C H I L E S C O P E
astronomy on demand

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Remote Planetary Imaging

Using the 1 metre telescope

USER GUIDE

Dear customer, welcome to the CHILESCOPE remote imaging world!

This document will help you to understand all necessary steps you need to take to acquire the high quality Planetary images using CHILESCOPE services.

CHILESCOPE team is proud to propose you remote imaging services under dark and clear Chilean sky.

Our site has about 300 clear nights per year and sub-second seeing condition. This provides astrophotographer with unique opportunity of high resolution imaging.

This guide is intended to help those using the 1m telescope for planetary imaging quickly become familiar with its controls and operation.

Telescope and Camera details:

Site location: 20km SE of Cerro Pachon, Chile.   30º 27' South   70º 45' West

Site Altitude: 1560m

Telescope: 1m F/8 RC working at F16 manufactured by ASA.
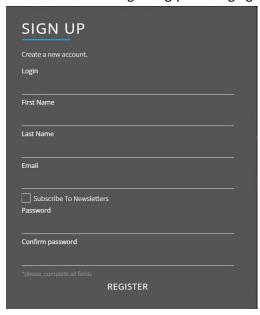
Camera: ZWO ASI174MM camera

Image scale: 0.07"/pixel

Camera Control Software: Firecapture (latest version.)

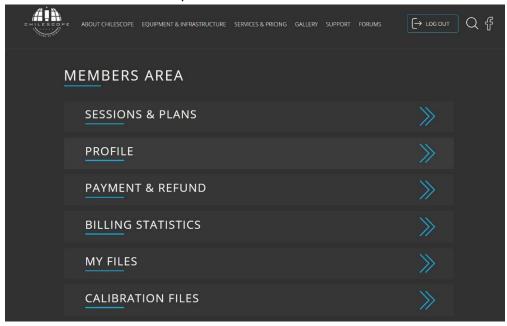**Filters:** L, R, G, B, UV, IR642, IR685, IR742 (CH4 and IR1000 coming soon.)

Logging on

Sign up on our web portal www.chilescope.com. Enter your user name, password and e-mail address. All alerts regarding your imaging sessions will be sent to this e- mail address.

1. After registered you allow access to Members Area where you can plan your observing sessions, monitor your observations, check your balance and so on.
   PROFILE. Maintain your personal data
   PAYMENT and REFUND. Make payments through PayPal system, use available discounts
   BILLING STATISTICS. Monitor your balance and all financial transactions
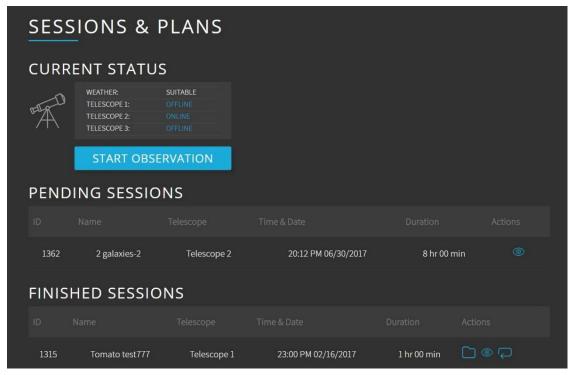
2. You can replenish your account in PAYMENT and REFUND section.

3. The telescopes hourly rates and discounts are located in PRICES section of web portal. The fixed price for 1 hour of planetary imaging is 200 USD. No Moon phase refund is applicable in case of planetary imaging. Minimum session duration is 1 hour.
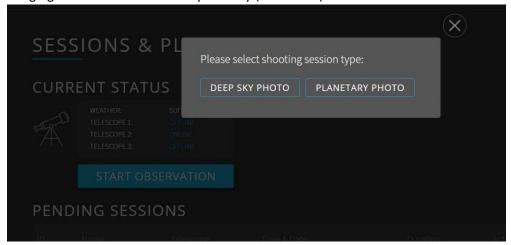
4. As soon as your balance is positive you can start to plan your observing sessions. Before creating sessions and plans on CHILESCOPE portal please do some preparatory work to plan your observation better. Choose the planet you want to image. Using any planetarium software, check and determine the best date and time for observation. Check if the object has orientation and moons orientation you want to capture. Think about session strategy (filters, exposures, focusing and so on).

6. As soon as you are ready with imaging strategy you can start session development
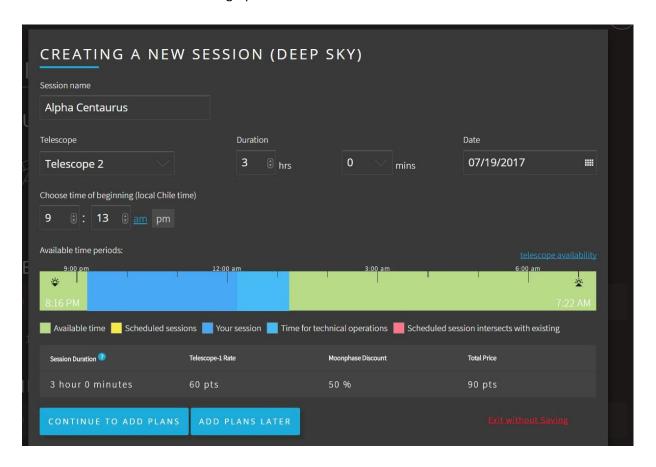
Go to section SESSIONS and PLANS, check the telescopes statuses (on line/off line) and then go to START OBSERVATION

7. The system will suggest you to choose DEEP SKY or PLANETARY PHOTO. Please choose PLANETARY PHOTO. Planetary sessions are not automated. The system just books observing time for you. The session is done manually with CHILESCOPE operator assistance. Planetary imaging can be done on Telescope 1 only (1m RC F:8).

8. Now you are ready to plan your sessions. NOTICE, time the system operates is CHILEAN local time! Please input Date of session, start time of session, session name, session duration.
Your session is now shown on the graph

Press SAVE SESSION
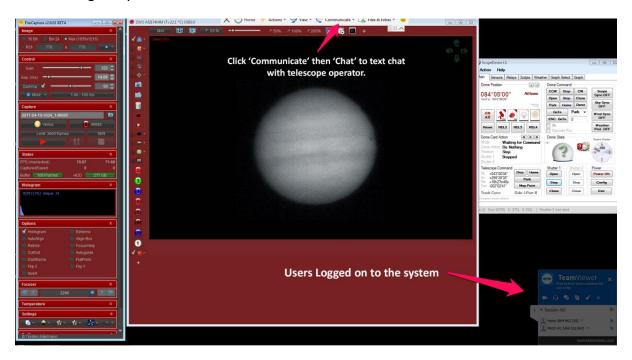Now time for your session is booked in CHILESCOPE system

Also you can check telescope availability on weekly, monthly and yearly basis by pressing appropriate link

To use the system one must download and install the Team viewer remote desktop client. This can be found at https://www.teamviewer.com/

Note! A high speed internet connection is required for operation since the process involves streaming live video. If you have a slow ADSL type connection you may struggle to operate the system properly!

Upon booking at session you will be provided with log on details to access the observatory PC . The telescope operator will greet you upon logging on. When you log on the following screen will greet you.

Your chosen object will already have been centred on the chip by the telescope operator. You can easily communicate with the operator via the 'Communicate' tab at the top of the screen (Team viewer control bar.) Any questions or problems just ask and they will do their best to help!
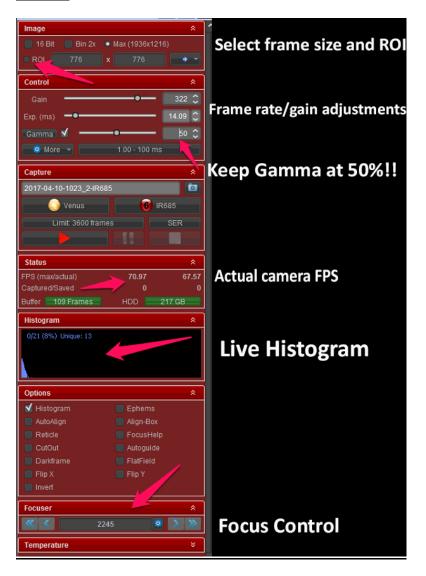
Focusing

This is perhaps the trickiest part of the process. Filter focus points should already be very close to the required value though may need some adjustment (since temperatures will vary slightly.) Spend at least several minutes focusing the filters you wish to use. NOTE! Once focus points are calibrated for the filters Firecapture will automatically refocus upon changing filter – you do NOT need to refocus each time!

Ease of focusing will depend upon how good the seeing is. The live feed is usually quite good in giving rates of around 10fps which is good enough for precise focusing. Take your time with this stage as it is important!

Focus control can be seen in the Firecapture sidebar. Use the ==DOUBLE ARROWS== to make focus adjustments as this corresponds to the smallest step on the native focus control.

Settings

==**ROI (Region of Interest)**== - Use a square ROI size if possible as its more stable and less prone to 'Capture Failed' errors.

==**Exposure/Gain settings**== - Adjust using the sliders. Firecapture will remember your settings for the filter selected.

==**Capture Menu –**== Set frame count/capture time limit and capture format (SER is best format.) Filter change can also be done here.

==**Gamma setting**== - Keep this at 50% to avoid image artifacts.

FPS vs Actual FPS - Keep an eye on this setting and also the buffer bar. Setting capture speed too high will resulting in data lag to the drive.
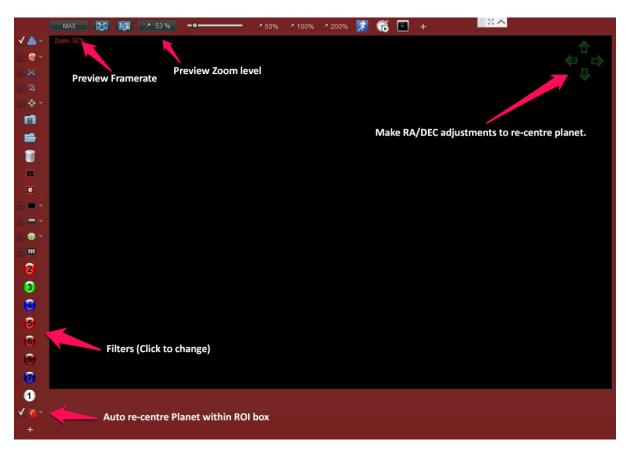
Live Histogram - Make sure this remains below 90% when capturing!

Focus Control readout – Adjust focus from here.

Telescope control

Adjustment to the telescope position can be easily done using the arrow pad in the top right corner of the live preview screen. Other changes can also be made here such as changing filters etc. Hover over the various buttons to get a brief caption on what each control does.

To adjust the scope position you'll need to click several times on each button as the adjustments are very small (to keep object centred in field.)

Filters

To select filters simply click the filter button indicated to bring up the selection available. Again note Firecapture will automatically refocus for each filter one you have calibrated the focus positions.
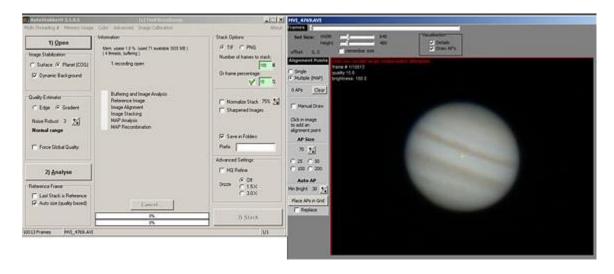
Capturing data

Here is a simple workflow to follow:

1. Set object ROI size (try and keep frame square to avoid capture failed errors.)
2. Focus each of the filters you wish to use (Firecapture will remember the setting.)
3. Set capture time limit or frame count limit
4. Set format to SER.
5. Set capture folder to appropriate drive (Telescope operator will inform.)
6. Begin capturing data!

Processing the data

Once your session has finished your data will be transferred to another PC specifically dedicated to image processing. Installed here you will find Autostakkert!3 which you can then use to reduce your video data to raw images.

Alternatively, if you have a very high speed connection, you can also ask the telescope operator to transfer your video data to you via WeTransfer.

Conclusion

Spend time focusing at the start of the session – ten to fifteen minutes. Once this is done concentrate on data capture. With good seeing nice results are possible, though bear in mind with such a large aperture very good seeing is needed for excellent results. Even here seeing is not always excellent! If seeing is very bad the session can be re-scheduled.

Steady skies and good luck!