

41st SYMPOSIUM ON THE SEARCH FOR EXTRATERRESTRIAL INTELLIGENCE (SETI) – The
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INTEGRATION OF REMOTE SENSING FOR EXTRATERRESTRIAL GEOLOGICAL STUDIES

Abstract

Remote sensing today plays a major role not only in gathering information of remote locations on earth surface but also in geological study of the distant celestial bodies. With the integration of Geological study the remote sensing has gained a significant importance extending its application in planetary studies. With the advent of radar, the world of remote sensing is revolutionized and hyperspectral added a feather in its hat. Remote sensing has proved its significance in understanding the different processes of earth and in the exploration of different energy resources. The study of the lineaments on the surface of earth with the help of the remote sensing images has given an idea on the seismic activity and basement tectonics. With the help of the radar data it is made easy to map the different volcanic provinces and their related processes. The radar data of different planets has shown the presence of several volcanics on the surface of the mercury, Venus, Mars and on one of the moon of Jupiter. Use of Radar in mapping the lava channels on the surface of the moon helped to infer the interior processes. Radar got its own application in understanding the processes of any planet as it can penetrate through the thick layers of atmosphere and helps in inferring the tectonics and the land motion as a result of internal processes. The hyperspectral data on the other hand can be much more advantageous as radar data itself cannot get the mineral composition of the planetary bodies. The hyperspectral data of the moon has shown the presence of various minerals on its surface which are formed as a result of the crater formation or those formed due to the other processes. The hyperspectral data of the moon has also shown a way to study the crater impact on the surface of the moon. On the surface of the Earth the impact structures were not preserved as a result of weathering, erosion and deposition of different sediments. These impacts would have been much larger on the surface of the Earth due to its higher gravity. However, remote sensing is required to integrate with the geological study of the different planets for better and accurate results. These planetary studies are required in understanding the different processes that took place on the earth in relation to that of other planets.

Keywords: Integrated Geological Study, Minerals and Composition, Volcanism and Processes