Angela Burke

email: burke209@purdue.edu

Education

Ph.D. Candidate, Planetary Science, Aug 2021-present
Purdue University (*West Lafayette, IN)*
Advisor: Dr. Stephanie Olson

B.S., Earth System Science, May 2019 (Summa Cum Laude)
University of Alabama in Huntsville *(Huntsville, AL)*
Concentration: Atmospheric Science

Technical Skills

-Programming Languages: Python, IDL, Fortran, Linux OS, LaTeX, and C++
-General Climate Models: ExoPlaSim and ExoCAM
-Radiative Transfer Models: NEMESIS, SBDART, and AER LBLRTM

Research Experience

Purdue Planetary Habitability and Biosignatures Lab
Graduate Research Assistant, August 2021- present *(West Lafayette, IN)*

- Investigating abiotic oxygen production in planetary atmospheres by modeling water loss due to planetary obliquity and eccentricity, planetary evolution on geologic timescales, and the simulated appearance of abiotic oxygen signatures to next-generation observing platforms

NASA Short-term Prediction Research and Transition (SPoRT) Center
Graduate Research Assistant, August 2019 – August 2021 *(Huntsville, AL)*

- Investigated methods to extend the use of multi-spectral imagery products from the GOES-R series Advanced Baseline Imager (ABI) and used machine-learning methods to improve the identification of dust and fog in ABI products

Undergraduate Research Assistant, Sept 2016 – May 2019 *(Huntsville, AL)*

- Produced training products on satellite imagery applications for National Weather Service forecasters; analyzed multi-spectral imagery products to identify suitable case studies

NASA Jet Propulsion Laboratory (JPL), Planetary and Exoplanetary Atmospheres Group
JPL SIP Intern, May – Aug 2019 & May – Aug 2020 *(Pasadena, CA)*

- Built a database of full longitudinal maps and radiative transfer retrievals from ground-based observations to analyze the morphology of Jupiter's polar regions
- Devised an improved method of limb correction for ground-based observations to enhance return from, quantitative analysis of poleward change in radiance

Cooperative Institute for Research in the Atmosphere (CIRA)
NOAA Hollings Summer Intern, May – Aug 2018 *(Fort Collins, CO)*

- Validated the accuracy of the CIRA cloud-cleared background product with GOES-16 ABI data and investigated the utility of the product as input into in a GOES-16 multi-spectral imagery product where surface emissivity negatively impacted interpretation

Oak Ridge National Laboratory
Higher Education Research Experience Participant, May-Aug 2017 *(Oak Ridge, TN)*

- Collaborated with NASA SPoRT and ORNL Critical Infrastructures Team to validate the VIIRS Day-Night Band (DNB) Power Outage Detection Product

Publications

Jernigan, J., Lafleche, E., **Burke, A.**, & Olson, S. (2023). Superhabitability of High-Obliquity and High-Eccentricity Planets. *The Astrophysical Journal*.

Berndt, E. B., Elmer, N. J., Junod, R. A., Fuell, K. K., Harkema, S. S., **Burke, A. R**., & Feemster, C. M. (2021). A Machine Learning Approach to Objective Identification of Dust in Satellite Imagery. *Earth and Space Science,* 8(6), e2021EA001788.

Selected Presentations

Burke, A., Olson, S. L., and Kang, W. (2022). The Effect of Obliquity on Stratospheric Humidity and Implications for Atmospheric Evolution. American Geophysical Union Fall Meeting, Abstract #P35C-1894. Chicago, IL.

Burke, A., Olson, S. L., and Kang, W. (2022). The Effect of Obliquity on Stratospheric Humidity and Implications for Atmospheric Evolution. Goldschmidt Annual Meeting, Abstract #12451. Honolulu, HI.

Burke, A., Orton, G., Sinclair, J. (2020). Characterizing Jupiter's Polar Vortices at Mid-Infrared Wavelengths. American Geophysical Union Fall Meeting, Abstract #A076-02. Online e-Lightning Session.

Burke, A., Wade, R., Griffin, R., Lyza, T., and Conrad, D. (2019). Analyzing Tornadic Debris Signatures by Integrating Aerial Imagery and Polarimetric Radar Data in GIS. American Meteorological Society Annual Meeting, Paper 1.6. Phoenix, AZ.

Burke, A., Orton, G., Sinclair, J. (2019). Characterizing the Variability of Jupiter's Polar Regions. American Geophysical Union Fall Meeting, Abstract #P21G-3447. San Francisco, CA.

Burke, A., and Berndt, E. (2019). Surface Emissivity Impacts on GOES-R Series Multi-spectral Imagery Applications. American Geophysical Union Fall Meeting, Abstract #U14C-06. San Francisco, CA. ***(Invited)***

Burke, A., Lindsey, D., Rogers, M., Miller, S., and Solbrig, J. (2018). Developing Cloud-cleared Backgrounds to Assist in GOES-16 Advanced Baseline Imager Multi-spectral Imagery Applications. American Geophysical Union Fall Meeting, Abstract #A12A-07. Washington, D.C. ***(Received an Outstanding Student Presentation Award)***

Academic Awards & Activities

Purdue, Earth, Atmospheric, and Planetary Sciences Department *(West Lafayette, IN)*

- AbGradCon Proposal Writing Retreat (May 2023, Catalina Island, CA)
- Purdue EAPS Passport Week (2022)

UAH, College of Science & Atmospheric Science Department *(Huntsvile, AL)*

- UAH Atmospheric Science Departmental Award for Outstanding Undergraduate Achievement (2018)
- NOAA Ernest F. Hollings Scholarship (2017 - 2019)
- UAH Charger Distinction Scholarship (2015 - 2019)
- College of Science "Science Ambassador" **(**2016-2020)
- Rocket City WeatherFEST Volunteer (2015-2018) and Coordinator (2019)
- Girl's Science & Engineering Day Volunteer (2016-2017) and Coordinator (2018)