



**National Observatory of Athens
Institute of Astronomy &
Astrophysics
Helmos Observatory**

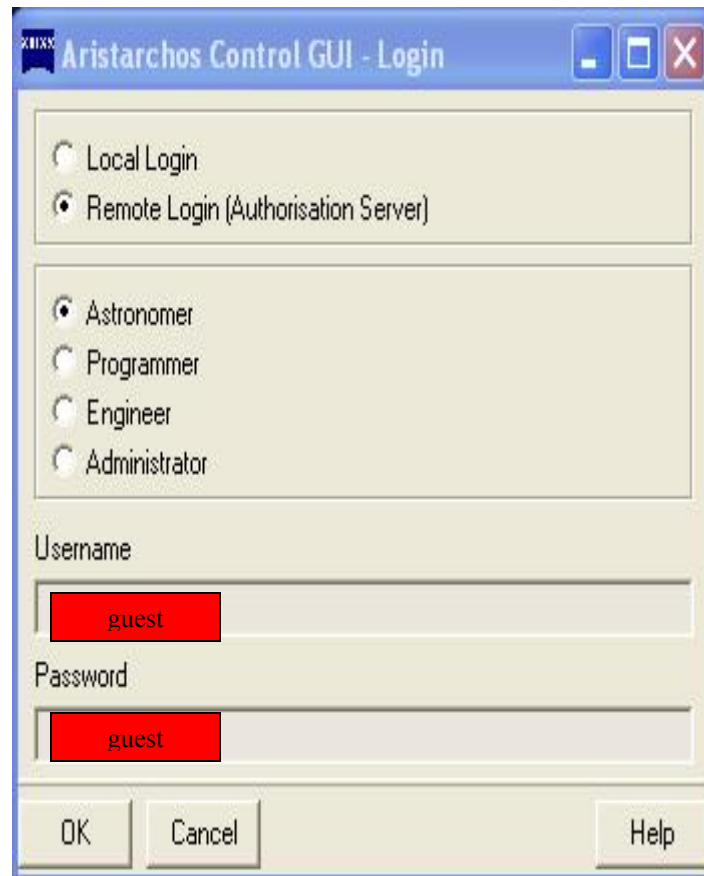


ARISTARCHOS TELESCOPE 2.3 m

OBSERVER'S COOKBOOK

GETTING STARTED

The program ZEISS GUI is selected and run in the OPC computer



The image shows a Windows-style dialog box titled "Aristarchos Control GUI - Login". The dialog has a blue title bar with standard minimize, maximize, and close buttons. The main content area is divided into several sections:

- A group box containing two radio buttons: "Local Login" (unselected) and "Remote Login (Authorisation Server)" (selected).
- A second group box containing four radio buttons: "Astronomer" (selected), "Programmer" (unselected), "Engineer" (unselected), and "Administrator" (unselected).
- A "Username" label followed by a text input field containing the text "guest".
- A "Password" label followed by a text input field containing the text "guest".
- A button bar at the bottom with three buttons: "OK", "Cancel", and "Help".

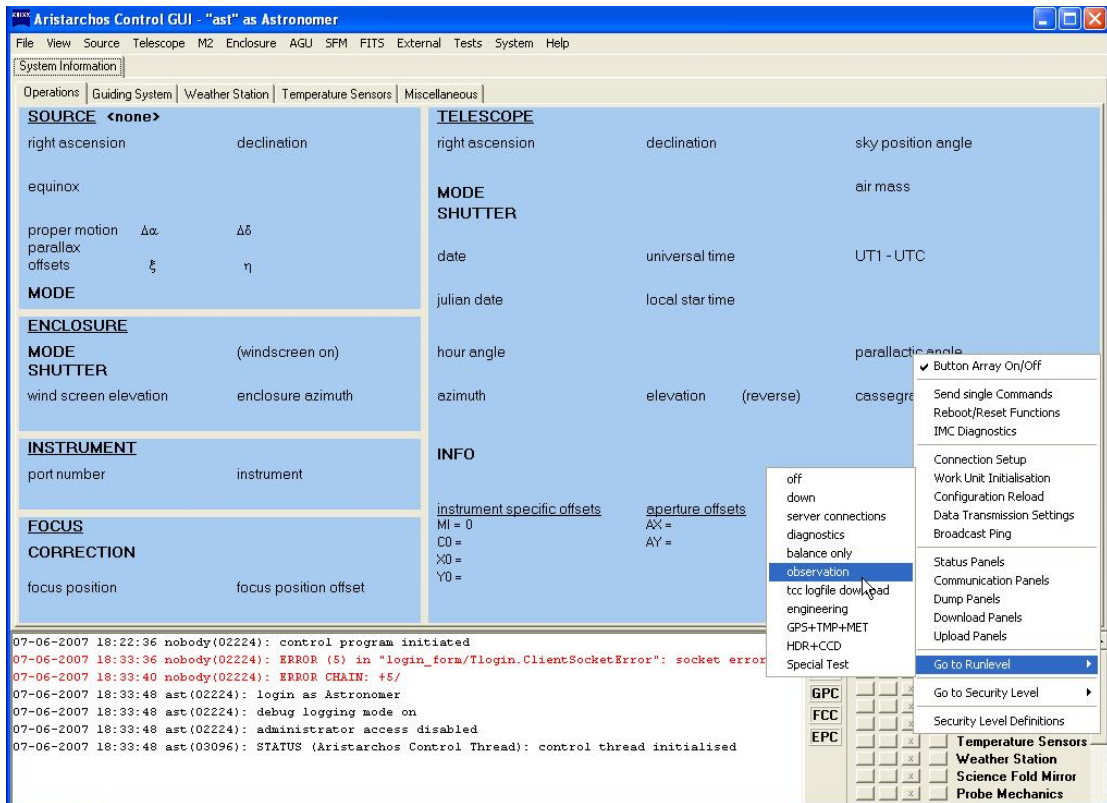
The Telescope operating system is activated

The screenshot shows the 'Aristarchos Control GUI - "ast" as Astronomer' window. The main area is divided into several sections: SOURCE, ENCLOSURE, INSTRUMENT, FOCUS, CORRECTION, TELESCOPE, and INFO. The TELESCOPE section includes fields for right ascension, declination, sky position angle, air mass, and various time and angle settings. The INFO section lists instrument specific offsets (MI, CO, XO, YO) and aperture offsets (AX, AY). At the bottom, there is a log window showing system messages and a server control panel with buttons for TCC, GPC, FCC, and EPC, and a grid of buttons for various components like Telescope, M2, Enclosure, GPS, etc.

Right click in this area and a pop up appears

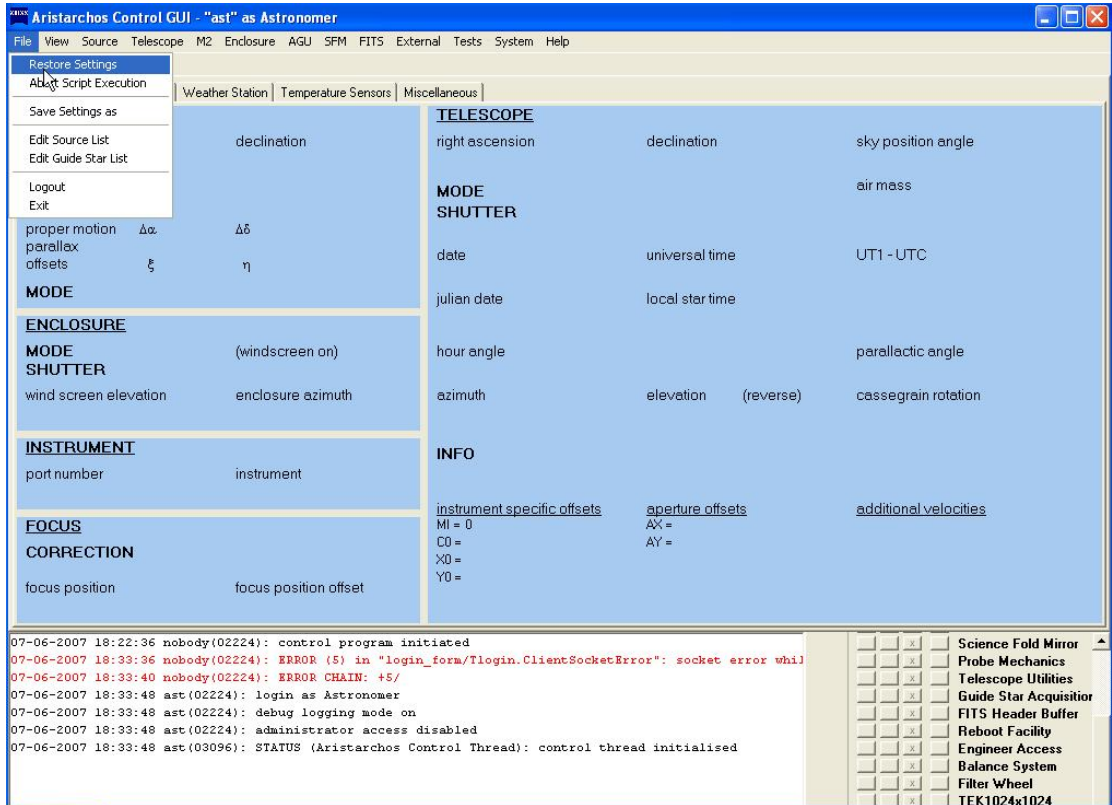
This screenshot is identical to the one above, but with a context menu open over the server control panel. The menu is titled 'Button Array On/Off' and contains the following items: Send single Commands, Reboot/Reset Functions, IMC Diagnostics, Connection Setup, Work Unit Initialisation, Configuration Reload, Data Transmission Settings, Broadcast Ping, Status Panels, Communication Panels, Dump Panels, Download Panels, Upload Panels, Go to Runlevel, Go to Security Level, and Security Level Definitions. A blue arrow from the text above points to the location where the menu was triggered.

Choose Button Array On/Off in order to activate the menu bar and right click in the same area to select Go to Run level, observation



SCRIPT INTRODUCTION

Next, go to the central menu and select Restore settings



Then, the script "basics.noa" is automatically loaded (wait until is finished)

TELESCOPE PARAMETERS

Go to the central menu, Telescope and select the essential parameters: refraction, pointing, shutter

The screenshot shows the 'Aristarchos Control GUI - "ast" as Astronomer' window. The 'Telescope' menu is open, and 'Tracking' is selected. The main window displays various telescope parameters and a status log.

Parameter	Value	Parameter	Value
right ascension	declination	sky position angle	
equinox		air mass	
proper motion		date	universal time
parallax		UT1 - UTC	
offsets		julian date	local star time
MODE		hour angle	parallactic angle
ENCLOSURE		azimuth	elevation (reverse)
MODE SHUTTER		cassegrain rotation	
INSTRUMENT		INFO	
port number		instrument specific offsets	aperture offsets
FOCUS		MI = 0	AX =
CORRECTION		CO =	AY =
focus position	focus position offset	XO =	
		YO =	

Log messages:

```

07-06-2007 18:54:02 ast(02172): ERROR CHAIN: +210/335/2010/1922/
07-06-2007 18:54:02 ast(02172): WARNING: program "C:\Documents and Settings\Omiros\My Documents\ast_ctr
07-06-2007 18:55:45 ast(02224): DEBUG: OPEN WINDOW: IMC Diagnostics
07-06-2007 18:55:50 ast(02224): DEBUG: CLOSING WINDOW BY CANCEL: IMC Diagnostics
07-06-2007 19:00:52 ast(02224): DEBUG: OPEN WINDOW: Enclosure Positioning
07-06-2007 19:00:52 ast(02224): ERROR (498) in "ENC_task/ENC_GetData": work unit not initialised
07-06-2007 19:00:52 ast(02224): ERROR (2554) in "ENC_Positioning_form/TENC_Positioning.getENCBtnClick
07-06-2007 19:00:52 ast(02224): ERROR CHAIN: +498/2554/
07-06-2007 19:01:02 ast(02224): DEBUG: CLOSING WINDOW BY CANCEL: Enclosure Positioning
    
```

The screenshot shows the 'Aristarchos Control GUI - "ast" as Astronomer' window. The 'Telescope' menu is open, and 'Refraction' is selected. The main window displays various telescope parameters and a status log.

Parameter	Value	Parameter	Value
right ascension	declination	sky position angle	
equinox		air mass	
proper motion		date	universal time
parallax		UT1 - UTC	
offsets		julian date	local star time
MODE		hour angle	parallactic angle
ENCLOSURE		azimuth	elevation (reverse)
MODE SHUTTER		cassegrain rotation	
INSTRUMENT		INFO	
port number		instrument specific offsets	aperture offsets
FOCUS		MI = 0	AX =
CORRECTION		CO =	AY =
focus position	focus position offset	XO =	
		YO =	

Log messages:

```

07-06-2007 18:54:02 ast(02172): ERROR CHAIN: +210/335/2010/1922/
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07-06-2007 19:00:52 ast(02224): DEBUG: OPEN WINDOW: Enclosure Positioning
07-06-2007 19:00:52 ast(02224): ERROR (498) in "ENC_task/ENC_GetData": work unit not initialised
07-06-2007 19:00:52 ast(02224): ERROR (2554) in "ENC_Positioning_form/TENC_Positioning.getENCBtnClick
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07-06-2007 19:01:02 ast(02224): DEBUG: CLOSING WINDOW BY CANCEL: Enclosure Positioning
    
```

Aristarchos Control GUI - "ast" as Astronomer

File View Source Telescope M2 Enclosure AGU SFM FITS External Tests System Help

System Information | Options | Default Parameters | Temperature Sensors | Miscellaneous |

Operations | Guiding

SOURCE <none>
right ascension
equinox
proper motion
parallax
offsets

MODE
Shutter
Tracking
Reversion
Refraction

ENCLOSURE
Pointing
Displacement Compensation
Instrument Offsets
Aperture Offsets
Reset Aperture Offsets
Reset Blind Offsets

MODE SHUTTER
wind screen element

INSTRUMENT
port number
Pointing Tests
Position Measurements
Observation Definitions

FOCUS CORRECTION
focus position
focus position offset

TELESCOPE
right ascension
declination
sky position angle

MODE SHUTTER
date
universal time
UT1 - UTC
julian date
local star time

hour angle
parallactic angle
azimuth
elevation (reverse)
cassegrain rotation

INFO
instrument specific offsets
MI = 0
CO =
XO =
YO =
aperture offsets
AX =
AY =
additional velocities

```

07-06-2007 18:54:02 ast(02172): ERROR CHAIN: +210/335/2010/1922/
07-06-2007 18:54:02 ast(02172): WARNING: program "C:\Documents and Settings\Omiros\My Documents\ast_ctr
07-06-2007 18:55:45 ast(02224): DEBUG: OPEN WINDOW: IMC Diagnostics
07-06-2007 18:55:50 ast(02224): DEBUG: CLOSING WINDOW BY CANCEL: IMC Diagnostics
07-06-2007 19:00:52 ast(02224): DEBUG: OPEN WINDOW: Enclosure Positioning
07-06-2007 19:00:52 ast(02224): ERROR (498) in "ENC_task/ENC_GetData": work unit not initialised
07-06-2007 19:00:52 ast(02224): ERROR (2554) in "ENC_Positioning_form/TENC_Positioning.getENCBtnClick
07-06-2007 19:00:52 ast(02224): ERROR CHAIN: +498/2554/
07-06-2007 19:01:02 ast(02224): DEBUG: CLOSING WINDOW BY CANCEL: Enclosure Positioning
  
```

Server dummy mode off ping

TCC	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Telescope
GPC	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	M2
FCC	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Enclosure
EPC	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	GPS
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Temperature Sensors
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Weather Station
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Science Fold Mirror
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Probe Mechanics

Aristarchos Control GUI - "ast" as Astronomer

File View Source Telescope M2 Enclosure AGU SFM FITS External Tests System Help

System Information | Options | Default Parameters | Temperature Sensors | Miscellaneous |

Operations | Guiding

SOURCE <none>
right ascension
equinox
proper motion
parallax
offsets

MODE
Shutter
Tracking
Reversion
Refraction

ENCLOSURE
Pointing
Displacement Compensation
Instrument Offsets
Aperture Offsets
Reset Aperture Offsets
Reset Blind Offsets

MODE SHUTTER
wind screen element

INSTRUMENT
port number
Pointing Tests
Position Measurements
Observation Definitions

FOCUS CORRECTION
focus position
focus position offset

TELESCOPE
right ascension
declination
sky position angle

MODE SHUTTER
date
universal time
UT1 - UTC
julian date
local star time

hour angle
parallactic angle
azimuth
elevation (reverse)
cassegrain rotation

INFO
instrument specific offsets
MI = 0
CO =
XO =
YO =
aperture offsets
AX =
AY =
additional velocities

```

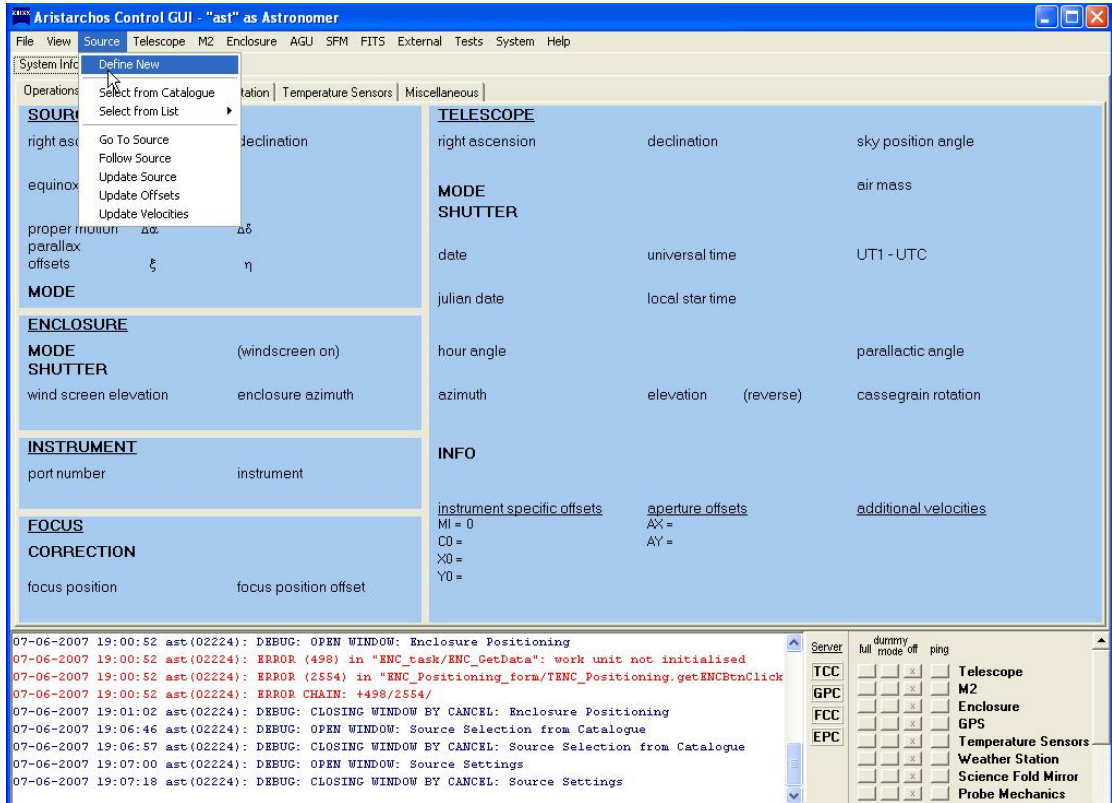
07-06-2007 18:54:02 ast(02172): ERROR CHAIN: +210/335/2010/1922/
07-06-2007 18:54:02 ast(02172): WARNING: program "C:\Documents and Settings\Omiros\My Documents\ast_ctr
07-06-2007 18:55:45 ast(02224): DEBUG: OPEN WINDOW: IMC Diagnostics
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07-06-2007 19:00:52 ast(02224): DEBUG: OPEN WINDOW: Enclosure Positioning
07-06-2007 19:00:52 ast(02224): ERROR (498) in "ENC_task/ENC_GetData": work unit not initialised
07-06-2007 19:00:52 ast(02224): ERROR (2554) in "ENC_Positioning_form/TENC_Positioning.getENCBtnClick
07-06-2007 19:00:52 ast(02224): ERROR CHAIN: +498/2554/
07-06-2007 19:01:02 ast(02224): DEBUG: CLOSING WINDOW BY CANCEL: Enclosure Positioning
  
```

Server dummy mode off ping

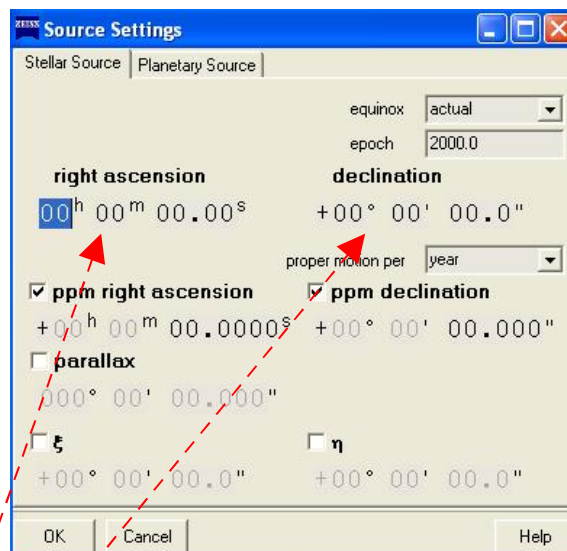
TCC	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Telescope
GPC	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	M2
FCC	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Enclosure
EPC	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	GPS
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Temperature Sensors
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Weather Station
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Science Fold Mirror
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Probe Mechanics

TARGET SELECTION

Go to central menu, Source menu so as to select a target via choice define new



This is what appears



Then we can define the coordinates of the target and the epoch of the observation (e.g. equatorial coordinates, J2000)
These parameters do appear in the following area,


```

SOURCE NGC6205(M13)
right ascension      declination
16h41m41.50s      +36°27'39.0"
equinox
J2000
proper motion  Δα NIL/yr  Δδ NIL/yr  (2000)
parallax      NIL
offsets       ξ 0"        η 0"
MODE

```

on which if right click applied then the preview option appears

```

SOURCE NGC6205(M13)
right ascension      declination
16h41m41.50s      +36°27'39.0"
equinox
J2000
proper motion  Δα NIL/yr  Δδ NIL/yr  (2000)
parallax      NIL
offsets       ξ 0"        η 0"
MODE

```

Pre View

which helps us check if the target defined can really be observed

The screenshot shows a window titled "Source Location Preview" with several tabs: Location, Axes Tracking, Tracking Drift, Telescope Configuration, and Simulation Parameters. The "Location" tab is active, displaying the following information:

```

Current Object Location
source identification: NGC6205 (M13)
source type: fixed
location: 16h41m41.50s +36°27'39.0" (J2000)
proper motion: NIL NIL (2000)
parallax: NIL
offsets: xi=0", eta=0"

observation at: 07-06-2007 19h15m38.76s (0s)
julian date: 2454259.30253
reduced location: 16h41m59.47s +36°26'40.5"

local mean star time: 13h47m42.31s
hour angle: 21h05m42.84s
horizontal location: 258°50'21.5" +55°35'14.2"
cassegrain rotation angle: 073°58'37.2"
parallactic angle: 286°01'22.8"
airmass: 1.212

set in 11h15m
refraction critical in 8h34m
blind spot crossing in 2h48m
EL limit in 10h5m

```

At the bottom of the window, there are "Close" and "Help" buttons.

After the target has been selected, then we go to central menu, Source and then Go to source option

Aristarchos Control GUI - "ast" as Astronomer

File View Source Telescope M2 Enclosure AGU SFM FITS External Tests System Help

System Info Define New

Operations Select from Catalogue Select from List

SOURCE

right ascension 16h 41m 36.27s declination +36° 27' 39.0"

equinox J2000

proper motion α NIL δ NIL/yr (2000)

parallax NIL

offsets ξ 0" η 0"

TELESCOPE

right ascension declination sky position angle

MODE SHUTTER

date universal time UT1 - UTC

julian date local star time

hour angle parallactic angle

azimuth elevation (reverse) cassegrain rotation

ENCLOSURE

MODE (windscreen on)

SHUTTER

wind screen elevation enclosure azimuth

INSTRUMENT

port number instrument

FOCUS CORRECTION

focus position focus position offset

INFO

instrument specific offsets aperture offsets additional velocities

MI = 0 AX =

CO = AY =

X0 =

Y0 =

07-06-2007 19:08:46 ast(02224): DEBUG: OPEN WINDOW: Source Settings

07-06-2007 19:11:07 ast(02224): DEBUG: CLOSING WINDOW BY CANCEL: Source Settings

07-06-2007 19:11:16 ast(02224): DEBUG: new stellar source: ID=NGC6205(M13), RA=16h41m41.50s, DE=+36°2

07-06-2007 19:11:16 ast(02224): SOURCE SELECTION: SRC_DefineFixed identification=(NGC6205(M13)) epoch

07-06-2007 19:15:38 ast(02224): DEBUG: OPEN WINDOW: Source Location Preview

07-06-2007 19:15:38 ast(02224): ERROR (209) in "TEL_task/TEL_GetData": work unit not initialised

07-06-2007 19:15:38 ast(02224): ERROR (2996) in "SRC_Preview_form/TSRC_Preview.Execute": could not ex

07-06-2007 19:15:38 ast(02224): ERROR CHAIN: +209/2996/

07-06-2007 19:17:45 ast(02224): DEBUG: CLOSING WINDOW: Source Location Preview

Server full dummy mode off ping

TCC Telescope

GPC M2

FCC Enclosure

EPC GPS

Temperature Sensors

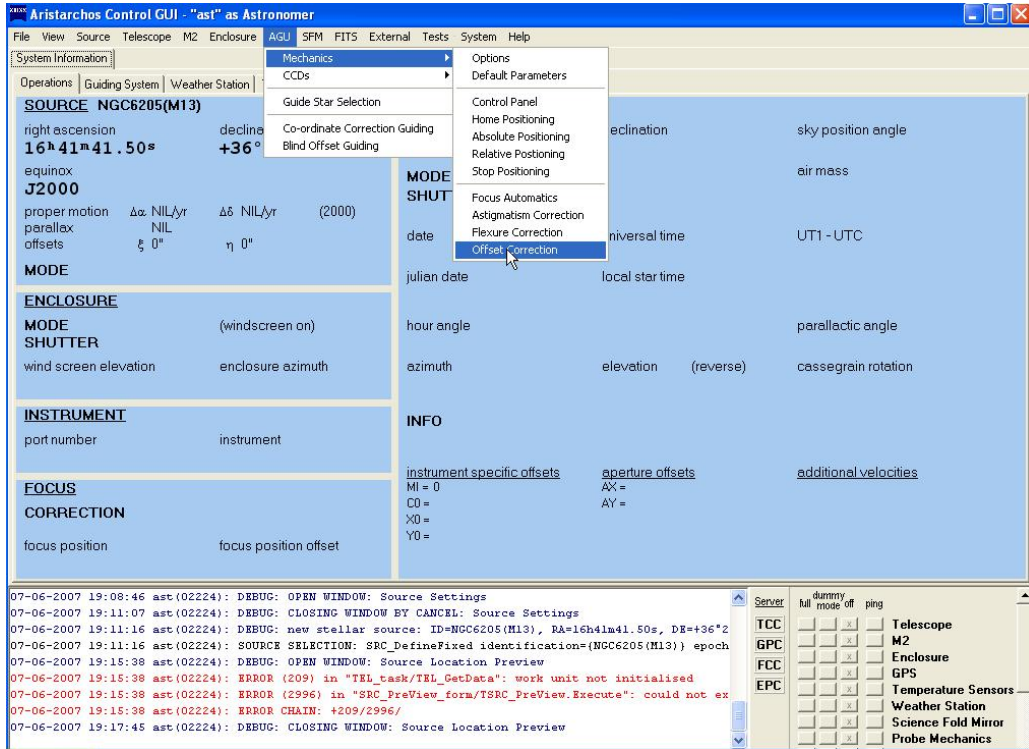
Weather Station

Science Fold Mirror

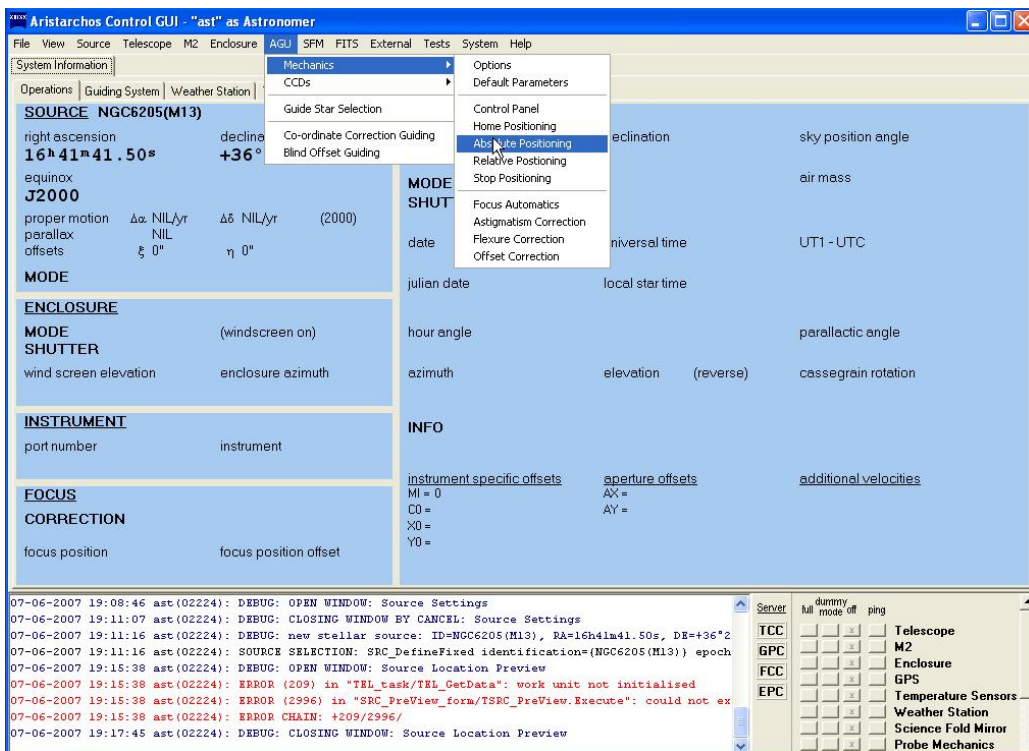
Probe Mechanics

GUIDING

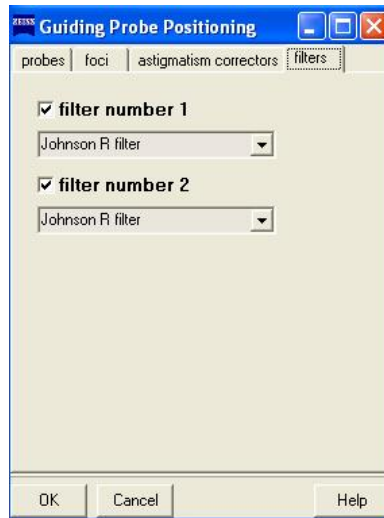
Next, go to central menu and to option AGU and choose Mechanics folowed by the Offset Correction option



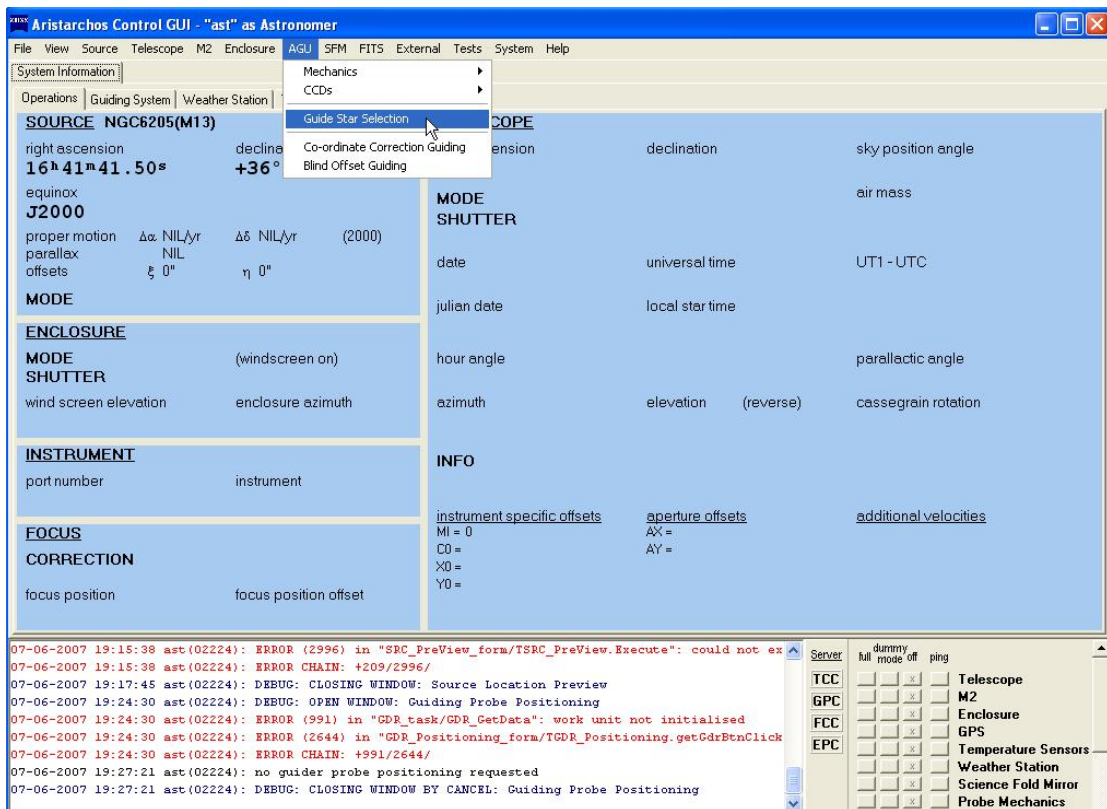
which is followed by the absolute positioning option



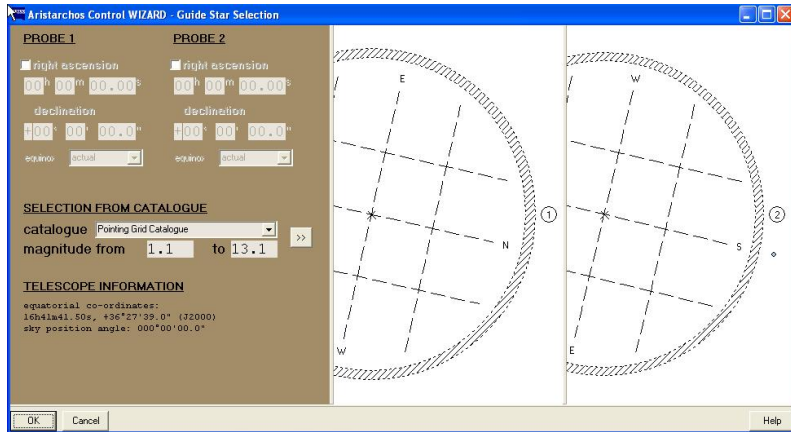
As a result, we can now select various filters for the guide stars



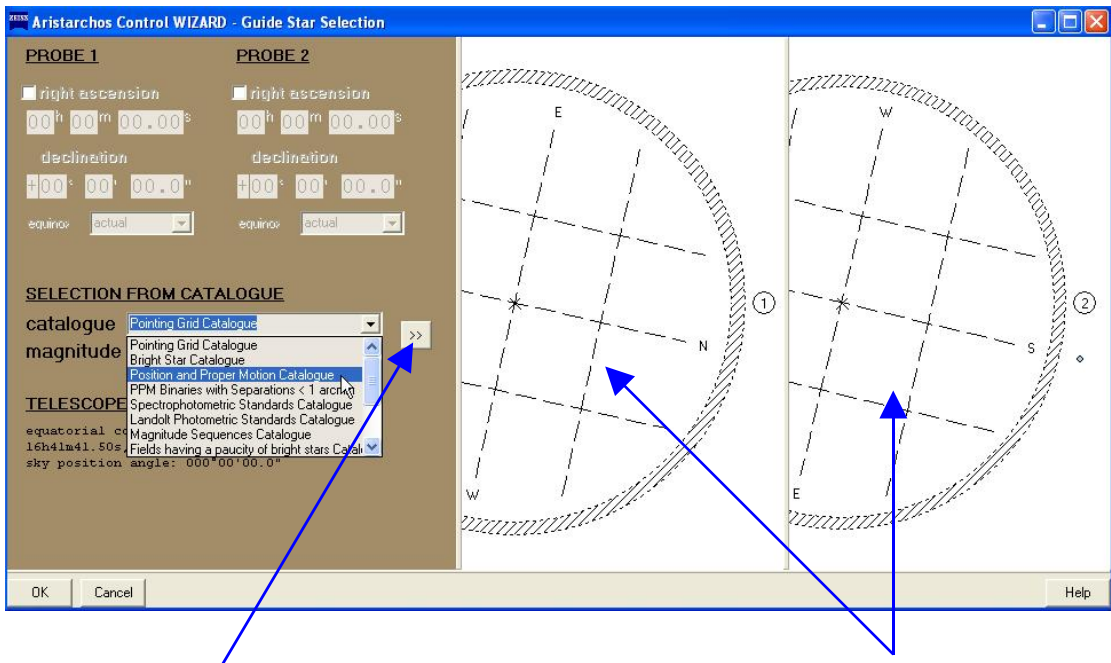
Next, we choose AGU and guide star selection again from the central menu



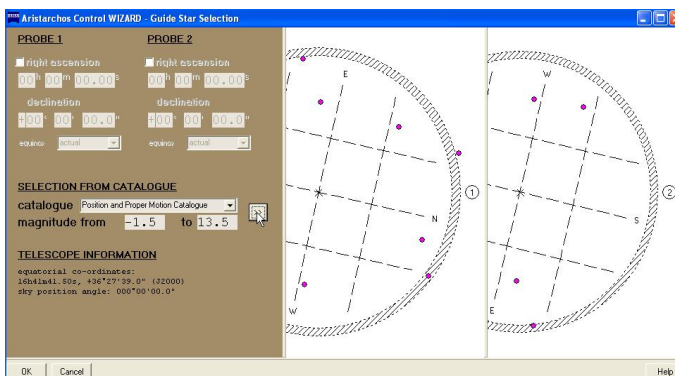
and the following image does appear



from which we can select the following

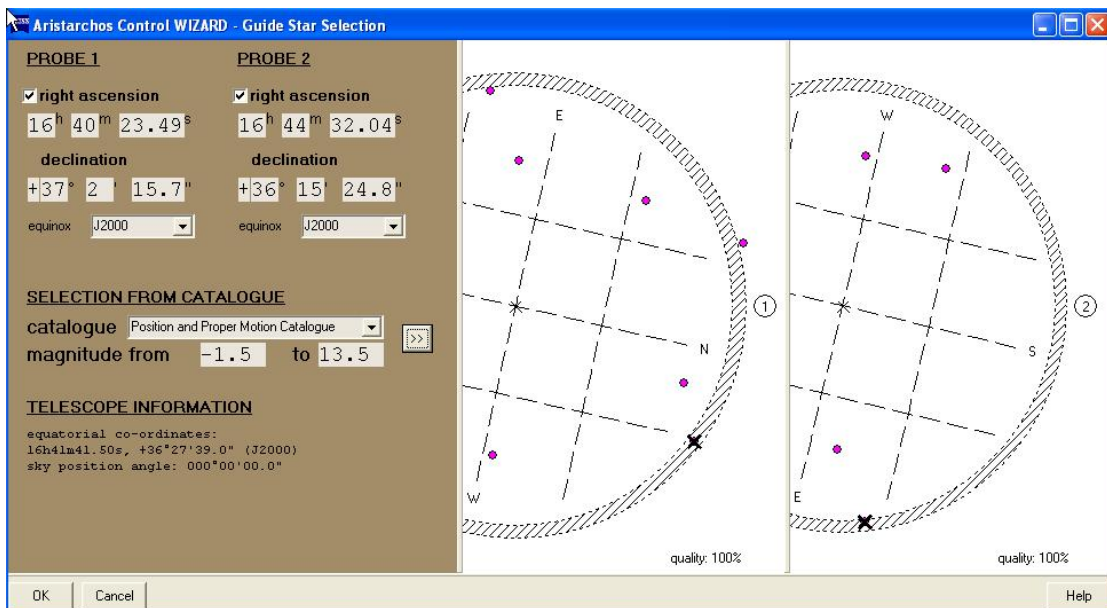


By selecting Pointing grid catalogue and position and proper motion catalogue and by clicking on the two arrow button, we can see in principle some guide stars on the right hand side of the window



We select (left click) those guide stars closest to the numbers 1 and 2 which should additionally be located on the shaded periphery

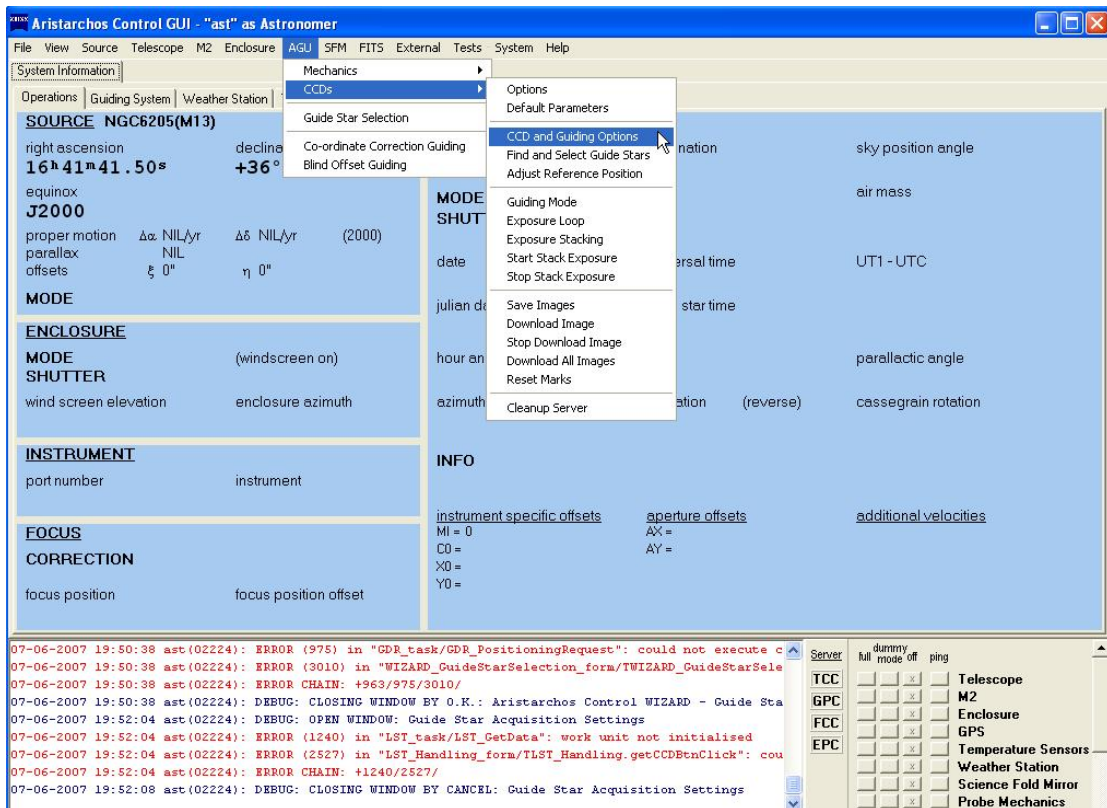
A black cross can then be spotted on each of the guide star positions



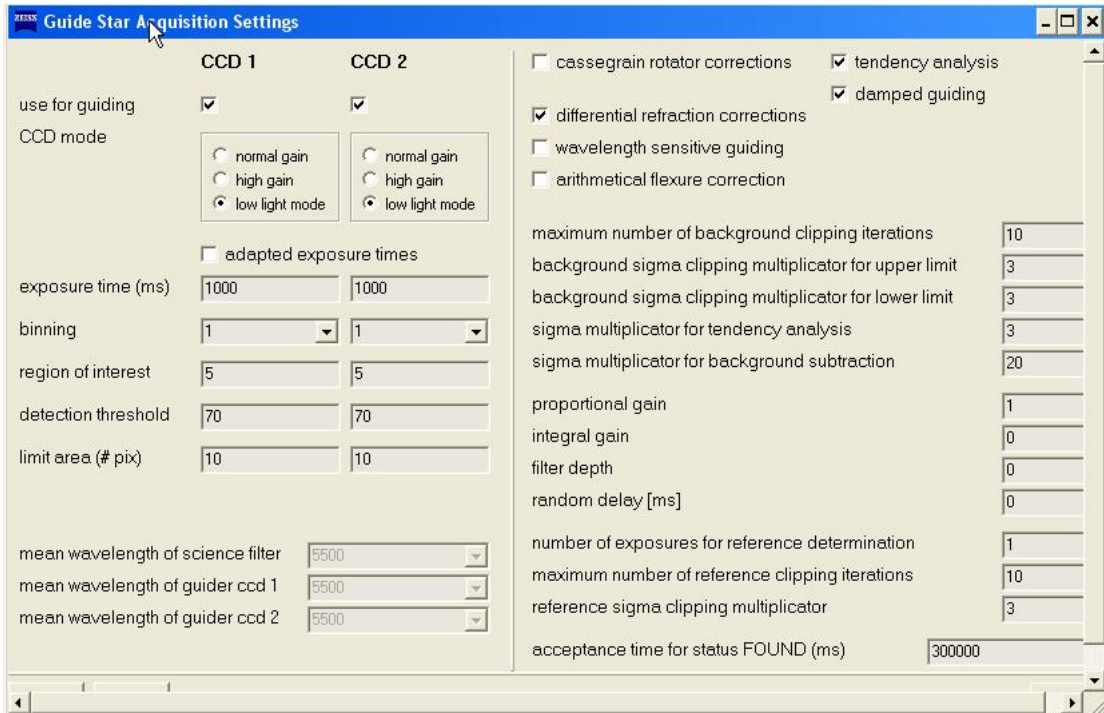
then we press the OK button (bottom left region)

Next, we execute the following instructions

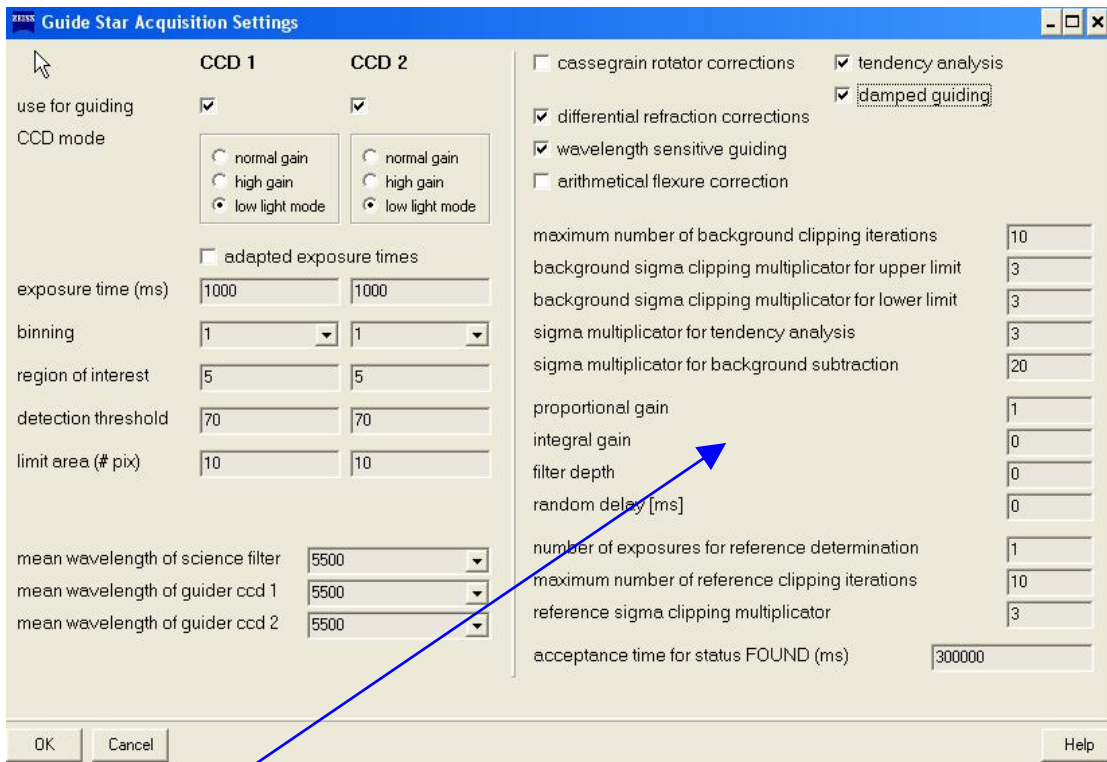
Go to central menu, then to AGU, CCDs, CCD and Guiding Options



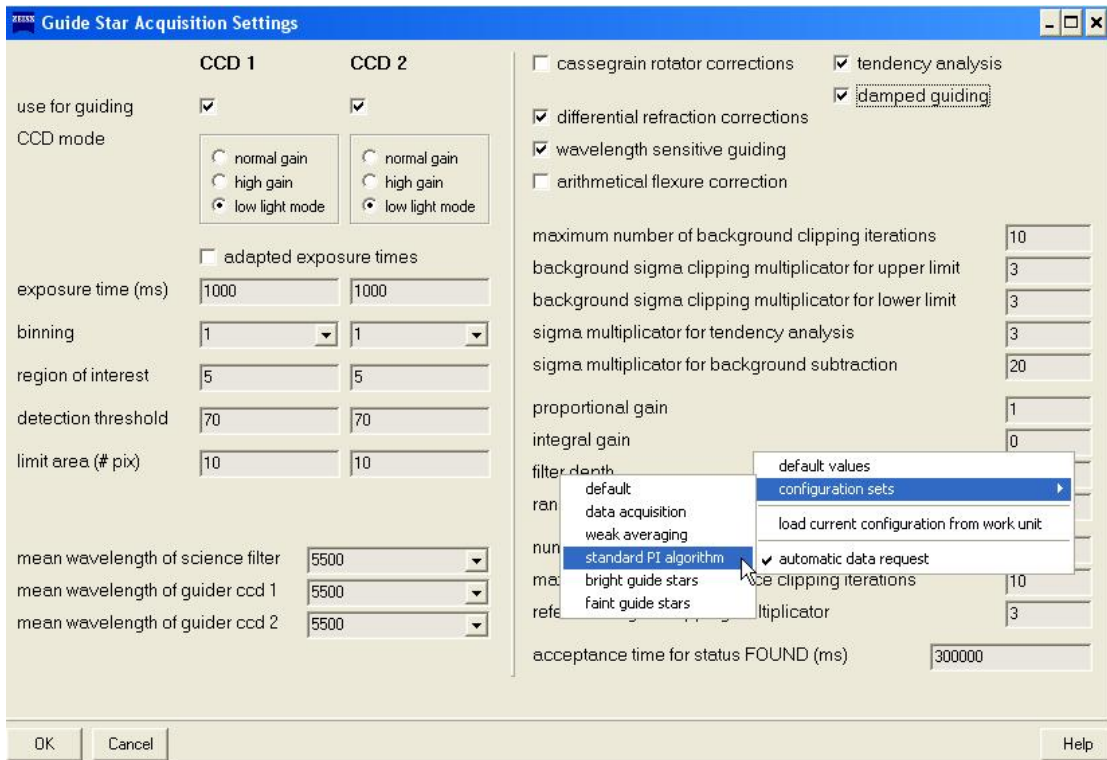
and the following window appears on which the settings for the two guide stars are presented



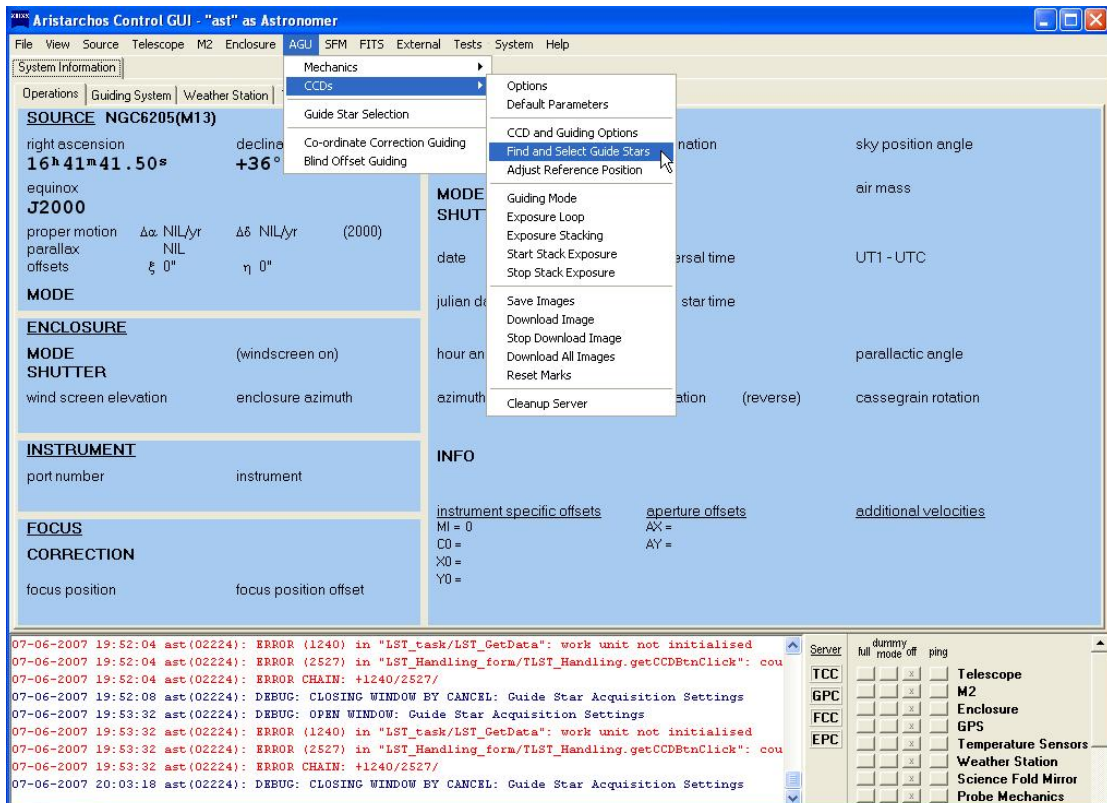
In this window the following must already be preselected: tendency analysis, differential refraction corrections and wavelength sensitive guiding. Moreover, we may choose to work with CCD1 or CCD2 or both, depending on the guide stars we have already detected



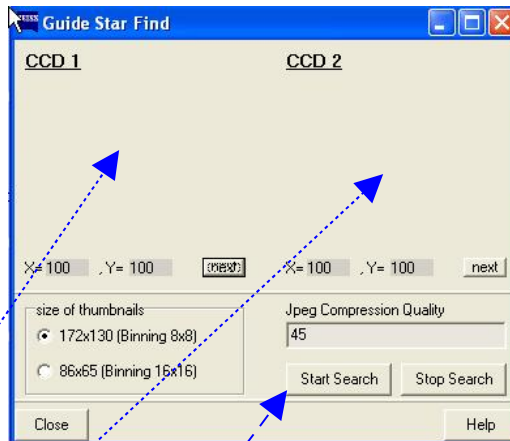
Using right click on the window, we may select the following: configuration sets and standard algorithm and then press OK



Next, go to central menu, AGU, CCDs, Find and Select Guide Stars option

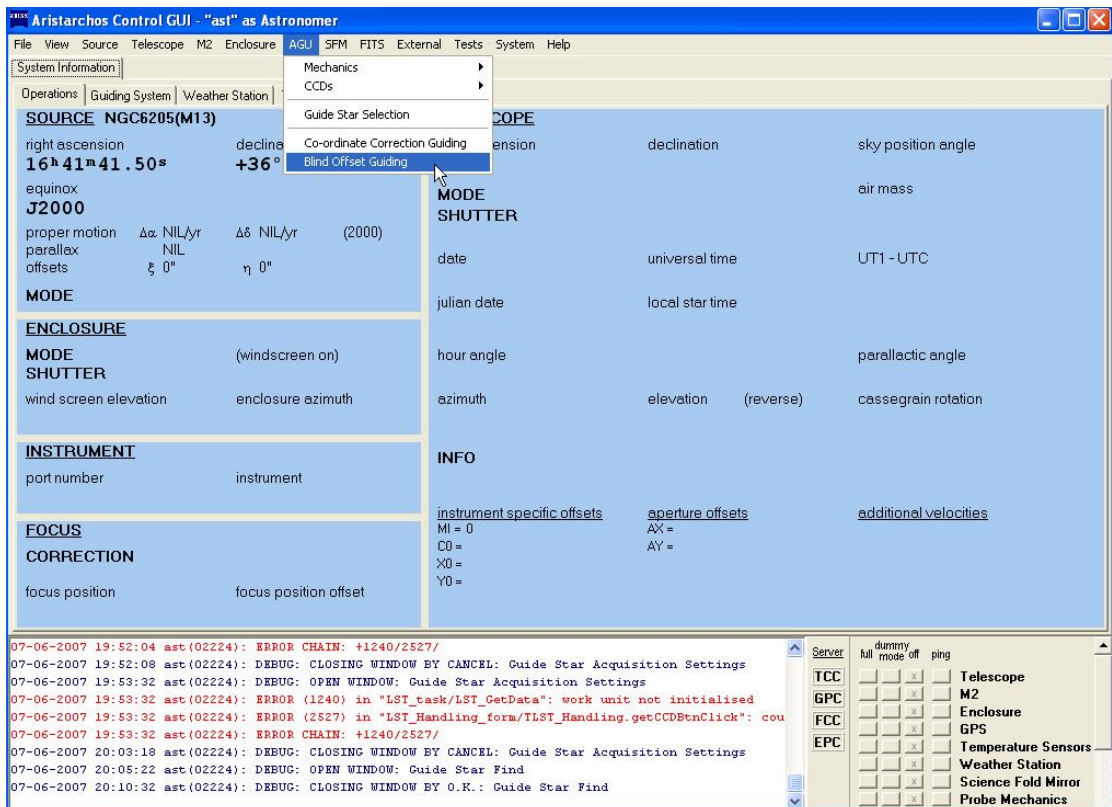


and the following window emerges



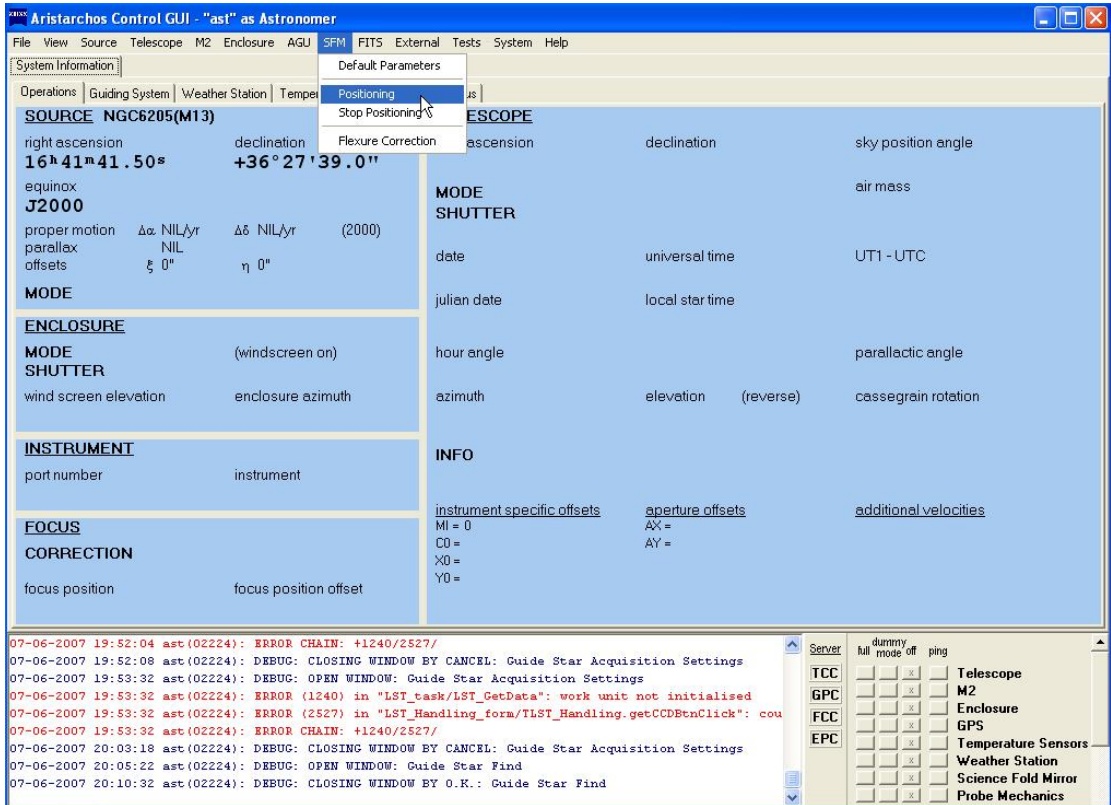
Click on start search button, then some guide stars come out on the empty areas below CCD1 and CCD2, which we may select by pressing left click. Finally, we Close the window

Next, goto central menu, AGU, Blind Offset Guiding



SCIENTIFIC INSTRUMENT

In order to pick the instrument we wish to observe with, go to central menu, SFM and positioning



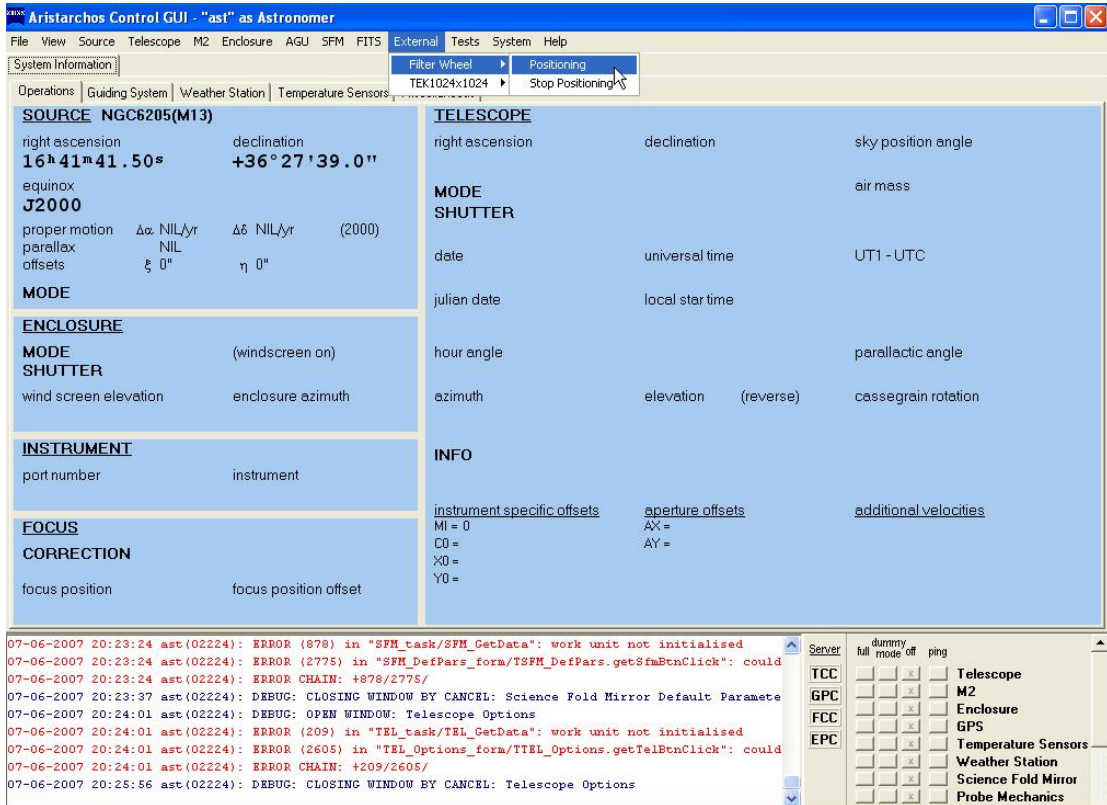
Then, the instrument selection menu does come forth



We easily select the desirable instrument and press OK

OBSERVATION SETTINGS

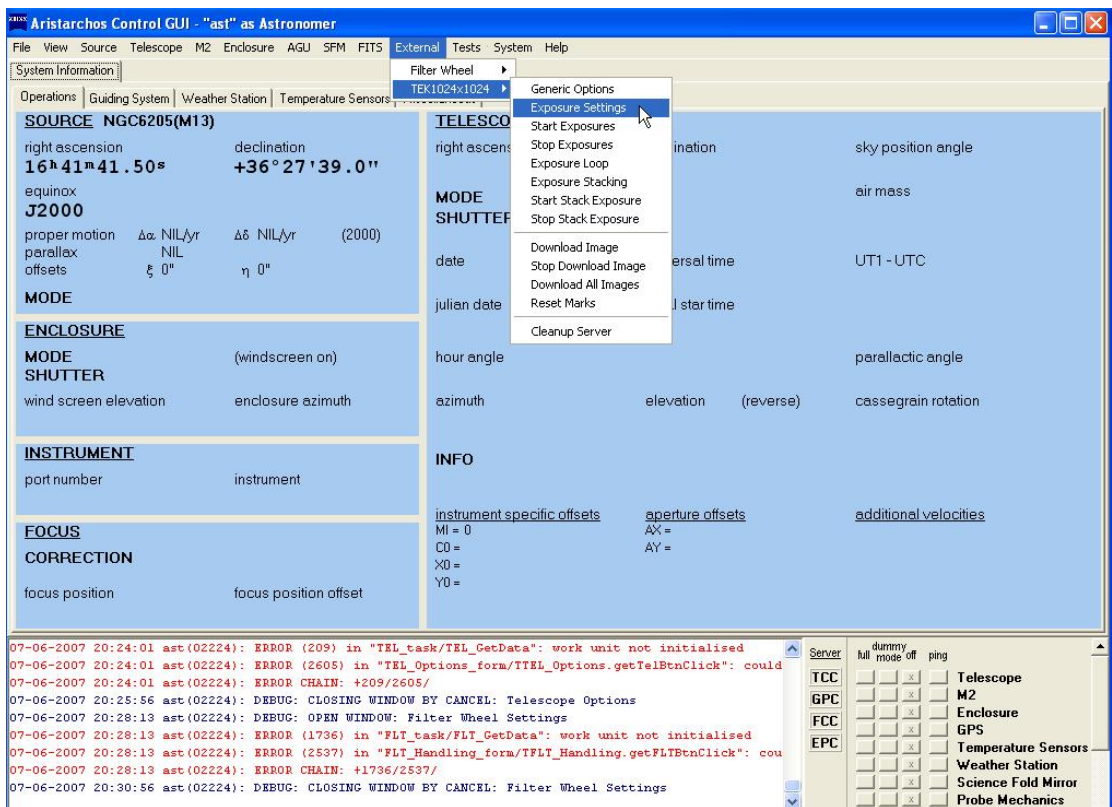
Go to central menu, External, Filter Wheel and Positioning



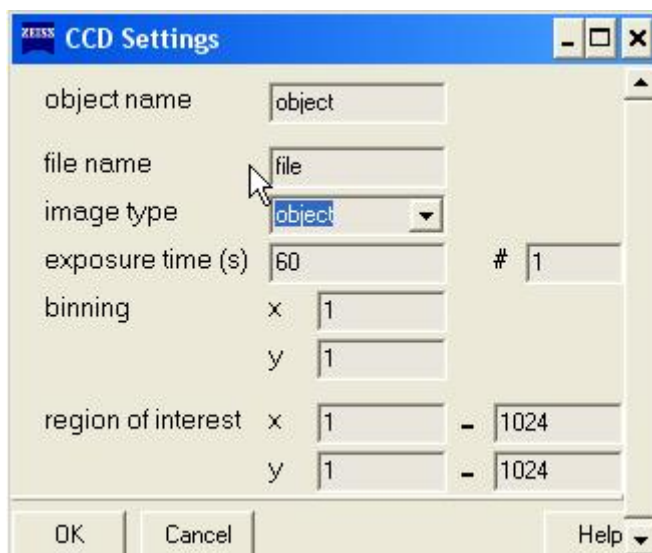
and the filter menu arises as shown. Choose appropriately and press OK



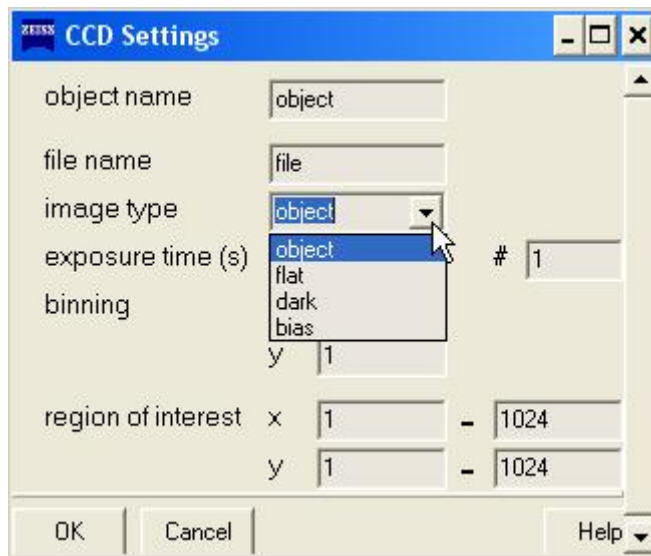
Next, go to central menu, External, TEK1024x1024 and Exposure Settings



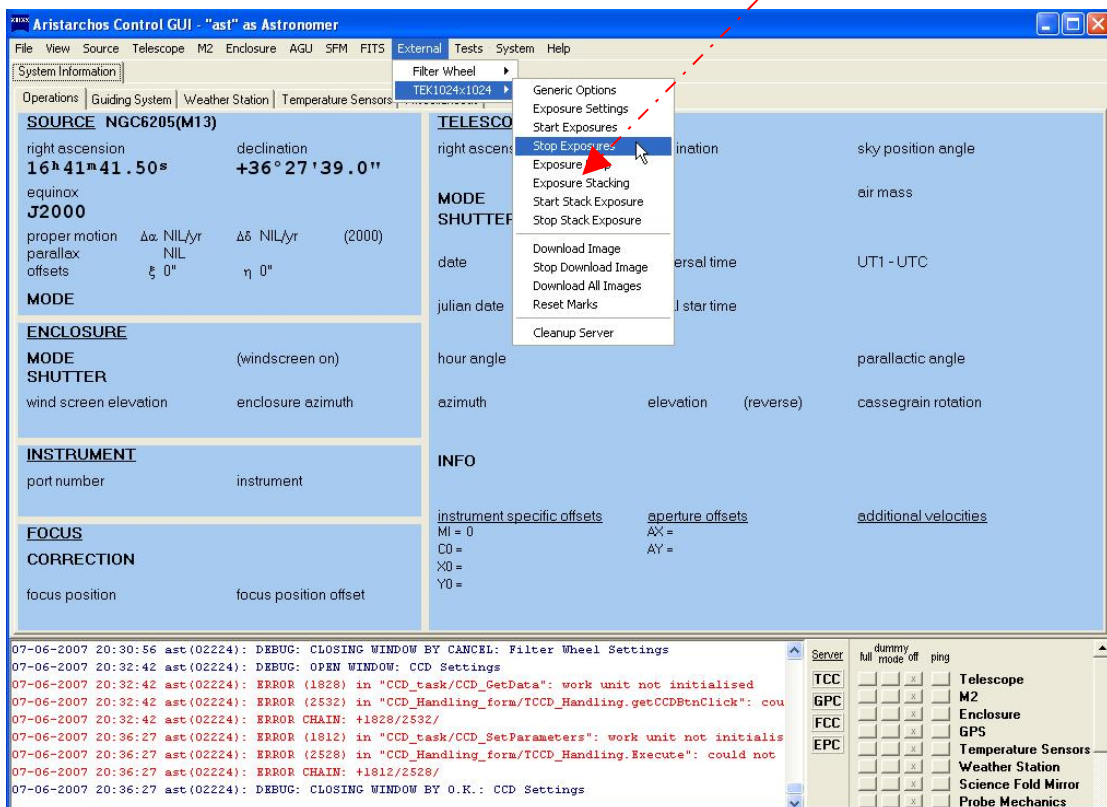
and the observation selection menu develops as follows



On the option image type, we may pick object (real observation), dark, bias or flat

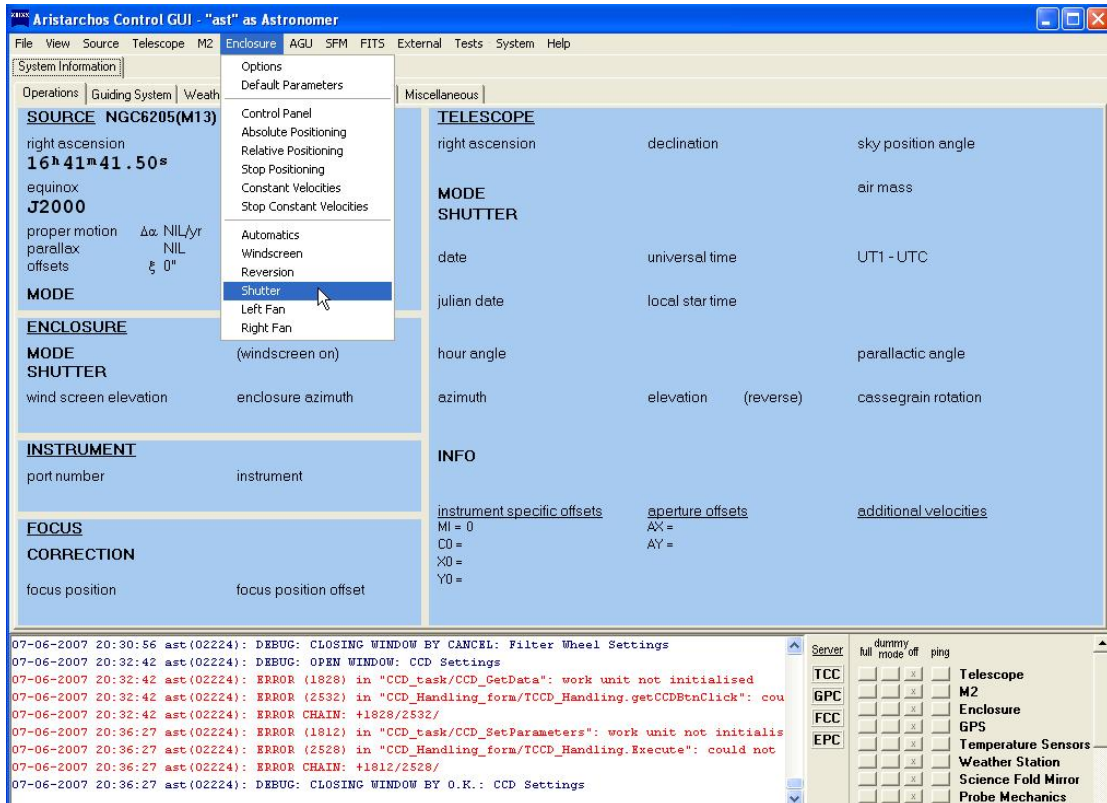


After fixing the observation status, we then Start Exposures as shown below

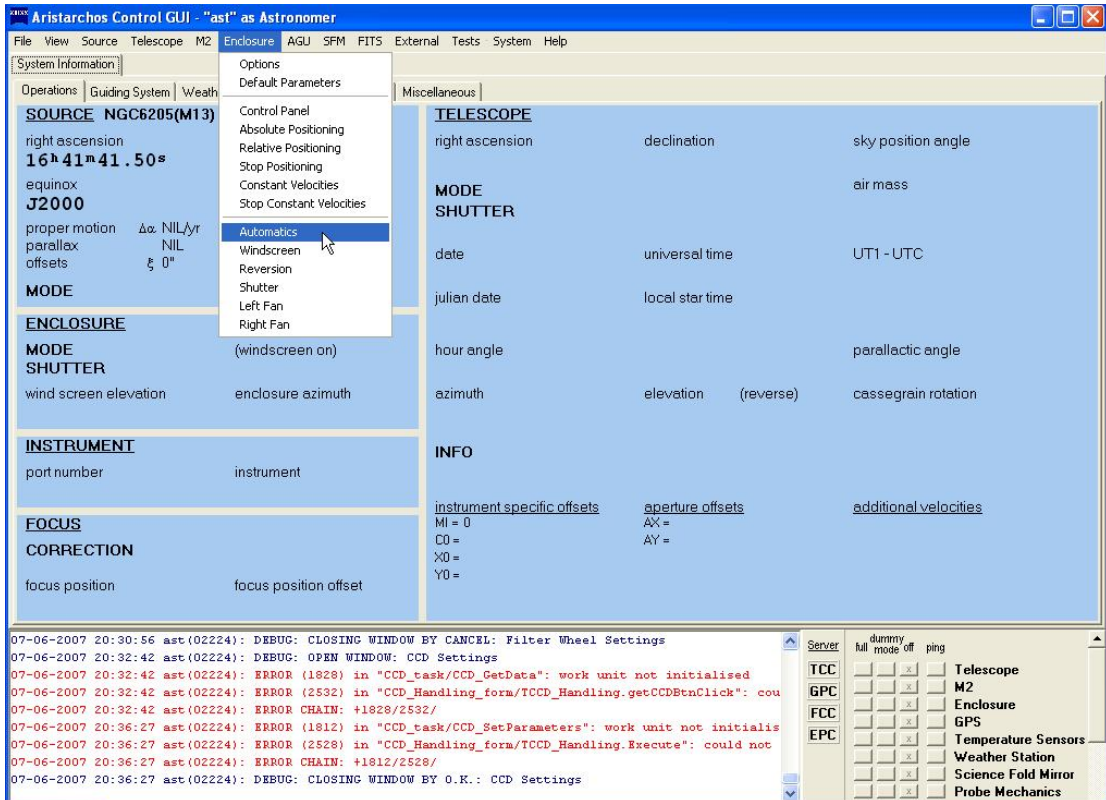


ENCLOSURE

We may open the enclosure (dome) simply by going to central menu, Enclosure, Shutter

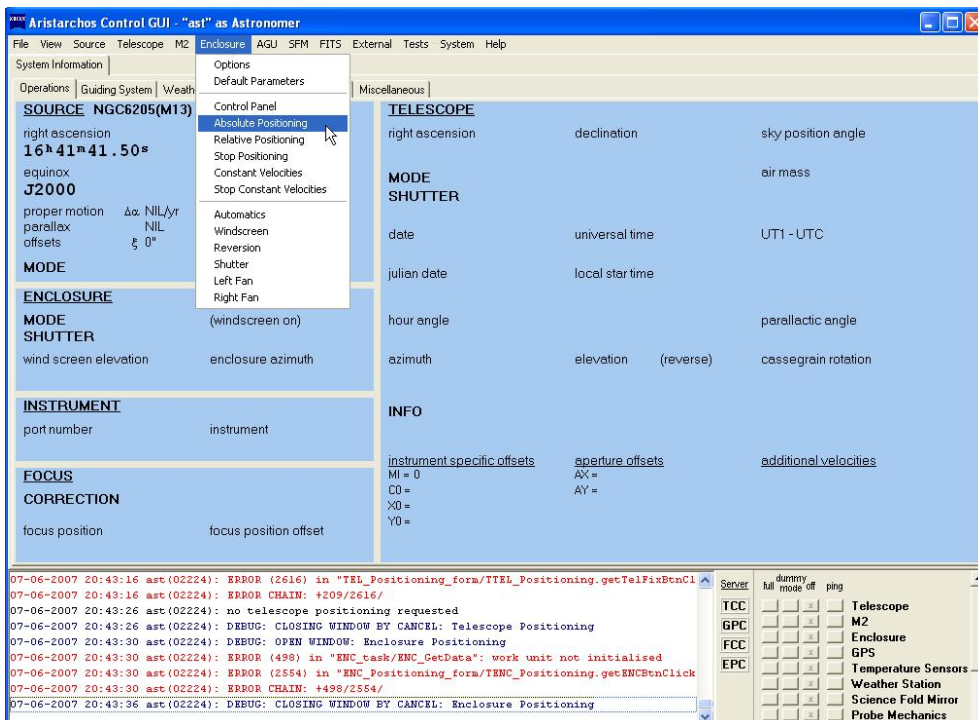


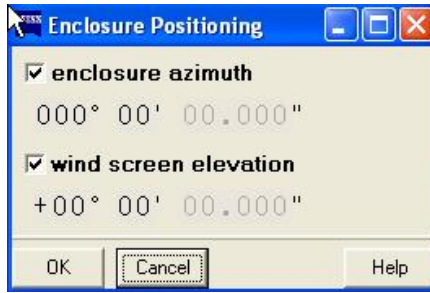
For the enclosure to follow the telescope we press Automatics (central menu, Enclosure)



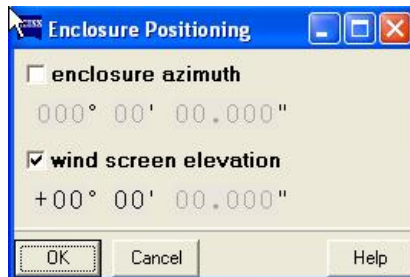
WINDSCREEN

This option is activated by default. If we wish to raise or lower the windshield, we may go to central menu, Enclosure, Absolute Positioning, where the following window appears





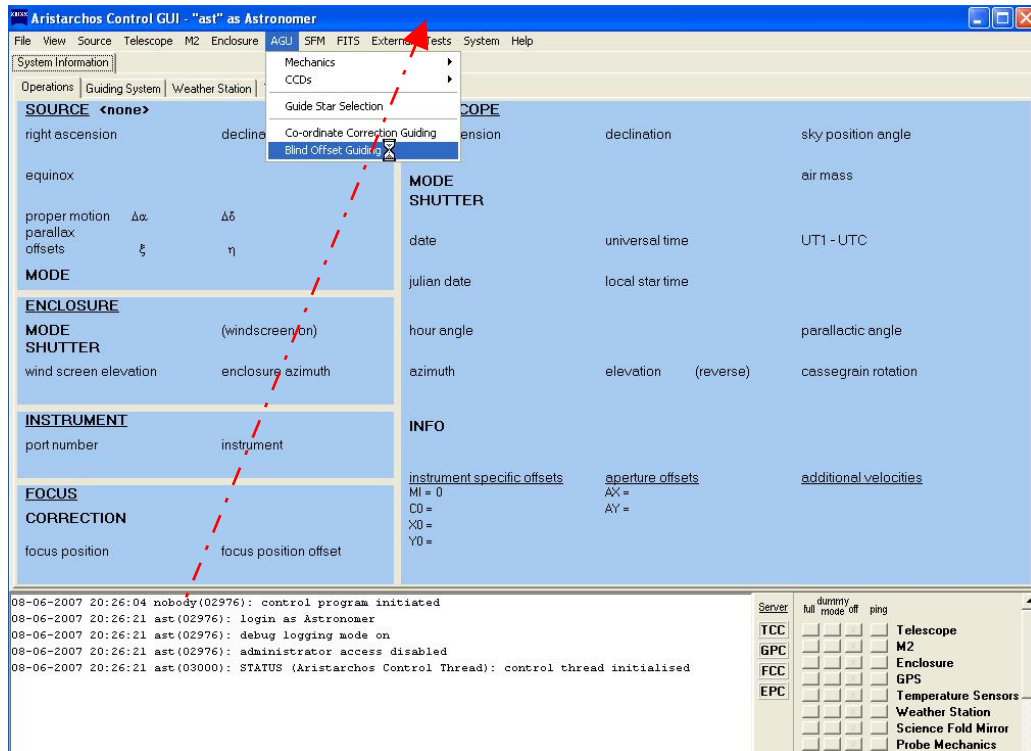
and choose a desirable elevation limit as below (after deactivating the enclosure azimuth option)



NB: The windscreen elevation, has a maximum value of 70 degrees.

CHANGING FROM ONE TARGET TO ANOTHER USING GUIDING

To change the target during an observation (using guiding) we do the following:
Deactivate Blind Offset Guiding in the menu AGU:



Then reset blind offsets option in the Telescope menu:

