



Lunar Surface Innovation

C O N S O R T I U M

Extreme Access Focus Group Telecon

June 9, 2022

We'll start around 3:03-3:05

Sarah Withee
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Facilitator_ExtremeAccess@jhuapl.edu



JOHNS HOPKINS
APPLIED PHYSICS LABORATORY

Today's Agenda

- LSIC Updates
- Poll time!!
- Upcoming Meetings/Opportunities
- LIVE RFI Discussion
- Open floor

LSIC Updates

Funding Opportunities

- NASA STMD Tipping Point
 - Mini Proposals were due April 8.
 - Invite-only full proposals due July 28, 2022
 - <https://nspires.nasaprs.com/external/solicitations/summary.do?sollid={9987D88F-0A12-5203-FC25-423773FAF134}&path=&method=init>
- Watts on the Moon Challenge Phase 2
 - Up to \$4.5 million in prizes to design, build, and demonstrate a prototype that addresses technology gaps in power transmission and energy storage
 - Previous participants as well as new teams eligible
 - https://www.nasa.gov/directorates/spacetech/centennial_challenges/second-phase-open-of-5-million-lunar-power-prize-competition.html
 - Register to compete by June 15, 2022
- Phase 2 Break the Ice Challenge
 - <https://breaktheicechallenge.com>
 - Register by September 30, 2022
- Space Technology Research Institutes
 - University-led, sustained, multidisciplinary space technology research focused in strategic areas for transformative impact to future NASA exploration and science
 - Accelerating Additive Manufacturing Certification with Model-Based Tools
 - Quantum Technologies for Remote Sensing
 - 5 years, up to \$15M
- Please visit LSIC website for full list
 - <http://lsic.jhuapl.edu/Resources/Funding-Opportunities.php>



Upcoming Meetings

- Focus Group Telecons (2nd Thursday each month, 3-4 pm EST)
 - June 9, 2022
 - July 14, 2022
- Subgroup Meetings:
 - Communications: June 15, 4 pm ET
 - Guest speaker: An Overview of Lunar Radios for Rover-Lander Communications and Edge Computing
 - PNT: June 16, 3 pm ET
 - Mobility: June 23, 1 pm ET
- Surface Power Workshop: Low Temperature Sub-kW Power and Energy Storage for the Lunar Surface, July 28 2022

LSIC | Low-Temperature, Sub-kW Power and Energy Storage for the Lunar Surface



The Moon harbors thermal extremes with requirements far beyond most terrestrial technologies. The permanently shadowed regions near the lunar poles, rich in science and containing potentially commercially relevant volatiles, reach ultra-cold temperatures ranging down to tens of degrees Kelvin. Solutions such as battery modules that will survive or operate within these extremes, as well as strategies that ensure survival through hibernation, are immediate needs critical for operations on the lunar surface and beyond.

Topics for the workshop include:

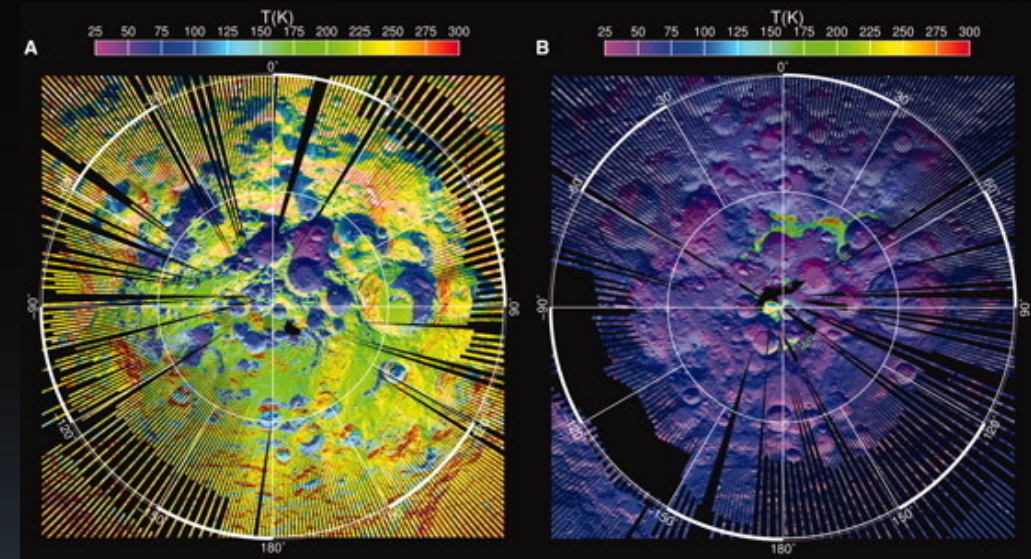
- Context on needs and lunar thermal environments
- Panel discussion of near-term system solutions
- Lightning talks that survey recent developments
- Focused session on low temperature batteries
- Break-out discussions targeting specific scenarios

Format and date:

Virtual, Zoom Webinar (**registration required, but is fast and free**)

Lightning Talks: 400-word max abstracts due July 8th

Thursday July 28th, 11:00 – 4:45 ET (total length subject to change)



Diviner-measured daytime (left) and nighttime (right) bolometric brightness temperatures


<https://lsic.jhuapl.edu/Events/Agenda/index.php?id=214>

Upcoming Community Meetings

- LSSW: Assessing the Value of Modern Field Geology Tools for Artemis
 - June 16, 2022
 - Free, but registration is required!
 - <https://www.hou.usra.edu/meetings/lunarsurface2020/>
- LSSW: Defining a Coordinated Lunar Resource Evaluation Campaign
 - June 27, 2022
 - Free, but registration is required!
 - <https://www.hou.usra.edu/meetings/lunarsurface2020/>
- COSPAR 2022
 - July 16-24, Athens Greece
 - <https://www.cosparathens2022.org>
- NASA SSERVI Exploration Science Forum
 - July 19-21 (hybrid)
 - In-person: Boulder, CO
 - Focus on basic and applied scientific questions fundamental to understanding the Moon
 - <https://sservi.nasa.gov/nesf2022>
- AIAA Intelligent Systems Workshop
 - July 26-27, Texas A&M
 - Technical sessions covering autonomy and human-machine teaming
 - https://aiaa-istc.github.io/2022_IS_Workshop.html
- International Astronautical Congress
 - September 18-22, Paris France
 - <https://iac2022.org>
- AIAA ASCEND Conference
 - October 24-26, 2022 in Las Vegas, NV
 - <https://www.ascend.events/call-for-content/>

STMD RFI released: “GO” thrust

- The following information is requested :
 - Are the Envisioned Futures charts inclusive of space community needs? Please provided specific recommendations for improving the provided Envisioned Future charts.
 - Are the State-of-the-Art summaries complete and accurate or are there technologies that exist that we may not be aware of that satisfy these needs?
 - Are the technology gaps stated in the Envisioned Futures charts inclusive of the work needed to reach these Envisioned Futures? What technology advances are not included that would be necessary to reach these goals?
- **Responses to this RFI are due May 20, 2022 at 5:00 p.m. ET.** Responses to this RFI must be submitted electronically using NSPIRES at <https://nspires.nasaprs.com/>.
- Any questions to this RFI may be submitted to HQ-STMD-STAR-RFI@nasaprs.com at any time before the due date for responses.

Thrusts	Outcomes	Primary Capabilities
 <p>GO Rapid, Safe, and Efficient Space Transportation</p>	<ul style="list-style-type: none"> • Develop nuclear technologies enabling fast in-space transits. • Develop cryogenic storage, transport, and fluid management technologies for surface and in-space applications. • Develop advanced propulsion technologies that enable future science/exploration missions. 	<ul style="list-style-type: none"> • Nuclear Systems • Cryogenic Fluid Management • Advanced Propulsion

<https://techport.nasa.gov/framework>

Are the Envisioned Futures charts inclusive of space community needs?

Please provide specific recommendations for improving the provided Envisioned Future charts

Are the State-of-the-Art summaries complete and accurate or are there technologies that exist that we may not be aware of that satisfy these needs?

Are the technology gaps stated in the Envisioned Futures charts inclusive of the work needed to reach these Envisioned Futures?

What technology advances are not included that would be necessary to reach these goals?



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- Confluence is our record of discussions and a good repository
 - Confluence is free to you and available to all registered LSIC members
 - We will be using Confluence to document discussions and provide resources to LSIC members. All focus groups have a separate page so it's a good collaboration space.
 - To request an account, please email Andrea Harman: ams573@alumni.psu.edu
- Technology Spotlights/Lightning Talks at monthly telecons
 - Anyone can volunteer to give a lightning talk (10-20 mins)
 - Email Angela or Sarah, or comment on Confluence, to sign up!
- Updates to the webpage - <http://lsic.jhuapl.edu/Focus-Areas/Extreme-Access.php>
 - Notes, slides, recordings from telecons posted here

Follow the Code of Conduct for all Focus Group communications

Contact information

LSIC Director: Rachel Klima, SES-LSIC-Director@jhuapl.edu
<http://lsic.jhuapl.edu>

Focus Group Area	Listserv address	Facilitator
In-Situ Resource Utilization	LSIC_ISRU@listserv.jhuapl.edu	Karl Hibbitts
Surface Power	LSIC_Power@listserv.jhuapl.edu	Wes Fuhrman
Extreme Environments	LSIC_ExtremeEnvironment@listserv.jhuapl.edu	Jamie Porter
Extreme Access	LSIC_ExtremeAccess@listserv.jhuapl.edu	Angela Stickle
Excavation and Construction	LSIC_ExcavationConstruction@listserv.jhuapl.edu	Athonu Chatterjee
Dust Mitigation	LSIC_DustMitigation@listserv.jhuapl.edu	Jorge Núñez

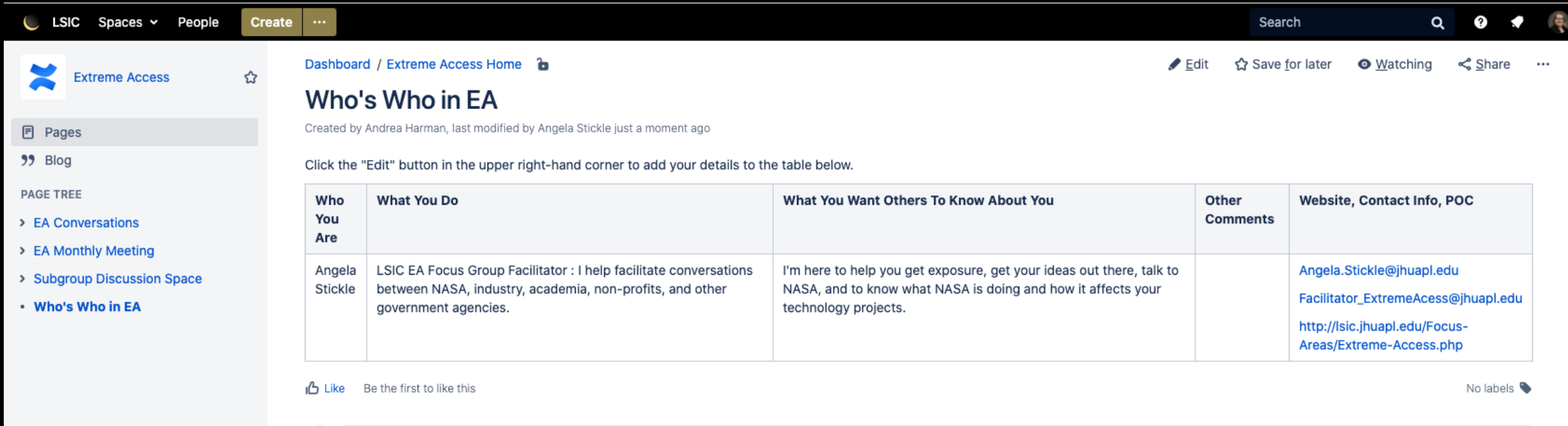


LSIC Meeting Cadence

- **Bi-Annual Meetings (Spring and Fall)**
- **Monthly Focus Group Meetings**
 - 2nd Tuesday of the Month 3:00-4:00 pm – Extreme Environment
 - 2nd Thursday of the Month 3:00-4:00 pm – Extreme Access
 - 3rd Wednesday of the Month 3:00-4:00 pm – ISRU
 - 3rd Thursday of the Month 12:00-1:00 pm – Dust Mitigation
 - 4th Thursday of the Month 11:00 am-12:00 pm – Surface Power
 - 4th Wednesday of the Month 2:00-3:00 – Excavation and Construction
- **Thematic Workshops (as identified by FGs and NASA POCs)**
 - Workshops In development Funding, CLPS Provider

Get to know the community

<https://lsic-wiki.jhuapl.edu/x/0IVf>



LSIC Spaces People Create ... Search

Extreme Access

Dashboard / Extreme Access Home

Who's Who in EA

Created by Andrea Harman, last modified by Angela Stickle just a moment ago

Click the "Edit" button in the upper right-hand corner to add your details to the table below.

Who You Are	What You Do	What You Want Others To Know About You	Other Comments	Website, Contact Info, POC
Angela Stickle	LSIC EA Focus Group Facilitator : I help facilitate conversations between NASA, industry, academia, non-profits, and other government agencies.	I'm here to help you get exposure, get your ideas out there, talk to NASA, and to know what NASA is doing and how it affects your technology projects.		Angela.Stickle@jhuapl.edu Facilitator_ExtremeAccess@jhuapl.edu http://lsic.jhuapl.edu/Focus-Areas/Extreme-Access.php

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Who's Who in ISRU: <https://lsic-wiki.jhuapl.edu/display/ISRU/Who%27s+Who+in+ISRU>

Who's Who in Surface Power: <https://lsic-wiki.jhuapl.edu/display/SP/Who%27s+Who+in+LSIC-Surface+Power>

Who's Who in E&C: <https://lsic-wiki.jhuapl.edu/pages/viewpage.action?pageId=6260179>

Who's Who in EE: <https://lsic-wiki.jhuapl.edu/display/EE/Who%27s+Who+in+LSIC-EE>