Dr. Christina Hedges

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Director of NASA TESS Science Support Center | Data Processing Center Lead for NASA Pandora Smallsat | Astrophysics Researcher

Education

University of Cambridge / PhD In Astronomy
October 2013 - July 2017, Cambridge, UK
University of Birmingham / Masters in Physics and Astrophysics (MSci)
September 2009 - July 2013, Birmingham, UK

Employment

Director of NASA TESS Mission Science Support Center

June 2022 - **Present**, University of Maryland Baltimore County, NASA Goddard Space Flight Center

I lead a team dedicated to supporting the scientific community in maximizing the impact of TESS data. I ensure that our center provides the tools and resources necessary to enable the scientific work of the community, including discovery and characterization of exoplanets. My role involves managing staff scientists and working with other mission partners, while also contributing to the advancement of exoplanet research.

Data Processing Center Lead for NASA Pandora SmallSat Mission

June 2022 - **Present**, University of Maryland Baltimore County, NASA Goddard Space Flight Center

I am responsible for developing the data processing pipeline that will analyze raw Pandora data during operations, and will produce spectra of exoplanet atmospheres. I collaborate with mission engineers and scientists to ensure that the pipeline delivers high-quality, scientifically valuable data. My work is open source and uses best practices for modern Python programming, ensuring the pipeline will provide rigorous results.

Research Scientist

June 2020 - June 2022, Bay Area Environmental Research Institute at NASA Ames Research Center

Kepler/K2 Guest Observer Office / Exoplanet Support Scientist

June 2017 - June 2020, Bay Area Environmental Research Institute at NASA Ames Research Center

Science

My research spans exoplanet discovery and characterization, time-domain astronomy, and the development of advanced methodologies for analyzing astronomical imaging and time series data. I specialize in leveraging techniques such as linear algebra and machine learning to extract faint signals from large datasets, enabling new insights into planetary systems and stellar phenomena. My work integrates cutting-edge statistical models with data from NASA missions such as TESS, Kepler, and the upcoming Pandora Mission, advancing both the scientific understanding and the tools available to the broader research community.

Recent First Author Publications

→ **Hedges, Christina** et al. "Linearized Field Deblending: Point-spread Function Photometry for Impatient Astronomers". *Astronomical Journal* 162. 3(2021): 107.

→ **Hedges, Christina** et al. "TOI-2076 and TOI-1807: Two Young, Comoving Planetary Systems within 50 pc Identified by TESS that are Ideal Candidates for Further Follow Up". *Astronomical Journal* 162. 2(2021): 54.

→ **Hedges, Christina** et al. "Multiwavelength Photometry Derived from Monochromatic Kepler Data". *Astronomical Journal* 161. 2(2021): 95.

Mentoring

Throughout my career, I have prioritized mentoring the next generation of scientists and engineers.
- I mentor a graduate student shadow who is working with me on developing software for the Pandora mission.
- I fund and mentor two postdoctoral researchers who are working with me on extracting asteroid data from TESS observations.
- I have mentored several NASA interns at both Ames and GSFC, providing them with hands-on experience in research and mission support.
- I collaborate with other staff scientists at NASA GSFC to jointly mentor postdocs and students, fostering science collaborations.

My mentorship approach includes aligning projects I give with individual career goals, identifying and prioritizing opportunities that help individuals meet those goals, and offering constructive feedback at regular 1-1 meetings to guide mentees. Interns, students, and postdocs that have worked with me are successfully moving up to their next career steps.

Leadership

In my leadership roles, I focus on fostering collaboration and empowering individuals. As the Director of the TESS Science Support Center, **I lead a team of five staff scientists** dedicated to enabling science discoveries with TESS data. I oversee team operations, prioritize key projects, and ensure the delivery of critical resources to the scientific community. As the Lead Pipeline Scientist for the Pandora SmallSat mission, I collaborate with engineers, scientists, and mission partners to guide the development of a robust, open-source data pipeline and ensure my work will meet requirements. My leadership style emphasizes clear communication, delegation, and creating an environment where every team member is empowered and valued.

NASA Reviews and Program Management

I have played a key role in organizing and managing NASA reviews for TESS, where I have written calls for proposals, overseen the logistical execution of reviews, and ensured compliance with NASA policies and guidelines, and interfaced directly with NASA Headquarters. This dual perspective, both as a scientist and someone within NASA, provides me with a comprehensive understanding of NASA's funding and evaluation processes.

NASA Awarded Grants

I have successfully secured over $2M in competitive NASA grants to advance NASA's science goals and increase science from NASA's exoplanet missions.

PDART 2018 [Proposal Number 19-PDART19_2-0056]:
Leveraging the NASA Exoplanet Missions for Planetary Science **($1.3M)**

ADAP 2018 [Proposal Number 18-2ADAP18-0200]:
Rescuing Kepler's Background and Crowded Targets **($670K)**

TESS Cycle 2 [Proposal Number GO 22214]:
A High Precision Survey To Characterize The Dynamical History Of Main Belt Asteroids **($150K)**

Hubble Space Telescope Cycle 25 [Proposal Number 15428]:
Sub-Neptune Atmosphere Characterization in a Multi-Planet System **($70K)**