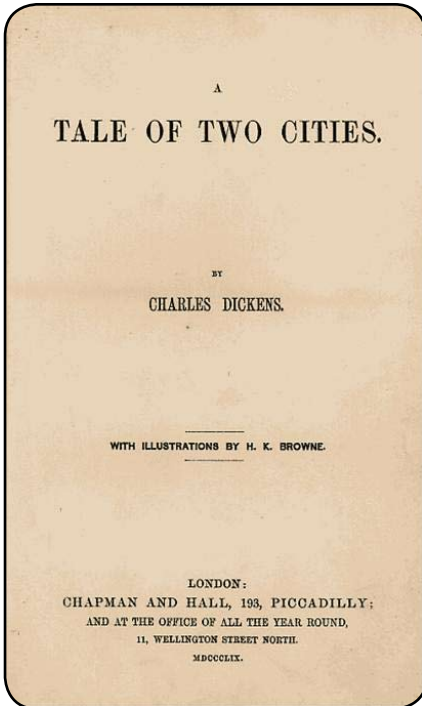


CSC/SETI Institute Colloquium Series



Devon M. Burr

Principal Investigator, Carl Sagan Center

Planetary Habitability of Mars and of Titan: A Tale of Two Worlds

Wednesday, Dec. 19, 12:00pm
The SETI Institute, Europa room

Planetary geology provides critical information of other worlds, including their astrobiological potential. By that term, I mean not only their specific potential to harbor life but their more general potential to tell us something about life. As we expand our understanding of life – where it is, what it is, how it is – beyond Earth, geomorphology complements compositional data in giving us clues as to planet habitability.

Mars is a case in point: the earliest to most recent data show extensive geomorphic evidence of water, the sine qua non for all life that we know. These remote and (recently) in situ data indicate large volumes of water in the surface, subsurface and atmosphere throughout Mars' history. Yet compositional evidence in the spectral data for organic materials is stubbornly lacking. As a converse example, data of Titan, Saturn's largest moon, show a near-total lack of liquid water, as expected from its size and position relative to the Sun. Yet this world is drenched in organic compounds. As part of its hydrocarbon cycle (analogous to Earth's hydrologic cycle), Titan forms organic molecules in the upper atmosphere, which apparently result on the surface in extensive aeolian (wind-formed) dunes. Thus, Mars and Titan each provide disparate but important astrobiological information. In this talk, I will give an overview of some of the most recent geologic discoveries regarding water on Mars and organics on Titan.



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