

Methane-oxidizing Communities Associated with Hydrothermal Systems

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Hydrothermal springs are of great astrobiological interest as several molecular phylogeny studies propose that the most primitive Earth organisms are hyperthermophiles. If life forms were ever present on Mars, ancient spring deposits such as those recently observed in Vernal Crater would be an ideal location to search for evidence of life. Potential active systems may also account for trace methane (10ppb) detected in Mars atmosphere. Examination of terrestrial systems can help refine biosignatures of such ecosystems, as well as to better define how they may have functioned and the microbial community they may have supported.

The Canadian Cordillera is home to over 150 thermal springs, each with a range of chemical, mineralogical and gas signatures. Methane gas is commonly released and methane-oxidizing bacteria are ubiquitous in these environments. Here we present preliminary data characterizing the origin of methane in these systems and the methane-oxidizing communities it supports.