astrophysics data system

ADS Funding and Guidance from NASA

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and the ADS Team

ADS Users Group Meeting, 20-21 Nov. 2025

CENTER FOR ASTROPHYSICS HARVARD & SMITHSONIAN

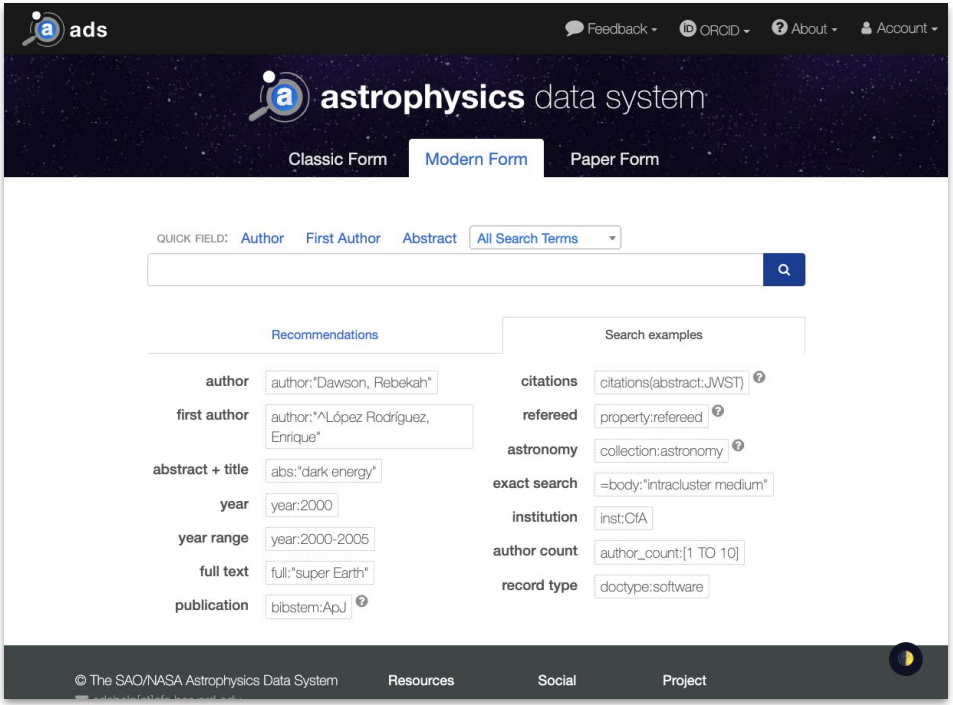
NASA Partner

The Astrophysics Data System

ADS is a NASA-funded project which provides open discovery services for scholarly literature in Astronomy and Astrophysics since 1993.

We do this by aggregating and curating a database of scholarly content and building services to maximize the scientific impact of research data and publications in the scholarly ecosystem.

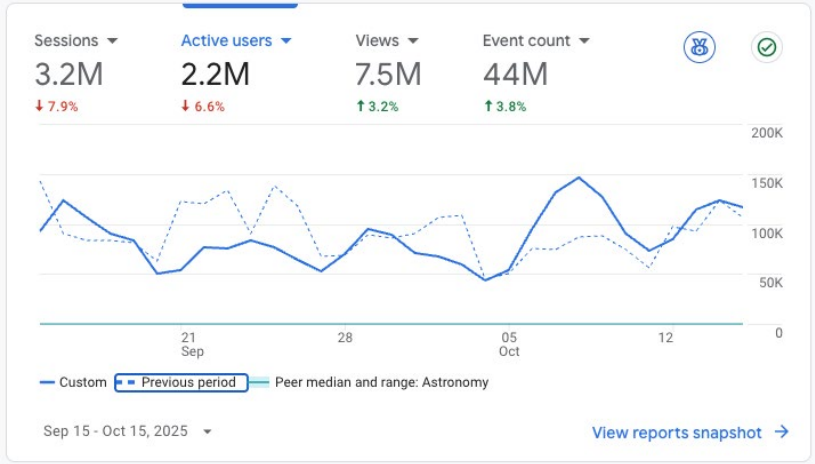
Our technical infrastructure is build on open source software and systems which we adapt and extend for our needs.

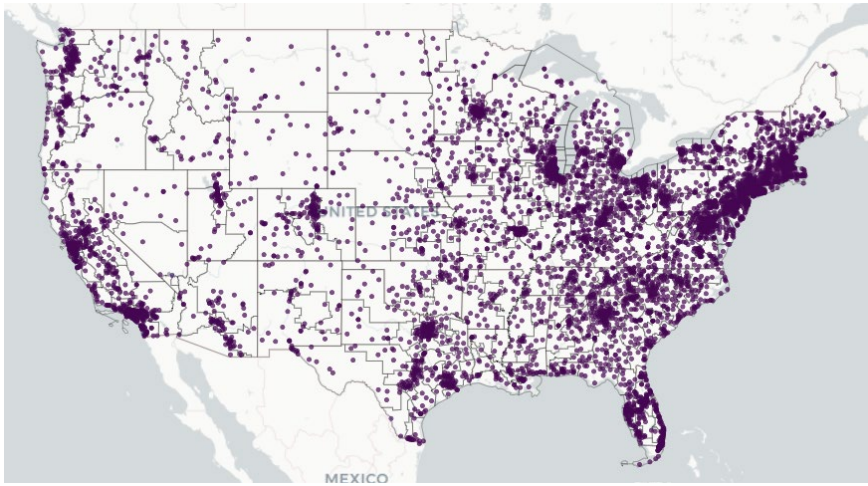


https://ui.adsabs.harvard.edu

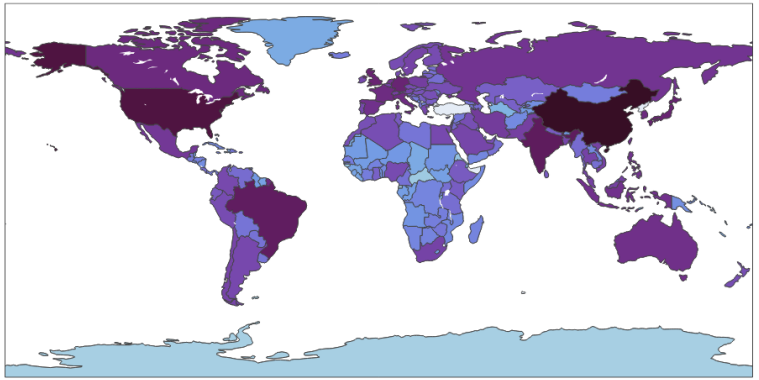
Usage

ADS is accessed regularly by science professionals, librarians, educators, citizen scientists, and curious members of the general public.





Active Users by Country, Jan-July 2025



SciX: ADS for all of NASA Science

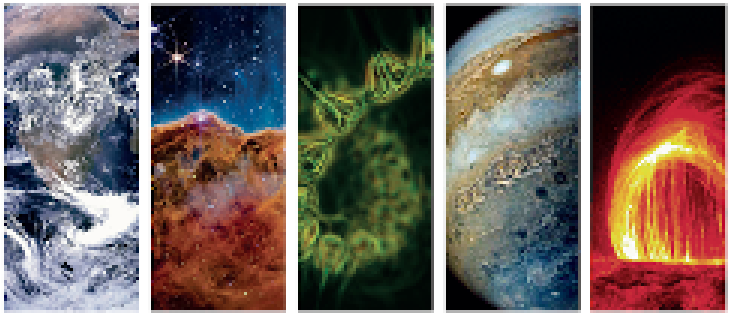
In 2022, NASA asked ADS to expand its services to all the NASA-funded science disciplines to support its open science goals: facilitating discovery and dissemination publications, data, and software by aggregating and linking them.

In Dec. 2023, the ADS team introduced the beta version of the Science Explorer Platform (SciX), a new digital library portal covering all SMD disciplines: Astrophysics, Heliophysics, Planetary Science, Earth Science, and Biological and Physical Sciences.

On September 29, 2025, we officially launched SciX to the research community, with press releases from CfA, NASA, a blog entry and introductory video on our website, and various social media announcements.

SciX

[www.SciXplorer.org]



Science Explorer

Accelerating the discovery of NASA Science.

https://SciXplorer.org

Ultimate Goal: ADS is migrated to SciX

We are building a system that is superior to ADS

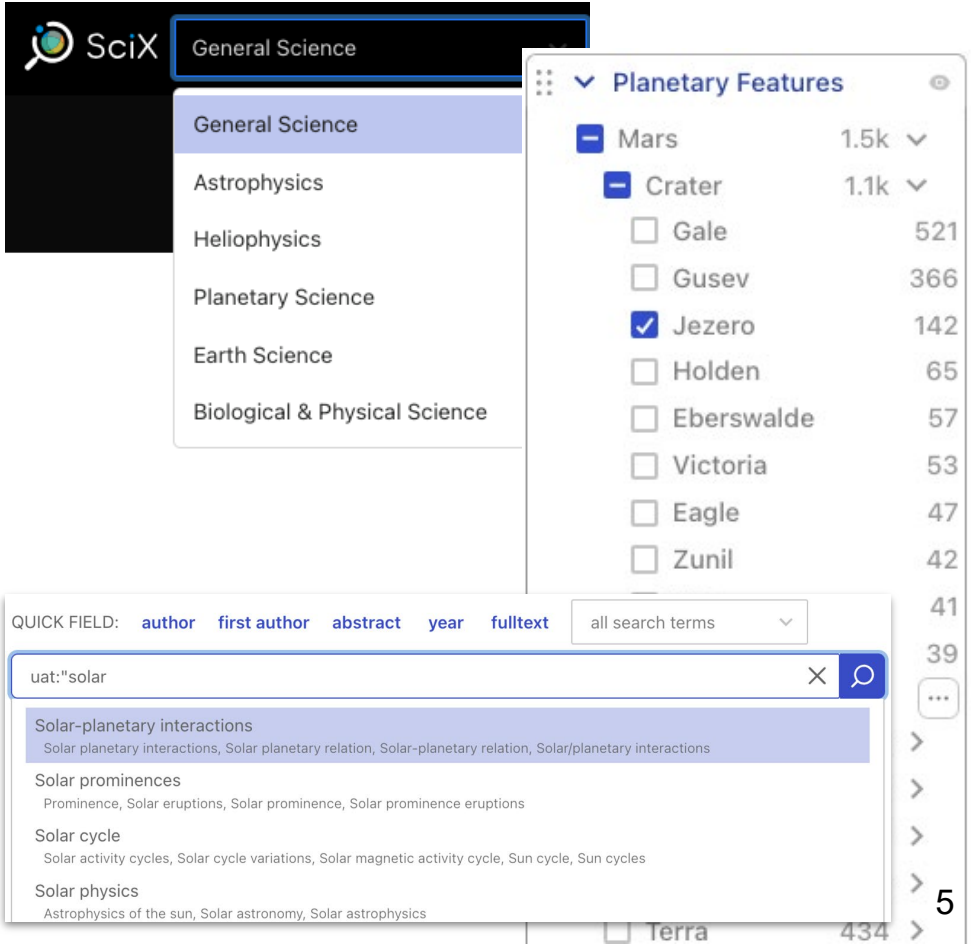
Content: we want new and existing users to find all their papers, research software and datasets and their connections

User Interface: we want a more responsive, accessible, and faster system

Search: we want to provide better search experience with discipline-specific rankings

Features: we want new, better functionality for each discipline covered, powered by AI/ML

We want to give astronomers reasons to use the new system over ADS!



NASA 2024 Proposal - Vision

In the spring of 2024 the ADS team submitted its 5-year funding proposal to NASA. Some highlights:

The NASA Science Explorer (SciX) will be a permanent component of open science infrastructure, built on the 30 year legacy of the Astrophysics Data System (ADS) *by expanding it to encompass all scholarly disciplines supported by the NASA Science Mission Directorate. Including Planetary Science, Heliophysics, Earth Science, and Biological and Physical Sciences along with Astrophysics marks a significant expansion in scope and collaborative potential.*

The strategic shift from ADS to SciX is marked by a significant change in team structure *to include discipline-specific project scientists, paving the expansion to new communities. This evolution reflects a broader vision of fostering interdisciplinary communication, collaboration, and research, and collapsing silos between scientific domains.*

We aim to enlarge and enrich our collections and collaborations while also advancing our technical capabilities to unify NASA science discovery on a single platform. *However, the realization of SciX's full potential is contingent upon strategic investment and support. The risks of underfunding the project during its critical expansion phase carry implications not just for the project but for NASA SMD's open science ecosystem and for the global scientific community that depends on it.*

NASA 2024 Proposal - Development & Ops

Development of SciX capabilities will focus on services and features that benefit all disciplines and communities, irrespective of their research focus. These foundational services include **author disambiguation, search infrastructure, text mining, citation processing, and metadata enrichment pipelines.**

Operating SciX will focus on a set of core activities, such as **ingestion of content, user interface updates, user support, interoperability with research systems, collaborations with publishers and data providers, and maintenance of system infrastructure.**

Given the scope of the expansion, there is no scenario under which traditional ingest and curation alone can scale up to enable an ingestion of SciX content twice the size of the current ADS system.

Investments in technology, coupled with the establishment of disciplinary teams, provide the only viable path to the increase in efficiencies required to accomplish our goals, and informs the choices we have made in creating the SciX team and schedule of activities.

NASA 2024 Proposal - Curation Tasks

	AP	PS	HP	ES	BPS
Census	✅	✅	✅	✅	2025
Ingestion	✅	✅	✅	2025-27	2026
Citation	✅	2025	2025	2026-28	2027-28
Bibliographies	✅	2026	2025-26	2025-26	2026-27
Data Links	2025	2025	2026	2025-28	2028
NER (Missions)	2026	2026	2026	2026	(2027)
Taxonomies	2025	2027-30	2027	2026-27	(2030)
API integration	✅	2026	2028	(2027)	(2030)
Enrichment	2025-30	2027-30	2028-30	2027-30	(2030)

Legend:

Past Y

Next 2 Y

Last 2 Y

Cur. focus

Endangered

(Tentative and/or best effort)

NASA Budget - Current Direction

Going forward, ADS and SciX will be funded separately

- **ADS funded by the NASA Astrophysics Division (APD)**
  - This ensures that APD has control over the future of ADS, while still subscribing to the single platform plan laid out in our proposal
  - Funding accounts for infrastructure, astrophysics content and curation, interoperability with astronomy archives
  - New Cooperative Agreement set up in spring of 2025, currently planned to be funded at guideline levels as described in proposal ($4.5M/y) and endorsed by ADSUG
- **SciX to be funded by NASA Office of the Chief Science Data Officer (OCSDO)**
  - OCSDO reduced guidelines for SciX funding ($3M/y), 25% below requested levels ($4M/y)
  - New contract was expected to be set up in early 2025, now put on hold
  - OCSDO budget was significantly cut in the President's Budget Request
  - Due to federal budget uncertainty, 2026 funding for SciX is not guaranteed
  - Currently operating on FY25 funds, which will last through the end of March 2026

Scenario 1: ADS + SciX Funded

This is the assumption we have been working on for the past three years, and have been building a system and team to implement it

- If both ADS and SciX are funded at adequate levels, the original plan stands (possibly with some modifications if SciX is below guidelines)
- Both ADS and SciX resources will be used to upgrade and develop infrastructure and applications, including further improvements in UI/UX
- Multidisciplinary content will continue to be ingested and curated in the system
- SciX features will continue to be developed for each discipline as planned
- ADS users will be migrated to SciX over the next year, with plenty of carrots and a few sticks
- Depending on funding levels, some disciplines may suffer lack of attention and integration due to lack of disciplinary expertise (e.g. Planetary, Heliophysics and BPS)
- All current staff retained

Scenario 2: Only ADS Funded

Defunding of SciX is a major threat for ADS. SciX was never meant to be a “nice add-on,” it was a fundamental reimagining of our project

- If only ADS is funded at adequate levels, the original plan outlined in the NASA proposal is no longer feasible and the roadmap for ADS changes dramatically
- Only insufficient ADS resources will be available to support and upgrade our infrastructure and transition users to a new technology
- Some multidisciplinary content will be ingested on a best effort basis, but curation will only apply to astronomy and astrophysics
- The development of new features and capabilities will be severely limited, in particular the integration of AI/ML technologies in our operations and applications
- Due to our inability to operate two separate systems, ADS users will be migrated to the new platform quickly and abruptly
- Staffing levels would drop to 12 FTEs from the current level of 20 FTEs

Alternative Funding

ADS Management has been trying to identify alternative sources of funding with scant results

- Because of Smithsonian rules and regulations, we are unable to contact foundations directly, rather we have to go through the Institution's advancement office. This limits the number of conversations we can have with potential funders
- Because of Smithsonian policy, we cannot publicly comment on funding from NASA (or other federal agencies), and all communications need to be vetted by SI Washington. This limits the conversations we can have with partners, institutions, societies, and the general public
- The few conversations we have been able to have with foundations and international partners show the great difficulty of replacing the level of funding required to sustain ADS and SciX. It is particularly challenging to fundraise for SciX, given its limited adoption and exposure so far
- No viable alternative to NASA funding has been identified so far

Staffing

Team integrity has been a focus over the past year

- Staffing levels are reduced from a year ago due to two resignations (one senior developer and the project scientist for Planetary Sciences), and planned hiring of a search/backoffice developer has been postponed indefinitely
- Our lead project scientist and ADS founder Michael Kurtz will retire in March 2026, with no planned replacement
- We were able to hire Atilla Alkan, an NLP postdoc
- We have reduced spending on all fronts in order to preserve our team for as long as possible, in line with NASA guidance (“do no irreparable harm for as long as possible”)
- Our attempt at retaining remote employees has been approved by CfA and SI, which is critical positive outcome due to the fact that 30% of our staff are remote. The remaining staff enjoy part-time telecommuting benefits. **Thank you for your support in securing these goals!**