

2024-04-17 TSO CT Meeting notes

Date

17 Apr 2024

Attendees

- [Brian Brooks](#)
- [Sarah Kendrew](#)
- [Knicole Colon](#)
- [Everett Schlawin](#)
- [Ian Wong](#)
- [Aarynn Carter](#)
- [Loic Albert](#)
- [Leonardo Ubeda](#)
- [Nestor Espinoza](#)
- [Nikolay Nikolov](#)

Agenda

- News & Announcements (all)
- Previous and upcoming TSO observations (Nikolov)
- NIRCam DHS updates (Schlawin)
- Jira ticket discussions (all)
- Closing remarks.

Discussion items

Time	Item	Who	Notes
10min	News & Announcements	All	• Nikolay Nikolov exits the TSO CT as a deputy lead and member. This is his last meeting. • Welcome to Ian Wong - a new MIRI TSO member. • Knicole Colon is the new JWST Operations Project Scientist in NASA Goddard, and moves from TESS to JWST.
10min	Previous and upcoming TSO observations	Nikolay Nikolov	Nikolay Nikolov reports TSO observations past two weeks and upcoming two weeks. Mentions repeats due to TA failure. Sarah Kendrew points out a skipped observation that was not reported, because it was recent an a TTRB has been just submitted. This one was skipped because the observatory was behind schedule. ☐ Nestor Espinoza will contact the schedulers to discuss the percentage of TSOs with this issue.

30min	NIRCam DHS updates	Everett Schlawin	• Everett Schlawin introduces the DHS capability at the NIRCam SW. With the DHS enabled observers will be able to obtain spectra on both SW and LW simultaneously. He reports the recent observing status for enabling the DHS mode with data now available for the following calibration aspects: ◦ flux calibration ◦ wavelength calibration ◦ new field points to put the spectra on the two detector rows on the SW for faster read A new program is developed to check a few filters that were not examined yet, and test the new field points. He also elaborates that the SW and LW detector modes are locked (by design) to have the same timing. This and the goal to observe bright targets have been the driver to move to smaller 32 pixel subarrays. Questions for the TSO CT: • What do people in this group think are the risks by going for such a narrow subarray? ◦ Loic Albert asks if the filter position varies from observation-to-observation. Everett Schlawin reports that such variations like the ones seen at the NIRISS instrument have not been seen in NIRCam. ◦ Nikolay Nikolov mentions that with such a narrow subarray, and with the LW showing a wide wings, the PSF may be set-subtracted in some cases. ◦ Michael Regan mentions that if the new mode is offered with several choices, the calibration may be too heavy task. ◦ Nestor Espinoza suggests the current data to be combined in order to constrain the psf profile and take informed decision. ◦ Everett Schlawin proposes for two sizes of the subarrays, which will be explained to the users in order that they decide what to use in a given situation and know the risks. ◦ Everett Schlawin asks the SOSS representatives how did they select the subarrays for their instrument. Loic Albert mentions that the team did not know about the tilt moves of the filter wheel at the time the decisions were taken. He also suggests the DHS team should add reference and background pixels away from the source to enable an accurate background subtraction, if the arrays are too small. Nestor Espinoza adds that for SOSS it was critical to subtract the background. Michael Regan points out that while subtracting the background is important, if the telescope has a stable pointing, then there is no issue with the background, as the transit TSOs are relative. Nestor Espinoza mentions that this is not quite the case, because the signals that the exoplanet community searches for are very small, a few tens of ppm, and the background subtraction is critical. • Is the tilt a problem? ◦ The tilt is not easy to resolve, because it exists for all DHS spectra, and it is different from spectrum to spectrum. ◦ In addition, there is overlap between orders with some contamination. ◦ Positioning the spectra such as to optimize the widest wavelength coverage is not trivial and some compromise needs to be done with a sacrifice of wavelength coverage. • Will the users need the red optical wavelength coverage? ◦ Nestor Espinoza mentions that for transits, these wavelengths are not covering very interesting features. ◦ Nikolay Nikolov mentions that for earth-mass exoplanets, there is a CH₄ feature that peaks at 0.9µm, which is close to the red edge of grism F090W order 2.
10min	Jira ticket discussions	All	• JP-3584 - outlier detection for TSO3 ◦ extraction repeats again at the TSO3 level, because of the outlier_detection step; the pipeline does not use the TSO information to flag outliers; Nikolay Nikolov and Sarah Kendrew proposed a running median to catch outliers for TSOs and the algorithm is currently being implemented; SSCB will start soon reaching people for feedback and help. • JP-3569 - revise how resample handles VAR arrays; Michael Regan mentions this is a generic issue for all modes, not just TSOs. • JP-3308 - Level3TSO is not working for NIRCam and produces an error. Nikolay Nikolov mentions that this has not been a problem so far, so it might be an issue related with the new build.
2min	Closing remarks	All	Nikolay Nikolov and Leonardo Ubeda mention help desk ticket INC0197192, where a smooth variation in the observatory pointing has been observed for 15min. An investigation by the ACS team has been done and found that the reason is not FGA move, which occurred earlier, but a reaction wheel bias. In such cases, the reaction wheel decreases its speed to zero and starts rotation in the opposite direction causing a short instability. TSOs can catch such events, but their frequency is small, perhaps smaller than this for tilt events. Nestor Espinoza mentions that he has seen such in the data he analyzed.

Action items

