Stat-Mech Paper

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INTRODUCTION

While the polar axis of earth is tilted on its axis by 23.5° from the elliptic plane the moon, even tilted 5° on its orbit plane, i inclined by only 1.5° on its polar axis[1]. This means that locations at the lunar poles are horizontal to the light from the sun.

HABITAT LOCATION

The loation of the habitat requires at least four basic requirments, proximaty to water, communication line-of-sight with Earth, illumination , and traversable terrain. It is the intersection of these componets where we find the most habital location to be the southern lunar pole.

ILLUMINATION INFO

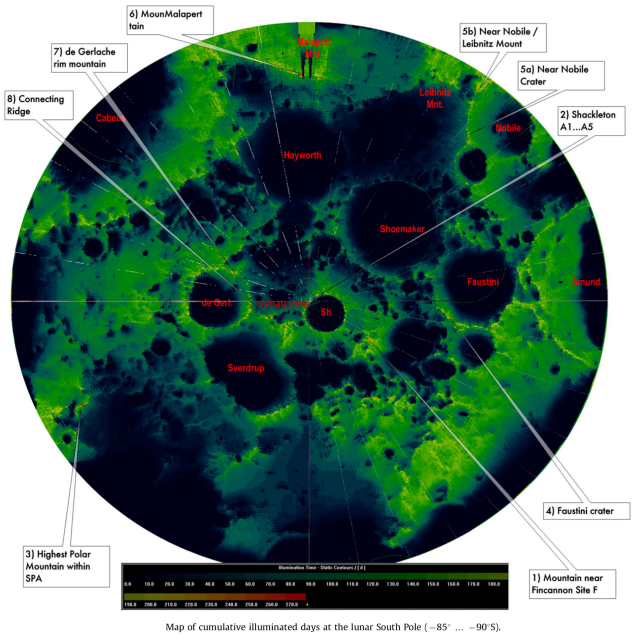

FIG. 1. The Gaussian distribution of the data.

"The solar elevation is dependent upon the lunar seasons, with solstices of $-1.54°$ during lunar winter,and $+1.54°$ during lunar summer. There thus exist mountain peaks that are characterized by near eternal illumination, which provide a benign thermal environment for any long-term robotic or manned lander mission and ideal conditions for photovoltaic power generation. Sunlit polar surfaces feature moderate temperature variations of $10° \pm 50°C$ [2]"[1].

"In contrast to this,depressed polar surfaces,like crater grounds,lie in near permanent darkness, and are thus very cold. Uncertainties in lunar heat flow values [3] suggest that the temperatures within these cold traps vary between 50 and 70K. At these temperatures, atoms and molecules of volatile species cannot escape [4]. The smaller impact craters in the polar region are therefore believed to harbour water resources that remain conserved through the cryogenic temperatures inside them."[1]

GENERATING POWER

REGOLITH USAGE

REGOLITH THERMAL PROPERTIES

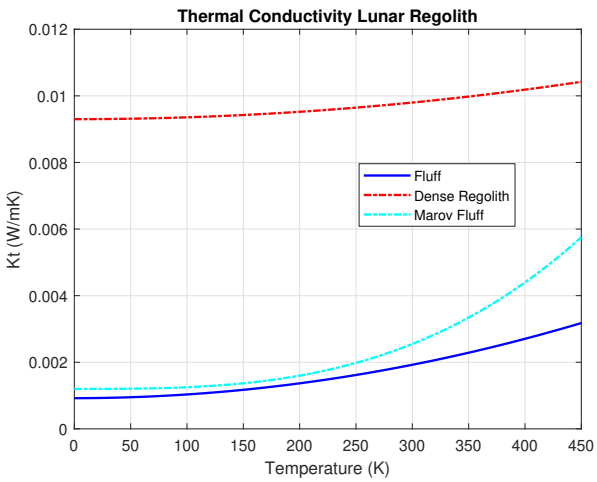

FIG. 2. The Gaussian distribution of the data.

HABITAT THERMAL

CONCLUSION

Acknowledgments

All figures were created in Matlab and the paper was typeset in LaTeX.

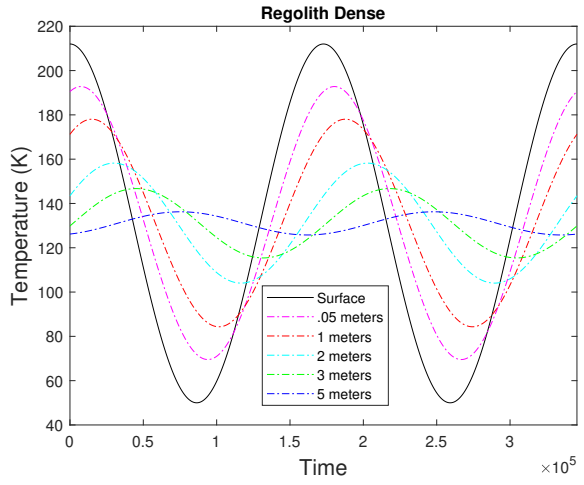

FIG. 3. The Gaussian distribution of the data.

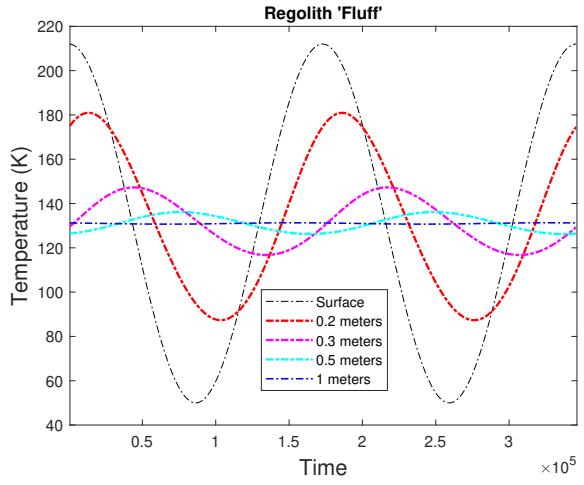

FIG. 4. The Gaussian distribution of the data.

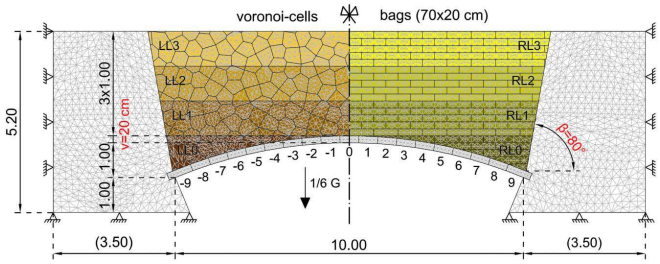

FIG. 5. The Gaussian distribution of the data.

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[1] David Koebel, Michele Bonerba, Daniel Behrenwaldt, Matthias Wieser, Carsten Borowy, Analysis of landing site attributes for future missions targeting the rim of the lunar South Pole Aitken basin, Acta Astronautica, Volume 80, 2012, Pages 197-215