Lunar Surface Innovation
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LSIC Dust Mitigation Focus Group

Monthly Meeting
January 19, 2022

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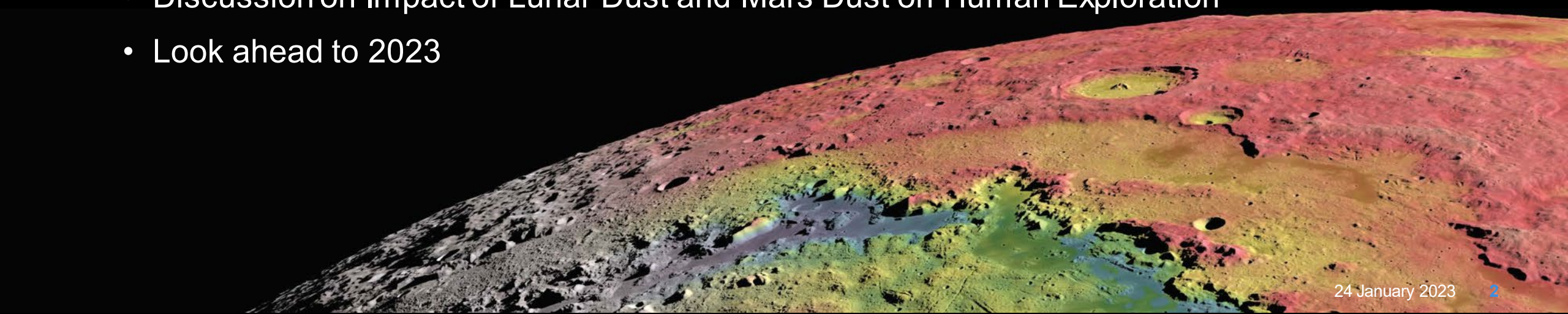
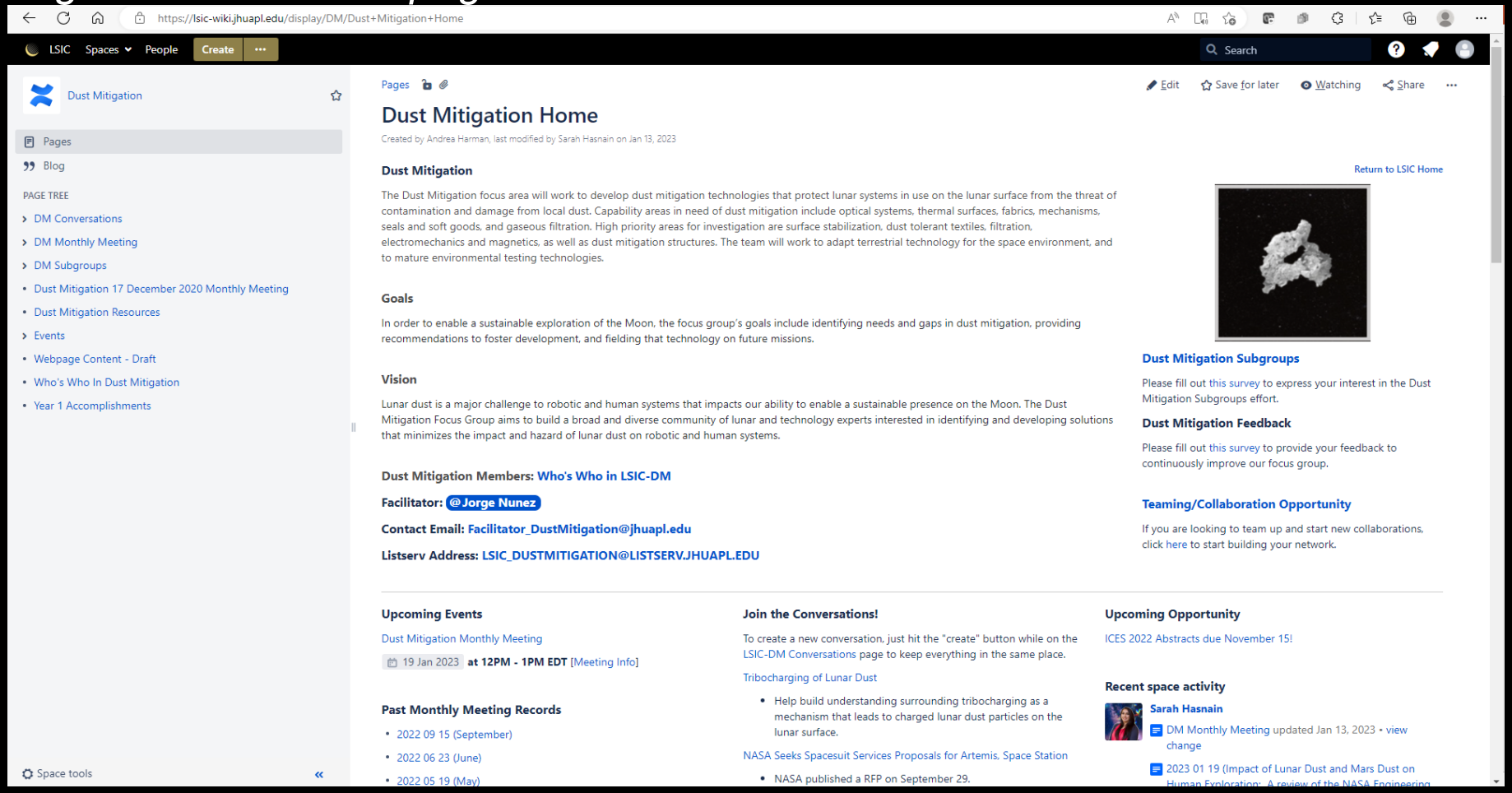
Agenda

- Welcome, LSIC and Focus Group Updates
- Upcoming Opportunities and Meetings
- Featured Technology Presentation:
  - **"The Impact of Lunar Dust and Mars Dust on Human Exploration: A review of the NASA Engineering and Safety Center (NESC) Workshops"**
    - Dr. Joel S. Levine, Research Professor, Department of Applied Science, The College of William and Mary, Williamsburg, Virginia and Member, Space Environment Technical Discipline Team, NASA Engineering and Safety Center (NESC), NASA Langley Research Center, Hampton, Hampton, Virginia
- Discussion on Impact of Lunar Dust and Mars Dust on Human Exploration
- Look ahead to 2023



LSIC Dust Mitigation Wiki Page

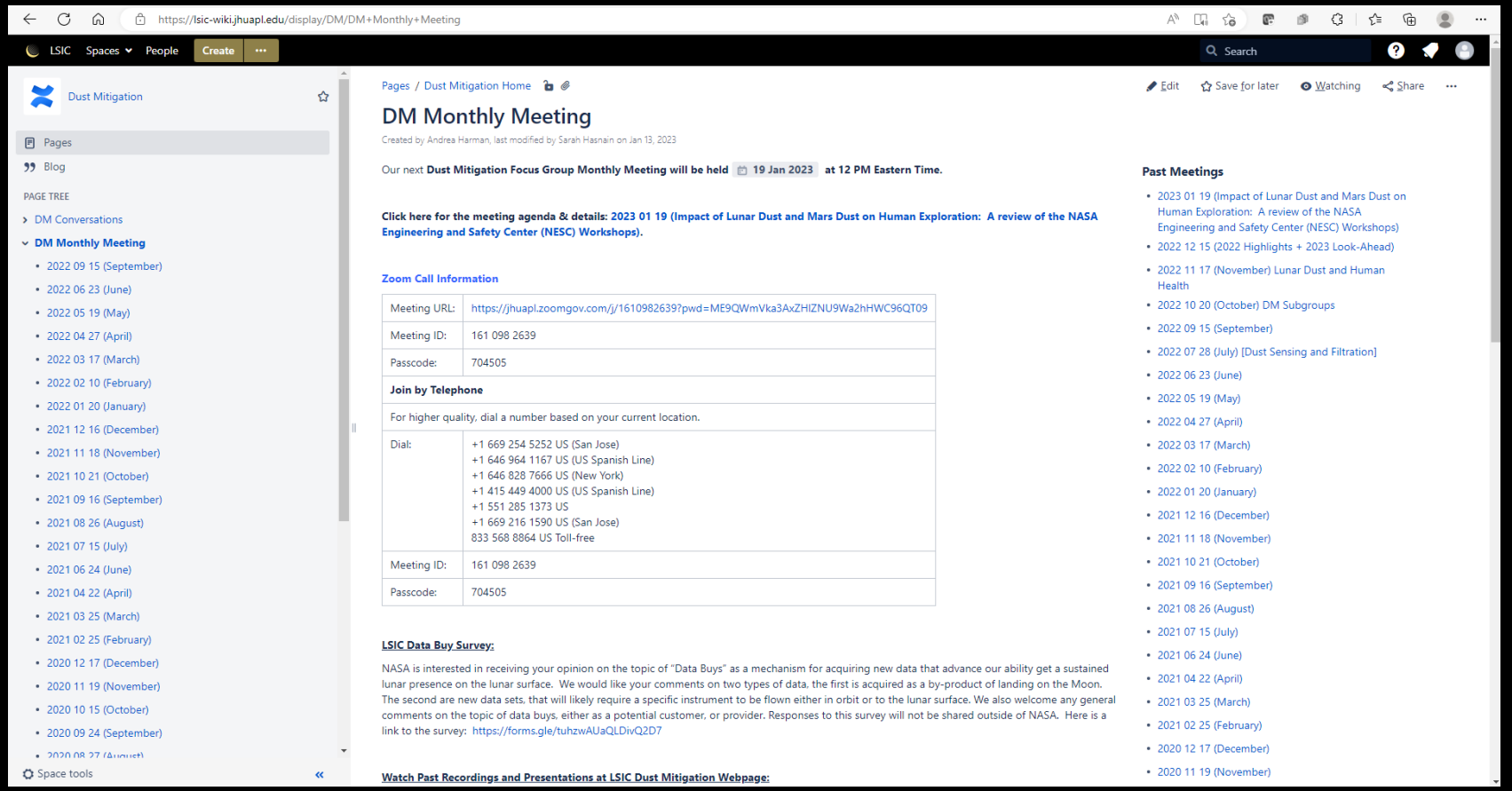
- **To request access, please contact lsic-wiki-admins@listserv.jhuapl.edu**
- *Dust Mitigation Discussion page and wiki*



https://lsic-wiki.jhuapl.edu/display/DM/Dust+Mitigation+Home

Join the Discussion on our Wiki Page

- **To request access, please contact lsic-wiki-admins@listserv.jhuapl.edu**
- *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



https://lsic-wiki.jhuapl.edu/x/GoAZ

Updates and Communications

- Monthly LSIC newsletter – New edition came out early January 2023
  - POC: Josh Cahill
  - 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
- Keep up on the Wiki!
  - Confluence is free to you and available to all registered LSIC members
  - **To request access, please contact lsic-wiki-admins@listserv.jhuapl.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

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Space Technology Funding Opportunities

Current Tech Development Opportunities

- **NASA Innovative Advanced Concepts (NIAC) 2022 Phase II Call for Proposals »**
  - Proposals Due January 18, 2023
- **FY 2023 Phase II SBIR and STTR Solicitations (2022 Phase I awardees only) »**
  - Phase II solicitations are not released publicly; the solicitations are sent directly to Phase I awardees as they are the only ones eligible to apply.
  - SBIR and STTR Phase II contracts last for 24 months and have a manimum funding amount of $850,000. Proposals are due 60 days before the Phase I period of performance ends.
  - The 2022 SBIR Phase II Solicitation (2022 SBIR Phase I awardees only) opens on December 13, 2022 and closes on January 25, 2023. Post Phase II funding opportunities are only open to small businesses with Phase I or II awards. See the NASA SBIR/STTR program website for more information.
- **FY 2023 Phase I SBIR and STTR Solicitations »**
  - Phase I opportunity opened on Jan. 10, 2023 and closes on March 13, 2023.
  - The NASA SBIR and STTR Phase I Solicitations are open to small businesses with 500 or fewer employees. To apply for an STTR, a small business must partner with a non-profit research institution such as a university or a research laboratory. SBIR Phase I contracts last for six months and STTR Phase I contracts last for 13 months, both with a maximum funding of $150,000.
  - Selections scheduled to be announced on June 5, 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 SBIR & STTR Solicitations 2023

- Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR)
- *Open to U.S. small businesses*
  - *May collaborate with universities and industry partners*
- Phase I: Up to $150 K for 6 Mo
- Phase II: Up to $850 K for 24 Mo
- Focus Area 24: “Dust Mitigation and Extreme Lunar Environment Mitigation Technologies”
- **Phase I Solicitation Closes March 13, 2023**
- **Phase II Solicitations Due by last day of Phase I contract**
- **Phase I Selections expected June 5, 2023**
- https://sbir.nasa.gov/solicit-detail/97360

NASA SBIR & STTR Solicitations 2023

- Focus Area 24: Dust Mitigation and Extreme Lunar Environment Mitigation Technologies
  - 2 Sub-topic areas
- 1. Lunar Dust Filtration and Monitoring (Z13.04)
  - Lead Center: GRC
  - Participating Center(s): JSC, KSC
- 2. Components for Extreme Environments (Z13.05)
  - Lead Center: KSC
  - Participating Center(s): GRC, JSC, LaRC
- https://sbir.nasa.gov/solicit-detail/79614

LSIC Activities

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

- LSIC SP Focus Group Meeting (01/26)
- LSIC Dust Mitigation Focus Group Meeting (02/16)
- LSIC Spring Meeting (04/24 – 04/25, 2023) – New Date!
  - Abstracts due Feb 3!
  - Johns Hopkins Applied Physics Laboratory (Hybrid)
- LSIC Dust Mitigation Workshop (Spring 2023)
  - Follow-up to DM Workshop from 2021
  - Dates TBD

Other Recent and Upcoming Dust Mitigation Related Workshop and Meetings

- Lunar and Planetary Science Conference - LPSC (03/13 – 03/17, 2023)
  - The Woodlands, TX
  - https://www.hou.usra.edu/meetings/lpsc2023/index.shtml
- Space Resources Week 2023 (04/19 – 04/21, 2023)
  - Luxembourg
  - https://www.spaceresourcesweek.lu/

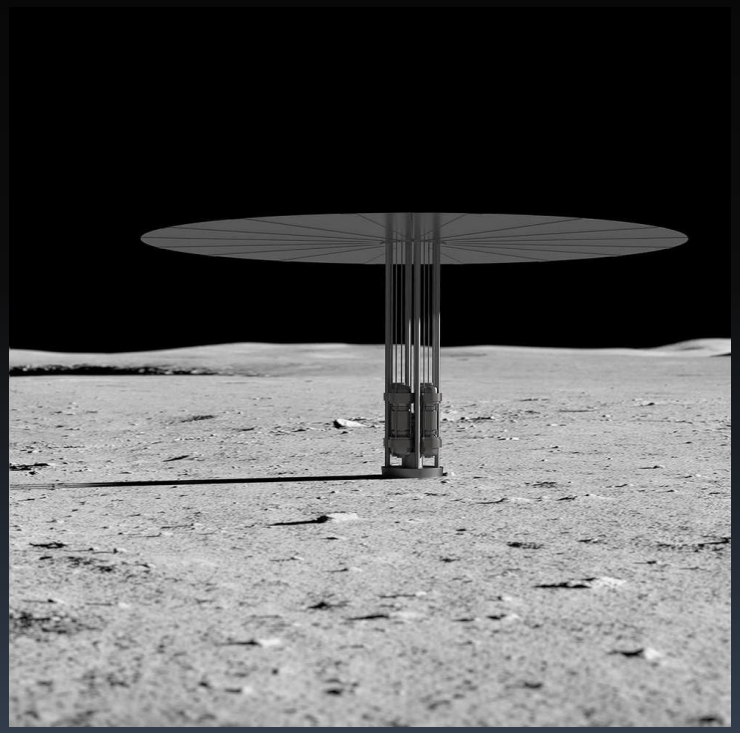
LSIC | Surface Power Focus Group January Telecon

Surface Power Telecon: January 26th 11:00 ET

Speakers: Peter McGrath (FSP Project Manager for Intuitive Machines and X-Energy)
Joe Halackna (Deputy Director for Reactor Engineering for Westinghouse)
Mikaela Blood (FSP Reactor Lead at Lockheed Martin)
Lee Mason (Power Division Associate Chief at NASA GRC)

Topic: NASA Fission Surface Power Phase I

Agenda:
- Community Updates
- Intuitive Machines/X-Energy presentation
- Westinghouse presentation
- Lockheed Martin presentation
- Panel Discussion Q&A



Zoom Link for Jan 26th 11:00 ET:

https://jhuapl.zoomgov.com/j/1617206812?pwd=ZWhlaW5XRURsRmxJcWd4b1ZoeFFwUT09

LSIC Spring Meeting

****NOW**** April 24th – 25th at Johns Hopkins Applied Physics Lab

Abstracts are due Feb. 3rd. Registration will open in Feb.!

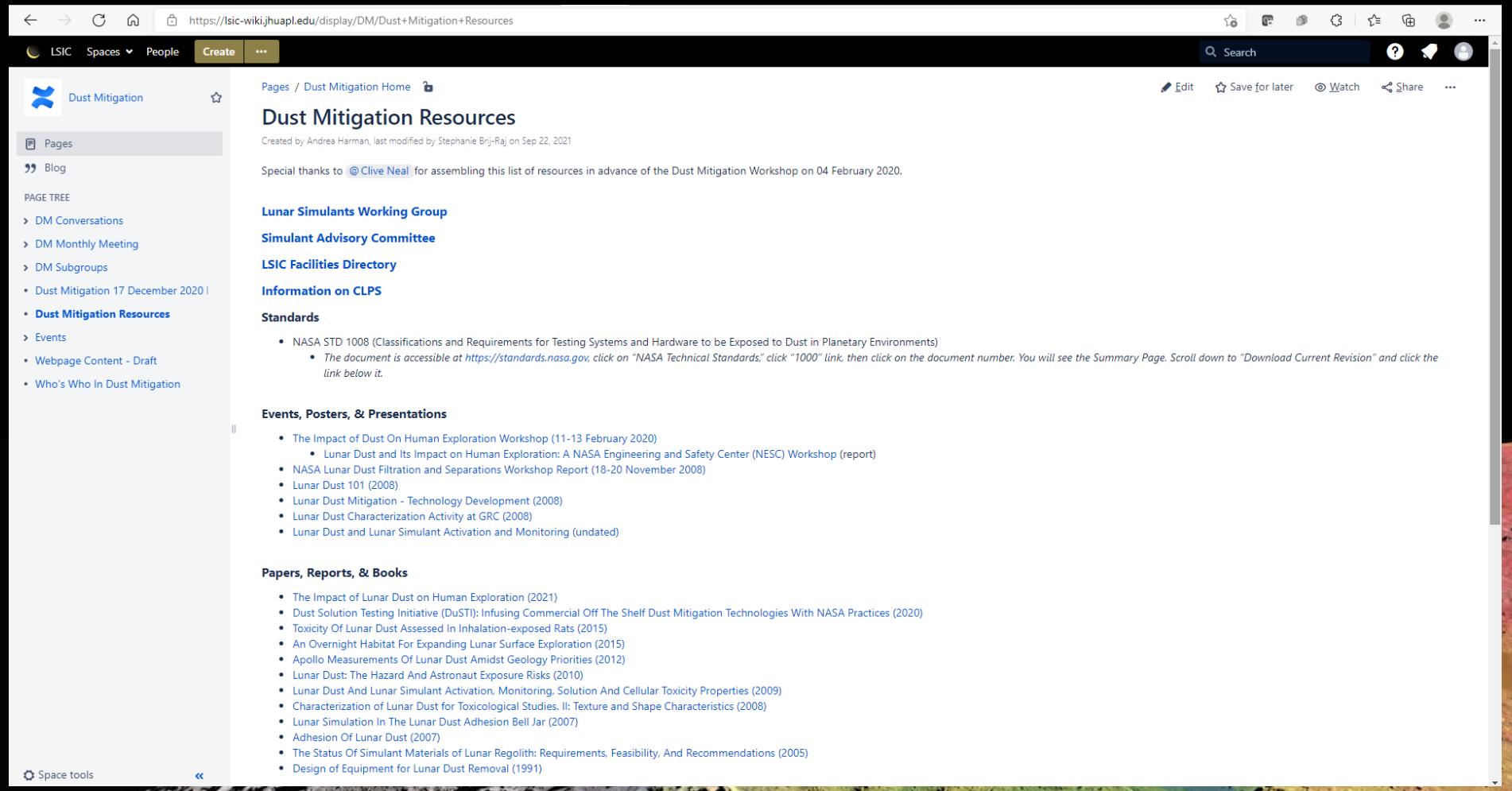
*Please remember to utilize the abstract template provided on webpage

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

Dust Mitigation Resources

- 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



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_aSMLAzLS762qtzbgmcOd2fgizICsab6KQ/viewform
- Join one of the Dust Mitigation Subgroups!
  - Dust Mitigation Subgroup Membership/Leaders survey:
  - https://forms.gle/AGpyJcNZBd6ihdaq7
  - Still looking for subgroup leads!
- 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

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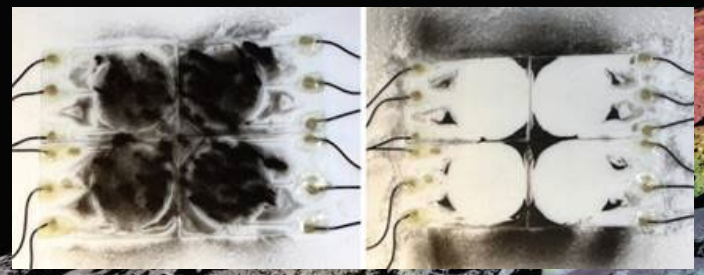
Dust Mitigation FG Subgroups

- Standards & Interoperability [Subgroup Lead: Dan Hawk]
  - Standards and interoperability across testing and operational use cases
- Isolation Technologies [Subgroup Lead: Ron Creel]
  - Technologies that keep dust out
- Materials & Coatings
  - Optical Systems – Viewports, camera lenses, solar panels, space suit visors, mass spectrometers, other sensitive optical instruments
  - Thermal Surfaces – Thermal radiators, thermal painted surfaces, thermal connections
  - Fabrics – Space suit fabrics, soft wall habitats, mechanism covers
  - Seals and Soft Goods – Space suit interfaces, hatches, connectors, hoses
- Mechanisms & Connectors
  - Mechanisms – Linear actuators, bearings, rotary joints, hinges, quick disconnects, valves, linkages
  - Dust-tolerant connectors
- Modeling & Monitoring
  - Gaseous Filtration – Atmosphere revitalization, ISRU processes
  - Dust monitoring – Cabin and external dust monitoring
  - Dust plume modeling

Interested in leading a Dust Mitigation Subgroup?

Fill out our survey!
https://forms.gle/AGpyJcNZBd6ihdaq7

Today's Technology Presentation

"The Impact of Lunar Dust and Mars Dust on Human Exploration: A review of the NASA Engineering and Safety Center (NESC) Workshops"

Dr. Joel S. Levine

Research Professor, Department of Applied Science

The College of William and Mary, Williamsburg, Virginia

Member, Space Environment Technical Discipline Team, NASA Engineering and Safety Center (NESC)

NASA Langley Research Center, Hampton, Hampton, Virginia

joelslevine@gmail.com

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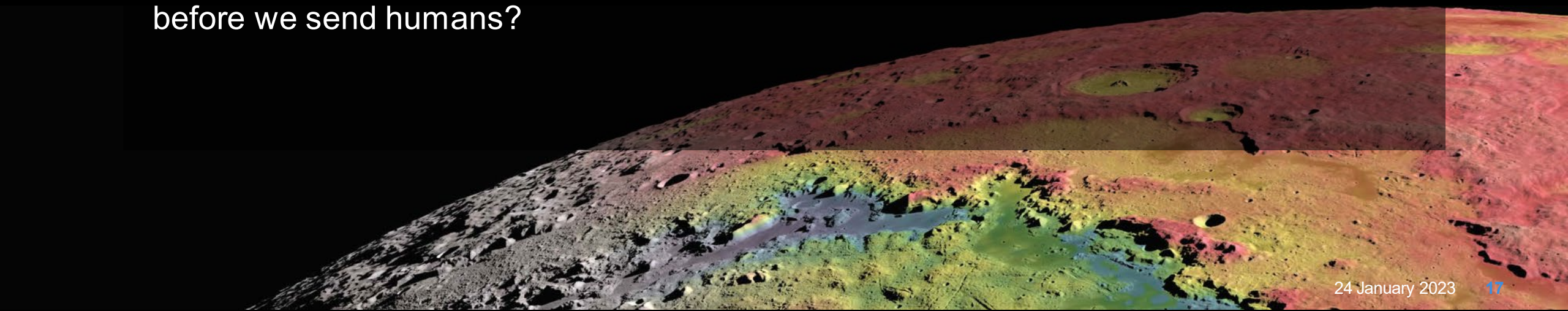
Discussion on Impact of Lunar Dust and Mars Dust on Human Exploration

- What gaps exist in our understanding of lunar and martian dust and dust environment?
- What data do we still need to help improve our understanding of risks to hardware and 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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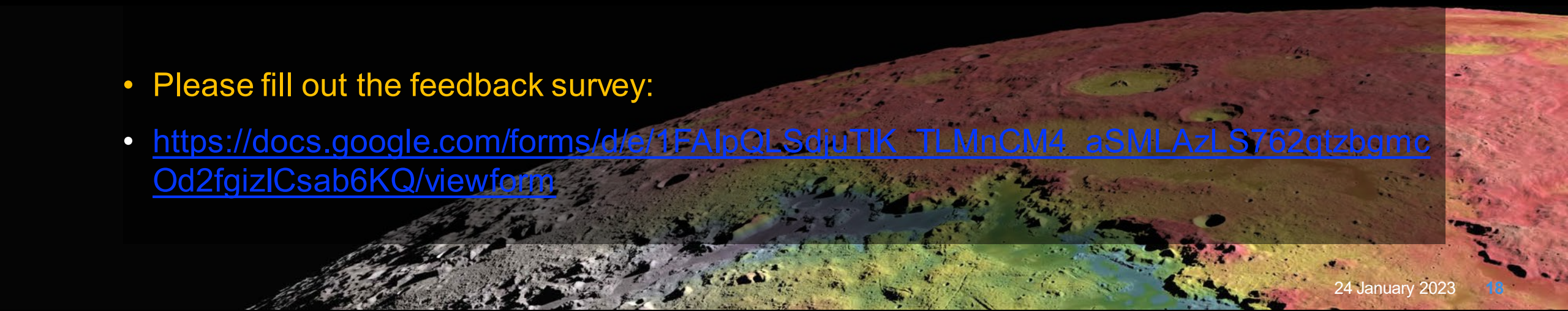
What is next for Dust Mitigation FG?

What would you like to see for Dust Mitigation Focus Group in 2023

- What benefits have you gained from being part of the LSIC Dust Mitigation Focus group?
- Is there anything else you enjoy about monthly meetings? Anything you'd like to see us change?
- Is there anything you liked about this past year that you'd like to see continue?
- Is there anything about this past year that you'd change going forward?
- Are there any topics we have not covered you would like to see covered (or see more)?
- Are there other activities you would like to see us organize?



- Please fill out the feedback survey:
- https://docs.google.com/forms/d/e/1FAIpQLSdjuTIK_TLMnCM4_aSMLAzLS762gtzbgmcOd2fgizICsab6KQ/viewform

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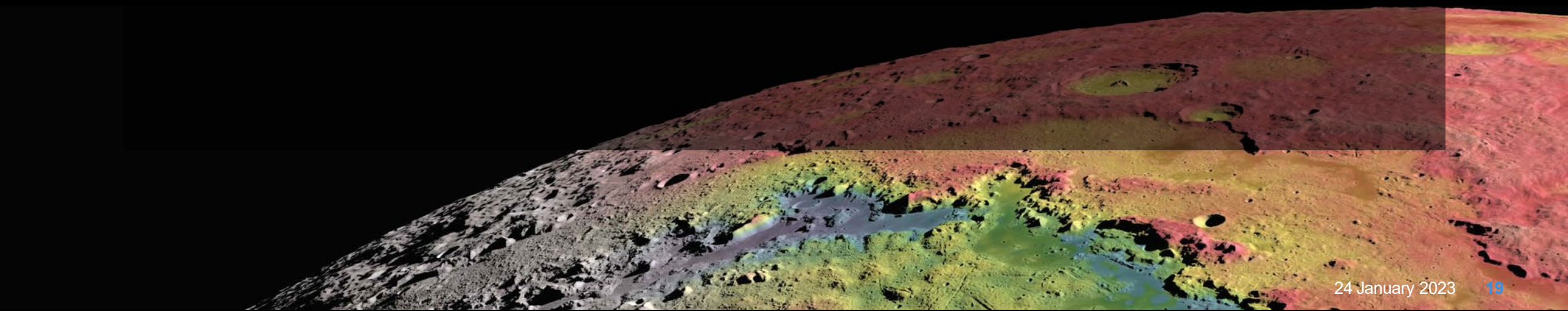
Looking forward to 2023

- LSIC Spring Meeting (April 24-25, 2023)
- LSIC “White Paper”
- LSIC Dust Mitigation Workshop (Spring 2023)



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