

# Astro 2020



Decadal Survey on Astronomy and Astrophysics

Town Hall Meeting  
January 9, 2019

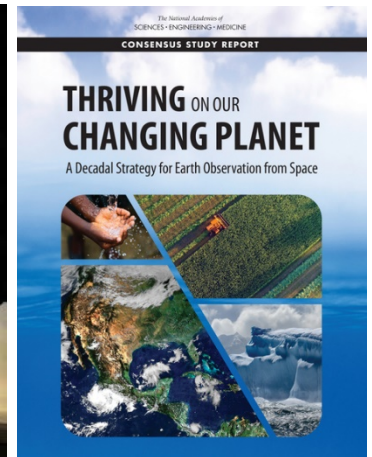
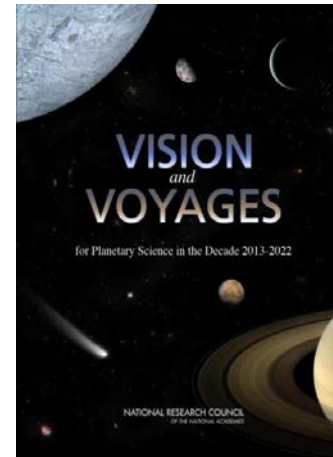
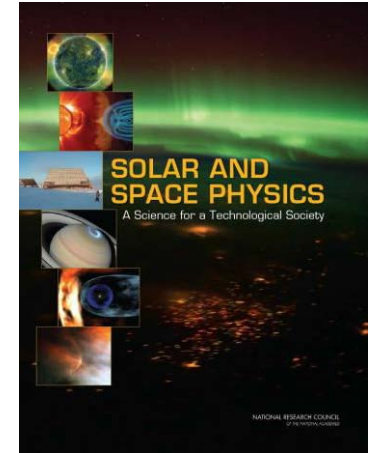
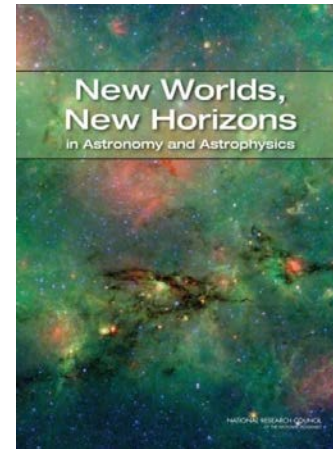
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[nas.edu/astro2020](https://nas.edu/astro2020)

# 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.



# Notional Decadal Survey Timeline

## All Dates Approximate

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

# 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



# 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

# 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)

# 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



# Next Steps: Science White Papers

- Deadline extended to February 19
- Template (optional), example papers on NAS website
  - [www.nas.edu/astro2020](http://www.nas.edu/astro2020)
- 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
- During submission you may opt to have your white paper also published by the AAS in the *Bulletin of the AAS*

# Next Steps: Definition of Committee and Subcommittee Structure

- Steering committee ~18 members including co-chairs
  - Responsible for overall decadal activity, recommendations and final report
- Study panel structure still TBD but will be determined by end of January
  - Previous decadals have included science and program panels
  - Will include state of the profession
- Considering cross-panel working groups to address cross-disciplinary issues (e.g., lab astrophysics, computation, data science, etc)

# Next Steps: Nominations for Members

- Nominations encouraged (including self-nominations)
- Nominations due January 22  
<http://nas.edu/astro2020>
- Primary qualifications: scientific expertise, experience, objectivity
- Desirable qualifications: experience in project or organization management, committee experience
- Major involvement or leadership in a project before Astro2020 is generally disqualifying
- Members must be broad, open-minded - not proponents of a single mission
  - Co-authorship on a whitepaper is not disqualifying

# Community Engagement

- Nominate/volunteer for survey/panel membership
  - <http://nas.edu/astro2020>
- Write white papers
  - Advocate for science, projects and professional issues
  - Attend town halls (AAS, local, web)
- Attend public input sessions at committee meetings
- Ideas for expanding participation in the survey
  - Web-only town halls
  - Early-career town halls
  - Early-career workshops
  - Other ideas?

To submit white papers and nominations and to join the mailing list for updates: [www.nas.edu/astro2020](http://www.nas.edu/astro2020)

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

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Decadal Survey on Astronomy and Astrophysics

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exhibit hall

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

# 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

## Criteria

- **Broad and balanced** view of astronomy/astrophysics;
- **Well-respected** by the community and seen as **fair**;
- Demonstrated **leadership** ability;
- **Consensus builder** who is able to stimulate others to work collaboratively;
- Willing to shepherd the **study through to completion** and during the **years following** release of the report when it serves to guide the field forward;
- **Not heavily involved** in major projects anticipated to be considered for prioritization by the survey
- Invited **nominations** of theorists, observers and experimentalists
- Particularly encouraged candidates who reflect the **diversity** of the astronomy/astrophysics fields.

Over 50 names received and evaluated, with help from a consultation group. Two were selected as co-chairs.



# Consultation Group

The CG's work will conclude upon the receipt of funding for the survey from the agencies.

- Neta Bahcall, NAS Section 12 Chair
- Alan Dressler, Survey of Surveys Chair, NAS
- Debra Elmegreen, OIR System Study Chair
- Wendy Freedman, BPA member, NAS
- Sarah Gibson, CSSP Co-Chair and SSB XCOM member
- Fiona Harrison, SSB Chair, NAS
- Chryssa Kouveliotou, SSB XCOM member, NAS
- Avi Loeb, BPA Vice-Chair
- Marcia Rieke, CAA Co-Chair, NAS
- Steve Ritz, CAA Co-Chair, BPA member
- David Van Wie, ASEB member, NAE

- AAAC Meeting - Jan. 2018
- NAS=National Academy of Sciences
- BPA=Board on Physics and Astronomy
- CAA=Committee on Astronomy and Astrophysics
- CSSP=Committee on Solar and Space Physics
- ASEB=Aeronautics and Space Engineering Board
- SSB=Space Studies Board