

Eclipse 2017 at Southern Illinois University Carbondale

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Abstract. In the path of both the 2017 and 2024 total solar eclipses, Southern Illinois University (SIU) Carbondale led a regional eclipse awareness and planning effort in the three years leading up to eclipse 2017. At the start of the fall 2017 semester four days of eclipse events were held for returning students and over 30,000 visitors who came to campus. Activities at SIU were hosted in partnership with NASA Space Science Education Consortium (Eclipse 2017), NASA Edge, the Adler Planetarium of Chicago, the Louisiana Space Consortium, and several local partners. The collaborative efforts resulted in the campus coming together to host the most impactful outreach events in SIU's history.

1. Introduction

August 21, 2017 was set to be the first day of classes for Southern Illinois University (SIU) Carbondale. This date had been on the academic calendar for several years prior to any discussions to modify the class and move in schedule to accommodate not just the thousands of returning students, faculty, and staff, but an estimated additional 30,000 campus visitors traveling to campus to see the great American eclipse. With just three years to prepare, the university took on the immense task of leading a total solar eclipse outreach and education effort, designing first rate events and activities, and preparing safety and emergency response plans with several state and federal agencies. Collaborative planning and events at SIU included the efforts of approximately 2,000 members of the campus and Carbondale community, in addition to numerous partners. Three years of planning and preparing the region culminated in 4 days of events at SIU Carbondale that included: The Crossroads Festival, Eclipse Comic-Con, Crossroads Eclipse 2017 Research Workshop, Crossroads Astronomy Science and Technology Expo, Planetary Radio Live Eclipse 2017 Panel Discussion, Crossroads Art and Craft Fair, and Eclipse Day at Saluki Stadium. This exciting eclipse experience was held in the 14,000 seat Saluki Stadium and was hosted by Mat Kaplan of the Planetary Society. An interactive map of eclipse 2017 events at SIU Carbondale is available online.¹

¹<http://eclipse.siu.edu/map>

2. Three Years to Plan

2.1. Initial Planning

Planning on campus formally began with the Southern Illinois Eclipse 2017 - 2024 steering committee forming in fall 2014. The committee included broad campus and community representation with each committee member being in charge of a subcommittee in their area of responsibility. Committee efforts were divided so that eclipse awareness and education could proceed simultaneously with promotion, events, safety, and security planning. Planning was continually pushed forward by the need to stay on our own timeline for campus events while assisting with regional preparedness and participating in broader state and national planning.

SIU strived to stay at the forefront on eclipse planning and took seriously the warning messages that came out of the early American Astronomical Society (AAS) Eclipse 2017 workshops of potential disaster for communities that failed to plan. The message applied to all communities in the eclipse path, but was especially important for locations such as SIU and surrounding communities. We were not just in the path; the extended campus included property on the center-line of the path within a mile of the point of Greatest Duration as shown on Xavier Jubier's solar eclipse maps.² Drawing additional attention to the region were maps and media stories noting the intersection of the 2017 and 2024 eclipses.^{3,4} The eclipse path centerlines intersect just over Cedar Lake south of Carbondale, and drew public speculation from people searching for deeper meaning in this natural occurrence. The challenge for our campus was not how to get people's attention and bring them to the region, it was how to accommodate a large number of visitors in a safe and responsible manner. University planning concentrated on creating events and spaces that could best handle the expected crowds. Initial collaboration between the SIU College of Science, University Events, and the Athletics department drew on the experience of staff responsible for hosting a broad range of successful events at SIU.

Collaboration with the SIU Athletics department focused on using the recently remodeled and well equipped campus athletics facilities and surrounding areas for the bulk of public eclipse observation areas. An effort was made to create a mix of open and reserved spaces to accommodate different populations using the spacious campus. A great amount of thoughtful discussion, with guidance from campus leadership, built a strategy to host eclipse events in a fiscally responsible manner. Pricing for activities was established on a cost recovery basis. An emphasis was placed on keeping costs low while still offering several free areas. The standard ticket price for a seat in the stadium was \$25 for general public, \$5 for students through group sales, with 1,500 free tickets going to SIU students. The tickets granted access to the stadium, all programming, and a large observation area where visitors were permitted to setup their own equipment for the day.

²http://xjubier.free.fr/en/site_pages/solar_eclipses/TSE_2017_GoogleMapFull.html

³<https://fox2now.com/2017/07/14/carbondale-il-at-center-of-not-one-but-two-total-solar-eclipses/>

⁴<https://nationaleclipse.wordpress.com/2016/06/28/x-marks-the-spot-two-total-solar-eclipses-in-seven-years/>

About 3,000 group sales student tickets were sold to schools bringing student groups to the stadium on eclipse day. School groups visiting the stadium were given complimentary bus parking in an area within easy walking distance to the stadium. We marketed the stadium primarily to high school groups although properly chaperoned student groups of all ages were welcomed.

In order to support the expected volume of additional people coming to campus, we established additional parking for approximately 6,000 cars and 60 busses. The bulk of the capacity was created by the university farms using 27 acres of field and pasture ground. The city of Carbondale established additional low cost parking for 5,600 cars and worked with SIU to coordinate city and campus shuttles to events. Campus parking lots were designed with single point entrance and multiple exits to allow quick traffic outflow following events.

2.2. Partnerships and Volunteers

In planning the large-scale outreach events at SIU, it was critical to form partnerships with outreach professionals and groups willing to participate in activities before and on eclipse day. Partners who wanted to participate in events in a mutually beneficial way and take part in collaborative planning were sought out. This effort resulted in partnering with groups such as the Adler Planetarium, The American Astronomical Society (AAS), The Louisiana Space Consortium (LaSpace), NASA Space Science Education Consortium (Eclipse 2017), NASA Edge, the Planetary Society, The Astronomical Association of Southern Illinois, The Citizen CATE Experiment, The Science Center of Southern Illinois, Augustana College, Rend Lake College, College of Dupage, Hack SI, Girl Scouts, Earth-to-Sky Illinois, Shadow Chasers (High Altitude Balloon Adventures) and the Boys and Girls Club of Carbondale. The number and variety of partners allowed us to create truly diverse eclipse events. Future eclipse planners should strive to forge diverse partnerships with groups that complement their goals and strengthen their planning process. Performing an analysis of your group's strengths and weaknesses can help identify what types of partnerships are needed.

2.3. Promotion and Media Engagement

Eclipse education and event promotion information was often combined to make the best use of resources. The SIU eclipse glasses, which were in very high demand, included information on contact times, GPS coordinates of our main observation location, and links back to the SIU eclipse website, eclipse.siu.edu. Information about the eclipse was included in the admissions mailings to students coming to campus in 2016 and 2017. The university worked closely with the Regional Offices of Education (ROEs) to coordinate eclipse workshops for schools and teachers. Eclipse workshops were also provided to local and regional community organizations. Support was provided through a Julena Steinheider Duncombe Mini-Grant for an eclipse education and safety workshop for the Boys and Girls Club of Carbondale, whose members then served as eclipse ambassadors on the day of the eclipse at Saluki Stadium.

Media engagement added to the excitement of the eclipse. We worked closely with several media organizations to not only get the word out about eclipse events, but also educate the public on eclipse observation safety. During initial interviews with the media, a combination of materials from SIU, NASA, and AAS was handed out. This included consistent national information on the eclipse across the U.S., as well as a fact sheet on the SIU eclipse. Over two years, this built a very consistent message so that the

majority of local reporters were very well versed on the eclipse and it had the effect of helping to calm public rumors and concerns. Local media was very well prepared over two years of covering local eclipse workshops and planning, with the national media coming into the eclipse participation later. The strategy that worked best for national media was to partner with a science correspondent for their live eclipse day broadcast.

2.4. Practice Events

Despite the fact that SIU would see two total solar eclipses in 2017 and 2024, the 2017 eclipse was in no way a practice run. In preparation for the large eclipse events being planned for SIU, smaller events with local partners using SIU athletics facilities were organized and carried out. The first opportunity to do this was the Spring 2015 Illinois State Science Fair during which an astronomy observation and movie event for 600 visitors was carried out in Saluki Stadium. The event, co-hosted by SIU Physics Department, the Astronomical Association of Southern Illinois, and SIU Athletics, provided the opportunity to experience a large stadium event. The next opportunity was the September 27, 2015 total lunar eclipse. The main event was an observation of the moon and visible planets on the stadium field combined with showings of two science-themed movies. The event was kicked off with a VIP reception in the Saluki Stadium Club, similar to what was being planned for the total solar eclipse. This was a “prime time” lunar eclipse, occurring around 8pm on a fall evening. Key to the success of the event was monitoring the weather and using social media to communicate up to date information to the public.

An estimated 5,000 people attended, which was much larger than the amount that typically shows up to just a movie or just an astronomy observation. The artificial turf athletics field was able to handle a heavy rain the afternoon prior to the event and still hosted a comfortable observation. Despite standing in long lines for telescopes, everyone at this event was smiling and enjoying themselves. The crowd loved the event format, and more importantly, the event demonstrated a proof of concept to campus leadership for a large astronomy outreach event.

Event planners for the 2024 total solar eclipse should use smaller scale events in the years prior to the eclipse to develop partner relationships and build their capacity to host a large event. Look for astronomy events that hold particular interest such as the total lunar eclipse of May 16, 2022,⁵ or the October 14, 2023⁶ annular solar eclipse. While the entire country sees a partial solar eclipse in 2023, communities in path of annularity through southern Texas have a better opportunity to use this annular eclipse to prepare for and promote the upcoming 2024 total solar eclipse.

2.5. Facilities, Infrastructure, and Lodging

When choosing facilities for eclipse events, it is important for planners to consider what is available and what has worked well in their area for past events. Realize that most venues managers will have never held an eclipse observation before, and the concept will be foreign. Once you decide on a theme for the event and identify possible venues, it is helpful to draw parallels between the eclipse event and successful events that the venue has hosted in the past. SIU chose our main event, Eclipse Day at Saluki

⁵<https://eclipse.gsfc.nasa.gov/LEplot/LEplot2001/LE2022May16T.pdf>

⁶<https://eclipse.gsfc.nasa.gov/SEsearch/SEsearchmap.php?Ecl=20231014>

Stadium to have the feel of a sports event with coverage of it by NASA Edge similar to a college football pre-game show.

SIU athletics had a demonstrated ability to handle large event crowds and the staff had a broad range of capabilities in event promotion, production, and coverage. The athletics department had existing relationships with several campus units as well as external vendors and media. Saluki Stadium was laid out almost perfectly for a large capacity crowd to observe this eclipse from the stadium seats. Observing shadow lines in the stadium on August 21 of 2015 and 2016 allowed us to remove from the sales pool a relatively low number of seats that would not see totality. Adjacent to the stadium is the SIU arena, which housed the Crossroads Astronomy, Science, and Technology (CAST) Expo. This two-day expo gave visitors a climate controlled environment on a hot eclipse day and served as a backup rain venue. Although equipment reservations were made two years in advance, last minute additions required quick prioritization decisions to be made by the experienced facility coordinators.

Ample eclipse weekend accommodations were a challenge for the southern Illinois region as was the case in most of the areas in the eclipse path. When faced with a limited number of lodging options, event planners can look for non-traditional partners to create additional temporary lodging options. SIU announced a number of lodging options in the months prior to the eclipse. The 3,200 acre SIU Touch of Nature Environmental Center announced eclipse packages that allowed up to 400 visitors to stay onsite in various housing and camping options while participating in unique on-site programming. The SIU Recreational Center provided indoor “eclipse camping” in its large gymnasium areas and recreational rooms such as dance studios. University housing made one of SIU’s dorms, Schneider Hall, available, providing 200 dorm suites for three-day eclipse packages. Up to eight people were permitted to stay in a two room suite. All university lodging was reasonably priced and included options for parking and meal plans. In addition to the visitor lodging, lodging was made available for several members of the media and staff needed for events safety and security.

Eclipse event planners should work with local tourism offices in the planning stages of events. Tourism offices can help you network with other event coordinators so you can create complimentary, not competing events. They can also help estimate numbers of attendees by getting an accurate count on lodging reservations in an area. One lesson learned from 2017 was that individuals and sometimes groups will speculatively reserve lodging in multiple areas for the eclipse. Once weather prospects are determined a few days before the eclipse, they may cancel in one area, or resell lodging in another. This can have a negative impact on events and visitor experience by artificially creating lodging shortages a year or more in advance of an event. In order to discourage this locally, SIU maintained a no refund policy on all lodging and event tickets. This allowed the university to maintain affordable prices and accurately estimate visitor numbers.

2.6. Summer 2017

The pace of planning and preparations dramatically increased in the final months before the eclipse. The last advanced site visits, script readings, and technical details were coordinated with partners. The stadium show was coordinated with the NASA Edge Eclipse 2017 broadcast and other media requests to make best use of resources and prevent overlapping individual interviews. Several individuals involved in planning were giving daily interviews throughout the summer while University Communications,



Figure 1. Eclipse Day at Saluki Stadium getting started with host, Mat Kaplan (on left) and Eclipse Reporter, Michelle Nichols (on right). Photo courtesy of Steve Buhman, Southern Illinois University.

WSIU, and Athletics eclipse team leaders dealt with increasing media logistics requests. The start of the summer brought concerns of low ticket sales and the possibility of not breaking even on ticket sales. However, in our final meeting, just two weeks before the eclipse, it was announced that all lodging had sold out and the entire stadium, 14,000 ticketed seats plus several hundred more in the Stadium Club and suite areas were expected to sell out soon. There was constant activity around the athletics facilities as infrastructure went into place to support the vendors, media, and outreach partners arriving on campus in preparation of the events. The collaboration with the Athletics department exceeded all expectations. Athletics put their entire staff on notice that they were all to work eclipse events. Amtrak train service decided to add an eclipse train to Carbondale that would include a special delegate car reserved for state representatives and staff from the state capital.

3. Welcome to the Eclipse Crossroads of America

New student move-in at SIU started on Wednesday, August 16 and immediately flowed into the eclipse themed week of welcome and eclipse event kickoff on Friday, August 18. The kickoff events were initiated at a new student pep rally that had an atmosphere of excitement and anticipation for the upcoming eclipse. Fellow eclipse committee co-chair, Scott Ishman, NASA Edge co-host, Chris Geirch, and I spoke about the eclipse to a fired-up incoming freshmen class. Immediately following the pep rally was the Crossroads Festival, a four-day event including music, food, and fun. The Eclipse Comic-con, hosted by the SIU Student center was the first Comic-con to be held at SIU.

It was designed as an affordable family friendly experience. Attendance was measured at 3,084 visitors over 2 days, and considered to be a great success based on feedback from students, visitors, and vendors. The event was cross promoted with our other events, such as the CAST Expo, and the Crossroads Eclipse Research Workshop to maximize exposure. The research workshop was created to give those doing research on campus for the 2017 eclipse a forum to present and a structure to conduct experiments and collaborate. The presentation portion was free and open to the public and consisted of 6 presentations over 2 hours.

The free CAST Expo took place over the Sunday and eclipse Monday at the SIU Arena and was attended by an estimated 10,000 visitors. The bulk of the expo areas were family-friendly with hands on demonstration booths and activities. Although all areas of the expo were well visited, highlights included the two planetariums, one donated by the Adler Planetarium of Chicago, and the second one owned and operated by LA Space. A full talk schedule in the expo was also very popular with hundreds of visitors typically watching the main stage at any given time. Expo programming was halted from 1 pm to 2 pm on eclipse day to allow people sufficient time to head outside and enjoy totality. The expo and talks resumed from 2 pm until 5 pm. This was purposefully extended to provide ample exit time for outgoing traffic.

The night before the eclipse an entertaining and informative show was given by Mat Kaplan, host of Planetary Radio Live from SIU Schryock Auditorium. This 2-hour event featured music by the local Jenny Johnson Band performing their new song, “Solar Eclipse,” as well as several special guests to speak to the science and public outreach aspects of solar eclipses. The event “sold out” the 1,200 free tickets offered to the public in advance.



Figure 2. Saluki Spirit team entertaining the stadium crowd between edu-tainment activities in the stadium. Photo courtesy of Steve Buhman, Southern Illinois University.

4. Eclipse Day

The main event started at 10am, August 21, 2017 at Saluki Stadium. All eyes were on Mat Kaplan, host of Eclipse Day at Saluki Stadium as he was led into the stadium by a procession of Star Wars cosplayers. “Eclipse reporters,” Michelle Nichols of the Adler Planetarium and Jeff McGoy from SIU roamed the stadium throughout the day interacting with the energetic crowd and assisting to explain scripted edutainment activities. Designed for the general public, the event included basic explanation of eclipse phenomenon by the hosts. It included more in depth field interviews with groups such as the Citizen CATE (Continental-American Telescopic Eclipse) Experiment, the Louisiana Space Consortium launching high altitude balloons from the field, and Girl Scouts involved in a large-scale shadow bands observation in cooperation with the SIU Physics club. Major event coverage was provided by eighty-four national and international media organizations represented by just over three hundred individuals, the bulk of which were in and around the stadium.



Figure 3. SIU Physics students and girl scouts place shadow band observation tarps on the stadium field just prior to totality. Photo courtesy of Steve Buhman, Southern Illinois University.

The excitement of the crowd in the stadium grew more tense as totality approached. The video screens and lighting was turned off. Clouds parted in the final moments before second contact and the roar of the crowd became deafening as the diamond ring appeared. The Citizen CATE telescope on the field recorded 12 seconds of totality frames prior to totality being obscured by a heavy cloud directly overhead. Despite the clouds, a beautiful 360 degree sunset was observed, as well as Venus and Jupiter. The crowd was in awe of the brief totality and yelling for more.

For the next two minutes, the enthusiasm of the crowd was at times overwhelming as they swayed between the awe of the moment, and chanting for the cloud to move.



Figure 4. The first diamond ring of eclipse 2017 over Saluki stadium. Photo courtesy of Steve Buhman, Southern Illinois University.

There were only moments left until the end of totality and it appeared like the cloud was finally moving. Visible light levels over parts of the stadium changed and the crowd erupted as light from the corona broke through. First on the west side of the stadium, and sweeping east, the cloud parted and the stadium was able to see the last moments of totality and then the final diamond ring. It was an incredible experience similar to being part of a championship game with the winning touchdown occurring in the final seconds. The only difference was that everyone was cheering for the same team, the eclipse. “We have shadow bands,” was announced by Michelle Nichols over the loudspeakers a few minutes after totality. The sky had opened up directly in front of sun. Shadow bands were visible on all flat surfaces in and around the stadium, and especially on the eight tarps that had been placed on the field just prior to totality. As part of the shadow bands observation experiment, two of the tarps were marked with directional and distance indicators consisting of blue tape spaced every foot. Video of shadow bands recorded in the stadium before and after totality can be viewed online.⁷

The large majority of the people started flowing out of campus and heading home immediately following totality with small groups remaining to enjoy the final talks in the expo. Within a few hours, campus traffic was back to normal levels. There were

⁷https://www.youtube.com/watch?v=Wxf_9LsR1so



Figure 5. Visitors react to the start of totality at Saluki Stadium. Photo courtesy of Steve Buhman, Southern Illinois University.

zero security incidents on campus and a minimal number of people were seen for heat related injuries. Almost no cleanup was necessary. The students and visitors did an outstanding job. They were very respectful and cleaned up after themselves. Post-event comments were overwhelmingly positive and included inquiries to reserve tickets for the next event in 2024.

Our goals were accomplished: we got the public interested in science, and encourage them to take the next steps. Seeing an eclipse in a cloud free sky is beautiful, but clouds at the stadium added real drama. It got people on their feet and unified as they all cheered for the eclipse. It was a true group experience where people felt like they pulled together and willed the cloud to move. Best of all, it left them asking questions and wanting to learn more.

The total solar eclipse planning and activities at SIU are the subject of two documentaries, “2:38: A Glimpse into the Eclipse,”⁸ by SIU students Malea Bailey and Marcia Kuhlman and, “In the Shadow,” created by Mark Stoffel and Howard Motyl in the SIU College of Mass Communication and Media Arts. Eclipse 2024 and interim activities will be posted at eclipses.siu.edu and on SIU social media.

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⁸https://www.youtube.com/channel/UC1SRLWRJ58eZiev4vf_1hJQ

Louisiana Space Consortium / LSU; Mike Kentrianakis and Shadia Habbal, American Astronomical Society; Mat Kaplan, The Planetary Society; Matt Penn, The Citizen CATE Experiment; Sean Herbert, CBS News; Tarique Malik, Space.com, The Science Center of Southern Illinois, Augustana College, Rend Lake College, College of Dupage; Dav Glass, Hack SI; Emily Stanley, Girl Scouts; Tina Carpenter, Boys and Girls Club of Carbondale; Amanda Downard, Earth-to-Sky Illinois; Aaron Savka, Shadow Chasers (High Altitude Balloon Adventures). Eclipse activities at SIU Carbondale were partially funded by the following groups or individuals: Pepsi Mid America, AT&T, Airgas, Greg Anderson, Julena Steinheider Duncombe Mini-Grants Program (American Astronomical Society and National Science Foundation), Southern Illinois University Carbondale.