



**STScI** | SPACE TELESCOPE  
SCIENCE INSTITUTE

EXPANDING THE FRONTIERS OF SPACE ASTRONOMY

# Proposing for JWST

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Klaus Pontoppidan

JWST Project Scientist, STScI



# Four JWST Science Themes

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## *FIRST LIGHT & REIONIZATION*

Webb will be a powerful time machine with infrared vision that will peer back over 13.5 billion years to see the first stars and galaxies forming out of the darkness of the early universe.

[Read More](#) ▶



## *ASSEMBLY OF GALAXIES*

Webb's unprecedented infrared sensitivity will help astronomers to compare the faintest, earliest galaxies to today's grand spirals and ellipticals, helping us to understand how galaxies assemble over billions of years.

[Read More](#) ▶



## *BIRTH OF STARS & PROTOPLANETARY SYSTEMS*

Webb will be able to see right through and into massive clouds of dust that are opaque to visible-light observatories like Hubble, where stars and planetary systems are being born.

[Read More](#) ▶



## *PLANETS & ORIGINS OF LIFE*

Webb will tell us more about the atmospheres of extrasolar planets, and perhaps even find the building blocks of life elsewhere in the universe. In addition to other planetary systems, Webb will also study objects within our own Solar System.

[Read More](#) ▶

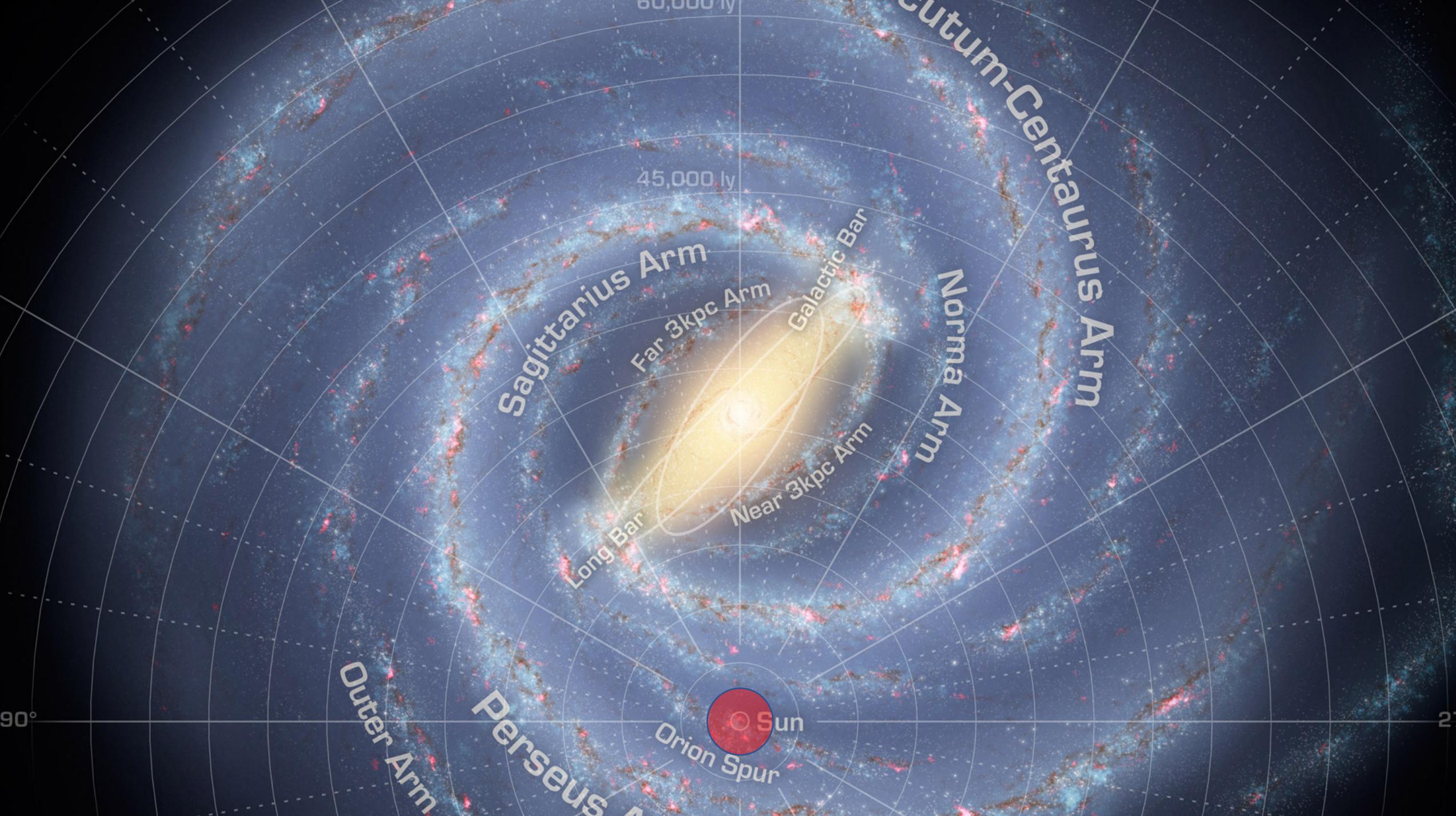
From [jwst.nasa.gov](http://jwst.nasa.gov)

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## *DISCOVERY SPACE*

Webb will discover the unanticipated!





Orion (0.4 kpc) ~ 10 disks per pointing

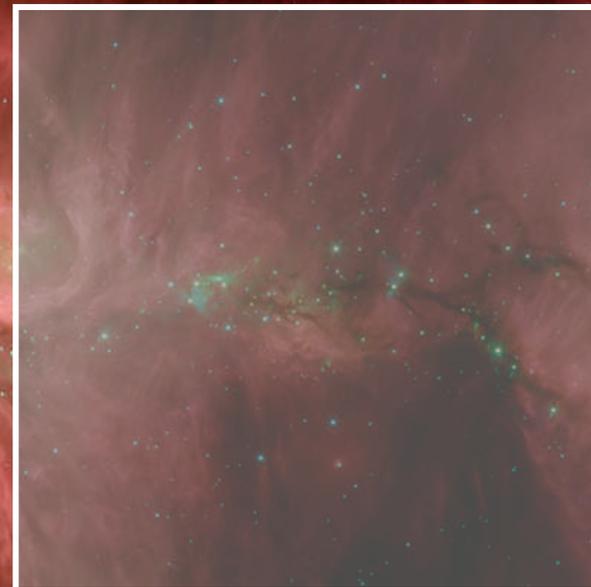
NIRSpec FOV



SSC / T. Megeath

**“Massive star-forming region” at 4 kpc ~ 100 disks per pointing**

**NIRSpec FOV**



**SSC / T. Megeath**



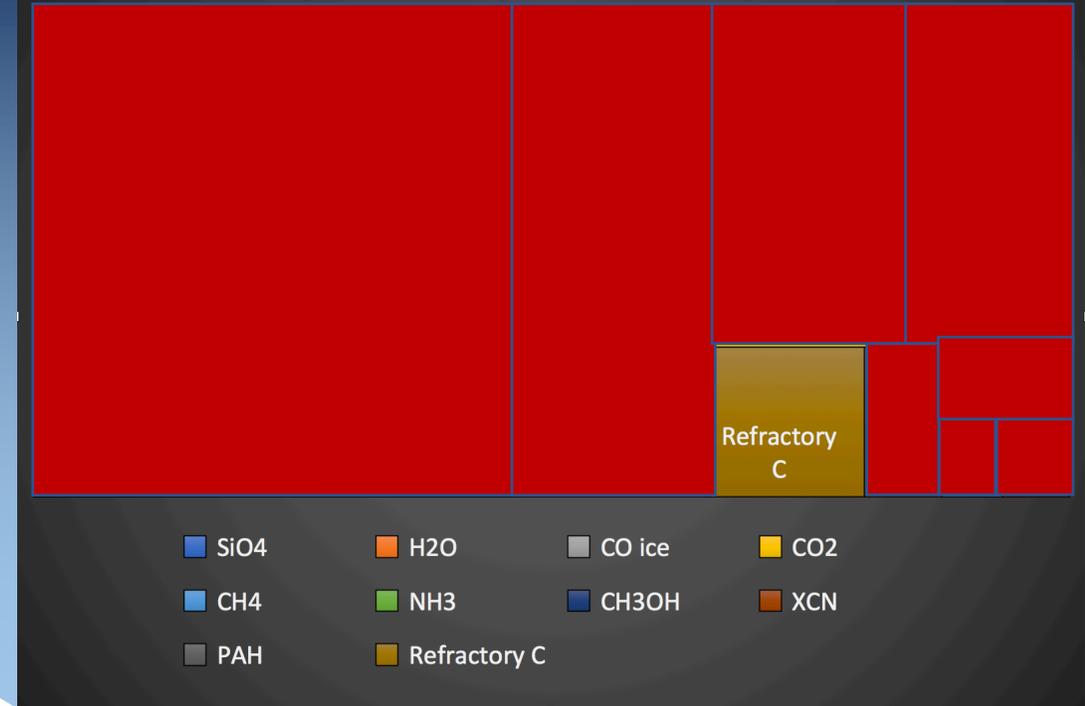
# Bulk composition of gas and dust in the ISM

The IR is needed to measure the bulk composition of the ISM (near and far)

## Protoplanetary gas composition by mass



## Protoplanetary dust composition





## AAS JWST events

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- **JWST Proposal Preparation Workshop**
  - When: Friday, January 3, 8.30am-5.00pm
- **JWST Town Hall**
  - When: Sunday, January 5, 6.30pm-8.00pm
  - Refreshments courtesy of Northrop Grumman
- **JWST Open House**
  - When: Sunday, January 5, 9.30am-11.30am (IFUs)
  - Monday, January 6, 9.30am-11.30am (Grisms)
  - Tuesday, January 7, 9.30am-11.30am (NIRSpec MSA)
- **JWST Exhibitors**
  - NASA Booth (Questions about Project Status)
  - STScI Booth (Questions about Science operations, proposal planning)



# Getting started

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<https://jwst-docs.stsci.edu/getting-started-guide>

JWST uses single-stream proposal submission – observations are mostly defined at submission, with some exceptions.

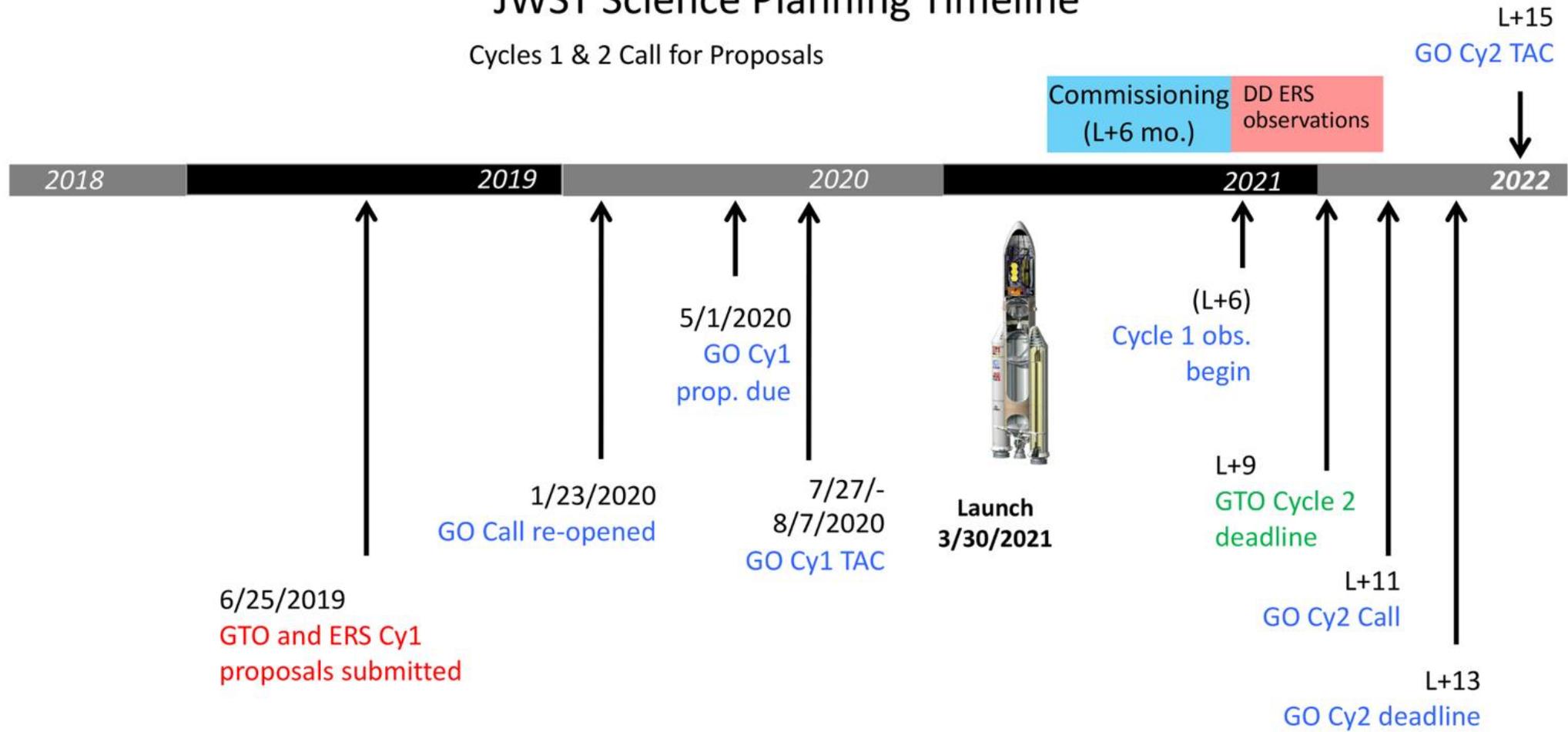
- 1. Know the deadline – May 1, 2020**
2. Follow @JWSTObserver on Twitter or Facebook for the latest news
3. Become familiar with the JWST capabilities, terminology, and documentation
4. Determine if your targets can be observed (check duplication and visibility)
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# JWST Science Timeline

## JWST Science Planning Timeline

Cycles 1 & 2 Call for Proposals





## JWST GO Cycle 1 structure

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- Anticipate receiving 1000-1600 proposals for GO/AR programs in Cycle 1.
- Approximately 6000 hours of observing time will be available to General Observer (GO) programs.
- The approximate breakdown of observing time per size category is as follows:
  - 3500 hours for **Small Programs** (totaling less than 25 hours),
  - 1500 hours for **Medium Programs** (25 to 75 hours),
  - 1000 hours for **Large Programs** (>75 hours).



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# JWSTObserver News

The screenshot shows the JWST Observer News website. At the top, there is a navigation bar with links for JWST Home, About, News & Events, Instrumentation, Science Planning, Observing Programs, and Documentation. Below the navigation bar is a breadcrumb trail: Home > James Webb Space Telescope > News & Events. A search and filter section includes a 'Filter News' button, a 'Type' dropdown menu, an 'Enter Keyword' input field, 'From' and 'To' date pickers, and a 'SUBMIT' button. Below this, there is a 'Items per page' dropdown set to 15 (84 total). Three news items are displayed, each with a thumbnail image, a date, a title, a short description, and a 'Read More >' link.

**JWST OBSERVER NEWS**

JWST Home About News & Events Instrumentation Science Planning Observing Programs Documentation

Home > James Webb Space Telescope > News & Events

Filter News Type Enter Keyword From To SUBMIT

Items per page: 15 (84 total)

**NOVEMBER 25, 2019**  
**JWST Observer Events at the 235th Meeting of the AAS**  
The 235th meeting of the AAS will include events to prepare the community for the release of the JWST Cycle 1 Call for Proposals on January 23, 2020.  
[Read More >](#)

**NOVEMBER 13, 2019**  
**Watch the JWST Master Class Plenary Webcast**  
The JWST Master Class plenary presentations will be streamed live via the STScI webcast.  
[Read More >](#)

**NOVEMBER 11, 2019**  
**JWST Observer Offers a New Way To Explore JWST Sensitivities**  
Estimate sensitivities and exposure times with JIST.  
[Read More >](#)

JWSTObserver news is duplicated on

- [jwst.stsci.edu](http://jwst.stsci.edu)
- Social media (Twitter+FaceBook)
- Email newsletter roundup
- You can also check the call for proposals' *Late Breaking News*



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# Improved JDOx navigation and new example science programs

## Proposing Opportunities

- › JWST Cycle 1 Proposal Opportunities
- › JWST General Science Policies

## Proposal Preparation

- Getting Started Guide
- Understanding Exposure Times
- › Methods and Roadmaps
- Example Science Programs
- Observing Strategies
- › JWST Duplication Checking
- › JWST Observatory Functionality
- › JWST Observatory Hardware

## Proposing Tools

- › Exposure Time Calculator
- › Astronomer's Proposal Tool
- Observation Templates

## Example science programs by instrument

Table 1. Example science programs

Program reference #	Prime instrument(s) and template(s)	Parallel instrument and template (if any)	Example science program title (links go to the relevant articles)
<b>MIRI</b>			
28	MIRI MRS	---	<a href="#">MIRI MRS Spectroscopy of a Late M Star</a>
(See other MIRI examples in the Multi-instrument section.)			
<b>NIRCam</b>			
22	NIRCam Imaging	MIRI Imaging	<a href="#">NIRCam Deep Field Imaging with MIRI Imaging Parallels</a>
29	NIRCam Time-Series	---	<a href="#">NIRCam Time-Series Imaging of HAT-P-18 b</a>
30	NIRCam Grism Time-Series	---	<a href="#">NIRCam Grism Time-Series Observations of GJ 436b</a>
37	NIRCam WFSS	---	<a href="#">NIRCam WFSS Deep Galaxy Observations</a>



# New video tutorials



**JWST Observer**

215 subscribers

SUBSCRIBE

HOME

VIDEOS

PLAYLISTS

CHANNELS

ABOUT



**Getting Started** ▶ PLAY ALL

Videos developed to help observers get started using JWST proposal tools. For the latest information on JWST tools and functionality, please consult JDox: <https://jwst-docs.stsci.edu/>.



**JDox Overview**

JWST Observer  
139 views • 3 months ago



**ETC Home Page Overview**

JWST Observer  
122 views • 3 months ago



**ETC General Overview**

JWST Observer  
92 views • 3 months ago



**APT GUI Overview**

JWST Observer  
100 views • 3 months ago



**Aladin Overview in APT**

JWST Observer  
42 views • 3 months ago



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# MAST portal and program information tool

[Home](#) > [James Webb Space Telescope](#) > [Observing Programs](#)

To obtain information about a specific program, enter the **Program ID** or the **Investigator's Name** and hit one of the buttons to the right of the entry box.

When entering an investigator's name, either just the **LAST** name or both the **FIRST** and **LAST** name may be specified.

Program ID #:

Investigator:

  
First Name  
Last Name

Comments to: [JWST Help Desk](#)



# Archival proposals can be based on ERS and some GTO programs

**OBSERVING PROGRAMS**

[JWST Home](#) [About](#) [News & Events](#) [Instrumentation](#) [Science Planning](#) [Observing Programs](#) [Documentation](#)

[Home](#) > [James Webb Space Telescope](#)

## Science Observations with JWST

Learn more about the approved JWST observing programs:

- [Program Information lookup tool](#)
- [Approved ERS programs](#)
- [Approved GTO programs](#)

These links provide access to JWST data and tools to facilitate the translation of that data into scientific knowledge:

- [Data Analysis Toolbox](#)
- [Mission Archive for Space Telescopes \(MAST\)](#)





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# JWST Interactive Sensitivity Tool (jist.stsci.edu)

## JWST INTERACTIVE SENSITIVITY TOOL

JIST is intended for initial exploration and quick feasibility checks. For detailed results, please use the [JWST ETC](#).

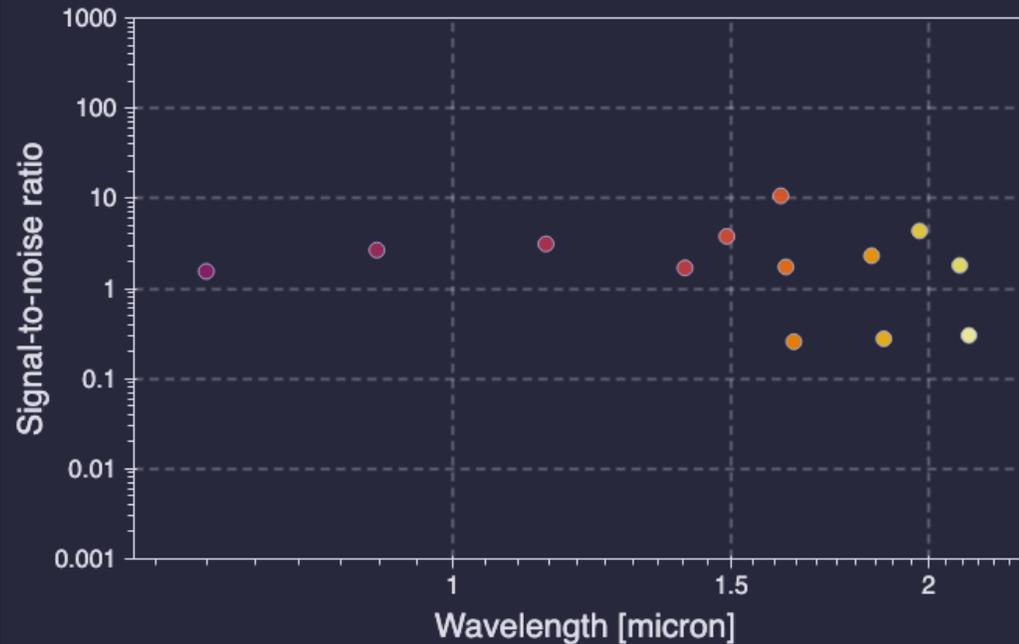
Log Flux Density [Log(mJy)]



Exposure Time [seconds]: 100.47



- MIRI: Imaging
- MIRI: Low-Resolution Spectroscopy Slit
- MIRI: Medium-Resolution Spectroscopy
- NIRCam: SW Imaging
- NIRCam: LW Imaging
- NIRCam: Wide-Field Slitless Spectroscopy
- NIRISS: Imaging
- NIRISS: Wide-Field Slitless Spectroscopy
- NIRSpec: Fixed Slit
- NIRSpec: Multi-Object Spectroscopy
- NIRSpec: IFU



- F070W SW
- F090W SW
- F115W SW
- F140M SW
- F150W SW
- F150W2 SW
- F162M SW
- F164N SW
- F182M SW
- F187N SW
- F200W SW
- F210M SW
- F212N SW





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# APT release schedule during the Cycle 1 call

- Our understanding of the observatory and its performance has improved.
- We are working hard on providing you with the best available sensitivities and timing model.
- Changes are relatively minor – there is no reason to wait for the last version!
- APT release schedule (note new version numbering system)
  - 2020.1.1 (January 21, 2020)
    - Includes the new NIRSpec Multi-Shutter Array Planning Tool (MPT).
  - 2020.2 (Early March, 2020) – To be used with your final proposal submission.

Astronomer's Proposal Tools Version 27.3 mpt-demo (Thu Jul 25 2019) JWST PRD: PRDOPSSOC-L-023

Form Editor Spreadsheet Editor **MSA Planning Tool** Orbit Planner Visit Planner Timeline View in Aladin BOT Target Confirmation PDF Preview Submission Errors and Warnings

New Document | ▾

NEW What's New Roadmap Feedback

## Astronomer's Proposal Tools

Version 27.3 mpt-demo (Thu Jul 25 2019) JWST PRD: PRDOPSSOC-L-023

- Copyright 2002 - 2007 United States Government as represented by the Administrator of the National Aeronautics and Space Administration. All Rights Reserved.
- This software has made use of the Aladin Sky Atlas (<http://aladin.u-strasbg.fr/>) developed at the *Centre de Données astronomiques de Strasbourg* (CDS - <http://cdsweb.u-strasbg.fr/>)
- This software has made use of the SIMBAD database, operated at CDS, Strasbourg, France.
- This software has made use of the NASA/IPAC Extragalactic Database (NED) which is operated by the Jet Propulsion Laboratory, California Institute of Technology, under contract with the National Aeronautics and Space Administration.
- This software uses portions of the JSky library which is maintained by the European Southern Observatory.

Show:

✓ No errors & warnings (Click for Details)



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# Training opportunities

- JWST Town Hall Presentation by Katey Alatalo
- 1<sup>st</sup> JWST Master Class – training the trainer
  - Intensive 4.5 day workshop at STScI
  - Took place November 18-22, 2019
  - Cohort of 28 participants
- Local community workshops
  - **The Master Class Graduates committed to hosting local training workshops**
  - >30 workshops being planned
  - January-March 2020 time frame
  - Supported remotely by STScI
  - <http://www.stsci.edu/jwst/science-planning/proposal-training>
- All teaching materials collected in a “Workshop-in-a-box”
  - Also useful for self-teaching

