

Getting the most out of your observing time

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Congratulations

**ESO observing time was allocated
to your programme !!**

Your goal

- Obtain data as soon as possible
- Obtain all the data
- Obtain highest quality data

Getting the most out of your observing time

Your next step (PHASE2)

- Select the right **STRATEGY** and carefully **PREPARE / PLAN** your observations

Checklist:

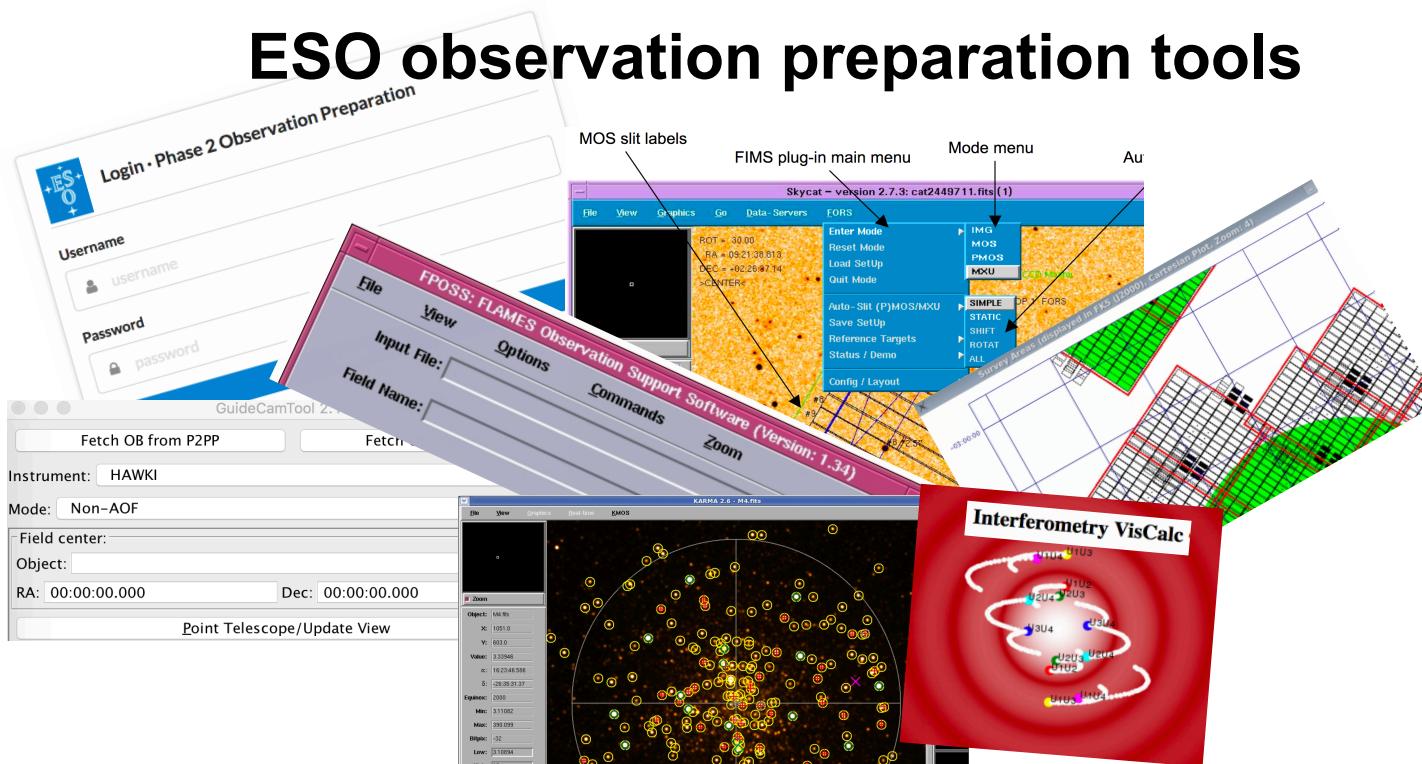
- Do I need special calibrations? → check the standard calibration plan
- Select best instrument set-up (→ User Manual/Template manual) and exposure times for your science (Phase1 is binding)
- Re-Calculate exposure times with ETCs, check the S/N
- ESO service mode rules → Check if you need to submit a waiver (e.g. >1hr OB)
- Check Phase2 instrument specific webpages
<http://www.eso.org/sci/observing/phase2/SMGuidelines.html>

Getting the most out of your observing time

Your next step (PHASE2)

- Select the right **STRATEGY** and carefully **PREPARE / PLAN** your observations

ESO observation preparation tools



General Strategies

What is your programme's ranking?

- Rank class (i.e. priority) of your programme (in SM)
 - **Rank A - High Priority:** These programmes are considered to have the highest scientific value and are executed first as observing conditions allow. ESO makes every possible effort to complete programmes in this Group.
 - **Rank B - Medium Priority:** Programmes in this group have lower scientific priority than Group A and are executed only when no Group A programme can be executed. ESO tries to complete all programmes in this Group, but incomplete programmes are terminated at the end of the allocated semester
 - **Rank C - Low Priority:** These programmes have lower scientific priority than those in Groups A and B – any weather programmes

General Strategies

- Rank class \leftrightarrow Observation block (OB) constraints
 - OB constraints: Airmass, Sky transparency, Lunar illumination, Moon Angular distance, Image quality
 - Probability of realization \rightarrow OB constraints

60.A-9052(A) · XSHOOTER · **OB** 1988350 [Test_OB](#) (Partially Defined)

Constraints Name

No Name

Airmass

2.8

Lunar Illumination

1

Twilight (min)

0

Sky Transparency

- Photometric
- Clear
- Variable, thin cirrus
- Variable, thick cirrus

1

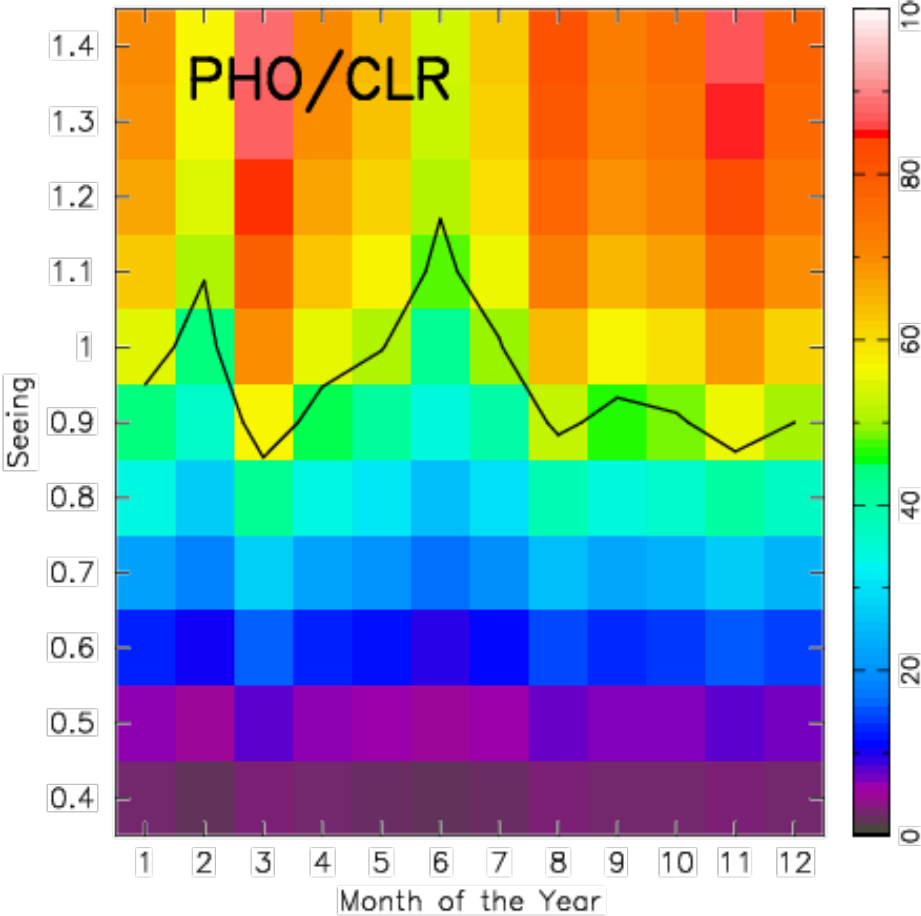
Moon Angular Distance

30

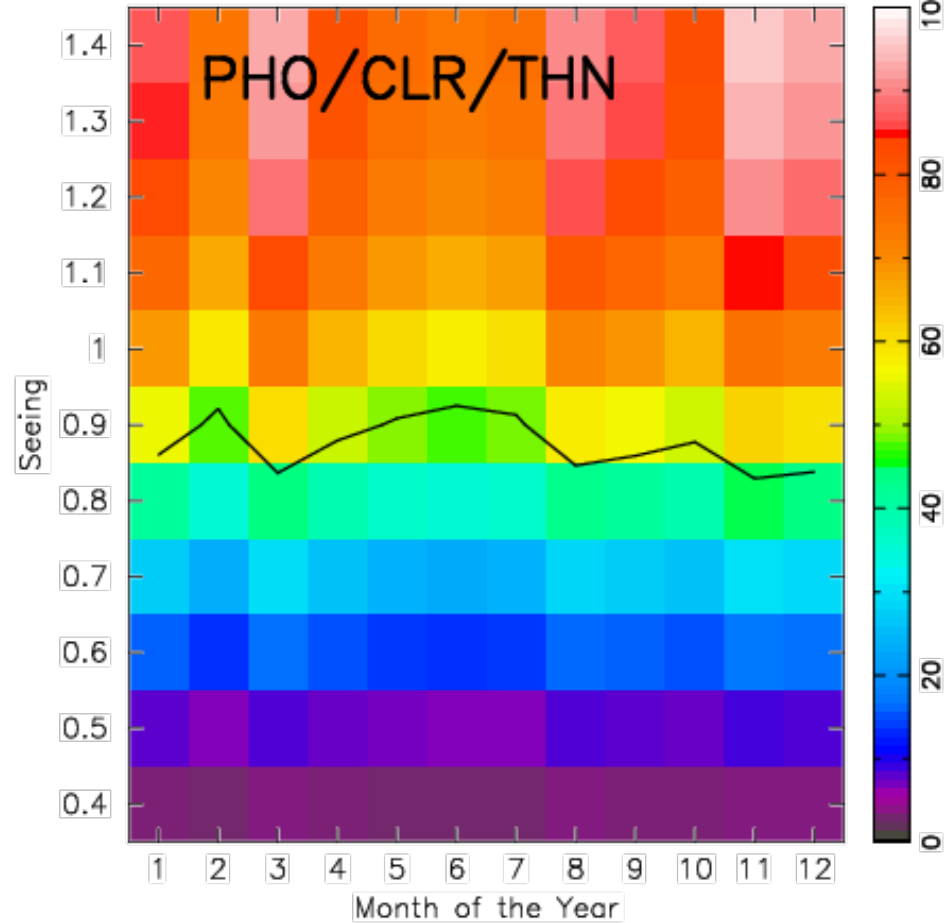
OB preparation tool
p2

Chances of seeing realization

Percent Chance of Success

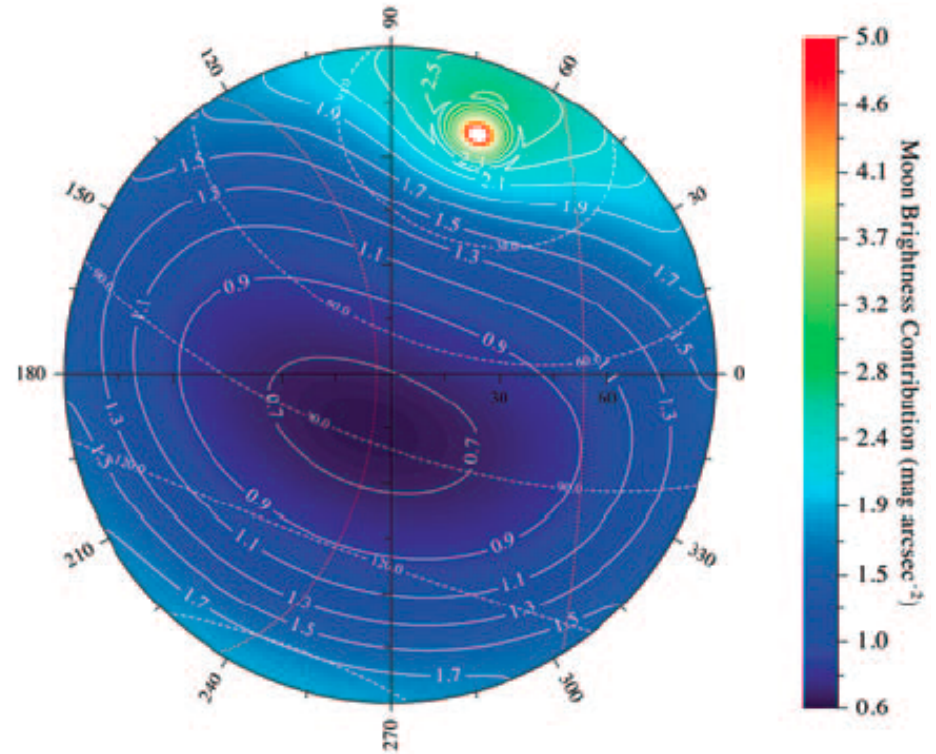
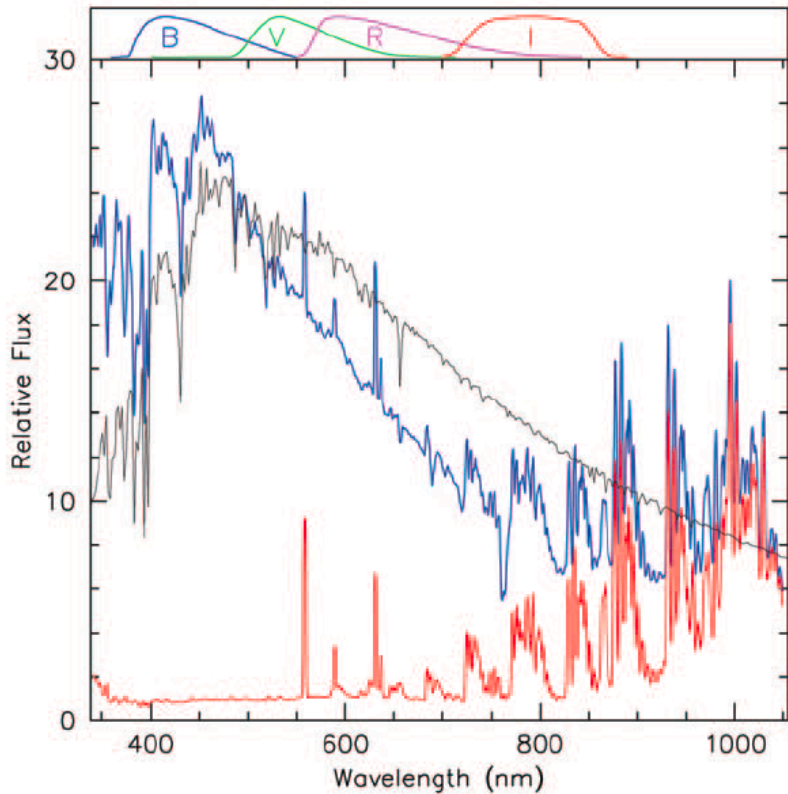


Percent Chance of Success



Primas, F. et al., Messenger Article (Dec 2014)

General Strategies: Bright or Dark Sky



B-filter, FLI=0.5,
moon elevation 20

Patat 2004, Messenger

**Do not overconstrain your OBs (observation blocks) !
Make use of the twilight constraint**

General Strategies

■ Typical OB constraints (but Phase1 is binding!)

Rank A

Constraint Set	
Name	Constraints A-rank
Sky Transparency	Clear
Image Quality (arcsec)	0.6
Airmass	2.0
Lunar Illumination	0.5
Moon Angular Distance	30
Twilight (min)	0
Baseline	
Strehl (%)	0.0
PWV (mm)	0.0
Atmospheric Turbulence Model	
Contrast	0.0

Highest rank class
can have stringent
constraints if needed

Rank B

Constraint Set	
Name	Constraints B-rank
Sky Transparency	Clear
Image Quality (arcsec)	1.0
Airmass	2.0
Lunar Illumination	0.8
Moon Angular Distance	30
Twilight (min)	0
Baseline	
Strehl (%)	0.0
PWV (mm)	0.0
Atmospheric Turbulence Model	
Contrast	0.0

Medium rank class
ok, but remember
termination at period
end

Rank C

Constraint Set	
Name	Constraints C-rank
Sky Transparency	Variable, thin cirrus
Image Quality (arcsec)	1.2
Airmass	2.5
Lunar Illumination	1.0
Moon Angular Distance	30
Twilight (min)	-20
Baseline	
Strehl (%)	0.0
PWV (mm)	0.0
Atmospheric Turbulence Model	
Contrast	0.0

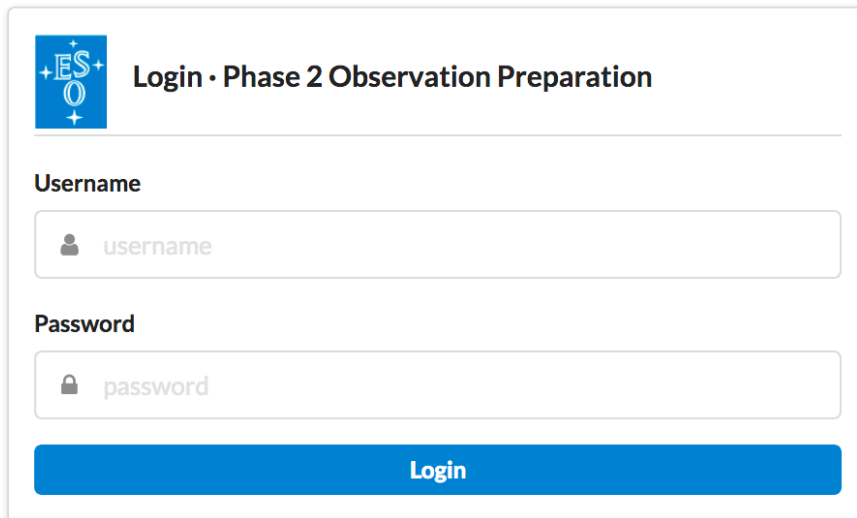
Filler rank class
relax the constraints,
re-calculate exp. times and
expected S/N

General Strategies

- Your programme has limited time allocated – Use it wisely!

p2 web-tool

Phase2 observing preparation (OB preparation)



The screenshot shows the login interface for the Phase 2 Observation Preparation tool. It features the ESO logo in the top left corner, followed by the text "Login · Phase 2 Observation Preparation". Below this, there are two input fields: "Username" with a placeholder "username" and a user icon, and "Password" with a placeholder "password" and a lock icon. A blue "Login" button is positioned at the bottom of the form.

p2 allows to give priorities to OBs

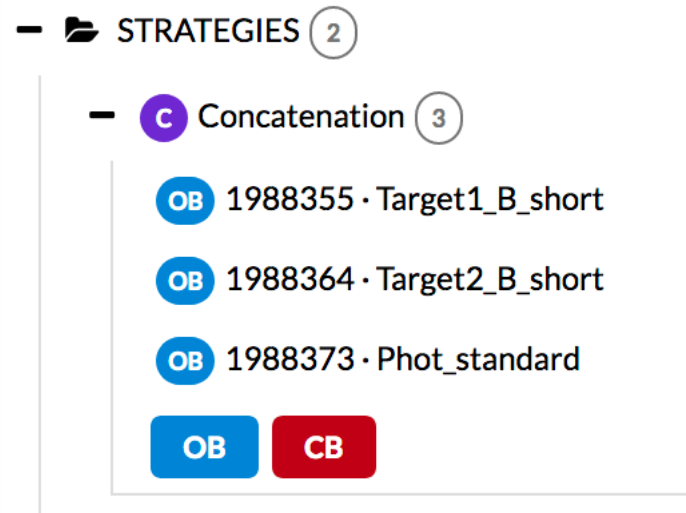
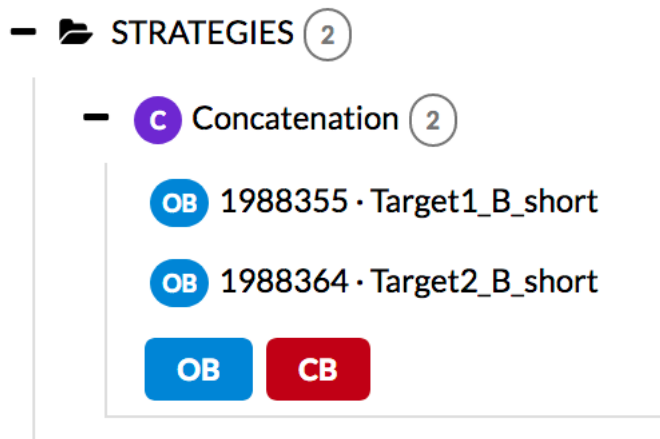
p2 allows to implement different strategies

<https://www.eso.org/sci/observing/phase2/p2intro.html>

General Strategies

■ Optimize your overheads!

- Short OBs with targets close together on the sky can be concatenated (i.e. execution in immediate sequence)
- Calibrators can be concatenated to the science OB

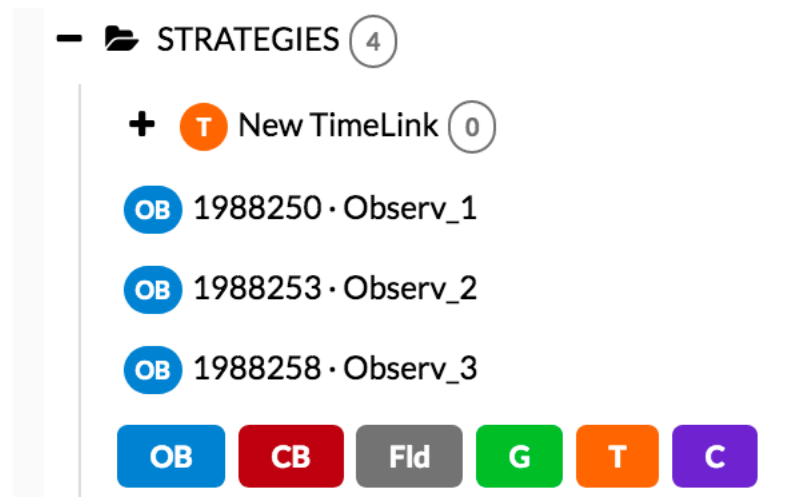


Depending on targets' distances you save up to ~5min per OB

General Strategies

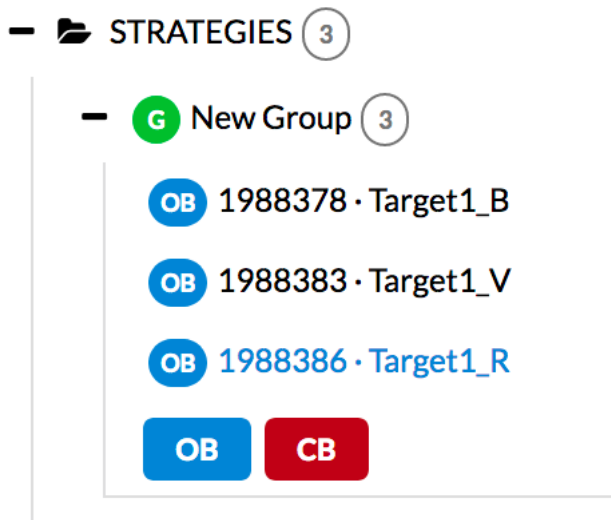
■ Plan your time sequences!

- Use time-links → ensure the quality of your science, e.g. for variability studies
- Check the telescope schedule first
- Don't put stringent time-constraints for rank C programs, loose constraints ok



General Strategies

- Group certain OBs together (Group containers)
 - E.g. complete set of all filter observation for a target
 - E.g. complete set of all (identical) OBs for a deep field
 - Particularly useful for rank B and C programmes

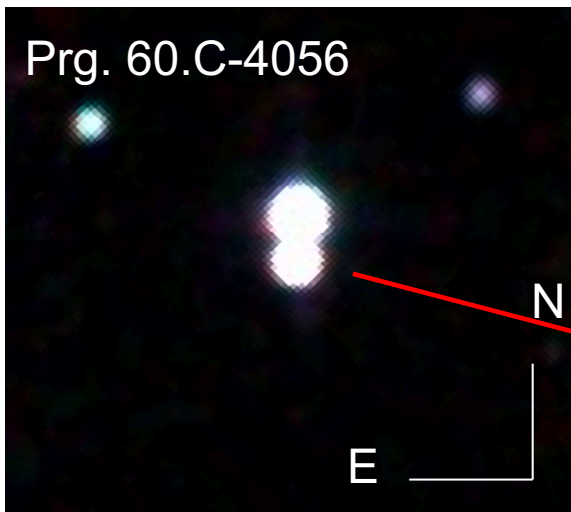


- Priority of execution at the telescope will increase for remaining OBs of a group once one OB of the group was started

General Strategies

- Don't underestimate the usefulness of the Finding Charts
 - Situation: your OB is started but then execution aborted, because the operator cannot recognize the field, or it is ambiguous

EXAMPLE



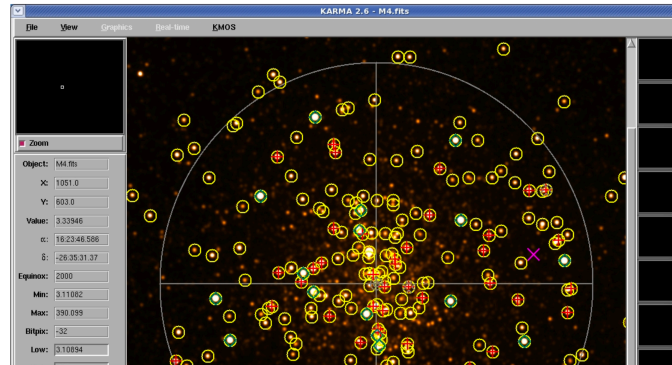
- ReadMe file instruction: put the bright target under the coronagraph

Bad finding chart!
Which one is the target?

Multi-object spec preparation

- How to ensure the best data are taken for multi-object spectroscopy?
 - KMOS/FORS/FLAMES have specific preparation tools – KARMA/FIMS/FPOSS

Take your time when fine-tuning the set-up



- Your target input catalog is crucial! Precise relative astrometric accuracy; reference stars must be in the same astrometric system as your target catalog; the optimization is crucial – take your time!



GuideCAM tool – MUSE/VISIR/HAWK-I

GuideCamTool 2.1.0

Fetch OB from P2PP Fetch OB from P2

Instrument: VISIR

Mode: SPEC Size: 34.0x1.0

Field center:
Object: M41
RA: 06:46:01.008 Dec: -20:45:24.120

Point Telescope/Update View

Tool: Science target acquisition

Position angle: 0.0

FoV offset Blind offset Reference stars

Select on sky Input blind offset Input coordinates

Current acquisition star: RA: 06:46:01.224 Dec: -20:45:51.376

Current blind offset: RA: 3.03 Dec: -27.26

Clear blind offset

Aladin v9.0

Location: [] Frame: ICRS

DSS SDSS 2MASS WISE GALEX PLANCK AKARI XMM Fermi Gaia Simbad NED

2MASS H

Slit spectroscopy of faint/invisible target. Acquisition via offset star.

Target

Offset star

15" 1.774' x 1.505'

grid wink north hdr multiview match

Search []

Blind offset values in arcsec

GuideCAM tool – MUSE/VISIR/HAWK-I

GuideCamTool 2.1.0

Fetch OB from P2PP Fetch OB from P2

Instrument: **MUSE**

Mode: WFM-AO Setup: Nominal

Field center:

Object:

RA: 12:36:49.816 Dec: 13:09:46.330

Point Telescope/Update View

Tool: Science target acquisition

Position angle: 0.0

FoV offset Blind offset Reference stars

Mark on detector Input FoV offset

Current offset: RA: -20.0 Dec: 60.0

Clear FoV offset

Mark target on sky

Pointer: Arrow

Current target: RA: 12:36:48.447 Dec: 13:10:46.329

Aladin v9.0

Location Frame: ICRS

DSS SDSS 2MASS WISE GALEX PLANCK AKARI XMM Fermi Gaia Simbad NED

DSS red

12:36:58 12:36:56 12:36:54 12:36:52 12:36:50 12:36:48 12:36:46 12:36:44 12:36:42 12:36:40

+13:12

Acquisition fine-tuning and Tip-tilt star selection

TTS 1

Target

+13:11

+13:10

+13:09

1" 5" x 4.241"

N

E

select
pan
zoom
dist
phot
draw
tag
filter
x-y
rgb
crop
cont
pixel
prop
del



GuideCAM tool – MUSE/VISIR/HAWK-I

GuideCamTool 2.1.0

Fetch OB from P2PP Fetch OB from P2

Instrument: HAWKI

Mode: Non-AOF

Field center:
Object: M55
RA: 19:39:59.710 Dec: -30:57:53.100

Point Telescope/Update View

Tool: Observing offsets

Coordinates: Sky Detector

New Offset:

RA/X: -600 Dec/Y: 0 Add

RA	Dec
300.0	0.0
-600.0	0.0

Dither offset values

Current absolute offset:
RA/X: 0.0 Dec/Y: 0.0 Clear

Buttons: Move Up, Move Down, Remove, Apply, Next, Show all

Aladin v9.0

Location: [input] Frame: ICRS

DSS ★ SDSS ★ 2MASS ★ WISE ★ GALEX ★ PLANCK ★ AKARI ★ XMM ★ Fermi ★ Gaia ★ Simbad ★ NED +

Define and check FOV dither pattern

The image shows a star field with a grid of RA and Dec coordinates. A large green circle represents the field of view (FOV). A red circle represents the detector's field of view. A pink rectangle is drawn over the star field, and it is divided into four quadrants labeled Q1, Q2, Q3, and Q4. The quadrants are colored: Q1 is yellow, Q2 is green, Q3 is orange, and Q4 is pink. The text "Define and check FOV dither pattern" is written in red over the star field.

Buttons: select, pan, zoom, dist, phot, draw, tag, filter, x-y, rgb, crop, cont, pixel, prop, del

grid wink north hdr multiview match

Search [input]

During the observations

- Check the progress and act(!) if necessary

ESO User Portal Services

ESO recommends changing your password for better security.



Phase 1

- Download the proposal form
- Submit an observing proposal
- Check the time allocation information



Phase 2

- Prepare observing materials
- Submit a target or set-up change request
- Check the status of your observing runs
- Delegate Phase 2 tasks



Phase 3

- Download the Science Data Products Standard
- Submit data
- Check your Phase 3 submission status
- Delegate Phase 3 tasks



Archive Services

- Query the Archive for
 - La Silla Paranal raw data
 - La Silla Paranal reduced data
 - APEX reduced data
 - Phase 3 Catalogs
- Delegate proprietary data access rights
- Check your Archive requests
- Access other Archive services
- Access ALMA data



Help

- Ask for help
- Find User Portal Information and FAQ
- Check the data reduction FAQ

Check the status of your observing run



During the observations

■ Check the progress and act(!) if necessary

OB Summary

[OB Details »](#)

Archive query for selected RAW OBs

Retrieve OBs	OB ID	Date ▲	from > to	OB Name	Grade	Weather
<input type="checkbox"/>	1426219	16/17-Dec-2016	03:04:33 > 03:28:44	OriOB1b Bright CVSO-180	B	
<input type="checkbox"/>	1427327	19/20-Jan-2017	01:41:23 > 01:42:55	OriOB1a Medium CVSO 653	-	
<input type="checkbox"/>	1427327	19/20-Jan-2017	01:43:18 > 02:17:17	OriOB1a Medium CVSO 653	B	
<input type="checkbox"/>	1427330	19/20-Jan-2017	02:17:34 > 02:43:23	OriOB1a Medium CVSO 1003	C	
<input type="checkbox"/>	1427333	19/20-Jan-2017	02:43:33 > 03:02:24	OriOB1a Faint CVSO_509	B	
<input type="checkbox"/>	1427333	19/20-Jan-2017	03:02:47 > 03:08:01	OriOB1a Faint CVSO_509	A	
<input type="checkbox"/>	1426174	19/20-Jan-2017	03:08:14 > 03:32:16	OriOB1a Faint 23189	C	
<input type="checkbox"/>	1426174	19/20-Jan-2017	03:33:05 > 03:38:13	OriOB1a Faint 23189	C	
<input type="checkbox"/>	1426479	11/12-Feb-2017	03:06:54 > 03:32:43	CAL_Trapezium1E	A	
<input type="checkbox"/>	1426177	10/11-Mar-2017	00:18:19 > 00:41:26	OriOB1a Faint 25542	B	
<input type="checkbox"/>	1426222	10/11-Mar-2017	00:41:40 > 01:08:01	OriOB1b Bright CVSO-185	C	
<input type="checkbox"/>	1426285	10/11-Mar-2017	01:08:16 > 01:29:16	OriOB1b Medium 36209	A	
<input type="checkbox"/>	1426180	13/14-Mar-2017	00:05:02 > 00:25:23	OriOB1a Faint 26946	A	
<input type="checkbox"/>	1426222	25/26-Mar-2017	23:48:21 > 23:50:15	OriOB1b Bright CVSO-185	-	
<input type="checkbox"/>	1426222	25/26-Mar-2017	23:50:50 > 00:21:31	OriOB1b Bright CVSO-185	A	

E



Phase 1

Download the proposal form

Submit an observing proposal

Check the time allocation information



Archive Service

Query the Archive for

La Silla Paranal raw data

La Silla Paranal reduced data

APEX reduced data

Phase 3 Catalogs

Delegate proprietary data access rights



During the observations

■ Time link with “F”ailed OBs

- T LMC var_LMC_7_5_1_1_1 (18)		+	
OB 1811570 · epoch1_LMC_7_5_1_1_1	✓	F	JKs imaging
OB 1811573 · epoch2_LMC_7_5_1_1_1	✓	F	JKs imaging
OB 1811576 · epoch3_LMC_7_5_1_1_1	✓	F	JKs imaging
OB 1811579 · epoch4_LMC_7_5_1_1_1	✓	F	JKs imaging
OB 1811582 · epoch5_LMC_7_5_1_1_1	✓	F	JKs imaging
OB 1811585 · epoch6_LMC_7_5_1_1_1	✓	C	JKs imaging
OB 1811588 · epoch7_LMC_7_5_1_1_1	✓	C	JKs imaging
OB 1811591 · epoch8_LMC_7_5_1_1_1	✓	C	JKs imaging

Missed epochs

Completed epochs

➤ **Monitor** your time-links, and **contact ESO** to add missed epochs to the end of a time-sequence !!

Summary

- Careful preparation and strategy selection ensure the best use of your observing time
- Make use of ESO tools, User Manuals & Tutorials
- For help contact the User Support Department
usd-help@eso.org