

# Charles H. Minns

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## EDUCATION

<b>Mullard Space Science Laboratory, University College London</b> , Surrey, UK	<i>October 2025 - current</i>
PhD in Space and Climate Physics	
<b>University College London</b> , London, UK	<i>September 2024</i>
MSc in Planetary Science with distinction (part-time)	
<b>Princeton University</b> , Princeton, NJ, USA	<i>June 2020</i>
AB in Physics, Certificates in Planets and Life and Applications of Computing	
<b>Wallingford School</b> , Wallingford, OXON, UK	<i>August 2016</i>
A-levels: Maths A*, Further Maths A*, Physics A, Chemistry (AS-level) A	

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## PUBLICATIONS

[The Spectroscopic Impact of Sublimation Under Martian Surface Conditions: Implications for Sample Analysis by the Rosalind Franklin Rover and Biosignature Preservation](#)

Louisa J. Preston, Charles H. Minns, Ifigeneia Rousouli, Connor J. Ballard, Sadiyannat Mirdha, and Lewis R. Dartnell. *Journal of Geophysical Research: Planets*, 131, e2025JE009430.

[Spore Survival During Abrasive Saltation on Mars: A Comment on Bak et al.](#)

Charles H. Minns, Emma M.C. Louden, and Christopher F. Chyba. *Astrobiology* 2022 22:9, 1029-1031

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## RESEARCH EXPERIENCE

<b>The Effects of the Martian Climate on Spectral Biosignatures</b>	<i>Oct 2023 - Sep 2024</i>
<ul style="list-style-type: none"><li>• MSc Thesis, Dr Louisa Preston, University College London</li><li>• Ran an experiment to compare spectral lines of Mars-analogue samples under different environmental conditions</li><li>• Obtained spectra in the mid-infrared and visible to near-infrared using reflectance spectroscopy</li><li>• Determined potential biosignatures in the samples and discussed how the conditions affect their presence and properties</li><li>• Interpreted the results in the context of the Rosalind Franklin rover, where subsurface samples will be exposed to surface conditions</li></ul>	
<b>Automated Trainable Data Clustering with Applications in Astronomy</b>	<i>Oct 2019 - May 2020</i>
<ul style="list-style-type: none"><li>• Undergraduate Senior Thesis, Prof. Peter Melchior, Princeton University</li><li>• Reviewed existing clustering methods and analysed the results of contemporary algorithms</li><li>• Processed hyperspectral data from CRISM; produced spectra and a mapping of the surface composition of the Nili Fossae region, obtaining clustering results that corroborated existing literature</li><li>• Developed greater autonomy for detecting clusters in simulated extragalactic multi-band images</li></ul>	
<b>The Effects of Impact Erosion on the Early Lunar Atmosphere</b>	<i>Feb 2019 - May 2019</i>
<ul style="list-style-type: none"><li>• Undergraduate Research Paper, Prof. Christopher Chyba, Princeton University</li><li>• Applied calculations done on Mars to analyse impact erosion effects on the Moon shortly after the period of heavy bombardment</li><li>• Concluded that these effects were negligible compared to other atmospheric loss rates</li><li>• Validated the potential for a transient atmosphere to have persisted on the Moon during this period</li></ul>	
<b>Photon Detection Efficiency in Photomultiplier Tubes and Silicon Photomultipliers</b>	<i>Oct 2018 - Jan 2019</i>
<ul style="list-style-type: none"><li>• Undergraduate Research Paper, Prof. Cristiano Galbiati, Princeton University</li><li>• Devised an experiment to compare two instruments for photon detection at the single-photon level</li><li>• Obtained a measurement for the relative photon detection efficiency</li><li>• Produced results that justified integrating new photon detection technology into DarkSide-20k</li></ul>	

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## WORK EXPERIENCE

### Full-Stack Developer and Product Manager, OnTheMove Software Ltd.

*Dec 2020 - Jun 2025*

- Team lead for the Core Product Team
- Developing generic software for integration into offline-first, mobile-friendly enterprise applications
- Producing a Content Management System using React and Express to simplify website configuration and automate hosting
- Building dynamic front-end components in React and a back-end to manage authentication and data synchronisation
- Working with clients through the production life-cycle
- Writing automated unit, integration, and end-to-end tests with Jasmine and Jest frameworks for quality assurance

### Swim England Diving Coach, Albatross Diving Club Reading

*Sep 2023 - current*

- Coaching divers aged 5 – 17 from learn-to-dive through to our competitive Skills and Age Groups squads
- Level 2 Diving Judge

### Software Engineer Summer Intern, ESO (Santiago, Chile)

*Jun - Aug 2019*

- Processed calibration data for ALMA and developed a Python program to improve the visualisation and efficiency of analysis
- Created a time-variable interactive figure displaying 5 calibration results for up to 528 sources
- Optimised program to display up to 4 figures on 1 monitor for real-time observations
- Created a report and presentation to summarise my work to the engineers and astronomers
- Integrated the program into the existing software to reduce time spent analysing calibration data

### Individual and Peer Tutor, Princeton University

*Sep 2016 - Jun 2020*

- Tutored Princeton University students in college-level physics and maths classes
- Tutored middle-school and high-school students in physics, maths, and chemistry

### Student Coordinator and Social Chair, Butler-Wilson Dining Hall, Princeton University

*Sep 2016 - Jun 2020*

- Managed the set-up and breakdown of meals with a team of university staff and students
- Performed administrative tasks: recruiting, scheduling, and payroll
- Promoted to highest ranking student position; liaison between professional managers and student workers
- Elected as Social Chair to coordinate weekly social events to improve worker camaraderie

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## RELEVANT COURSEWORK

Astronomical Spectroscopy	Topics in Modern Astronomy	Classical Mechanics
Physics of Exoplanets	Life in the Universe	Quantum Mechanics
Physics of the Earth	Cosmology	Statistical Mechanics
Planetary Atmospheres	Global Geophysics	Thermal Physics
Solar Physics	Data Structures and Algorithms	Electromagnetism
Space Science, Environment & Satellite Missions	Computing and Optimisation	Experimental Physics

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## SKILLS AND ACHIEVEMENTS

### Technical Skills

Python, LaTeX, MATLAB, JavaScript, HTML, CSS, React, Svelte, Jasmine, Jest, Node, Express, AWS, MongoDB, Git, SQL, Java, JIRA, Confluence

### Athletics

British Diving National Finalist; Princeton Varsity Swimming and Diving Team (Team Captain 2019-2020); NCAA Qualifier; Scholar All-American; Ivy League Career High Point Diver; War Memorial Swimming Trophy for diligence to studies and athletics; Black belt in Karate; Competitor at KUGB National Championships; Edinburgh Marathon 2024; Maverick Jurassic Coast 100 km Ultra 2024

### Languages

Conversational Spanish and basic French

### Music

Grade 8 saxophone (Trinity); Grade 5 piano (ABRSM); Grade 5 guitar (Rockschool)