Comet measurements using ASTAP

Using the files supplied by Nick James:

https://nickdjames.com/comphot/Examples/2022E3/

The files are stacks on the stars and the comet. These are not necessarily how I would use ASTAP for comet photometry so this is a bit of a fix. Han, the author of ASTAP, describes his technique here:

https://www.youtube.com/watch?v=BEjcSm_cZx8

These are the steps I took to make the measurements:

Platesolving and setting of MZERO is done on the stack on stars since it can't be done on the comet stack as stars are trailed. The aperture on the Photometry tab has to be set to maximum to allow it to calculate sky background
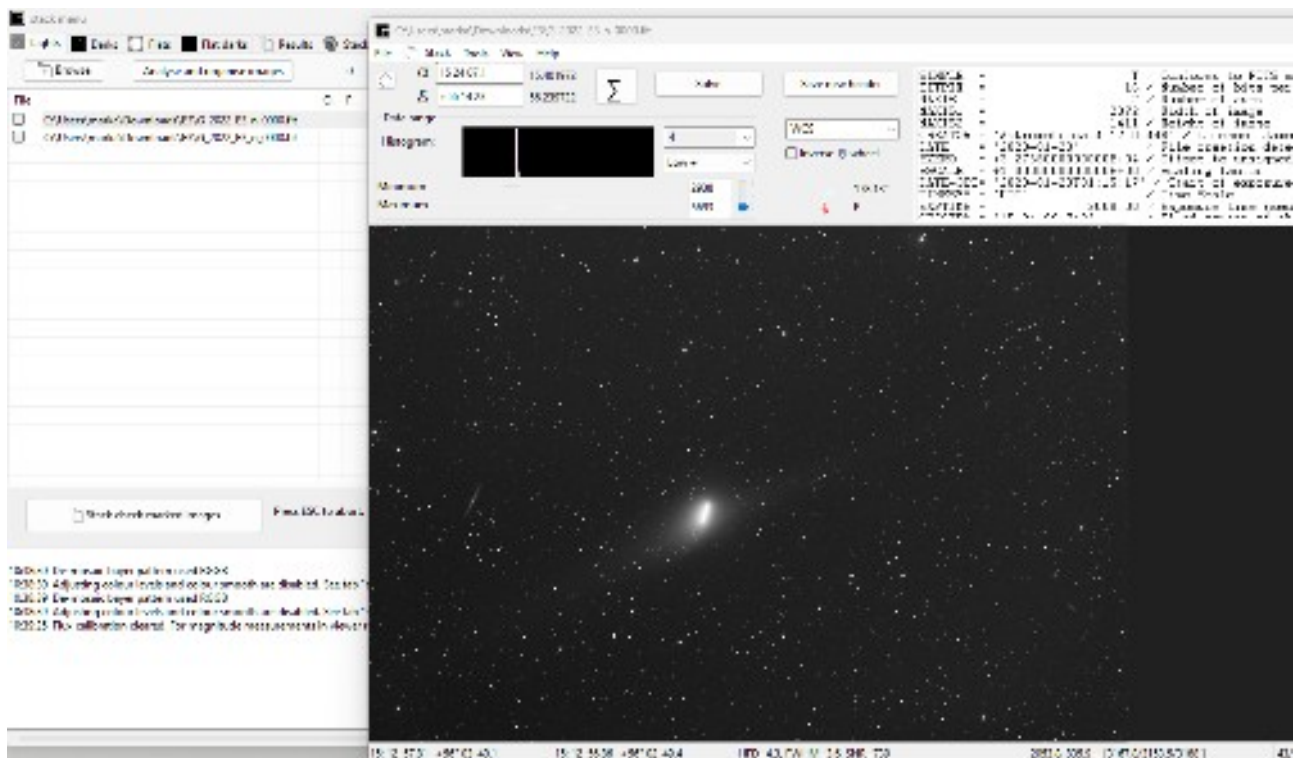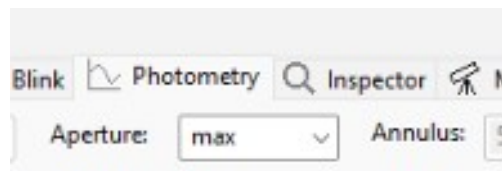
In the image viewer window, click the Solve button to platesolve (takes <0.5s) and to calculate MZERO use Tools → Calibrate photometry (or Ctrl-U). This sets fields in the FITS header so now click "Save new header"

Because the comet stack can't be platesolved, need to copy FITS header values (platesolve details and MZERO) from the first window and copy to the comet stack FITS header window – they can easily just be copied or edited. (This is the fix!)
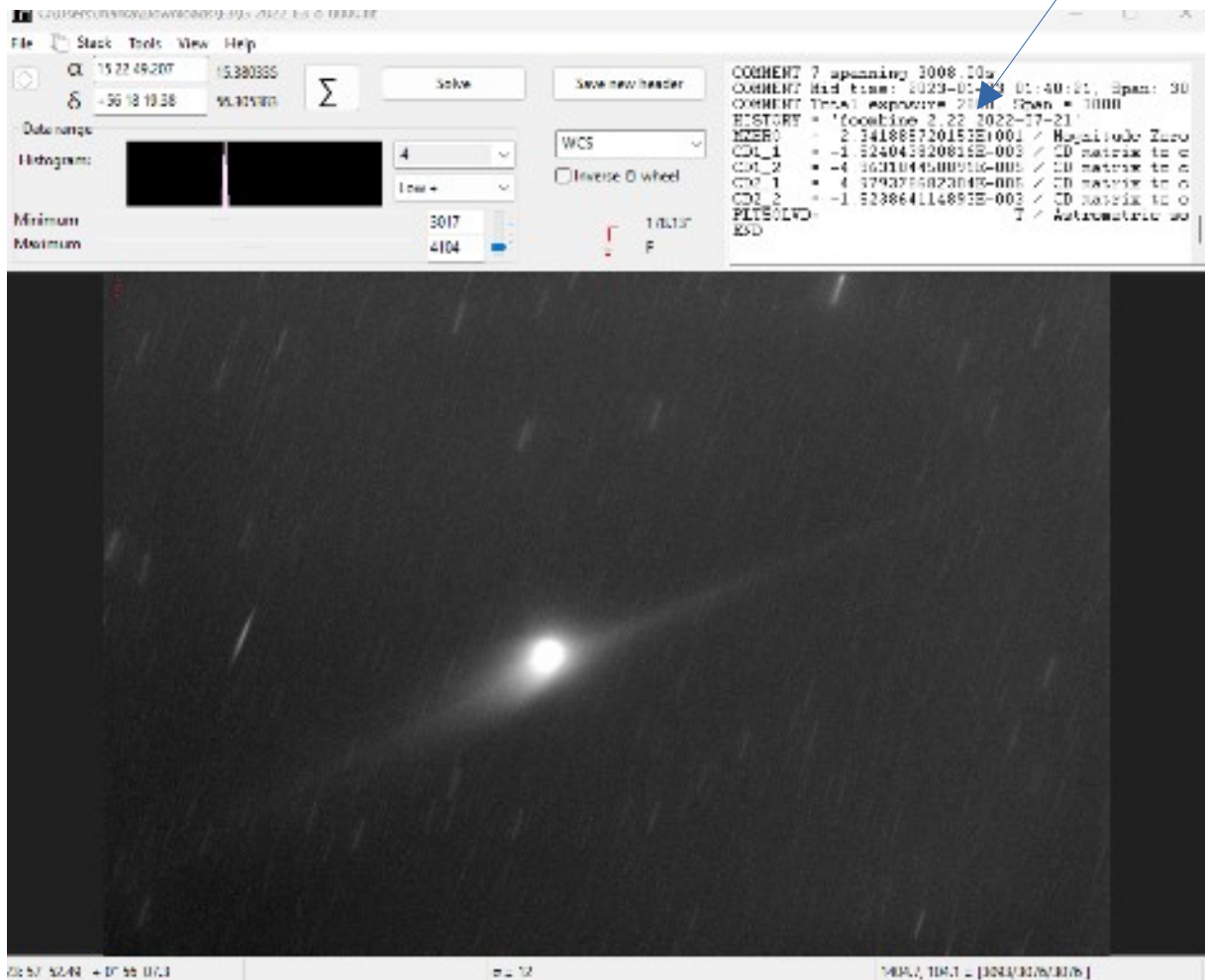
This allows measurements to be made. To see the extent of the coma you can stretch the histogram, either using the presets or manually.

I chose to rotate the image (Tools → Rotate image) so I could draw an ellipse around the coma. Right-click mouse and drag around the coma. Holding the ctrl key at the same time as dragging for an ellipse, or without gives a rectangle. Might take a few attempts the get the best fit.
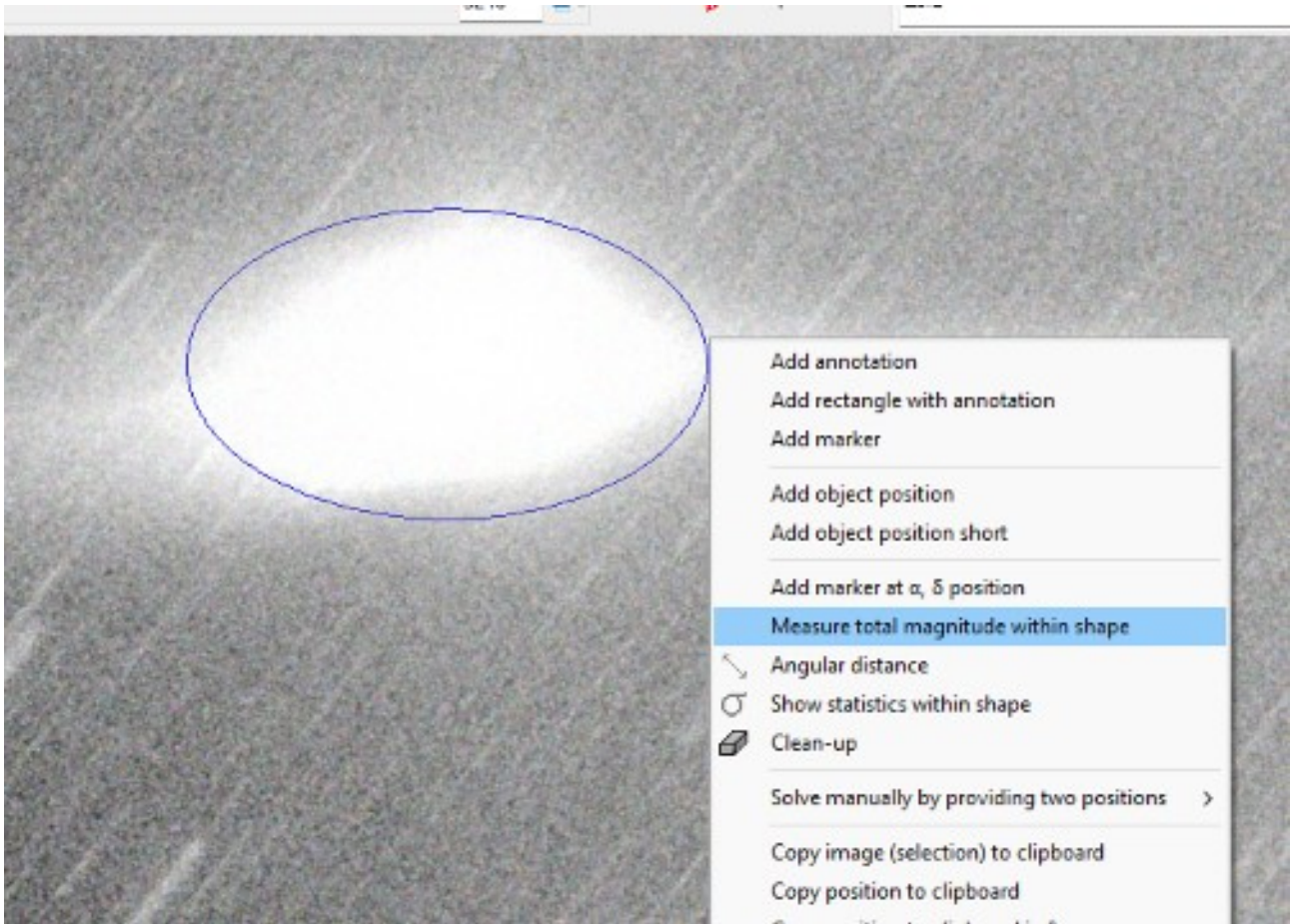
Select **Measure total magnitude within shape** gives a magnitude written next to the image.

To measure the size of the coma, again drag from the edges of the coma and select **Angular distance**
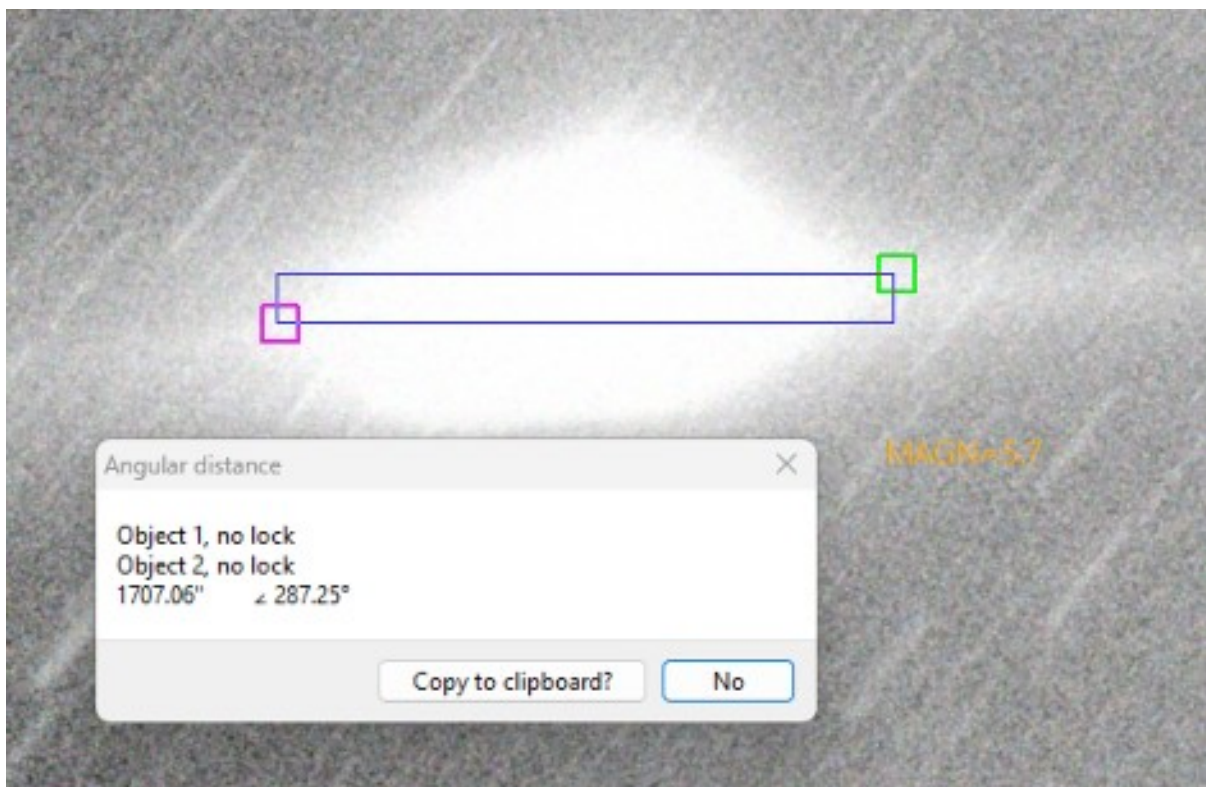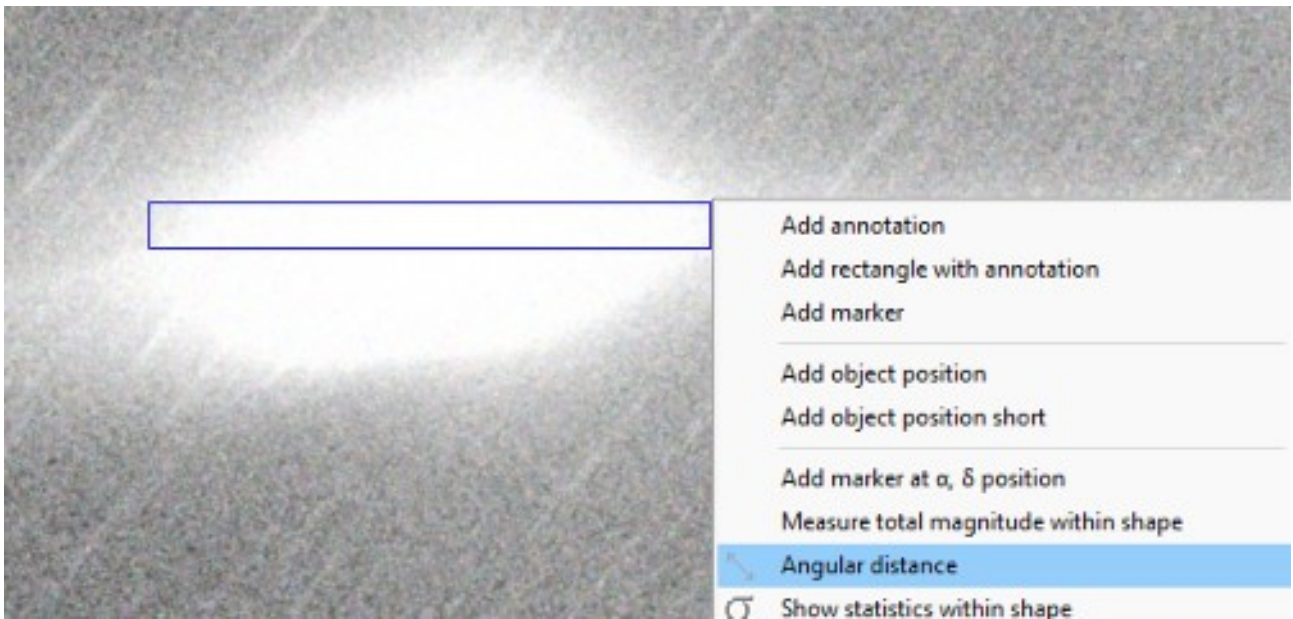
You can also remove objects from any measurement aperture by selecting them (dragging mouse again) and selecting **remove deep sky object**. This allows you to remove any bright stars that might affect photometry measurements.