

IAF SPACE EXPLORATION SYMPOSIUM (A3)
Interactive Presentations - IAF SPACE EXPLORATION SYMPOSIUM (IPB)

Author: Mr. Jorge Romero
University of Colorado Boulder, United States, jorge.romero@colorado.edu

LUNAR EXOSPHERE: DISCOVERIES, UNRESOLVED QUESTIONS AND NEW CHALLENGES

Abstract

As space science has advanced, the Moon has once again taken center stage in space exploration. From the observation of the Moon's exosphere to the discovery of water at the poles, interest has been growing by leaps and bounds, leading to NASA's proposed Artemis missions. Recent discoveries have raised provocative new questions about Moon: How do the dynamics of soil-exosphere interaction affect the water cycle on the Moon? Why do the concentration measurements of the lunar ionosphere present a big discrepancy with the amount of gas in the Moon's exosphere? How is the interaction between the Sun and the lunar exosphere? Are there any other processes involved? This paper will review the current understanding of the Moon's exosphere until the future in Moon's exosphere exploration. First, we will go through the definition of some concepts related to exospheres, interaction between the Sun and atmospheres, followed by the review of the main missions and findings. Likewise I will analyze how these are related among them, this will give us a better understanding about the questions that arose inside the scientific community but at the same time what additional questions will need to be addressed in future lunar missions to have a clearer understanding of it, since a new era of human in situ lunar exploration is coming. Finally, I will summarize the coming missions and some possible new ideas for future lunar exosphere exploration.