Stephanie A. Getty NASA Goddard Space Flight Center Solar System Exploration Division

Title: Habitable Environments in Our Planetary Neighborhood

Abstract: One of the most fundamental questions in planetary science focuses on the emergence of life, whether Earth is unique in our Solar System as an inhabited planet, and how the habitability of our neighboring planets has evolved over time. A habitable environment is one in which the conditions are conducive to the emergence and sustainment of life, and the ingredients for such an environment include liquid water, a source of energy, and a source of nutrients. Mars has long been considered a leading candidate for having hosted life in a warmer, wetter past, with its evidence potentially preserved below the surface. More recently, it has been suggested that the habitability of our other planetary neighbor, Venus, featuring liquid water on the surface may have persisted up until just a few hundred million years ago. I will describe upcoming plans to explore Mars with the Mars Organic Molecule Analyzer, as part of the 2022 ExoMars Rover, and how the exploration of Mars can enable more sophisticated future in situ investigations that are tailored to explore habitability in our planetary neighborhood just beyond Earth.