Extreme Environments Focus Group
April Meeting

April 12, 2022

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Today’s Agenda

• LSIC Updates
• LSIC Facilities Directory
• 3 Month Agenda for EE
• Featured Presentations (Karen Stockstill-Cahill)
  - Simulants
• Open floor
Lunar Community Meetings

- **LSIC’s Spring Meeting**
  - Registration Deadline: April 25, 2022 (for virtual attendance)
  - Event Date: May 4-5, 2022 (hybrid)
  - [https://lsic.jhuapl.edu/Events/Agenda/index.php?id=200](https://lsic.jhuapl.edu/Events/Agenda/index.php?id=200)

- **IEEE Nuclear & Space Radiation Effects Conference (NSREC)**
  - Event Date: July 18-22, 2022 in Provo, Utah
  - [https://www.nsrec.com/](https://www.nsrec.com/)

- **AIAA ASCEND 2022**
  - Call for Content Deadline: March 31, 2022
  - Event Date: October 24-26, 2022 (hybrid)
  - [https://www.ascend.events/2022](https://www.ascend.events/2022)

- **COSPAR 2022**
  - Early Bird Registration Deadline: April 29, 2022
  - Event Date: July 16-24, 2022 in Athens, Greece
  - [https://www.cosparathens2022.org/](https://www.cosparathens2022.org/)
LSIC Updates

Lunar Community Meetings (Continued)

• NASA Exploration Science Forum
  - Event Date: July 19 - 21, 2022 in Boulder, Colorado
  - https://sservi.nasa.gov/nesf2022/

• Intelligent Systems Workshop
  - Event Date: July 26-27, 2022 in College Station, TX
  - https://www.iafastro.org/events/iac/iac-2022/technical-programme/

• International Astronautical Congress
  - Event Date: September 18 – 22, 2022 in Paris, France
  - https://www.iafastro.org/events/iac/iac-2022/technical-programme/
LSIC Updates

Funding Opportunities

• Nighttime Precision Landing Challenge No. 1
  - Develop sensing systems that can detect terrain hazards in the dark
  - Register Deadline: May 5, 2022, at 5:00 PM Pacific
  - Application Deadline: May 19, 2022, at 5:00 PM Pacific
  - https://www.precisionlanding1.nasatechleap.org/

• Space Technology Research Institutes (STRI) Solicitation
  - June 2022
  - https://www.nasa.gov/directorates/spacetech/strg/stri

• Early Stage Innovations (ESI)
  - April 2022
  - https://www.nasa.gov/directorates/spacetech/strg/early-stage-innovations-esi

• NASA Innovative Advanced Concepts (NIAC) 2023 Phase I Call for Proposals
  - June 2022
  - https://www.nasa.gov/content/apply-to-niac

Please visit LSIC website for full list
http://lsic.jhuapl.edu/Resources/Funding-Opportunities.php
The LSIC Facilities Directory

A Searchable Facilities Directory to Spur Innovation, Technological Advancement, and Team Building

Josh Cahill (APL), Kristen John (NASA), Andrea Harman (APL), and Jacquelyn Black (NASA)
The Need

- To return to the Moon with the most advanced technologies during Artemis, knowledge of, and access to, appropriate testing facilities is critical.

- NASA and LSIC have heard this need conveyed by the LSIC community and have begun working together to provide some informational support.

- Beginning by gathering searchable knowledge
NASA Facilities

• Dr. Kristen John and Jaquelyn Black managed to:
  - Collect ~150 NASA facilities and POC’s focused upon dust mitigation
  - Have been gathering POC permission to list publicly as potentially available to be utilized.

• LSIC has been:
  - Creating and populating a searchable interface on LSIC Confluence Wiki (password protected)
  - And will be placing a call out to the larger LSIC community for additional commercial, academic, government, and non-profit facilities.
LSIC Facilities Directory Interface

- Directory is organized by keywords/labels

- But, is also full listing searchable (not dependent upon selected keywords/labels)

- Currently ~75 facilities; Working on getting approval for an additional 75 facilities

- Most consist of dust mitigation led facilities

- Calling for EE focused facilities here
How Does A Facility Get Listed?

- Fill out the Facilities Survey!
- Find under path: Resources > Community > Surveys

EARLY CAREER MEMBERS
- NextGen Lunar Scientists and Engineers

ROADMAPS AND PLANS
- Lunar Exploration Roadmap (LEAG)
  This is a living document that is updated periodically. It's last update was in 2016.
- Global Exploration Roadmap
  Released on Monday, January 01, 2018
- Lunar Open Architecture
  LOA is a dynamic, living, and open roadmap for lunar exploration, powered by an evolving database that captures and coalesces current and future missions for lunar exploration.
- Artemis Plan
  Released on Tuesday, September 01, 2020

SURVEYS
- Simulant Needs Survey (NASA Simulant Advisory Committee)
  Released on Sunday, February 28, 2021
- Cislunar Communication Needs (CommStar)
  Released on Sunday, February 28, 2021
- **LSIC Facilities Directory**
  Released on Sunday, August 29, 2021

REPORTS
- Small Lunar Base Camp and In Situ Resource Utilization Oxygen Production Facility Power System Comparison
  Released on Monday, March 02, 2020
- Ensuring Economically Viable Lunar Settlements - Proceedings of AIAA ASCEND
  Released on Tuesday, September 01, 2020
  Released on Friday, October 30, 2020
- Artemis Science Definition Team Report
  Released on Friday, December 04, 2020

STUDIES
- Lunar Water Reference Case Study
  Released on Thursday, October 01, 2020

WEBSITES AND PORTALS
- Apollo In Real Time
- SpaceTech Technology Portal
- NASA Solar System Exploration Virtual Institute (SSERVI)
Directory Questionnaire

- Questionnaire Link:
  https://forms.gle/MronYz72WeWbAqdx6

- Details on each facility, its location, availability, scheduling, pricing, etc, as well as a Point of Contact and e-mail address

- Listing is Free
Getting to the Directory Itself

• Resources > LSIC Resources > LSIC and LSII Resources

• Link: https://lsic-wiki.jhuapl.edu/x/HINf

• Password protected

• Contact Andrea Harman if you are a member of LSIC and would like an account

LSIC and LSII Resources
- Code of Conduct (PDF)
- Welcome Package (PDF)
- Listserv Overview (PDF)
- NASA Lunar Surface Innovation Initiative
- NASA Space Technology Mission Directorate
- Lunar Simulants
  - LSIC Facilities Directory (on Confluence wiki)

Reference Materials
- Ice Mining in Lunar Permanently Shadowed Regions
- Dallas Bienhoff, Cislunar Space Development Company, LLC "CSDC ISRU Propellant Needs and Value"
- Pascal Barbier, Air Liquide "ISRU Development for Sustainable Space Exploration"
- Nicholas Bennett, UNSW ACSER "An Existing Market for Lunar Propellant — GTO Orbit Raising as a Service"

Newsletters
- September 2021
- August 2021
- July 2021
- June 2021
- May 2021
- April 2021
- March 2021
- February 2021
- January 2021
- December 2020
- November 2020
- October 2020
- September 2020
- August 2020
- July 2020
LSIC Home

Confluence Training Sessions
If you're just getting to know Confluence, please contact @Andrea Harman for support and training.

Focus Areas

Dust Mitigation (DM)  Excavation & Construction (E&C)  Extreme Access (EA)

Extreme Environments (EE)  In Situ Resource Utilization (ISRU)  Surface Power (SP)

Visit LSIC's external website here: lsic.jhuapl.edu
Visit LSIC's LinkedIn site here: https://www.linkedin.com/groups/13861869/
LSIC's code of conduct for members is available here.

Tools & Resources

Lunar Simulants Working Group
LSIC Facilities Directory
LSIC-Wide Events
2021 Spring Meeting
2020 Fall Meeting

Recent Space Activity

News & Announcements
3 Month Agenda for EE

• May 10, 2022
  - Overview of Subgroup Progress
  - Speaker: Subgroup Leads

• June 14, 2022
  - “Cold-Operable Electronics”
  - Speaker: Tom McCarthy, Motiv Space Systems

• July 12, 2022
  - Radiation and Regolith Crosstalk
  - Speaker: TBD