



MARS, RECONSIDERED: HOW A CANADIAN INSTRUMENT'S CONTRIBUTIONS TO UNDERSTANDING ANCIENT MARS MAY ALSO CHALLENGE A PREVAILING NARRATIVE

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Modern Mars is known for its reddish colour, cold temperatures, and extreme aridity. Robotic spacecraft sent to Mars, including both landers and rovers, have found compelling evidence for an ancient Mars vastly different from today, with liquid surface water present and lakes possibly sustained for 10s of thousands to 10s of millions of years. There are currently two NASA-led rovers operating on the surface of Mars, each equipped with an X-ray spectrometer. The more senior of the two, the Mars Science Laboratory rover Curiosity, carries a Canadian contribution: the Alpha Particle X-ray Spectrometer (APXS). This presentation will focus on some of the challenges faced by X-ray spectrometers on the surface of Mars that do not typically encumber instruments in a terrestrial lab, and how incremental post-launch advancements to the capabilities of these instruments have enhanced their respective science return. We will explore recent discoveries that elucidate new dangers for potential human missions to Mars and specifically highlight a recent discovery by Curiosity that may challenge a prevailing narrative and the astrobiological potential of our crimson celestial neighbour.

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