

# Angela Burke

email: burke209@purdue.edu

## Education

### **Ph.D., 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++

**-Data Analysis Programs:** NEMESIS, SBDART, AER LBLRTM, ArcGIS, and ENVI

## Research Experience

### **Purdue Planetary Habitability and Biosignatures Lab**

**Graduate Research Assistant**, August 2021- present (*West Lafayette, IN*)

- Investigating abiotic oxygen production in planetary atmospheres through the modeling of water loss due to planetary obliquity, 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 imagery applications from various satellite sensors 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 of ground-based observations and radiative transfer retrievals 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 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

## **UAH, Atmospheric Science Department**

**EarthKAM Team Member**, Sept 2015- Sept 2016 (*Huntsville, AL*)

- Supported active EarthKAM missions, analyzed EarthKAM images for STEM learning applications, and created 9 geoscience-themed lesson plans for teachers to use with the image

### **Publications**

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**

#### **Oral Presentations**

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

#### **Posters**

- 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., 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.
- Burke, A. (2018). *Developing Cloud-cleared Backgrounds to Assist in GOES-16 Advanced Baseline Imager Multi-spectral Imagery Applications*. Wernher von Braun Memorial Symposium Student Poster Competition. Huntsville, AL. (***Received 1<sup>st</sup> place in the Undergraduate Physical Sciences category***)

### **Academic Awards**

- UAH Atmospheric Science Departmental Award for Outstanding Undergraduate Achievement (2018)
- NOAA Ernest F. Hollings Scholarship (2017-2019)
- UAH Charger Distinction Scholarship (2015 - 2019)

### **Outreach**

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

- Purdue EAPS Passport Week (2022)

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

- 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)