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# Assessing the habitability of the MASE Mars analogue sites

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The MASE (Mars Analogues for Space Exploration) [1] project is a four-year collaborative research project supported by the European Commission Seventh Framework Contract. The aim of the project is to understand how combined environmental stresses influence the habitability of a number of Mars analogue environments in Europe and beyond. Field sites sampled for MASE include deep subsurface salts at Boulby Mine in the UK, sulfidic springs In Germany and an acidic cold lake in Iceland. Samples and isolates have also been provided to the project from acidic deep subsurface environments at the Rio Tinto in Spain as well as permafrost sites in Russian Siberia and northern Canada.
Crucial to assessing the habitability of any environmental system to be used as an astrobiological analogue • whether for life in general or, as in this case, for anaerobic microorganisms • is a detailed understanding of their geological and physiochemical context [2, 3]. One of the key outcomes of the MASE project is a comparison and synthesis of just such a set of context data from a varied set of analogue sites, the core of which is presented here, and complemented by an analysis of field samples to detect and quantify amino acids, other organics as well as biologically relevant molecules.
We show that anaerobic environments provide some of the best fidelity environments for examining the potential habitability of environments on Mars, which are also anaerobic, but that even these analogue environments show the signatures of Earth's very different geological history, such as high carbon abundance in some environments (from 0.1% in Icelandic lake sediments to 22. 7% in deep .permafrost environments).
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Literature

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[3] Soare, Richard, Wayne Poll ard, and David Green. "Deductive model proposed for evaluating terrestrial analogues." Eos, Transactions American Geophysical Union 82.43 (2001): 501-501.