

Viking Lander Rock Population Data:

Notes regarding PDS3-to-PDS4 Migration

PDS Geosciences Node

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PDS3 Dataset

The Viking Lander Rock Population dataset was originally produced by Richard A. Simpson while at Stanford University. The dataset is based on work by Henry J. Moore and J.M. Keller [Moore and Keller, 1990; 1991] from the US Geological Survey who tabulated the sizes of rocks at the two Viking landing sites and published some statistical analyses of the size distributions. The primary data in the dataset are two files that list the size and other information about rocks measured at each landing site. Simpson also provided several additional files that reproduced the analyses of Moore and Keller [1990; 1991]. The Simpson dataset was submitted to the Planetary Data System (PDS) and archived with the PDS3 standards (dataset id: VL1/VL2-M-LCS-5-ROCKS-V1.0). More information about the dataset can be found in the file: *viking_lander_rock_dataset.txt* located in the document collection of the PDS4 bundle.

Changes for PDS4

The PDS3 dataset has been migrated to meet the PDS4 standards as part of PDS's effort to convert all of its older datasets to the newer standard. In total the dataset contains twelve data files. There four types of data files for each lander – one for the listing of rock size data and three with results of size-frequency analysis. Viking Lander 1 has two sets of files – one set includes two areas that may be outcrop or large buried rocks and one set that omits the two "outcrops". Thus, there are a total of twelve data files in the dataset. The format of twelve data files in the PDS3 dataset was ASCII tables with fixed-width columns, which in PDS4 are referred to as Table_Character objects. During the migration effort, it was determined that three of the file types that contained the results statistical analyses were not compliant with PDS4 standards because some records had blank or empty values that were filled with ASCII spaces. The PDS4 standards are not specific as to whether empty fields could be filled with spaces. As such the spaces were removed from the PDS4 version of these files. The resulting data files have PDS4 labels that use the Table_Deimited object to describe the format of the new files. The extensions of the file names were changed from *.tab to *.csv, which is the usual convention for Table_Delimited files. The file type with the listing of rocks was also modeled as Table_Delimited for consistency. Thus, the revised PDS4 dataset was organized into a bundle separate from the PDS3 volume.

Documentation

Most of the documentation included in the PDS4 bundle was derived from the PDS3 catalog files. There was a Software Interface Specification (SIS) document with the PDS3 dataset. However it was not included in the PDS4 bundle because it was specific to the original PDS3 dataset and was no longer relevant to the format of the PDS4 data files or labels. There is a separate spacecraft host document file (*host.txt) for each lander. These two documents are basically the same because the two landers were identical. Likewise, the four camera documents (*camera*.txt) are basically the same because all four cameras were identical. The document collection also contains a copy of fortran code and usage notes from the PDS3 volume that Simpson used to do the statistical analyses. These are treated as documents

in the PDS4 bundle because PDS does not archive or support such software. The code, thus, is provided as documentation on how the analyses results were generated.

References

Moore, H.J., and J.M. Keller, Surface-material maps of the Viking landing sites on Mars, Reports Planet. Geol. Geophysics Program, NASA TM-4210, 533-535, 1990.

Moore, H.J., and J.M. Keller, Surface-material maps of the Viking landing sites on Mars, Reports Planet. Geol. Geophysics Program, NASA TM-4300, 160-162, 1991.