

SPACE EXPLORATION SYMPOSIUM (A3)
Mars Exploration – Part 2 (3B)Author: Prof. Jean-Pierre Bibring
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MARS EARLY HISTORY, AND THE EMERGENCE OF LIFE

Abstract

Mars on-going space exploration is revolutionizing our view on its history, at all timescales: in particular, an ancient era during which liquid water was stable over geological durations has been discovered, and the terrains having preserved the relevant records identified and located. They are unique, possibly in the entire solar system, to offer exploring a period critical to planetary evolution: the first hundreds of millions years after the planet formed, and before the heavy bombardment ceased. During this period, starting with planetary accretion and migration, inner planets were loaded with water and C-rich species, and possibly harboured life. Exploring these Martian sites has thus the potential to address fundamental questions such as: has life emerged other than on Earth, within the solar system? What are the processes and conditions related to life emergence? To which extent is our solar system specific, with respect to other stellar systems? We will present the major results of relevance, primarily obtained by the OMEGA/Mars Express investigation, and discuss them in the more general framework of planet and exoplanet exploration/evolution.