

Notes from Dust Mitigation Monthly Meeting

June 2020

Notes From Discussion

Longform notes available on page 3

- Michael Johansen is the Tech Integration Manager for Dust Mitigation within STMD
 - At July meeting, Michael will provide overview of NASA's efforts
- NASA investigators will participate in focus group, and Michael J. will provide NASA updates
- Focus group will provide information primarily to NASA (and the Artemis program), but will also be sharing information with industry and commercial providers
- Stimulant production, standardization, etc. will be a part of this group, also will be applicable to other groups, LSIC encourages cross-pollination.
- A potential resource is a simulant group between APL and NASA - need to connect with them (potential portal for needs?)
- Need for a database for collaborators to find each other
 - A database of facilities also should be developed (NASA has one covering their capabilities)
 - The Extreme Environments focus group is also looking for facilities with capabilities for lunar relevant environments for testing
- Consortium members looking for:
 - Understanding of the existing needs from both NASA and industry
- LSIC will foster mentoring for smaller business with more established organizations, as well as for individual students (grad and undergrad) to find internships and other opportunities
 - Members should feel free to send opportunities / positions for students to the listserv

Notes From Chat

Full chat discussion transcript available on page 6

GENERAL INFO

- ASU is hosting virtual fall meeting

QUESTIONS

- How will NASA participate?
 - July focus group meetings will feature presentations from NASA leads for each topic
- Is there a specific group we're providing solutions re: dust mitigation?
 - NASA, but should also consider broader needs for a sustainable lunar presence in context with what is going on at NASA
- Is simulant production / standardization part of this focus group?
 - ISRU focus group is working on simulant topic as well

- Did NASA provide expectations and how the info will be used?
 - NASA's first expectation is to create lines of communication
- Will outcomes of JHU/APL study on simulant availability & production be made available?
 - Off Planet Research has spoken with APL but until report comes out contact OPR for questions re: specific categories of regolith simulants
- What are the names of the NASA leads for each of the 6 focus areas?

RESOURCES

- Simulant Database: <https://simulantdatab.com/> (from Christine Hartzell)

TOPICS OF INTEREST

- Testing methodologies and available test equipment / facilities for dust-related activities
- Collaborator capabilities database
 - Potentially could spin off a digital resources group to identify what is available now and what is needed
- Will have an opportunities section on website to post positions for students, etc.
- Standardizing tools (software, requirement definitions, etc.)

Longform Discussion Notes

Michael Johansen – I'm the Tech Integration Manager for Dust Mitigation within STMD. Cross-mission directorate role, looking forward to taking inputs from universities and industry on knowledge gaps and things to do in the future to support lunar exploration. I'll be giving a more detailed look at what we've done with Dust Mitigation for next month.

How will NASA Participate?

Not only participation from industry, academy, also have investigators from NASA who are participating in the focus group. Jorge working with Michael (NASA) to provide feedback & info to NASA via Michael, and their focus group in terms of networking and collaboration, what info they need. He will also be able to participate in monthly meetings to provide updates on what's going on with NASA and what other opportunities are in the pipeline.

Is there a specific group we are looking to provide....

The primary is NASA. They're the ones who approached APL with LSII and identified these six main areas of these are the needs / capabilities, areas where we need development to return to the moon. That's not to say that just because this is focused on NASA, it also impacts industry and commercial providers who will also be sending missions to the moon. They also need to have similar solutions for dust mitigation.

Elliott Carol – generally speaking it's for the Artemis program?

Jorge – Yes.

How can the consortium work for you and your institution, what do you want to get out of this focus group?

Elliott

From a lunar resources perspective, we need to understand what needs there are. We have a lot of solutions that we're working on, but having a better understanding of what the needs are to address those would be a major step for us.

Jorge – so what are the needs from NASA? Or do you also want to know needs from industry?

Elliott – both would be great.

Jorge – Working with NASA we're going to be – part of this with members of the focus group is to identify what are some of these needs. Also what are your thoughts in terms of needs you see? Things that NASA might be missing. That's the whole part of it where working with this focus group is to really get your voice and your thoughts as far as what are potential needs and solutions.

Is simulant 'production', standardization etc. in this focus group...

Paul – So one of the challenges with any lunar work being done in evaluating lunar dust is simulants. A lot of us want to do tests but without good simulant and being able to compare results from one group to another, having some way of not necessarily standardizing but figuring the metrics to compare, how do you produce simulants affordably, that's a challenge. Wondering if that belongs in this group or other groups.

Jorge – this is something that definitely impacts everybody in this group. Knowing that we have good dust analog. I do think that's something that could fall under this group.

Tom Orlando from GT – I was at Karl's for ISRU, that is a topic that ISRU folks are also addressing. This might be an area for cross-correlation.

Brett Denevi – We do have a simulant group that we're working between with APL and a simulant consortium of people at NASA. That one was kept as a separate activity b/c it affects so many different groups. Something we hope we can communicate not just among ourselves, but making sure we're touching across all the focus groups.

Jorge – is there a way people can communicate with simulant group?

Brett – a basic need that needs to be made is a portal. I have simulant needs, can you please help me understand which simulant would be best or what can best reproduce aspects I'm most interested in. Still working on getting communication out there. We're doing an assessment of different assessments out there. We completed initial, see if we can share that soon. That'll be updated with more work throughout the year.

Jorge – that could be something, especially once it becomes available, that could be something that maybe you could present at one of our meetings.

Jorge – next month will be very valuable for people to tune in, where Michael will provide an overview of one of the efforts, what has been NASA's efforts regarding dust mitigation and what are some of the needs that they have. We'll definitely – make sure that we'll have plenty of time for that and for discussion.

Nicole Shumaker – question about availability of stimulate availability and production? Asked while Brett was talking about the study, so it would be great to have that initial update then ongoing as it develops.

Jorge – Brett at some point you'll let people know – do we have an idea of timeline of when maybe people could find out?

Brett – we could probably share that now, I'll just double check. My timeline is dictated by children shouting in the background right now.

Rachel – what do we need to do to keep things moving? First few months of meetings will be what NASA knows, what they need. Then we'll be talking with community about, we identify where gaps NASA thinks they have may actually be less of an issue than they already know because of what's already been going on independently, and where there are other gaps they haven't really zeroed in on to keep things sustainable in the future.

Rob Myerson asked about names of NASA leads, we are – there is some internal discussions going on about key point of contact for some of the groups. Jerry Sanders is the lead for the ISRU side, Michael Johansen is the lead for the dust side. Ray Beech is the lead for surface power and I believe the others, I'm not sure whether they've been zeroed in on yet or not. We'll post those once they've had their discussions. A lot of these are teams.

Tom Orlando – We recently submitted a proposal to the Artemis program which came out of the human exp program. One thing they've done is they've put together a database of collaborators. A database of collaborator capabilities. People can then use that to link with each other in response to calls. Maybe you already have that on your screen, with the number of people and expertises, this could be an incredibly useful database for teambuilding.

Jorge – that's the part where we want to ask people to put your name, information in the chat box. So that way we can have this for this info, and as you mentioned we can create this database of expertise.

Along the lines of database, one of the things we're going to start putting together is a database of facilities. NASA has put together a database of facilities within NASA that's useful for testing, lunar enviro testing of techs. We know that there's so many more resources out there in the community. If you have testing facilities that you think would be of value and could be available, that would be something if you can share it

Ben Greenhagen – that cataloguing of facilities is a big component of our year one task. If you have capabilities for lunar relevant enviros at any level of fidelity, please check out extreme environments group as well.

Nicole S. – I think tom’s idea about database is good and see it broken down in terms of who’s doing modeling, who’s doing more of the physical testing, in terms of mitigation technique vs modelers vs characterization. To get that granular would be a tremendous help so we know who could benefit from what we’re developing. Also will help with documenting the gaps

Jorge – That is – so that is one of the key, and maybe Rachel you can pipe in – that’s something that is also key tenant of LSIC, not just of this focus group but of LSCI overall is to also provide an opportunity not only for more experienced institutions to provide, maybe opportunities for mentoring with startups and smaller companies, but also for students, maybe you might have opportunities within your institution that could be available for internships or say ‘hey we have this new opening at our institution for a mechanical engineer to work on x technology. That’s something that, if opportunities are available, we hope folks will share with the community.

Rui Ni – Jorge mentioned about intern opportunities for students, but I was referring more to graduate students who are currently working on projects. I’m curious if there’s some kind of fellowship or mechanism that can motivate them.

Rachel – that’s definitely something we’d like to work towards. We have an opportunity here to, especially for grad student who are often on a track towards academia, to connect with industry and other groups and potentially get a better understand of skills to take other pathways than becoming faculty somewhere. I think this is something that it wouldn’t be in this year, but we could give feedback to STMD about things whether it’s ways to do internships that cross fertilize stakeholders, but as Jorge mentioned – financially, we’ll see what we can do for recommendations. Functionally, we do have it as a high priority to make these connections and help connect opportunities with qualified individuals who might not otherwise find them.

Jorge- if you have an opening for PHD students or a job opening looking to hire, that’s something that, especially for dust mitigation, that’s something that you can send to the group with dust mitigation email address. See that also as a resource to reach out within the focus group

Complete Chat Discussion Transcript

AJ Gemer : I got an audio notification "this call is being recorded" right when I signed in

Paul Van Susante : test ;)

Michael Johansen : Good Morning. Trying to unmute

Dana Hurley : Thanks, ASU for hosting the Fall meeting. It will be a virtual meeting.

spampp : how will nasa participate?

Elliot Carol, Lunar Resources : is there a specific group we are looking to provide solutions on mitigating dust? ex, NASA moon base, CLPS landers, robotic rovers, industrial activity, etc.

Paul Van Susante : is simulant 'production', standardization etc. in this focus group? we are creating our own simulant currently for example and have developed a methodology

thomas orlando : Did NASA give JHU/APL what they expect from LSIC and how the info delivered will be used....in upcoming calls,feedback regarding direct needs and gaps they know of now.

thomas orlando : The ISRU group is working on the simulant topic...

Rachel Klima : Thom - the first expectation is that we create the lines of communication, but for instance, next month we will have the NASA leads for each group present their current known needs

Shumaker, Nicole : Following on the Paul's question — could we hear the outcomes from the JHU/APL study/assessment on simulate availability and production?

Rachel Klima : But we should also consider broader needs for a sustainable lunar presence in the context of what is going on at NASA

Christine M Hartzell : Simulant Database: <https://simulantdatab.com/>

Shumaker, Nicole : OK, thanks, Brett!

Rob Meyerson : What are the names of the NASA leads for each of the 6 focus areas?

Melissa Roth : Off Planet Research has spoken with APL, but until the report comes out, please reach out to us if you have questions on specific characteristics of our regolith simulants. We can customize the mineralogy and particle size distribution if your research has specific needs.

spampp : who is speaking?

Rob Meyerson : Thank you Rachel!

AJ Gemer : From an industry perspective, I'm interested in learning about testing methodologies and available test equipment/facilities for dust-related activities. Paul Van Sustante and Frank Han have both mentioned their testing capabilities, and I'd like to learn more!

AJ Gemer : Yes exactly - "collaborator capabilities" sums up my interest nicely

Rachel Klima : We will be posting the recording of this as well as notes summarizing the chat and discussions

Rachel Klima : It should be up by next week—unfortunately its taking some time to get our Wiki in place, but we will put items on the main website until that is ready to go

Shumaker, Nicole : For the capabilities database, would be great to see it

Rachel Klima : I think it may be helpful to spin off a resources group, at least temporarily, to identify what things we can just link to now and what needs to be built in

Rachel Klima : resources as in digital not as in lunar resources ;)

Paul Van Susante : I am still looking for a PhD student to work in my lab on ISRU, robotics, etc. ;)

Rachel Klima : we will also ultimately set up a portion of the website to do that, but it's still in development

Paul Van Susante : looking forward to it.

Paul Van Susante : one other thing I brought up a while ago is to standardize tools (e.g. software, requirement def) etc.

Michael Johansen : Thank you everyone. Really looking forward to see where we can take the LSIC

Shumaker, Nicole : Thanks Jorge and team. Looking forward!

Sarah Deitrick : Thanks all!

Morgan Gendel : Nice meeting everyone! Look forward to next time.

AJ Gemer : Thanks everyone!

Sebastian : Thank you!