



Lunar Surface Innovation

C O N S O R T I U M

LSIC Dust Mitigation Focus Group

Monthly Meeting

November 17, 2022



JOHNS HOPKINS
APPLIED PHYSICS LABORATORY

Dr. Jorge Núñez
Senior Scientist
Space Exploration Sector

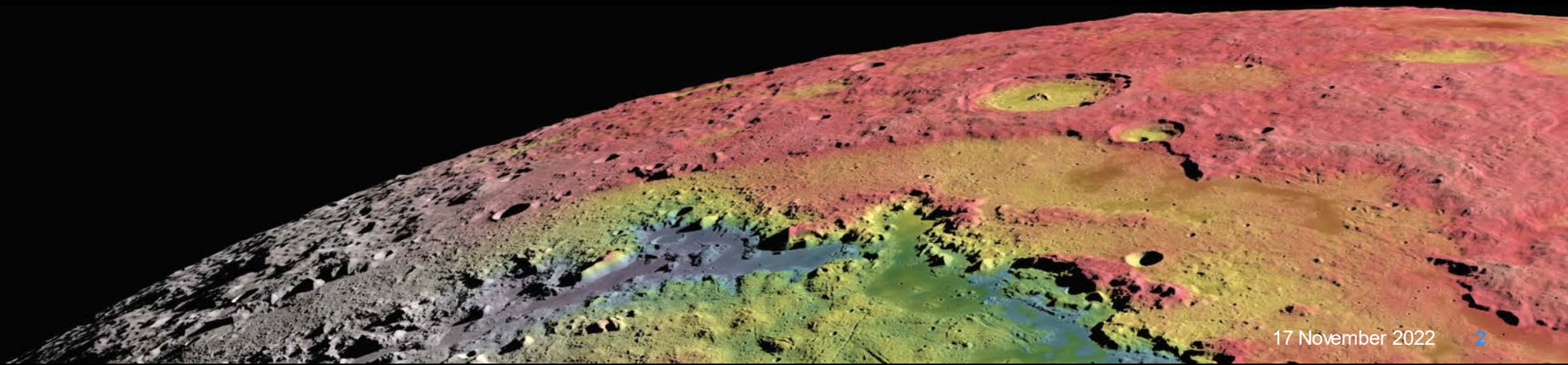
Facilitator_ DustMitigation@jhuapl.edu

APL LSIC Dust
Mitigation Team:

Lindsey Tolis
Mark Perry
Richard Miller
Sarah Hasnain

Agenda

- Welcome, LSIC and Focus Group Updates
- Upcoming Opportunities and Meetings
- Recap from LSIC Fall Meeting
- Featured Technology Presentation:
 - Torin McCoy, Moon2Mars Deputy Chief Health and Performance Officer, NASA Johnson Space Center
 - “Crew Health and Lunar Dust: What To Know Before You Go”
- Discussion on Risks and Challenges of Lunar Dust on Human Health



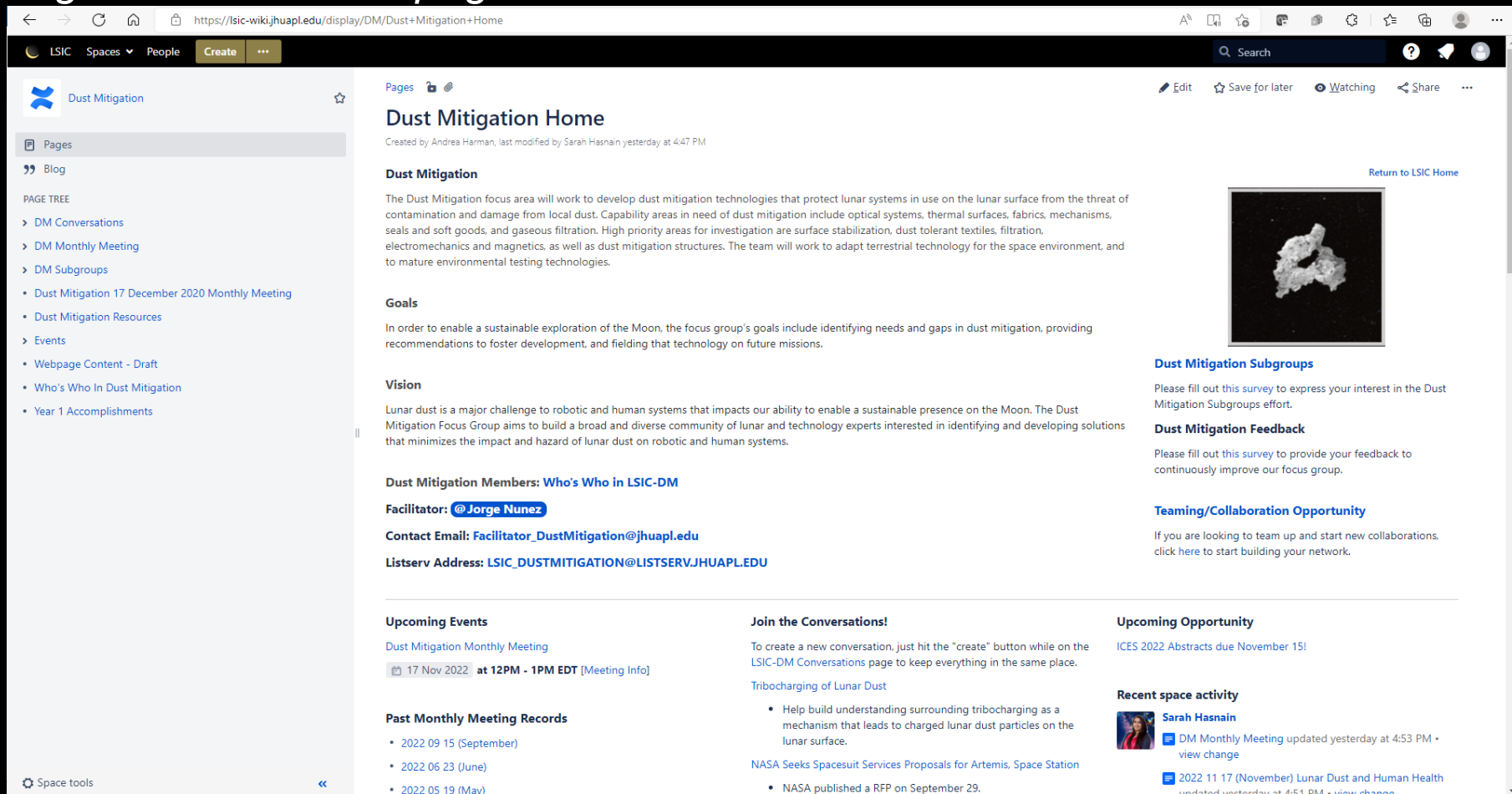
Artemis 1 Launch!





LSIC Dust Mitigation Confluence Site

- Please contact Andrea Harman (ams573@alumni.psu.edu) to get set up with an account!
- *Dust Mitigation Discussion page and wiki*



The screenshot shows the Confluence page for the Dust Mitigation Home. The page is titled "Dust Mitigation Home" and was created by Andrea Harman, last modified by Sarah Hasnain yesterday at 4:47 PM. The page content includes:

- Dust Mitigation:** The Dust Mitigation focus area will work to develop dust mitigation technologies that protect lunar systems in use on the lunar surface from the threat of contamination and damage from local dust. Capability areas in need of dust mitigation include optical systems, thermal surfaces, fabrics, mechanisms, seals and soft goods, and gaseous filtration. High priority areas for investigation are surface stabilization, dust tolerant textiles, filtration, electromechanics and magnetics, as well as dust mitigation structures. The team will work to adapt terrestrial technology for the space environment, and to mature environmental testing technologies.
- Goals:** In order to enable a sustainable exploration of the Moon, the focus group's goals include identifying needs and gaps in dust mitigation, providing recommendations to foster development, and fielding that technology on future missions.
- Vision:** Lunar dust is a major challenge to robotic and human systems that impacts our ability to enable a sustainable presence on the Moon. The Dust Mitigation Focus Group aims to build a broad and diverse community of lunar and technology experts interested in identifying and developing solutions that minimizes the impact and hazard of lunar dust on robotic and human systems.
- Dust Mitigation Members:** [Who's Who in LSIC-DM](#)
- Facilitator:** [@Jorge Nunez](#)
- Contact Email:** Facilitator_DustMitigation@jhuapl.edu
- Listserv Address:** LSIC_DUSTMITIGATION@LISTSERV.JHUAPL.EDU

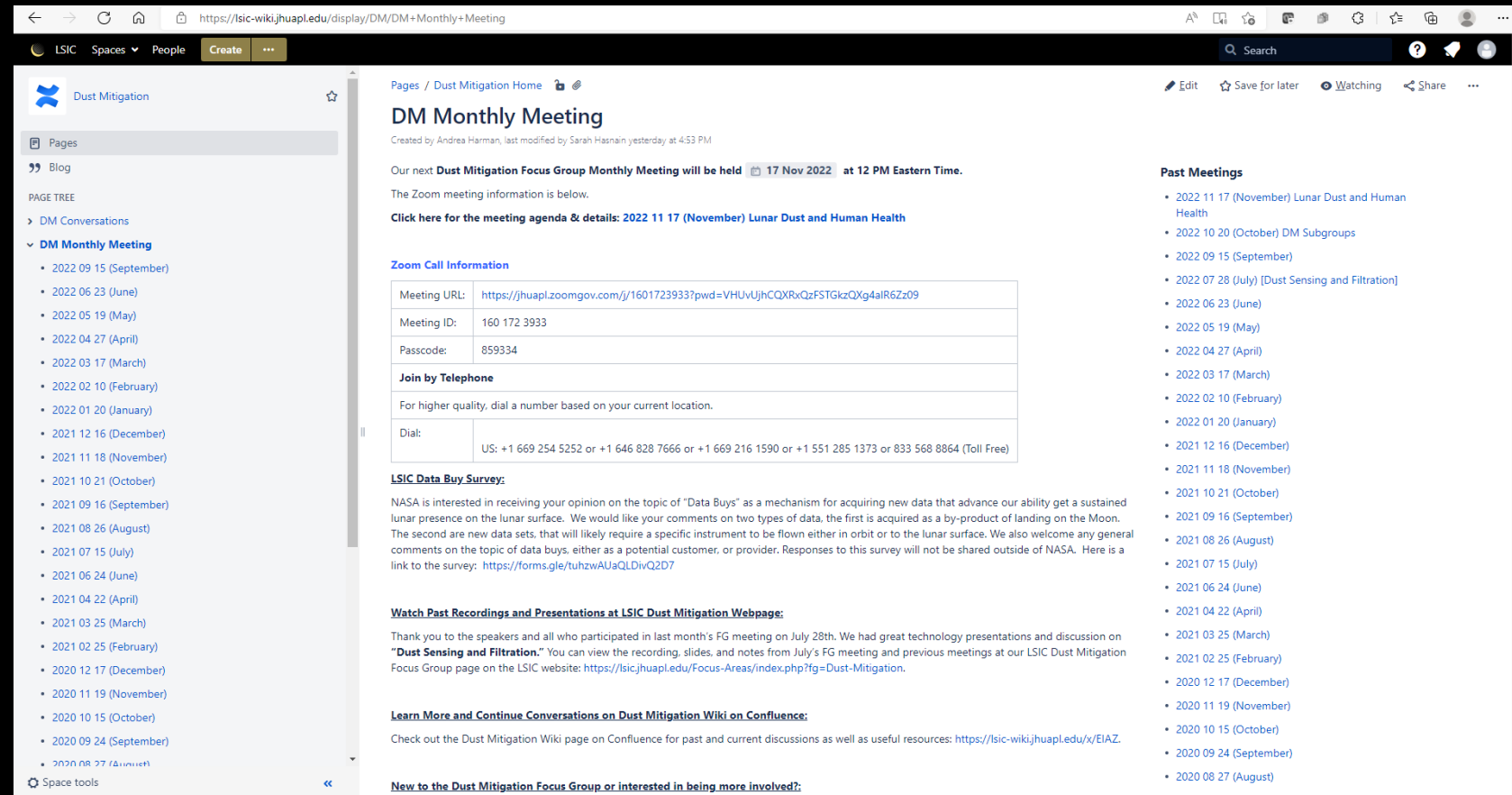
The page also features several sidebars and sections:

- Pages:** A sidebar menu with options for Pages, Blog, and a Page Tree containing links to DM Conversations, DM Monthly Meeting, DM Subgroups, Dust Mitigation 17 December 2020 Monthly Meeting, Dust Mitigation Resources, Events, Webpage Content - Draft, Who's Who In Dust Mitigation, and Year 1 Accomplishments.
- Upcoming Events:** Dust Mitigation Monthly Meeting on 17 Nov 2022 at 12PM - 1PM EDT.
- Past Monthly Meeting Records:** A list of past meetings: 2022 09 15 (September), 2022 06 23 (June), and 2022 05 19 (May).
- Join the Conversations!** A section encouraging users to create new conversations on the LSIC-DM Conversations page.
- Upcoming Opportunity:** ICES 2022 Abstracts due November 15!
- Recent space activity:** A section with a profile picture of Sarah Hasnain and two recent updates: "DM Monthly Meeting updated yesterday at 4:53 PM" and "2022 11 17 (November) Lunar Dust and Human Health updated yesterday at 4:51 PM".

Join the Discussion on Confluence Site

- Please contact Andrea Harman (ams573@alumni.psu.edu) to get set up with an account!
- *Dust Mitigation Discussion page and wiki*

- 1. Sign-in to add a comment
- 2. Add comment at bottom of page
- 3. You can comment before, during, or after today's meeting



The screenshot shows a Confluence page titled "DM Monthly Meeting" within the "Dust Mitigation" space. The page content includes:

- DM Monthly Meeting**: Created by Andrea Harman, last modified by Sarah Hasnain yesterday at 4:53 PM.
- Our next Dust Mitigation Focus Group Monthly Meeting will be held** 17 Nov 2022 at 12 PM Eastern Time.
- The Zoom meeting information is below.
- Click here for the meeting agenda & details: 2022 11 17 (November) Lunar Dust and Human Health**
- Zoom Call Information**:

Meeting URL:	https://jhuapl.zoomgov.com/j/1601723933?pwd=VHUvUjhCQXRxQzFSTGkzQXg4alR6Zz09
Meeting ID:	160 172 3933
Passcode:	859334
- Join by Telephone**: For higher quality, dial a number based on your current location.

Dial:	US: +1 669 254 5252 or +1 646 828 7666 or +1 669 216 1590 or +1 551 285 1373 or 833 568 8864 (Toll Free)
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- LSIC Data Buy Survey**: NASA is interested in receiving your opinion on the topic of "Data Buys" as a mechanism for acquiring new data that advance our ability get a sustained lunar presence on the lunar surface. We would like your comments on two types of data. The first is acquired as a by-product of landing on the Moon. The second are new data sets. That will likely require a specific instrument to be flown either in orbit or to the lunar surface. We also welcome any general comments on the topic of data buys, either as a potential customer, or provider. Responses to this survey will not be shared outside of NASA. Here is a link to the survey: <https://forms.gle/tuhzwAJaQLDivQZD7>
- Watch Past Recordings and Presentations at LSIC Dust Mitigation Webpage**: Thank you to the speakers and all who participated in last month's FG meeting on July 28th. We had great technology presentations and discussion on "Dust Sensing and Filtration." You can view the recording, slides, and notes from July's FG meeting and previous meetings at our LSIC Dust Mitigation Focus Group page on the LSIC website: <https://lsic.jhuapl.edu/Focus-Areas/index.php?fg=Dust-Mitigation>.
- Learn More and Continue Conversations on Dust Mitigation Wiki on Confluence**: Check out the Dust Mitigation Wiki page on Confluence for past and current discussions as well as useful resources: <https://lsic-wiki.jhuapl.edu/x/EIAZ>.
- New to the Dust Mitigation Focus Group or interested in being more involved?**

The right sidebar shows a "Past Meetings" list with dates from 2020 to 2022.

Updates and Communications

- Monthly LSIC newsletter – New edition came out early November 2022
 - <https://lsic.jhuapl.edu/Resources/LSIC-Resources.php>
 - Mailing list
 - The listserv goes to all participants. Use with caution. But feel free to use!
 - Please make sure to add LSIC_DUSTMITIGATION@LISTSERV.JHUAPL.EDU to safe senders list.
 - If we need smaller, focused lists we can set those up
- Updates to the webpage - <https://lsic.jhuapl.edu/Our-Work/Focus-Areas/index.php?fg=Dust-Mitigation>
 - Notes, slides, recordings from telecons posted here
- Wiki is ready!
 - Confluence is free to you and available to all registered LSIC members
 - To request an account, please email Andrea Harman: ams573@alumni.psu.edu
- Lightning Talks at monthly focus group meetings
 - Anyone can volunteer to give a featured talk (~15 mins)
 - Email me if you want to sign up: Facilitator_DustMitigation@jhuapl.edu

Follow the Code of Conduct for all Focus Group communications

<https://lsic.jhuapl.edu/Resources/LSIC-Resources.php>

Space Technology Funding Opportunities

Current Tech Development Opportunities

- [Space Technology Research Institutes \(STRI\) Solicitation »](#)
 - Invited Full Proposals were Due November 3, 2022
- [NASA Space Technology Graduate Research Opportunities – Fall 2023 \(NSTGRO23\) »](#)
 - Proposals were Due November 2, 2022
- [Announcement for Partnership Proposals \(AFPP\) to Advance Tipping Point Technologies »](#)
 - Final Proposals Due November 22, 2022
- [NASA Payloads and Research Investigations on the Surface of the Moon »](#)
 - Proposals Due December 20, 2022
- [NASA Innovative Advanced Concepts \(NIAC\) 2022 Phase II Call for Proposals »](#)
 - Proposals Due January 18, 2023

Future Solicitation and Opportunities

- [NASA Innovation Corps Pilot »](#)
 - Proposals may be submitted at any time through March 29, 2023, but applications will be reviewed in intervals on the following dates: July 22, 2022; Sept. 16, 2022; Nov. 17, 2022; and Jan 20, 2023

NASA PRISM 3 Solicitation

- This third Payloads and Research Investigations on the Surface of the Moon (PRISM) program element solicits proposals for an investigation that includes development and flight of science-driven suites of instruments that will be delivered to the lunar surface by the Commercial Lunar Payload Services (CLPS).
- This PRISM call is for science investigations that will be delivered to the lunar surface in mid-Calendar Year 2027.
- This delivery will go to a safe landing site identified and justified by the proposer that resides within $\pm 75^\circ$ of the lunar equator.
- Both nearside and far side destinations are open to consideration.
- This PRISM call provides the opportunity to leverage survive-the-night services and mobility services provided by the CLPS provider.
- **Step 1 due: October 24; Step 2 due: December 20;**
- Questions and comments concerning PRISM may be directed to Debra Needham and Ryan Watkins at HQ-PRISM@mail.nasa.gov.

LSIC Activities

Recent and Upcoming LSIC Meetings and Workshops (<https://lsic.jhuapl.edu/Events/>)

- LSIC Fall Meeting (11/02 – 11/03)
 - University of Texas – El Paso
 - Agenda and registration posted on LSIC website
 - <https://lsic.jhuapl.edu/Events/Agenda/index.php?id=350>
- LSIC Dust Mitigation Focus Group Meeting (12/15)
 - End of Year Recap & Look Forward

Other Recent and Upcoming Dust Mitigation Related Workshop and Meetings

- AIAA ASCEND Conference (10/24-26)
 - <https://www.ascend.events/>
- Commercial Lunar Payload Services Survive the Night Technology Workshop (12/06-08)
 - Cleveland, OH/Virtual; Program Available;
 - Registration for In-Person US Citizens: 11/22 (International was 10/31); Virtual Registration: 12/08
 - <https://www.hou.usra.edu/meetings/clps2022/>

LSIC Fall Meeting

- Dates: November 2-3, 2022
- University of Texas at El Paso (UTEP), Virtual and In-Person
- The LSIC 2022 Fall Meeting concentrated on understanding NASA's plans and technology investments relevant to building a sustained presence on the lunar surface.
- The event featured interrelationships between the six focus areas identified by the Consortium, with a specific focus on how they relate to excavation and construction.
- The fall meeting featured individual invited talks, group and panel discussions, as well as poster sessions, breakout groups, and networking opportunities.
- Tours of University of Texas, El Paso facilities, White Sands Test Facility, and ICON's 3D printed barracks at Fort Bliss.
- **Fall Meeting Website:**
<https://lsic.jhuapl.edu/Events/Agenda/index.php?id=200>
- Recordings and Presentations will be posted on the Fall Meeting Website soon!



Get Involved with Dust Mitigation

- Sign-up to Receive LSIC and Dust Mitigation FG Updates:
 - Fill out the LSIC Survey and indicate interest in Dust Mitigation to receive news and event invitations:
 - <https://lsic.jhuapl.edu/News/Sign-Up.php>
- Help us improve the Dust Mitigation Focus Group!
 - Feedback survey:
https://docs.google.com/forms/d/e/1FAIpQLSdjuTIK_TLMnCM4_aSMLAzLS762qtzbgmcOd2fgizlCsab6KQ/viewform
- Join one of the Dust Mitigation Subgroups!
 - Dust Mitigation Subgroup Membership/Leaders survey:
 - <https://docs.google.com/forms/d/e/1FAIpQLScB6iT2fgPqj2zlaP0s-rwWQDQ04TPfgVyiC5zn0AQPAT5CZA/viewform>
 - Still looking for subgroup lead for Monitoring and Filtration Subgroup!
- Interested in Teaming/Collaborating with Others?
 - Add yourself to our Who's Who page: <https://lsic-wiki.jhuapl.edu/display/DM/Who%27s+Who+In+Dust+Mitigation>
- Looking for info on lunar dust or dust mitigation resources?
 - Checkout our resources page on the Dust Mitigation Wiki page on Confluence: <https://lsic-wiki.jhuapl.edu/x/94Rf>

LSII | Data Buys Survey

- NASA is interested to learn more about the interest in the LSIC community of NASA conducting data buys from commercial providers
- There are two types of data to consider
 - Data acquired as a by product of landing on the Moon
 - Dedicated data that require a specific instrument to be flown
- What kind of data access is required?
 - Does NASA buy an entire data set and put it in PDS?
 - Do users buy data directly from the providers?
- Survey Link:
<https://forms.gle/tuhzwAUaQLDivQ2D7>



Surface Power Telecon: December 1st 11:00 ET

Speakers: Dr. Matt Clement, Dr. Sean Young, Dr. Joe Kozak Samantha Andrade, Julie Peck, Joseph Kozak (JHU/APL, Surface Power FG team members)

Topic: Surface Power Focus Group Year in Review and Feedback Forum

Agenda:

- Community Updates
- Review of 2022 Telecons and Workshops:
 - Anthony Calomino: FSP RFP (Jan)
 - Ansel Barchowsky: Tethered Pwr (Mar)
 - Low Temperature Workshop (Jul)
 - Annette Dolbow/Lee Mason/Jeff Csank: Integration and Testing (Oct)
 - MOSA subgroup (Feb)
 - LIVE RFI Breakouts (May)
 - Popcorn Networking (Aug)
 - Ian Jakupca: RFCs (Mar)
 - Martin Naredorf: Stds Gov (Jun)
 - David Sadey: ISPSIS (Sep)
- Survey and Community Feedback

Zoom Link for Dec 1st 11:00 ET:

<https://jhuapl.zoomgov.com/j/1617206812?pwd=ZWhtaW5XRURsRmxJcWd4b1ZoeFFwUT09>

Today's Technology Presentation

“Crew Health and Lunar Dust: What To Know Before You Go”



Torin McCoy

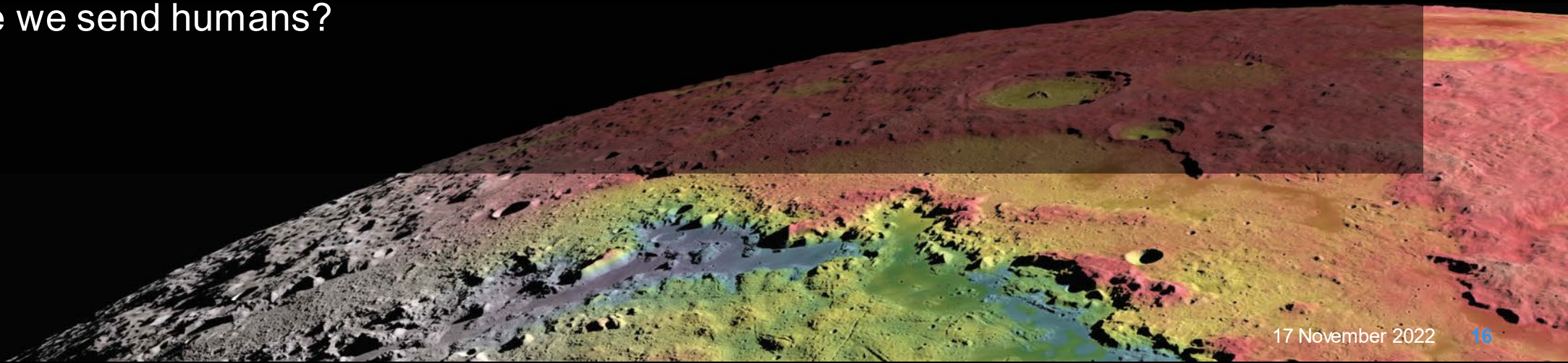
**Moon2Mars Deputy Chief Health and
Performance Officer**

NASA Johnson Space Center

torin.mccoy-1@nasa.gov

Lunar Dust and Human Health Discussion

- What gaps exist in our understanding of lunar dust and dust environment?
- What data do we still need to help improve our understanding of risks to future astronaut crews?
- What plans are in place to ensure we get the data we need to close those gaps?
- Do upcoming CLPS missions help get the data we need?
- Are current testing facilities and simulants sufficient for testing that needs to be done?
- What experiments and technology demonstrations need to be flown on CLPS missions before we send humans?





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