What is an observing block?

Paola Popesso - 2022-04-20 - Comments (0) - How to prepare your observations (Phase 2)

What is an observing block?

The Observing Block (OB) is the building block of the observation. A single OB is a structured set of information and commands to the telescope. This commands will be executed by you in Visitor or designated Visitor modes (VM and dVM) or by the night astronomer in Service mode (SM).

Let's go through your observation and its codification in the OB.

The first info you need to provide is your target coordinates and in which conditions you would like to observe it: dark, grey or bright time, at what seeing or image quality, at what lunar illumination and distance. All this info is contained in your Phase 1 proposal. Pay attention, that these constraints can only be relaxed and cannot be changed into more stringent ones when preparing the OB unless in exceptional conditions. Check the Phase 2 golden rules.

An OB has several components: templates, finding chart and readme.

The skeleton of the OB is given by the **templates**, which are per-structured sets of information related to the instrument you intend to use. You will need in all cases more than one template: at least one for the *acquisition*, possibly a further template for an intermediate step (e.g. a through slit image in case of spectroscopy for few instruments), and one or more *science templates*. To help you filling the correct template for any need, we have prepared a series of tutorials for each instrument and case. Look here to find the tutorial suited for your case. In addition to this, you can find also the appropriate instrument related User manuals and Template manuals here.

The ***acquisition template*** is used to provide the info on how to acquire your target to make sure the telescope observes what you need, e.g. the image is centered on your target or your target is at the center of the slit in case of slit spectroscopy. The acquisition template, thus, needs the definition of the exposure time of the very short acquisition image, the filter and for some instruments the coordinates of a suited guiding star. For many instruments the latter info is not mandatory.

An ***intermediate step template*** is necessary only for few instruments and observing modes. This might involve the acquisition of an additional short observation in particular cases, e.g. for a blind offset or for a proper centering of the target(s) in the slits or fibers.

Once these necessary technical templates are filled, you can proceed with the design of your observation with *the* ***science template***. Each instrument and observing mode is codified in a specific template. If you use the instrument related Template manual

linked above, you will find detailed info on each entry of the chosen template.

In some cases, the OB is meant for a specific calibration, it may contain a calibration template, such as, for instance, an arc lamp exposure for precise wavelength calibration to be obtained right after the last scientific exposure with the instrument in the same configuration. The set of acquisition, science, and possible attached calibration templates in a given OB compose the Observation Description.

In addition to the template in SM only, the OB needs to have an associated ***finding chart***. This consists in one or more images showing where the target is in the instrument FoV and where are possible reference or guide stars. It is particularly useful to the astronomer at the telescope to understand the nature of your target and to have some clarification in case of doubts. The finding chart together with the acquisition will assure that we are observing what you really want us to observe for you.

If your observation is in SM, the last step is writing the ***readme***. This will give you the possibility to give us a summary of your observation to better understand it and to provide key information regarding critical aspects such as particular observing conditions or observation windows. Keep in mind that you do not need to explain your sceintific case, but your observation. The observing astronomers at the telescope need to understand the nature of your observations, but they have no interests in your scientific goals. It is much more important to let them know that you expect your target to be visible in the given exposure time at a given SNR, rather than explaining why you need such SNR. This misconception is still very common among users.

As mentioned above, the OB must be prepared by respecting several rules. Breaking one or more of these rules is possible but needs some action from you. Look at the dedicated article in this section to see how to do it properly.

If this article clarified a bit what is an OB, let's go to the next article and see how to prepare it in the dedicated web-tool p2!

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