

**Minutes of
National Council of Space Grant Directors' Fall Workshop Virtual Meeting
October 8-9, 2020**

Please Note: Because the Workshop was held online, and video of all of the online sessions have been posted, we are providing abridged minutes that highlight key points made at the meeting.

General Session 1: Day 1, Thursday, October 8. All times listed as Eastern Daylight Time

Council Business

12:00 Welcome and Executive Committee Update – **Luke Flynn** (HI SGC), Council Chair

Luke welcomed us and he discussed the impetus behind this virtual workshop. He then turned over the microphone to Ian Cawthray from VASGC who described logistics. Mr. Cawthray also discussed that the procedure for answering questions after a talk. He described the breakout sessions and the rest of the agenda.

Luke then opened the floor for introduction of new directors and personnel.

Andy Arena (OK) introduced Meg Nelson, their new administrative coordinator.

Joshua Rovey (IL) introduced Heidi Bjerke as their new STEM coordinator of ILSGC.

Caitlin Nolby (ND) announced that Marissa Saad was promoted to Deputy Director.

Tomas Gonzales-Torres (IA) introduced Sara Nelson as assistant director for education and outreach.

Matthew Bernards (ID) introduced Christina Davenport as program specialist.

Carol High (PA) introduced Kylie Bocklund as program delivery specialist.

12:15 Secretary and Treasurer's Reports – **Haim Baruh** (NJ SGC), Council Secretary and **Majid Jaridi** (WV SGC), Council Treasurer

Haim and Majid gave their respective reports. Both accepted.

12:30 Nominating Committee Update, Nominations, and Elections – **Steve Ruffin** (GA SGC), Nominating Committee Chair

Steve gave a description on nominations for Alliance and for the Nominating Committee. He also described why Scott Tarry (NE) is interim vice chair. When Luke was elected as chair, the vice chair position was vacated, and Luke appointed Scott Tarry for the position. Steve stressed the importance of having broad participation from the states.

The following Alliance Board members have expiring terms on 12/31/2020: John Kosmatka (Chair), Robert Winglee, Tony Galvin, and Mary Sandy. Elections will be held for four positions. The following people have been nominated: Andy Arena, Mary Sandy, Toni Galvin, John Kosmatka, Robert Winglee.

The following Foundation Board members have expiring terms on 12/31/2020: Shawna McBride (Chair), Jed Marquart (Vice-Chair), and Joe Orr. Elections will be held for three positions. The following people have been nominated: Jed Marquart, Shawna McBride, Joe Orr, Timothy Urban.

One ballot per consortium will be cast. Nominations will be accepted by 11:59 pm on October 8. Voting will close on October 13, 2020.

Because some time was left, Luke opened the floor for announcements. Greg Guzik discussed the procedure for applications to the HASP program for 2021. An announcement will come out soon.

Chris Koehler (CO) discussed dates for Rock-SAT and RockOn. Plans are for holding the programs at Wallops. If in-person will not be feasible, virtual options will be explored.

Paulo Oemig discussed a virtual conference on inclusiveness. Nov. 10-13, please ask Paulo for more details. Research and Creativity Week; great keynote speakers. <https://rcw.nmsu.edu/>

Luke then asked Ian Cawthray from VASGC to discuss details of the breakout session.

Break-out Session 1: Methods to Increase Inclusiveness

12:50 ***Sessions Chaired by ExComm Members***

National Space Grant Foundation

1:40 ***Shawna McBride*** (WY SGC), National Space Grant Foundation President, and ***Kevin Freese***, Chief Executive Officer, National Space Grant Foundation

Shawna opened the session by giving a general overview of the foundation and the latest emphasis on fundraising. She then turned over the presentation to Kevin Freese, executive director. Kevin began by discussing the benefits of raising private funds. He discussed his prior experience in fundraising. Please see presentation for more details on means of raising private funds. Efforts include cultivating a donor database, developing public service announcements, purchasing products from the Foundation store, hosting a Virtual Day of Giving in our consortia.

Kevin noted that we should take advantage of approaching holiday season. Kevin then discussed the Endowment portfolio. Please see slides for more detail. 55% equity, 43% income, 2% cash.

Please feel free to contact Kevin with questions and suggestions.

Susan White (NC) mentioned that any fundraising is managed heavily through the host academic institution, does foundation work with academic institutions in fundraising efforts? Kevin stated that we don't want to compete with academic institutions. We need to be creative on how we coordinate with academic institutions.

Luke said that he has been getting questions regarding establishing consortia-wide awards in honor or memory of a person who has been very important to their state. He and Shawna stated that the Foundation would be a very good place to establish such funds. Kevin said that we can establish such programs and publicize them on the Foundation web site.

2:00 ***Session 1 Adjourned – Election Results will be Announced via Email***

General Session 2: Day 1, Thursday, October 8. All times listed as Eastern Daylight Time

NASA Office of STEM Engagement Leadership

3:30 High Level Summary of Topics with Time for Questions

- **Mike Kincaid**, Associate Administrator for STEM Engagement

Luke introduced Mr. Kincaid, who has been working from home for the last six months. Make sure you look at Mr. Kincaid's slides, especially the slide that shows NASA's economic impact.

https://www.nasa.gov/sites/default/files/atoms/files/2020_nasa_eir_brochure_for_fy19.pdf

Intersection of Key Drivers for NASA STEM Engagement: Covid-19, social justice, newly revised strategy. Core values are safety, teamwork, excellence, integrity, and now diversity and inclusion have been added.

Kris Brown continued the presentation and described how NASA swiftly responded to this year's challenges. New activities include NASA STEM at Home and the Virtual Internship Program, which has placed 1,600 interns. New solicitation for informal education institutions. She then continued to discuss the NASA strategy for STEM engagement for 2020-2023. Renewed focus on outcomes and priorities: 1) Higher Ed, 2) Pre-College, 3) Agency STEM Engagement.

Continuous progress on a replacement system for OEPM. NASA is reaching out to several consortia to test the new OEPM 2.0 application.

The Artemis program continuing full steam.

https://www.nasa.gov/sites/default/files/atoms/files/artemis_plan-20200921.pdf

Mr. Kincaid wants help from SG to promote the Mood Pod Essay Contest. Looking for volunteers to be judges and essay readers.

<https://www.futureengineers.org/artemismoonpodessay>

Mr. Kincaid discussed the Artemis Student Challenges program which has been going on for a while. He reported that NASA Mission Directorates have provided \$2.6M in matching funds for Artemis student projects.

Ms. Elaine Ho continued with the presentation. She discussed greater focus on program collaboration and efficiencies. She gave highlights of FY2020 activities. Timely distribution of program awards, Covid-19 response, and strengthening collaboration with Mission Directorates. Mission directorate activities, Artemis, Big Idea, Aeronautics Webinars, One Legal NASA.

Please look at the slide on the STEM Engagement Program on how NASA STEM Programs overlap on K-12, Higher Ed, and doctoral. Please also see slide on broadening student participation.

New Better Together Conference Series. Two meetings, one for NASA Internal and OSTEM grantees PIs. Other is for OSTEM funded research PIs. The meetings will be conducted using new software which allows, for example, virtual poster sessions and multiple ways to interact. NASA OSTEM wants to hear your success stories. There will be a template for doing so.

Mr. Kincaid continued with answering questions posed by the audience.

Can you move moneys from one category in your budget to the other? Answer is yes, but with approval of the technical officer. Recruitment. Programs need to be open to everyone and you can do recruiting in different ways. Ms. Ho views FY2015-2020 as a transition period and 2020-2024 with the new focus. Please look at slide on Space Grant strategic direction.

Ms. Erica Alston continued with Covid-19 issues and its impact on state funds. Augmentation funds do not require cost share. If you want to get a waiver of your other cost share on your existing award, please apply by 10/30/2020. Please look at the internships program for statistics.

Ms. Julie Clift continued with the status of awards. Please look at slides for details. She gave examples of awards description of projects and the contribution of OSTEM and Mission Directorates. Ms. Alston continued with the evaluation solicitation. She described budgetary flexibilities to cope with Covid-19. Chats with consortia will continue in November. OSTEM wants to find out about your state's Spring 2021 semester status. Six-month reporting is going very well. Most states are turning in their reports in a timely fashion. OSTEM wants all reports in a timely manner. Please don't forget the White House MSI report.

Ms. Alston then described the funding mechanism under a Continuing Resolution. OSTEM is already preparing for the FY2021 CRs. Currently, there are 12 consortia with a combined unspent balance of \$7M. Those funds will expire at end of NCEs.

Broadening participation. Emerging issues in the July 2020 meeting with SG and Alliance, reporting of diversity metrics and focus of specific demographic emerged as issues. OSTEM will do a deep dive assessment on diversity of OSTEM interns. Please look at slides for a calendar of upcoming events.

Mr. Kincaid then discussed questions. He gave more details about OEPM. Mike Cherry stated that there will be changes in reporting of the same program in two different years.

Is there a 10% threshold for moving programs from one budget to another? Please be safe and request permission even for small amounts of budget changes. Feedback on dealing with underserved students. Fast pace of presentation. Mr. Kincaid stated that the first thing he realized when he came to OSTEM was better communication. All of their efforts are directed toward that.

Go to the Moon Pod web site and register to volunteer to be a judge.

<https://www.futureengineers.org/artemismoonpodessay>

NASA Space Grant Office Report

4:30 *Ms. Elaine Ho, Dr. Erica Alston*, Space Grant HQ

Merged into the previous session.

Kentucky Space Grant Presentation

5:00 Large Synoptic Survey Telescope – *Ian Shipsey and Gerry Williger* (KY SGC)

Susanne Smith, previous director of Kentucky SG Consortium, provided an introduction. Please look at slide for details and for the timeline for the Kentucky LSST timeline. Dr. Shipsey, who is from Oxford University, then continued the presentation. He began to describe efforts to get more participation worldwide to LSST.

Historical progress includes bigger telescopes, angular resolution, and all sky observation. He then described the Rubin (named after the famous astronomer Vera Rubin, who was a Space Grant Distinguished Service Award recipient), Observatory is located in Chile and has an eight-meter telescope with a field view of 3.5 degrees. He gave examples about capabilities of the telescope and the phenomenal capabilities of Rubin. Please see slides for the four science missions of LSST and major funders of the telescope. Dr. Shipsey continued to describe the lens of the telescope, which was completed in 2015. Its transportation to Chile was quite a challenge.

Dr. Shipsey went on to discuss the benefits of LSST to the world at all levels, as well as its societal impact. He discussed the need for fundraising to spread LSST-related activities. Please see slides for more details for proposed outreach activities.

Gerry Williger, from University of Louisville, continued the presentation, by describing public interest in astronomy and how it promotes STEM education. Please see slides for Kentucky's participation in LSST and how it became possible to have access to a world-class facility. He concluded by describing how the project was funded in Kentucky. Rubin observatory will start operating fully in 2023.

5:30 **Session Adjourned**

5:30 ***Space Grant Happy Hour!***

Luke announced that ExComm decided to create a “Lifetime Achievement Award” for Space Grant directors who have made outstanding contributions to the Space Grant program over the years. The first recipient of this award is Mary Sandy, longtime director of the Virginia Space Grant Consortium. Chris Carter, Deputy Director of VASGC, presented Mary with a globe that acknowledges her many years of outstanding service, leadership, and dedication. A virtual standing ovation followed.

General Session 3: Day 2, Friday, October 9. All times listed as Eastern Daylight Time

Scott Tarry opened the meeting.

Massachusetts Space Grant Presentation

12:00 MOXIE: Oxygen Production on Mars – *Jeff Hoffman* (MA SGC)

Scott introduced Jeff Hoffman. Jeff informed us that Moxie is on its way to Mars together with the Perseverance rover. He showed a video. In the future, for return to Earth, a Mars ascent vehi-

cle will need oxygen propellant, around 30 metric tons of it. To put 1 ton of weight on Mars, it is necessary to put 15 tons of propellant on a spacecraft to reach Earth orbit. ISRU (in-situ resource utilization) is an answer to produce oxygen on surface of Mars.

How can oxygen be produced in Mars? There is ice on Mars that has to be mined and extracted and then separated into oxygen and hydrogen. Also, the Viking Lander (1976-1980) found CO₂ on Mars, from which oxygen can be extracted.

Moxie experiment, which is a joint project between MIT and JPL, will ride aboard the Mars Perseverance Rover. First, Mars atmosphere will be filtered, then it will be compressed, and then oxygen will be extracted. Please see slides for details of the process. A lot of very interesting pictures, including one of Jeff at the test-bed facility at JPL.

For the first time, a helicopter will fly on surface of Mars. Density of Mars atmosphere is about the Earth's atmospheric density at an altitude of 100,000 ft. Jeff then described planetary descent, landing and ascent processes. There will be atmospheric heating of 2,100 C and 13g deceleration. Powered landing. Please watch the video. New navigation technique for landing: terrain-relative navigation. Moxie needs lots of power to accomplish its goals.

Space Grant Program Operations

12:25 Presentations by *Michelle Coe* (AZ SGC) and *Bernadette Garcia* (CO SGC); Brief Presentations by Various SGC

Michelle Coe began by describing a virtual research symposium in Arizona. Student presentations that were 10 minutes each, and there were over 200 attendees. There were parallel sessions and the meeting was set up so that viewers could switch from one parallel session to the other. Please see slides for pictures of organization of the meeting. Ms. Coe then described the online security features that were employed, such as password protection, camera and mic off upon entry, disabling screen sharing, sharing links only with known people. One host and two co-hosts per session. See slides on details of host and co-host responsibilities. Students submitted a 150-word abstract and eight-minute PowerPoint presentation. Abstract writing workshops and PowerPoint practice sessions were held. Meeting was successful with lots of positive feedback, including high attendance, easy to move from session to session, parents and friends can participate, some interns preferred this presentation style, also lower cost (food, travel). On the other hand, there was limited networking time, lots of chatter in chat box, and the conclusion session could be improved. Please see slides for tips to other organizers of such meetings.

<https://spacegrant.arizona.edu/students/symposium>

Bernadette Garcia's presentation was on Adventures in Creating and Facilitating a Remote How-to Workshop. The areas they implemented were balloon payloads, autonomous robotics, and wearable technology. This program was facilitated by the lead institution, University of Colorado, Boulder. Please see slides for schedule. The Space minor at CU was involved in the project. This minor is available to all students at CU. When the pandemic occurred, some discus-

sion ensued as to whether such a workshop could be run remotely. The idea of a remote workshop had been discussed in previous years, because of the large size of the state and difficulties of bringing people together for an in-person workshop.

They modified the toolkits sent to students by adding equipment that usually is not available to students at home. Please see slides for completing the modules of the workshop and the software used (Panopto) for online learning. Please see presentation slides for issues that are still in process. Is the team experience reproducible while still remote? How will launch day look like? How about spring semester projects, can there be online modules?

<https://spacegrant.colorado.edu/statewideprograms/78-cosgc-activities/1409-statewide-programs-virtual>

Colleen Fava then showed a few slides on Promising Programs and Practices (P³), that come out of the Communications Working Group. The working group will be doing monthly webinars on the subject. Program will allow community members a dedicated space and time to share promising programs and practices with the SG community. 2nd Monday each month at 3 pm EST. Meetings should last 60-75 minutes. There will be a registration, notification, and reminder system in place soon.

NASA OSTEM Student Challenge Projects

1:15 MA SGC BIG Idea Challenge Project

Please see this video presentation about the Ascend program, a self-deploying lunar tower project at MIT. Composite boom in a gravity field. Provides line of sight in regions that are permanently shadowed. Boom will self-deploy in two weeks after a lunar landing. Boom will deploy vertically from the lunar landing vehicle. A leveler system will be used to ensure that the base of the lander will be leveled so the boom will be deployed completely vertically. Please see video for the deployment process. Boom will be lightweight and structurally stable, with a lenticular cross-section. A CubeSat will be at top of the boom. Please see video on the operations procedures for and hardware used in the CubeSat, as well as for the integration and mechanical design phases. Covid-19 has delayed some of the scheduled activities.

1:30 *Robert Winglee* (WA SGC) – Lunar Technology Exploration Challenge

Robert (ohm) began by introducing his team for Artemis Lunar Technology Education Challenge. They selected lunar lava tubes for observation. Such tubes can provide protection from cosmic radiation, create a human habitat, remove rocks and debris, be able to create a human habitat. WASGC is proposing a high-functioning robot to accomplish the tasks required. Robert then showed a video simulation of how the robot will navigate the tunnel system. The project will involve 30 teams, \$2-3K for each team for their robotic systems, training sessions, challenge events for teams, such as climb a steep hill, or go up a step. Please see slides for procedures to be followed, especially during the pandemic, and challenge divisions, as well as the timetable for the events.

1:45 **Christine Bolz** (WI SGC) – First Nations Launch

This program is part of the Artemis Student Challenge. Students participating from tribal colleges and universities from U.S. and Canada, as well as native American non-tribal institutions. The program was growing and expanding and then Covid-19 hit. What in the world would Chris Koehler do? Inspired by this thought, Christine dealt with the eggs that would have gone to the Moon. Please see presentation for the entertaining slides and video. They plan to make 2021 a stellar year. Future activities will include a Moon challenge and a Mars challenge. They are developing the following resources: competition handbook, certification workshops, local launch sites, webinars, video training sessions. Please see slide for timeline and for impact on students and researchers.

2:00 **Session 3 Adjourned**

General Session 4: Day 2, Friday, October 9. All times listed as Eastern Daylight Time

Breakout Session 2: Space Grant Consortium Successful Practices?

3:30 ***Sessions Chaired by ExCom Members***

Space Grant Highlights – Collaborative Ideas and Cross-Consortium Opportunities

4:00 **Angela Des Jardins** (MT SGC) – National Eclipse Project

Angela started by giving an overview of upcoming eclipses, in 2023 (annular eclipse) and 2024 (total eclipse). Montana SGC went to Chile in 2019 for a total solar eclipse there. They observed that gravity waves were affected by eclipses and they described this to funding agencies and received funding from NSF to do more observations. They published their findings in Nature. Then COVID-19 happened.

Please see slides for the eclipse project's goals and structure of NEBP. Previous eclipse activities were more engineering than science. For future eclipse projects, the projects will be more science-driven. Their initial proposal for this project was not selected, they will propose the same project to the 2021 Science Activation solicitation. They also plan to submit an unsolicited proposal in 2021. Funding will support equipment and supplies for the 70-participation team, as well as support for MSIs to participate.

4:15 **Marissa Saad** (ND SGC) – NDSGC's Virtual Sphero Educator Workshop

North Dakota SGC partnered with United Tribes Tribal College. They have adopted online education. They tried test runs to improve the systems. They asked ND teachers if they are interested in 15-hour zoom meetings and they found out that there was tremendous interest. They used the software Submittable for their recruitment efforts.

Each participating teacher received a Sphero Bolt. NDSGC offered to get web-cameras for teachers who did not have them. They used Google to share documents. Please see slides for more information. Sphero has an extensive educational support structure. Please see slides for

more details and also visit the Sphero Academy web site. NDSGC STEM Ambassadors (from all over the state) were very helpful. Also, Elizabeth Joiner from NASA was very helpful. The teachers provided positive feedback.

Breakout Session 3: SG Regional Breakouts – Regional Projects during COVID

5:00 Regional Breakout Sessions

- **Great Midwestern**
- **Mid-Atlantic**
- **Northeast**
- **Southeastern**
- **Western**

Please refer to meeting videos and transcripts for minutes of the regional breakouts.

Council Business

5:25 Closing Comments

Luke thanked Virginia SGC and Old Dominion University for excellent organization and technical support. All the recordings and videos will be posted on our web site shortly. Luke thinks it is likely that we will have another virtual meeting in Spring 2021. Luke also complimented the speakers who all made excellent presentations, as well as everyone involved in the organization of this workshop.

Everyone thanked Luke and Scott for an outstanding meeting, the first virtual Space Grant workshop.

5:30 **Session 4 Adjourned. Workshop Adjourned.**

Respectfully submitted. Haim Baruh, Secretary, 3/4/2021