

NASA/HEAT Rice U Status Report – June 2021

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- **Underserved Student Event: South Texas**

We participated in the “South Texas STEM event” on June 30 and July 1, 2021. The event was held at Santa Rosa High School, Santa Rosa TX. We took the Discovery Dome and did training for all 300 students (from pre-school to High School) on the Sun, eclipses, and the upcoming annular and total eclipses which will be very near their location. (They will experience the sun 85% covered for both events.)

We enlisted the help of the South Texas Astronomical Society to help with the demonstration of safe solar observing techniques outdoors while I was in the planetarium dome. Each student and teacher received a pair of eclipse glasses and an envelope to save them in.

Participants: South Texas STEM Academy, June 30-July 1

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| Students: Elementary 110; middle school 120; High School 70 |
| Teachers: Elementary 10; middle school 10; High school 8 |
| Demographics: 100% hispanic; 50% female (all students and most of the teachers) |

Figure 1: Elementary students after learning about eclipses in the dome. A typical group: 22 students, 2 teachers (not in the photo) and one dome educator. There were 20 chairs in the dome, spaced for Covid at 3 feet centers. The students wore masks in the dome (masks removed for the photo). The students, after the dome training, went outside to observe the Sun using solar eclipse glasses and solar telescopes.



Figure 2: High School students after learning about eclipses in the dome. A typical group: 13 students, 2 teachers and one dome educator.



- *Underserved Student Event: Houston Hispanic students*

We are on the organizing committee for the Houston STEM event at the Lone Star Flight Museum, scheduled for October 2. We are planning for 400 hispanic students plus adult chaperones (teachers or parents). The chief organizer is the “Gathering of Eagles”, with help from the Flight Museum, the West Point Foundation, Rice U and the University of Houston. The event will feature a tour of the museum and booths highlighting STEM careers.

The website is set up <https://goestemfest.org> and the registration is open. We are inviting lower-income primarily hispanic student to participate.



Eclipse Animation Update

The final animations to be created under our initial project is to add annular eclipse animations to our other seven eclipse animations that we created previously for the 2017 event. We have identified two animations to be done (in 4K x 4K fulldome fisheye for planetariums, but also available in pre-warped for mirror systems and in flatscreen):

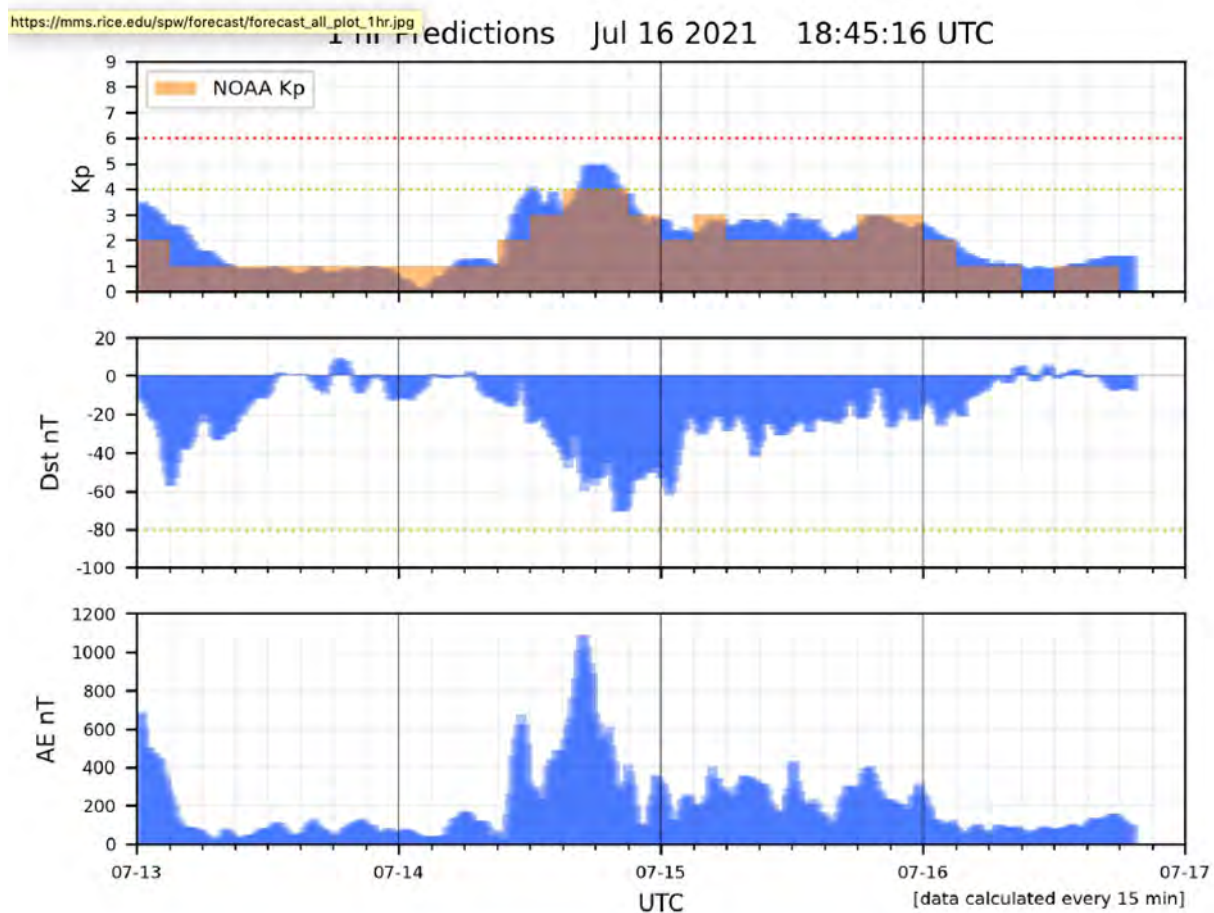
1. A closeup of the phases of the annular eclipse, much like the “Total Eclipse from the Earth” animation (https://space.rice.edu/eclipse/eclipse_animations.html) but larger, but not as large as the “Bailey’s Beads” animation (on the same page).
2. An animation of the geometry of an annular eclipse, showing the umbra not quite touching the earth, leaving only the penumbral shadow. This would be similar to the “Eclipse Geometry” animation for the total eclipse, but would not include the lunar eclipse at the end and would “close in” to the shadow.

Space Weather Forecast Website

We are in process of rewriting all our image generating scripts for the space weather forecast pages. The forecast page is: <https://mms.rice.edu/forecast.html> and the solar wind input page is here: <https://mms.rice.edu/realtime.html>

We are redoing the graphs to make the time of the forecast more visible in the plots, and making the forecasts semi-transparent so that the uncertainty is easily visible.

Below is a result of the work (which has extended into July). The July 14 event was well predicted by the model.



We are beginning to look into updating the Space Weather software to see if we can get it to run on newer Mac's. (It runs on all Windows machines but not Mac Catalina or higher). We will work on that in July and August. We will request a no-cost extension to finish the animation and this website work.