



## **Martian methane: Faster destruction, bigger source**

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Unconventional physico-chemical loss processes may control the fate of Martian methane. Large quantities of oxidants produced by electrochemistry [1,2] triggered during Martian convective processes of ordinary saltation, dust devils and storms, as well as energetic electrons produced in such processes [3], are expected to remove methane more efficiently than photochemistry. This enhanced destruction would require a larger source to maintain the gas in the atmosphere [4]. The characteristics of methane distribution from 76,000 measurements of Mars Express/ Planetary Fourier Spectrometer [5] and those from ground-based observations [6]—non-uniform distribution, transient nature, global value of 10-15 ppbv and a high of 50-70 ppbv in late summer at northern polar latitudes—all indicate that *sinks* more efficient than photochemical are operating on Mars. The Sample Analysis Suite on the 2009 Mars Science Laboratory [7,8] is expected to measure methane down to parts per trillion level, together with the  $^{12}\text{C}/^{13}\text{C}$  isotope, as well as search for organics and trace constituents, which will go a long way in understanding the sources and sinks of methane and other organics, and ultimately the habitability of Mars. [articles may be downloaded from webpage: <<http://umich.edu/~atreya/>>]

### References

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