

Guidelines for HARPS **observations**

This is a general introduction to observe with the HARPS instrument attached at the 3.6m telescope from the new control room located in the former library building in La Silla.

These guidelines do not substitute the user manual, that can be found in the web page:

<http://www.eso.org/sci/facilities/lasilla/instruments/harps/doc/index.html>

Welcome to the control room



Make sure to read about the La Silla operation scheme in:

<http://www.eso.org/sci/facilities/lasilla/sciops/LS2010/index.html>

The 3.6m console I

The astronomer's area



- DHS terminal, from here run P2PP
- HARPS pipeline
- Offline computer

The operator's area



- The real time display

The 3.6m console II

Intended use of the various computers:

- Offline computer:
 - Free use: web browser, e-mail, data reduction “by hand” (MIDAS, IRAF, IDL are available).
- HARPS pipeline computer:
 - only the HARPS pipeline (online or offline) is supposed to run in this computer.
 - the user can generate and run small scripts to look at the data
- DHS (Data Handling Software) computer:
 - only P2PP can run in this computer

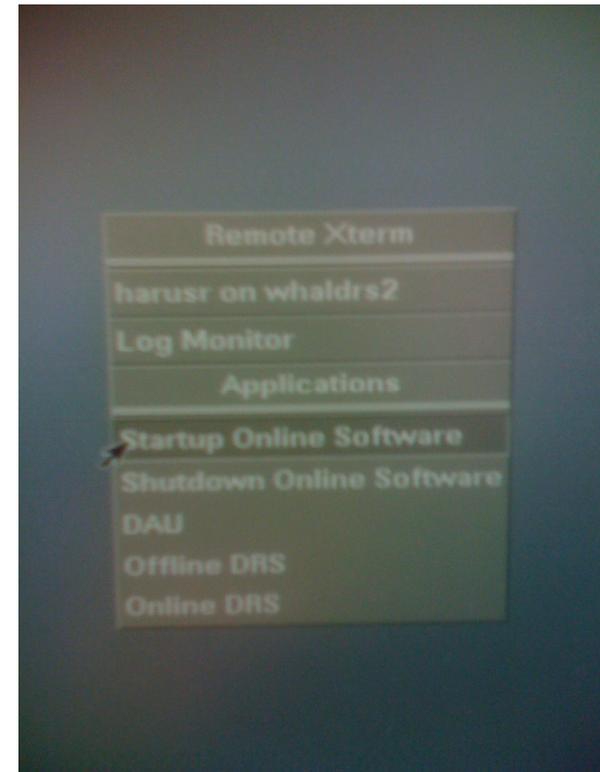
A different use of these computers might interfere with the observations and generate downtime !!!

The pipeline computer: WHALDRS2

The user is logged in the account “harusr”.
This account has only read permission on the data.

All relevant applications can be started from a menu activated by pressing the left mouse button from the background.

- Startup online software:
the online pipeline is started,
as well as a software that is
monitoring the quality of the guiding.
- Shutdown online software
- DAU: this software can backup your data
on your private USB disk, if required.
Anyway, you will get your data on DVD
as well, as per your *backup request*.
- Offline DRS: useful tool to look at and reprocess
your data if needed.
- Online DRS: this starts only that part of the online
software concerning the data reduction.

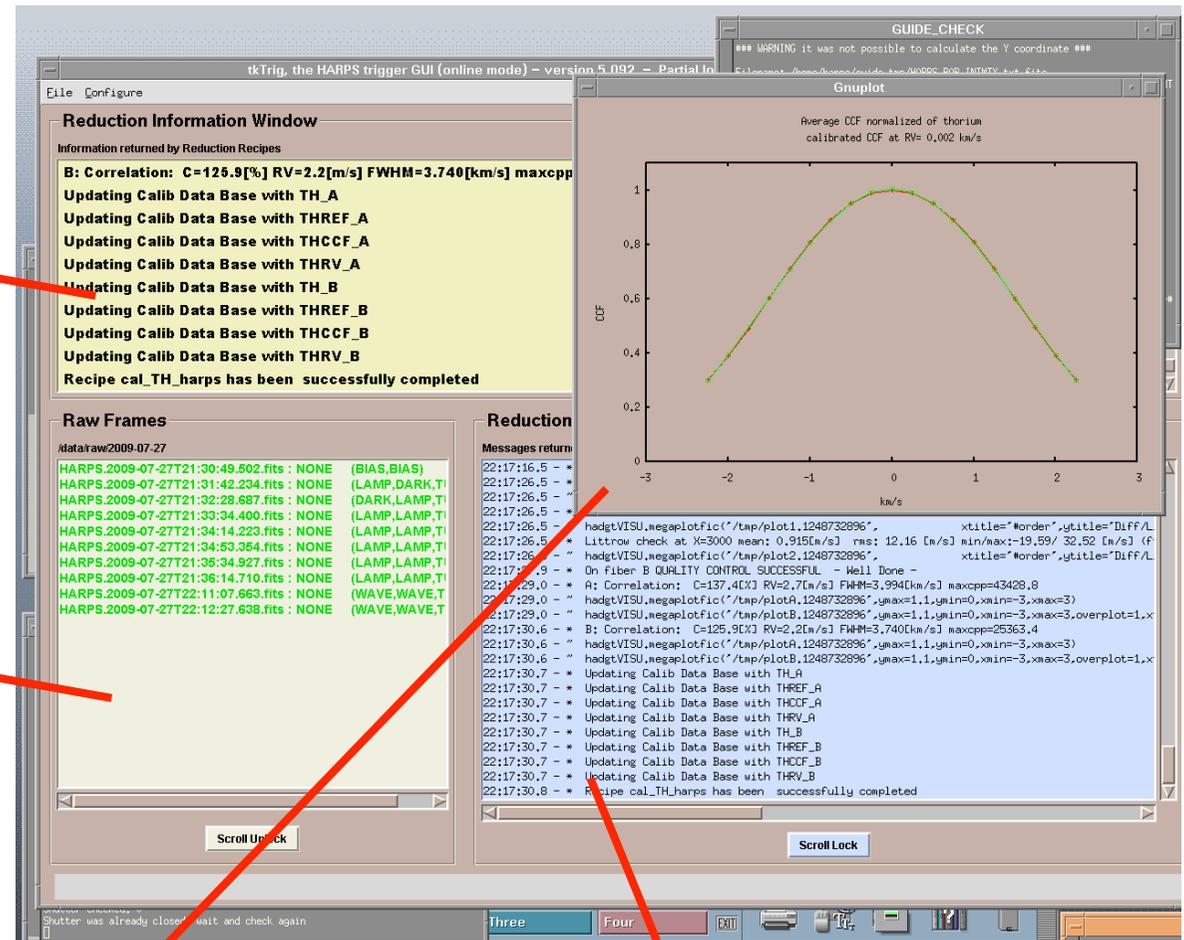


The data reduction software (pipeline)

Relevant figures out of the data reduction (S/N, RV, etc.)

Reduction log

Some graphic output (extracted spectrum on a sample order, FF shape etc.)



Pipeline log monitor (status of the reduction, error messages, etc.)

The data reduction software (pipeline)

Color code of the filename in the reduction log:

- Black: file just arrived, nothing done
- Blue: reduction on this file ongoing
- Yellow: on hold: it needs to wait for more files before starting the reduction
- Light green: reduction completed successfully
- Dark green: reduction completed with warning
- Red: error in the reduction

The pipeline computer: WHALDRS2

Location of the data:

/data/raw/yyyy-mm-dd -> raw data
/data/reduced/yyyy-mm-dd -> reduced data

Useful scripts:

list_spectra_harps yyyy-mm-dd

 this script produces a log file of the observations

list_rv_harps yyyy-mm-dd

 extracts the RV data from the fits header of the reduced files. The output is immediately useful for RV analysis.

The pipeline computer: WHALDRS2 troubleshooting

Two classes of problems might happen:

- the guiding monitoring software misbehaves;
- the reduction software misbehaves.

In both cases it should be enough to shutdown the online software and to start it up again from the menu.

If the reduction software hangs again after a new startup, it means that the last raw file it is trying to reduce is corrupted. Ask the operator to remove the file (you will still get the raw file from the archive).

The pipeline computer: WHALDRS2

- Please, put all the files you might generate (not the reduced data files) under a directory with your name under `~harusr/`
- Please at the end of your run clean after yourself (i.e. remove the directory with your name).

The DHS computer: w3p6dhs

This computer is used to plan the observations via the “p2pp” software package.

p2pp can be started via the menu, activated by the left mouse button:



Importing the OBs

The observing blocks (OBs) must be imported on p2pp in the w3p6dhs computer before the afternoon calibrations.

The w3p6dhs computer is not accessible from the user network, therefore the OBs must be “pulled” from the user laptop by the DHS computer. A ftp client must be running on the laptop. If not already installed, ftp clients might be downloaded from this site:

<http://filezilla-project.org/download.php>

The OBs should be copied in the directory:

`visitor@w3p6dhs:p2pp-impex/your-name`

that you should have generated previously via the command “`mkdir`”

Importing the OBs in P2PP

From the “File” menu in P2PP select the option “Import” and navigate through the directories.

The screenshot shows the P2PP V.2.13.1 software interface. The title bar reads "P2PP V.2.13.1 Na stars@060.A-9700(G)/SM/HARPS". The menu bar includes "File", "Finding Charts", "Ephemeris Files", "Readme", "Edit", "Folder", "Reports", and "Synchronise". The "File" menu is open, showing options like "New", "Move", "Display Object Details", "Refresh Object Target Data", "Verify", "Check-in", "Delete", "Login as ...", "Check-out...", "View Phase1 Targets", "Download/Refresh Observing Runs", "Import Target List", "Import", "Export...", "Engineering Mode", "Clone OBs to Database", "Close", and "Quit". The "Import" option is highlighted. Below the menu, there are buttons for "Readme" and "p2pp-submit", a "Period" dropdown set to "A11", and icons for "CCS" and "Direct". A "Summaries" section contains a "CalBlock" button. A table with columns "Name", "Dbaseld", "Status", "Target", "OD", "CS", "Acquisition", "Finding...", and "Ephem..." is visible. The table contains several rows of data, including entries for "EGGS", "tau CMa", "eta Ori", and "beta Sco".

Name	Dbaseld	Status	Target	OD	CS	Acquisition	Finding...	Ephem...
EGGS	100243878	e(X)ecuted	S Mon	S Mon	7+10	HARPS_e...	(0)	
	100243879	e(X)ecuted	tau CMa	tau CMa	7-25	HARPS_e...	(0)	
	100243877	e(X)ecuted	S Mon	S Mon	7+10	HARPS_e...	(0)	
-EGGS	100243880	e(X)ecuted	tau CMa	tau CMa	7-25	HARPS_e...	(0)	
-EGGS	100243866	e(X)ecuted	eta Ori	eta Ori	No Name	HARPS_e...	(0)	
	100243865	e(X)ecuted	eta Ori	eta Ori	No Name	HARPS_e...	(0)	
o-EGGS	0	e(X)ecuted	beta-Sco	beta-Sco	No Name	HARPS_e...	(0)	
	0	e(X)ecuted	beta-Sco	beta-Sco	No Name	HARPS_e...	(0)	
	0	(P)arti...	Csi-0ph	Csi-0ph	No Name	HARPS_e...	(0)	

Program ID

Always be very careful to use the assigned program ID for the observing run. If the correct program ID does not appear in the P2PP left window, from the menu in the top, select the option “File”, and from there the option “Download/Refresh Observing Runs”.

Preparing the OBs

Instructions on how to prepare the observing blocks can be found in the User manual and in the Template manual, both linked through the page:

<http://www.eso.org/sci/facilities/lasilla/instruments/harps/doc/index.html>

Target change

In case the user would like to observe targets that aim at the same scientific goal of the proposal, but were not listed in the proposal, the target change request form should be filled and submitted as soon as possible:

http://www.eso.org/sci/facilities/lasilla/sciops/observing/vm_backup.html

Executing the OBs

To execute an OB, select it from the P2PP panel, the OB should be marked in blue. Inform the telescope operator that the OB is ready to be executed.

The new STS

- In the w3p6dhs computer, login as user “harps”. If necessary use the command:
>su – harps
ask the operator for the password
- Type: nsts.csh (it does not matter on which directory you are).
Important directories:
 - catalogs
 - RUN_NSTS: to save the lists
- Manual: HARPS home page -> Manuals -> Short Time Scheduler (STS)

HAM & EGGS

Two modes are available for HARPS observations: HAM (High Accuracy Mode, better than 1m/s RMS RV long term precision), and EGGS (general spectroscopy, 10m/s RMS RV long term precision).

The EGGS mode is available with one fiber only.

Standard calibration OBs for these two modes are available (see user manual for details). Just ask the operator to execute the standard calibration OB for the mode of your choice.

High S/N observations

High S/N observations ($S/N > 800$) require a larger number of flat field exposures to be taken. In this case the user could ask the operator to increase the number of flat exposures in the standard OB. The standard OB (5 flats) permits to reach a S/N of 800 at 550nm.

Earthquakes

In case of an earthquake it is advisable to repeat the calibration sequence.

At times earthquakes have been responsible of radial velocity apparent shifts of up to 10m/s

Meteorological conditions

Meteo conditions can be monitored through the web pages:

<http://www.lis.eso.org/lasilla/dimm/>

[http://www.lis.eso.org/lasilla/sciops/2p2/
EnvMon/2p2/](http://www.lis.eso.org/lasilla/sciops/2p2/EnvMon/2p2/)

Meteorological conditions

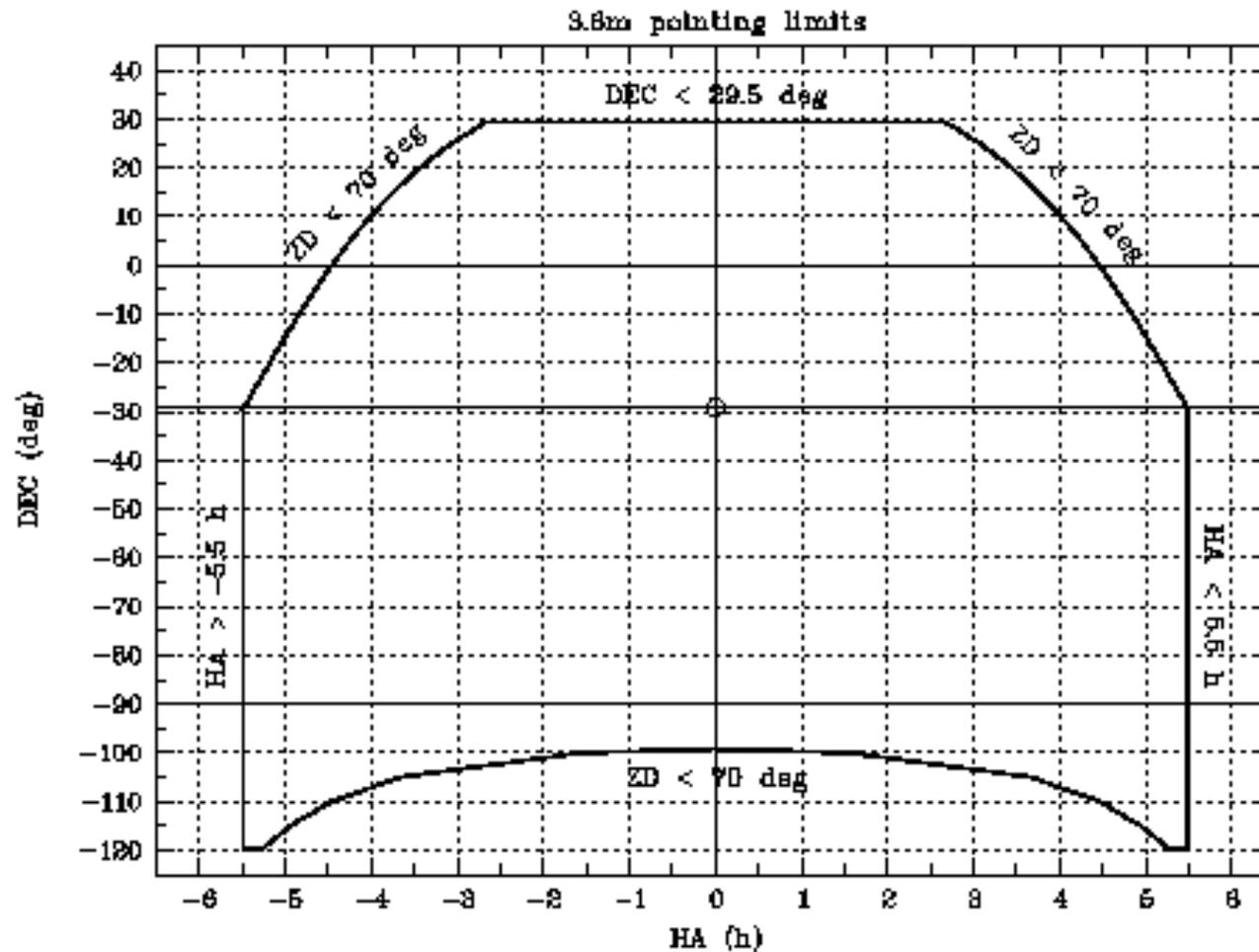
The telescope operator is responsible to stop the observations and close the telescope in case of bad weather. For reference only we indicate the limiting conditions for the 3.6m telescope:

- Wind speed $> 20\text{m/s}$ \Rightarrow close the telescope
- Wind speed $> 14\text{m/s}$ but $< 20\text{m/s}$ \Rightarrow point > 90 degrees away from wind
- Humidity $> 90\%$ \Rightarrow close the telescope, reopen when humidity $< 80\%$

These data are for reference only, closing the telescope is the responsibility of the telescope operator.

Prevalent winds are from the North, make sure to have targets to the South, in case the winds from the North are strong.

Pointing limits of the telescope: a reminder



End of mission report

Please, do not forget to fill and submit the end of mission report:

<http://www.eso.org/sci/facilities/lasilla/sciops/EoM/>