**NIRCam TSO Updates (03/05/2020)**

*The following document (In preparation for TSOWG meeting 03/18/2020) outlines a list of NIRCam TSO related work either in-progress or completed since the TSOWG last met ~1 year or so ago.* See the [WIC page](https://innerspace.stsci.edu/display/WIC/WIC%2BTasks%2Band%2BEvents) for a high level overview of currently planned work.

[JWST TSOWG Homepage](https://outerspace.stsci.edu/display/JTEWG/JWST%2BTime-Series%2BObservation%2BWorking%2BGroup%2BHome), email list: **JWST-TSOWG@maillist.stsci.edu**

[JWST DMS TSO Homepage](https://innerspace.stsci.edu/display/jwstdms/JWST%2BDMS%2B-%2BTime%2BSeries%2BObservations%2B%28TSO%29%2BPage)

**TSO Precise Times with FPE Clock**

* See [meeting notes](https://outerspace.stsci.edu/display/JTEWG/2018-12-03%2BTSO%2BWG%2BMeeting%2Bnotes) for last discussion
* Analysis needs to be completed/reviewed and technical report/memo (lower priority) to be completed.

**SOC/PPS**

* Implementing DHS was reviewed and is currently on-hold in favor of TA brighter targets support ([See JSOCINT-264](https://jira.stsci.edu/browse/JSOCINT-264)) . Various discussions arose Winter 2019 on the estimated [DHS positions](https://github.com/eas342/dhs_layout) via email.

**Commissioning**

* [NRC-33](https://outerspace.stsci.edu/pages/viewpage.action?spaceKey=JN&title=NIRCam+Commissioning+Analysis+Plans+and+Reports) TSO Stability Verification was developed, approved and placed on the commissioning timeline. CAR passed the PIT review ([notes](http://www.stsci.edu/ftp/presto/ops/jwst-pit-minutes/1442.txt)). CAP is converging and is in the review/development phase.

**Pipeline/Calibration**

* TSO capabilities were recently tested in build 7.4 and issues were reported making the 7.4 build of the TSO pipeline non-functional. Majority of issues have now been fixed and is currently undergoing follow-up testing which will go into the 7.5 build release. [See page](https://outerspace.stsci.edu/pages/viewpage.action?spaceKey=JWSTPWG&title=INS+Ticket+Prioritization#INSTicketPrioritization-NIRCam) for further test details.
* Enhancements (See [here](https://outerspace.stsci.edu/display/JWSTCC/Enhanced%2BPipeline%2B-%2BDevelopment%2BPriorities))
	+ “Optimal” Spectral Extraction
	+ Spectral background subtraction
	+ Re-centering during aperture photometry

The provided link is great for tracking the [TSO and overall Pipeline Status](https://outerspace.stsci.edu/display/JWSTPWG/JWST%2BScience%2BCalibration%2BPipeline%2BStatus)

**ETC (Cycle 1 Frozen)**

* In the 1.5 and 1.5.1 released versions of the ETC, the following TSO updates were made:
* New NIRCam short-wavelength and long-wavelength Imaging Time-Series modes, including support for weak lens observations
* Elimination of flat field errors for time-series modes
* Addition of F405N narrow-band filter for NIRCam TA for bright targets
* See [link here](http://www.stsci.edu/contents/news/jwst/2019/the-jwst-etc-cycle-1-version-15-is-now-live) and [here](http://www.stsci.edu/contents/news/jwst/2020/accuracy-improvements-and-bug-fixes-available-in-etc-151) for release info

The ETCWG is currently planning for a v1.6 release around summer of 2020. NIRCam and the WG ranked TSO DHS updates a high priority for the Cycle 2 release but is currently on-hold [https://innerspace.stsci.edu/display/JEP/ETC+1.6+Prioritization](https://innerspace.stsci.edu/display/JEP/ETC%2B1.6%2BPrioritization) . See SOC/PPS section in this document above

**APT (see** [**release**](http://www.stsci.edu/scientific-community/software/astronomers-proposal-tool-apt/previous-apt-releases)**)**

* Recently completed adding F405N and awaiting OSS approval before placing in production. See [JSOCINT-113](https://jira.stsci.edu/browse/JSOCINT-113)
* DHS is on-hold. See SOC/PPS section in this document above

**Simulations**

* TSO data challenge being led by UofA is coming soon
* Simulated TSO data [JWSTSIMS-61](https://jira.stsci.edu/browse/JWSTSIMS-61), [JWSTSIMS-12](https://jira.stsci.edu/browse/JWSTSIMS-12)
* **MIRaGe**
* Now has recently released [TSO capabilities](https://mirage-data-simulator.readthedocs.io/en/latest/tso_simulations.html), but needs feedback from community
* [Notebook examples](https://github.com/spacetelescope/mirage/blob/master/examples/NIRCam_TSO_examples.ipynb) are available
* There is currently no planned MIRaGe work in regards to TSO

**JDOX (Cycle 1 Frozen)**

* Example Science Programs [(#29, #30](https://jwst-docs.stsci.edu/jwst-example-science-programs)) were developed
* [TSO Roadmaps](https://jwst-docs.stsci.edu/methods-and-roadmaps/jwst-time-series-observations) were created
* ETC saturation values were [published](https://jwst-docs.stsci.edu/jwst-exposure-time-calculator-overview/jwst-etc-calculations-page-overview/jwst-etc-saturation)
* Multiple NIRCam pages were updated as a result from items listed in this report ([see page](https://innerspace.stsci.edu/display/JWST/NIRCam%2BJDox%2BPage%2BList))

**JWQL**

* Nothing was implemented specifically for TSO. The TSOWG previously considered adding monitors that were not present on the instrument specific list. See [meeting notes](https://outerspace.stsci.edu/display/JTEWG/2018-08-06%2BTSO%2BMeeting%2Bnotes) “JWST QuickLook” section for details