

Observations in a nutshell – NOT

(Observing with the NOT)

Tiina Liimets

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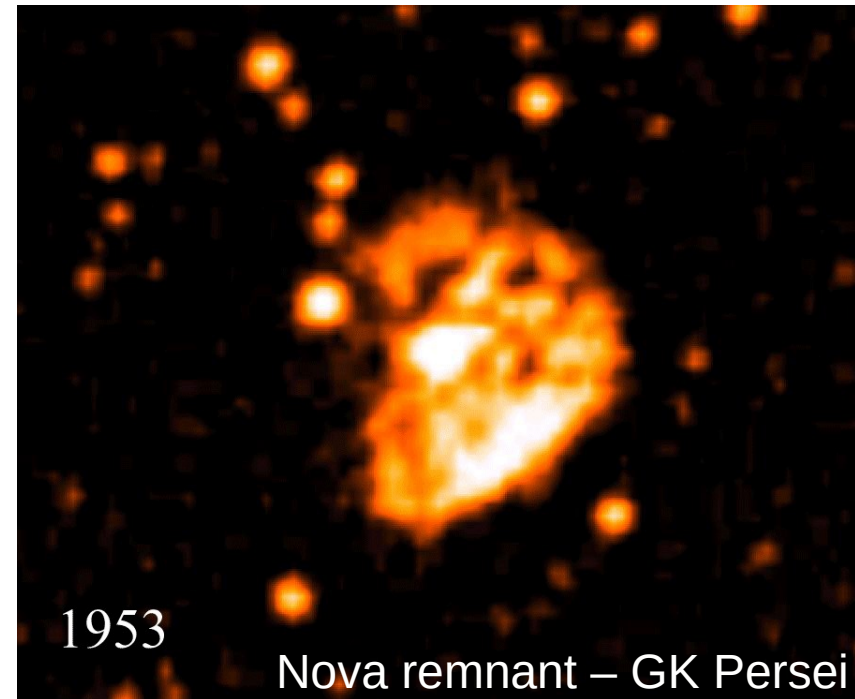
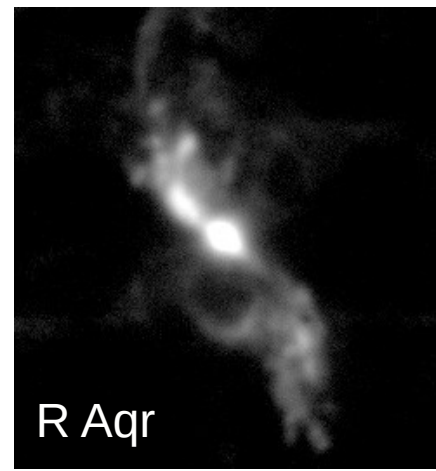
ChINOS 2023

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- ★ How to obtain observing time?
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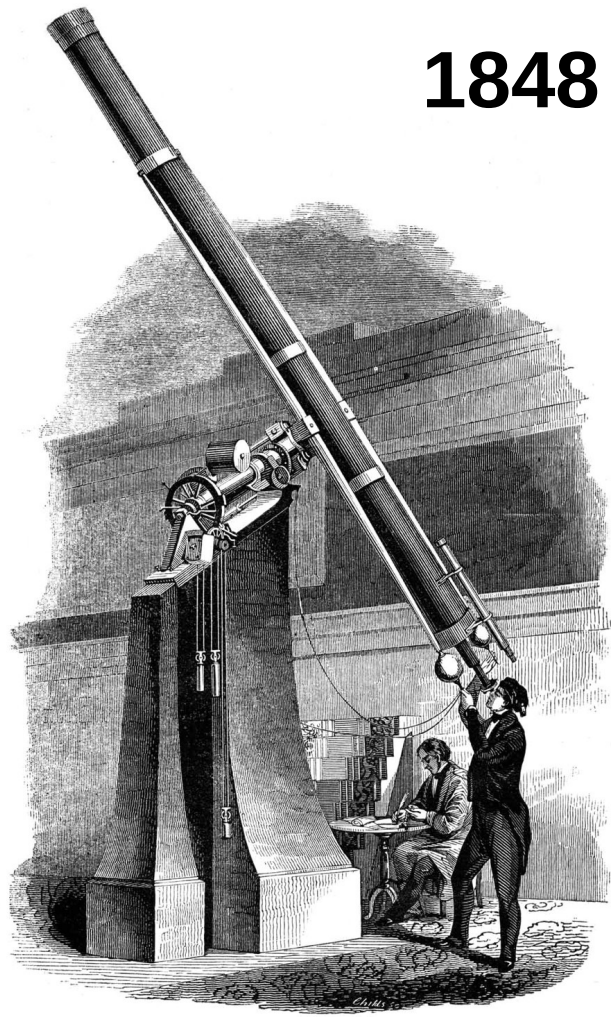
Who am I?

- ★ Tiina Liimets
- ★ Observational astronomer (20 years)
- ★ Tartu Observatory (Estonia)
La Palma Observatory (Spain)
Ondrejov (Czechia)
- ★ 2019 PhD
- ★ Structure and kinematics of
ejecta around outbursting stars.



Credit: Liimets+ 2012

1848



*"Smith's Illustrated Astronomy"
Cincinnati Observatory*

2023

Nordic Optical
Telescope - NOT

Control-room



*Credit: NOT ▲
Tiina Liimets ►*



Nordic Optical Telescope – NOT

www.not.iac.es

- La Palma (Canary Islands, Spain) – Roque de los Muchachos Observatory



Largest European based observatory.

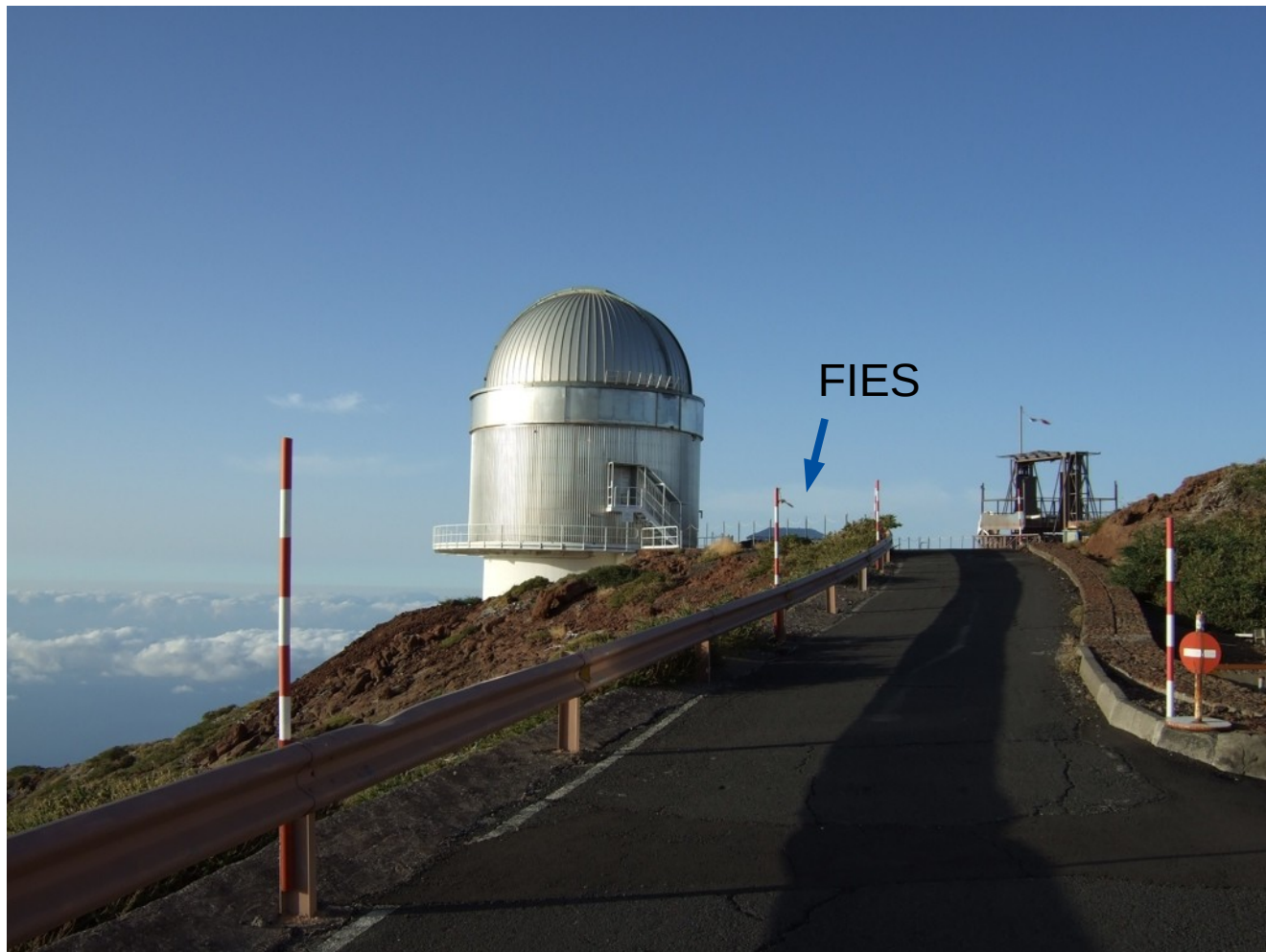
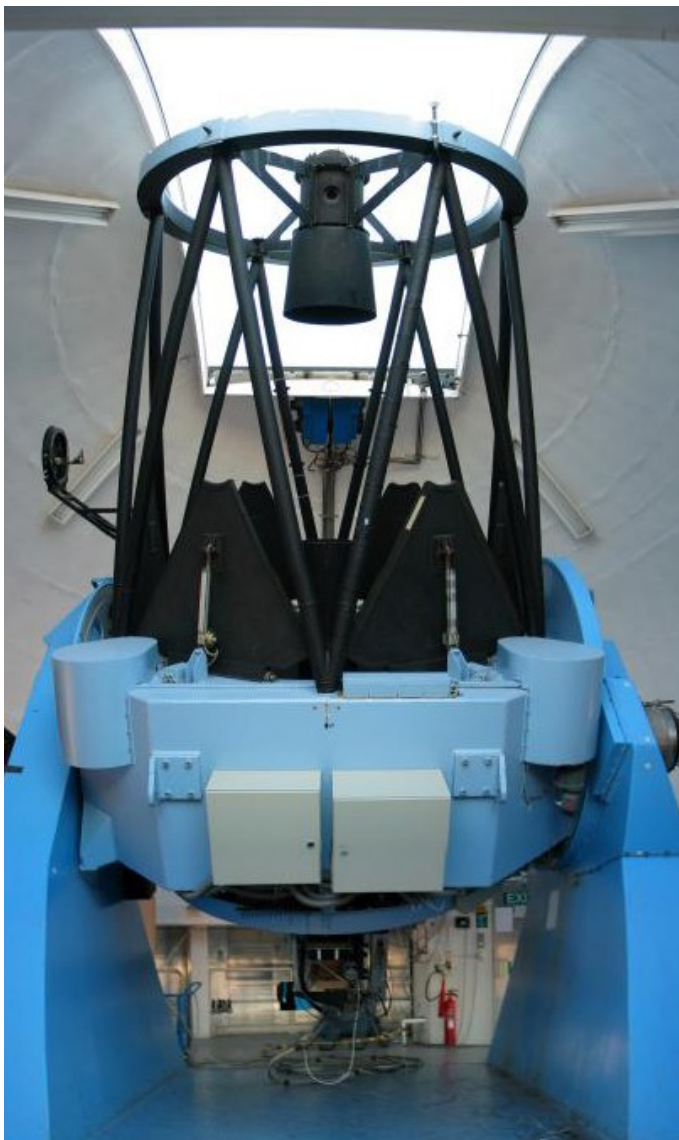
15 operational telescopes
(worlds largest single-aperture
optical telescope 10.4 m
Gran Telescopio Canarias)

Credit: ESO

Nordic Optical Telescope

- ★ 2.56 m telescope
- ★ Inaugurated 1989
- ★ Aarhus University (Denmark) + University of Turku (Finland) Non-Nordic users allowed
- ★ Flexible/state of the art instruments (3 always available) – UV to near infrared, low and high resolution spectroscopy, imaging, and polarimetry.
 - Your main instrument is FIES > see Raine's lecture on Tuesday (one project with ALFOSC)
- ★ Research Studentships – (Tiina Liimets, Raine Karjalainen)
<https://www.not.iac.es/general/studentships/>





Credit: Tiina Liimets

How to get observations?

★ Are observations already done?

Check archives!!

★ Which telescope?

- Ground-based or space telescope?
- Northern or Southern hemisphere?
 - Where targets are observable?
- How big telescope is needed?
- Instrument?
- Service mode or in person observations?



Credit: ESA

Applying for observing time

<https://www.not.iac.es/observing/proposals/>

★ **This is not easy! Telescope time is expensive!\$**

★ **Observing proposal.**

Depending on the telescope the over-subscription can be 10 times.



★ **You are lucky!!**



Preparing for your observations



Observing tools – preparing for the night

<https://www.not.iac.es/observing/tools.php>

- ★ Visibility plots - <https://www.not.iac.es/observing/forms/visibility/>
or <http://catserver.ing.iac.es/staralt/index.php> (file input)
- ★ Signal-to-noise Calculator - <https://www.not.iac.es/observing/forms/signal/>
> see Raine's lecture on Tuesday
- ★ Overheads at the NOT - <https://www.not.iac.es/observing/tools/overheads.html>
> see Raine's lecture on Tuesday
- ★ Pointing Script Generator - <https://www.not.iac.es/observing/forms/pointing/>
- ★ DDS Search Engine - Finding Chart Generator - <http://catserver.ing.iac.es/dss1/>
- ★ The NOT Observing Block Generator - OB Generator -
<https://www.not.iac.es/observing/forms/ob/login.php>
> see Tiina's lecture on Tuesday

Visibility plots (NOT)

<https://www.not.iac.es/observing/forms/visibility/>

★ Starobs – one year
Date (year), Observatory

Mode ☐ Staralt ☐ Startrack ☒ Starobs ☐ Starmult
Plots how altitude changes over a year

Date 2023 ▾

Observatory → Roque de los Muchachos (La Palma, Spain) ▾
or specify own site: "East_Longitude(deg) Latitude(d"

Coordinates Available formats: [name] hh mm ss ±dd mm ss ; [r
V838 07 04 04.85 -03 50 51.1
GKPer 03 31 11.82 43 54 16.8
RAqr 23 43 49.5 -15 17 04.2

Options 10 ▾ Min. Elevation

Submit Request

Visibility plots (NOT)

<https://www.not.iac.es/observing/forms/visibility/>

★ Starobs – one year
Date (year), Observatory

Mode	☐ Staralt ☐ Startrack ☒ Starobs ☐ Starmult <i>Plots how altitude changes over a year</i>
Date	2023 ▾
Observatory	Roque de los Muchachos (La Palma, Spain) ▾ or specify own site: "East_Longitude(deg) Latitude(d
Coordinates	Available formats: [name] hh mm ss ±dd mm ss ; [r V838 07 04 04.85 -03 50 51.1 GKPer 03 31 11.82 43 54 16.8 RAqr 23 43 49.5 -15 17 04.2
Options	10 ▾ Min. Elevation
Submit Request	Retrieve Help

★ Staralt – one night
Date, Observatory

Mode	☒ Staralt ☐ Startrack ☐ Starobs ☐ Starmult <i>Plots altitude against time for a particular night</i>
Date	22 ▾ July ▾ 2023 ▾
Observatory	Roque de los Muchachos (La Palma, Spain) ▾ or specify own site: "East_Longitude(deg) Latitude(c
Coordinates	Available formats: [name] hh mm ss ±dd mm ss ; [r V838 07 04 04.85 -03 50 51.1 GKPer 03 31 11.82 43 54 16.8 RAqr 23 43 49.5 -15 17 04.2
Options	Moon Distance ▾ Included on plot
Submit Request	Retrieve Help

Optimum observing time, Roque de Los Muchachos, 342.1184E +28.7606, year 2023

Altitudes at Middle-Dark-Time

Airmass

Visibility plots - Starobs

1.02
1.04
1.06
1.10
1.15
1.22
1.30
1.41
1.55
1.74
1.99
2.36
2.90
3.82
5.60

List of objects

- 1 V838 7^h 4^m - 3°50'
2 GKPer 3^h 31^m +43°54'
3 RAqr 23^h 43^m -15°17'

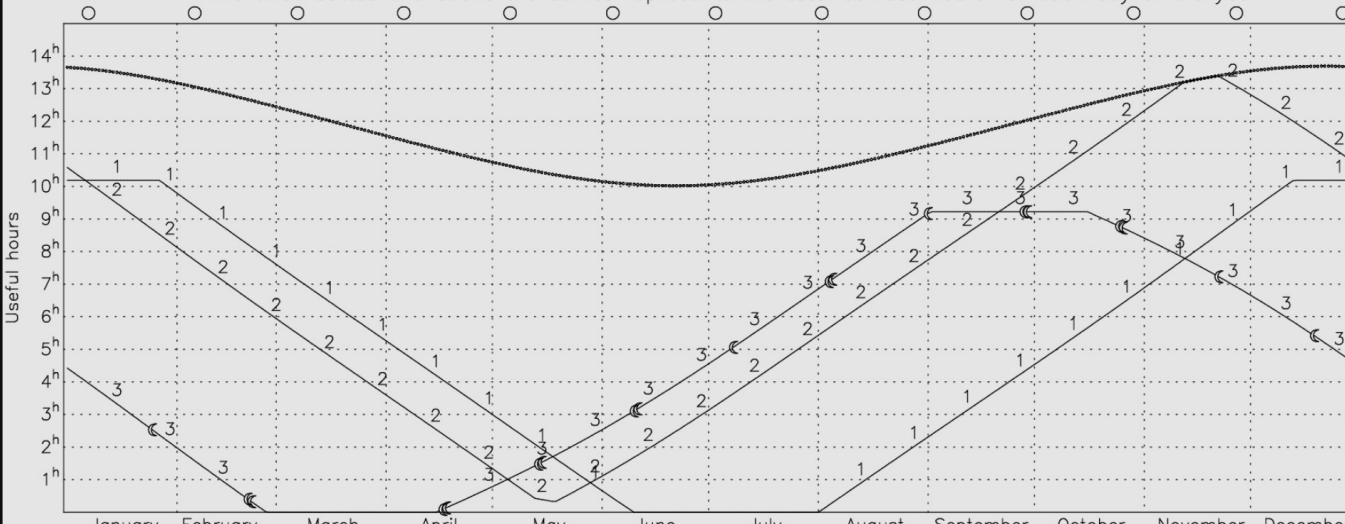
General condition
for observing:

Airmass < 2.0
(altitude > 30°)

Comments

Sunless hours above altitude 10°

Circles above frame represent Full Moon and the "C" symbol on a curve means the Moon is closer than 15°
The thick dotted line above the curves represents the total sunless hours for each day of the year



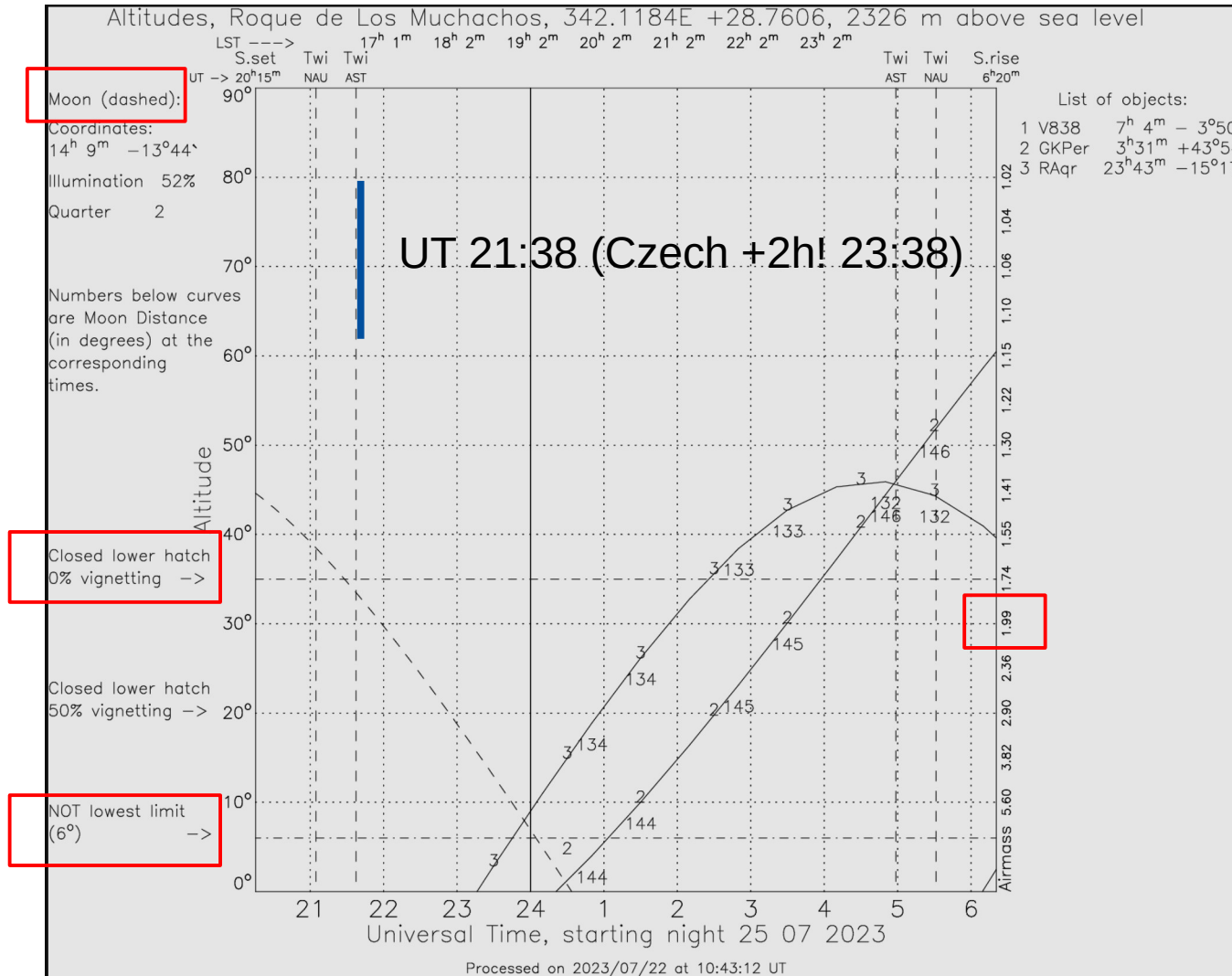
Visibility plots - Staralt

Airmass < 2.0

Planning the night (\$\$\$):

- 1) Exposure time per target
 - 2) Overheads
 - 3) Calibrations
- > Raine's lecture on Tuesday!

OB Generator will help
> Tiina's lecture on Tuesday



Mode

Staralt

Night

25

July

2023

or date when the local night starts. *Staralt*, *Startrack* only.

Observatory

Roque de los Muchachos Observatory (La Palma, Spain)

Select one above or specify your own site with this format:
Longitude(°E) Latitude(°N) Altitude(metres) UT-offset(hours)
Ex.: 289.2767 -30.2283 2725 -4

Coordinates

Formats can be any of these:
name hh mm ss ±dd mm ss
name hh:mm:ss ±dd:mm:ss
name ddd.ddd dd.ddd
name must be a single word with no dots, avoid using single numbers. Every entry must be in the same format, do not use different formats with different entries. We recommend a maximum of 100 targets per submission.

Alternatively, you can upload a file with coordinates. You can use the same format as in the [TCS catalog](#). Target names must be single words with no dots.

Choose File

example_targets.cat

Options

Moon distance

Included on plot. Moon coordinates at ~02:00 UT. *Staralt* only.

10°, X=5.8

Min. elevation (or max. airmass X). *Starobs*, *Starmult* only.

GIF [inline]

Output format

Submit

Retrieve

Help

Telescope limits

WHT: 89.8° < Altitude < 12° (plot). Targets with +28:57:40>Dec>+28:33:40 won't be accessible when transiting the zenithal blind spot (~0.2° size).

INT: 90° < Altitude < 33° (20° if lower shutter raised), -6h < HA < +6, +90°>Dec>-30° 09' 30" (HA-Dec plot - lower shutter raised; [lowest altitude-Dec plot](#)).

More

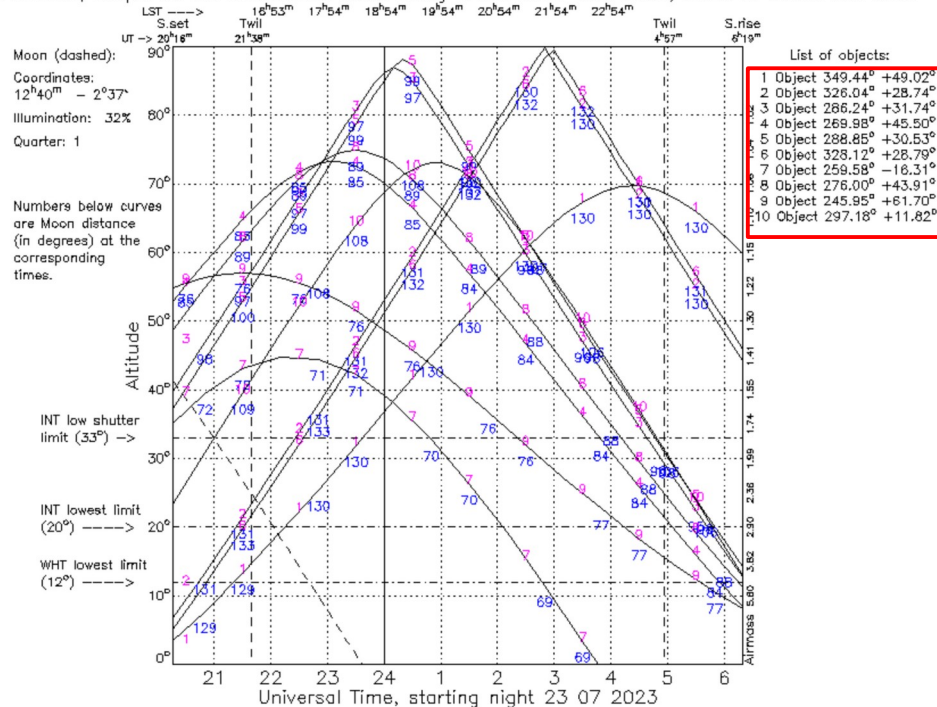
These are other useful resources for planning observations: [iObserve](#), [astronomy tools](#), [JSkyCalc](#), [obstools](#), [NOT's visplot](#).

Visibility plot – (ING)

(file input)

<http://catserver.ing.iac.es/staralt/index.php>

Altitudes, Roque de los Muchachos Observatory 342.1184E 28.7606N, 2326 m above sea level



Science projects

- 1) Chemical evolution of neutron-capture elements (Camilla Juul Hansen)
- 2) Impact of stellar parameters and abundance corrections (Camilla Juul Hansen)
- 3) S-process and stellar abundance patterns (with abundance corrections) (Camilla Juul Hansen)
- 4) Stellar ages of Milky Way stars (Camilla Juul Hansen)
- 5) Chemically peculiar stars (Camilla Juul Hansen)
- 6) *Biases in Gaia-RVS parameters for metal-poor stars* (Andreas Korn, Gabriele Cescutti)