

# Astro 2020

A stylized constellation diagram is the central visual element. It features a network of thin blue lines connecting various points, with several thicker blue lines forming a prominent 'X' shape. Small yellow dots are scattered throughout, representing stars or data points. The overall composition is circular and set against a solid black background.

Decadal Survey on Astronomy and Astrophysics

APS PCOS Update  
18 April 2020

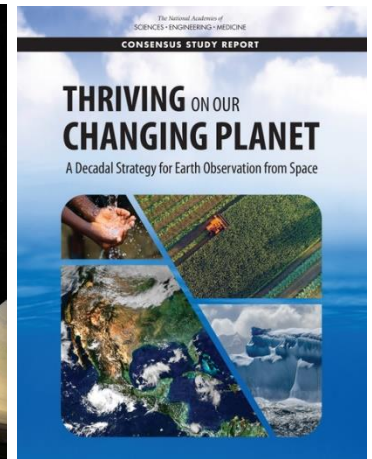
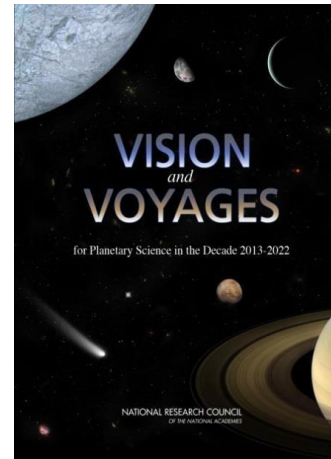
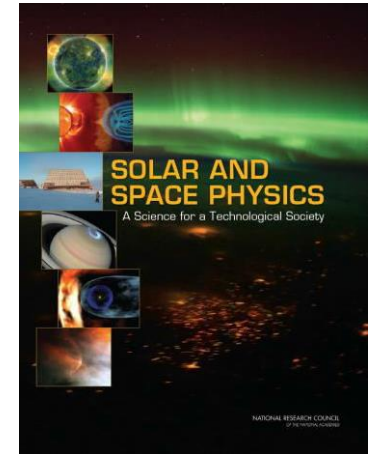
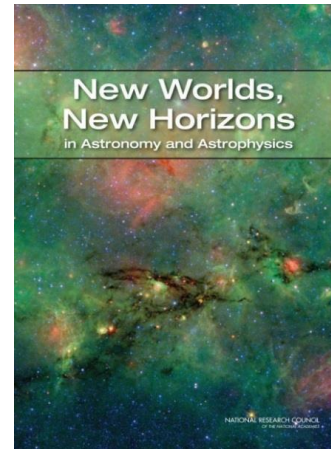
*The National  
Academies of*

SCIENCES  
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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.



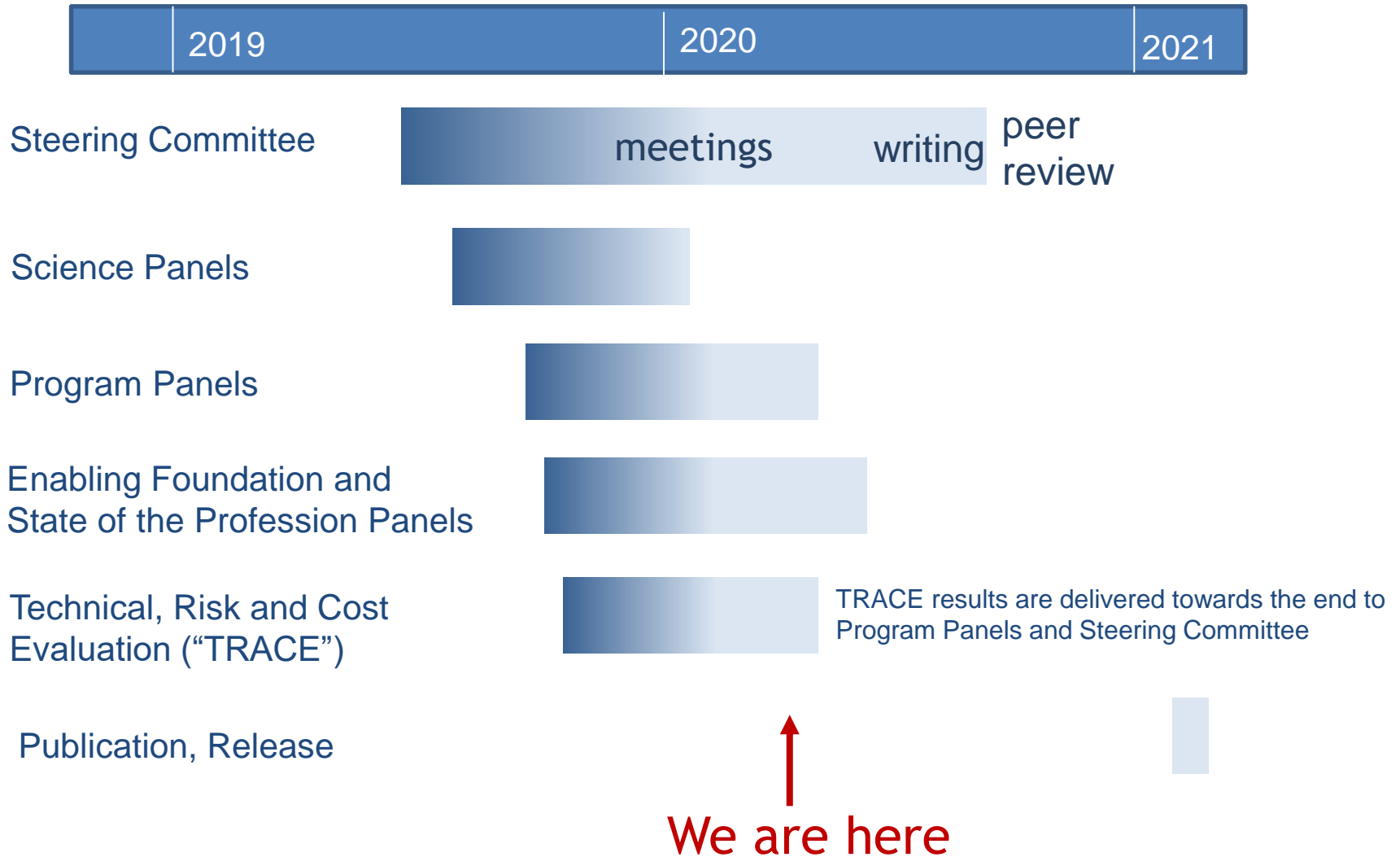
# Survey Scope

- 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)

# Survey Structure (Background)

- Steering Committee (20 members)
  - plan overall review process, in consultation with NAS
  - synthesize outputs from the 13 science, program, and state of profession panels into an overall decadal strategy and survey report
  - member serves on each panel to facilitate communication, coordination
- Science Panels (6 panels, 8-11 members each)
  - review all science white papers, review science advances since Astro2010, identify high-priority scientific questions and discovery areas for the coming decade
- Program Panels (6 panels, 12 members each)
  - review relevant project/program APC's, assess proposed projects in terms of science return and priorities, technical readiness, risk, cost
- State of the Profession and Societal Impacts (1 panel, 15 members)
  - review health and demographics of the astronomy and astrophysics community, identify milestones and actions for the coming decade

# Decadal Survey Timeline (Pre-COVID)



# Status Report Through Early March (1)

- Six science panels completing their reports
  - preliminary reports presented to steering committee and program panels December 2019; 4 key science questions and 1 discovery area defined for each
  - draft reports delivered to steering committee in February, were reviewed by committee members; most issues raised presentational
  - 30 science questions and discovery areas encompass an exciting agenda for 2020's

# Status Report Through Early March (2)

- Six program panels and State of the Profession panel completing final meetings
  - final sets of presentations from projects
  - TRACE analyses presented for most projects
  - panels for ground, space, and particles/gravitation assembling draft findings and advice to steering committee, for presentation at a face-to-face meeting in DC on March 24
  - State of the Profession (SoP) and Enabling Foundation for Research (EFR) panels completing information gathering and drafting of findings/advice to steering committee, for presentations at face-to-face meeting on May 4-6



# Status Report Through Early March (3)

- Steering Committee
  - bi-weekly Zoom meetings in addition to face-to-face meetings, ramping up to weekly after March 24-26 meeting
  - review, feedback on draft science panel reports
  - cross-survey TRACE working group
  - coordinating working groups on cross-cutting topics
  - main deliberative and prioritization discussions beginning from late March



# Impacts and Response to COVID-19

- From mid-March all panel meetings conducted remotely
  - some panels directly affected but completed meetings
  - result was a wide range of readiness for presentation of results to the steering committee
  - TRACE activities continued but some studies not ready in time
- Astro2020 Co-Chairs decided to delay presentation of program panel reports until after March 24
  - it is important for program balance that all panels achieve comparable levels of readiness
  - impacts at home (professional and family) imposing peak stress on participants during exactly this time frame
  - deadlines for other panels on hold while we reassess the situation

# Planning Forward

- Core Principle: Balance the wish to maintain momentum with consideration for the well-being of survey participants and NAS staff. This translates to continuing work but with reduced efficiency.
- March 24-26 steering committee meeting was conducted remotely over two days
  - presentations from international agencies (ESA, ESO, JAXA)
  - reports of working groups and committee planning discussion
- Program panel presentations have been re-scheduled for May 4-6
- Co-chairs and NAS have discussed the overall survey schedule with the agencies

# Questions?

*NB: Now that deliberations are under way, we cannot comment on specific projects, missions, proposals, or white papers.*

# Technical, Risk, & Cost Evaluation (TRACE; formerly known as CATE)

- Independent evaluation of project/activity concepts for technical risk, maturity and cost/schedule
- TRACE process will provide an analysis of technology development needs and an independent cost assessment
- Analysis (and the survey) recognizes most concepts evaluated are early stage (pre-Phase A)
- Process is accommodating the varying levels of definition and maturity of implementation plans