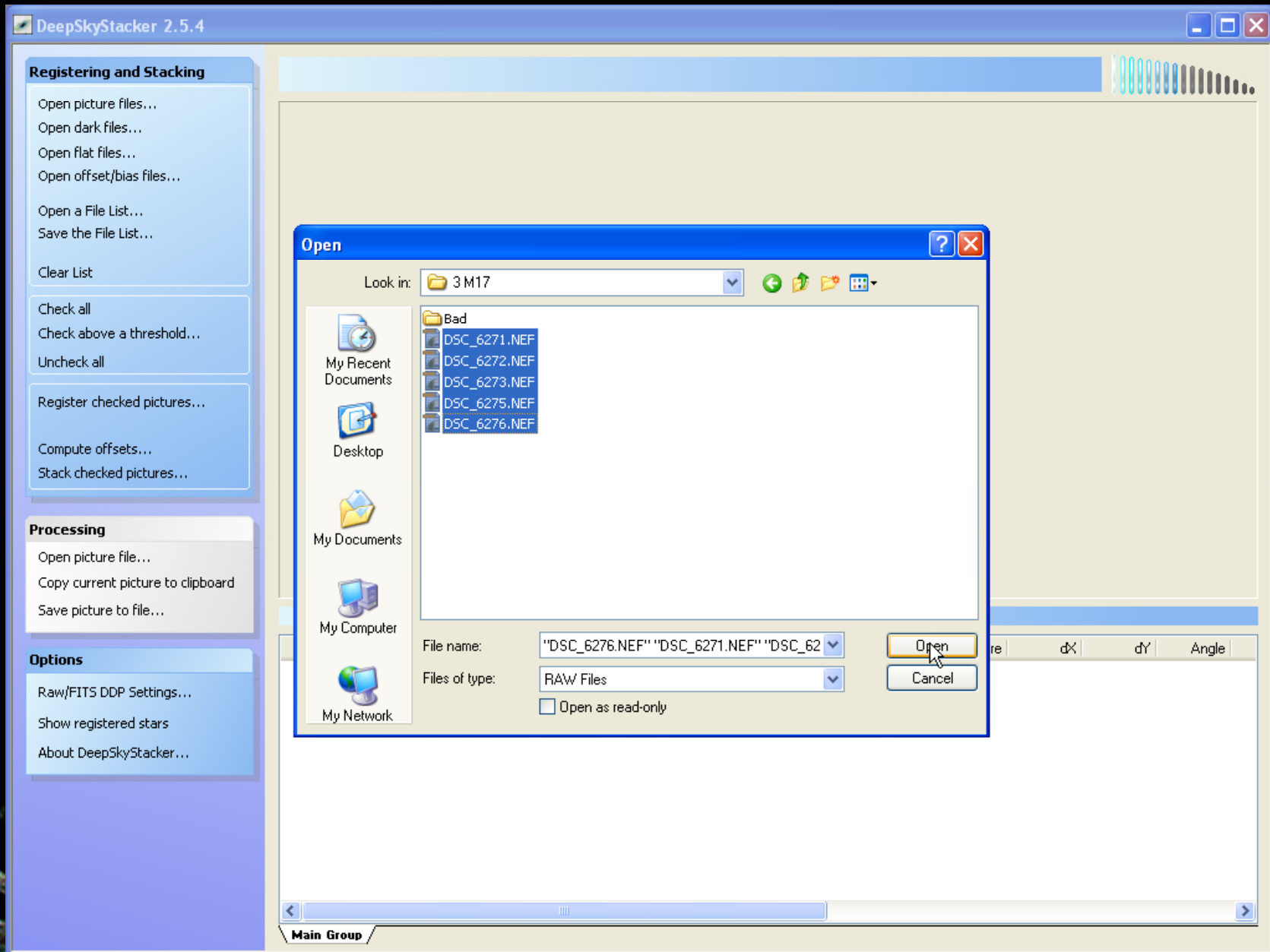
# Open Picture files

## First step



# Open Picture files

## Select 5 Nikon D70 NEF Files



# 5 Image Files in Main Group

Nikon D70 Files: DSC\_6271.NEF etc.

The screenshot shows the DeepSkyStacker 2.5.4 software interface. The window title is "DeepSkyStacker 2.5.4". The interface is divided into several sections:

- Registering and Stacking:** Contains buttons for "Open picture files...", "Open dark files...", "Open flat files...", "Open offset/bias files...", "Open a File List...", "Save the File List...", "Clear List", "Check all", "Check above a threshold...", "Uncheck all", "Register checked pictures...", "Compute offsets...", and "Stack checked pictures..."
- Processing:** Contains buttons for "Open picture file...", "Copy current picture to clipboard", and "Save picture to file..."
- Options:** Contains buttons for "Raw/FITS DDP Settings...", "Show registered stars", and "About DeepSkyStacker..."

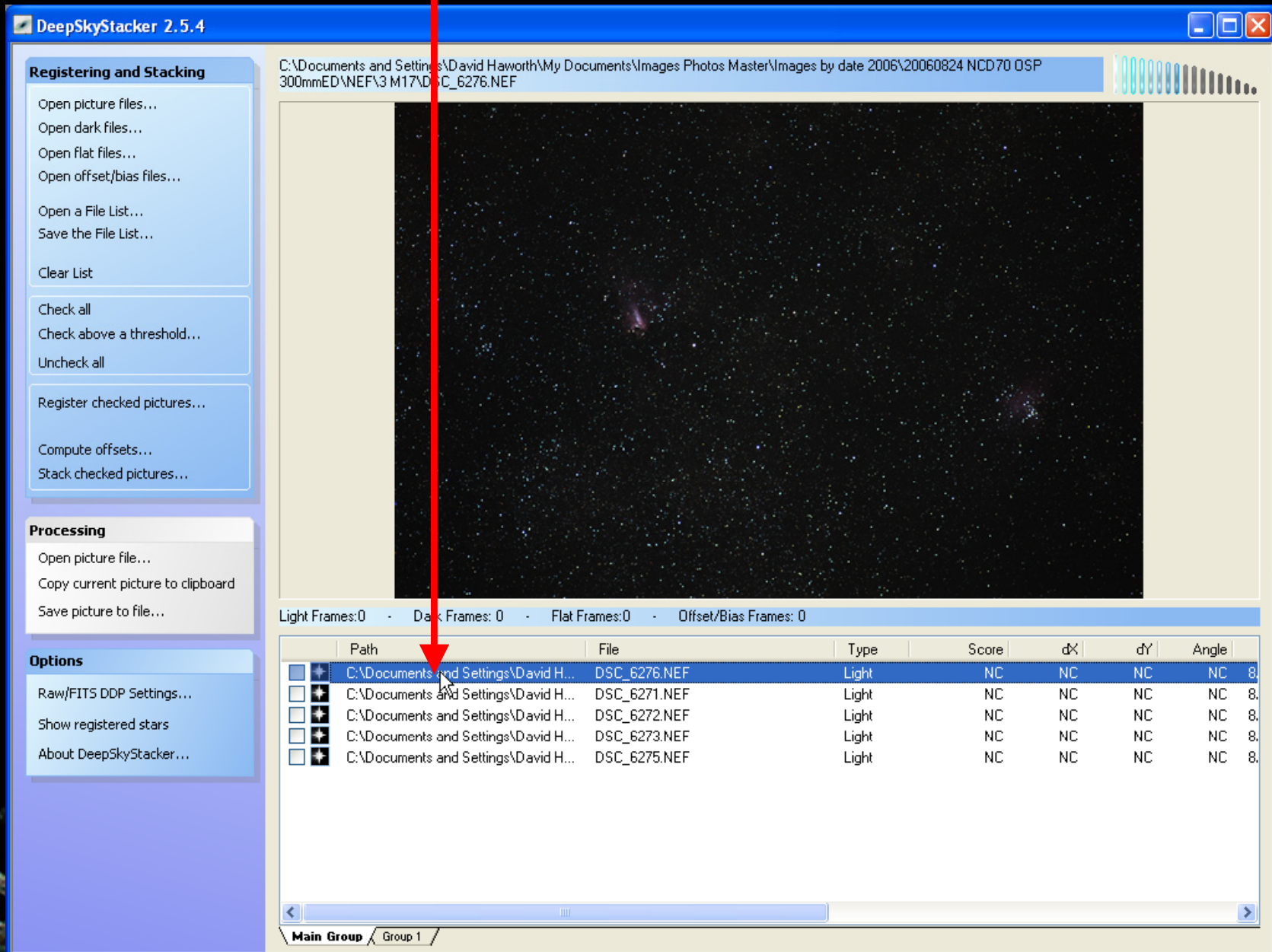
The main area of the software displays a list of image files. At the top of this area, there is a progress bar and a status line showing "Light Frames:0 - Dark Frames: 0 - Flat Frames:0 - Offset/Bias Frames: 0". Below this is a table with the following columns: Path, File, Type, Score, dX, dY, Angle, and a checkbox. The table contains 5 rows of data:

	Path	File	Type	Score	dX	dY	Angle	
<input type="checkbox"/>	C:\Documents and Settings\David H...	DSC_6276.NEF	Light	NC	NC	NC	NC	8.
<input type="checkbox"/>	C:\Documents and Settings\David H...	DSC_6271.NEF	Light	NC	NC	NC	NC	8.
<input type="checkbox"/>	C:\Documents and Settings\David H...	DSC_6272.NEF	Light	NC	NC	NC	NC	8.
<input type="checkbox"/>	C:\Documents and Settings\David H...	DSC_6273.NEF	Light	NC	NC	NC	NC	8.
<input type="checkbox"/>	C:\Documents and Settings\David H...	DSC_6275.NEF	Light	NC	NC	NC	NC	8.

At the bottom of the window, there is a status bar showing "Main Group" and "Group 1".

# To Display Image

## Click on image file line



DeepSkyStacker 2.5.4

C:\Documents and Settings\David Haworth\My Documents\Images Photos Master\Images by date 2006\20060824 NCD70 DSP 300mmED\NEF\3 M17\DSC\_6276.NEF

**Registering and Stacking**

- Open picture files...
- Open dark files...
- Open flat files...
- Open offset/bias files...
- Open a File List...
- Save the File List...
- Clear List
- Check all
- Check above a threshold...
- Uncheck all
- Register checked pictures...
- Compute offsets...
- Stack checked pictures...

**Processing**

- Open picture file...
- Copy current picture to clipboard
- Save picture to file...

**Options**

- Raw/FITS DDP Settings...
- Show registered stars
- About DeepSkyStacker...

Light Frames:0 - Dark Frames:0 - Flat Frames:0 - Offset/Bias Frames:0

	Path	File	Type	Score	dX	dY	Angle
<input checked="" type="checkbox"/>	C:\Documents and Settings\David H...	DSC_6276.NEF	Light	NC	NC	NC	NC 8,
<input type="checkbox"/>	C:\Documents and Settings\David H...	DSC_6271.NEF	Light	NC	NC	NC	NC 8,
<input type="checkbox"/>	C:\Documents and Settings\David H...	DSC_6272.NEF	Light	NC	NC	NC	NC 8,
<input type="checkbox"/>	C:\Documents and Settings\David H...	DSC_6273.NEF	Light	NC	NC	NC	NC 8,
<input checked="" type="checkbox"/>	C:\Documents and Settings\David H...	DSC_6275.NEF	Light	NC	NC	NC	NC 8,

Main Group / Group 1



# To Change Image Display

Click on vertical lines in upper right corner

DeepSkyStacker 2.5.4

C:\Documents and Settings\David Haworth\My Documents\Images Photos Master\Images by date 2006\20060824 NCD70 DSP 300mmED\NEF\3 M17\DSC\_6276.NEF

**Registering and Stacking**

- Open picture files...
- Open dark files...
- Open flat files...
- Open offset/bias files...
- Open a File List...
- Save the File List...
- Clear List
- Check all
- Check above a threshold...
- Uncheck all
- Register checked pictures...
- Compute offsets...
- Stack checked pictures...

**Processing**

- Open picture file...
- Copy current picture to clipboard
- Save picture to file...

**Options**

- Raw/FITS DDP Settings...
- Show registered stars
- About DeepSkyStacker...

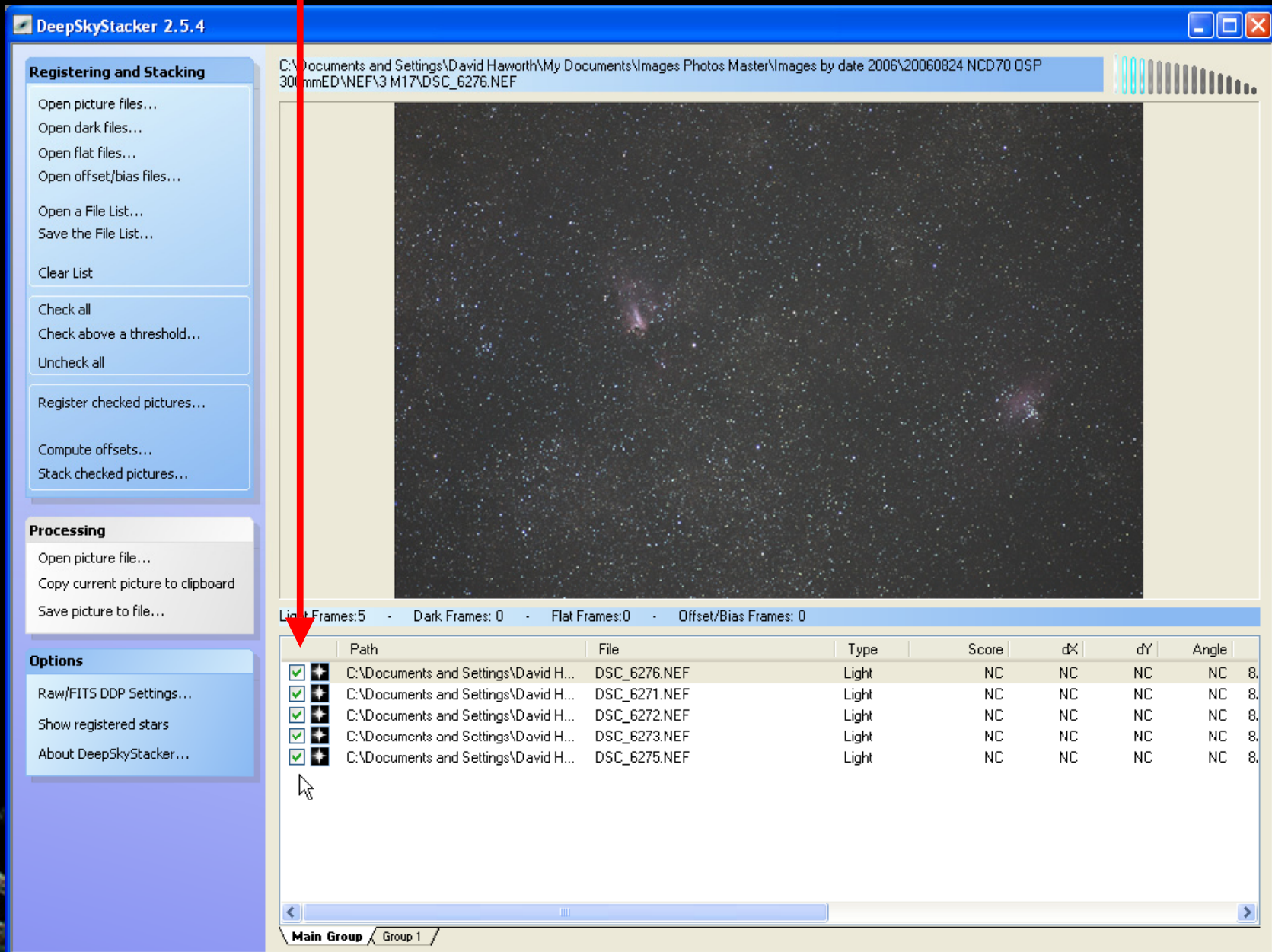
Light Frames:0 - Dark Frames: 0 - Flat Frames:0 - Offset/Bias Frames: 0

	Path	File	Type	Score	dX	dY	Angle
<input type="checkbox"/>	C:\Documents and Settings\David H...	DSC_6276.NEF	Light	NC	NC	NC	NC 8.
<input type="checkbox"/>	C:\Documents and Settings\David H...	DSC_6271.NEF	Light	NC	NC	NC	NC 8.
<input type="checkbox"/>	C:\Documents and Settings\David H...	DSC_6272.NEF	Light	NC	NC	NC	NC 8.
<input type="checkbox"/>	C:\Documents and Settings\David H...	DSC_6273.NEF	Light	NC	NC	NC	NC 8.
<input type="checkbox"/>	C:\Documents and Settings\David H...	DSC_6275.NEF	Light	NC	NC	NC	NC 8.

Main Group / Group 1

# Select Light Frames to be Stacked

Click on boxes at beginning of line



The screenshot shows the DeepSkyStacker 2.5.4 interface. The main window displays a starry night sky image. On the left, there are three panels: 'Registering and Stacking', 'Processing', and 'Options'. The 'Registering and Stacking' panel contains options like 'Open picture files...', 'Check all', and 'Register checked pictures...'. The 'Processing' panel has 'Open picture file...', 'Copy current picture to clipboard', and 'Save picture to file...'. The 'Options' panel includes 'Raw/FITS DDP Settings...', 'Show registered stars', and 'About DeepSkyStacker...'. The main area shows a file list with columns: Path, File, Type, Score, dX, dY, Angle. A red arrow points to the first column of the file list, where five rows are checked. The status bar at the bottom indicates 'Light Frames: 5 - Dark Frames: 0 - Flat Frames: 0 - Offset/Bias Frames: 0'.

	Path	File	Type	Score	dX	dY	Angle
<input checked="" type="checkbox"/>	C:\Documents and Settings\David H...	DSC_6276.NEF	Light	NC	NC	NC	NC 8.
<input checked="" type="checkbox"/>	C:\Documents and Settings\David H...	DSC_6271.NEF	Light	NC	NC	NC	NC 8.
<input checked="" type="checkbox"/>	C:\Documents and Settings\David H...	DSC_6272.NEF	Light	NC	NC	NC	NC 8.
<input checked="" type="checkbox"/>	C:\Documents and Settings\David H...	DSC_6273.NEF	Light	NC	NC	NC	NC 8.
<input checked="" type="checkbox"/>	C:\Documents and Settings\David H...	DSC_6275.NEF	Light	NC	NC	NC	NC 8.

# Register Checked Pictures

No boxes check in Register Settings: Actions

DeepSkyStacker 2.5.4

C:\Documents and Settings\David Haworth\My Documents\Images Photos Master\Images by date 2006\20060824 NCD70 DSP  
300mmED\NEF\3 M17\DSC\_6276.NEF

**Registering and Stacking**

- Open picture files...
- Open dark files...
- Open flat files...
- Open offset/bias files...
- Open a File List...
- Save the File List...
- Clear List
- Check all
- Check above a threshold...
- Uncheck all
- Register checked pictures...
- Compute offsets...
- Stack checked pictures...

**Processing**

- Open picture file...
- Copy current picture to clipboard
- Save picture to file...

**Options**

- Raw/FITS DDP Settings...
- Show registered stars
- About DeepSkyStacker...

**Register Settings**

Actions Advanced

- Register already registered pictures
- Automatic detection of hot pixels
- Stack after registering

Select the best  % pictures and stack them.

Don't forget to add and check dark, flat and offset frames before stacking.

Raw DDP Settings... OK Cancel

Light Frames: 5

	Path	Type	Score	dX	dY	Angle
<input checked="" type="checkbox"/>	C:\Documents and Settings\David H... DSC_6276.NEF	Light	NC	NC	NC	NC 8.
<input checked="" type="checkbox"/>	C:\Documents and Settings\David H... DSC_6271.NEF	Light	NC	NC	NC	NC 8.
<input checked="" type="checkbox"/>	C:\Documents and Settings\David H... DSC_6272.NEF	Light	NC	NC	NC	NC 8.
<input checked="" type="checkbox"/>	C:\Documents and Settings\David H... DSC_6273.NEF	Light	NC	NC	NC	NC 8.
<input checked="" type="checkbox"/>	C:\Documents and Settings\David H... DSC_6275.NEF	Light	NC	NC	NC	NC 8.

Main Group / Group 1

# Register Settings: Advanced

## Adjust Star detection threshold and compute

The screenshot displays the DeepSkyStacker 2.5.4 interface. The main window shows a starry sky image. A 'Register Settings' dialog box is open, showing the 'Advanced' tab. The 'Star detection threshold' is set to 40%. A button labeled 'Compute the number of detected stars' is highlighted. Red arrows point from the title text to the slider and the button. The background shows a starry sky image.

**Registering and Stacking**

- Open picture files...
- Open dark files...
- Open flat files...
- Open offset/bias files...
- Open a File List...
- Save the File List...
- Clear List
- Check all
- Check above a threshold...
- Uncheck all
- Register checked pictures...
- Compute offsets...
- Stack checked pictures...

**Processing**

- Open picture file...
- Copy current picture to clipboard
- Save picture to file...

**Options**

- Raw/FITS DDP Settings...
- Show registered stars
- About DeepSkyStacker...

**Register Settings**

Actions | **Advanced**

Star detection threshold

40 %

Compute the number of detected stars

Raw DDP Settings... OK Cancel

	Path		Type	Score	dX	dY	Angle
<input checked="" type="checkbox"/>	C:\Documents and Settings\David H...	DSC_6276.NEF	Light	NC	NC	NC	NC 8.
<input checked="" type="checkbox"/>	C:\Documents and Settings\David H...	DSC_6271.NEF	Light	NC	NC	NC	NC 8.
<input checked="" type="checkbox"/>	C:\Documents and Settings\David H...	DSC_6272.NEF	Light	NC	NC	NC	NC 8.
<input checked="" type="checkbox"/>	C:\Documents and Settings\David H...	DSC_6273.NEF	Light	NC	NC	NC	NC 8.
<input checked="" type="checkbox"/>	C:\Documents and Settings\David H...	DSC_6275.NEF	Light	NC	NC	NC	NC 8.

Light Frames: 5

Main Group / Group 1

# Register Settings: Advanced

1881 stars found, only 100 will be used for registration

DeepSkyStacker 2.5.4

C:\Documents and Settings\David Haworth\My Documents\Images Photos Master\Images by date 2006\20060824 NCD70 DDP 300mmED\NEF\3 M17\DSC\_6276.NEF

**Registering and Stacking**

- Open picture files...
- Open dark files...
- Open flat files...
- Open offset/bias files...
- Open a File List...
- Save the File List...
- Clear List
- Check all
- Check above a threshold...
- Uncheck all
- Register checked pictures...
- Compute offsets...
- Stack checked pictures...

**Processing**

- Open picture file...
- Copy current picture to clipboard
- Save picture to file...

**Options**

- Raw/FITS DDP Settings...
- Show registered stars
- About DeepSkyStacker...

**Register Settings**

Actions Advanced

Star detection threshold

40 %

Compute the number of detected stars

1881 star(s)

Raw DDP Settings... OK Cancel

	Path	Type	Score	dX	dY	Angle	
<input checked="" type="checkbox"/>	C:\Documents and Settings\David H...	DSC_6276.NEF	Light	NC	NC	NC	8.
<input checked="" type="checkbox"/>	C:\Documents and Settings\David H...	DSC_6271.NEF	Light	NC	NC	NC	8.
<input checked="" type="checkbox"/>	C:\Documents and Settings\David H...	DSC_6272.NEF	Light	NC	NC	NC	8.
<input checked="" type="checkbox"/>	C:\Documents and Settings\David H...	DSC_6273.NEF	Light	NC	NC	NC	8.
<input checked="" type="checkbox"/>	C:\Documents and Settings\David H...	DSC_6275.NEF	Light	NC	NC	NC	8.

Light Frames:5

Main Group / Group 1

# Configure RAW and FIT Settings

## Click on Raw DDP Settings

The screenshot shows the DeepSkyStacker 2.5.4 interface. The main window displays a starry sky image. A dialog box titled "Register Settings" is open, showing the "Advanced" tab. The "Star detection threshold" is set to 40%. A button labeled "Compute the number of detected stars" is highlighted, and a red arrow points to the "Raw DDP Settings..." button at the bottom of the dialog. The background image shows a starry sky with a red arrow pointing to the "Raw DDP Settings..." button.

Light Frames: 5

	Path	Type	Score	dX	dY	Angle
<input checked="" type="checkbox"/>	C:\Documents and Settings\David H... DSC_6276.NEF	Light	NC	NC	NC	NC 8.
<input checked="" type="checkbox"/>	C:\Documents and Settings\David H... DSC_6271.NEF	Light	NC	NC	NC	NC 8.
<input checked="" type="checkbox"/>	C:\Documents and Settings\David H... DSC_6272.NEF	Light	NC	NC	NC	NC 8.
<input checked="" type="checkbox"/>	C:\Documents and Settings\David H... DSC_6273.NEF	Light	NC	NC	NC	NC 8.
<input checked="" type="checkbox"/>	C:\Documents and Settings\David H... DSC_6275.NEF	Light	NC	NC	NC	NC 8.

# RAW Settings

## Use Auto White Balance and Bilinear

DeepSkyStacker 2.5.4

C:\Documents and Settings\David Haworth\My Documents\Images Photos Master\Images by date 2006\20060824 NCD70 DSP 300mmED\NEF\3 M17\DSC\_6276.NEF

### RAW/FITS Digital Development Process Settings

RAW Files | FITS Files

**Colors Adjustment**

Brightness: 1.0  
Red scale: 1.0  
Blue scale: 1.0

**White Balance**

Use Auto White Balance  
 Use Camera White Balance

Create super-pixels from the raw Bayer matrix (no interpolation)  
This option uses the Bayer matrix to create one super-pixel from each group of 4 pixels (RGBG). The size of the resulting picture is thus reduced by two.

Use Bayer Drizzle algorithm (no interpolation, no debayerization)  
This option uses the Bayer matrix as is. No interpolation is done and each pixel is given only primary components from the matrix.  
This option is the best if you have a lot of frames to stack.

**Interpolation**

Bilinear (very fast, low quality).  
 Variable Number of Gradients (VNG)  
 Adaptive Homogeneity-Directed (AHD)  
 Interpolate RGB as four colors.  
Use this if the output shows false 2x2 meshes with VNG or mazes with AHD

OK Cancel Apply

Score	dX	dY	Angle	
NC	NC	NC	NC	8.
NC	NC	NC	NC	8.
NC	NC	NC	NC	8.
NC	NC	NC	NC	8.
NC	NC	NC	NC	8.

# FITS Settings

## Nikon D70 and Bilinear

DeepSkyStacker 2.5.4

C:\Documents and Settings\David Haworth\My Documents\Images Photos Master\Images by date 2006\20060824 NCD70 DSP 300mmED\NEF\3 M17\DSC\_6276.NEF

**Registering and Stacking**

- Open picture files...
- Open dark files...
- Open flat files...
- Open offset/bias files...
- Open a File List...
- Save the File List...
- Clear List
- Check all
- Check above a threshold...
- Uncheck all
- Register checked pictures...
- Compute offsets...
- Stack checked pictures...

**Processing**

- Open picture file...
- Copy current picture to clipboard
- Save picture to file...

**Options**

- Raw/FITS DDP Settings...
- Show registered stars
- About DeepSkyStacker...

**RAW/FITS Digital Development Process Settings**

RAW Files | **FITS Files**

Monochrome 16 bit FITS Files are RAW files created by a DSLR

DSLR Used: NIKON D70

**Colors Adjustment**

Brightness: 1.0  
Red scale: 1.0  
Blue scale: 1.0

**Bayer Pattern Filter used**

Create super-pixels from the raw Bayer matrix (no interpolation)  
This option uses the Bayer matrix to create one super-pixel from each group of 4 pixels (RGBG). The size of the resulting picture is thus reduced by two.

Use Bayer Drizzle algorithm (no interpolation, no debayerization)  
This option uses the Bayer matrix as is. No interpolation is done and each pixel is given only primary components from the matrix.  
This option is the best if you have a lot of frames to stack.

**Bilinear Interpolation**

OK Cancel Apply

Light Frames: 5

Pa	Score	dX	dY	Angle
✓ +	NC	NC	NC	NC 8.
✓ +	NC	NC	NC	NC 8.
✓ +	NC	NC	NC	NC 8.
✓ +	NC	NC	NC	NC 8.
✓ +	NC	NC	NC	NC 8.

Main Group / Group 1



# Register Checked Pictures

Click OK to start

The screenshot shows the DeepSkyStacker 2.5.4 interface. The main window displays a star field image. A 'Register Settings' dialog box is open, showing the 'Advanced' tab with a 'Star detection threshold' slider set to 40%. Below the slider is a button labeled 'Compute the number of detected stars' which displays '1881 star(s)'. A red arrow points from the text 'Click OK to start' to the 'OK' button in the dialog box. The background image shows a star field with a prominent nebula.

**Registering and Stacking**

- Open picture files...
- Open dark files...
- Open flat files...
- Open offset/bias files...
- Open a File List...
- Save the File List...
- Clear List
- Check all
- Check above a threshold...
- Uncheck all
- Register checked pictures...
- Compute offsets...
- Stack checked pictures...

**Processing**

- Open picture file...
- Copy current picture to clipboard
- Save picture to file...

**Options**

- Raw/FITS DDP Settings...
- Show registered stars
- About DeepSkyStacker...

C:\Documents and Settings\David Haworth\My Documents\Images Photos Master\Images by date 2006\20060824 NCD70 DSP  
300mmED\NEF\3 M17\DSC\_6276.NEF

Light Frames: 5

	Path	Type	Score	dX	dY	Angle	
<input checked="" type="checkbox"/>	C:\Documents and Settings\David H...	DSC_6276.NEF	Light	NC	NC	NC	8.
<input checked="" type="checkbox"/>	C:\Documents and Settings\David H...	DSC_6271.NEF	Light	NC	NC	NC	8.
<input checked="" type="checkbox"/>	C:\Documents and Settings\David H...	DSC_6272.NEF	Light	NC	NC	NC	8.
<input checked="" type="checkbox"/>	C:\Documents and Settings\David H...	DSC_6273.NEF	Light	NC	NC	NC	8.
<input checked="" type="checkbox"/>	C:\Documents and Settings\David H...	DSC_6275.NEF	Light	NC	NC	NC	8.

Main Group / Group 1

# After Register Checked Pictures

Highest score is automatically used for reference image

The screenshot shows the DeepSkyStacker 2.5.4 interface. The main window displays a list of registered images with columns for Path, File, Type, Score, dX, dY, and Angle. A red arrow points from the title bar area to the 'Score' column of the table, highlighting the highest score of 14095.98 for the file DSC\_6272.NEF.

**Registering and Stacking**

- Open picture files...
- Open dark files...
- Open flat files...
- Open offset/bias files...
- Open a File List...
- Save the File List...
- Clear List
- Check all
- Check above a threshold...
- Uncheck all
- Register checked pictures...
- Compute offsets...
- Stack checked pictures...

**Processing**

- Open picture file...
- Copy current picture to clipboard
- Save picture to file...

**Options**

- Raw/FITS DDP Settings...
- Show registered stars
- About DeepSkyStacker...

C:\Documents and Settings\David Haworth\My Documents\Images Photos Master\Images by date 2006\20060824 NCD70 DSP  
300mmED\NEF\3 M17\DSC\_6276.NEF

Light Frames:5 - Dark Frames: 0 - Flat Frames:0 - Offset/Bias Frames: 0

	Path	File	Type	Score	dX	dY	Angle
<input checked="" type="checkbox"/>	C:\Documents and Settings\David H...	DSC_6271.NEF	Light	14122.91	NC	NC	NC 8.
<input checked="" type="checkbox"/>	C:\Documents and Settings\David H...	DSC_6275.NEF	Light	13537.77	NC	NC	NC 8.
<input checked="" type="checkbox"/>	C:\Documents and Settings\David H...	DSC_6273.NEF	Light	13692.65	NC	NC	NC 8.
<input checked="" type="checkbox"/>	C:\Documents and Settings\David H...	DSC_6276.NEF	Light	12765.97	NC	NC	NC 8.
<input checked="" type="checkbox"/>	C:\Documents and Settings\David H...	DSC_6272.NEF	Light	14095.98	NC	NC	NC 8.

Main Group / Group 1

# Compute Offsets

NC means Not Computed

DeepSkyStacker 2.5.4

C:\Documents and Settings\David Haworth\My Documents\Images Photos Master\Images by date 2006\20060824 NCD70 DSP  
300mmED\NEF\3 M17\DSC\_6276.NEF

**Registering and Stacking**

- Open picture files...
- Open dark files...
- Open flat files...
- Open offset/bias files...
- Open a File List...
- Save the File List...
- Clear List
- Check all
- Check above a threshold...
- Uncheck all
- Register checked pictures...
- Compute offsets...
- Stack checked pictures...

**Processing**

- Open picture file...
- Copy current picture to clipboard
- Save picture to file...

**Options**

- Raw/FITS DDP Settings...
- Show registered stars
- About DeepSkyStacker...

Light Frames:5 - Dark Frames: 0 - Flat Frames:0 - Offset/Bias Frames: 0

	Path	File	Type	Score	dX	dY	Angle
<input checked="" type="checkbox"/>	C:\Documents and Settings\David H...	DSC_6271.NEF	Light	14122.91	NC	NC	NC 8.
<input checked="" type="checkbox"/>	C:\Documents and Settings\David H...	DSC_6275.NEF	Light	13537.77	NC	NC	NC 8.
<input checked="" type="checkbox"/>	C:\Documents and Settings\David H...	DSC_6273.NEF	Light	13692.65	NC	NC	NC 8.
<input checked="" type="checkbox"/>	C:\Documents and Settings\David H...	DSC_6276.NEF	Light	12765.97	NC	NC	NC 8.
<input checked="" type="checkbox"/>	C:\Documents and Settings\David H...	DSC_6272.NEF	Light	14095.98	NC	NC	NC 8.

Main Group / Group 1

# After Compute Offsets

dx, dy and Angle values replace NC (Not Computed)

The screenshot shows the DeepSkyStacker 2.5.4 interface. The main window displays a star field with a red arrow pointing to the 'dx' column in the table below. The table lists five light frames with their respective paths, file names, types, scores, and computed offset values (dx, dy) and angles.

Light Frames: 5 - Dark Frames: 0 - Flat Frames: 0 - Offset/Bias Frames: 0

	Path	File	Type	Score	dx	dy	Angle
<input checked="" type="checkbox"/>	C:\Documents and Settings\David H...	DSC_6271.NEF	Light	14122.91	0.00	0.00	0.00 ° 8.
<input checked="" type="checkbox"/>	C:\Documents and Settings\David H...	DSC_6275.NEF	Light	13537.77	0.31	2.31	-0.00 ° 8.
<input checked="" type="checkbox"/>	C:\Documents and Settings\David H...	DSC_6273.NEF	Light	13692.65	-0.37	1.22	-0.00 ° 8.
<input checked="" type="checkbox"/>	C:\Documents and Settings\David H...	DSC_6276.NEF	Light	12765.97	0.33	1.51	-0.00 ° 8.
<input checked="" type="checkbox"/>	C:\Documents and Settings\David H...	DSC_6272.NEF	Light	14095.98	-0.04	0.38	-0.00 ° 8.

# After Compute Offsets

Use scroll bar to see other data

The screenshot shows the DeepSkyStacker 2.5.4 interface. The main window displays a star field image. Below the image, a status bar shows: Light Frames: 5 - Dark Frames: 0 - Flat Frames: 0 - Offset/Bias Frames: 0. Below the status bar is a table with the following data:

dX	dY	Angle	Date/Time	Size	CFA	Depth	Infos	ISO	Exposure	F.
0.00	0.00	0.00 °	8/24/2006 11:03:00 PM	3039 x 2014	Yes	Gray 16 bit	RAW (NIKON D70)	800	4 mn 5 s	4.01
0.31	2.31	-0.00 °	8/24/2006 11:41:32 PM	3039 x 2014	Yes	Gray 16 bit	RAW (NIKON D70)	800	4 mn 6 s	4.04
-0.37	1.22	-0.00 °	8/24/2006 11:22:50 PM	3039 x 2014	Yes	Gray 16 bit	RAW (NIKON D70)	800	4 mn 7 s	4.04
0.33	1.51	-0.00 °	8/24/2006 11:52:04 PM	3039 x 2014	Yes	Gray 16 bit	RAW (NIKON D70)	800	4 mn 5 s	4.04
-0.04	0.38	-0.00 °	8/24/2006 11:13:20 PM	3039 x 2014	Yes	Gray 16 bit	RAW (NIKON D70)	800	4 mn 7 s	4.06

A red arrow points to the scroll bar at the bottom of the table, indicating that the user should use it to view other data.

# Stack Checked Pictures

All images are used in stacking

DeepSkyStacker 2.5.4

C:\Documents and Settings\David Harborth\My Documents\Images Photos Master\Images by date 2006\20060824 NCD70 DSP 300mmED\NEF\3 M17\DSC\_6276.NEF

**Registering and Stacking**

- Open picture files...
- Open dark files...
- Open flat files...
- Open offset/bias files...
- Open a File List...
- Save the File List...
- Clear List
- Check all
- Check above a threshold...
- Uncheck all
- Register checked pictures...
- Compute offsets...
- Stack checked pictures...**

**Processing**

- Open picture file...
- Copy current picture to clipboard
- Save picture to file...

**Options**

- Raw/FITS DDP Settings...
- Show registered stars
- About DeepSkyStacker...

Light Frames:5 - Dark Frames: 0 - Flat Frames:0 - Offset/Bias Frames: 0

	Path	File	Type	Score	dX	dY	Angle		
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	C:\Documents and Settings\David H...	DSC_6271.NEF	Light	14122.91	0.00	0.00	0.00 °	8.
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	C:\Documents and Settings\David H...	DSC_6275.NEF	Light	13537.77	0.31	2.31	-0.00 °	8.
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	C:\Documents and Settings\David H...	DSC_6273.NEF	Light	13692.65	-0.37	1.22	-0.00 °	8.
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	C:\Documents and Settings\David H...	DSC_6276.NEF	Light	12765.97	0.33	1.51	-0.00 °	8.
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	C:\Documents and Settings\David H...	DSC_6272.NEF	Light	14095.98	-0.04	0.38	-0.00 °	8.

Main Group / Group 1

# Stack Checked Pictures

All images are used in stacking and click on Stacking Par.

**Stacking steps**

Mosaic mode: [No](#)

**Stacking step 1**  
->5 frames (ISO: 800) - total exposure: 20 mn 30 s  
[RGB Channels Background Calibration: Yes](#)  
Method: [Average](#)  
-> No Offset  
-> No Dark  
-> No Flat

**Estimated Total exposure time: 20 mn 30 s**  
*(the total exposure time is computed considering that all the checked light frames are kept for the stacking process)*

The process will temporarily use 0.1 Gb on the C: drive (24.5 Gb free).

Stacking parameters... OK Cancel

	Score	dX	dY	Angle	
<input checked="" type="checkbox"/>	1122.91	0.00	0.00	0.00 °	8.
<input checked="" type="checkbox"/>	13537.77	0.31	2.31	-0.00 °	8.
<input checked="" type="checkbox"/>	13692.65	-0.37	1.22	-0.00 °	8.
<input checked="" type="checkbox"/>	12765.97	0.33	1.51	-0.00 °	8.
<input checked="" type="checkbox"/>	14095.98	-0.04	0.38	-0.00 °	8.

# Stacking Parameters: Results

Standard mode & create registered file for each light frame

The screenshot shows the DeepSkyStacker 2.5.4 interface. The main window displays a starry image. A 'Stacking Parameters' dialog box is open, showing the following settings:

- Result: Light
- Standard Mode (selected)
- "Mosaic" Mode (unselected)
- Create a registered/calibrated file for each light frame (checked)
- Temporary Files Folder: C:\DOCUME~1\DAVIDH~1\LOCALS~1\Temp\

The 'Light' tab in the dialog shows a preview of the stacked image with a green registration box. Below the dialog, a table lists the frames being processed:

Light Fr	Score	dX	dY	Angle
[checkbox]	1122.91	0.00	0.00	0.00 °
[checkbox]	13537.77	0.31	2.31	-0.00 °
[checkbox]	13692.65	-0.37	1.22	-0.00 °
[checkbox]	12765.97	0.33	1.51	-0.00 °
[checkbox]	14095.98	-0.04	0.38	-0.00 °



# Stacking Parameters: Light

Use Average because only 5 images are being stacked

**Dark, Flat and Bias/Offset are not used**

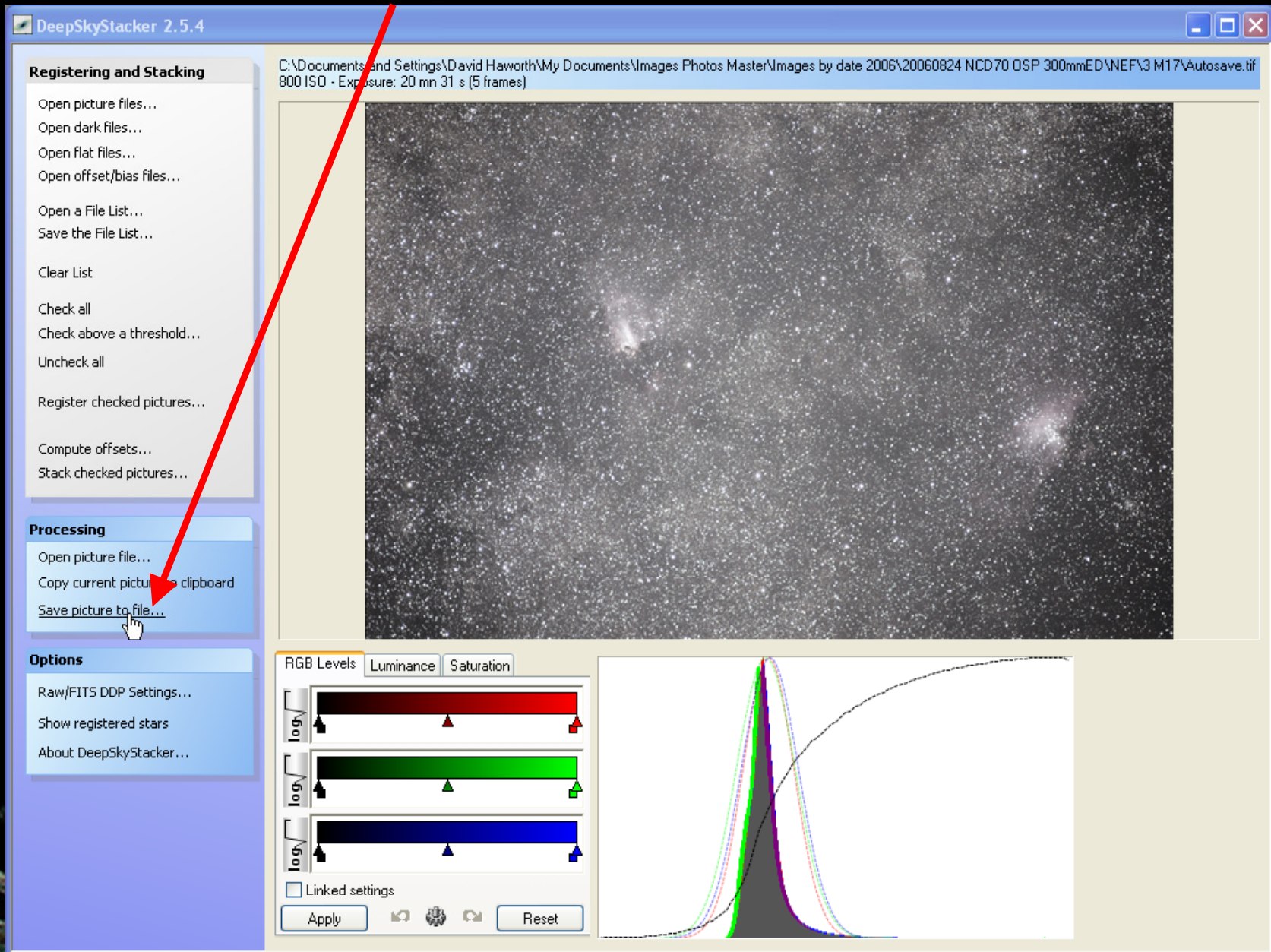
Stacking Parameters dialog box options:

- Result: Light (selected), Dark, Flat, Bias/Offset
- Stacking mode:
  - Average
  - Median
  - Kappa-Sigma clipping
  - Median Kappa-Sigma clipping
  - Auto Adaptive Weighted Average
  - Entropy Weighted Average (High Dynamic Range)
  - Maximum
- Kappa: 2.00
- Number of iterations: 5
- RGB Channels Background Calibration
- Temporary Files Folder: C:\DOCUME~1\DAVIDH~1\LOCALS~1\Temp

Score	dX	dY	Angle
1122.91	0.00	0.00	0.00 ° 8.
13537.77	0.31	2.31	-0.00 ° 8.
13692.65	-0.37	1.22	-0.00 ° 8.
12765.97	0.33	1.51	-0.00 ° 8.
14095.98	-0.04	0.38	-0.00 ° 8.

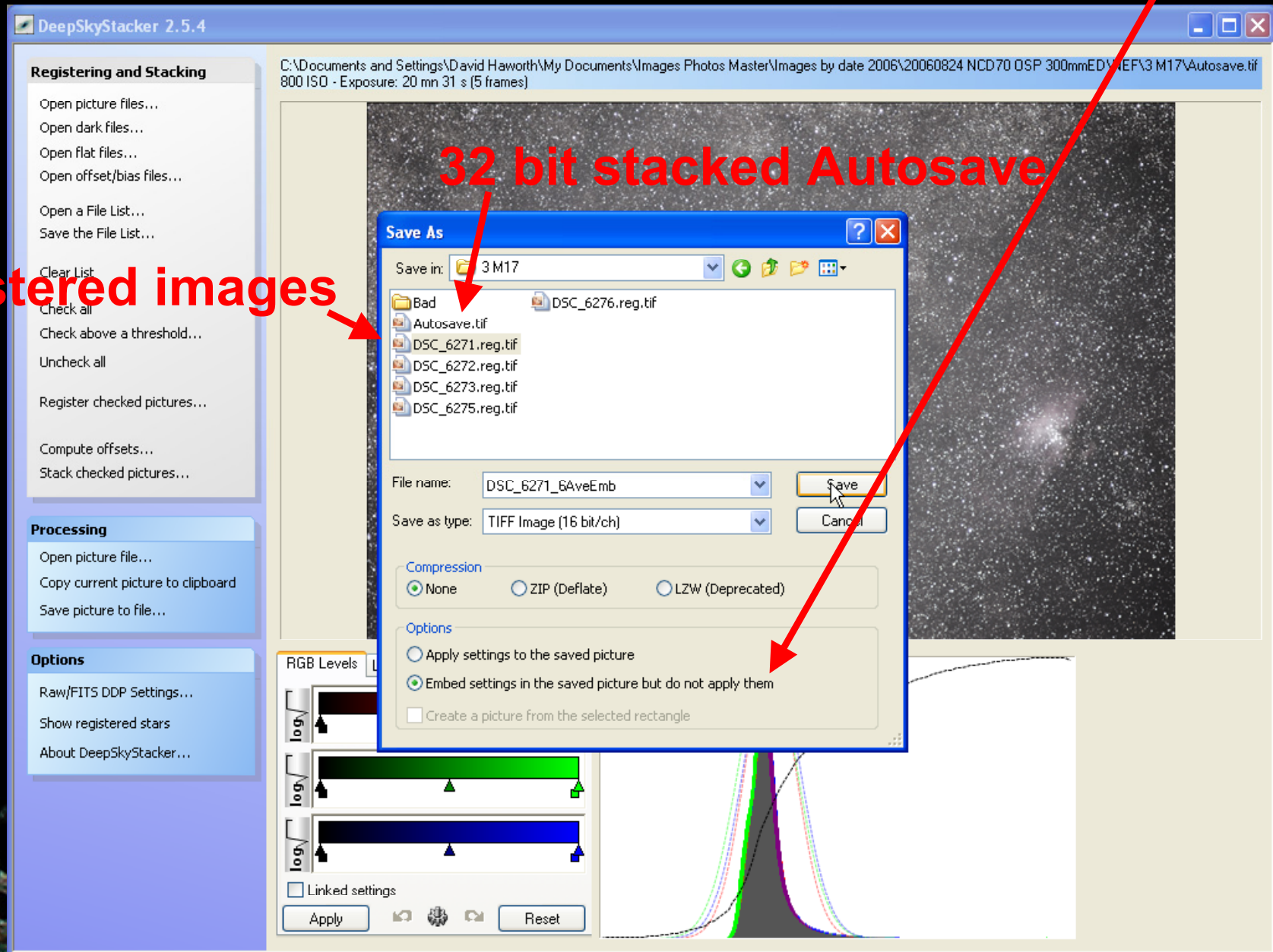
# Five Stacked Images

## Save stacked image



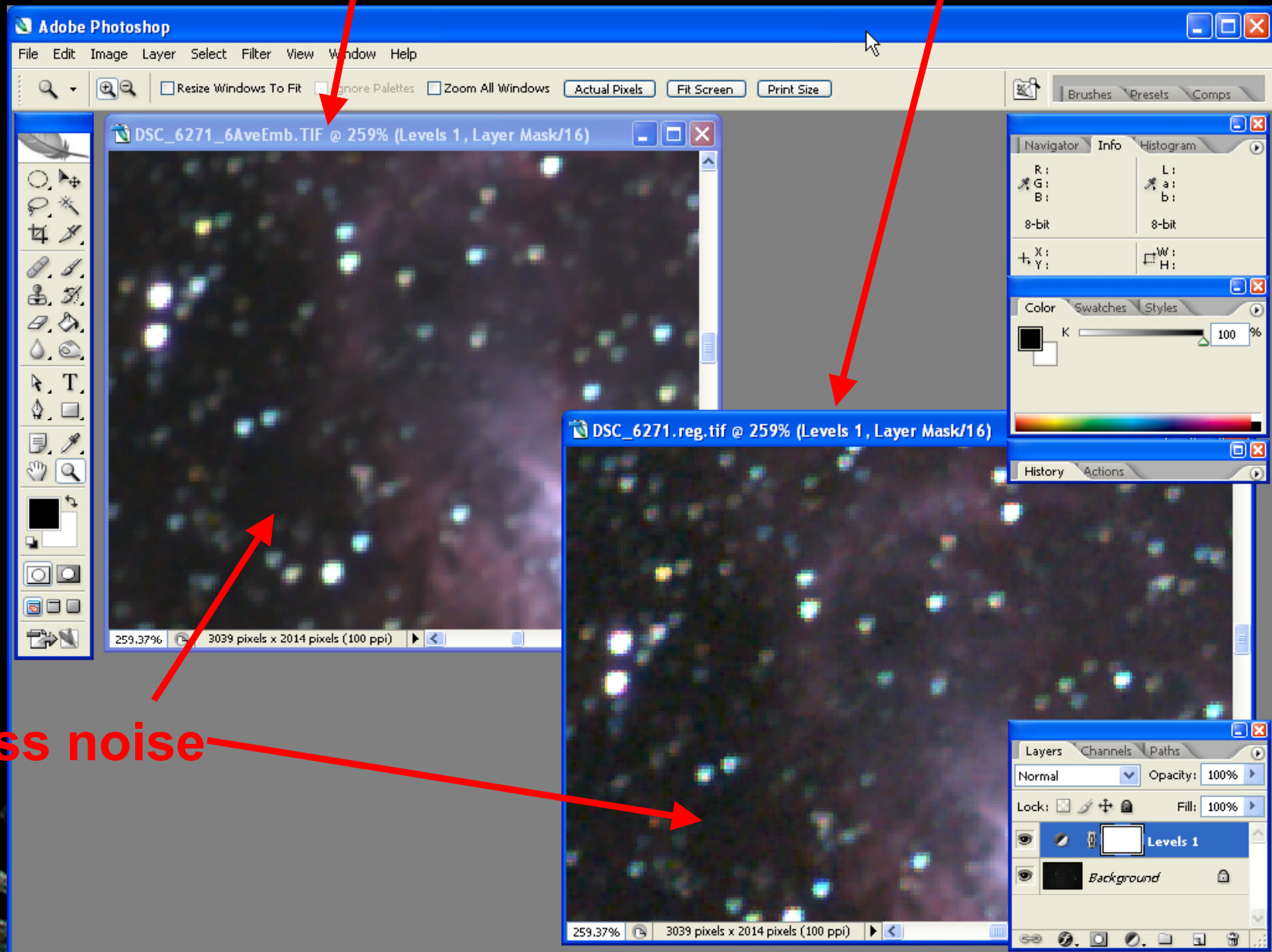
# Saving Stacked Image

Save stacked image with embed settings



# Comparison

DSS 5 stacked images with 1 image



Less noise

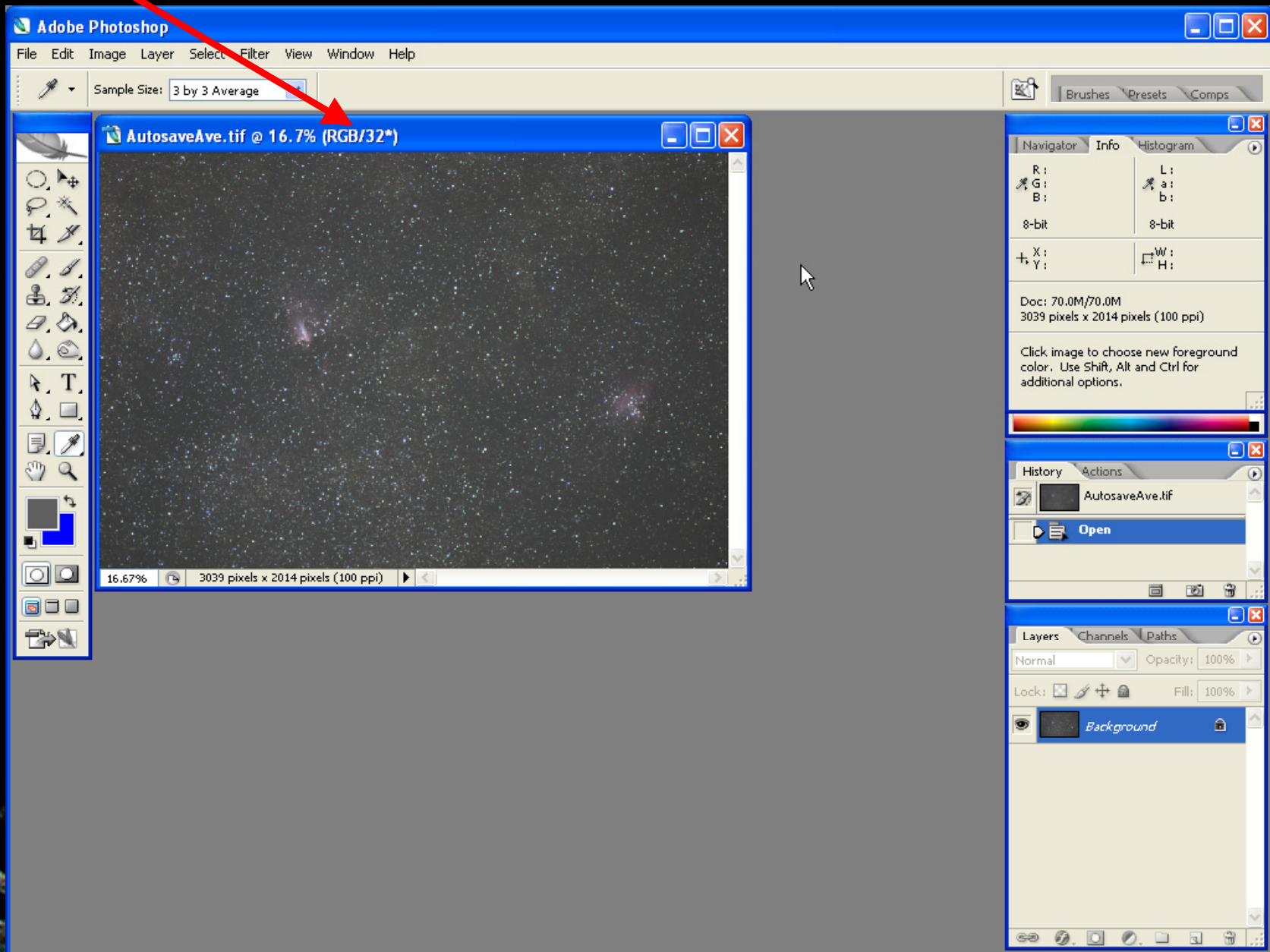
# Final Processing of Stacked Image

Using 16-bit TIF

- 🌀 Open in Photoshop CS
- 🌀 Open in AIP4WIN V2.1.10
- 🌀 Open in MaxIm DL V3.20

# Final Processing of Stacked Image

32-bit TIF open in Photoshop CS with limited operations



# www.stargazing.net/david/


Observational Astronomy - Microsoft Internet Explorer

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## Observational Astronomy



David Haworth

Amateur observational astronomy is the unlimited hobby of learning about the universe and observing it. This Web site contains images and resources about observing skills that are used in amateur observational astronomy.

There are four major types of [amateur observing](#):

- Observing with your [unaided eyes](#) without optical aids
- Observing with [binoculars](#)
- Observing with [telescopes](#)
- Observing with [cameras](#) that use film and electronic technologies