

Ancillary Data to R. Lorenz 'Analytic Rock Abundance Distributions and their application to Spacecraft Landing Hazards', Planetary and Space Science, in review

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rockdistributions.csv

Compilation of rock distributions digitized from previous works

NSYT_D, NSYT_N are diameter (m) and cumulative number (/m2) for the InSight Workspace from Fig 10b of Golombek et al., Geology of the InSight landing site on Mars, Nature Communications (2020) 11:1014 | <https://doi.org/10.1038/s41467-020-14679-1>

The following data were digitized from Golombek, M., Huertas, A., Kipp, D. and Calef, F., 2012. Detection and characterization of rocks and rock size-frequency distributions at the final four Mars Science Laboratory landing sites. International Journal of Mars Science and Exploration, 7, pp.1-22. (NB the Bonneville and Legacy data here supercede those of Golombek et al 2005 which had a plotting error)

VL1 is Viking 1
PHX is Phoenix
VL2 is Viking 2
MPF is Mars Pathfinder
CMS is Columbia Memorial Station (MER Spirit landing site)
BON is Bonneville crater rim (MER Spirit)
LEG is Legacy Pan (MER Spirit)

RYU is asteroid Ryugu from Michikami, T., Honda, C., Miyamoto, H., Hirabayashi, M., Hagermann, A., Irie, T., Nomura, K., Ernst, C.M., Kawamura, M., Sugimoto, K. and Tatsumi, E., 2019. Boulder size and shape distributions on asteroid Ryugu. Icarus, 331, pp.179-191.

HUY is Huygens probe - see text of the present paper and Keller, H.U., Grieger, B., Küppers, M., Schröder, S.E., Skorov, Y.V. and Tomasko, M.G., 2008. The properties of Titan's surface at the Huygens landing site from DISR observations. Planetary and Space Science, 56(5), pp.728-752.

The following terrestrial sites were digitized from fig 12 of Golombek, M. and Rapp, D., 1997. Size-frequency distributions of rocks on Mars and Earth analog sites: Implications for future landed missions. Journal of Geophysical Research: Planets, 102(E2), pp.4117-4129. (see also their table 1)

GDB2 is a volcanic surface near Goldstone, California
EF3, EF4 is a catastrophic flood deposit (Ephrata Fan) in Washington State
MHW is Mars Hill (NW) in Death Valley National Park

ZHU03 and ZHU40 are Utopia Planitia Zhurong Rock abundances generated as described in the text of the present Lorenz paper (diameters are mid-points of 0.01m histogram bins, counts are cumulative number /m2 using the relevant sample areas) (see fig 6 of Z. Chen et al. 2022. Rock Abundance and Erosion Rate at the Zhurong Landing Site in Southern Utopia Planitia on Mars. Earth and Space Science, 9(8), <https://doi.org/10.1029/2022EA002252>) This list, indicating rocks counted over a 232m2 / 252.5m2 area (Sol 3-6 / Sol 40), was extracted directly from the dataset of that paper at <https://doi.org/10.5281/zenodo.6504360>

V9, V13_1 and V13_2 are Venera 9 and 13 counts digitized from Rabinovitch and Stack 2021. Characterizing Landing site safety on Venus using Venera panoramas and Magellan radar properties. Icarus, 363, p.114429

UAE is Rock distribution observed at a United Arab Emirates interdune flat near large linear/compound dunes and barchans at 22°46'2.76"N, 55°12'50.87"E - see the present paper and Lorenz, R. D., H. Shiraishi, M. Panning, K. Sotzen, 2021. Wind and Surface Roughness Considerations for Seismic Instrumentation on a Relocatable Lander for Titan, Planetary and Space Science, 206, 105320. <https://doi.org/10.1016/j.pss.2021.105320>