Service learning and dust storm data collection through the GLOBE Observer app

In collaboration with
The Service Learning Program at El Paso Community College encourages civic responsibility among students through community service.
Abstract
The last half of 2017 brought an increased focus on astronomical observations, and with it opportunities for engaging the public with science. The Community College of El Paso has a long-standing tradition of working with community colleges and schools, such as the Sun City Learning Center, to create educational programs for the general public and advanced students. Our focus during the fall of 2017 was on engaging students with the potential impacts and opportunities of observations. The trajectory of the Moon and the potential for viewing the Moon during a total solar eclipse, seen from LPSC's website, was the focus of our efforts. In this year's Solar Eclipse (2017), the Moon's shadow was visible in certain regions of the world, including the United States. The eclipse occurred on August 21st, 2017, and was visible in parts of the western United States, including the area covered by the SLC. This event presented an opportunity for the SLC to engage with the local community and to promote our service learning programs.

Solar Eclipse 2017
The focus of our efforts was to reach out to local schools and enhance the educational experience for students. We worked with local schools and organizations to create educational programs for the general public and advanced students. Our focus was on engaging students with the potential impacts and opportunities of observations. The trajectory of the Moon and the potential for viewing the Moon during a total solar eclipse, seen from LPSC's website, was the focus of our efforts. In this year's Solar Eclipse (2017), the Moon's shadow was visible in certain regions of the world, including the United States. The eclipse occurred on August 21st, 2017, and was visible in parts of the western United States, including the area covered by the SLC. This event presented an opportunity for the SLC to engage with the local community and to promote our service learning programs.

Lunar Viewing and Lectures
November 5, 2017 provided six shows for a total of over 1,500 students. We engaged with students by delivering a series of presentations on our recent discoveries and future missions to students in the EL PASO Community College.

Future Plans
- Continue outreach and volunteer for shows with local Astro Society.
- Develop and present regular monthly public outreach events.
- Collaborate with the local astronomy club (Sun City Astronomy).
- Collaborate with the local chapter of the Solar System Exploration Network (SSEN).
- Collaborate with local community college astronomy departments.
- Collaborate with local community colleges and museums.

Acknowledgements
- SLC�1 acknowledges the support of the National Science Foundation (NSF) for our service learning programs and for our contributions to the education of undergraduate students.

References
Works and Collaborations

ED32A-06 - EXPLORING STEAM THROUGH SERVICE LEARNING AND CITIZEN SCIENCE ACTIVITIES: ENHANCING EDUCATION/PUBLIC OUTREACH IN THE INTERNATIONAL COMMUNITY AT EL PASO COMMUNITY COLLEGE AND THE UNIVERSITY OF TEXAS AT EL PASO

Wednesday, 11 December 2019
11:10 - 11:20
Moscone South - 215, L2

Swirl Topics
- Ethics, Diversity and Inclusion Field Guide - Track
- Science & Society - SWIRL

Link to abstract
Global Learning & Observations to Benefit the Environment (GLOBE) Program

El Paso Community College (EPCC) – Official GLOBE Partner since April 2019

Cloud observations
November 2019

GLOBE Program – Weather Station Network (Spring 2020)
Weather Station Locations
Dust Storm Ground Observations
Dust observations made easy

Download the GLOBE Observer app. Select Clouds and start a new observation.

Select OBSCURED.

Select DUST. Tap continue and report ground conditions.

Take Pictures

Select ADD PICTURES MANUALLY.

Tap on the camera icon to take photos. Point your camera straight at the horizon.

Send your observations when a cellular or WiFi signal is available.

Safety First! Protect yourself from dust. Observe from inside a building or car. Pull over, if needed.

Learn more at observer.globe.gov/dust

Excerpt from Amos et al (2020)
Data Processing

What happens to the data?

1. Send
2. Photo Approval
3. Data goes live

Excerpt from Amos et al (2020)
App users reporting dust worldwide

Peru  
Saudi Arabia  
Cyprus

Israel  
Australia  
Texas

Excerpt from Amos et al (2020)
Collaborations and Community Engagement

- Dust Observations
  - GLOBE Observer
  - Additional collaborations:
- Sponsor weather workshops
- Engage student participation in STEM/STEAM
- Promote citizen science within the international community
- Advance service learning opportunities
- Curriculum advancement (i.e. physics, geology, chemistry)
Surface Temperature

Clouds

Relative humidity found in our atmosphere, as observed by satellites of the GOES project. The gray and white regions are clouds. Image: NOAA

Barometric Pressure

Relative Humidity

Air Temperature

Seasonal Temperature Range

GLOBE Protocols
Thank You
Questions/Comments

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