JEFFREY A. BALCERSKI, PH.D. – CURRICULUM VITAE

Kent State University
800 E. Summit St., Kent, Ohio 44240

EMPLOYMENT AND RESEARCH

Assistant Professor, Kent State University, Aerospace Engineering, 2024-present
Senior Researcher, Ohio Aerospace Institute/Parallax Advanced Research, 2018 to 2024

- Maintain competitively awarded science and technology research for Venus exploration
- Contract support to NASA GRC Space Science Project Office

Research Engineer, NASA Glenn Research Center, 2015 to 2024

- Long-Lived In-situ Solar System Explorer (LLISSE) Project Scientist
    - Science support for Venus surface exploration platform development
- Glenn Extreme Environment Rig (GEER) Project Scientist
    - Chemical analytics of Venus near-surface atmosphere simulation chamber

NASA Postdoctoral Program Fellow, Glenn Research Center, 2015 to 2018

Adjunct Faculty, Case Western Reserve University, Department of Earth, Environmental, and Planetary Science, 2016 to 2024

Graduate Research Fellow, Case Western Reserve University, 2008 to 2015

PROFESSIONAL COMMUNITY SERVICE

- Panelist – NASA Planetary Exploration Science Technology Office Symposium – Venus and Mercury technology panel, 2024
- Undergraduate Honors Thesis Co-Advisor – "Evaluating the Role of Polysulfur in the Atmosphere of Venus". Gabrielle Adams, The Ohio State University, 2023
- Organizing Committee – NASA Technology Showcase for Planetary Science Missions, 2023
- Master's Thesis Co-Advisor – "Insights into the Mechanical Lithosphere of Venus: A Structural Analysis of Ridge Belts". Zachary Williams, North Carolina State University, 2022
- Session Chair – "Venus Beyond the Veil" - American Geophysical Union Fall Meeting, 2022
- Panelist and Study Group Member, Keck Institute for Space Studies Venus In Situ Sample Capture Workshop, 2021-2022
- VEXAG Virtual Colloquium Series Chair, 2021 - 2023
- VEXAG Steering Committee Member and Technology Lead, 2020-2023
- Panelist and Report Co-Author, Venus Lander Working Group, 2018
- Report Co-Author, Venus Technology Roadmap Working Group, 2018
- Co-Mentor, NASA Summer Internship Program, 2017
- Meeting Chair, Venus Modeling Workshop, 2016 to 2017
- Science Advisory Committee Lead, Glenn Extreme Environment Rig (GEER) Facility, 2016-present
- NASA Review Panels (Science, Technology, and Mission), 2012 to current
- Program committee and report author, Venus Science Priorities for Laboratory Measurements and Instrument Definition Workshop, 2015
- Participating scientist and education contributor, MESSENGER Student PI Program, 2013

EDUCATION

Ph.D., Planetary Sciences, Case Western Reserve University, 2008 to 2015

B.S., Geology, Eastern Michigan University, 2004 to 2007

B.S.E., Engineering Physics, University of Michigan, Ann Arbor, 1993 to 1998

RELEVANT EXPERIENCE

Orbital Remote Sensing: GIS mapping, Planetary Data System, ISIS mission image processing, SPICE kernel

Software development: C/C++, Javascript, Python, Linux/UNIX Shell, MATLAB, Fortran, GIS

Planetary mission design for Jupiter Trojan Tour: NASA/JPL Planetary Science Summer School
Mission development and exploration technology maturation
Thermodynamic equilibrium modeling of atmospheric chemistry
Mission P.I. and leadership training – NASA PI Launchpad

MENTORSHIP

Current Direct Advisor – (3) Graduate Students, (2) Ohio Space Grant Consortium STEM Undergraduate Scholarship Research students, (2) Summer Undergraduate Research Experience students, (2) Ohio Space Grant Consortium Summer Internship students
Co-Advisor – 1 Undergraduate Honors Student (Earth Sciences)
Mentor – AstroFlashes Competitive Space Engineering Team
Co-Mentor Kent State High Powered Rocket Team

AWARDS AND GRANTS

P.I. – University Nanosats Programs NS-12 Cycle (2024-2026), ($275k)
P.I. - *Lofted Environmental and Atmospheric Venus Sensors* (2021-2023), NASA NIAC Phase II ($496k)
Co.-I. - *A Venus Durable Actuator and Electronics System* (2021-2024), NASA HOTTECH2, Honeybee Robotics ($46k)
Co.-I. - *High Temperature UV near field Imager* (2021-2023), NASA HOTTECH2, General Electric Company ($56k)
Consultant - *Windspeed Sensor for Planetary Science Applications* (2023-2024), Sporian Microsystems ($8k)
P.I. - *Venus In Situ Surface Imager* (2019-2022), NASA PICASSO ($933k)
P.I. - *Structural Analysis of Venus Ridge Belts Using High Resolution Stereo-Derived Topography* (2019-2021), NASA Solar System Workings ($216k)
P.I. - *Lofted Environmental and Atmospheric Venus Sensors* (2018-2019), NASA NIAC Phase I ($125k)

PUBLICATIONS

Balcerski, J., Jessup, K.-L., Hunter, G., Colozza, A., Zborowski, M., Kremic, T. 2024. Orbital Deployment of Picosat Sensors for Distributed Atmospheric Sensing. In prep.

Williams, Z., Byrne, P., **Balcerski, J.** 2025. Insights into the Mechanical Lithosphere of Venus: A Structural Analysis of Ridge Belts. Submitted to Journal of Geophysical Research.

Balcerski, J., Santos, A., Port, S., Phillips, K. 2025. Long-Duration Simulation of Venus' Surface Environment with the Glenn Extreme Environment Rig. Submitted to *Earth and Space Sciences*.

Santos, A., **Balcerski, J**., Burr, D. M., Helbert, J., Hunter, G., Izenberg, N., … Port, S. 2021: The Importance of Venus Experimental Facilities. Bulletin of the AAS, 53(4).

Balcerski, J., Jessup, K.-L., Hunter, G., Colozza, A., Zborowski, M., & Makel, D. 2021. Exploration of Venus' Atmosphere by Low-Cost Distributed Sensing Architecture. Bulletin of the AAS, 53(4).

Kremic, T., Amato, M., **Balcerski, J.**, Gilmore, M., Hunter, G., Kiefer, W., … Thompson, T. 2021. Venus Surface Platforms. Bulletin of the AAS, 53(4).

Klimczak, C., Ernst, C.M., Byrne, P.K., Solomon, S.C., Watters, T.R., Murchie, S.L., Preusker, F., **Balcerski, J.A.**, 2013: Insights into the subsurface structure of the Caloris basin, Mercury, from assessments of mechanical layering and changes in long-wavelength topography, *J. Geophys. Res.*, **118**, pp. 2030–2044, doi:10.1002/jgre.20157.

Dombard, A.J., Hauck, S.A., II, **Balcerski, J.A.**, 2013: On the origin of mascon basins on the Moon (and beyond), *Geophys. Res. Lett.*, **40**, pp. 28–32, doi:10.1029/2012GL054310.

Diniega, S.; Sayanagi, K.M., **Balcerski, J.**, et al., 2013: Mission to the Trojan asteroids: Lessons learned during a JPL Planetary Science Summer School mission design exercise, *Planet. Space Sci.*, **76**, pp. 68–82.

Zuber, M., …, **Balcerski, J.A.**, et al., 2012: Topography of the Northern Hemisphere of Mercury from MESSENGER Laser Altimetry, *Science*, **336**, pp. 217–220, doi:10.1126/ science.1218805.

CONFERENCE PAPERS AND PRESENTATIONS

Voyzey, O. M., and **Balcerski, J. A.**, 2025. Dynamic Altitude Skipping for Enhanced Planetary Observation: A Small Satellite Analysis. 2025 International Planetary Probe Workshop. Abstract 177.

Wible, L., Ortiz, J., **Balcerski, J.** 2025. Implications for Martian Ocean Chemistry on Potential Hydrothermal Mineral Deposits. 56th Lunar and Planetary Science Conference. Abstract 1473.

Balcerski, J.A., Jessup, K.L. 2024. LEAVES – An Orbit-Deployable Lightweight Sensor Platform for Measuring Venus' Global Atmosphere. 2024 International Planetary Probe Workshop.

Balcerski, J.A., Kremic, T., Chi, I. 2024 - Venus Atmosphere Experimental Simulation Performance of the Glenn Extreme Environment Rig. 55th *Lunar and Planetary Science Conference*, Abstract 2060.

Balcerski, J.A., Jessup, K.L. 2023. LEAVES – Distributed Sensing of Venus' Entire Cloud Depth with Orbit-Deployable Sensing Platforms. 2023 Int. Planetary Probe Workshop.

Adams, G.M., **Balcerski, J.A.**, Mills, F.P. 2022. Laboratory Kinetic Measurements of Polysulfur Reactions in the Atmosphere of Venus. Venus Exploration and Analysis Group 20th Meeting.

Balcerski, J.A., Jessup, K.L., Hunter, Kremic, T., G.W., Colozza, A.J., Zborowoski. 2022. LEAVES – An Orbit-Deployable Lightweight Sensor Platform for Measuring Venus' Global Atmosphere. Int. Planetary Probe Workshop 2022.

Williams, Z., Byrne, P**., Balcerski, J**. 2022. Insights into the Mechanical Lithosphere of Venus: A Structural Analysis of Ridge Belts. American Geophysical Union Fall Meeting. # P55B-07.

Balcerski, J.A., Jessup, K.L., Hunter, G.W., Kremic, T., Colozza, A.J., Zborowoski. 2021. LEAVES – A Platform for Widely Distributed Exploration of Venus' Atmosphere

Williams, Z. W., Byrne, P. K., **Balcerski, J.A**. 2020. A Global Study of Ridge Belt Morphology and Morphometry on Venus. 51*st Lunar and Planetary Science Conference*. Abstract 2375.

Balcerski, J.A., Kremic, T., Hunter, G.W., Tolbert, C. M., Phillips, K. G. 2020. Venus Exploration Technologies and Experimental Facilities at Glenn Research Center. 51st *Lunar and Planetary Science Conference*, Abstract 2626

Balcerski, J.A., Hunter, G.W., Colozza, A.J., Zborowoski, M.G., Makel, D.B. 2019. LEAVES – A Mission Augmentation for Global In Situ Atmospheric Exploration. *2019 VEXAG Annual Meeting*. Abstract 8026.

Williams, Z. W., Byrne, P. K., **Balcerski, J.A**. 2019. A Global Study of Ridge Belt Morphology and Morphometry on Venus. *2019 VEXAG Annual Meeting*. Abstract 8027.

Balcerski, J.A., Byrne, P.K. 2018. Fault Analysis of Venus Ridge Belts Using Stereo-Derived Topography. *International Venus Conference* (did not occur) and *2018 VEXAG Annual Meeting*.

Balcerski, J.A., Byrne, P.K. 2018. High-Resolution Ridge Belt Morphology at Dylacha Dorsa. *49th Lunar and Planetary Science Conference*, Abstract 2735.

Balcerski, J.A., Hunter, G.W., Colozza, A.J., Zborowoski, M.G., Makel, D.B. 2018. A Low-Mass Atmospheric Sensor Platform Concept for Distributed Exploration at Venus. *49th Lunar and Planetary Science Conference*, Abstract 2038.

Balcerski, J.A. 2017. Limits of Climate-Driven Wrinkle Ridge Formation on Venus. *Venus Modeling Workshop*, Abstract 8027.

Balcerski, J.A., Hauck, S.A., II, Dombard, A.J., 2015. Topography on the crust-mantle boundary in lunar basins due to genetic and evolutionary processes. *46th Lunar and Planetary Science Conference*, Abstract 3002.

Balcerski, J.A., Hauck, S.A., II, Sun, P., Klimczak, C., Byrne, P.K., Phillips, R.J., Solomon, S.C., 2013. New constraints on timing and mechanisms of regional tectonism from Mercury's tilted craters. *44th Lunar and Planetary Science Conference*, Abstract 2440.

Balcerski, J.A., Hauck, S.A., II, Dombard, A.J., 2012. The effect of initial compensation state on retention of superisostasy in lunar impact basins. *Second Conference on the Lunar Highlands Crust*, Abstract 9020.

Nahm, A.L., …, **Balcerski, J.**, et al., 2012. TASTER: Trojan ASteroid Tour, Exploration, and Rendezvous, a JPL Planetary Science Summer School Mission Design Exercise. *43rd Lunar and Planetary Science Conference*, Abstract 2857.

INVITED TALKS

"Reproducing Venus Surface Conditions at NASA Glenn". Cleveland Astronomical Society. 2023

"Into the Crucible: The Next Era of Venus Exploration". Baldwin-Wallace College. 2022

"Venus in Our Backyard – Laboratory Simulation of the Surface Environment". – Geological Society of America Annual Meeting. 2022