

Long-term variability monitoring strategies for HST and JWST

- [Context](#)
- [Charter](#)
- [Call for Community Input - June 15, 2023](#)
- [Community Town Hall – Slidedeck, Recording, and FAQ](#)
- [Final Report](#)

Context

Time domain astronomy was highlighted as a key science area for the 2020s in the Astro2020 Decadal Review. Both HST and JWST have the potential to make significant scientific contributions in probing the variable universe at moderate and longer timescales. HST has the advantage of a 30-year legacy of observations spanning the broadest range of celestial sources; JWST has the prospect of a 20-year lifetime, with unparalleled sensitivity at near- and mid-infrared wavelengths opens up opportunities in the high redshift universe. Phenomena include photometric and spectroscopic variations and astrometric motions.

Charter

The Space Telescope Science Institute's Interim Director, Nancy Levenson, has decided to constitute a Working Group to provide advice and recommendations on how HST and JWST observations can be leveraged in support of these investigations.

The Long-Term Monitoring WG is charged with providing guidance on optimal strategies for maximizing the scientific return from HST and JWST time domain observations. In particular, the Working Group should address the following tasks:

- Solicit input from the community on key science areas that can exploit long time-baseline observations, based either on past observations or laying the foundation for future investigations;
- Identify science themes that should be prioritized for exploration by future General Observer programs and/or Archival analyses;
- Provide advice on the optimal timing for substantive follow-up observations and suggest mechanisms for enabling those observations;
- Comment on the appropriate scale of resources likely required to support those programs;
- Develop a specific concept for an observing program that will utilize JWST's imaging and spectroscopic capabilities to probe transient phenomena at high redshift, with the goal of starting implementation of the program in JWST Cycle 2.

By forming this Working Group, STScI aims to ensure that many voices are heard in the formulation of the appropriate priorities for time domain science with HST and JWST. Our goal is to maximize the science return and legacy value of the observations and the resultant data products. An open request for input by the astronomical community will be issued by STScI to support the Working Group's efforts. In defining the science case for a DD program, the Working Group should take into account both the archival research value of the planned observations and the coordination of these observations with other observatories.

The Working Group will comprise 8-10 members of the astronomical community selected by the STScI in consultation with the HST and JWST user committees. The Chair of the Working Group will organize the meetings of the Working Group, and STScI will provide logistical (travel, meeting, telecon, etc) support as needed. We expect that the Working Group will have at least one face-to-face meeting, supplemented by regular telecons and email exchanges.

The committee will summarize their conclusions in a report to the Director and presentations to the STUC and the JSTUC. Interim recommendations will be presented in the Fall of 2023, with the final report due by January 2024.

The Working Group co-chairs are Saurabh Jha (Rutgers University) and Dana Casetti (Southern Connecticut University) and the members are:

Gary Bernstein (U. Penn.), Matt Hayes (Stockholm), Lidia Oskinova (Potsdam), Andrew Pace (Carnegie Mellon), Robert Quimby (San Diego State), Megan Reiter (Rice), Armin Rest (STScI), Adam Riess (JHU/STScI), David Sand (Arizona), Dan Weisz (Berkeley)

The primary STScI contacts for the Advisory Committee will be Neill Reid (Associate Director for Science) and Laura Watkins (Deputy Head, SMO). They are ex officio members of the Advisory Committee.

Call for Community Input - June 15, 2023

The WG encourages input either by completing this short, [on-line survey](#) and/or in the form of short contributions submitted to STScI **by Friday, September 8, 2023**. We request these be in PDF format and ideally limited to 1 page (+ figures/references), but any reasonable length will be accepted. Contributions do not need to be anonymized and multiple co-authors are welcome. Submissions will guide the working group recommendations, but will not be shared publicly.

PDF contributions should be e-mailed to wg-longterm@stsci.edu by the September 8th deadline.

Submissions should explicitly specify which of these two topics is being addressed:

- **Long time baseline science opportunities:** We are interested in learning about the key science that would be enabled with long time baseline observations and science themes that should be prioritized in General Observer and Archival proposals. **For our purposes, long time baselines refer to those that are not easily accommodated in the standard proposal process.** Observations could include, but are not limited to,

photometric or spectroscopic variability, and astrometric motions.

- **JWST DDT for high-redshift transients:** Our working group has also been directed to develop a specific concept for a Director's Discretionary Time observing program that will use JWST's imaging and spectroscopic capabilities to probe transient phenomena at high redshift, with a goal of starting implementation of the program in JWST Cycle 2. We are interested in understanding the science cases that should be prioritized for such a program.

In all cases, in addition to the science, we are soliciting input about the observational resources that would be required, advice about timing and sky location for the observations, and suggestions for mechanisms to promote this science in the broad portfolio of HST and JWST programs.

Community Town Hall – Slidedeck, Recording, and FAQ

The Working Group held a virtual Town Hall on Thursday, August 17 at 11 am Eastern Daylight Time. Members of the Working Group gave an overview of our activities, address questions from attendees, and highlighted how members of the community can provide their feedback on how HST and JWST observations should best be leveraged to monitor photometric, spectroscopic and astrometric variations.

If you were unable to attend, you can view the [Town Hall Recording](#) or read the [Frequently Asked Questions](#).

The slides are available here:



Final Report

The Final Report of the Working Group is linked [here](#).