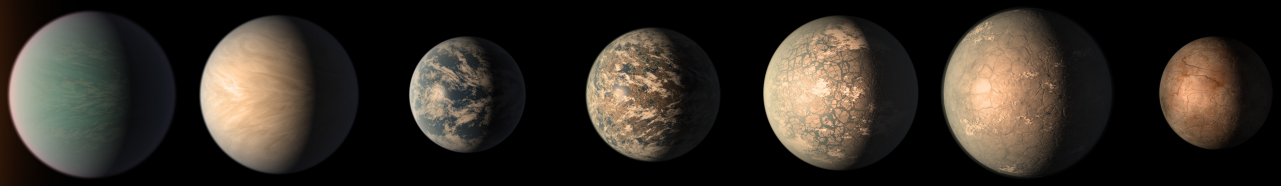
NASA Exoplanet Science Institute (NExScI)



NExScI is the science operations center for NASA's Exoplanet Exploration Program. We are part of IPAC, located on the campus of the California Institute of Technology, in Pasadena, California.

DATA ARCHIVES

The NASA Exoplanet Archive contains data on confirmed exoplanets and their host stars, provides transit observability prediction, transit/RV fitting, predictions of observable exoplanet signatures, and light curve viewing tools.

The Exoplanet Follow-up Observing Program (ExoFOP) facilitates community follow-up observations of Kepler, K2, and TESS Objects of Interest. Users can view community provided data, upload their own data, and receive email notification when their favorite targets are updated.

The W.M. Keck Observatory Archive (KOA) ingests and curates data from all active and decommissioned Keck instruments.

The NEID Archive serves data from the high-precision radial velocity NEID spectrograph built by Penn State University and funded by NASA/NSF.

NExScI hosts the Large Binocular Telescope Interferometer (LBTI) data archive.

NASA-KECK TIME

NExScI manages NASA's share of time on the two 10m W.M. Keck Telescopes. Proposals for the ~48 nights/semester are due every March and September.

Any U.S.-based astronomer can apply for NASA-Keck time to support NASA's strategic goals for both astrophysics and planetary science topics.

SAGAN PROGRAM

NExScI runs the annual Sagan Exoplanet Summer Workshop every July which focuses on a timely topic in exoplanet science and techniques.

NExScI participates in the management of the NASA Hubble Fellowship Program, which merged NASA's three named fellowship programs (Einstein, Hubble, and Sagan).

nexsci.caltech.edu
nexsci@ipac.caltech.edu

NExScI NASA Caltech ipac

NExScI Highlights for 2022

NASA Exoplanet Archive

- *New:* Over 5,000 confirmed planets from the refereed literature!
- Planet and stellar parameters vetted by staff scientists
- Web and command-line tools to work with data
- Kepler Candidate products and TESS Candidate properties

Sagan Summer Workshop

- *2022 Topic:* Exoplanet Science in the Gaia Era (Astrometry)
- Hybrid Workshop: Caltech campus and on-line
- July 25-29, 2022
- 700+ registrants as of 5/1
- Hands-on sessions: Accessing and Working with Gaia DR3 data, Orbital fits using Orvara, and more!

ExoFOP

- *New:* Kepler, K2, and TESS sites merged into one site
- Take advantage of 834,000+ files and 52,000 observations uploaded by the community
- Upload your own data
- Follow your favorite targets

NASA-Keck Time

- Co-Is can be international
- Proposals for 2023A due September 15, 2022
- *New:* Data from five instruments ingested into the Keck Observatory Archive (KOA) in real-time. All instruments by end of 2022.

NExScI

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NASA

Sagan Summer Workshops

- The Sagan Summer Workshops are held annually and provide opportunities for students, postdocs, and researchers to learn about the scientific applications and technology of exoplanet-related techniques used in NASA's Exoplanet Exploration Program and missions.
- Each year, a current hot topic in exoplanet science is explored with tutorial presentations by experts in the field.
- Hands-on sessions give attendees the opportunity to work with astronomical data in small groups.
- Small group meetings with the presenters are also among the interactive features of these workshops.
- The workshops are hosted by the NASA Exoplanet Science Institute (NExScI) and are normally held at the California Institute of Technology in Pasadena, CA. The 2020 workshop was held entirely online.

Workshop Topics

2021: Young Planets and Disks
2020: Extreme Precision Radial Velocity
2019: Astrobiology for Astronomers
2018: Did I Really Just Find an Exoplanet?
2017: Microlensing in the Era of WFIRST
2016: Is There a Planet in My Data?
2015: Exoplanetary System Demographics: Theory and Observations
2014: Imaging Planets and Disks

Workshop presentations from 2014-2021 can be viewed on the Sagan Summer Workshop YouTube channel:
http://www.youtube.com/c/SaganSummerWorkshop

nexsci.caltech.edu/conferences
sagan_workshop@ipac.caltech.edu

NExScI

NASA Keck Time Solicitation for the 2023A Observing Semester

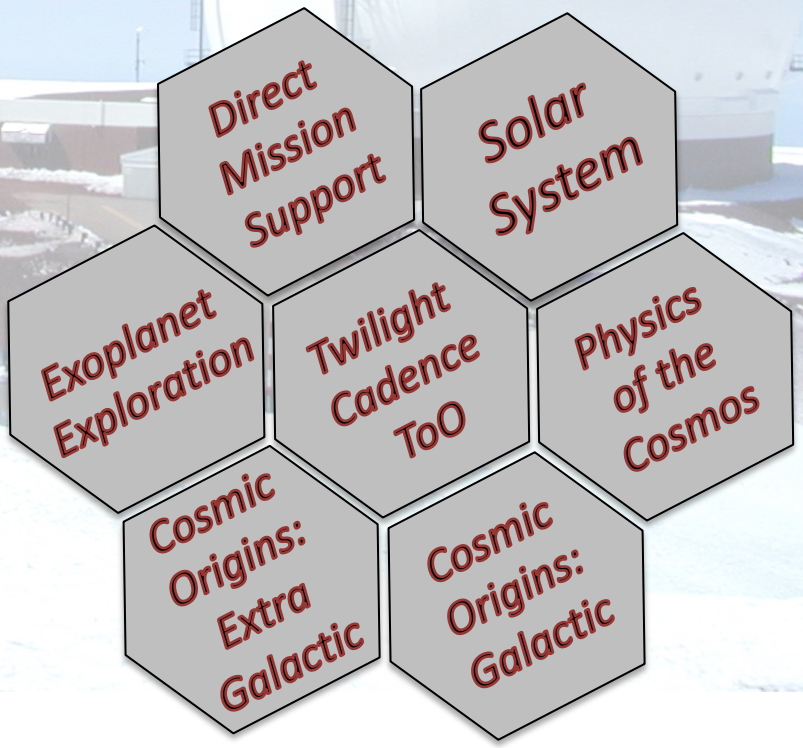
Proposals due September 15, 2022

For Professional Research Using the NASA Allocation of Observing Time at the W. M. Keck Observatory

You do *NOT* need to work at NASA to apply for NASA Keck Time! Applications are accepted from astronomers at ALL U.S. institutions!

Eligible Science Areas

NASA intends the use of its Keck time allocation to be highly strategic, in support of on-going missions and high priority long-term planetary/solar system and astrophysics science goals. Proposals in support of all NASA missions are encouraged, as well as in all areas of NASA science, including studies of our own Solar System.



General Information

- Access to ~47 nights/semester
- Proposals evaluated for NASA strategic relevance & science goals
- Financial support for successful PIs, contingent upon NASA funding
- Twilight Observing, Cadence, and Target of Opportunity proposals accepted
- Astronomers from all U. S. institutions may apply as PIs; Co-Is may be international
- Proposal submission and review uses a Dual Anonymous Proposal Review (DAPR) process

Dates and Further Information

August 2022: *Call for proposal information available*

September 15, 2022: *Proposals due to NExScI*

Proposal Call Information and Electronic Submission:
http://nexsci.caltech.edu/missions/KeckSolicitation/

WMKO Information including available instruments:
http://www.keckobservatory.org

Questions: **keckcfp@ipac.caltech.edu**

NExScI
NASA Exoplanet Science Institute

NASA

NASA Hubble Fellowship Program (NHFP)

Email: nhtp@stsci.edu

Website: http://nhfp.stsci.edu

The NHFP supports postdoctoral scientists to pursue independent research that contributes to NASA Astrophysics using theory, observation, simulations, experimentation, or instrument development.

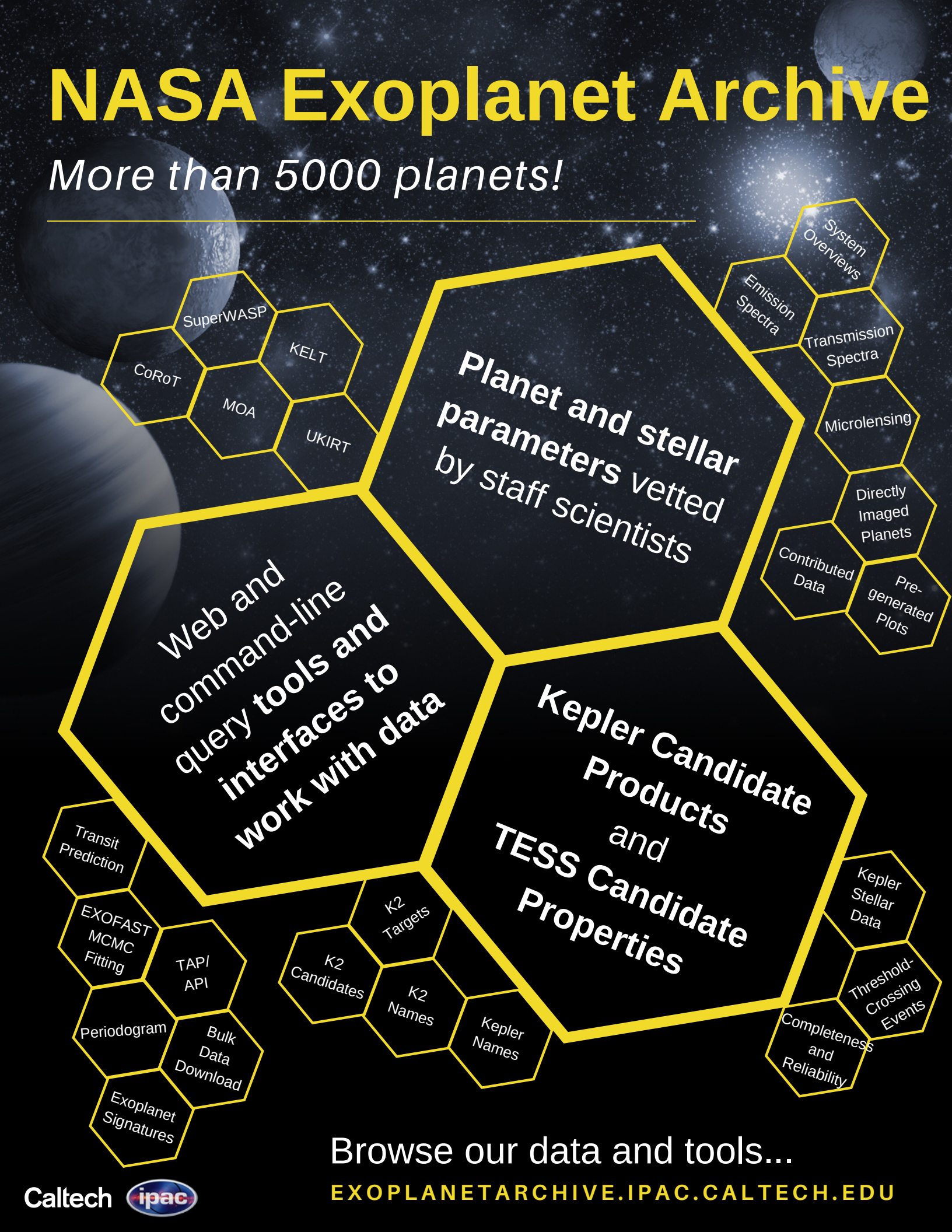
- NHFP topics span the entire breadth of NASA astrophysics
- Fellows will be known as Einstein, Hubble, or Sagan NHFP fellows depending on scientific research area
- Open to applicants of any nationality who have earned, or will earn their PhD within the past 4 years.
- Annual calls for applications are issued in early September with applications due in early November.

CXC

STScI | SPACE TELESCOPE SCIENCE INSTITUTE

NASA Exoplanet Archive

More than 5000 planets!



Browse our data and tools...

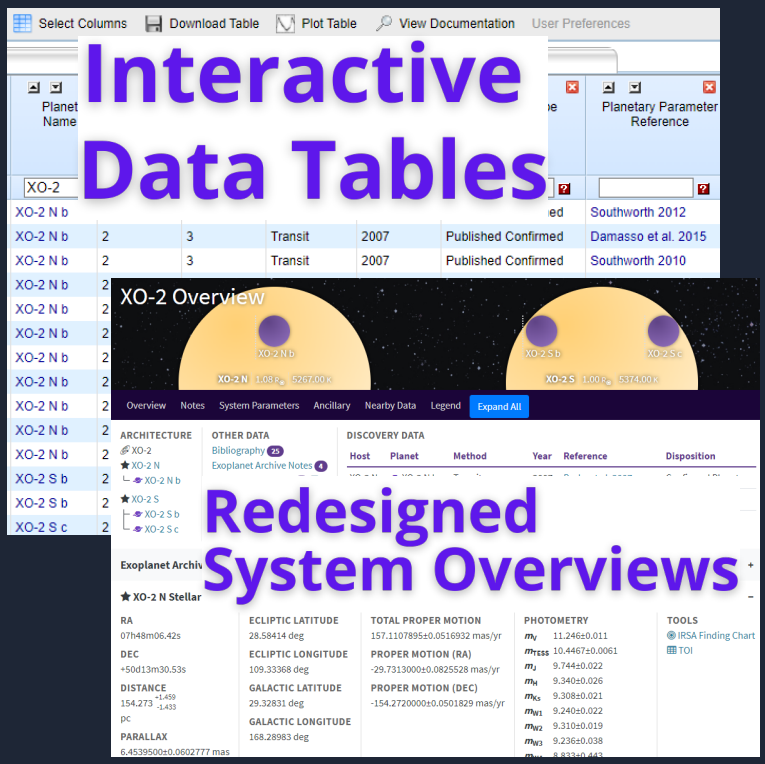
EXOPLANETARCHIVE.IPAC.CALTECH.EDU

Caltech ipac

NASA Exoplanet Archive

The NASA Exoplanet Archive collates and cross-correlates astronomical data on exoplanets and their host stars, and provides tools to work with these data.

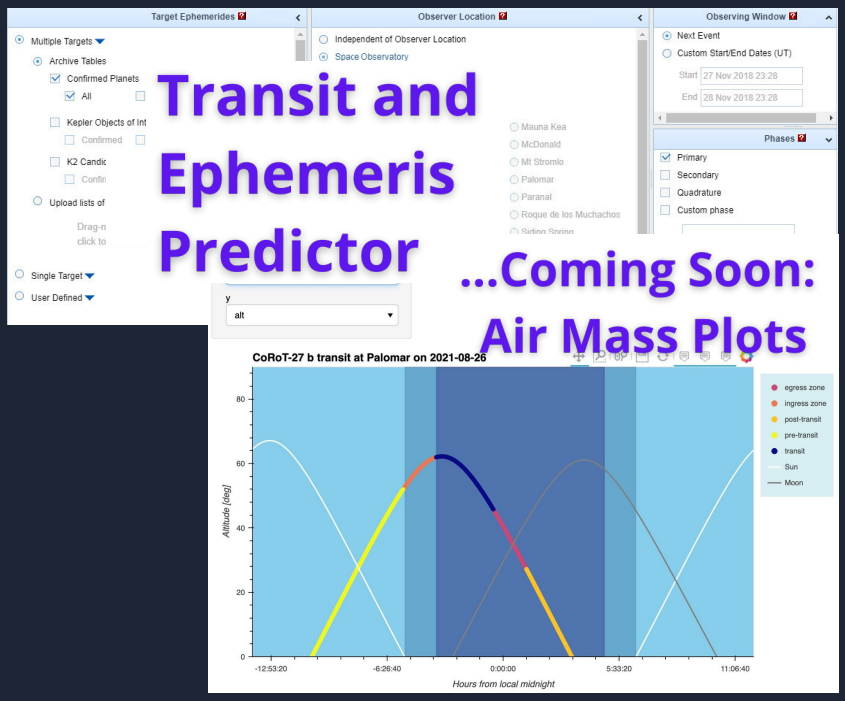
Our Data



- Planet and stellar parameters
- Planet and candidate statistics
- *Kepler and K2 light curves* and stellar target properties
- *Kepler pipeline products*, including completeness and reliability, TCEs, and data validation
- *Microlensing data*, including planet solutions and UKIRT light curves
- *SuperWASP and KELT* transit survey data
- Host star *radial velocity data*
- CoRoT exoplanet and asteroseismology data
- Transmission and emission spectra
- Pre-generated *presentation plots*
- *Coming soon: Planet Demotions*

Our Tools

- Transit and Ephemeris Service *predicts transits from any location.*
- *Automated, query-based data retrieval*
- *Search across all archive holdings by source name or position*
- EXOFAST fitting tool with *MCMC analysis*
- *Interactive data tables* allow users to save selections of most-used parameters
- *Light curve viewer* plots and normalizes data multiple files for 125 million time series
- Prediction of *observable exoplanet signatures*
- *Coming soon: Air Mass Plots*

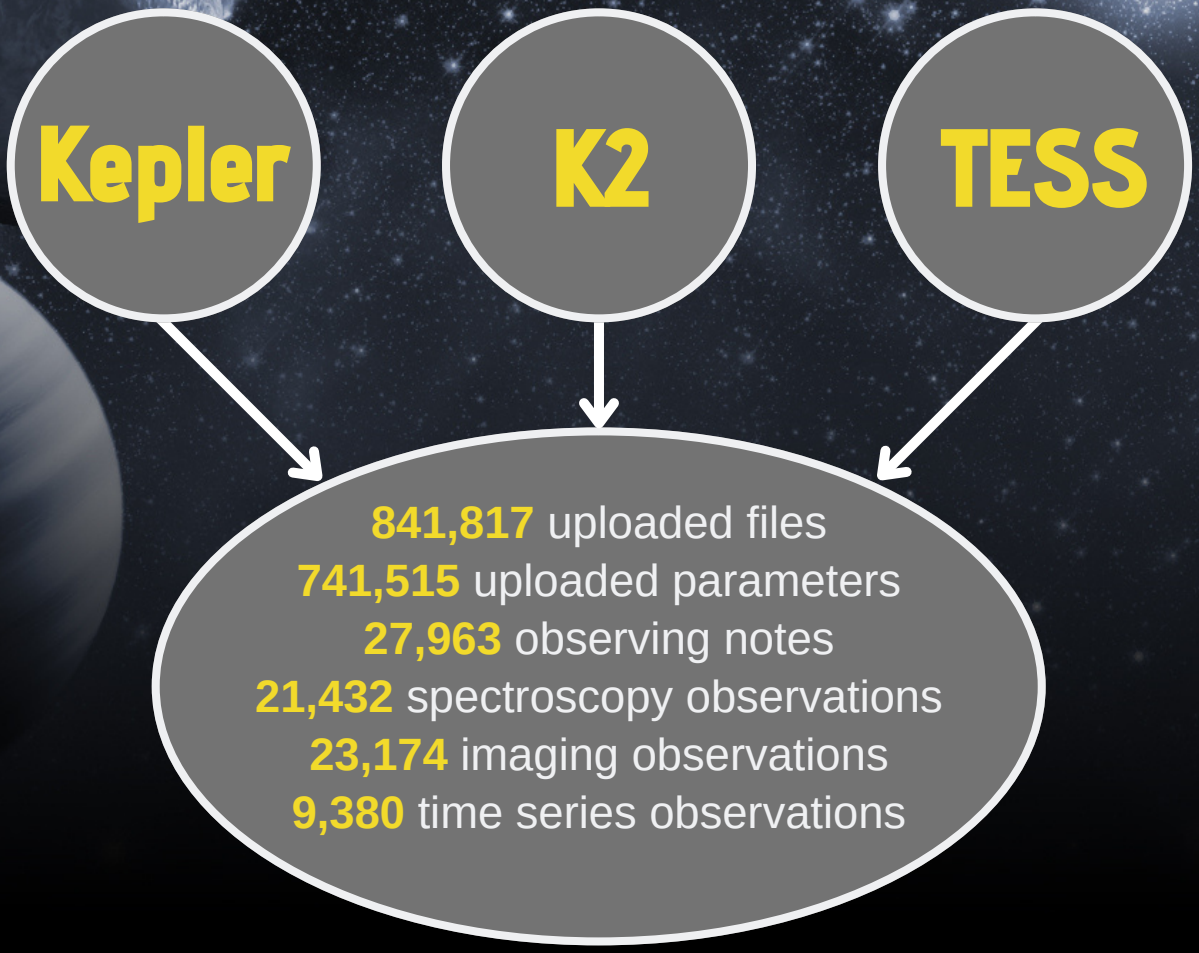


...and more!

exoplanetarchive.ipac.caltech.edu

Exoplanet Follow-up Observing Program (ExoFOP)

EXOFOP.IPAC.CALTECH.EDU



NEW

The separate ExoFOP sites for Kepler, K2, and TESS have been merged into one site. Data can now be uploaded using TIC IDs, TOIs, KOIs, Kepler names, KIC IDs, EPIC IDs, or K2 names.

ExoFOP is a web tool that facilitates science community follow-up observing.

***Share** data and observing notes, **cultivate** collaboration, **receive email** notifications when your **favorite targets** are updated, **and more**!*

exofop

Operated by the NASA Exoplanet Science Institute (NExScI)

NExScI

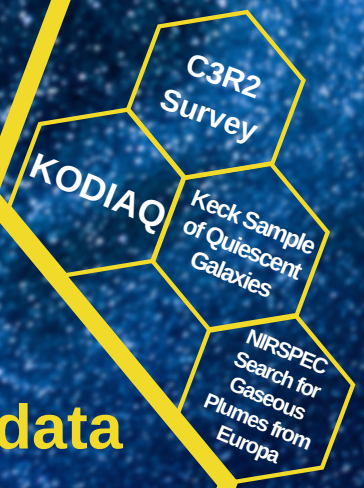
Keck Observatory Archive

koa.ipac.caltech.edu

Data from all 12 Keck instruments since 1994

Public data from Solar System objects to high-z quasars

Contributed data from PI and archival science investigations



The Keck Observatory Archive (KOA) is a collaboration between the NASA Exoplanet Science Institute (NExScI) and the W. M. Keck Observatory (WMKO). NExScI is sponsored by NASA's Exoplanet Exploration Program, and operated by the California Institute of Technology in coordination with the Jet Propulsion Laboratory (JPL).

Caltech NExScI JPL NASA W. M. KECK OBSERVATORY

Keck Observatory Archive

The W. M. Keck Observatory Archive (KOA) ingests and curates data from all active and decommissioned Keck instruments

MULTI-OBJECT IMAGING SPECTROGRAPHS

DEIMOS 2002 - present
Low and medium resolution, optical (0.4-1.0 µm)

LRIS 1994 - present
Low and medium resolution, optical (0.3-1.1 µm)

MOSFIRE 2012 - present
Medium resolution, IR (1-2.5 µm)

SINGLE OBJECT IMAGING SPECTROGRAPHS

ESI 1999 - present
Low and high resolution, cross-dispersed, optical (0.35-1.0 µm)

HIRES 1994 - present
High resolution, cross-dispersed, optical (0.35-1.0 µm)

NIRES 2017- present
Medium resolution, cross-dispersed, IR (0.95-2.5 µm)

NIRSPEC 2000 - present
Medium and high resolution spectra; slit-viewer camera images, IR (0.95-5.5 µm)

INTEGRAL FIELD SPECTROGRAPHS

KCWI 2017 - present
Low, medium and high resolution, image slicer, optical (0.35-1.1 µm)

ADAPTIVE OPTICS INSTRUMENTS

NIRC2 2001 - present
Imaging and low resolution spectroscopy, IR (0.95-5.3 µm)

OSIRIS 2005 - present
Imaging and low resolution spectroscopy, integral field unit (lenslet array), IR (1.0-2.4 µm)

NIRSPAO 2000 - present
NIRSPEC, but fed by AO system, 10x higher spatial resolution

DECOMMISSIONED INSTRUMENTS

LWS 1998 - 2005
Imaging and low resolution spectroscopy, mid-IR (3.0-25 µm)

NIRC 1995 - 2010
Imaging and low resolution spectroscopy, IR (1.0-5.0 µm)

Contributed Data

Keck Sample of Quiescent Galaxies
167 Keck spectra of high-redshift galaxies. Contributed by PI Sirio Belli.

C3R2 Survey Data
The Complete Calibration of the Color-Redshift Relation (C3R2) Survey. Contributed by PI (NASA Keck) Daniel Stern.

NIRSPEC Search for Gaseous Plumes from Europa
KL and M-wide spectra of Europa taken 3 Feb 2016 to 7 May 2017. Contributed by Lucas Paganini.

KODIAQ
Continuum normalized coadded extracted HIRES and ESI spectra of quasars. Contributed by the KODIAQ team, PI Nicolas Lehner, data lead John M. O'Meara.

KOA Services

- *Search* by instrument, position, time, program information, and more
- *Find* recommended calibration files
- *Search* for Moving Objects
- *Browse* or *download* tables of public data
- *Visualize* Keck data
- *Search* for weather data
- *Access* and *download* science and calibration data for all instruments through a Python client

Want to contribute data? Can't find what you need? Contact our Help Desk!

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Python and TAP Access to KOA Data

https://koa.ipac.caltech.edu

We summarize the features of five IVOA-compliant clients for accessing data from the Keck Observatory Archive (KOA). Scan the QR Code for examples and links to the clients. Queries for raw data for all active and retired instruments are available through these services.

IRSA Viewer

- Web-based GUI
- Convenience methods to query by date and position
- Complex queries

TAP+ & PyVO

- Python-based API
- Complex queries

Table Access Protocol (TAP)

TOPCAT

- Standalone GUI
- Complex queries

PyKOA

- Python-based API
- PI access to proprietary data
- Calibration association
- Methods for common and complex queries and downloading data

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