Introduction to observation preparation

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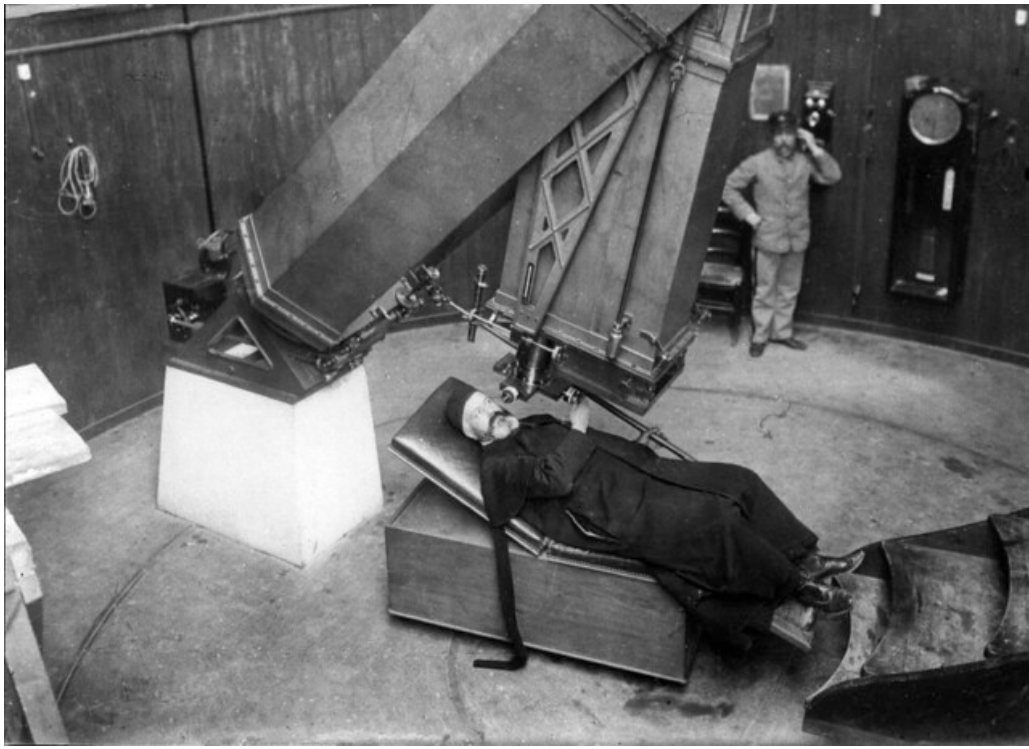
So you have an idea…

Observation preparation starts with the preparation of the proposal:

- Is the idea feasible?
- What telescope should I use?
- Which instrument? With which setup?
- How much time to apply for?
- What should be my targets?
- Service or visitor mode?
- What time of the year?
- Etc…

Congratulations! You got the observing time



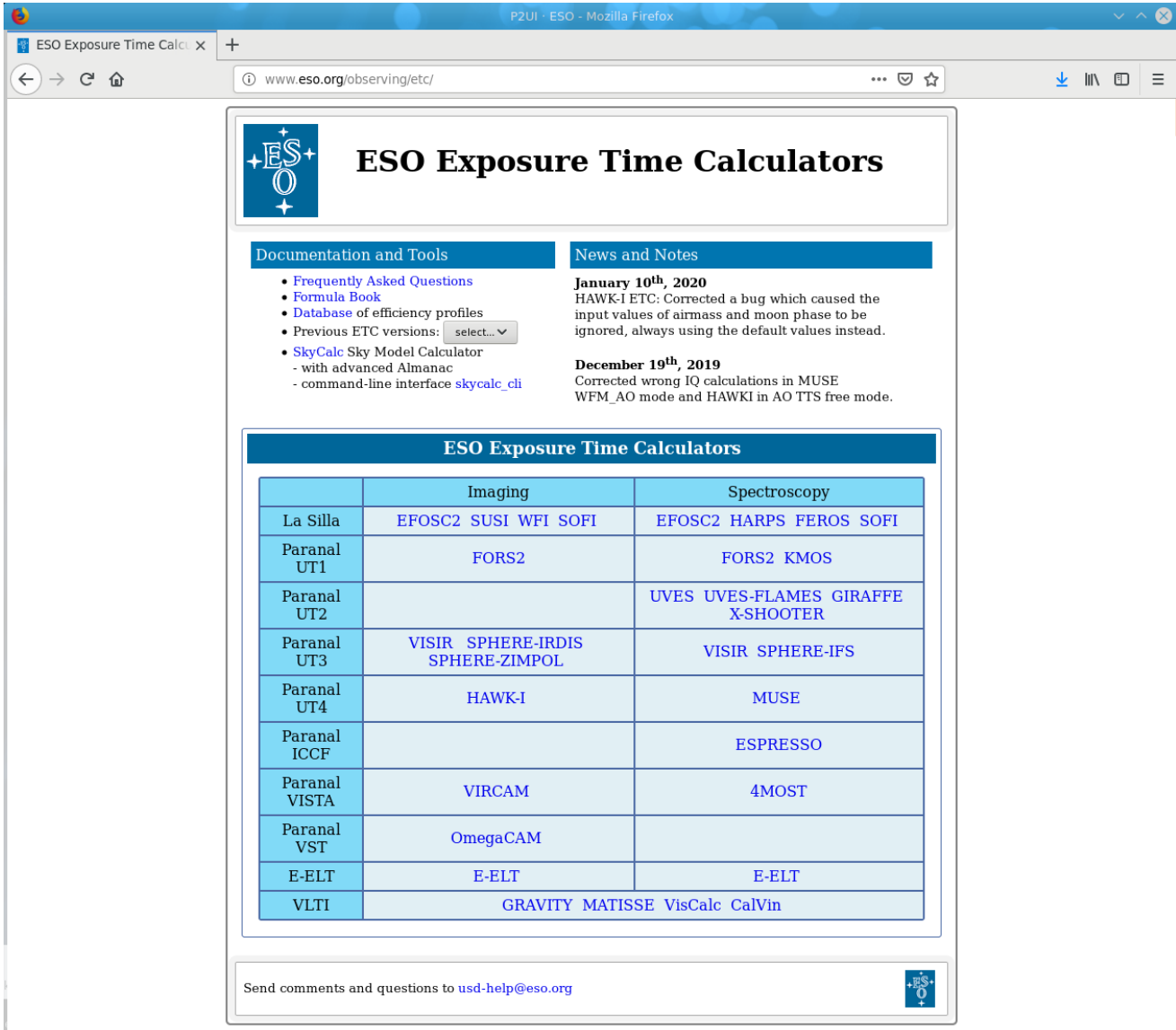
- Do Not Improvise!
- Time at the telescope is valuable
- You will arrive tired after long trip
- You have long nights ahead and it will be hard to stay awake at 4am
- Altitude may have an effect on you
- The unexpected will happen, so reserve as much time as possible to deal with it
- You will have things to do in real time (doing quick-data reduction, checking quality, making sense out of the results, figuring out what went wrong…).
- So, *think ahead about everything that is predictable.*

Some tips to prepare in advance

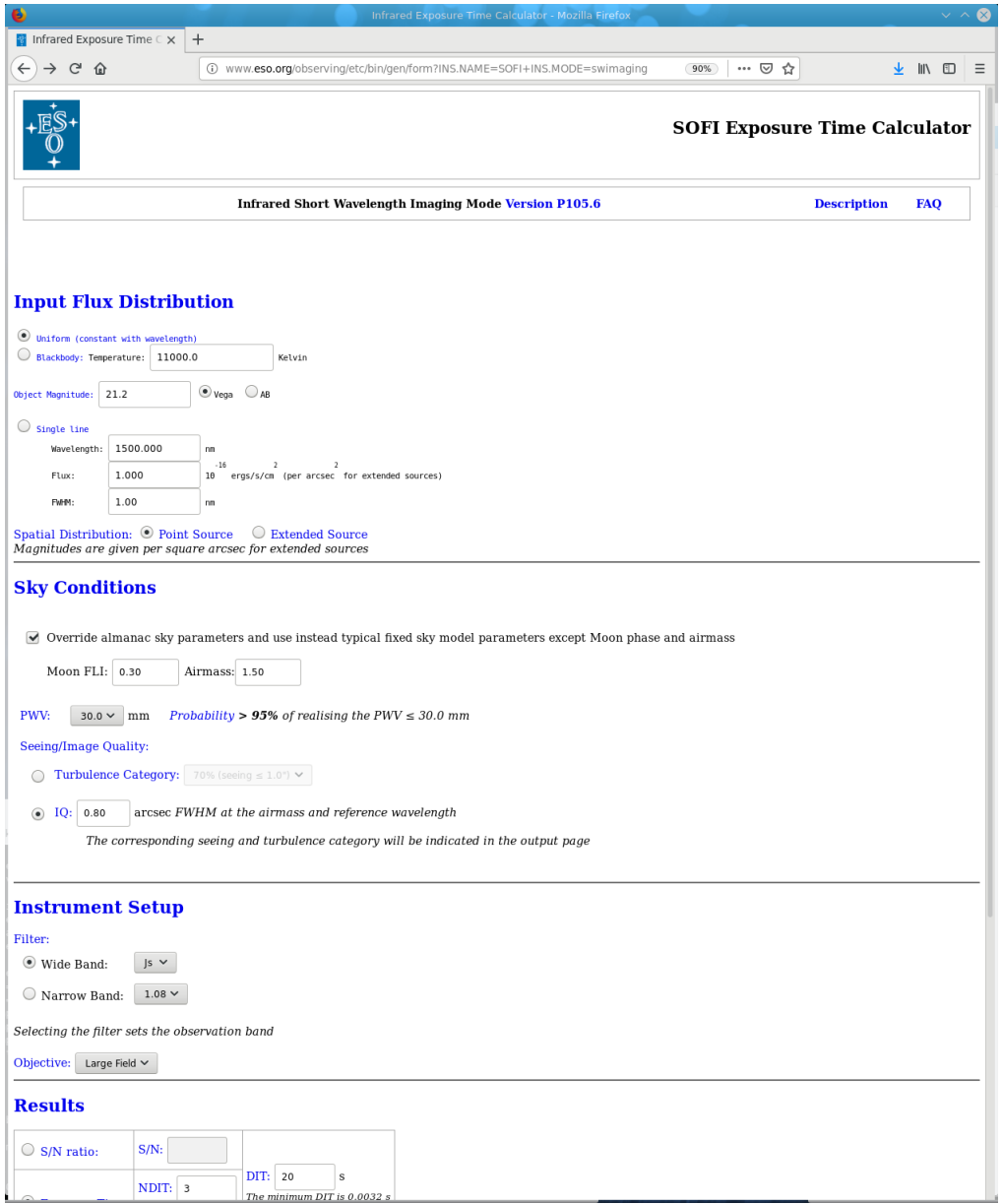
- Have your target list and the time when you will observe each target (don’t chase them near the horizon if you can avoid it, don’t run out of targets because some have set and others are not up yet).
- Have finding charts if needed.
- Have contingency plans for bad seeing, non-photometric conditions if you need them.
- Have a backup program if possible.
- Familiarize yourself with the tools that you will be using.
- Make sure that you have enough disk space in your laptop
- Think before arriving at the telescope everything that can be thought in advance.
- Give yourself time to adapt to night schedule (sleep well).
- At ESO, have your Observation Blocs ready.

Exposure time calculators

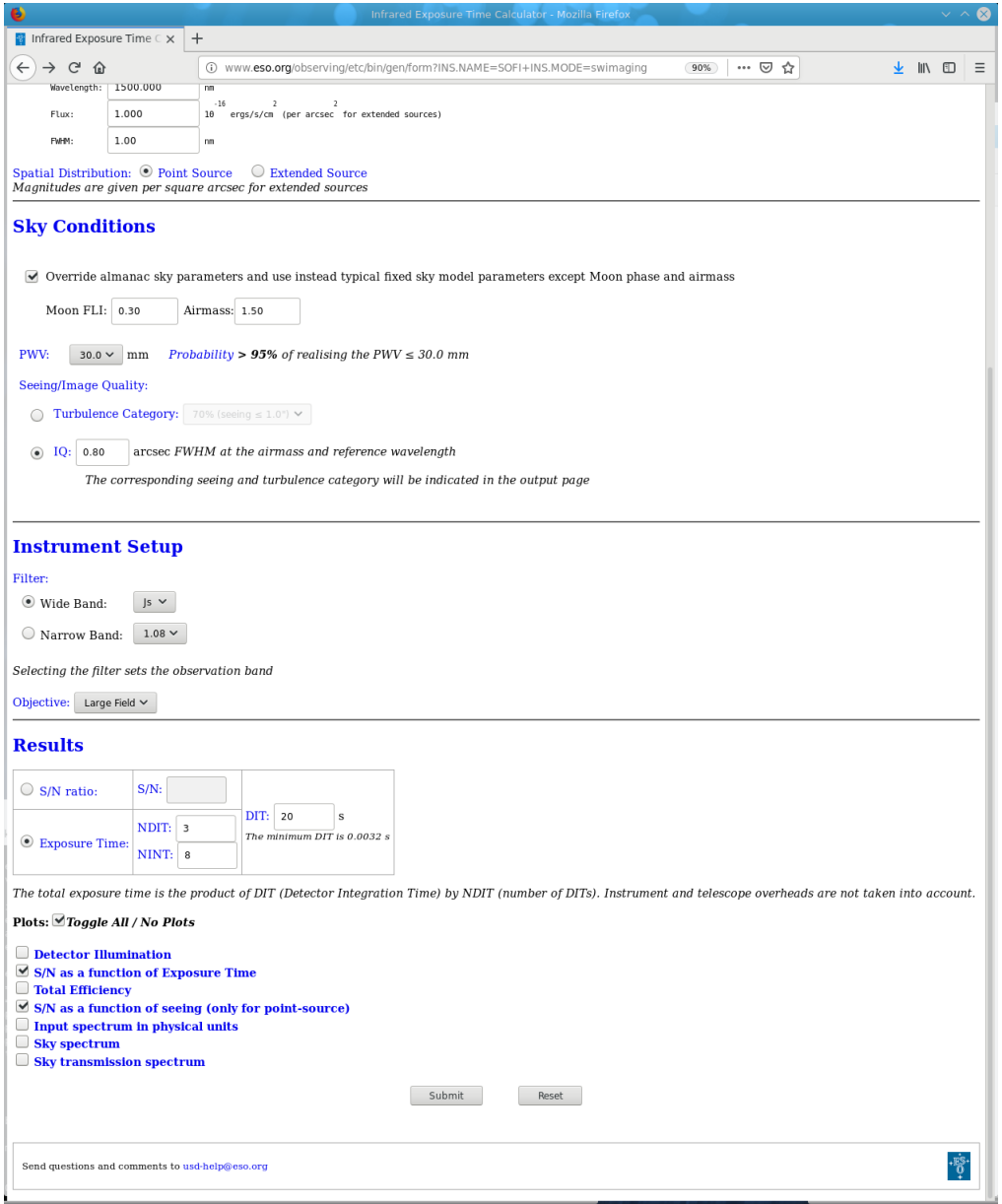
- Exposure Time Calculators(ETCs) encapsulate the best knowledge that ESO has about its instruments
- ETCs make you take into account all the factors that go into defining an observation and its conditions of execution



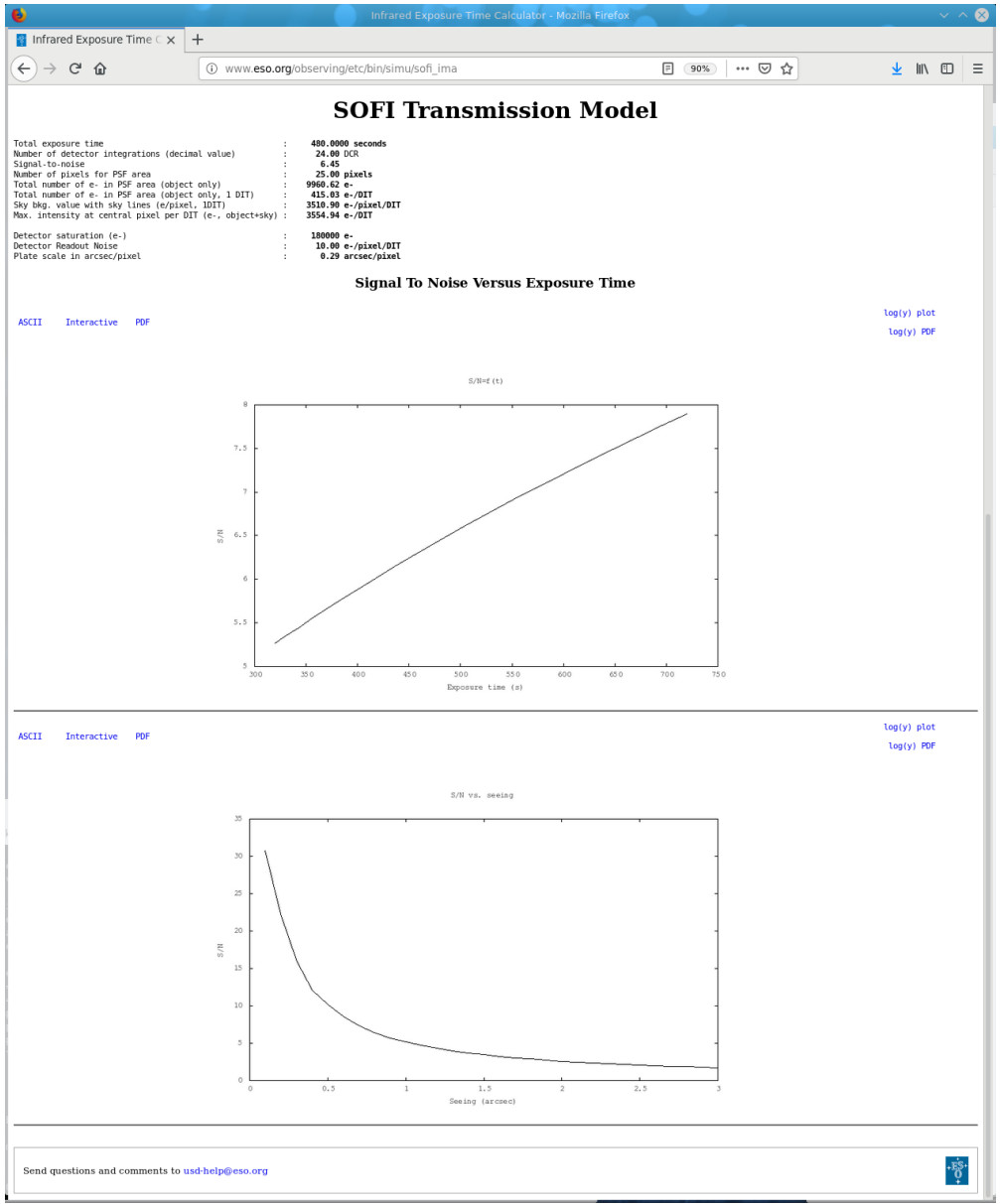
Exposure time calculators



Exposure time calculators



Exposure time calculators



Other tools

The ESO Sky Calendar Tool

The ESO Sky Calendar Tool

HOME INDEX SEARCH HELP NEWS

See also Object Observability - Airmasses - Daily Almanac - Ephemerides

Observability for 08 22 33.26 -15 28 53.2

La Silla Observatory

```
     RA & dec:   8 22 33.3, -15 28 53, epoch 2000.0
Site long&lat:  +4 42 55.1 (h.m.s) West, -29 15 25 North.

Shown: local eve. date, moon phase, hr ang and sec.z at (1) eve. twilight,
(2) natural center of night, and (3) morning twilight; then comes number of
nighttime hours during which object is at sec.z less than 3, 2, and 1.5.
Night (and twilight) is defined by sun altitude < -18.0 degrees.

 Date (eve) moon      eve            cent           morn     night hrs@sec.z:
                    HA  sec.z      HA  sec.z      HA  sec.z    <3   <2   <1.5
2020 Feb 8     F   -2 51   1.3    +1 06   1.1    +5 03   2.9   7.9   7.1   6.2
2020 Feb 22    N   -2 11   1.2    +2 00   1.2    +6 12  11.4   7.2   6.4   5.5
```

SkyCalc provided by courtesy of John Thorstensen, Dartmouth College. *John.Thorstensen@dartmouth.edu*

Send comments to <usd-help@eso.org>
Last update:November 10, 2006

- Ephemeris
- Visibility plots
- Satellite maps, weather conditions

eso.org/sci/bin/skycalendar?sit

```
      MOON PHASES FOR 2020, at ESO La Silla

Times and dates are given in local time, zone =   4 hr West.
They are generally better than +- 2 minutes.
Daylight savings time used.

   The end of the previous year and the beginning of the next
are included for continuity.

    NEW             1ST             FULL            LAST

Dec 26   2 16   Jan 03   1 47   Jan 10  16 23   Jan 17  10 01

Jan 24  18 44   Feb 01  22 43   Feb 09   4 35   Feb 15  19 19

Feb 23  12 34   Mar 02  16 59   Mar 09  13 49   Mar 16   5 36

Mar 24   5 30   Apr 01   6 22   Apr 07  22 36   Apr 14  18 57

Apr 22  22 27   Apr 30  16 39   May 07   6 46   May 14  10 03

May 22  13 40   May 29  23 30   Jun 05  15 13   Jun 13   2 25

Jun 21   2 42   Jun 28   4 17   Jul 05   0 45   Jul 12  19 31

Jul 20  13 34   Jul 27   8 34   Aug 03  12 00   Aug 11  12 48

Aug 18  22 42   Aug 25  13 59   Sep 02   1 23   Sep 10   5 28

Sep 17   7 01   Sep 23  21 57   Oct 01  17 07   Oct 09  20 41

Oct 16  16 32   Oct 23  10 24   Oct 31  11 51   Nov 08  10 48

Nov 15   2 09   Nov 22   1 46   Nov 30   6 32   Dec 07  21 38

Dec 14  13 19   Dec 21  20 43   Dec 30   0 30   Jan 06   6 39


                                  ***** 2020 FEBRUARY *****

Calendar for ESO La Silla, west longitude (h.m.s) =   4 42 55, latitude (d.m) = -29 15.4
Note that each line lists events of one night, spanning two calendar dates.  Rise/set times are given
in Chilean time (  4 hr W), for 2347 m above surroundings, DAYLIGHT time used, * shows night clocks are reset.
Moon coords. and illum. are for local midnight, even if moon is down.  Program: John Thorstensen, Dartmouth College.

  Date (eve/morn)      JDmid    LMSTmidn    ---------- Sun: ---------   LST twilight:   ------------ Moon: ------------
  (2020 at start)    (-2450000)              set  twi.end twi.beg rise    eve    morn     rise   set  %illum   RA       Dec

Sat Feb 01/Sun Feb 02  8881.6    7 04 14   20 48  22 08   5 46  7 06    5 12  12 51   .....   1 26    50   2 45.7   12 18

Sun Feb 02/Mon Feb 03  8882.6    7 08 10   20 47  22 07   5 47  7 07    5 15  12 56   .....   2 02    60   3 33.8   16 20
Mon Feb 03/Tue Feb 04  8883.6    7 12 07   20 46  22 06   5 48  7 07    5 18  13 01   .....   2 42    70   4 25.1   19 46
Tue Feb 04/Wed Feb 05  8884.6    7 16 03   20 46  22 05   5 49  7 08    5 21  13 06   .....   3 28    79   5 20.0   22 21
Wed Feb 05/Thu Feb 06  8885.6    7 20 00   20 45  22 04   5 50  7 09    5 24  13 11   17 32   4 21    87   6 18.5   23 49
Thu Feb 06/Fri Feb 07  8886.6    7 23 56   20 44  22 03   5 51  7 10    5 27  13 16   18 31   5 21    93   7 19.8   23 54
Fri Feb 07/Sat Feb 08  8887.6    7 27 53   20 44  22 02   5 52  7 11    5 30  13 21   19 28   6 26    98   8 22.4   22 28
Sat Feb 08/Sun Feb 09  8888.6    7 31 49   20 43  22 01   5 53  7 12    5 33  13 26   20 21   .....  100   9 24.5   19 31

Sun Feb 09/Mon Feb 10  8889.6    7 35 46   20 42  22 00   5 54  7 12    5 36  13 31   21 09   .....   99  10 25.0   15 17
Mon Feb 10/Tue Feb 11  8890.6    7 39 43   20 41  21 59   5 55  7 13    5 39  13 36   21 52   .....   95  11 23.2   10 05
Tue Feb 11/Wed Feb 12  8891.6    7 43 39   20 41  21 58   5 56  7 14    5 41  13 41   22 32   .....   88  12 19.2    4 22
Wed Feb 12/Thu Feb 13  8892.6    7 47 36   20 40  21 57   5 57  7 15    5 44  13 46   23 10   .....   79  13 13.6 - 1 29
```

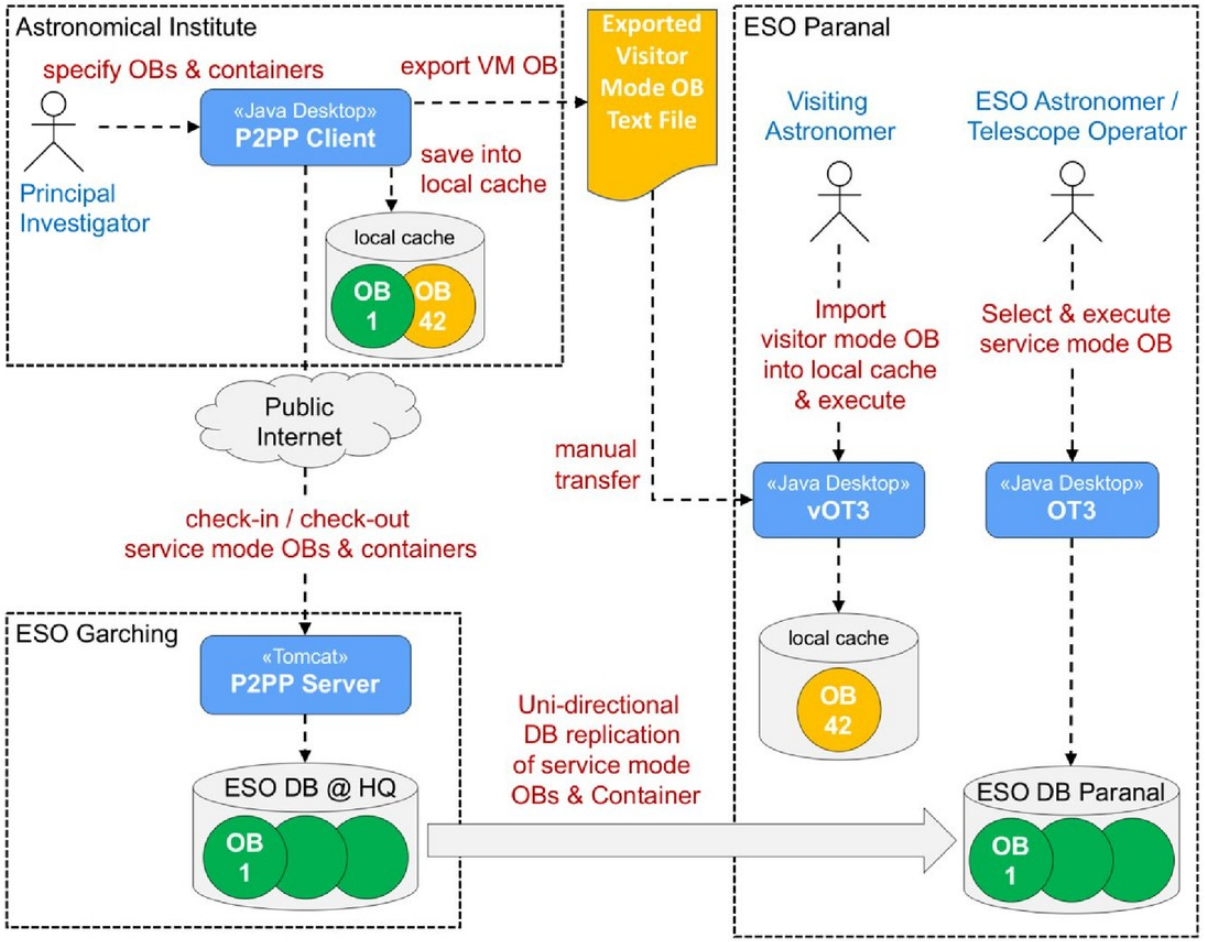
Observation Blocks

All ESO telescopes are operated by the users through *Observation Blocks*, in which all the observations composing an observing program are defined.

- Each Observation Block (OB) is a “unit of observation”
  - Specifies the target acquisition and the observation description (instrument configuration, exposure parameters)
  - Can contain finding charts, ephemeris files
  - In Service Mode, the OB specifies time-critical constraints and conditions of observation
- OBs are built using purpose-specific templates
  - Templates can be for acquisition, for science observations, for calibration
  - Each ESO instrument has its own set of templates
- Containers can be defined in which OBs can be grouped, concatenated, or specified as time-critical

The OB concept (or equivalent) is nowadays used at most major observatories, ground-based and in space, at any wavelengths…

Observation Blocks



OBs are essential components of the ESO Dataflow System, involving different tools, processes, databases and sites

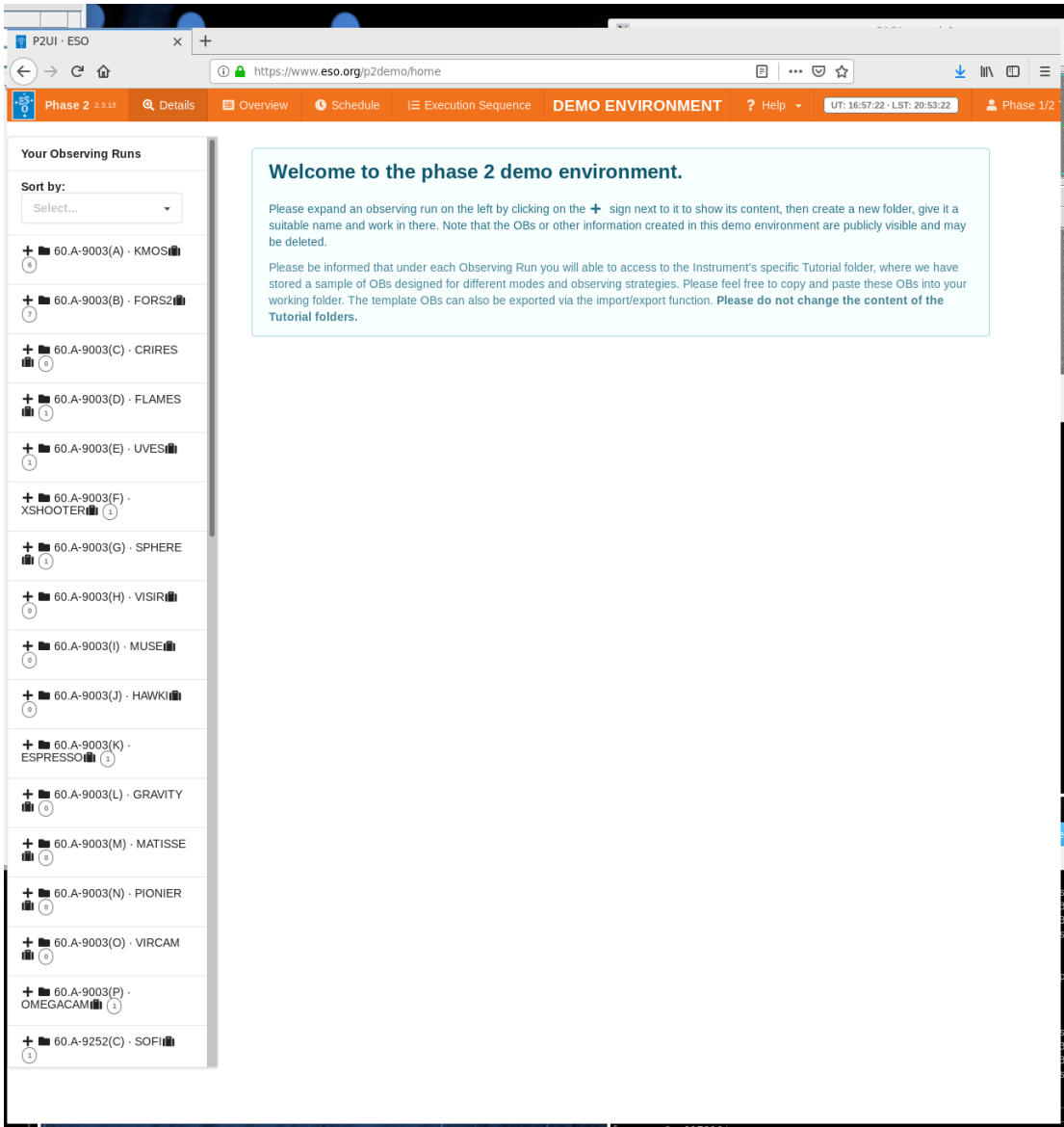
The Phase 2 Preparation program (p2, or p2ls for La Silla)

p2 is a web-based tool used to build OBs

- OBs are constructed by putting their component templates together and filling their used-defined values using p2
- Groups and links among OBs are defined in p2
- Finding charts and other auxiliary files can be attached using p2
- p2 also provides an interface to communicate to the observatory generic information on Service Observing programs
- p2 provides an interface with the database where all OBs are stored
- The use of p2 “forces” you to plan your upcoming observing run in detail and well in advance

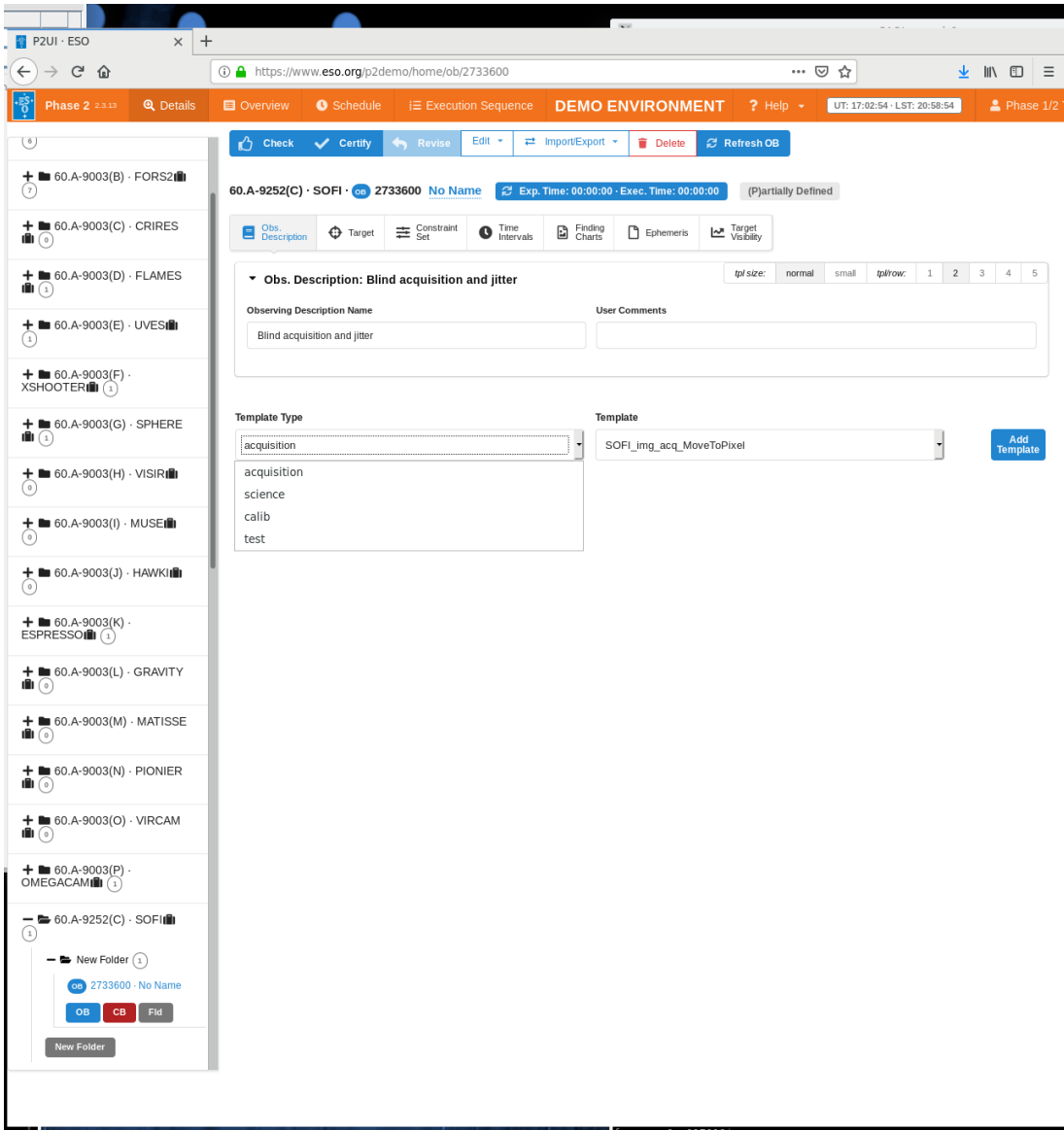
The Phase 2 Preparation program (p2, or p2ls for La Silla)

Upon authentication, p2s gives access to all the observing runs approved for the user as Principal Investigator



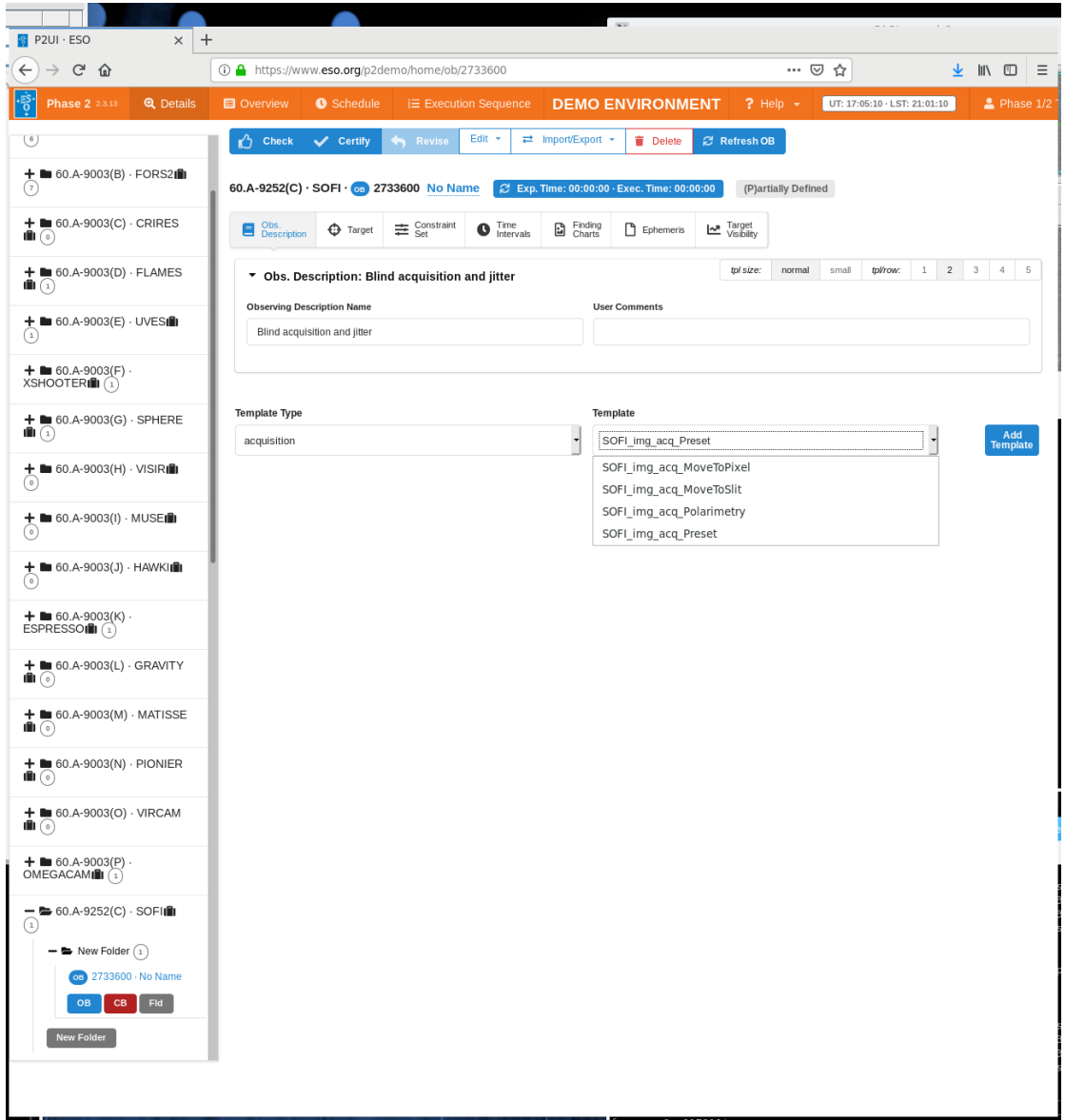
The Phase 2 Preparation program (p2, or p2ls for La Silla)

An OB usually starts with the acquisition of the target



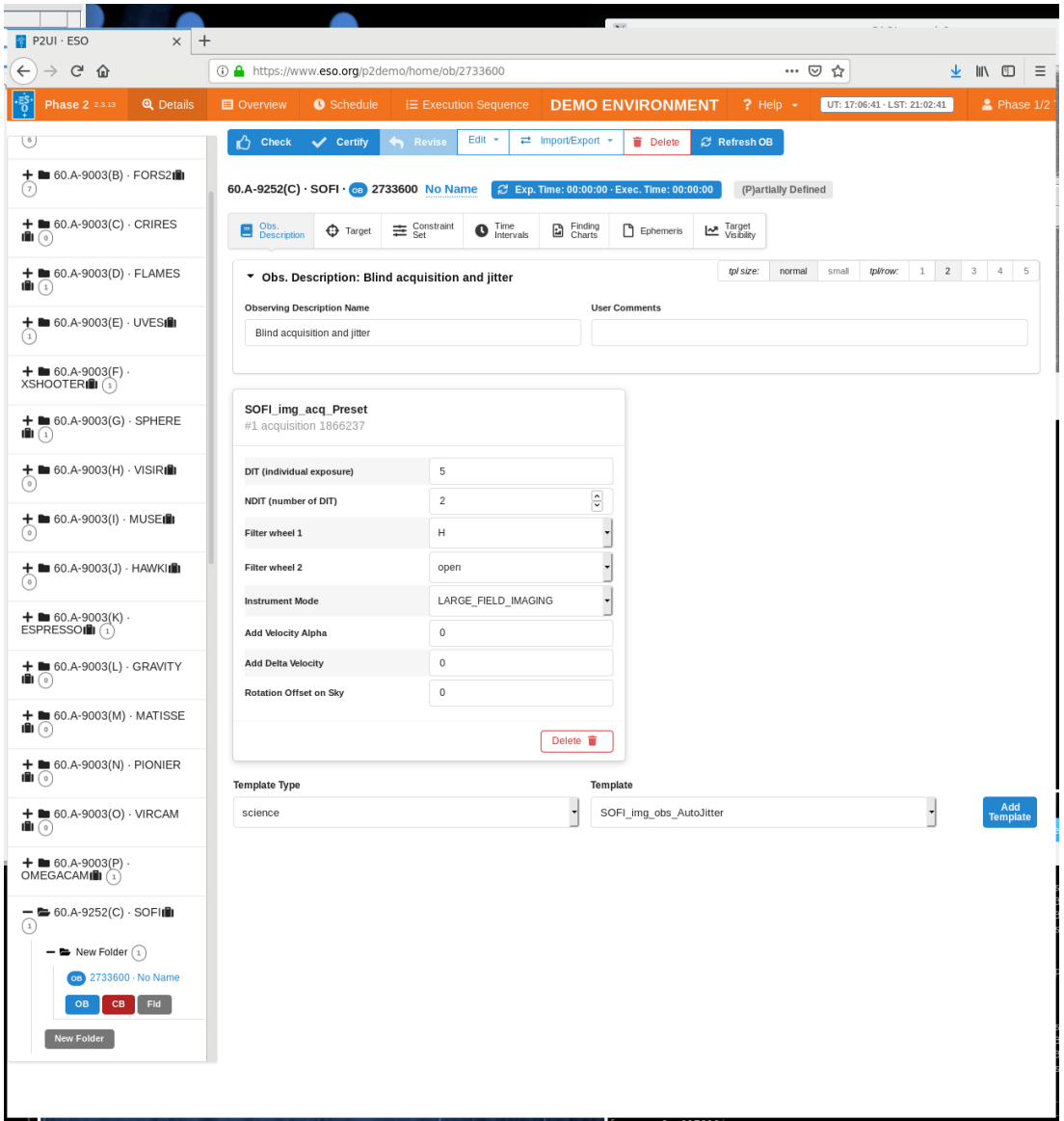
The Phase 2 Preparation program (p2, or p2ls for La Silla)

Several types of acquisition can be chosen from a list of options



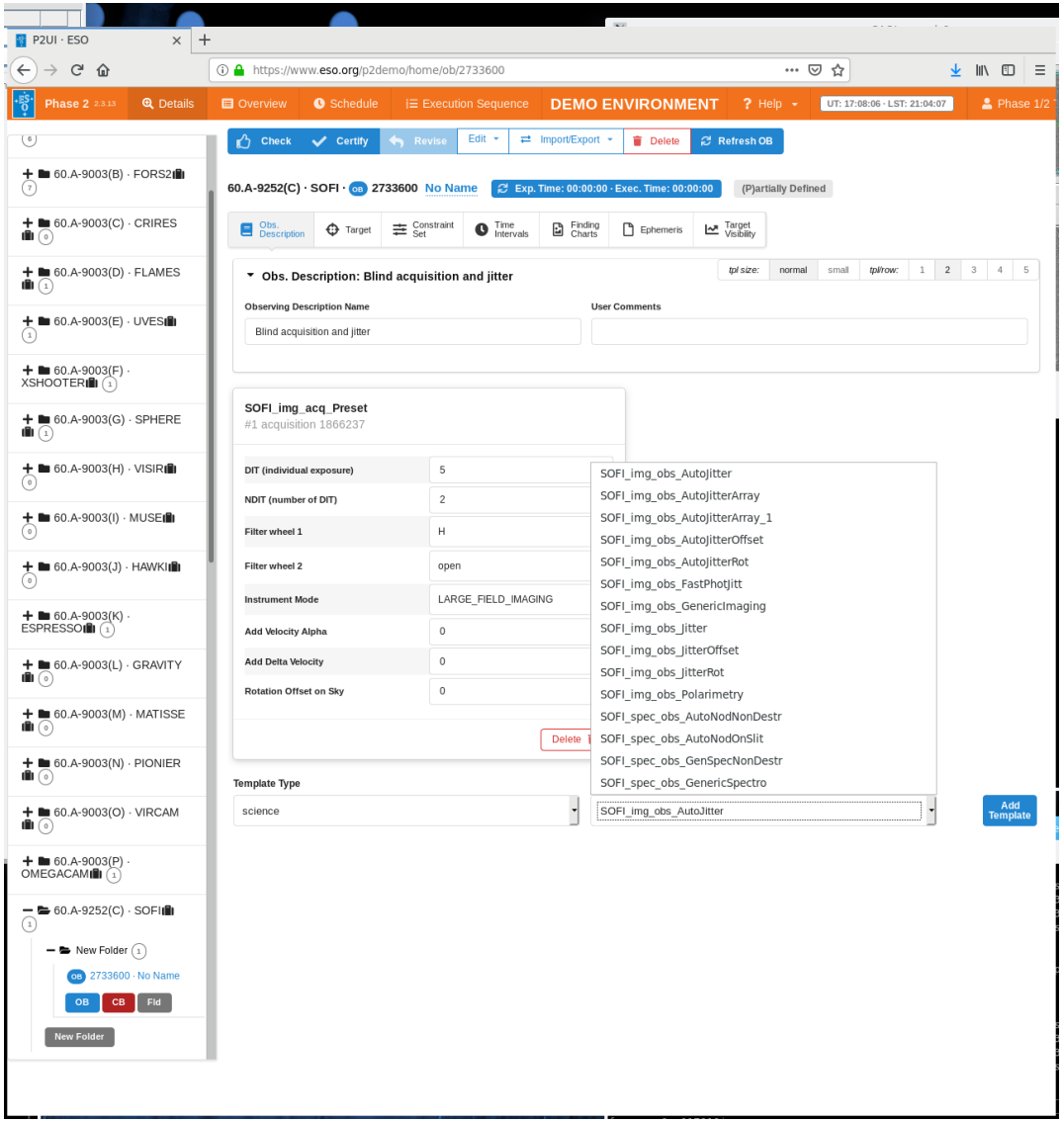
The Phase 2 Preparation program (p2, or p2ls for La Silla)

The chosen acquisition template has several parameters that must be entered by the user



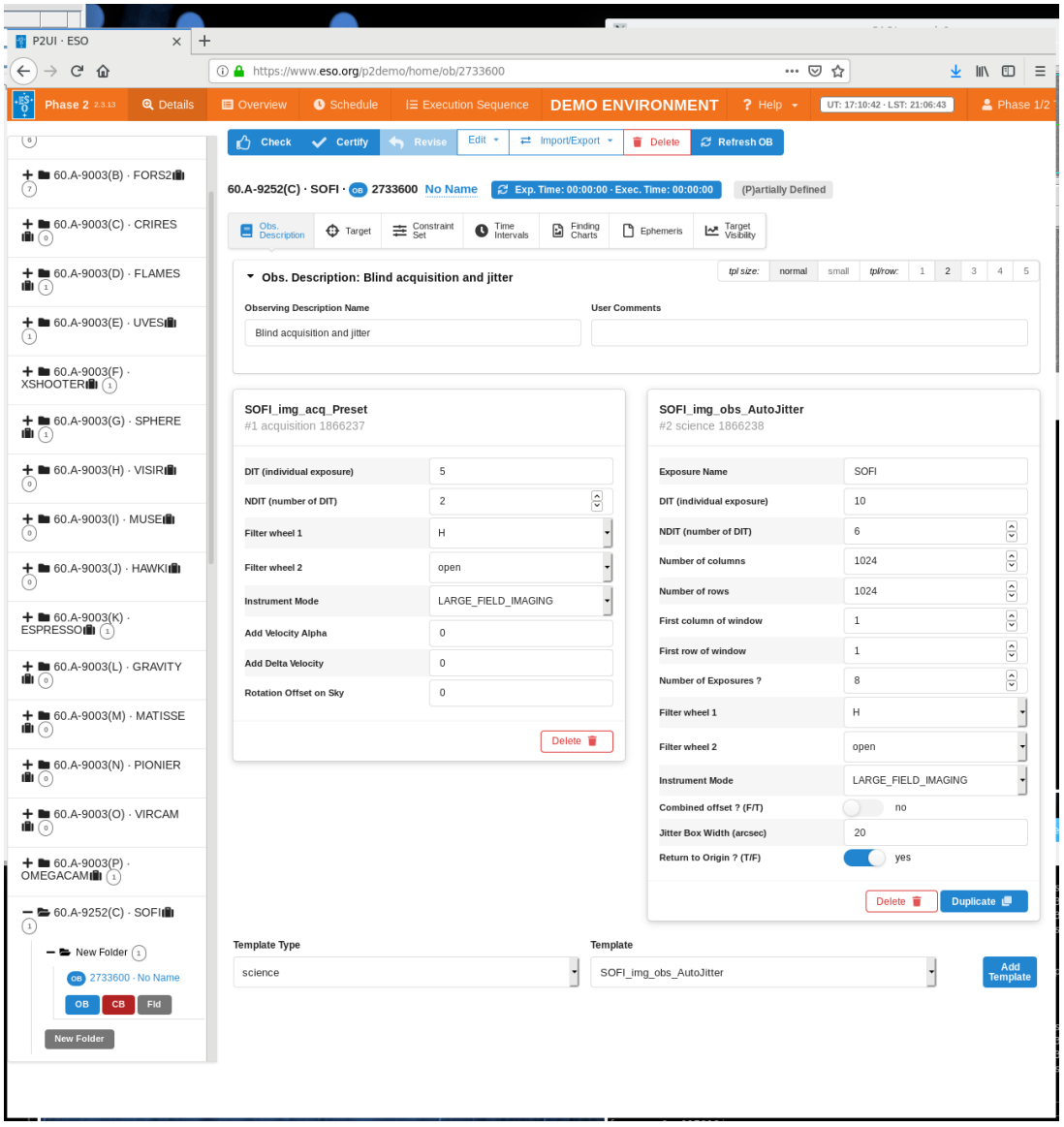
The Phase 2 Preparation program (p2, or p2ls for La Silla)

The Observation Description usually contains science templates. Each instrument has typically many science templates to choose from



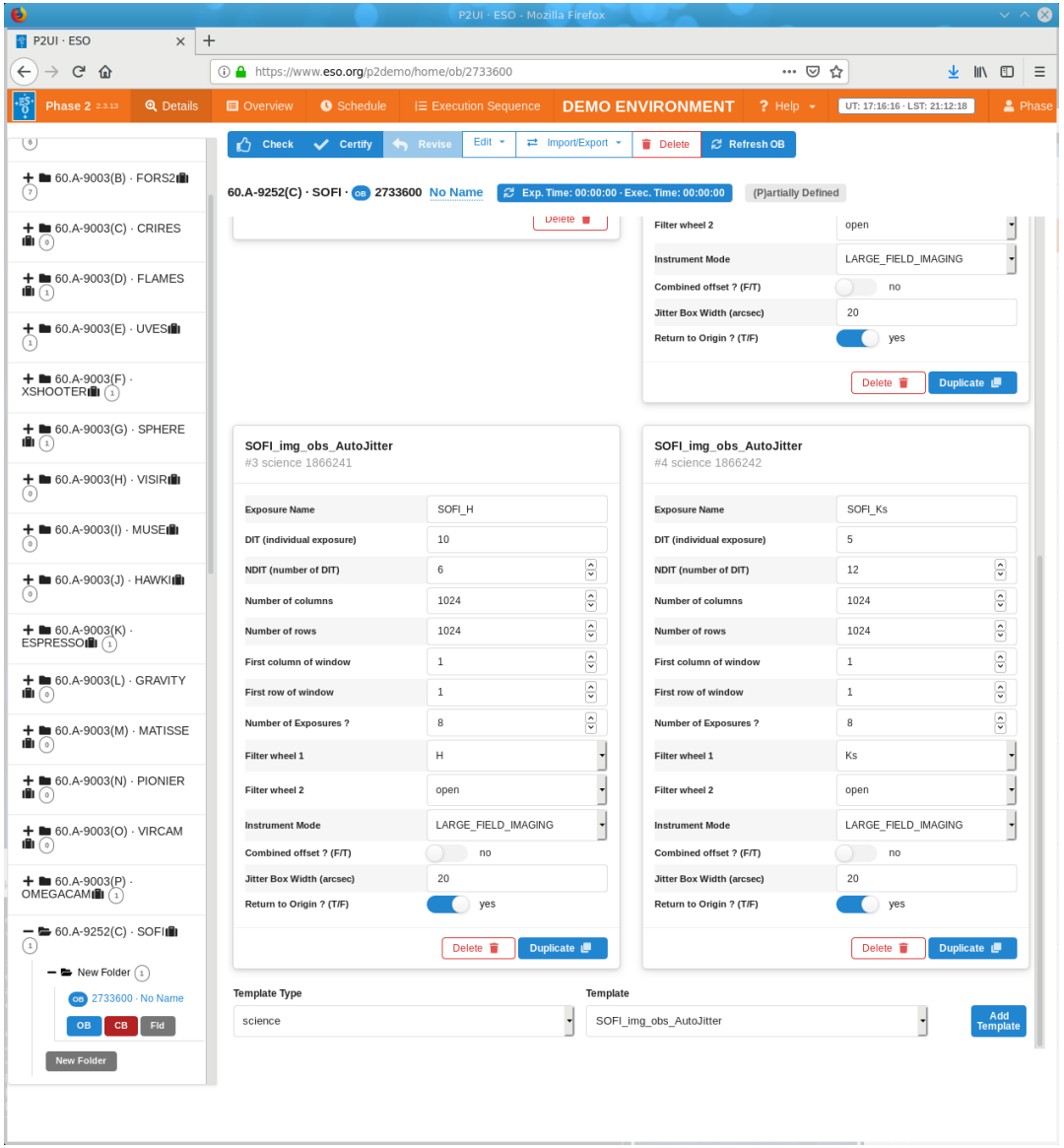
The Phase 2 Preparation program (p2, or p2ls for La Silla)

Each science template defines the configuration of the instrument (optical components, detector windowing) and exposure parameters (exposure times, number of exposures, telescope offsets between exposures…)



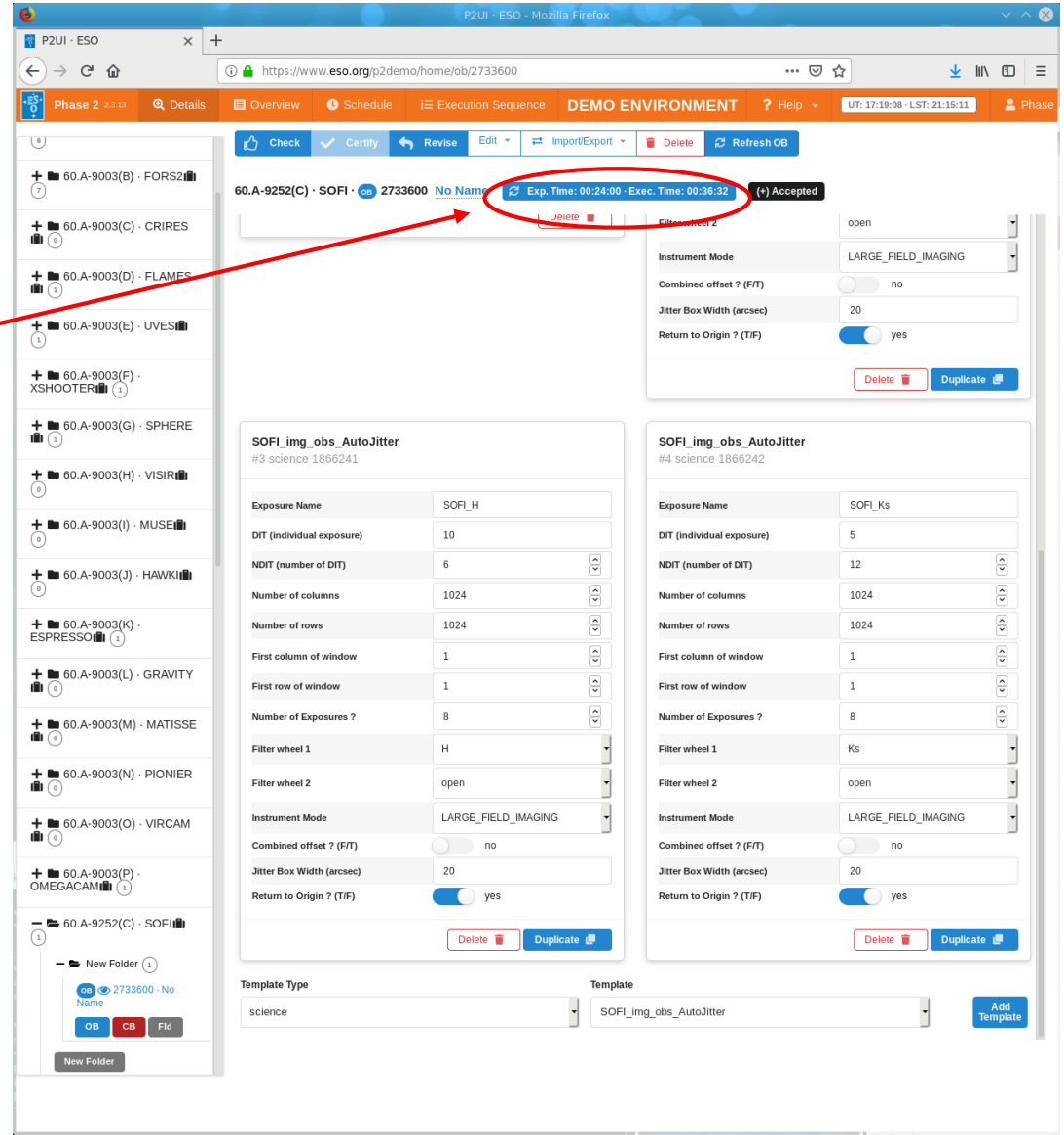
The Phase 2 Preparation program (p2, or p2ls for La Silla)

Very often, each OB contains several science templates as part if the observation description



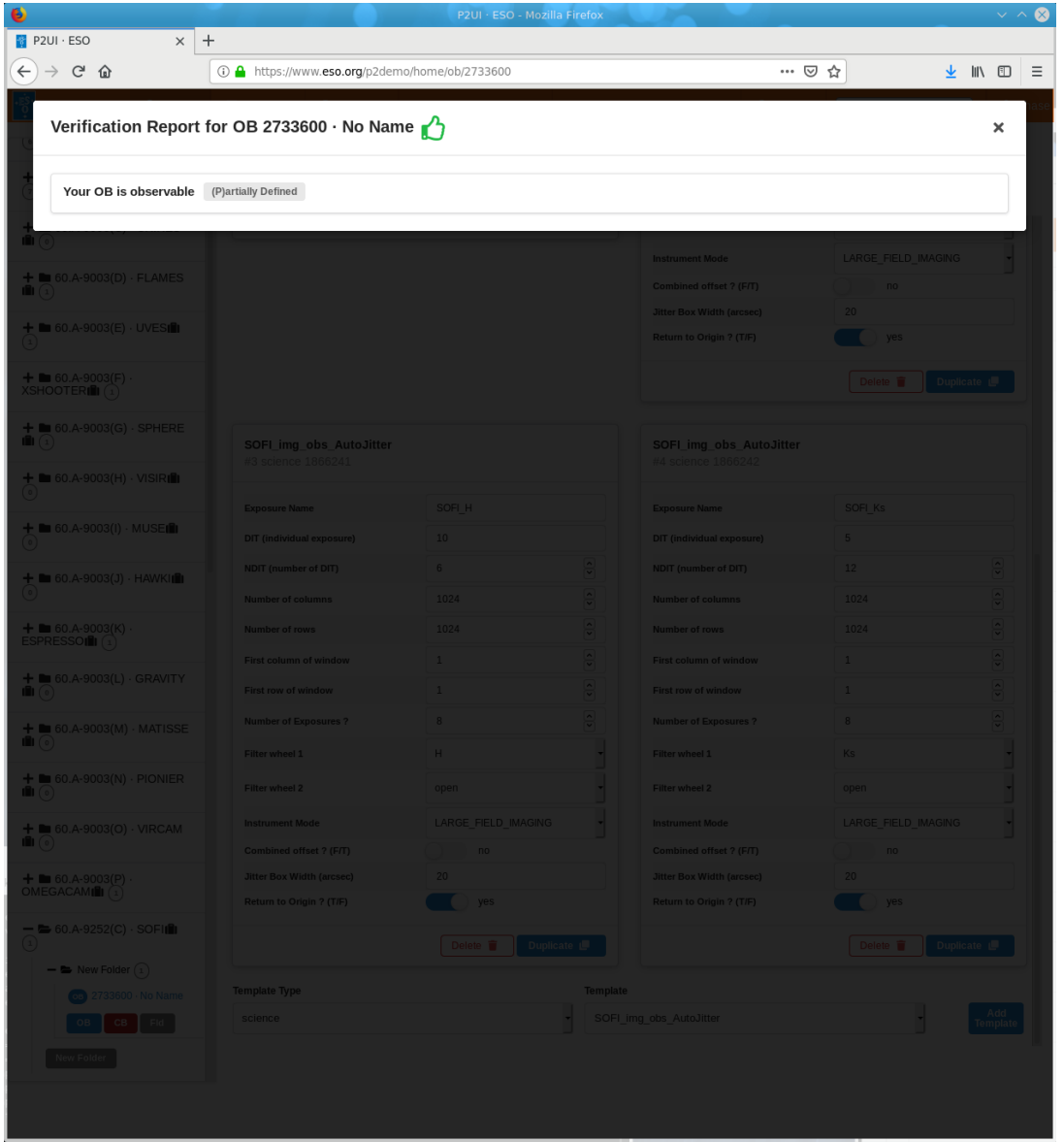
The Phase 2 Preparation program (p2, or p2ls for La Silla)

While building the OB it is possible to compute the exposure time, plus the total execution time (exposure plus overheads)



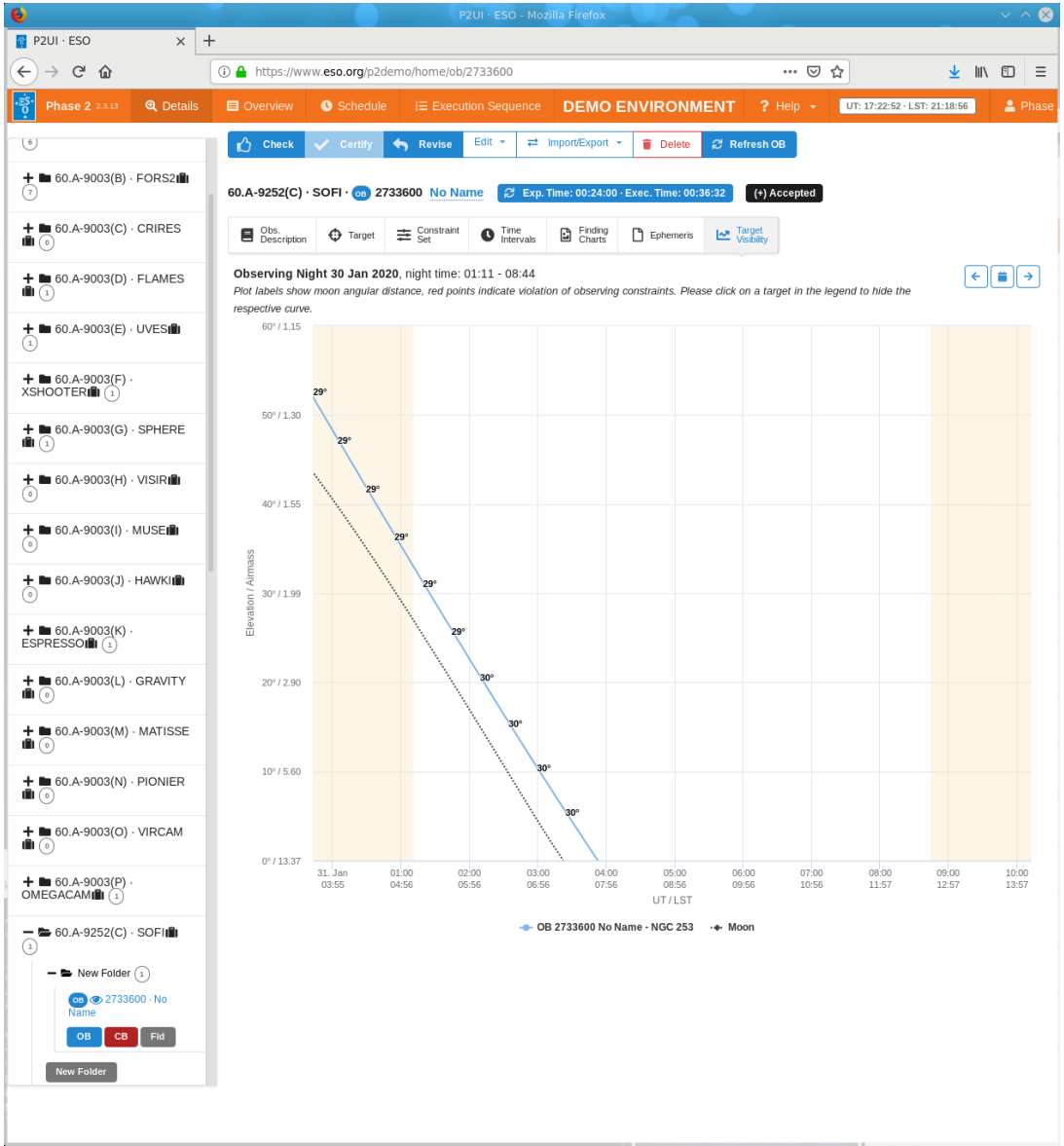
The Phase 2 Preparation program (p2, or p2ls for La Silla)

It is posible to verify too that the parameters introduce make sense, that the instrument configuration does not include something awkward, and that the OB will not fail at execution time



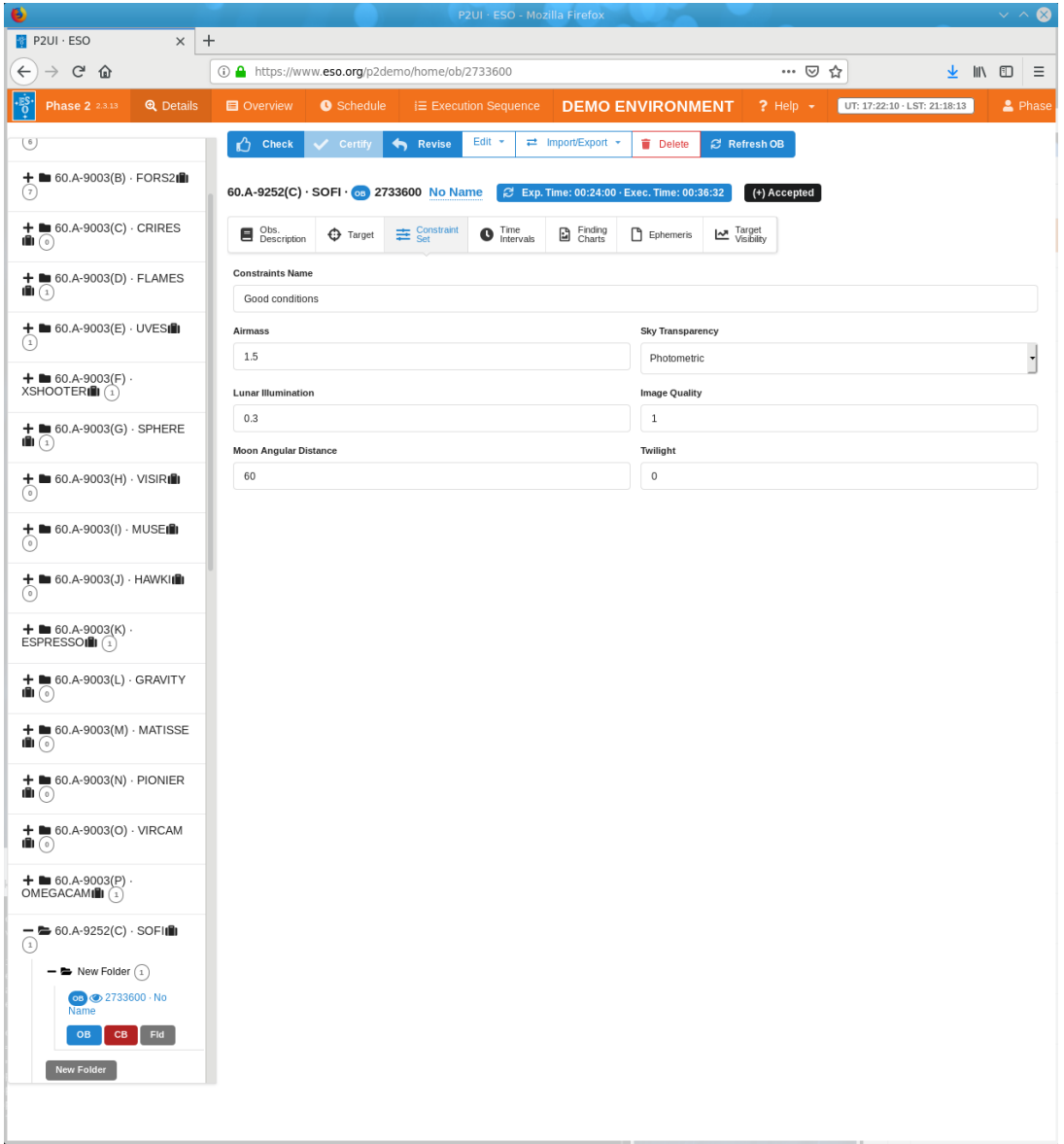
The Phase 2 Preparation program (p2, or p2ls for La Silla)

p2 offers some useful gadgets, like a visibility plot



The Phase 2 Preparation program (p2, or p2ls for La Silla)

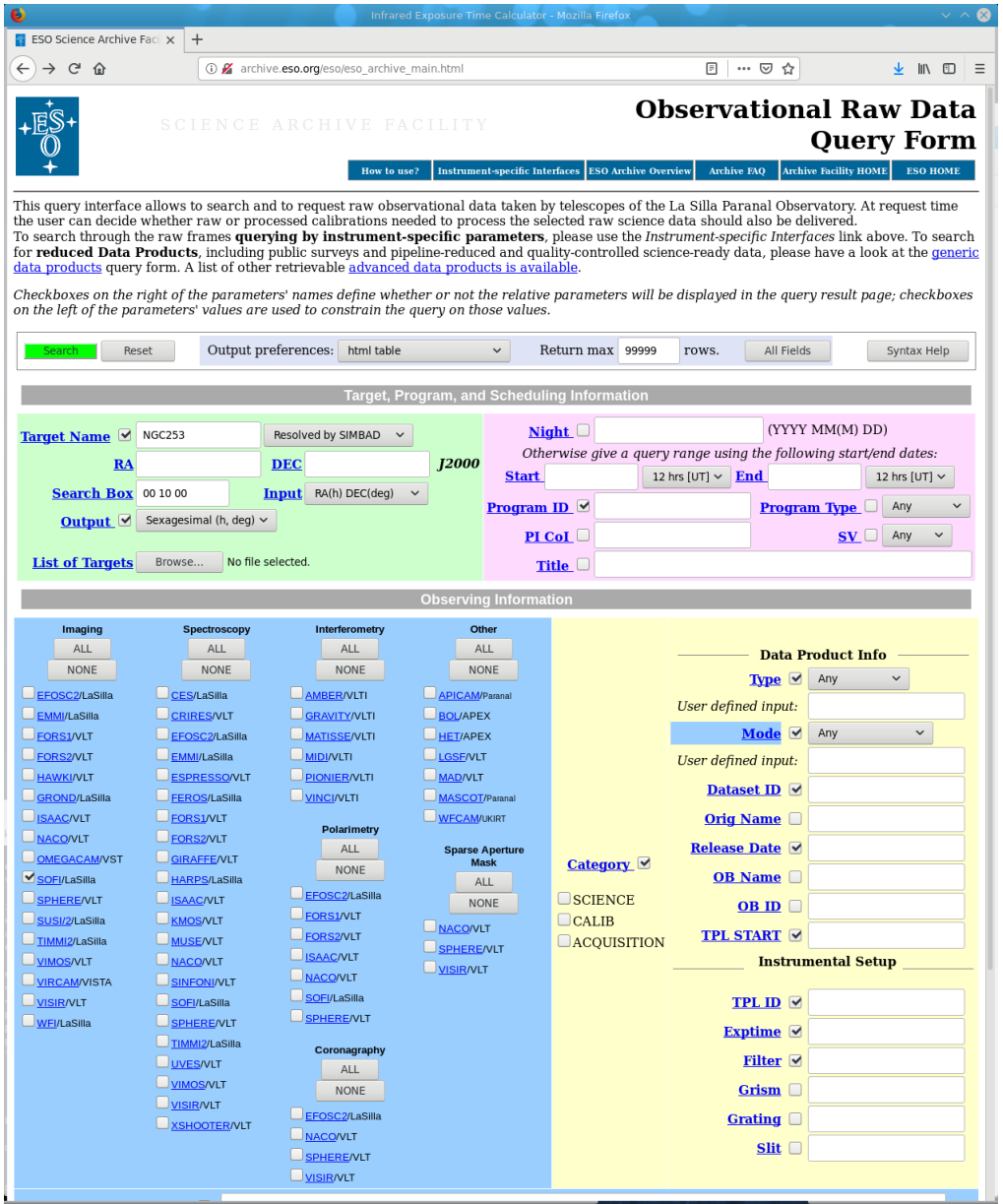
In Service Mode, the Constraint set specifying the worst posible conditions under which the OB can be executed and still be scientifically valid is an essential piece of information at the time to decide whether or not to execute an OB.



The ESO Archive as an observation preparation tool

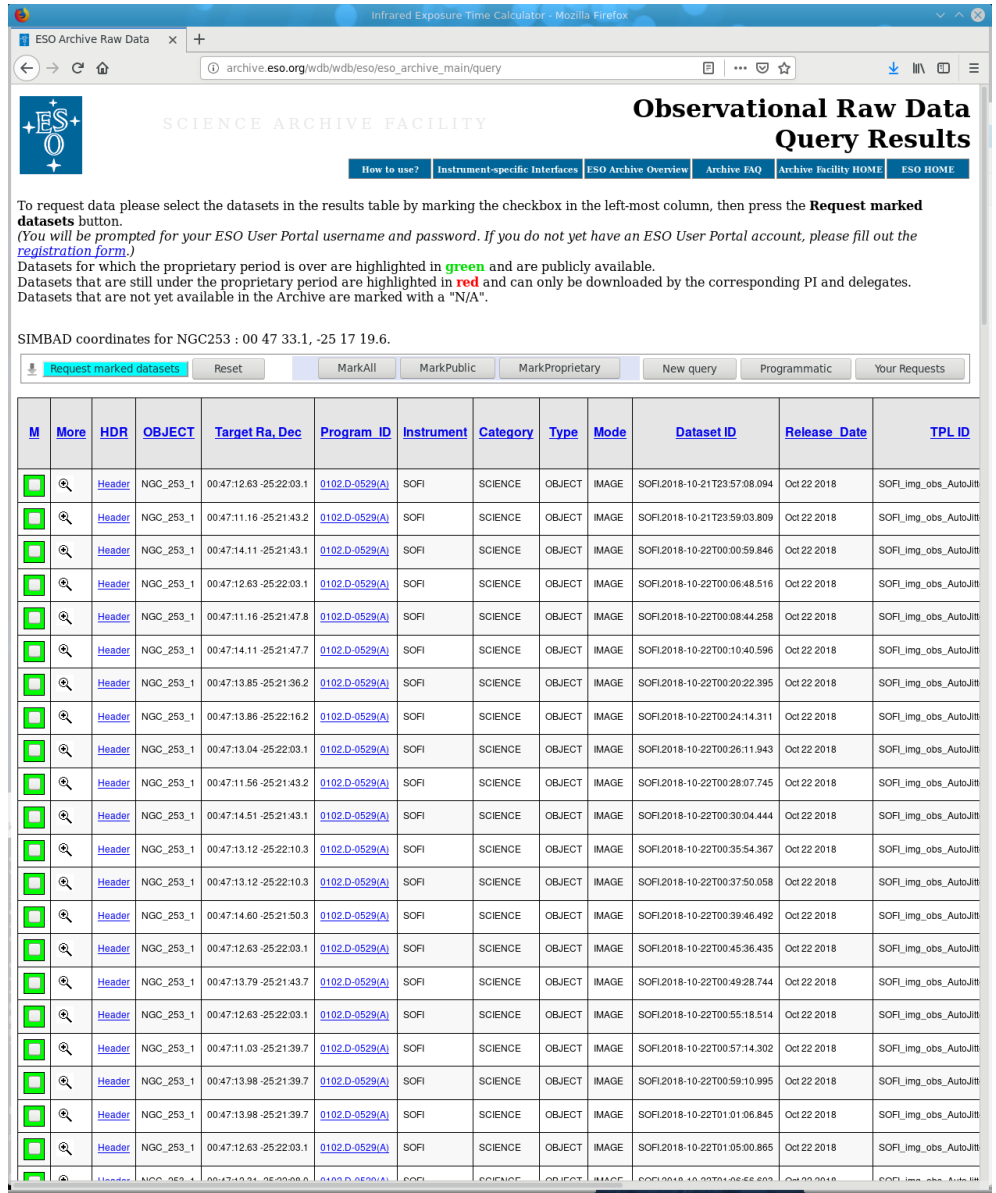
With the ESO archive, you can locate observations similar to the ones you are planning, download them, experience with them, try your data reduction procedures…

This can be very useful if you have never used the instrument before



The ESO Archive as an observation preparation tool

All existing observations are easy to identify and select.



M	More	HDR	OBJECT	Target Ra, Dec	Program_ID	Instrument	Category	Type	Mode	Dataset ID	Release_Date	TPL ID
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		Header	NGC_253_1	00:47:11.16 -25:21:43.2	0102.D-0529(A)	SOFI	SCIENCE	OBJECT	IMAGE	SOFI.2018-10-21T23:59:03.809	Oct 22 2018	SOFI_img_obs_AutoJitt
		Header	NGC_253_1	00:47:14.11 -25:21:43.1	0102.D-0529(A)	SOFI	SCIENCE	OBJECT	IMAGE	SOFI.2018-10-22T00:00:59.846	Oct 22 2018	SOFI_img_obs_AutoJitt
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		Header	NGC_253_1	00:47:11.16 -25:21:47.8	0102.D-0529(A)	SOFI	SCIENCE	OBJECT	IMAGE	SOFI.2018-10-22T00:08:44.258	Oct 22 2018	SOFI_img_obs_AutoJitt
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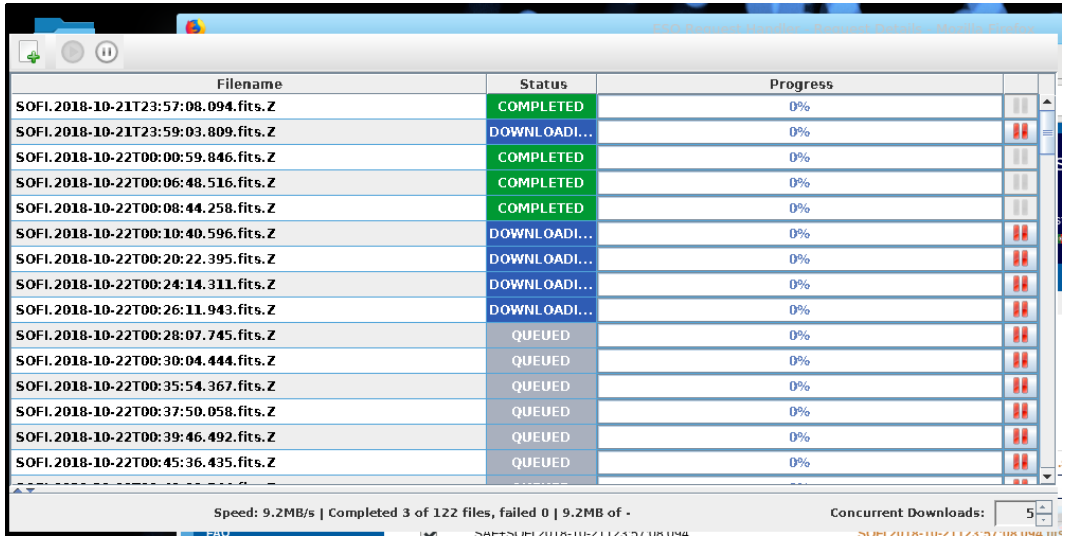
The ESO Archive as an observation preparation tool

Accessing and downloading the observations of interest is very easy and user-friendly.



So, once again…

ESO (and other places) offer you a good assortment of tools to prepare your observations – use them, it is worth doing!!