

D.2 ASTROPHYSICS DATA ANALYSIS

NOTICE: Amended April 3, 2020. NOI and Proposal due dates have changed: NOIs are requested by May 5, 2020, and proposals are now due June 30, 2020. NOI submissions have been reopened. NOIs are strongly encouraged, but not mandatory. In addition, ADAP proposals will not be solicited in ROSES 2021. It is expected that the next ADAP will be solicited under ROSES 2022, with a proposal deadline in mid-May 2022. This change will reduce the proposal writing burden on the community next year, while also preserving the total funding awarded and providing some certainty of funding a year in advance. Prospective proposers are advised to plan accordingly.

Starting this year proposals submitted to this program will be evaluated using a dual-anonymous review process. Proposals must be prepared according to the guidelines in Section 2 and in the associated "Guidelines for Anonymous Proposals" document under "Other Documents" on the NSPIRES page for this program element.

1. Scope of Program

Over the years, NASA has invested heavily in the development and execution of an extensive array of space astrophysics missions. The magnitude and scope of the archival data from those missions enables science that transcends traditional wavelength regimes and allows researchers to answer questions that would be difficult, if not impossible, to address through an individual observing program. To capitalize on this invaluable asset and enhance the scientific return on NASA mission investments, this Astrophysics Data Analysis Program (ADAP) program in ROSES provides support for investigations whose focus is on the analysis of archival data from NASA space astrophysics missions.

1.1 Special Considerations for ADAP Proposers

- Beginning with ROSES-2020, the Astrophysics Division is consolidating its support for exoplanet science investigations under the Exoplanet Research Program (XRP; ROSES-2020, Appendix E.3). Consequently, archival investigations that are focused on the formation, evolution, detection, or characterization of protoplanetary and debris disks, exoplanets, exoplanetary systems, or the demographics of the exoplanet population are hereby excluded from the scope of the ADAP. Researchers interested in developing proposals in these areas are directed to Appendix E.3 of ROSES-2020. For archival investigations where the focus falls close to the boundaries between exoplanet science and other areas of astrophysics (e.g. brown dwarf investigations or exoplanet host star characterization), prospective proposers are encouraged to contact the Program Officer listed in Section 4 for guidance.
- Beginning with ROSES-2020, proposals submitted to this program will be evaluated using a dual-anonymous peer review process in which, not only are proposers unaware of the identity of the members on the review panel, but the reviewers will not be told the identity of proposers until after the evaluation of Merit (see Section 2,

below). The overarching objective of dual-anonymous peer review is to reduce unconscious bias in the evaluation of the merit of a proposal.

To implement dual-anonymous peer review, reviewers may not see any information that would identify proposers, so proposers must follow the instructions in Section 2, below and the "Guidelines for Anonymous Proposals" document under "Other Documents" on the NSPIRES page for this program element that explain how to properly prepare the proposal for dual-anonymous peer review.

- Prospective proposers should be aware that the defined ADAP research areas have been revised under ADAP-2020 (see Section 1.4). These changes include:
 - a) Studies of exoplanet formation and protoplanetary/debris disks have been removed from the former *Star and Exoplanetary System Formation* research area, and the remainder has been combined with the former *Interstellar Medium* research area to form a single research area titled *Interstellar Medium and Star Formation*.
 - b) Investigations involving the detection and characterization of exoplanets has been removed from the former *Stellar Astrophysics and Exoplanets* research area, and that area has been retitled simply *Stellar Astrophysics*.
 - c) The former *Collapsed Objects and X-ray Astrophysics* and *Supernovae and Gamma-Ray Bursts* research areas have been restructured into two new research areas titled *Collapsed Objects and Transient Phenomena* and simply *Supernovae*. The scopes of these new research areas are described in Section 1.4.
- The budget justification of any proposal that involves the collection and analysis of new ground-based observations must include (1) an explicit statement that all costs associated with the ground-based portion of the project are less than 25% of the total cost of the investigation and (2) a separate budget breakout detailing the work effort and procurement costs (e.g., travel, equipment, consumables, etc.) associated with executing the ground-based observing component of the investigation (see Section 1.3.1). Proposals that do not satisfy this requirement will be penalized, even to the extent of being declined and not considered for funding, regardless of their intrinsic merit rating.
- Proposals to this program element require a data management plan (DMP) or an explanation of why one is not necessary given the nature of the work proposed within the 15-page Scientific, Technical, and Management section of the proposal. The mandatory minimum requirement is making the data behind figures and tables available electronically at the time of publication, ideally in supplementary material with the article. More information on the data management plan is available in the [SARA DMP FAQs](#). However, ADAP proposals that involve the development of new databases, data products, or data analysis tools for the community must satisfy the more rigorous requirements described in Section 1.3.3. Specifically, any proposal for which *Astrophysical Databases* is identified as either the primary or secondary research area must include a clear description of the products, and how those products will be disseminated to the community.

1.2 Research Objectives

The Astrophysics Data Analysis Program (ADAP) solicits research with a primary emphasis on the analysis of NASA space astrophysics data that are archived in the public domain at the time of proposal submission. Most of these data have undergone considerable reduction and refinement by way of calibrations and ordering and extensive data analysis software tools often exist for these data. Table 1 below provides a representative - but not exhaustive - list of NASA space astrophysics missions for which suitable archival data are publicly available.

Table 1. A Representative List of Projects/Missions that had a Significant NASA Contribution and may Represent the Primary Data Source for an ADAP-2020 Proposal.

Advanced Satellite for Cosmology and Astrophysics (ASCA; formerly Astro-D)	Keck Observatory Archive (KOA)
Chandra X-Ray Observatory**	Kepler and K2
Compton Gamma-Ray Observatory (CGRO)	Midcourse Space Experiment (MSX)
Cosmic Background Explorer (COBE)	Neutron star Interior Composition Explorer (NICER)
Extreme Ultraviolet Explorer (EUVE)	Nuclear Spectroscopic Telescope Array (NuSTAR)
Far Ultraviolet Spectroscopic Explorer (FUSE)	Planck
Fermi Gamma Ray Space Telescope**	Roentgen Satellite (ROSAT)
Galaxy Evolution Explorer (GALEX)	Rossi X-ray Timing Explorer (RXTE)
Herschel Space Observatory	Spitzer Space Telescope
High Energy Astronomy Observatories (HEAO-1, 2, 3)	Stratospheric Observatory for Infrared Astronomy (SOFIA)
High Energy Transient Explorer 2 (HETE-2)	Submillimeter Wave Astronomical Satellite (SWAS)
Hubble Space Telescope**	Suzaku (Astro E2)
Hitomi (Astro-H)	Swift
Infrared Astronomical Satellite (IRAS)	Transiting Exoplanet Survey Satellite (TESS)
Infrared Space Observatory (ISO)	Two Micron All Sky Survey (2MASS)
International Gamma-ray Astrophysics Laboratory (INTEGRAL)	X-ray Multi-Mirror-Newton (XMM-Newton)*
International Ultraviolet Explorer (IUE)	Wide-field Infrared Survey Explorer (WISE)
Keck Interferometer (KI) and Palomar Testbed Interferometer (PTI) Archives	Wilkinson Microwave Anisotropy Probe (WMAP).
Shuttle-based Astrophysical Observatories, including: Hopkins Ultraviolet Telescope (HUT), Wisconsin Ultraviolet Photopolarimetry Experiment (WUPPE), Ultraviolet	

Imaging Telescope (UIT), Broad-Band X-Ray Telescope (BBXRT), and ORFEUS-SPAS I and II

* - including US investigators on foreign-led Guest Observer (GO) investigations; some restrictions apply; see Section 1.3.4 for details.

** - data from these missions compliant only when analyzed in conjunction with the data from one or more other NASA space astrophysics missions; see Section 1.3.2 for details.

Researchers interested in analyzing datasets from missions or projects that are not included in Table 1 should contact the ADAP Program Officer before writing their proposal to confirm that their planned research program is compliant with this program element. Proposals found to be noncompliant will be declined and may be returned without review or adjectival rating.

Analyses of data from non-Astrophysics NASA space missions are eligible for ADAP support, provided that (1) all such data are available in the public domain at the time of ADAP proposal submission, and (2) the primary scientific goals of the investigation fall within the scope of NASA's Astrophysics program as described in the agency's [2014 Science Plan](#) (Section 4.4, p. 74-85) and the [2013 Astrophysics Roadmap](#). For example, data collected by NASA Planetary Science missions and made available through NASA's Planetary Data System (PDS) are suitable as the primary basis of an ADAP proposal providing they meet the foregoing requirements. In any such case, the onus is on the proposer to make a convincing case for the relevance of the proposed work to NASA's astrophysics goals in their proposal.

Most NASA space astrophysics data may be found in one or more of the following NASA astrophysics archives:

- High Energy Astrophysics Science and Analysis Data Center (HEASARC) (<http://heasarc.gsfc.nasa.gov/>);
- Infrared Science Archive (IRSA) (<http://irsa.ipac.caltech.edu/>);
- Keck Observatory Archive (KOA) (<http://nexsci.caltech.edu/archives/koa/>);
- Mikulski Archive for Space Telescopes (MAST) (<http://archive.stsci.edu/>);
- NASA Exoplanet Archive (including the data holdings of the Exoplanet Follow-up Observing Program (ExoFOP) system; <http://exoplanetarchive.ipac.caltech.edu/>);
- NASA/IPAC Extragalactic Database (NED) (<http://ned.ipac.caltech.edu/>);
- NASA Astronomical Virtual Observatory (NAVO; <https://heasarc.gsfc.nasa.gov/vo/summary/>).

Prospective proposers should be aware that considerable research has already been done using NASA space astrophysics data sets by the original mission science teams, as well as by previously selected participants in the ADAP (see, for example, abstracts of currently and previously funded ADAP projects by following links to Past Selections and searching for ADAP (or ADP for 2009 and earlier) at <http://nspires.nasaprs.com>). Therefore, ADAP proposals should clearly demonstrate how their proposed research extends the frontier of knowledge or how their proposed data products differ from those currently available in a fundamental and important manner. If a new proposal for this

program element is itself based on a previously funded research effort, the proposal must identify that work and clearly summarize all significant results from it.

NASA recognizes and supports the benefits of having diverse and inclusive scientific, engineering, and technology communities and fully expects that such values will be reflected in the composition of all panels and teams including peer review panels (science, engineering, and technology), proposal teams, science definition teams, and mission and instrument teams.

1.3 Scope and Limitations of the Program

As stated in Section 1.2 above, the overarching requirement of the ADAP is that any NASA space astrophysics data involved in a proposed investigation must be available in the public domain at the time of the proposal submission deadline. As a direct consequence of this requirement, proposed investigations may not anticipate future public data releases. The scientific case for any proposed investigation must be based on - and executable with - data that are in the public domain at the time of the original proposal. Moreover, for proposals involving the analysis of higher-level data products from a NASA mission, it is NOT sufficient that the level-1 data are publicly available; it is the data products that will actually be used in the investigation that must be publicly available. Any proposal found to violate the capstone data availability requirement of the ADAP will be ruled noncompliant and will not be rated or considered for funding. The only exception to this requirement is described in Section 1.3.4 below.

NASA does not anticipate awarding contracts in response to proposals submitted to this program element, because it would not be appropriate for the nature of the work solicited.

Several other requirements/limitations of the ADAP are described in Sections 1.3.1 – 1.3.8 below.

1.3.1 Use of theory, modeling, or other relevant data

In support of any ADAP proposal – but only as a secondary emphasis and only as needed to interpret and analyze NASA’s archival data – the proposed research may include the use and application of: (a) theoretical research or numerical modeling; (b) existing data from ground-based telescopes or suborbital platforms; and/or (c) available laboratory astrophysics data. However, in any such instance, the onus is on the proposer to clearly establish that the data and/or models in question are used only insofar as necessary to accomplish the analysis of approved NASA archival data and are not themselves the primary object of the investigation.

Requests for the support of new ground-based observations are acceptable under the ADAP provided that the requests are clearly described, that the observations are integral to the success of the proposed ADAP effort, and that the proposal includes an explicit statement that the collection and analysis of those data will account for no more than 25% of the total cost of the proposed investigation by NASA. Any such proposals must include a summary of the work effort (in terms of personnel time commitment) and the budget justification must include a breakout of the other direct costs, e.g., procurements, equipment, consumables, and travel, allocated to executing the ground-based observing component of the investigation. Furthermore, the degree to which the

success of the proposed investigation depends on the collection of new ground-based observations, and the perceived likelihood that the proposer will be able to obtain the needed telescope time through the normal time allocation committee process, will be taken into consideration as part of the evaluation of the scientific merit of the proposal. Consequently, proposers should make clear in their proposal whether access to the necessary facilities has already been granted or, if not, provide a rationale for why such access can reasonably be expected.

1.3.2 Analysis of data solely from Hubble Space Telescope (HST), Chandra X-Ray Observatory (CXO), or Fermi Gamma-Ray Space Telescope

Proposals for archival research based exclusively on the data from HST, CXO, or Fermi are not eligible for funding under the ADAP. Such proposals are solicited through the associated NASA-chartered science operations centers and funded under each mission's General Observing (GO) program. However, proposals for archival research that involve a combination of data from these observatories, or data from one of these observatories in combination with the data from other NASA missions (e.g., see above list), are eligible for funding under ADAP. In such cases, the onus is on the proposer to clearly establish that the cited additional data set(s) are integral to the success of the proposed investigation and not merely window dressing added only to make what is essentially a Hubble/Chandra/Fermi archival research program compliant with the ADAP.

1.3.3 Astrophysical databases and development of new data products/analysis tools

Databases of fundamental atomic, molecular, nuclear, and solid-state parameters that are complete, critically evaluated, and readily accessible to the community represent a powerful tool for analyzing NASA space astrophysics data. The ADAP, therefore, accepts proposals for the development of publicly accessible compilations of existing fundamental atomic, molecular, and nuclear parameters (both experimental and theoretical), as well as the associated computational tools necessary to effectively apply those data to the analysis of astronomical observations. This opportunity is intended to support only the development of new databases or significant enhancement/maintenance of existing databases. Proposers are cautioned that new measurements or calculations of fundamental atomic, molecular, nuclear, or solid-state parameters are not eligible for support under the ADAP, and proposals found to include any such work will be declared non-compliant and declined without review. Proposals of this type are more appropriate for the Astrophysics Research and Analysis program (APRA; ROSES-2020 program element D.3).

In addition, recent years have seen a dramatic growth in both the size and scope of the archival astronomical data from NASA's space missions. The development of new archival data products through reprocessing or further processing of these datasets, as well as the development of tools for mining the vast reservoir of information they contain, have the potential to open new areas of investigation and substantially increase the scientific return on those missions. Consequently, such work is also eligible for funding under the ADAP, provided that both the science it will enable and the wider impact/value of the resultant products to the community, is clearly articulated in the proposal.

Of special note, the *Astrophysical Databases* research area (see Section 1.4) accepts proposals for the development of publicly accessible databases of observational data from NASA-sponsored astrophysics suborbital (balloon-borne, sounding rocket, CubeSat) experiments. However, proposals for the analysis of non-public data from suborbital missions should be submitted to the APRA Program. Furthermore, only suborbital experiments funded under the auspices of the APRA program are eligible for this funding opportunity.

An essential component of any activity funded under the *Astrophysical Databases* research area of the ADAP is the ultimate dissemination of high-value data products and data analysis tools to the astronomical community. Consequently, it is essential that any proposal identifying *Astrophysical Databases* as either the primary or secondary research area must include within its 15-page Scientific, Technical, and Management section a Data Management Plan that clearly describes the final products of the investigation, and how those products will be made available to the community. Although not strictly required, the use of open-source code in tools/algorithms developed as part of an ADAP investigation and the subsequent public release of those tools/algorithms is strongly encouraged and is often cited as a strength in the proposal evaluation. If the products are to be ingested and curated at an existing astrophysics archive (see list in Section 1.2 above), the cost of any required support for the proposed activity from the relevant archive must be included in the proposal budget. Proposers are also strongly encouraged to include a letter of acknowledgement from the NASA archive in the separate “Expertise and Resources – Not Anonymized” document (see Section 2).

1.3.4 Support for US Co-Investigators on Foreign-led XMM-Newton GO Proposals

U.S. Co-Investigators on foreign-led XMM-Newton GO proposals that are selected for execution and rated as either Category A or Category B are eligible to propose for funding under ADAP even if the associated observations have not yet been executed, or the data are not yet available in the public domain. However, in such circumstances, the (foreign) PI must designate a U.S. PI for the investigation, and only that individual will be eligible to propose for ADAP funding prior to the public release of the data. The designation of the U.S. PI must be established by inclusion of a letter from the foreign PI on institutional letterhead in the proposal document. Failure to include such a letter will result in the proposal being declared non-compliant. This letter should be included in the “Expertise and Resources-Not Anonymized” document. Please note- this waiver does not apply to U.S.-led Category A or Category B proposals selected under the AO-18 cycle (which are funded under the auspices of the XMM-Newton US Guest Observer Facility), or to any Category C XMM-Newton GO proposals.

Proposers seeking funding support for an approved foreign-led GO program are not relieved of the responsibility to provide a compelling proposal that meets all of the requirements of the ROSES-2020 NRA and the ADAP program element. It is generally not sufficient to simply submit the approved GO proposal.

1.3.5 Citizen Science Investigations

Proposals for the analysis of NASA space astrophysics data through a citizen science effort are permitted under the ADAP. Proposals for investigations involving a citizen

science component will be reviewed along with other ADAP proposals in the research area most appropriate to their science goals (see Section 1.4) and shall be held to the same rigorous standards for scientific merit, NASA relevance, and cost realism as any ADAP science investigation, i.e., documented project goals must include advances in science, the merit of which shall be determined by peer review.

1.3.6 *Exclusions*

Proposers to this NRA should note that the ADAP is not intended to support:

- Investigations whose primary emphasis is fundamental theoretical research or the development of numerical models without specific application to the analysis of NASA archival data or where archival data are used only to calibrate or benchmark the output of the computations. Such research is supported under NASA's Astrophysics Theory Program (ATP; ROSES program element D.4);
- Investigations involving new measurements or calculations of fundamental atomic, molecular, or nuclear parameters. This includes analysis or reanalysis of data measured in a laboratory. Such research is supported under the Laboratory Astrophysics element of NASA's APRA Program (ROSES program element D.3);
- Investigations with a primary focus on the analysis of datasets from astrophysics projects or space missions that had no significant NASA contribution (e.g., Hipparcos, *Gaia*, Sloan Digital Sky Survey). Such data may be used to support the analysis of allowed data from a NASA mission, but may not itself be the primary object of the investigation. In any such instance, the onus is on the proposer to clearly establish that analysis of any proscribed data is (1) necessary to the achievement of the scientific goal(s) of the proposed investigation and, (2) not the object of that investigation.
- Investigations using data from NASA space astrophysics missions to advance our understanding of the origin, evolution, and characteristics of objects within the Solar System. In particular, proposers are cautioned that studies of Near Earth Objects and other Solar System bodies based on archival WISE and/or K2 data are not eligible for funding under the ADAP. Planetary science investigations using the data from NASA space astrophysics missions are eligible for funding through the Research and Analysis (R&A) programs of NASA's Planetary Science Division (see Appendix C).
- Investigations using data from NASA space astrophysics missions to advance our understanding of the Sun and its impact on our Solar System. Such research is eligible for funding through the Research and Analysis (R&A) programs of NASA's Heliophysics Division (see Appendix B).
- Proposals primarily for the general education and/or training of students (Note, however, that this does not preclude the involvement of undergraduate or graduate students in the proposed research);
- Proposals for organizing and/or hosting scientific meetings. Such activities may be proposed under NASA's Topical Workshops, Symposia, and Conferences solicitation (TWSC; ROSES program element E.2); or
- Proposals for the acquisition of substantial computing facilities or resources beyond nominal workstation or network requests.

1.3.7 *Archival Exoplanet Science Investigations*

Beginning with ROSES-2020, the Astrophysics Division is consolidating its support for exoplanet science investigations under the Exoplanet Research Program (XRP; ROSES-2020, Appendix E.3). Consequently, archival investigations that are focused on the formation, evolution, detection, or characterization of protoplanetary and debris disks, exoplanets, exoplanetary systems, or the characteristics of the exoplanet population are hereby excluded from the scope of the ADAP. Potential proposers developing science cases in these areas are directed to Appendix E.3 of ROSES-2020. For archival investigations where the focus falls close to the boundaries between exoplanet science and other areas of astrophysical research (e.g. brown dwarf investigations or exoplanet host star investigations) prospective proposers are encouraged to contact the Program Officer listed in Section 3 for guidance.

1.3.8 *Proposal formatting: further considerations*

In addition to falling within the scientific scope of the ADAP as described in this solicitation, proposals must conform to the proposal formatting requirements set forth in Section IV(b)ii of the *ROSES Summary of Solicitation* (e.g., page limits, acceptable font sizes, line spacing, margins, etc.). These requirements have been developed to ensure a level playing field for all proposers. The Astrophysics Division takes these formatting requirements seriously, and proposals found to violate them will be penalized even to the extent of being ruled noncompliant and not considered for funding, regardless of their perceived merit. It is the responsibility of the proposer to ensure that their proposal complies with all formatting requirements.

Proposers are reminded that it is the PDF version of their proposal in NSPIRES that will be judged for compliance. Since, in rare cases, translation of PDF documents can alter the formatting of a document, proposers are strongly urged to download copies of any documents they upload to NSPIRES to ensure that they still conform to all formatting requirements.

1.4 Identification of Proposal Data Set(s) and Research Areas

The Cover Page for ADAP proposals provides for designation of the data set(s) proposed for analysis and also for the Research Area, as defined below, which designates the primary focus of the proposal. Identification of the appropriate Research Area is important as it facilitates the assignment of each proposal to the appropriate review panel (a secondary Research Area may also be designated).

NASA reserves the right to reassign a proposal to a different primary or secondary Research Area for the purposes of arranging for the most qualified review. The nine defined ADAP Research Areas are:

1. Interstellar Medium and Star Formation - includes studies of dense molecular clouds, star-forming clouds, HII regions, interstellar dust and ices, protostars and YSOs, and the physics and chemistry of protostellar disks; also includes characterization of supernova remnants and the dynamics of their interactions with the ISM; DOES NOT INCLUDE protoplanetary and debris disks, or the formation of exoplanets and exoplanetary systems (see Section 1.3.7).

2. Stellar Astrophysics - includes studies of the structure and evolution of main sequence stars, stellar variability and activity, binary/multiple stars, asteroseismology, the IMF of stellar populations, and stellar archaeology; DOES NOT INCLUDE detection and characterization of exoplanets and exoplanetary systems (see Section 1.3.7).
3. Post-Main Sequence Stars - includes studies of the structure and evolution of post-main sequence stars, late circumstellar outflows and mass loss, white dwarfs and cataclysmic variables, and planetary nebulae.
4. Collapsed Objects and Transient Phenomena - includes studies of neutron stars (ns), stellar-mass black holes (bh), and X-ray binaries (both ns and bh); also includes Gamma-Ray Bursts, mergers (ns-ns, ns-bh, bh-bh), and fast radio bursts.
5. Supernovae - includes studies of supernova progenitors, the physics of catastrophic stellar explosions, supernova-driven nucleosynthesis, and validation of supernovae as standard candles; does not include studies of supernova remnants and their interaction with the interstellar medium (Research Area 1) or supernova surveys as tools for cosmology (Research Area 8).
6. Normal Galaxies and Galactic Structure - includes studies of the formation, evolution, and structure of the Milky Way and other galaxies.
7. Active Galaxies and Quasars - includes studies of interacting galaxies, starburst galaxies, Luminous/ultraluminous infrared galaxies, Seyfert galaxies, radio galaxies, active galactic nuclei and supermassive black holes, and quasars.
8. Large Scale Cosmic Structures - includes studies of clusters of galaxies, galaxy environment and evolution, intracluster medium, diffuse x-ray background, and supernova surveys as tools for cosmology.
9. Astrophysical Databases - includes development of databases of fundamental atomic, molecular, solid state parameters and the tools to apply them to the analysis of astronomical data; also includes development of new data products through further processing or reprocessing of existing archival astrophysical data sets, new publicly-accessible databases of observations from NASA suborbital astrophysics projects, and new data analysis tools.

2. Specific Instructions for Dual-Anonymous Peer Review Proposals

Proposals submitted to this program will be evaluated using a dual-anonymous peer review process in which, not only are proposers unaware of the identity of the members on the review panel, the reviewers will not be told the identity of proposers until after the evaluation of Merit (see below). The overarching objective of dual-anonymous peer review is to reduce unconscious bias in the evaluation of the merit of a proposal.

To implement dual-anonymous peer review, reviewers may not see any information that would identify proposers, so proposers must follow the instructions in the "Guidelines for Anonymous Proposals" document under "Other Documents" on the NSPIRES page for this program element that explain how to properly prepare the proposal for dual-anonymous peer review.

The forms filled out on the NSPIRES web pages with Proposal Summary, Budget, Proposal Team and Program Specific and Business Data known as the NSPIRES "cover pages" will not be seen by peer reviewers. This has two implications: 1) The Proposal summary must also be included as the first page of the proposal PDF and 2) proposers must upload a separate "Expertise and Resources - Not Anonymized" document, that contains all of the personally (and organizational) identifying information.

In order to meet the objectives of dual-anonymous peer review, review panels will be instructed to evaluate the anonymized proposals based on their scientific merit, without taking into account the proposing team qualifications. As a final check, and only after the scientific evaluation is finalized for all proposals, the panel will be provided with the "Expertise and Resources - Not Anonymized" documents. The panel will assess the qualifications of the team in order to allow the reviewers to assess the team capabilities required to execute a given proposed science investigation.

A summary of the key requirements for anonymized proposals, reproduced from the "Guidelines for Anonymous Proposals" document, is listed below:

Item	Requirement
Anonymization	Proposals must be anonymized.
References	References must be in the [1], [2] format.
Proposal Summary	Enter as part of the NSPIRES cover page and first page page of uploaded proposal PDF file.
Page Limits	15 pages for the central Science/Technical/Management section of proposal. An additional page is allotted for the Proposal Summary, see above.
Biographical Sketches	Do not include in the anonymized proposal document. This information is gathered in the separate "Expertise and Resources - Not Anonymized" document (see below).
Current and Pending Support	Do not include in the anonymized proposal document. Include in separate "Expertise and Resources - Not Anonymized" document (see below).
Budget Narrative	Include in main proposal document in an anonymized format.
Summary of work effort, including Table of Work Effort	Include an anonymized version (e.g., PI; Co-I#1; Co-I#2) in the main proposal document. Include a not-anonymized version in separate "Expertise and Resources - Not Anonymized" document.
Facilities and equipment	Do not include in main proposal document. Include in separate "Expertise and Resources - Not Anonymized" document.
Letters of Resource Support (e.g., from archives, facilities, etc.)	Do not include in main proposal document. Include in the separate "Expertise and Resources - Not Anonymized" document.
Data Management Plan	All proposals must include an anonymized Data Management Plan within the 15-page Scientific, Technical, and Management section of the proposal. The Data Management Plan for proposals that identify Astrophysical <i>Databases</i> as

	either the primary or secondary research area must meet the requirements described in Section 1.3.3.
High-End Computing request	Submit PDF HEC form as document type "Appendix" in NSPIRES.
Separate "Expertise and Resources - Not Anonymized" document	<p>Submit as document type "Appendix" in NSPIRES. This document provides:</p> <ol style="list-style-type: none"> 1. A list of all team members, their roles (e.g., PI, Co-I, collaborator), and their contributions to the work; 2. Brief descriptions of the scientific and technical expertise each team member brings, emphasizing the experiences necessary to be successful in executing the proposed work. 3. A description of the contribution that each team member will make to the proposed investigation. 4. A discussion of specific resources ("Facilities and Equipment", e.g., access to a laboratory, observatory, specific instrumentation, etc.) that are required to perform the proposed investigation. 5. The not-anonymized Table of Work Effort; 6. Biographical Sketches/CVs for the PI and all Co-Is on the proposal (limit 2 pages for the PI, 1 page for others); 7. Statements of Current and Pending Support for the PI and all Co-Is; 8. A discussion of any specific resources that are key to completing the proposed work; 9. Letters of commitment from any archives, specialized facilities, foreign institutions, etc. that will support the proposed investigation; 10. A letter from the foreign PI identifying the US PI on the XMM GO investigation (required for US PIs seeking ADAP support for participation in Foreign-led XMM-Newton GO investigations; see Section 1.3.4).

3. Current Profile of the ADAP

3.1 Response to the Previous ADAP solicitation

In 2019, as a result of a prolonged shutdown of the Federal Government, ADAP was issued via amendment as D.16 of ROSES-2018 under the title Second Astrophysics Data Analysis (hereinafter 2ADAP18). A total of 248 proposals were submitted in response to the 2ADAP18 solicitation, a number that is entirely consistent with the average proposal pressure in recent years (~250 proposals). The distribution of those proposals over the various research areas covered by the program is shown in Figure 1 below. Also shown in the figure is the distribution of requested durations of the proposals in each Research Area (i.e. one-, two-, or three-years). Note: proposals in the *Astrophysical Databases* Research areas (not broken out separately in the figure) were grouped into one of the other Research Areas, as appropriate, based on the subject matter of the proposal.

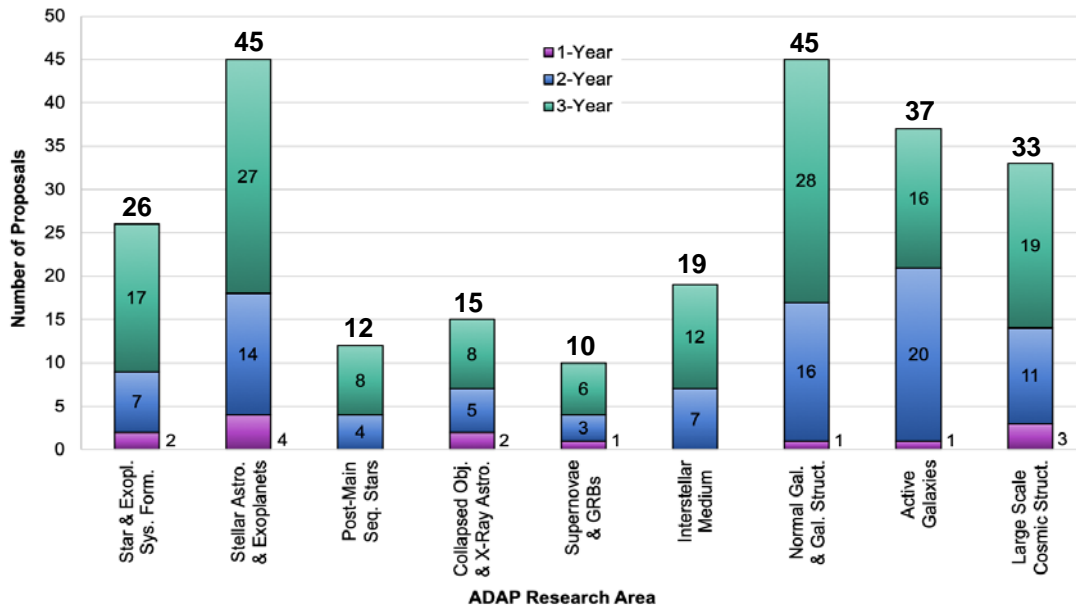


Figure 1. The distribution of 2ADAP18 proposal submissions, broken down by requested funding duration, across the Research Areas covered by the program. The bold number at the top of each column gives the total number of proposals in the corresponding research area. Proposals in the *Astrophysical Databases* Research Areas were grouped into one of the Research Areas shown based on their subject matter. Six of the submitted proposals were found to be non-compliant and were declined without review.

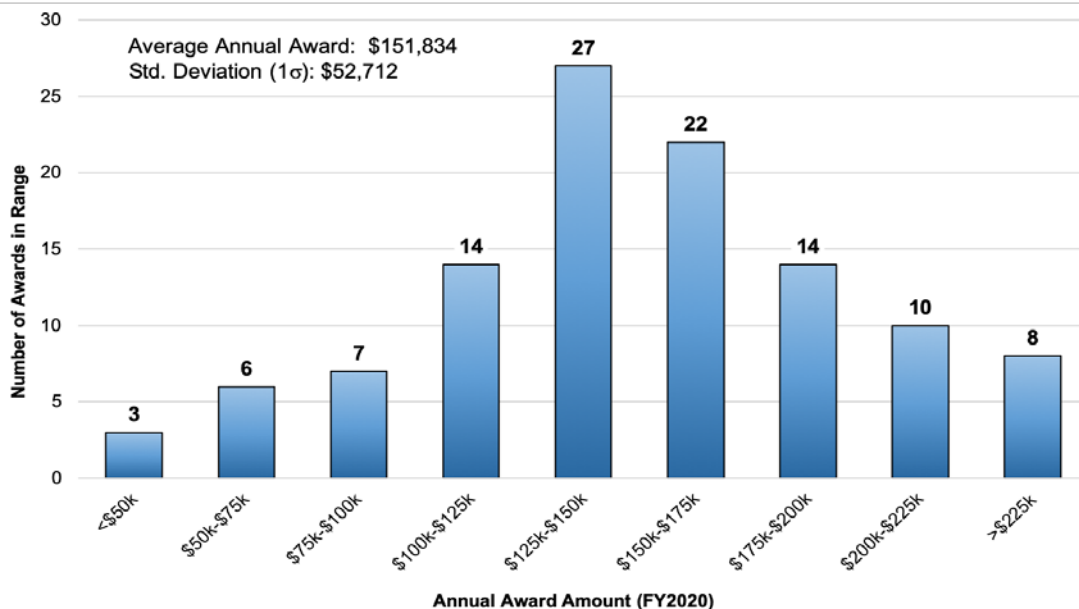


Figure 2. The distribution of annual awards for funded ADAP tasks in FY 2020. Data include both 2ADAP18 new starts and ongoing tasks from previous solicitations.

3.2 Distribution of annual funding levels for ADAP tasks

With an annual budget of around \$20M, the ADAP typically supports around 140 investigations in any given year (includes both new starts and continuing investigations). Although the average annual ADAP award is approximately \$152,000, actual award amounts span the range from less than \$50,000 per year to more than \$225,000 per year. Figure 2 shows the distribution of annual awards for the ADAP in FY 2020.

3.3 Evaluation Criteria

In addition to the evaluation criteria for all proposals given in Section VI.(a) of the *ROSES Summary of Solicitation* and the *Guidebook for Proposers*, for proposals in the *Astrophysical Databases* research area, the merit criterion includes an evaluation of the suitability and perceived impact of the proposed data products and/or data analysis tools of the investigation, and how and when they will be made available.

4. Summary of Key Information

Expected program budget for first year of new awards	~\$7.0M
Number of new awards pending adequate proposals of merit	~40-50
Maximum duration of awards	3 years; shorter-term proposals are welcome
Due date for Notice of Intent to propose (NOI)	See Tables 2 and 3 of this ROSES NRA
Due date for proposals	See Tables 2 and 3 of this ROSES NRA
Planning date for start of investigation	January 1, 2021
Page limit for the central Science-Technical-Management section of proposal	15 pages. One additional page is allotted for the Proposal Summary. See also Table 1 of ROSES and the <i>NASA Guidebook for Proposers</i> .
Relevance	This program is relevant to the Astrophysics questions and goals in the NASA Science Plan. Proposals that are relevant to this program are, by definition, relevant to NASA.
General information and overview of this solicitation	See the <i>ROSES Summary of Solicitation</i> .
General requirements for content of proposals	See Section 3 of the <i>NASA Guidebook for Proposers</i> and Section IV and Table 1 of the <i>ROSES Summary of Solicitation</i> .
Detailed instructions for the submission of proposals	See https://nspires.nasaprs.com/tutorials/ Sections 3.22-4.4 of the <i>NASA Guidebook for Proposers</i> and Section IV(b) of the <i>ROSES Summary of Solicitation</i> .

Submission medium	Electronic proposal submission is required; no hard copy is required or permitted. See also Section IV of the <i>ROSES Summary of Solicitation</i> and the <i>NASA Guidebook for Proposers</i> .
Web site for submission of proposal via NSPIRES	http://nspires.nasaprs.com/ (help desk available at nspires-help@nasaprs.com or (202) 479-9376)
Web site for submission of proposal via Grants.gov	http://grants.gov (help desk available at support@grants.gov or (800) 518-4726)
Funding opportunity number for downloading an application package from Grants.gov	NNH20ZDA001N-ADAP
Point of contact concerning this program	Douglas M. Hudgins Astrophysics Division Science Mission Directorate NASA Headquarters Washington, DC 20546-0001 Telephone: (202) 358-0988 Email: Douglas.M.Hudgins@nasa.gov