

# Astro 2020

Decadal Survey on Astronomy and Astrophysics



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[nas.edu/astro2020](https://nas.edu/astro2020)

# Survey Scope

- Ground and space-based observations, theory, computation, lab astrophysics
- Ground-based solar astronomy
- Gravitational-wave observations as related to astronomy and astrophysics
- Multi-messenger astronomy and astrophysics
- Exoplanets
  - informed by recent NAS studies on exoplanet science strategy and astrobiology
- Consider implementation and scope of WFIRST, Athena, LISA
  - Need not be ranked
- Excluded: direct dark matter detection, microgravity research, fundamental physics, projects under construction (JWST, DKIST, LSST, DESI)

# Statement of Task Highlights

- Review current state of astronomy and astrophysics
- Identify compelling science challenges for future
- Develop research strategy to advance scientific frontiers in 2022-2032
  - Recommend and rank high priority activities
  - Consider international and private landscape
  - Consider timing, cost and risk
- Develop decision rules for robust program
- Assess the state of the profession
  - Provide specific, actionable and practical recommendations

# Notional Decadal Survey Timeline Shown at Jan AAS

Government shutdown has impacted this schedule, rebuild in progress

- Co-Chairs Announced - End of November 2018
- Survey committee identified & appointed-  
Early Spring, 2019. **In progress**
- Panels formed - Late Spring, 2019
- Panel deliberations - Late CY2019
- Survey deliberations and report writing - Spring 2020
- Public report released- Late 2020
- Presentations to stakeholders - continuing after public report released

# Science White Papers

- Deadline extended to **March 11** to accommodate those affected by the government shutdown
- Very strong community interest, we expect hundreds (12 received as of Feb 22)
- Submissions encouraged from all segments of community
  - Foster student journal club discussions, early career participation
- Emphasis should be on future science
  - Call for white papers addressing projects, state of the profession to come later
- All submitted white papers will be available to view on the [www.nas.edu/astro2020](http://www.nas.edu/astro2020) website.

# Notice of Intent for Activity, Project or State of the Profession White Papers (APCs)

- NOI has been issued, deadline **March 20**
- Responses will help with panel planning and ensuring needed expertise
- NOI is not required before submitting an APC, but is strongly encouraged
- 5-10 page APCs tentatively due **July 1**, formal announcement coming soon

# Survey Committee and Panels

- Steering committee ~18 members including co-chairs
  - Responsible for overall decadal activity, recommendations and final report
  - Received >450 nominations
  - Formation in progress
- Panel structure will be similar to Astro2010, but with fully supported State of Profession activity. Precise panel definitions being discussed with NAS to fit budgetary constraints.
  - updates to represent emerging fields in science panels, larger space panel(s), full consideration of cross-disciplinary issues (e.g., lab astrophysics, computation, data science, etc)

# Community Engagement

- Primary engagement from community is via white papers
- Expand flow of information and survey updates
  - chairs' updates via Astro2020 website, AAS, etc
  - live and web-based town halls (next one late March)
  - local town hall meetings by survey committee members
  - continuously updated FAQ page
- Coordinate with AAS to engage directly with early career and under-represented communities in our profession
- NAS organized early-career Astro2020 workshop in 2018, discussing outcomes with chairs to consider options for future activities

Contacting Us: [astro2020@nas.edu](mailto:astro2020@nas.edu)



# Astro 2020



## Decadal Survey on Astronomy and Astrophysics

### Study Staff:

Abigail Sheffer, SSB, Study Director  
Gregory Mack, BPA, Senior Program Officer  
Art Charo, SSB, Senior Program Officer  
Mia Brown, SSB, Research Associate  
Dionna Wise, SSB, Program Coordinator

James Lancaster, Board on Physics and Astronomy, Director  
Colleen Hartman, Space Studies Board, Director

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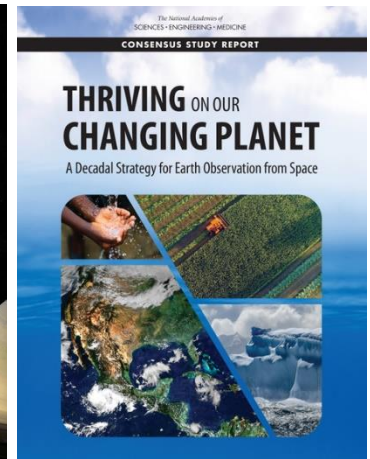
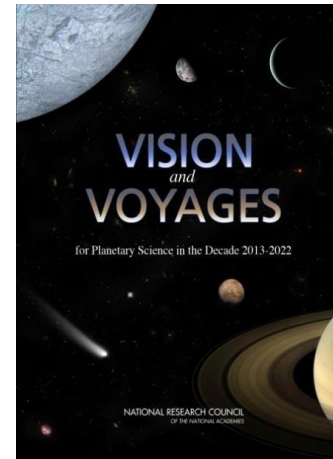
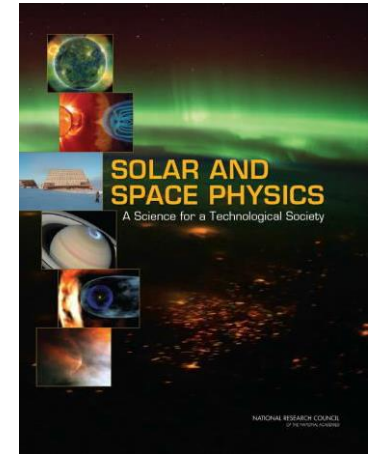
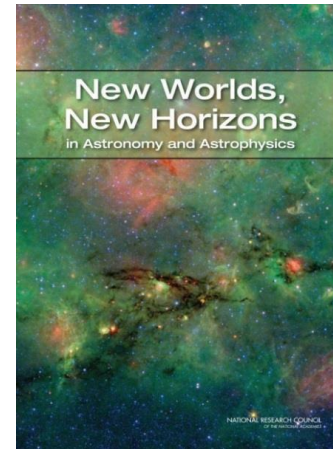
# Backup

# Scope

- The study will assess whether NASA's plans for WFIRST, Athena, and LISA play an appropriate role in the research strategy for the next decade. The study may include findings and recommendations regarding those plans, as appropriate, including substantive changes in NASA's plans. Recommendations may include, but are not limited to, actions ranging from increased investments (upscopes) to reduced investments (descopes) and termination. It is not necessary to rank WFIRST, Athena, and LISA among other recommended activities for space

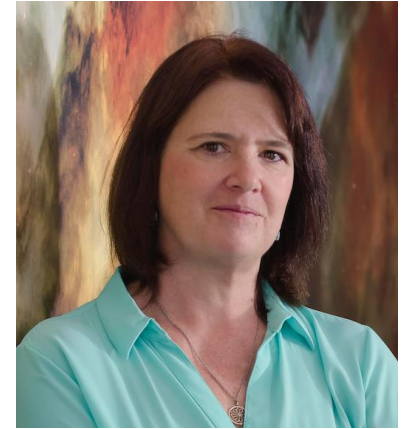
# What is a Decadal Survey?

- **Undertaken by the National Academy of Sciences for NASA, NSF and DOE and led by community members** who analyze and prioritize science questions for the next decade.
- **Provides prioritized recommendations** for government investment in research and facilities, including space and ground-based activities.
- **Required by US Congress** under the 2005 and 2008 NASA Authorization Acts, including an evaluation of risks/budgets for major missions.



# Fiona Harrison

- Research interests: high energy astrophysics, compact objects, active galaxies, instrumentation
- Professor, Caltech (1995 - present)
- PI, NASA's NuSTAR mission
- Former Chair, NAS Space Studies Board
- Member JWST Independent Review Board
- Member Astro2010 survey committee
- Member NAS, AAAS



# Rob Kennicutt

- Research interests: multi-wavelength extragalactic astronomy, star formation and ISM in galaxies, cosmic distance scale
- Professor, University of Arizona
- Professor, Texas A&M University (TAMU)
  - Mitchell Institute for Fundamental Physics and Astronomy (Executive Director)
- Emeritus Professor, University of Cambridge
  - Plumian Professor (2005-2017)
  - Director, Institute of Astronomy (2008-2011)
  - Head, School of the Physical Sciences (2011-2015)
- Former Editor-in-Chief, ApJ
- Member Astro2010 survey committee
- Member NAS, AAAS, Fellow of the Royal Society



# Chairs' Emphases for Astro2020

- International context
  - Participation on Survey Committee
- Close engagement between survey committee and survey panels
- Balance, objectivity and diversity on many axes
- Fully-funded State of the Profession component

# White Paper Timeline

- Science White Papers
  - Due [March 11](#)
- Notice of Intent for Activity, Project, or State of the Profession (APC) White Papers
  - Due [March 20](#)
- APC White Papers
  - Due [July 1](#) (tentative)