Jade Comellas

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(505) 603-0938 | comellas@hawaii.edu

Education

PhD in Earth and Planetary Sciences, University of Hawai'i at Mānoa (Anticipated 2025)
- Hawai`i Institute of Geophysics and Planetology
- Advisor: Dr. Shiv Sharma

Masters of Science in Earth and Planetary Sciences, University of Hawai'i at Mānoa, Awarded Fall 2023
- Hawai`i Institute of Geophysics and Planetology
- Advisor: Dr. Shiv Sharma

Bachelor of Science in Earth and Planetary Sciences, University of New Mexico (UNM), 2020
- *Summa Cum Laude,* GPA: 3.94
- Senior Thesis: The Sedimentary Structure and Morphology of Ireson Hill Deposit, Gale Crater, Mars.
- Advisor: Dr. Horton Newsom

Honors & Awards

Fred M. Bullard Fellowship, University of Hawai'i	2021
Vincent C. Kelley award for Outstanding Field Geologist, UNM	2021
Leonard Research Fellowship, UNM	2020
Departmental Honors, Earth and Planetary Sciences, UNM	2020
Gorham Field School Scholarship	2020
General Thomas Campbell A&S Scholarship	2019-2020
Dean's List, College of Arts and Sciences	2018-2020
Dean's List, School of Engineering	2018
Computer Science Van Dyke Scholarship	2017
Los Alamos National Laboratory Employee Fund Scholarship	2016
Rising Stars in the Southwest Scholarship	2016

Research Experience

University of Hawaii 2021-current
- Mars2020 SuperCam team member
- Analyzing Raman and LIBS data from Mars2020 SuperCam instrument
- Performing laboratory research on Mars-analogue materials with Raman spectroscopy, LIBS and VISIR spectroscopy
- Participating in rover operations as a science Payload Uplink Lead (sPUL) for Mars2020 SuperCam instrument

Los Alamos National Laboratory Post-Baccalaureate Internship, ISR-2 (Space and Remote Sensing) 2020-2021
- Tracked instances of elevated manganese and diagenetic features along the Curiosity rover's traverse
- Developed new geologic classification methods to better understand the geochemistry of Gale crater, Mars
- Developed new lithium calibration model for Curiosity's ChemCam instrument
- Conducted rover operations as a science Payload Downlink Lead (sPDL) for Curiosity's ChemCam instrument
- Mentors: Drs. Nina Lanza, Patrick Gasda, and Ann Ollila

University of New Mexico Undergraduate Research, Earth and Planetary Sciences Department 2018-2020
- Senior thesis: The Sedimentary Structure and Morphology of Ireson Hill Deposit, Gale Crater, Mars
- Studied distribution of small craters on the Curiosity rover's traverse
- Discovered and documented several previously unknown martian craters
- Trained for rover operations as a science Payload Uplink Lead (sPUL) for Curiosity's ChemCam instrument
- Advisor: Dr. Horton Newsom

Los Alamos National Laboratory Student Internship, ISR-1 (Space Science and Applications) 2018
- Searched for super flares in solar-analog stars with LANL RAPTOR telescope system
- Mentor: Dr. Lisa Winters

Los Alamos National Laboratory Student Internship, XIT (Experience IT) 2017
- Trained in Amazon Web Services and researched the pros and cons of different UI tools
- Mentor: Brady Jones

Los Alamos National Laboratory Student Internship, Departmental Computer Services (XIT, formerly DCS) 2016
- Responsible for web development using Python, Java Script, MySQL, CSS, and HTML.

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- Researched optimal web development platforms and tools
- Mentor: Sandy Frost

"GUTS y Girls" - Santa Fe Institute Workshop and Summer Camp Student Mentor 2011 - 2015

- Mentored high school and middle school girls in computer science and technology
- Supported diversity in STEM
- Programming languages taught: Starlogo, Netlogo, Processing, App inventor

Publications

1. **Comellas, J. M.**, Essunfeld, A. Morris, R., et al. (2024), Elevated-Mn ChemCam Targets Illuminating Mn Redox Cycling and Diagenesis in the Bradbury Rise, Gale Crater, Mars. Submitted to Icarus July 2024
2. Gasda, P. J., **Comellas, J. M**., Essunfeld, A., et al. (2022). Overview of the morphology and chemistry of diagenetic features in the clay-rich Glen Torridon unit of Gale crater, Mars. *Journal of Geophysical Research: Planets*, 127, e2021JE007097. https://doi.org/10.1029/2021JE007097
3. Treiman, A. H., Lanza, N. L., VanBommel, S., … **Comellas, J. M.**, et al. (2023), Manganese-Iron Phosphate Nodules at the Groken Site, Gale Crater, Mars. Minerals 13 (9), 1122.
4. Anderson, R. B., Forni, O., Cousin, A., … **Comellas, J. M**., et al. (2022), Post-landing major element quantification using SuperCam laser induced breakdown spectroscopy. Spectrochimica Acta Part B: Atomic Spectroscopy 188, 106347.

Conference Abstracts

1. **Comellas, J. M.**, Sharma, S. K., Gasda, P. J., et al. (2024), VISIR, Raman, and LIBS Analysis of Terrestrial Analogue Serpentines in Support of the SuperCam Instrument in Jezero Crater, 10th International Conference on Mars 2024 (LPI Contrib. No. 3007)
2. **Comellas, J. M.**, Sharma, S. K., Gasda, P. J., et al. (2023), The Identification of Serpentinization on Mars with Mars2020 SuperCam Instrument. 54th Lunar and Planetary Science Confernce, LPI Contributions 2806, 2940.
3. **Comellas, J. M**., Sharma, S. Kumar, Wiens, R. C., … et al. (2022), An Overview of the SuperCam Instrument Suite in Jezero Crater, Mars. 2022 Goldschmidt Conference.
4. **Comellas, J. M.,** Chertok, M. A., Wychoff, S., … et al. (2022), Triton Ices Mapper: A VNIR Spectrometer Feasibility Study. 53rd Lunar and Planetary Science Conference 2678, 1639.
5. **Comellas, J. M.,** Essunfeld, A., Morris, R., … et al. (2022), Evidence of Multiple Fluid Events in Elevated-Mn Chemcam Targets In The Bradbury Rise, Gale Crater, Mars. Lunar and Planetary Science Conference 53, 2445.
6. **Comellas, J. M.**, Essunfeld, A., Lanza, N., … et al. (2021), Geologic interpretations of elevated-Mn ChemCam targets in the Bradbury Rise, Gale crater, Mars. 52nd Lunar and Planetary Science Conference, 2176.
7. **Comellas, J. M.**, Newsom, H. E., Weissmann, G. S., … et al. (2020), The Sedimentary Structures and Depositional History of Ireson Hill, Gale Crater, Mars. 51st Annual Lunar and Planetary Science Conference, 2586.
8. **Comellas, J. M.**, Newsom, H. E., Scuderi, L. A., … et al. (2019), Sedimentary Structure and Morphology of the Ireson Hill Deposit, Gale Crater, Mars. Ninth International Conference on Mars 2089, 6442.
9. Essunfeld, A., **Comellas, J. M.**, Gasda, P. J., et al. (2023), Monte Carlo Methods for Visualizing Uncertainty on Ternary Plots with ChemCam and SuperCam Data. LPI Contributions 2806, 2900.
10. Morris, R., **Comellas, J. M.,** Essunfeld, A., … et al. (2022), Correlation Heatmaps for Visualizing Trends in Chemical Compositions Across Groups of ChemCam Targets. LPI Contributions 2678, 1718.
11. Gasda, P. J., **Comellas, J. M.**, Essunfeld, A., … et al. (2022), Comparison of Manganese Abundance in Gale and Jezero Craters. Lunar and Planetary Science Conference 53, 1654.
12. Essunfeld, A., **Comellas, J. M.,** Gasda, P. J., … et al. (2022), Grouping chemcam targets by visual characteristics improved by automatic partitioning. Lunar and Planetary Science Conference 53, 2612.
13. Gasda, P. J., **Comellas, J. M.**, Essunfeld, A., et al. (2021), The chemistry and morphology of diagenetic features in Glen Torridon, Gale crater. 52nd Lunar and Planetary Science Conference 2021, 15-19 Mar 2021, Virtual.
14. Essunfeld, A., **Comellas, J. M.**, Lanza, N., … et al. (2021), Attribute Recognition for Grouping Elevated-Manganese ChemCam Targets by Visual Characteristics. 52nd Lunar and Planetary Science Conference, 2180.
15. Acosta-Maeda, T. E., Kelly, E. M., **Comellas, J. M.**, et al. (2023), Analysis of Mars Olivines with the Raman Spectrometer in the Perseverance Rover SuperCam Instrument. LPI Contributions 2806, 2689.

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16. Wiens, R. C., Maurice, S., Clegg, S. M., … **Comellas, J. M.**, et al. (2023), Jezero Crater Floor and Delta Chemistry and Mineralogy Observed by SuperCam in the First 1.5 Years of the Perseverance Rover Mission. AGU Fall Meeting Abstracts 2022, P55A-07.
17. Lopez-Reyes, G., Manrique, J. A., Ollila, A., … **Comellas, J. M.**, et al. (2023), Exploring the Jezero Crater with Supercam: Raman Data Processing and Summary of Raman Detections on Mars. Seventh edition of the Spanish Meeting of Planetary Sciences and Exploration.
18. Lopez-Reyes, G., Veneranda, M., Manrique, J. A., … **Comellas, J. M.**, et al. (2023), Raman Estimation of Olivine Forsterite-Fayalite Ratio: Laboratory Analysis to Refine the Interpretation of SuperCam Detections on Mars. Seventh edition of the Spanish Meeting of Planetary Sciences and Exploration.
19. Sharma, S. K., Olilla, A. M., Lopez-Reyes, G., … **Comellas, J. M.,** et al. (2023), Performance of SuperCam's Remote Raman System at Jezero Crater, Mars. LPI Contributions 2806, 1891.
20. Lanza, N. L., Gasda, P. J., Swanner, E., … **Comellas, J. M.,** et al. (2022), Precipitation of Mn-Bearing Nodules in a Shallow Shoreline Environment in Gale Crater, Mars. 53rd Lunar and Planetary Science Conference 2678, 2689.
21. Lanza, N. L., Gasda, P., Essunfeld, A., … **Comellas, J. M**., et al. (2021), Chemistry of manganese-bearing materials at the Groken drill site, Gale Crater, Mars. 52nd Lunar and Planetary Science Conference.
22. Hoffman, M. E., Newsom, H. E., Adair, B. M., … **Comellas, J. M**., et al. (2019), Atmospheric Implications from the Crater Record Along Curiosity's Traverse, Gale Crater, Mars. Mars Extant Life: What's Next? 2108, 5044.
23. Hoffman, M. E., Newsom, H. E., Adair, B. M., … **Comellas, J. M.**, et al. (2019), The Recent Atmospheric History of Mars Derived from Small Craters Observed by MSL. Ninth International Conference on Mars 2089, 6371.
24. Hoffman, M. E., Newsom, H. E., Adair, B., … **Comellas, J. M., et al. (2019)**, The Recent Atmospheric History of Mars From Small Craters Observed By Msl. 50th Annual Lunar and Planetary Science Conference, 3147.

Professional Presentations

1. Comellas, J. M., Sharma, S. K., Gasda, P. J., et al. (2024), VISIR, Raman, and LIBS Analysis of Terrestrial Analogue Serpentines in Support of the SuperCam Instrument in Jezero Crater, 10th International Conference on Mars 2024, Poster #3278
2. Comellas, J.M., Sharma, S. K. (2023), The Identification of Serpentinization on Mars with Mars2020 SuperCam Instrument. 54th Lunar and Planetary Science Conference, Talk, #2940,
3. Comellas, J.M., Sharma, S. K. (2022), An Overview of the SuperCam Instrument Suite in Jezero Crater, Mars. Goldschmidt Conference, Talk
4. Comellas, J.M., Essunfeld, A. (2022), Evidence of Multiple Fluid Events in Elevated-Mn ChemCam Targets in the Bradbury Rise, Gale Crater, Mars. 53rd Lunar and Planetary Science Conference, Talk, #2445, https://www.hou.usra.edu/meetings/lpsc2022/pdf/2445.pdf
5. Comellas, J.M., Chertok, M. (2022), Triton Ices Mapper: A VNIR Spectrometer Feasibility Study, 53rd Lunar and Planetary Science Conference, Poster, #1639 https://www.hou.usra.edu/meetings/lpsc2022/pdf/1639.pdf
6. Comellas, J.M., Essunfeld, A. (2021), Geologic Interpretations of Elevated-Mn Targets in Bradbury Rise, Gale Crater, Mars, 52nd Lunar and Planetary Science Conference, Virtual, #2176
7. Comellas, J.M., Essunfeld, A.L. (2020), Geologic Patterns of Elevated Manganese along the Curiosity Rover's Traverse, Presented at the LANL Student Symposium, Los Alamos, NM, August 2020 https://www.youtube.com/watch?v=ZGK5ngd7S_8&feature=youtu.be&ab_channel=TheMarsNinja
8. Comellas, J.M., Newsom, H. (2020), "The Sedimentary Structures and Depositional History of Ireson Hill, Gale Crater, Mars." 51st Lunar and Planetary Science Conference, Houston, TX, #2585 https://www.hou.usra.edu/meetings/lpsc2020/pdf/2586.pdf
9. Comellas, J.M., Newsom, H. et al (2019), "The Sedimentary Structure and Morphology of Ireson Hill Deposit, Gale Crater, Mars." *9th International Conference on Mars*, 22-25 July 2019 (poster) https://www.hou.usra.edu/meetings/ninthmars2019/pdf/6442.pdf
10. Comellas, J.M., Winters, L. (2018), Studying the probability of super flares on Solar Analog Stars to better predict space weather, Presented at the LANL Student Symposium, Los Alamos, NM, August 2018 (with Dr. Lisa Winters in ISR-1)
11. Comellas, J.M. (2017), Comparing Amazon Web Service Interface Tools, Presentation to XIT-ISR, Los Alamos, NM, August 2017

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12. Comellas, J.M., Frost, S. (2016), A Web Developer's Toolbox, Presented at the LANL Student Symposium, Los Alamos, NM, August 2016

Relevant Coursework

- Electron Microprobe Analysis (Fall 2023)
- Lunar Geology (Fall 2022)
- Astrobiology seminar (Fall 2022)
- Statistics with R (Fall 2022)
- Data exploration with Python (Spring 2022)
- Explosive Volcanism (Spring 2022)
- Planetary Surfaces (spring 2021)
- Intro to Field Geology (summer 2020)
- Paleoclimatology (spring 2020)
- Environmental Applications and Geophysics (spring 2020)
- Structural Geology (spring 2020)
- Statistics and Data Analysis (spring 2020)
- Planetary Materials and the Evolution of the Solar System (fall 2019)
- Calculus-based Physics II (fall 2019)
- Exploring the Solar System (spring 2019)
- Sedimentology Stratigraphy Lab (fall 2019)
- Igneous and Metamorphic Petrology (spring 2019)
- Calculus-based Physics I (spring 2019)
- Mineralogy and Mineralogy lab (fall 2018)

Technical Skills

- Proficient in Python, MATLAB, HTML, CSS, MySQL, R
- Proficient in ArcGIS, Adobe Illustrator, and Amazon Web Services

Extracurriculars

- Fine arts: painting and drawing
  Selected works: https://photos.app.goo.gl/hbVZ63T58fvUMizs7
- Alto Saxophone in UNM Spirit Marching Band and Sound Pack (2016-2017)
- Qworks: Civic engagement volunteer work and videography (2018-2020):
  Video 1: https://www.youtube.com/watch?v=WyIZQFZdlBQ
  Video 2: https://www.youtube.com/watch?v=Q7Kd1d5y6z4
  Video 3: https://www.youtube.com/watch?v=uMoR1fjLdeY&t=1s