

Mars Exploration (3)
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SCIENTIFIC SIGNIFICANCE OF INSTRUMENTAL OBSERVATIONS FROM SPACE FOR THE EXPLORATION OF MARS AND ITS MOONS

Abstract

Present paper attempts to make a review of the Mars observation space missions since the onset of Mars exploration by satellites. The paper covers the instruments characteristics and main scientific results obtained from the photo, optical and radar instruments onboard of first Mars probes until recently. The paper aims at assessing the significance of the contributions of the Mars observations missions from space to the present-day knowledge of martian morphology, geology, atmosphere etc. An attempt is made to estimate the number of scientific publications (both peer-reviewed and grey literature) dedicated to the Mars observations from space from the total number of the publications published since the beginning of Mars observations by space instruments. Some notable projects from the main space agencies such as NASA, Roscosmos, ESA, and the very recent Chinese and UAE missions which utilize Mars observation data are mentioned and their results briefly discussed. In conclusion, the paper makes suggestions and recommendations for a systematic international Mars observation research programme which will enable further expansion of the manned activities to Mars in view of its further exploration for the benefit of humankind. This is based on the fact that data continuity of space observation was found to be of crucial importance for studying and modelling of the Earth processes. Similarly, Mars and other planets and their satellites from the terrestrial group, make no difference from the Earth geophysical processes and necessitate a constant observation programme. Its blueprint is briefly outlined according to the currently studied phenomena and objects on Mars.