

# **Lunar Proving Grounds Workshop**

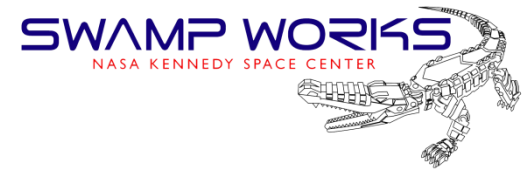
Lunar Surface Innovation Consortium (LSIC)  
Johns Hopkins University

LAUREL, MARYLAND  
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# Experience



- NASA Desert Research & Technology Studies (RATS)
  - Black Point Lava Flow – Arizona
  - Meteor Crater – Arizona
  - Cinder Lakes Crater Fields – Arizona
  - Moses Lake – Washington state
- SETI Haughton Mars Project
  - Devon Island – Canada
- NASA Geology Field Training
  - Los Alamos – New Mexico
- Private Expeditions
  - Mojave Desert, California
  - Rocky Mountains, Colorado
  - Atlantic Ocean “Blue Water” Sailing – Florida & Bahamas



# Topography

A black and white photograph of a rugged, cratered planetary surface, likely Mars. The image shows a series of ridges and valleys, with deep shadows and bright highlights that emphasize the topography. The word "Topography" is overlaid in white text on the left side of the image.

# Scale



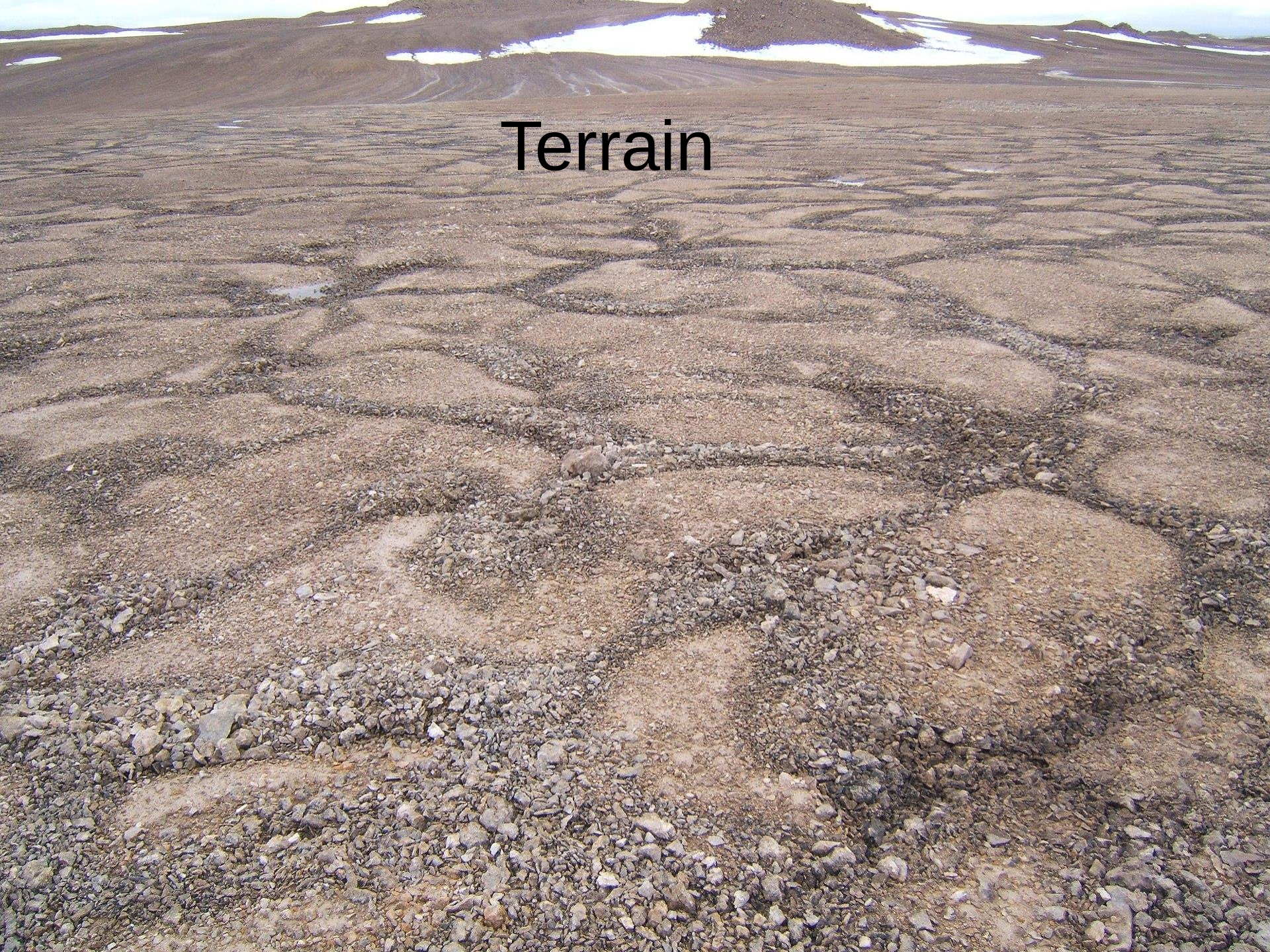
# Risk



# Geotechnical Properties

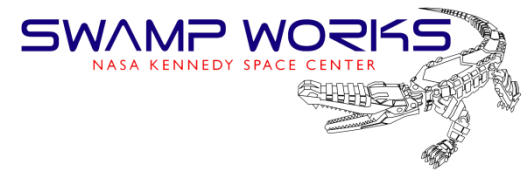


# Terrain



# Extreme Weather





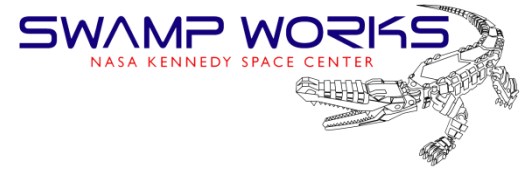
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**“What capabilities and features does the proving ground(s) need to possess?”**



# Necessary Infrastructure

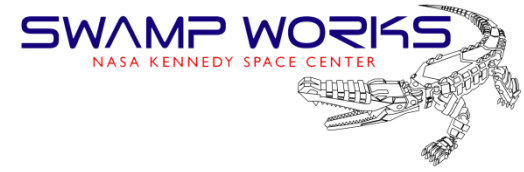
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- **Power**
- **Water**
- **Food**
- **Shelter**
- **Sanitation**
- **Wireless Communications**
- **Access (Road & Air)**
- **Local Transportation**
- **Security**
- **Safety**
- **Emergency Response**



# Definitions?



## Proving Ground(s)

A proving ground is a controlled and secure facility used for testing and evaluating various types of equipment, vehicles, weapons, and other technologies. It is typically an isolated area specifically designed to simulate real-world conditions and environments in order to assess the performance, reliability, and safety of the items being tested

## Analog Test Site(s)

Analog test sites for space serve as terrestrial environments that closely resemble certain aspects of extraterrestrial conditions. These sites provide opportunities to study and validate technologies, perform experiments, and train astronauts in environments similar to those encountered in space. They can be used for a wide range of purposes, including testing spacecraft, developing mission protocols, studying the effects of microgravity, and simulating extraterrestrial environments

## Test Facilities(s)

A space test facility is a specialized facility or laboratory where various tests and experiments related to space exploration, spacecraft, satellites, and related technologies are conducted. These facilities are designed to simulate space conditions, evaluate the performance of space systems, and verify their functionality before deployment or launch



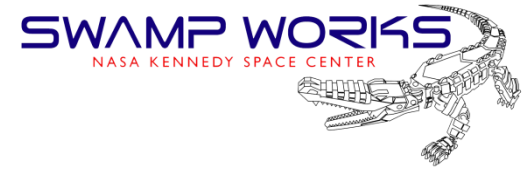
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what is a space proving ground?



The term "space proving ground" is not commonly used in the context of space exploration and satellite systems. However, it can be inferred to refer to a hypothetical or conceptual facility that would serve as a controlled environment for testing and validating various technologies, systems, and procedures related to space missions.

Similar to a traditional proving ground, which is used for testing and evaluating vehicles, equipment, and technologies in other industries, a space proving ground would provide a dedicated space where engineers, researchers, and scientists could conduct rigorous and comprehensive tests on space systems before their deployment or launch.



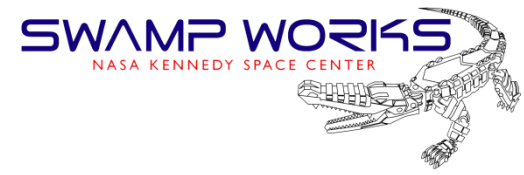
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what is a lunar proving ground



A lunar proving ground refers to a specific location on the Moon that is identified and designated by space agencies or scientists as a potential site for conducting tests, experiments, and evaluations related to lunar exploration and future human missions to the Moon.

The concept of a lunar proving ground emerged as part of NASA's plans for the Artemis program, which aims to return humans to the Moon and establish a sustainable presence there. The purpose of a lunar proving ground is to provide a realistic and challenging environment where astronauts and robotic systems can test technologies, perform scientific research, and develop operational procedures before undertaking more extensive lunar missions.



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# DISCUSS