

DR KEVIN S OLSEN



PROFILE

Dr Olsen grew up in Edmonton, Alberta, near the mountain ranges in western Canada, and began his academic career with a research-based MSc at the University of Alberta supporting the construction of a dark matter experiment. He moved to Toronto, Ontario to work on the high-resolution Fourier transform spectrometer for the ExoMars Trace Gas Orbiter (TGO), and earned his PhD from the University of Toronto in 2016 with Prof. Kimberly Strong. After NASA withdrew from the ExoMars mission and the TGO was reconfigured, Dr Olsen moved to Paris to work with Dr. François Forget at LMD on Martian water ice clouds using the Mars Express OMEGA imaging spectrometer, and with Dr. Franck Montmessin at LATMOS on retrieval software for the new, LATMOS-led TGO instrument: the Atmospheric Chemistry Suite (ACS). During this time, he was the recipient of a Postdoctoral Research Fellowship from the Natural Sciences and Engineering Research Council (NSERC) of Canada. ACS made its first observations of the Martian atmosphere in April, 2018, with Dr Olsen at the forefront of the data analysis. In 2019, Dr Olsen was selected to hold an Aurora Science Fellowship from the UK Space Agency (UKSA) and moved to the University of Oxford where he continued to work with the ground breaking ACS observations, publishing papers on hydrogen chloride (HCl), carbon monoxide (CO), the Martian water (H₂O) cycle, and ozone (O₃). After a short period as a research fellow working with Dr. Manish Patel at The Open University, he has recently returned to the University of Oxford to hold Mars Science Fellowship awarded by the UKSA.

EDUCATION

PhD – University of Toronto Department of Physics

2016

Thesis: *Temperature and pressure retrievals and mitigation of the impact of dust for a high-resolution Fourier transform spectrometer mission to Mars.*

MSc – University of Alberta Department of Physics

2010

Thesis: *Improvements to the resolution and efficiency of the DEAP-3600 dark matter detector and their effects on background studies.*

BSc – University of Alberta Department of Physics

2008

EXPERIENCE

University of Oxford – UKSA Mars Science Fellow – Oxford UK

2023-2025

The Open University – Research Fellow – Milton Keynes, UK

2022-2023

University of Oxford – UKSA Aurora Science Fellow – Oxford UK

2019-2022

Laboratoire Atmosphères, Milieux, Observations Spatiales (LATMOS) and Laboratoire de Météorologie Dynamique (LMD) – Postdoctoral researcher – Paris, France

2016-2019

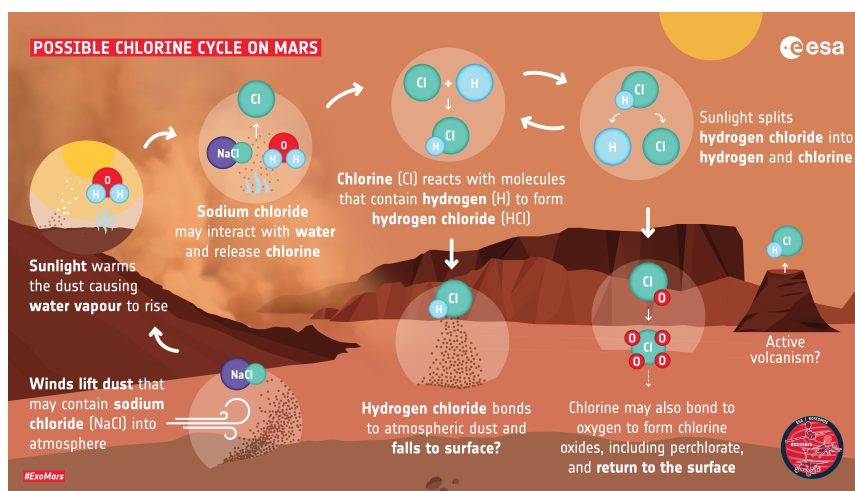
SELECTED PUBLICATIONS

Olsen, K. S., et al. Seasonal changes in the vertical structure of ozone in the Martian lower atmosphere and its relationship to water vapour. *J. Geophys. Res.* **127**, e2022JE007213 (2022), doi:10.1029/2022JE007213. Eos Editor's Highlight.

Olsen, K. S., et al. Upper limits for phosphine (PH_3) in the atmosphere of Mars. *Astron. Astrophys.* **649**, L1 (2021), doi:10.1051/0004-6361/202140868.

Olsen, K. S., et al. Seasonal reappearance of HCl in the atmosphere of Mars during the Mars year 35 dusty season. *Astron. Astrophys.* **647**, A161 (2021), doi:10.1051/0004-6361/202140329.

Korablev, O., **Olsen, K. S., et al.** Transient HCl in the atmosphere of Mars. *Sci. Adv.* **7**, eabe4386 (2021), doi:10.1126/sciadv.abe4386.



Olsen, K. S., et al. The vertical structure of CO in the Martian atmosphere from the ExoMars Trace Gas Orbiter. *Nat. Geosci.* **14**, 67–71 (2021), doi:10.1038/s41561-020-00678-w.

Olsen, K. S., et al. Retrieval of the water ice column and physical properties of water-ice clouds in the Martian atmosphere using the OMEGA imaging spectrometer. *Icarus* **353**, 113229 (2021), doi:10.1016/j.icarus.2019.03.006.

Trokhimovskiy, A., et al. First observation of the magnetic dipole CO_2 main isotopologue absorption band at $3.3\ \mu\text{m}$ in the atmosphere of Mars by ExoMars ACS. *Astron. Astrophys.* **639**, A142 (2020), doi:10.1051/0004-6361/202038134.

Olsen, K. S., et al. First detection of ozone in the mid-infrared at Mars: implications for methane detection. *Astron. Astrophys.* **639**, A141 (2020), doi:10.1051/0004-6361/202038125.

TEACHING EXPERIENCE

University of Oxford: MPhys project Evaluator (2021–2022); Formal Mentor for PDRAs (2022–2024); and Demonstrator for Physics Teaching Laboratories - data analysis and electrodynamics (2023–2034).

McGill University, Montreal, Canada: Guest Lecturer for TEPS Graduate Course (2022).

University of Toronto: Teaching Assistant for Physics labs at the introductory, intermediate and advanced levels, as well as an electronic circuits course (2011–2015); Supervisor for Summer Research Project (2013); and Tutorial Room Instructor (2011).

University of Alberta: Teaching Assistant for Physics labs at the intermediate and advanced levels (2008–2010) and Supervisor for a Summer Research Project (2009).