

Annual Report: “IClips”, Rice University
NASA NNX16AP14A
Patricia Reiff, PI
7/1/2018 – 5/30/2019

Summary

The IClips program, part of the NASA Space Science Education Consortium, was designed to create full dome pieces that could be used in planetariums as short interstitials or for public events. The project we developed in 2016-17 are seven full dome pieces on Eclipses, and in 2017 and 2019 leading up to the eclipse we distributed them and used them in many outreach events and teacher workshops. In 2018 we used a small amount of HEC funding to finish the “Magnetism” show by paying for the sound track. In 2018-19 we created two pieces for the 50th Anniversary of the Apollo landings: one on which recreated the Apollo 17 night launch from Florida and one which recreated in the Apollo 17 LEM liftoff from the moon. These have been widely distributed free.

We have given numerous talks and presentations at public and teacher events, including Astronomy on the Mall, CAST (Texas state science teachers), NSTA, ISTE and Escape Velocity. Our major student event last year was the STEM Symposium at Milby High School. We had difficulty with one school not returning our dome system and another school causing dome and mirror damage, so we have shut down the Dome Loaner Program since we don't have any maintenance funds available.

Total People reached in 2018-19 *in person contact*: 6,308

Total seen via media, YouTube, in planetariums or online interviews: estimated 20,000+

Note that at least 60% of the in person contacts would not have happened without the financial support of our partner company MTPE Inc., dba ePlanetarium, which paid for travel, shipping, and booth charges for outreach events.

Eclipse Clips:

In 2016 we created clips for the solar eclipse. These were widely distributed in 2017 and are still being requested for use. We showed them in all venues in 2016 and 2017 leading up to the eclipse, including teacher trainings in person and online. These are available for download from: http://space.rice.edu/eclipse/eclipse_animations.html. With the recent eclipse in 2019, more downloads of the eclipse animations have been done. 742 educators downloaded eclipse animations from our site and 706 remain as active subscribers to our eclipse mailservers.

Apollo Clips:

In 2018 we created two full dome clips of the Apollo 17 launch from Florida and subsequent LEM ascent from the Moon (totaling 60 seconds). These are being widely distributed in sizes up to 4K dome master frames at 60 fps. Educators (formal and informal) are encouraged to join our “Apollo Info” email list: <http://bit.ly/ApolloNews>. As of July 1, 2019, 84 museums or planetariums have downloaded the animations, with 29 downloading in the highest resolution (4K and/or 60 fps). These are the planetariums that reach the most people per show (generally 100-250 per show). These animations can be previewed at our website <http://space.rice.edu/apollo/> which also has links to other Apollo talks at Rice

and additional information. These animations are part of our new show (called “Apollo and Beyond”) which can also be viewed free at <http://space.rice.edu/apollo/>).

Media Interviews:

Interview by French TV about the Apollo history (to be shown later this summer)

Podcast on memories of Apollo by HMNS (to be aired later this summer)

Radio interview about “moon quakes”: <https://ktrh.iheart.com/content/2019-05-15-this-weekends-blue-moon-is-shrinking/>

Radio interview about Asteroid Apophos: <https://ktrh.iheart.com/content/2019-05-02-beware-the-god-of-chaos/>

Dome Loaner Program:

Another facet of our project is a dome loaner program, whereby rural museums and schools can borrow a dome system for a month for no charge except shipping. Here are the facilities that have received Dome Loaner in 2018-19. One group kept it six months instead of one month, and another group returned the system with some minor damage. Given the restricted funds we have for maintenance, we are suspending the project. We cannot afford to have our loaner dome damaged or lost.

Institution	Location	Contact Person	Dates
Claiborne County School	Byram, MS	Tavia Hess	April 2018 (not returned until October 2018!)
NASA/JSC	Houston TX	Andrea Mosie	May 2018
Southwest Research Inst	San Antonio, TX	Greg Fletcher	July 2018
Golden Rule, Inc.	Princeton, WV	Jana Jarret	October 2018

Teacher courses:

This grant supported tuition grants for several teachers to take graduate credit courses at Rice University, including ASTR 502 (Teaching Earth and Space Science, fall 2017), ASTR 503 (Astronomy for Teachers, spring 2018), PHYS 501 (Physics of Ham Radio, fall 2018), and ASTR 530 (Teaching organAstronomy Lab, spring 2019). Without this grant support, these teachers would not get the crucial background information for them to teach their classes. In addition, it trained them on astronomical equipment and NASA missions. For each class, the teachers were required to research and present a report on a NASA mission.

By training teachers, we are educating the next generation! These courses are heavily discounted by Rice, providing “in kind” contributions to this project. One teacher in the Master of Science Teaching program had several hours of research tuition paid from this project.

Other Outreach Activities:

We have also organized and presented many lectures and outreach activities. Given the cost of shipping a dome and booth charges for events, we would not have been able to accomplish this without major contributions from our spinoff company MTPE, Inc (dba ePlanetarium). Events **shown in bold** were dome events with all booth charges and travel paid for by MTPE. NOTE: All events had Dr. Reiff as SME. Virtually all included information about the MMS mission. Here are the events for 2018-2019, with over 6000 individuals reached in person (not counting those who interacted with our materials online or in museum settings.)

Outreach Events for 7/1/2018 – 5/31/2019:

Date	Event	Location	Number reached (students)	Number reached (public)	Number reached (teachers)
2018	(since previous report)				
July 18	“Kids Kamp” science day	Macedonia UMC, Hockley, TX	43		10
July 24	“YES” Lecture/dome show	SWRI, San Antonio	20		
July 27	REMSL Teacher program	Rice University			20
Aug-Dec	PHYS 501 Class (Space Weather)	Rice University			7
Aug 3	REMSL Teacher program	Rice University			20
Sep 5	“Women in Space” preview	Rice University		40	
Sept-Nov	“Women in Space” Lecture series (8 lectures)	Rice University		30	
Sept 15	“Cosmic to Quantum Creation”	Camp Allen, TX		220	
Oct 6	GCURS Symposium (Undergraduate Research)	Rice University	26		
Oct 11-13	NSTA Regional	NSTA, Reno, Nevada			800
Nov 1-3	CAST Teacher Conference	Fort Worth, TX			850
Nov 3	STEM Symposium (mostly African American and Hispanic students)	Milby High School, Houston, TX	450		25
Dec 10	AGU education talk on teaching by immersion	AGU, Washington, DC			45
2019	(through May 2019)				
Jan-April	Teaching Astronomy Laboratory Course	Rice University			6
1/20	Total Lunar Eclipse	Rice University		200	

	observing				
2/12	Workshop on Digital Data, Space Exploration Educators Conference	Space Center Houston, Clear Lake, TX			30
3/5	Costa Rica Student Visit	Rice University	12		
3/6	Solar Talk by Nicola Fox	Rice University	40	100	12
3/18	Apollo Talk by Brian O'Brien	Rice University	25	60	10
3/20	Equinox at the Sundial	Houston Museum of Natural Science	30	15	
3/27	"Living and Working in Space" talk	Rice University		240	
4/3	"Apollo Podcast"	HMNS		500	
4/10	Observatory Open House	Rice U	15	20	10
4/11-13	NSTA National Meeting, St. Louis	NSTA			400
5/25-26	Escape Velocity, Washington Harbor	Museum of Science Fiction	500	1200	40
5/28	NASA Moon Day	Buffalo Soldier Museum, Houston	180		32
Total	2018-2019	6308	1343	2725	2260
	Number that would not have been possible without support from MTPE, Inc.	3790 (60%)	500 (37%)	1200 (44%)	2090 (94%)

Images from Events:

Image from "Women in Space" lecture series (Reiff organizer and lecturer, with 8 speakers including women mission controllers, woman astronaut, woman historian):



<http://glasscock.rice.edu/courses/women-space>

*Lunar eclipse image from Jan 20, 2019
lunar eclipse event at Rice Campus
(taken by iPhone through 8 in telescope
eyepiece)*



*Equinox at the sundial, March 2019:
Each equinox and solstice, the sundial at the HMNS
patio casts a solar image at solar noon (our design).
We try to be on hand each time to show off our
special "Stonehenge". This year there were only a
few sunspots to show.*



*Escape Velocity, Washington, DC:
We brought the dome and showed a short
version of "Apollo and Beyond" to the
participants. The dome stayed full for the full
three days of the event.*