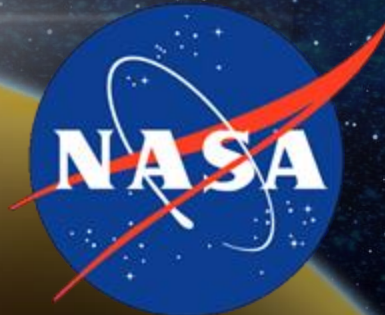


Plans for the NASA Ariel Science Center And Support for Community Participation in Ariel



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12 January 2025



The NASA Ariel Science Center (NASC)



- NASA's initial partnership with ESA on Ariel (PI Giovanna Tinetti) is through the CASE project (PI Mark Swain) for contribution of the optical FGS sensors and hosting the US Ariel Data Archive
- NASA is establishing the NASA Ariel Science Center (NASC) at IPAC/Caltech to support U.S. participation in and amplify the scientific return of Ariel.
 - Similar to what NASA has been done for previous ESA-NASA partnerships: e.g., Euclid (ENSCI), Herschel (NHSC)
- NASC designed to facilitate and support broad community usage of Ariel data and enhance the overall science return of the mission
 1. *Funding for US Community participation and contribution*
 2. *Community Engagement and Support*
 3. *Ariel Ground System Participation*
 4. *User Analysis Environment*

Community Funding Program Spans the Ariel Mission



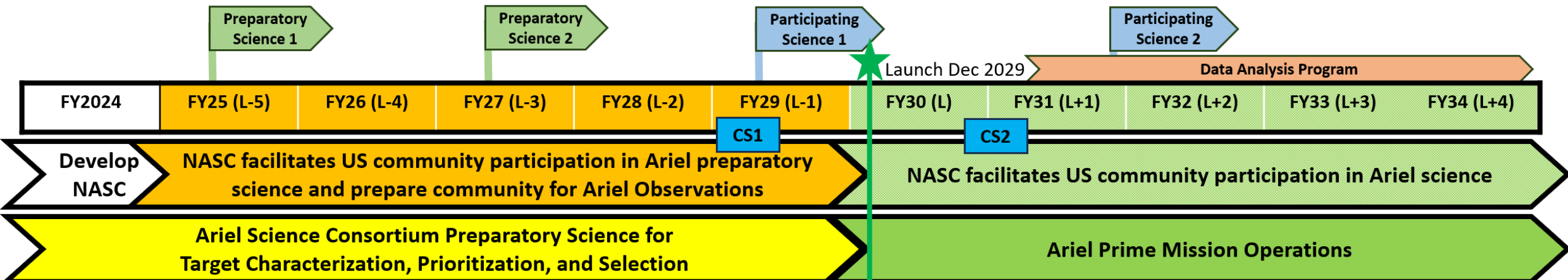
Funding programs aimed to enable community to engage with and contribute to Ariel Science
 Three phases to the program to span the mission lifetime

- **Contributions to Ariel Science via Preparatory Science Program (pre-launch)**
- **Participating Scientist Program (pre- and post-launch)**
- **General Community Ariel data analysis support (post-launch)**

Preparatory Science Program 1 (FY25 – FY26)
 Preparatory Science Program 2 (FY27 – FY28)
 Enables US community participation in Ariel Prep Science and target selection/prioritization

Participating Scientist Program (PSP) 1 (FY29 – FY31)
 Participating Scientist Program (PSP) 2 (FY32 – FY34)
 Enables US Community participation in Ariel Science
 Prepares community for launch and Ariel data

Data Analysis Program (FY31 – FY34)
 Annual call
 Coordinated with XRP and ADAP
 Enables analysis of Ariel data

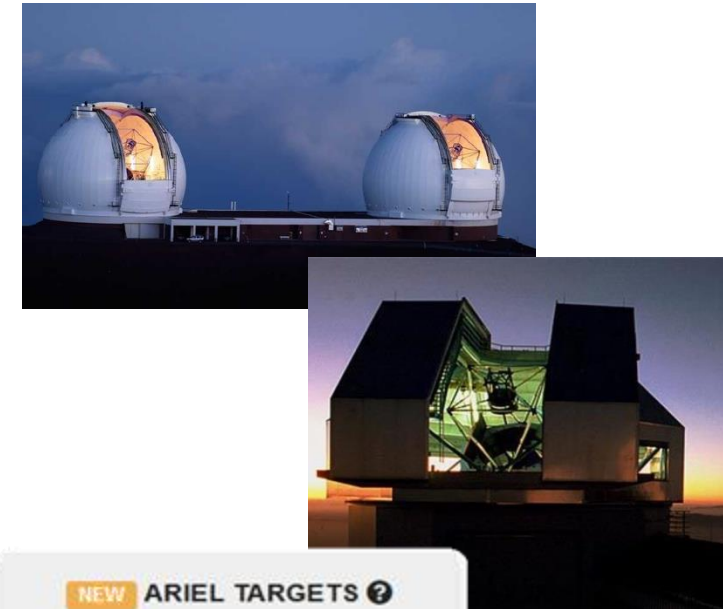


NASA Preparatory Science Call 1



US Contribution to Ariel Preparatory Science (USCAPS)

- Goal is to contribute to and provide observing of targets of interest to the Ariel mission and consortium
- Worked with Ariel PI (Giovanna Tinetti), observing-oriented Ariel Science Consortium Working Group leads (Billy Edwards, Giusi Micela, and Camilla Danielski), and ESA Project Scientist (Theresa Lueftinger) to identify key areas where US astronomers can contribute
 - Confirmation of **TESS candidates** appropriate for Ariel targets
 - Determination of **masses and orbits for known planets**
 - **Stellar characterization** of host stars
- 2 year observing program
- NASA making available 3 nights per semester on Keck and 10 nights per semester on WIYN: any instrument (2025B, 2026AB, 2027A)
 - Mandatory Notices of Intent were due: 12 Dec 2025
 - Proposals due date: 04 February 2025
- Goal is to start observing Summer 2025



<https://exofop.ipac.caltech.edu/>

Know Thy Star, Know Thy Planet 2 Conference

February 3 - 7, 2025

CALTECH | PASADENA, CA, USA



Know Thy Star 2 will focus on the ways that stars both enable and limit our ability to determine planetary masses, orbits, bulk compositions, and atmospheric abundances, as well as the state-of-the-art knowledge and techniques that have been developed to characterize and mitigate stellar effects. By Knowing Thy Star, we can better Know Thy Planet!

Deadline for *regular in-person* registration: 17 January 2025

knowthystar2@ipac.caltech.edu



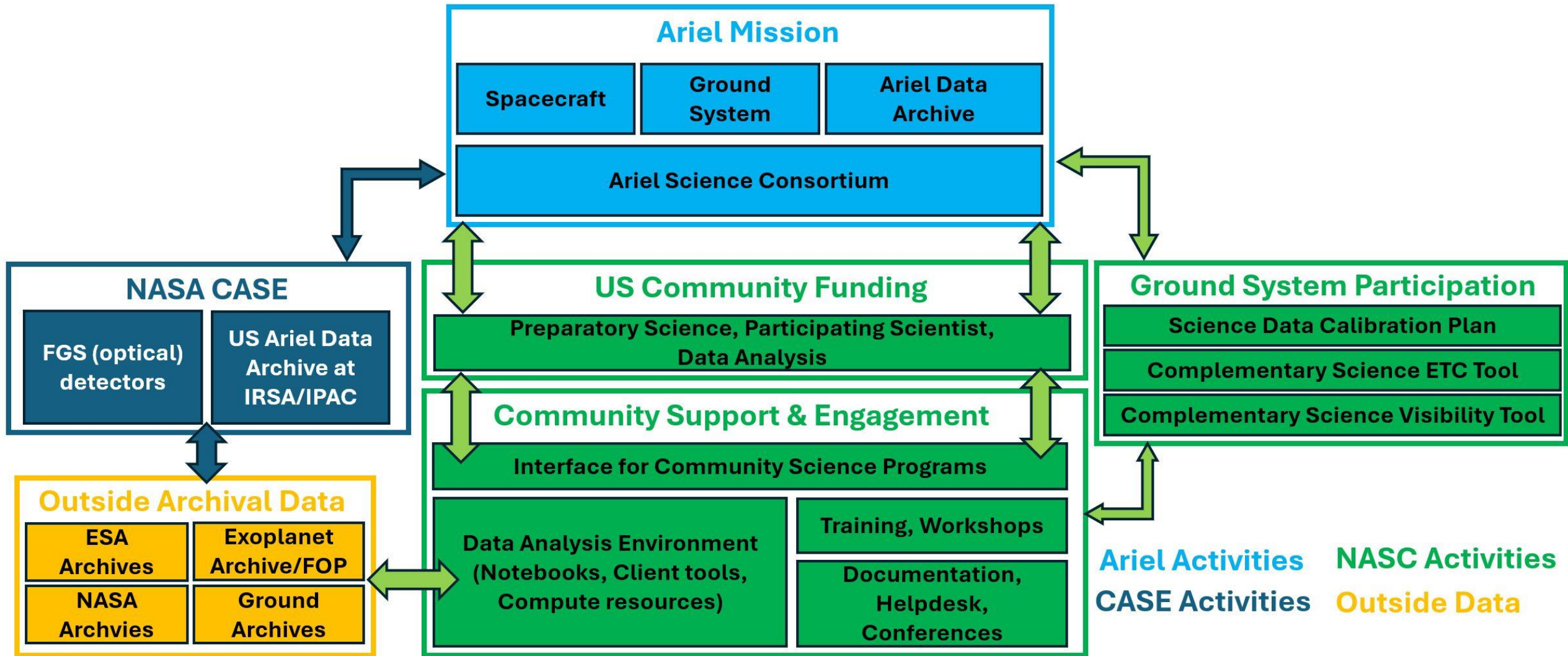
Invited Speakers:

- Megan Ansdell (NASA HQ)
- Megan Bedell (Flatiron)
- Jennifer Burt (JPL)
- Bill Chaplin (University of Birmingham)
- Jessie Christiansen (NExSci-Caltech/IPAC)
- Knicole Colon (GSFC)
- James Davenport (University of Washington)
- Dan Huber (University of Hawaii)
- Davy Kirkpatrick (Caltech/IPAC)
- Adam Kraus (University of Texas, Austin)
- Eve Lee (McGill University)
- Elisabeth Newton (Dartmouth University)
- Peter Plavchan (GMU)
- Ben Rackham (MIT)
- Heike Rauer (DLR)
- Malena Rice (Yale University)
- Rachael Roettenbacher (University of Michigan)
- James Rogers (UCLA)
- Alessandro Sozetti (INAF)
- Jessica Spake (Caltech)
- Jamie Tayar (University of Florida)
- Giovanna Tinetti (UCL)
- Luis Welbanks (ASU)
- Rob Zellem (GSFC)

conference.ipac.caltech.edu/knowthystar2



Relationship Between NASC, Ariel, and CASE



Targets and Observing Needs



Released a preliminary set of targets as part of the Proposal call

Target lists changeable and adaptable at the needs of the Ariel project and as the consortium establishes priorities and makes progress

TESS Candidates: ~380 targets

Confirmation of TESS candidates and determination of masses

- Time Series photometry
- High resolution imaging
- Spectroscopy and precision radial velocity

Known Exoplanets: ~120 targets

Determination of quality masses of known exoplanets

- Precision radial velocity for 30% or better masses

Exoplanet host stars: ~50 targets

Determination of stellar parameters and abundances

- Moderate and high resolution stellar spectroscopy



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Our goal is to enable broader US partnership with and contribute to the needs of the on-going Consortium working group efforts