CAA Report

November 15, 2021

Tom Greene & Chris McKee, CAA Co-Chairs

CAA reports to the BPA and the SSB

Disclaimer: These slides represent a personal assessment of the issues discussed by the CAA. This document should not be cited or quoted because the views expressed do not necessarily reflect those of CAA, SSB, BPA, or the NRC.

CAA Roles & Responsibilities

- CAA reports to National Academies Board on Physics and Astronomy (BPA) and Space Studies Board (SSB).
- CAA is not the Decadal Survey committee, and it does not set policy for the Survey
- CAA has been focused on implementation of Astro2010 and monitoring ongoing agency projects/programs in recent years
  - We will now focus on implementation of Astro2020 survey
- CAA also writes short reports as needed

- Most recent meeting was November 8 – 9, 2021 (reported here)

https://www.nationalacademies.org/our-work/committee-on-astronomy-and-astrophysics

CAA Membership

Thomas Greene, Co-Chair, NASA Ames Research Center
Christopher McKee (NAS), Co-Chair, University of California, Berkeley
William (Niel) Brant, Pennsylvania State University
*** Gabriela González** (NAS), Louisiana State University
Alyssa Goodman, Harvard University
Shaul Hanany, University of Minnesota
Elizabeth Hays, NASA Goddard Space Flight Center
Jeffrey Kuhn, University of Hawaii
Scott Ransom, National Radio Astronomy Observatory
Kate Scholberg, Duke University
*** Wanda Sigur** (NAE), Aerospace consultant, Lockheed-Martin (Ret.)
Joseph Silk (NAS), Johns Hopkins University
Alycia Weinberger, Carnegie Earth and Planets Laboratory

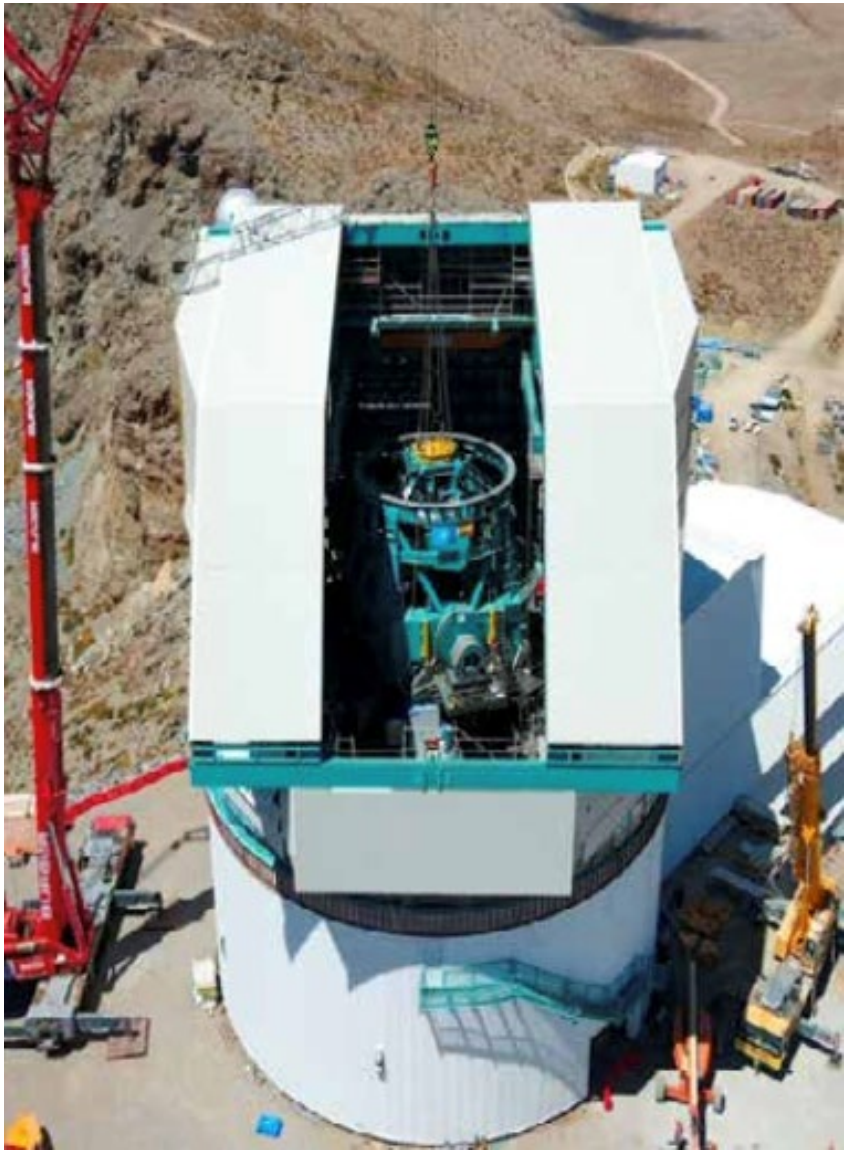
* = new members

- One membership position is currently unfilled

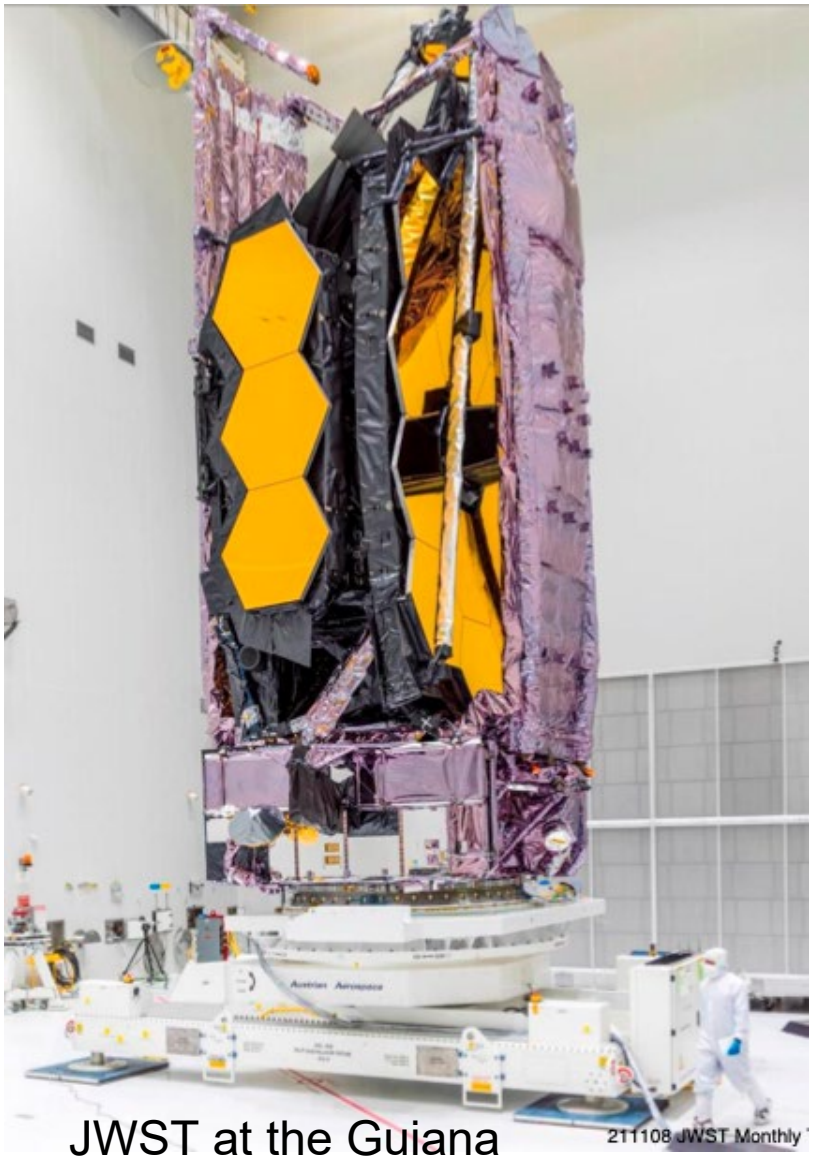
Astronomy & Astrophysics Update

- James Webb Space Telescope (AANM 2001) launches Dec. 18
  - Six months total commissioning before science
  - One month to L2 orbit, 2 months of telescope alignment, then instrument commissioning starts
- IXPE Explorer will launch in December
- DKIST Solar Telescope (AANM 2001) begins operations in December
- NSF NOIRLab creating US Extremely Large Telescopes (Astro2020) program office
- VLA, ALMA, and VLBA radio facilities all fully operational
- DOE, NASA, and NSF all taking actions on Diversity, Equity, and Inclusion

Astronomy & Astrophysics Update



Top end installation at Rubin Observatory



JWST at the Guiana Space Center

Astro2010 Decadal Survey Status

- CAA asked DOE, NASA, and NSF to report how their execution of Astro2010 compared to recommendations
  - CAA requested and agencies presented actual expenditures vs. recommended values for Astro2010 activities
- DOE had relatively few assigned recommendations in Astro2010 and largely fulfilled them
  - LSST/Rubin science was #1 large recommendation and was supported well by developing its camera, supporting science, and preparing to support operations and data facility
  - DOE elected to not partner with NASA on WFIRST/Roman due to budget limitations but is part of tri-agency dark energy group
  - DOE did not invest in CTA Cerenkov telescope due to low P5 ranking and little scientific overlap with DOE interests (also lowest Astro2010 priority)
  - Theory and computation networks (small rec.) were supported internally
  - BigBOSS/DESI funded and is starting operations

NASA Astro2010 Decadal Survey Status

- NASA largely completed Astro2010 and 2016 midterm assessment as recommended:
  - Roman / WFIRST funded as specified, passed CDR, and confirmed for 2027 launch (COVID delay) despite zero in budget request for several years
  - Explorer, suborbital, and technology programs augmented at or above recommended values
    - Some had substantial augmentations; Astrophysics Pioneers created
  - NASA joined ESA LISA and Athena (instead of IXO) missions in effective partnerships at less than recommended funding levels
    - Allowed important 3-spacecraft architecture for LISA
    - NASA did not join the JAXA SPICA mission ($150M rec)
  - R&A grant funding increased over decade but Theory and Lab Astrophysics below recommendations
    - Current R&A grant selection rates are 23% (46% for GO/GI)

NSF Astro2010 Decadal Survey Status

- NSF has made good progress on its highest priority large program (Rubin / LSST construction) and GEMINI augmentation (small), but fell short elsewhere
  - Astro2010 assumed NSF AST budget would double over decade but was ~flat instead (~$260 M/yr)
  - AAG general grants ~10-15% below recommendations over decade
    - 20% of NSF AST budget vs 25% Astro2010 recommendation
  - ATI, TSIP, MSIP instrument & technology programs < 50% of recommended
  - Little progress on Atacama sub-mm telescope (medium) or MSIP and GSMT 2nd and 3rd priority large programs
  - ALMA (DDAA 1991) and DKIST solar telescope (AANM 2001) construction completed successfully in the past decade
  - Operations costs of DKIST and Rubin telescopes will seriously erode NSF AST grant programs furhter in early 2020s if AST budget is not augmented significantly

Major topics for March 2022 CAA Meeting

- CAA will ask agencies to present initial ideas and plans for implementing Astro2020 Decadal Survey recommendations including any foreseen issues or difficulties
  - Astro2020 report calls for some different approaches to projects at NASA and NSF

- We will discuss CAA membership and balance
  - Optimize membership to oversee Astro2020 implementation and completion/operations of Astro2010 facilities
  - Up to 8 of 13 committee members could complete terms in 2022

Discussion