



STScI | SPACE TELESCOPE
SCIENCE INSTITUTE

EXPANDING THE FRONTIERS OF SPACE ASTRONOMY

JWST Cycle 2 GO/AR grants process

JSTUC meeting: August 26, 2022

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Cycle 1 – a reminder

- JWST Cycle 1 Program includes 266 GO programs and 20 AR programs
 - 180 US PIs, 89 ESA PIs, 10 CSA PIs, 7 foreign PIs
- Budget proposals submitted for 268 programs
 - 178 US PIs, 77 ESA PIs, 8 CSA PIs, 5 foreign PIs
- NASA did not provide funding guidelines prior to the budget deadline
 - The community was told to ask for what they needed to achieve the science goals
- Total request ~ \$99.5 million, significantly higher than anticipated funding levels
- JSTUC recommended reviewing a subset of the submitted budget requests to
 - Verify the level of funding required to support JWST Cycle 1 science, as described in the telescope proposals
 - Provide an assessment of potential inequities in the budget requests
- A Cycle 1 Grants Task Force was constituted to provide that information
 - JWST FRC members supplemented by JSTUC representatives

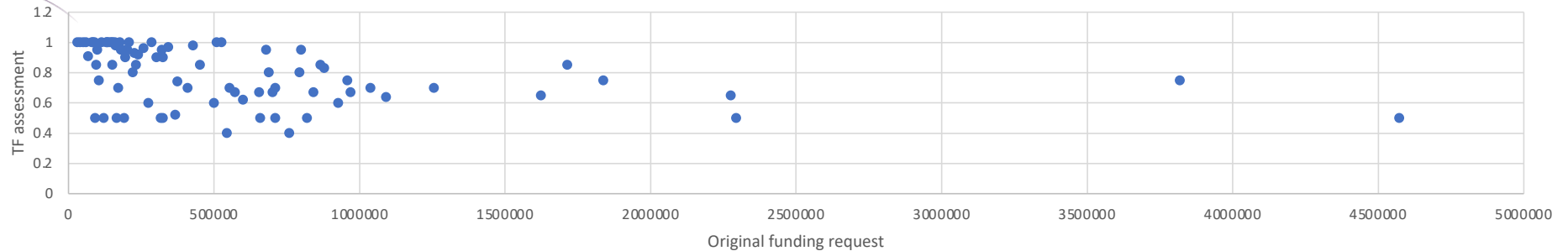


Budget assessment schedule

- Initial Task Force assessment included a representative sample of 65 programs
 - Programs were ordered by total budget request and every 4th program selected for assessment
 - Sample includes GO, pure parallel and AR programs
- Task Force met from July 20-23
 - July 20-22 devoted to program assessments
 - Task Force provided broader feedback on July 23
 - Recommendations for addressing the Cycle 1 budget shortfall
 - Included a recommendation to complete assessments of all proposals requesting >\$500,000
 - Advice on preparing the community for Cycle 2 (*)
- Following the Task Force recommendation, subsequent meetings scheduled on August 27 and September 3 to assess the remaining large (budget) programs
 - 37 additional programs, so 38% of Cycle 1 programs



Task Force Findings



- The overall level of resources requested is over-scoped by ~30%
 - Reflects redundant work effort, expanded scope of activities and some excessive costs (travel, publications)
 - Substantive over-budgeting is prevalent (but not ubiquitous) in the larger programs
 - Assessments generally indicate smaller cuts for smaller programs
 - Only 10 of 48 programs requesting <\$500,000 were assessed as requiring cuts >30%
- The required funding is therefore generally consistent with level recommended by the JSTAC,
 - Scaled to present time, ~\$65-70 million
- Funding at <50% of this level will disproportionately impact the scientific productivity of US researchers
 - Science will not only be delayed, but the reduced funding will result in fewer community members with direct expertise in analyzing JWST data, limiting the pool for future proposal cycles. Deferred science could become lost science.



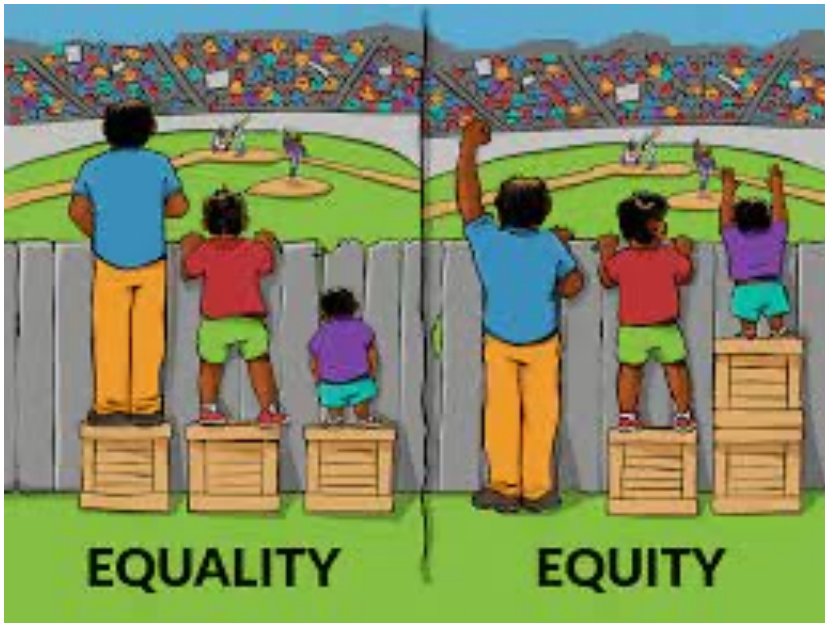
Equity

The JSTUC raised concerns over the extent to which proposers with no past HST experience might be disadvantaged by the JWST grants process

- The Task Force assessments do not identify this as a major issue
 - Most budget requests were reasonably well matched in scope and work effort relative to the science goals in the original proposal
 - There was only one case among those reviewed where the budget request was notably under-scoped
 - There are more cases where the resource request is over-scoped, and appropriate cuts were recommended.
- The Task Force noted that there are proposals with similar science goals that request different resources. These difference can reflect multiple factors
 - How work is shared with foreign co-Is
 - Whether the work is carried out by senior or junior researchers
 - The extent to which infrastructure support is already available at the parent institutions
- There is no simple correlation between instrument mode and complexity of analysis
- There was strong consensus that an FRC-style review is crucial to understanding these issues rather than relying on a formulaic approach.



Equality vs Equity





Task Force recommendations for Cycle 1 programs

Cycle 1

- NASA should give serious consideration to finding additional funding for JWST Cycle 1 programs [*NASA set funding at \$60 million, ~twice HST funding levels; anticipate similar levels in future cycles*]
- Complete assessments of all large (>\$500K) programs to give fair basis for cuts [*done*]
- Provide foundation funding for small programs
- Cap funding for travel and publications
- Cut the third year of work when not justified



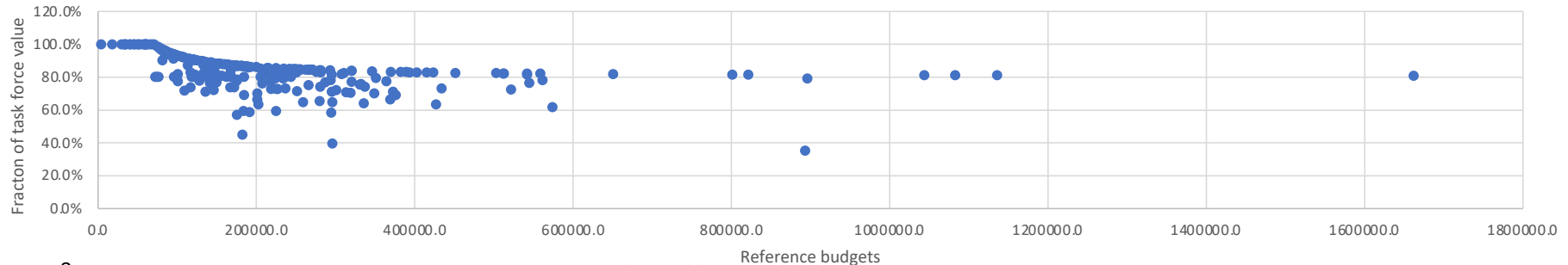
Setting Cycle 1 funding

The Task Force reductions alone were insufficient to meet the available funding

- Task Force reductions reduce total request to ~\$75 million
- NASA provided \$60 million for Cycle 1 GO/AR

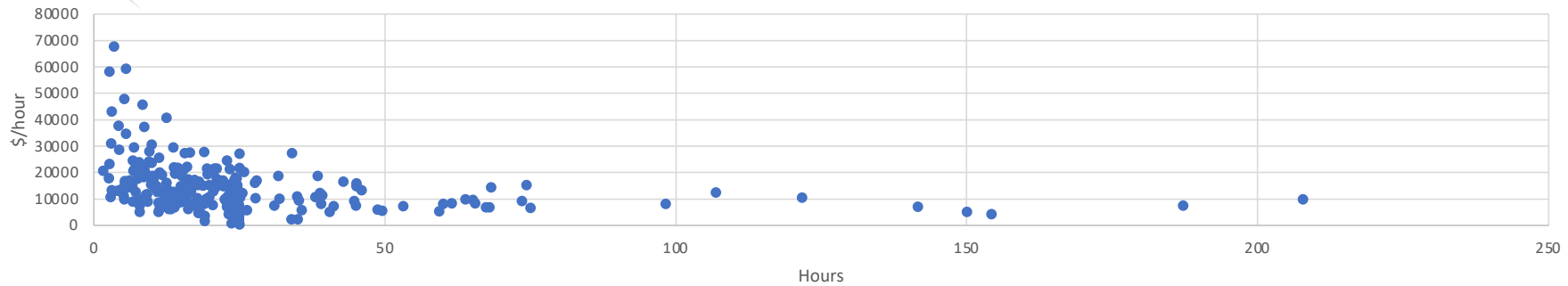
We applied a two-stage process to develop final budgets:

1. Use the Task Force assessments to establish a reference budget for each program
2. Use a scalable formula to apply further reductions
 1. Minimise reductions for the smaller programs
 2. Set baseline funding level
 3. Cap publications & travel
 4. Use progressive scaling to apply higher reductions to more expensive programs, where more expensive is measured in \$/hour
3. Final funding level for all programs is \$59.1 million





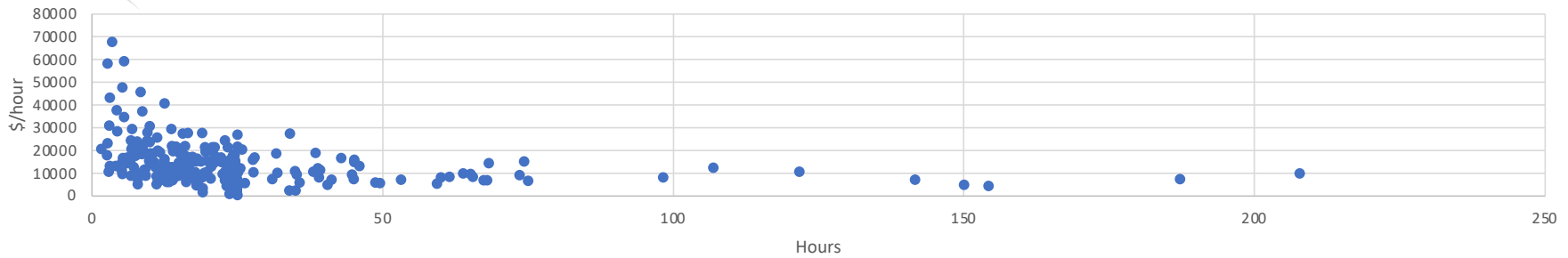
Final budgets – could we use a formula?



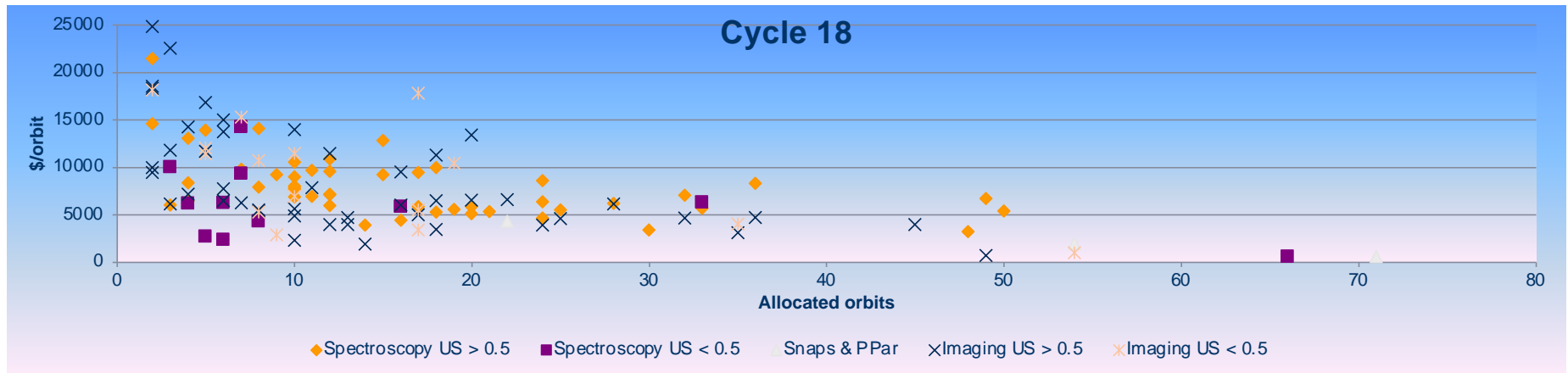
- There is no Webb constant!
 - In general, smaller proposals have a higher \$/hour, but the actual value depends on multiple factors
 - Complexity of the observations
 - Who's doing the work?
 - US based or foreign?
 - Junior or senior?
 - What resources are already available at the institution?
- Could we develop a hybrid approach? E.g. baseline funding + supplement
 - Probably – but we may need more data & time to build consensus
- **We need to develop a more efficient system to reduce workload for everyone**



Final budgets – could we use a formula?



- There isn't a Hubble constant either





Task force recommendations

Major recommendation

- An FRC-style review should be part of the budget review process for subsequent JWST cycles, **but the process needs to be simplified.**

Cycle 2 recommendations

- Provide budget preparation guidelines for Cycle 2 investigators; those should include recommendations to
 - Provide well-defined science goals and a clear work-plan in the TAC proposal;
 - Map all activities proposed for funding against the work-plan and specific science goals in the TAC-approved proposal;
 - Define clear roles and responsibilities for all investigators, notably including foreign co-I contributions – avoid or strongly justify apparently-redundant effort;
 - Clarify the period of performance – the expectation is 2 years of work effort that can be spread over 3 calendar years.
 - **Action: Grants has prepared an on-line guide for how to prepare a JWST proposal**
- Simplify how the budget handles travel and publications – these could be given as fixed costs, or limited to a fraction of total budget
 - **Important to reduce work for proposers, reviewers and Grants Administration**
- Low priority for support of ancillary observations
- Provide the community with an expectation for the average level of funding – proposers should be required to justify going above that level
 - **Action – NASA has given guidance that the funding level for Cycle 2 is anticipated to be comparable to Cycle 1**



Personnel funding update

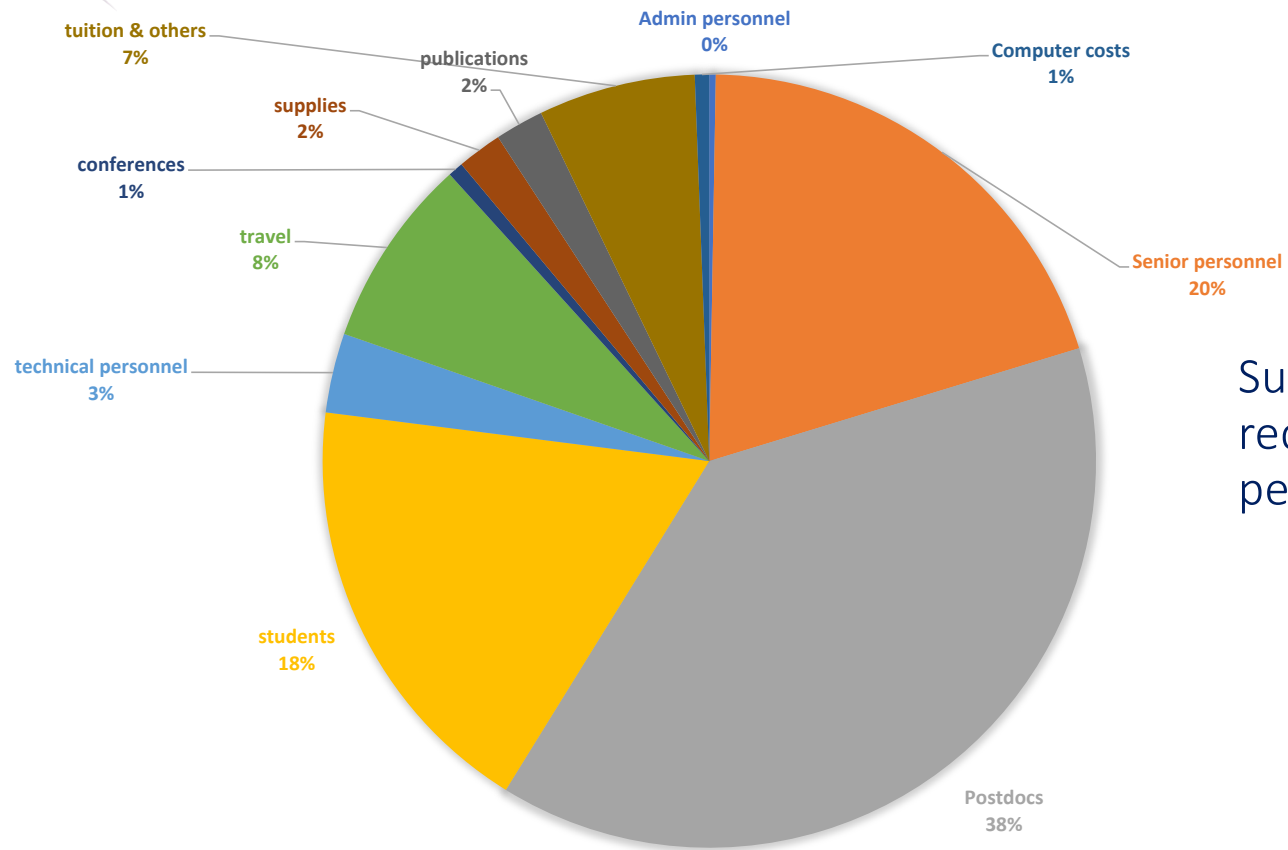
- NASA has changed the parameters for funding eligibility
- Formerly
 - Personnel were eligible for funding only if they were a US Scientist at the time that the program budget was submitted
 - This disadvantaged foreign graduate students and postdocs who had written successful HST and JWST proposals even if they moved to positions in the US
 - This was raised as an issue raised by both STUC and JSTUC
- Now
 - The requirement is that personnel must be a US scientist prior to their receiving funding
 - Foreign graduate students and postdocs who plan on moving to the US can now receive for support after they take up a position in the US

A deep space photograph showing a vast field of stars. On the left side, there is a prominent blue nebula with wispy, ethereal structures. To the right, a dense cluster of stars is visible, with many appearing as bright blue points of light. The background is a dark, deep blue, filled with numerous smaller, fainter stars. The overall scene is a rich, multi-colored stellar environment.

Backup



JWST Cycle 1 funding requests by category



Substantial majority of requested funding is for personnel support (>80%)