



# Lunar Surface Innovation

C O N S O R T I U M

## LSIC Dust Mitigation Focus Group

Monthly Meeting

July 28, 2022



JOHNS HOPKINS  
APPLIED PHYSICS LABORATORY

Dr. Jorge Núñez  
Senior Scientist  
Space Exploration Sector

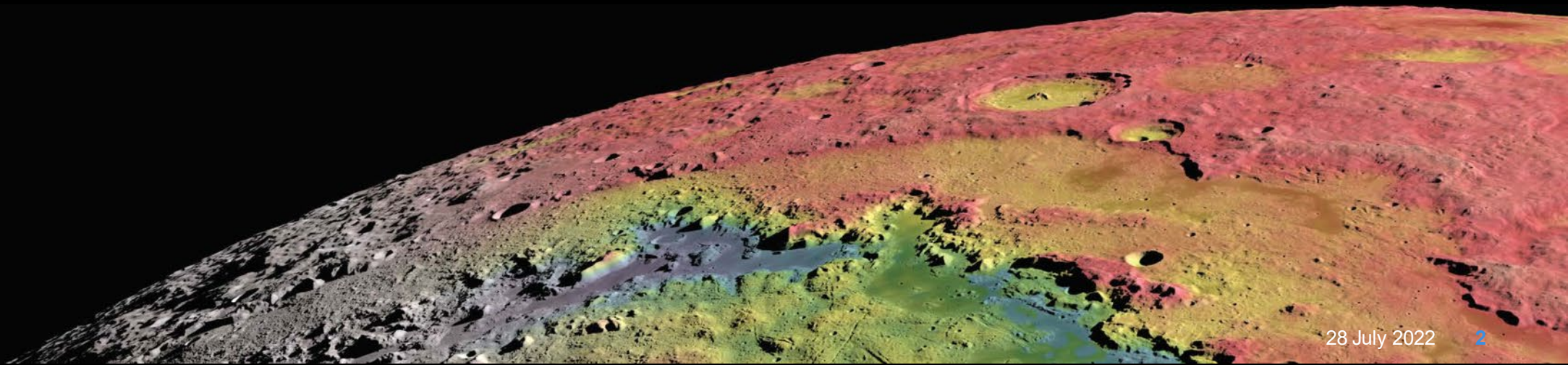
Facilitator\_DustMitigation@jhuapl.edu

APL LSIC Dust  
Mitigation Team:

Lindsey Tolis  
Mark Perry  
Richard Miller  
Sarah Hasnain

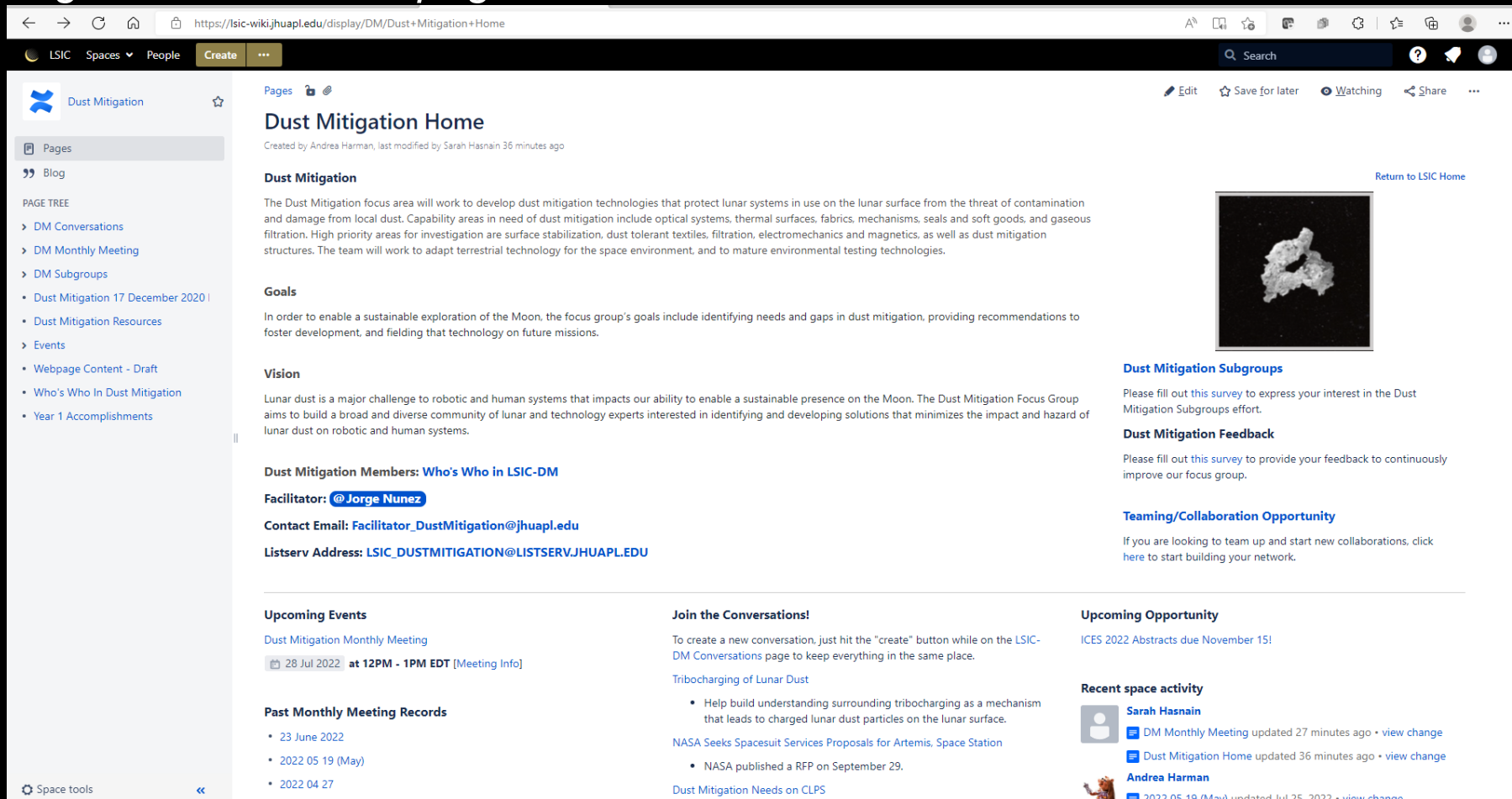
# Agenda

- Welcome, LSIC and Focus Group Updates
- Upcoming Opportunities and Meetings
- Featured Technology Presentations:
  - Daniel Cantin, INO (Institut National d'Optique)
    - “iSIPS an innovative dust characterization and monitoring tool: preliminary proof of concept and looking for Lunar applications”
  - Dr. Ben Sumlin, NASA Glenn Research Center
    - “Dust Detection Challenges in Complex Environments”
- Discussion on Dust Sensing and Filtration challenges and needs



# LSIC Dust Mitigation Confluence Site

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



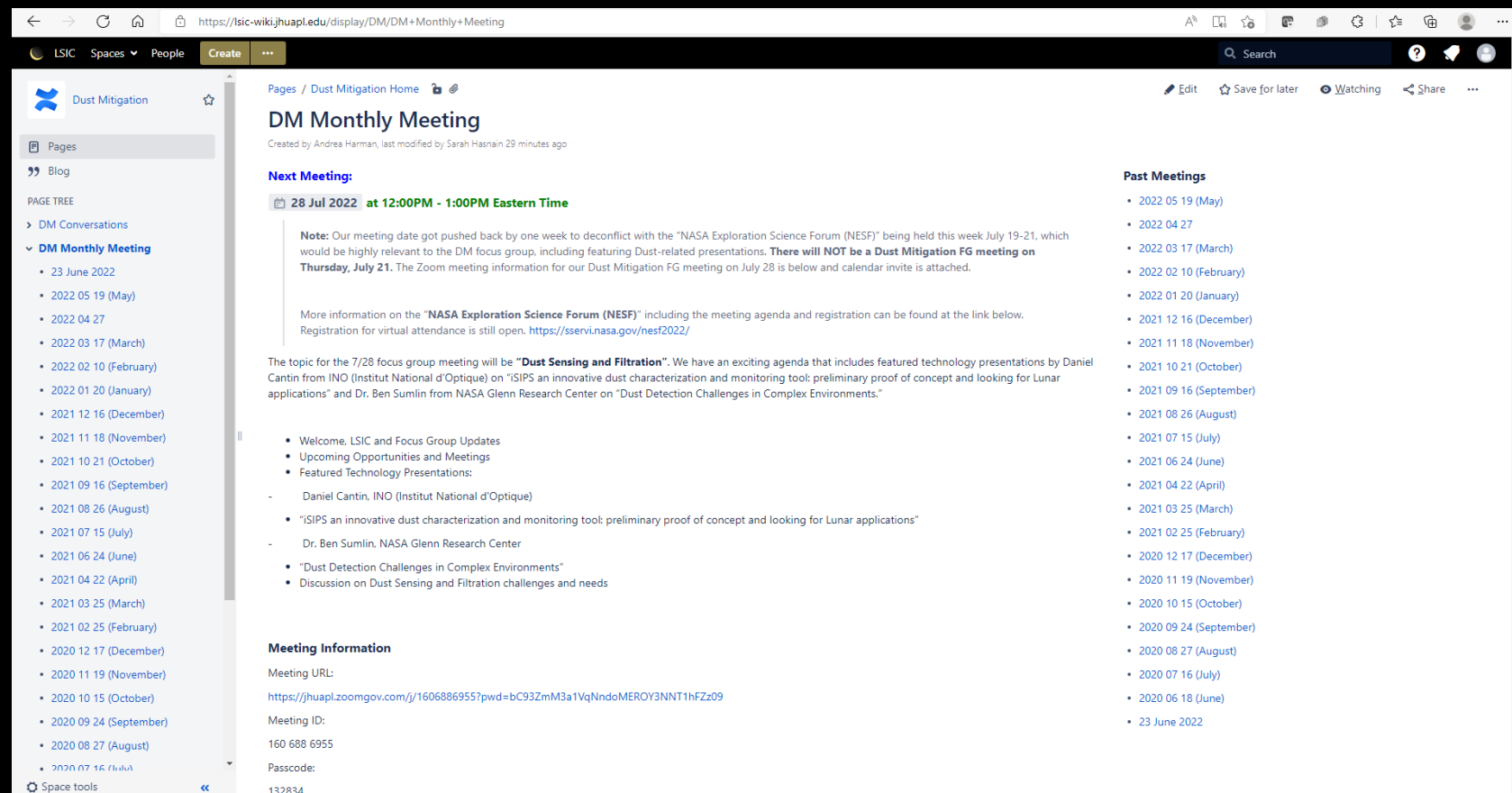
The screenshot shows the Confluence page for the LSIC Dust Mitigation Home. The page is titled "Dust Mitigation Home" and was created by Andrea Harman, last modified by Sarah Hasnain 36 minutes ago. The page content includes:

- 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](mailto:Facilitator_DustMitigation@jhuapl.edu)
- Listserv Address:** [LSIC\\_DUSTMITIGATION@LISTSERV.JHUAPL.EDU](mailto:LSIC_DUSTMITIGATION@LISTSERV.JHUAPL.EDU)
- Upcoming Events:** Dust Mitigation Monthly Meeting on 28 Jul 2022 at 12PM - 1PM EDT [Meeting Info]
- Past Monthly Meeting Records:**
  - 23 June 2022
  - 2022 05 19 (May)
  - 2022 04 27
- Join the Conversations!** To create a new conversation, just hit the "create" button while on the LSIC-DM Conversations page to keep everything in the same place.
  - Tribocharging of Lunar Dust
    - Help build understanding surrounding tribocharging as a mechanism that leads to charged lunar dust particles on the lunar surface.
  - NASA Seeks Spacesuit Services Proposals for Artemis, Space Station
  - NASA published a RFP on September 29.
  - Dust Mitigation Needs on CLPS
- Upcoming Opportunity:** ICES 2022 Abstracts due November 15!
- Recent space activity:**
  - Sarah Hasnain: DM Monthly Meeting updated 27 minutes ago • view change
  - Dust Mitigation Home updated 36 minutes ago • view change
  - Andrea Harman: 2022 05 19 (May) updated Jul 25, 2022 • view change

# Join the Discussion on Confluence Site

- Please contact Andrea Harman ([ams573@alumni.psu.edu](mailto: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 for the 'Dust Mitigation' space. The page title is 'DM Monthly Meeting', created by Andrea Harman and last modified by Sarah Hasnain 29 minutes ago. The page content includes:

- Next Meeting:** 28 Jul 2022 at 12:00PM - 1:00PM Eastern Time
- Note:** Our meeting date got pushed back by one week to deconflict with the "NASA Exploration Science Forum (NESF)" being held this week July 19-21, which would be highly relevant to the DM focus group, including featuring Dust-related presentations. **There will NOT be a Dust Mitigation FG meeting on Thursday, July 21.** The Zoom meeting information for our Dust Mitigation FG meeting on July 28 is below and calendar invite is attached.
- More information on the "NASA Exploration Science Forum (NESF)"** including the meeting agenda and registration can be found at the link below. Registration for virtual attendance is still open. <https://sservi.nasa.gov/nest2022/>
- The topic for the 7/28 focus group meeting will be "Dust Sensing and Filtration".** We have an exciting agenda that includes featured technology presentations by Daniel Cantin from INO (Institut National d'Optique) on "SIPS an innovative dust characterization and monitoring tool: preliminary proof of concept and looking for Lunar applications" and Dr. Ben Sumlin from NASA Glenn Research Center on "Dust Detection Challenges in Complex Environments."
- Agenda:**
  - Welcome, LSIC and Focus Group Updates
  - Upcoming Opportunities and Meetings
  - Featured Technology Presentations:
    - Daniel Cantin, INO (Institut National d'Optique)
      - "SIPS an innovative dust characterization and monitoring tool: preliminary proof of concept and looking for Lunar applications"
    - Dr. Ben Sumlin, NASA Glenn Research Center
      - "Dust Detection Challenges in Complex Environments"
      - Discussion on Dust Sensing and Filtration challenges and needs
- Meeting Information:**
  - Meeting URL: <https://jhuapl.zoomgov.com/j/1606886955?pwd=bc93ZmM3a1VqNndoMEROY3NNT1hFZz09>
  - Meeting ID: 160 688 6955
  - Passcode: 132834
- Past Meetings:**
  - 2022 05 19 (May)
  - 2022 04 27
  - 2022 03 17 (March)
  - 2022 02 10 (February)
  - 2022 01 20 (January)
  - 2021 12 16 (December)
  - 2021 11 18 (November)
  - 2021 10 21 (October)
  - 2021 09 16 (September)
  - 2021 08 26 (August)
  - 2021 07 15 (July)
  - 2021 06 24 (June)
  - 2021 04 22 (April)
  - 2021 03 25 (March)
  - 2021 02 25 (February)
  - 2020 12 17 (December)
  - 2020 11 19 (November)
  - 2020 10 15 (October)
  - 2020 09 24 (September)
  - 2020 08 27 (August)
  - 2020 07 16 (July)
  - 2020 06 18 (June)
  - 23 June 2022

# Updates and Communications

- Monthly LSIC newsletter – New edition came out early July 2022; August coming out next week
  - <http://lsic.jhuapl.edu/Resources/>
- 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](mailto:LSIC_DUSTMITIGATION@LISTSERV.JHUAPL.EDU) to safe senders list.
  - If we need smaller, focused lists we can set those up
- Updates to the webpage - <http://lsic.jhuapl.edu/Focus-Areas/Dust-Mitigation.php>
  - 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](mailto: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](mailto:Facilitator_DustMitigation@jhuapl.edu)

**Follow the Code of Conduct for all Focus Group communications**

[http://lsic.jhuapl.edu/Resources/files/Code%20of%20Conduct\\_05222020.pdf](http://lsic.jhuapl.edu/Resources/files/Code%20of%20Conduct_05222020.pdf)

# Space Technology Funding Opportunities

## Current Tech Development Opportunities

- [Space Technology Announcement of Collaboration Opportunity \(ACO\) »](#)
  - Mini proposals due: 03/31/2022; Final proposals due: 07/28/2022
- [Announcement of Collaboration Opportunity \(ACO\) Synopsis »](#)
- [Announcement for Partnership Proposals \(AFPP\) to Advance Tipping Point Technologies »](#)
  - Mini proposals due: 03/31/2022; Final proposals due: 07/28/2022
- [Break the Ice Lunar Challenge - Phase 2 »](#)
  - Registration Closes: 30 September 2022
- [Space Technology Research Institutes \(STRI\) Solicitation »](#)
  - Preliminary Proposals Due: 03 August 2022 - Invited Full Proposals Due 03 November 2022

## 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

# LSIC Activities

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

- LSIC Dust Mitigation Focus Group Meeting (07/28)
  - Topic: Dust Sensing and Filtration
- Low Temperature Sub-kW Power and Energy Storage for the Lunar Surface (07/28)
  - Abstracts due 07/08; Selections 07/13
  - <https://lsic.jhuapl.edu/Events/Agenda/index.php?id=214>
- Designing for the Extremes Workshop (08/05)
  - Registration closes today 07/28!
  - <https://lsic.jhuapl.edu/Events/Agenda/index.php?id=232>
- LSIC Fall Meeting (11/02 – 11/03)
  - University of Texas – El Paso
  - Planning underway; Call for abstracts and registration will be posted soon on website
  - <https://lsic.jhuapl.edu/Events/Agenda/index.php?id=350>

## *Other Recent and Upcoming Dust Mitigation Related Workshop and Meetings*

- Annual LEAG Meeting (08/23-25; at APL, Laurel, MD)
  - <https://www.hou.usra.edu/meetings/leag2022/#nav>
- AIAA ASCEND Conference (10/24-26)
  - <https://www.ascend.events/>

# Get Involved

- **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\\_aSMLAzLS762qzbgmcOd2fgizlCsab6KQ/viewform](https://docs.google.com/forms/d/e/1FAIpQLSdjuTIK_TLMnCM4_aSMLAzLS762qzbgmcOd2fgizlCsab6KQ/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>



# Today's Technology Presentation (1 of 2)

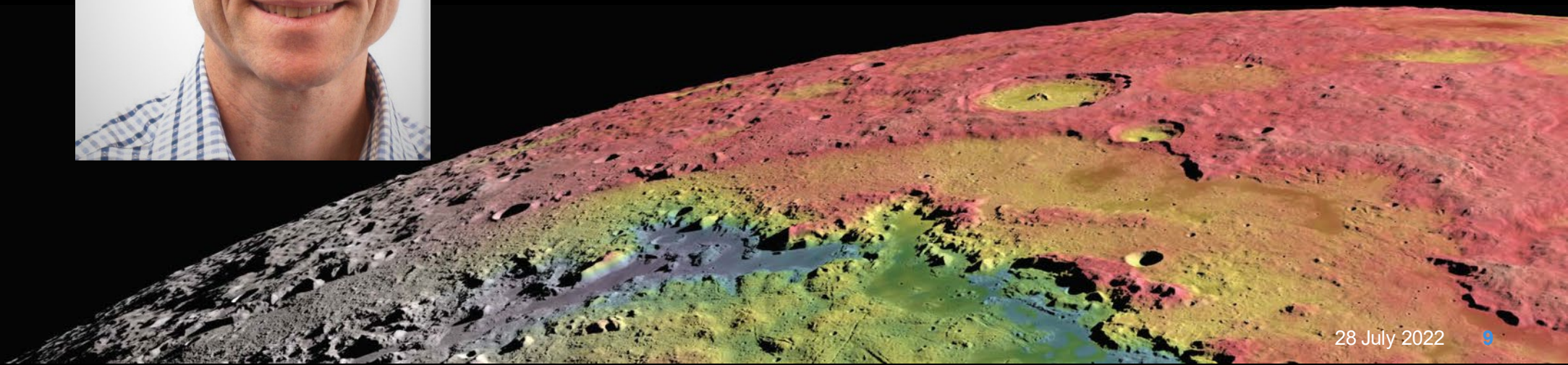
## “iSIPS an innovative dust characterization and monitoring tool: preliminary proof of concept and looking for Lunar applications”



**Daniel Cantin**

INO (Institut National d'Optique)

[Daniel.Cantin@ino.ca](mailto:Daniel.Cantin@ino.ca)



# Today's Technology Presentation (2 of 2)

## “Dust Detection Challenges in Complex Environments”

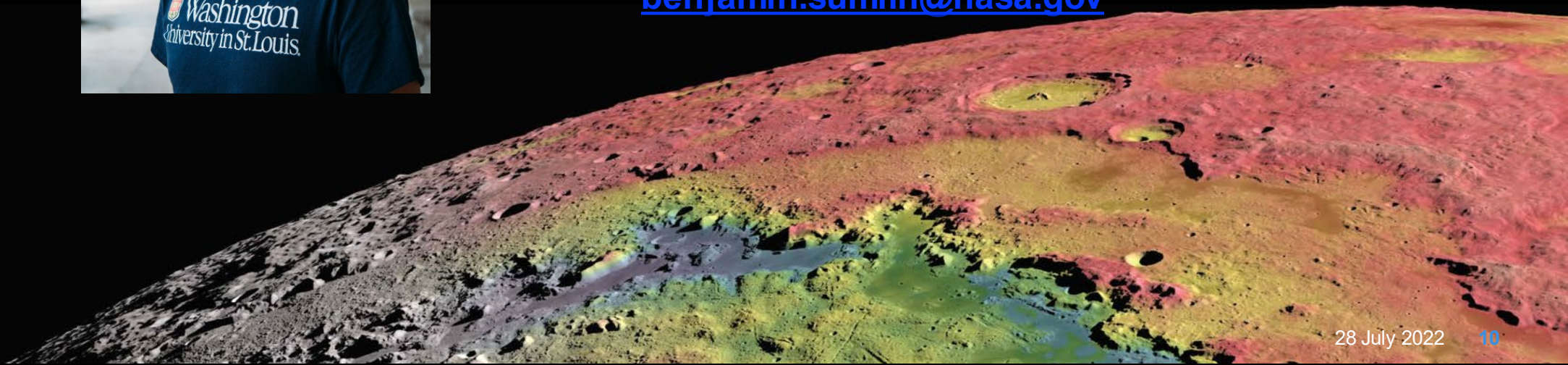


**Dr. Ben Sumlin**

Universities Space Research Association

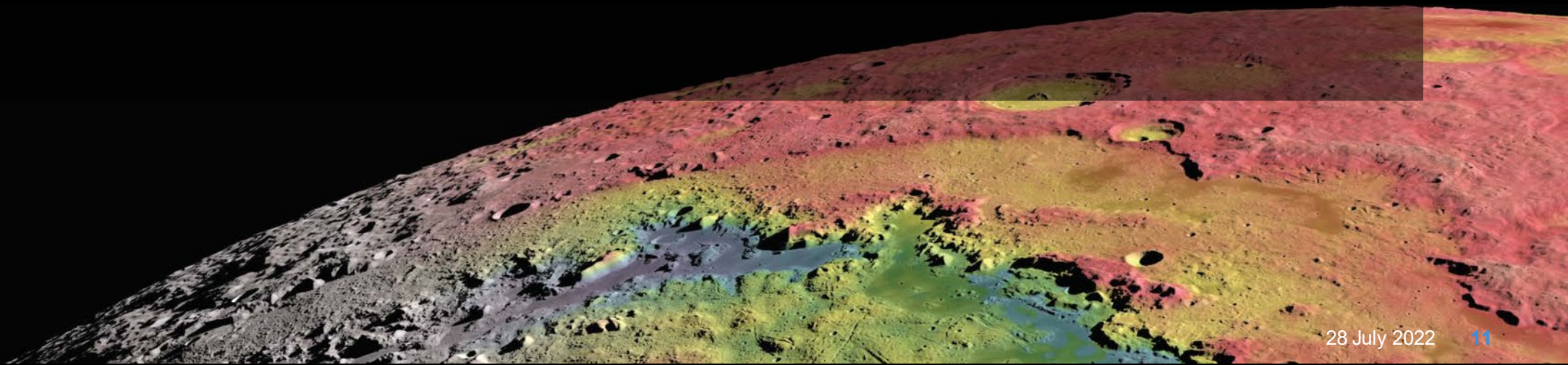
NASA Glenn Research Center

[benjamin.sumlin@nasa.gov](mailto:benjamin.sumlin@nasa.gov)



# Dust Sensing and Filtration Discussion

- What gaps exist in our understanding of lunar dust and dust sensing and filtration, and what data do we still need?
- 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 there priority technology areas in dust sensing and filtration that are in need of investment?
- Are in-flight demonstrations needed?





JOHNS HOPKINS  
APPLIED PHYSICS LABORATORY