Astro 2020

Decadal Survey on Astronomy and Astrophysics

& SGSO

The National Academies of | SCIENCES ENGINEERING MEDICINE

nas.edu/astro2020

APS White Paper Instructions

- The following slides were presented at an Astro2020 Town Hall Webinar on April 17, which can be viewed at https://vimeo.com/332499220
- Some bullet points that are particularly relevant for the SGSO white paper are highlighted
- A couple of slides added containing information that was discussed during the town hall or is provided on FAQ websites
- Finally: We need to get organized: Who, what, when?

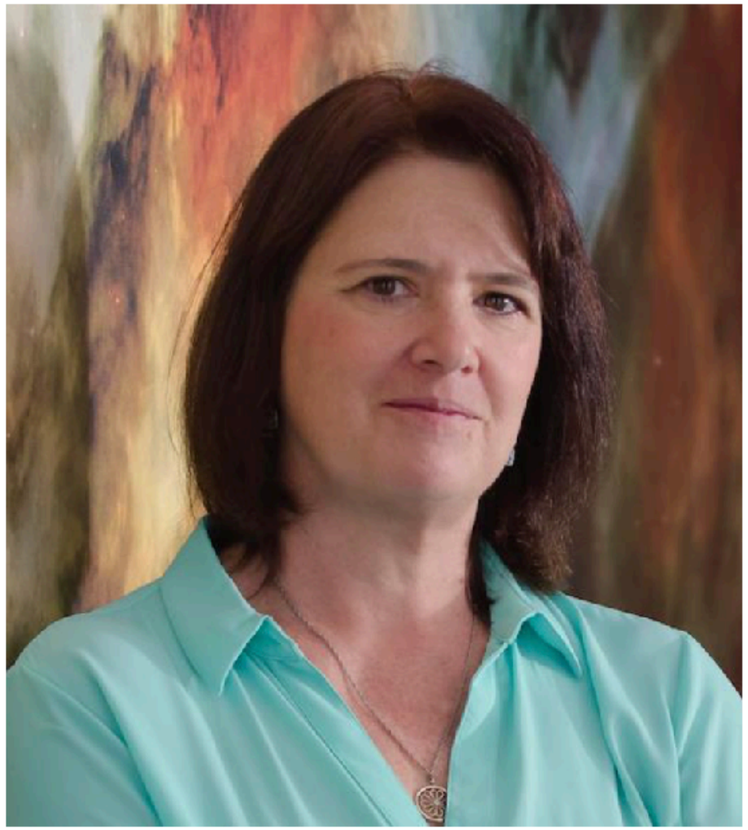
From the Town Hall
04/17/2019

The National Academies of Sciences, Engineering, and Medicine are private, nonprofit institutions that provide independent advice to the nation on pressing science issues.

For each of our studies, committee members are chosen for their expertise and experience, and they serve pro bono to carry out the study's statement of task. The final report will represent the consensus view of the committee and will go through extensive peer review.

Astro2020 Co-Chair: Fiona Harrison

From the Town Hall
04/17/2019



- 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

Astro2020 Co-Chair: Rob Kennicutt

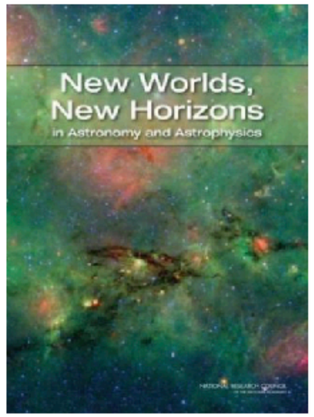
From the Town Hall
04/17/2019

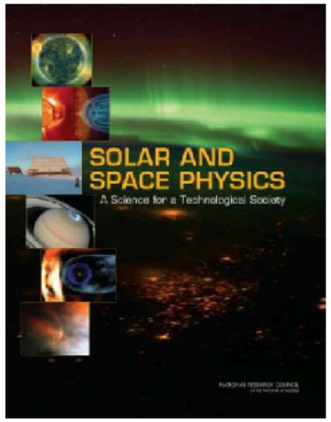
- Research interests: multi-wavelength extragalactic astronomy, star formation and ISM in galaxies, cosmic distance scale
- Professor, University of Arizona
- Professor, Texas A&M University (TAMU)
- Emeritus Professor, University of Cambridge
- Former Editor-in-Chief, Astrophysical Journal
- Member Astro2010 survey committee
- Member NAS, AAAS, Fellow of the Royal Society

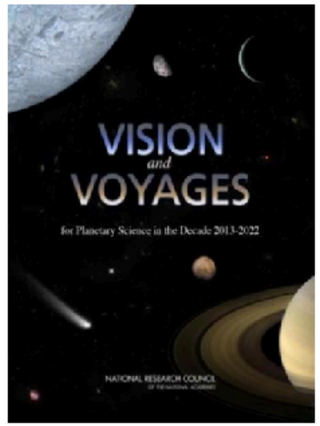
From the Town Hall
04/17/2019

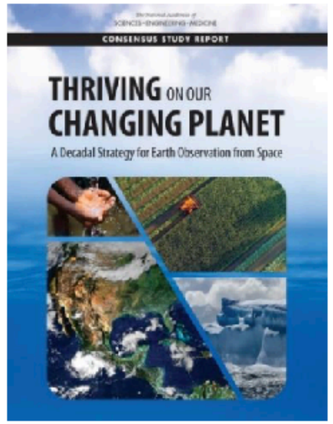
What is a Decadal Survey?

- **Undertaken by the National Academies of Sciences, Engineering, and Medicine 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. Also reaffirmed in NASA Transition Authorization Act of 2017.









Survey Scope

From the Town Hall
04/17/2019

- Ground and space-based observations, theory, computation, lab astrophysics
- Ground-based solar astronomy
- Gravitational-wave observations related to astronomy and astrophysics
- Multi-messenger astronomy and astrophysics
- Exoplanets & Astrobiology
  - Informed by recent NAS studies: *Exoplanet Science Strategy* and *Astrobiology Strategy for the Search for Life*
- 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)

From the Town Hall
04/17/2019

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

From the Town Hall
04/17/2019

Perspective from Sponsoring Agencies

- All 3 agencies (NASA, NSF, and DOE) & the National Academies want to see ambitious programs backed by strong science cases
- Need for clear decision rules
- NASA will deliver 4 flagship & 10 probe concepts for further evaluation

From the Town Hall
04/17/2019

Notional Decadal Survey Timeline Shown at Jan AAS

The government shutdown has impacted this schedule, rebuild in progress

- Co-Chairs Announced – End of November 2018
- Survey committee identified & appointed - 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

From the Town Hall
04/17/2019

Science White Papers

Available at nas.edu/astro2020

- Science whitepapers showed robust interest from all segments of the community
  - Received ~**590 submissions** (vs. 337 for Astro2010)
  - Other communities (e.g., ESA VOYAGE 2050, Canada LRP2020 have adopted the same approach
  - Astro2020 is encouraging student journal club discussions, early career participation
  - Widespread discussion of papers ongoing

From the Town Hall
04/17/2019

Activity, Project, or State of the Profession Considerations (APCs) White Papers

- ~300 Notices of Intent (NOI) received
  - Responses help with panel planning/expertise
- An NOI is not required before submitting an APC
- **5-10 page APCs will be due ~July 1**; announcement soon -> The due date appears to be July 10 now
  - APC White papers serve as useful guides for organizing requests for further info, and for defining inputs needed for the TRACE process. -> See in a couple of slides
    - Probe mission concepts should submit an APC white paper regardless of NASA sponsored study funding.
    - Large mission concepts (HabEx, LUVOIR, Lynx, Origins) should submit an APC white paper.

From the Town Hall
04/17/2019

Survey Committee and Panels

- Steering committee ~20 members including co-chairs
  - Responsible for Decadal recommendations and final report
  - *>450 nominations were received*
  - *Nominations are in the approval process at NAS*
- Panel structure
  - 6 Science panels
  - 5 Programmatic panels for projects and activities
  - 2 State of the Profession panels
    - SoP 1: the health and climate of the field and its participants – including education, career paths, diversity and inclusion, public policy, etc.
    - SoP 2: the research portfolio – including laboratory astrophysics, computation, general technology development, etc.
  - Final details TBD

Community Engagement

From the Town Hall
04/17/2019

- White papers
- Expand survey updates and information flow
  - Chairs' updates via Astro2020 website, Town Halls at AAS, etc.
  - **Mailing list signup at nas.edu/astro2020**
  - Live and web-based Town Halls
  - Local Town Hall meetings by survey committee members
  - Continuously updated FAQ page
  - Ongoing outreach to early-career community
    - National Academies held Early-Career Astro2020 Workshop (2018) and Chairs met with leaders to review recommendations.
  - Submit feedback at astro2020@nas.edu

Notes from the Q&A at the Webinar

- Of the ~300 NOI submissions, about 60 were project submissions for projects on the ground (same number as for projects in space)
- Some projects had multiple submission
- White papers will be published in the bulletin of the AAS

FAQ's

From http://sites.nationalacademies.org/DEPS/Astro2020/DEPS_192908

Since figures take up a lot of space in the white papers, can they be included in the white papers as hyperlinks?

- Yes

When are APC white papers due?

- July 10th

What types of ideas can be submitted for APC whitepapers?

- Ideas from the community that can be submitted include (but are not limited to) all scales of space- and ground-based science projects, activities such as infrastructure and technological advancements, and issues of consideration for the state of the profession.

Should current projects that are already part of the program of record submit NOIs and APC white papers?

- No. The NOIs and APC white papers are only for future project that are not part of the program of record.

More APC White Paper Specific FAQ's

http://sites.nationalacademies.org/SSB/SSB_192764

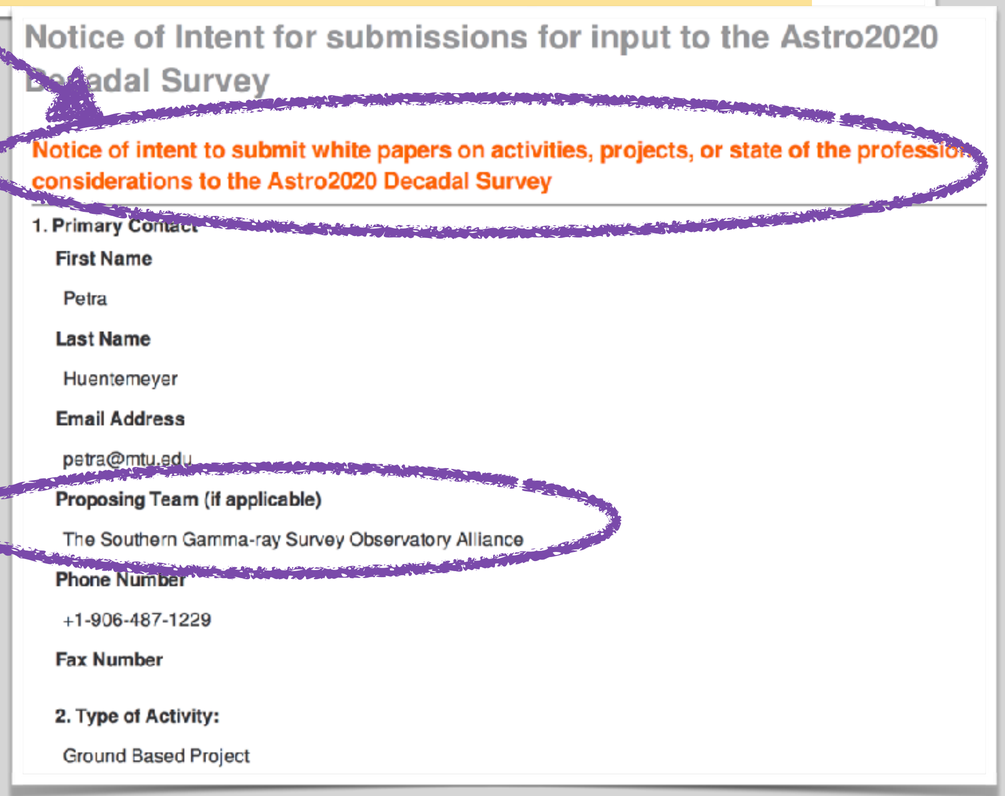
What was the purpose of this NOI?

This Notice of Intent is to inform the Astro2020 decadal survey committee of ideas that the community plans to submit for the prioritization process. This is to aid the survey committee in constituting its panels with the necessary expertise.

Should missions, ground-based projects, or other activities submit the details of their compelling science as science white papers or include them as part of an APC white paper?

- Science topics will be considered first, and science white paper input will be used somewhat independently of the APC white paper input. Therefore, the compelling science for missions, ground-based projects, and other activities should be submitted as science white papers to be most useful.

Submitted March 19



Notice of Intent for submissions for input to the Astro2020 Decadal Survey

Notice of intent to submit white papers on activities, projects, or state of the profession considerations to the Astro2020 Decadal Survey

1. Primary Contact

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Proposing Team (if applicable)

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Fax Number

2. Type of Activity:

Ground Based Project

Plan - Schedule

- Time is short — July 10 is coming up fast
- We can start with the SGSO white paper submitted to the ArXiv: https://arxiv.org/abs/1902.08429
- We may have to expand on the description of the detector design and technology because this will be the focus of the APC — **Opinions? Suggestions?**
- I am happy to help with the coordination of the APC white paper and organize **phone calls;** I suggest we start sooner rather than later; how about next week: **05/27-05/31?** — **Any other volunteers?**
- **Questions?**

Astro2020 APC White Paper

Design Concepts for the Southern Gamma-Ray Survey Observatory (SGSO): A Next-Generation Large-Field-of-View Ground-Based Telescope for VHE Gamma-Ray Astronomy

Thematic Areas: ☐ Planetary Systems ☐ Star and Planet Formation
☐ Formation and Evolution of Compact Objects ☐ Cosmology and Fundamental Physics
☐ Stars and Stellar Evolution ☐ Resolved Stellar Populations and their Environments
☐ Galaxy Evolution ☐ Multi-Messenger Astronomy and Astrophysics

Principal Author:
Name:
Institution:
Email:
Phone:

Co-authors: (names and institutions)

Abstract (optional):