

Dynamic Eclipse Broadcast Initiative

R. Baer, M. Penn, C. Brevik, H. Henson, C. Mandrell, R. Danley, T. Dean, *Southern Illinois University Carbondale*, E. Bell, *West Los Angeles College*, H. Bjerke, *University of Illinois*, K. Cobble, B. Kloepping, *Texas Astronomical Society of Dallas*, M. Conley, *Night Sky 45 Astronomy Club*, C. Fu, *Peninsula Astronomical Society*, D. Gerdes, J. Wang, *University of Michigan*, J. Kamenetzky, *Westminster College*, C. Plymate, *Bear Valley Springs Astronomy Club*, D. Prasad, *California State University Northridge*, M. Tovar, *Langara College, Canada*, J. Weiss, *retired*

The DEB Initiative Team:

- invented, funded, executed and published scientific results of the 2017 Citizen CATE Experiment.
- is a gender-balanced geographically diverse group of faculty, teachers, students and amateur astronomers.

The DEB Initiative is:

Faster: near real-time images available to the public and science community.

Better: wider field-of-view, more sensitive camera, sites outside path of totality, specific lead-in and follow-up science programs.

Cheaper: less than half the cost per site of our 2017 equipment (~\$1800).

Good citizen science is published:

Birriel, J. & Teitloff, J.; 2022, "Solar Coronal Flattening during the Total Solar Eclipse of August 2017 from CATE Data", *JAAVSO* Volume 50, No. 2 pp. 1-3.

Penn & 286 co-authors; 2020, "Acceleration of Coronal Mass Ejection Plasma in the Low Corona as Measured by the Citizen CATE Experiment", *PASP* 132:014201.

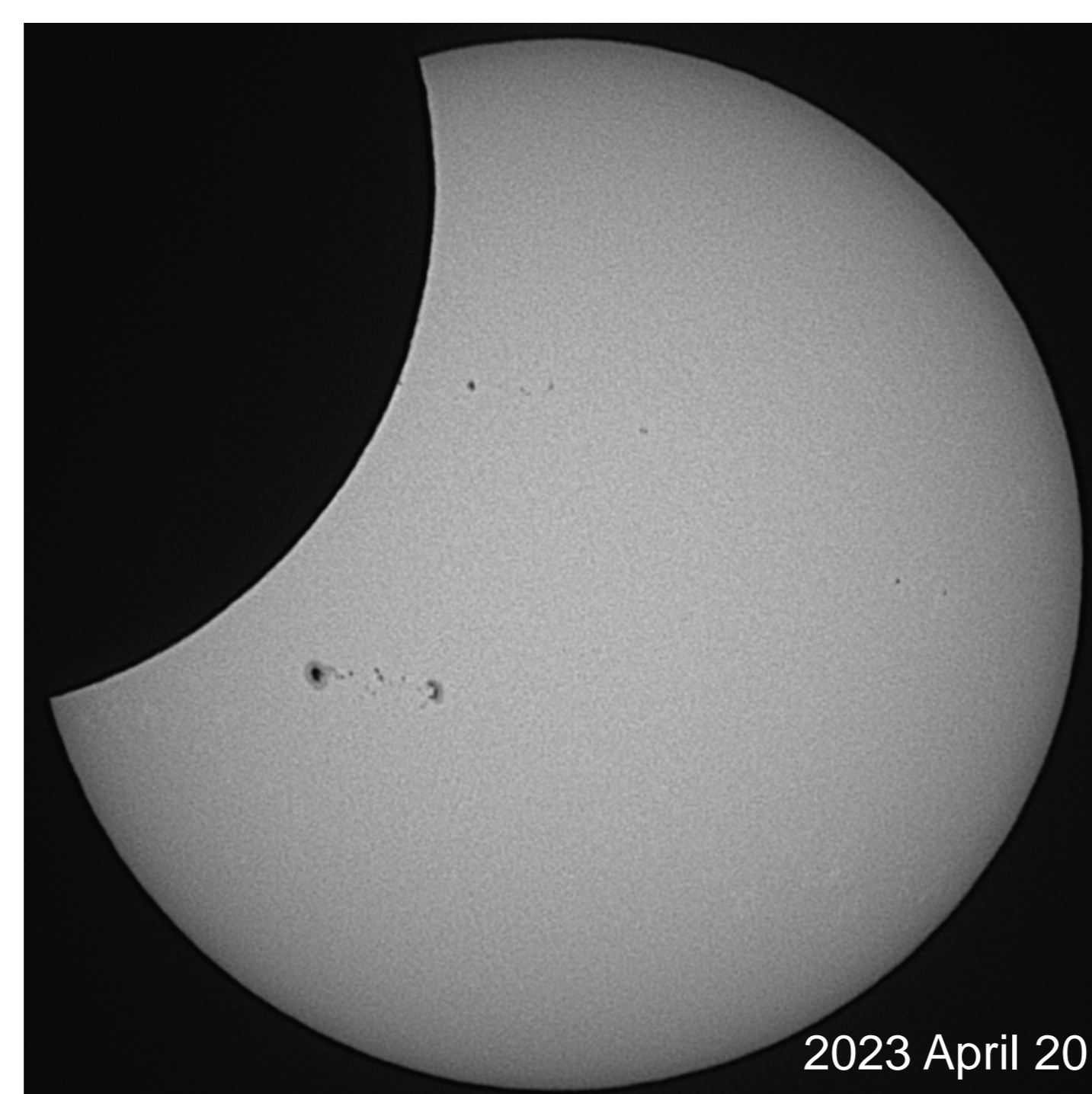
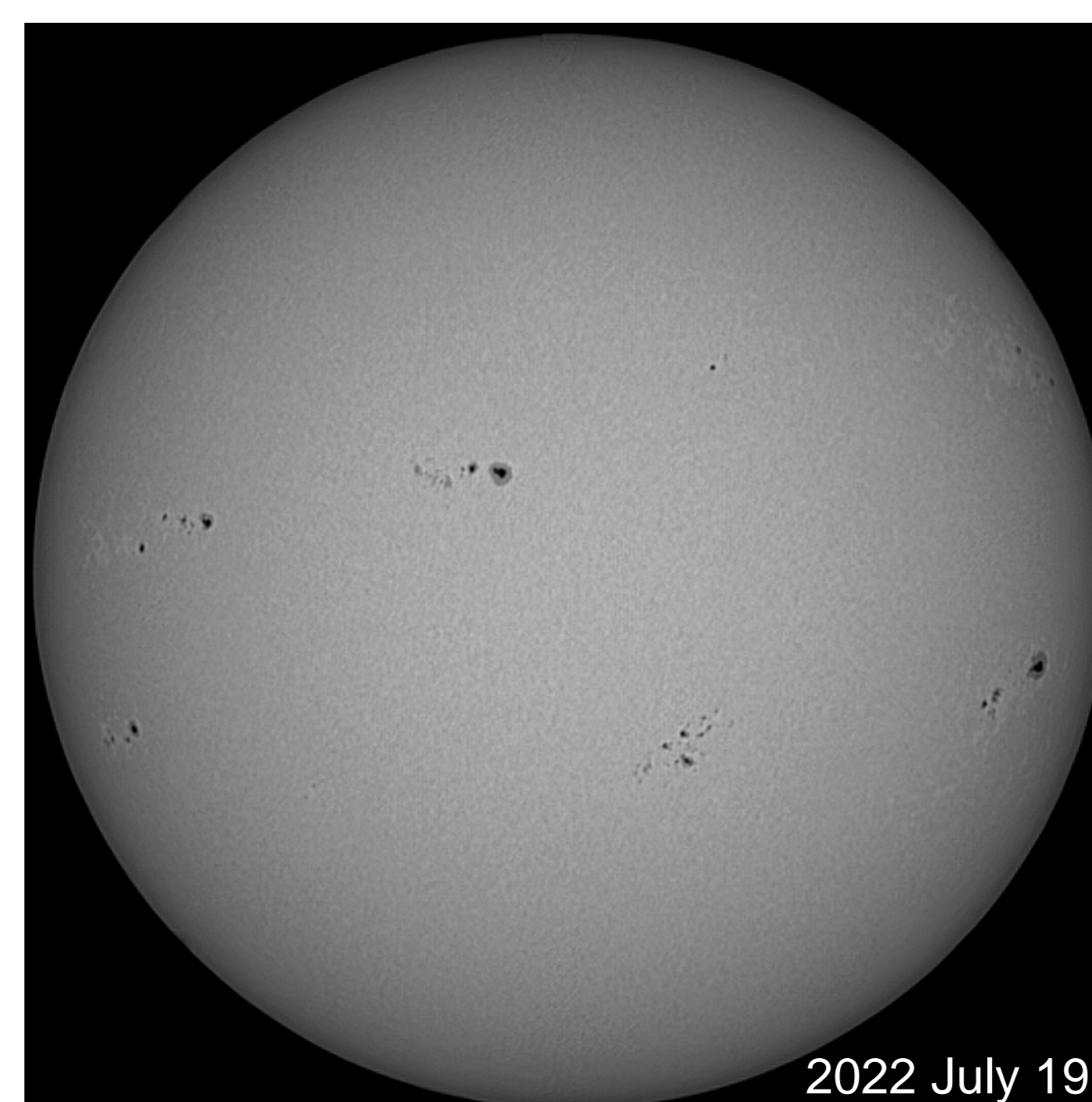
Stockbridge, Z.; 2019, "Citizen Science With The Transit Of Mercury", *Sky & Telescope*, October 2019.

Zellem et al.; 2020, "Utilizing Small Telescopes Operated by Citizen Scientists for Transiting Exoplanet Follow-up", *PASP* 132 054401.

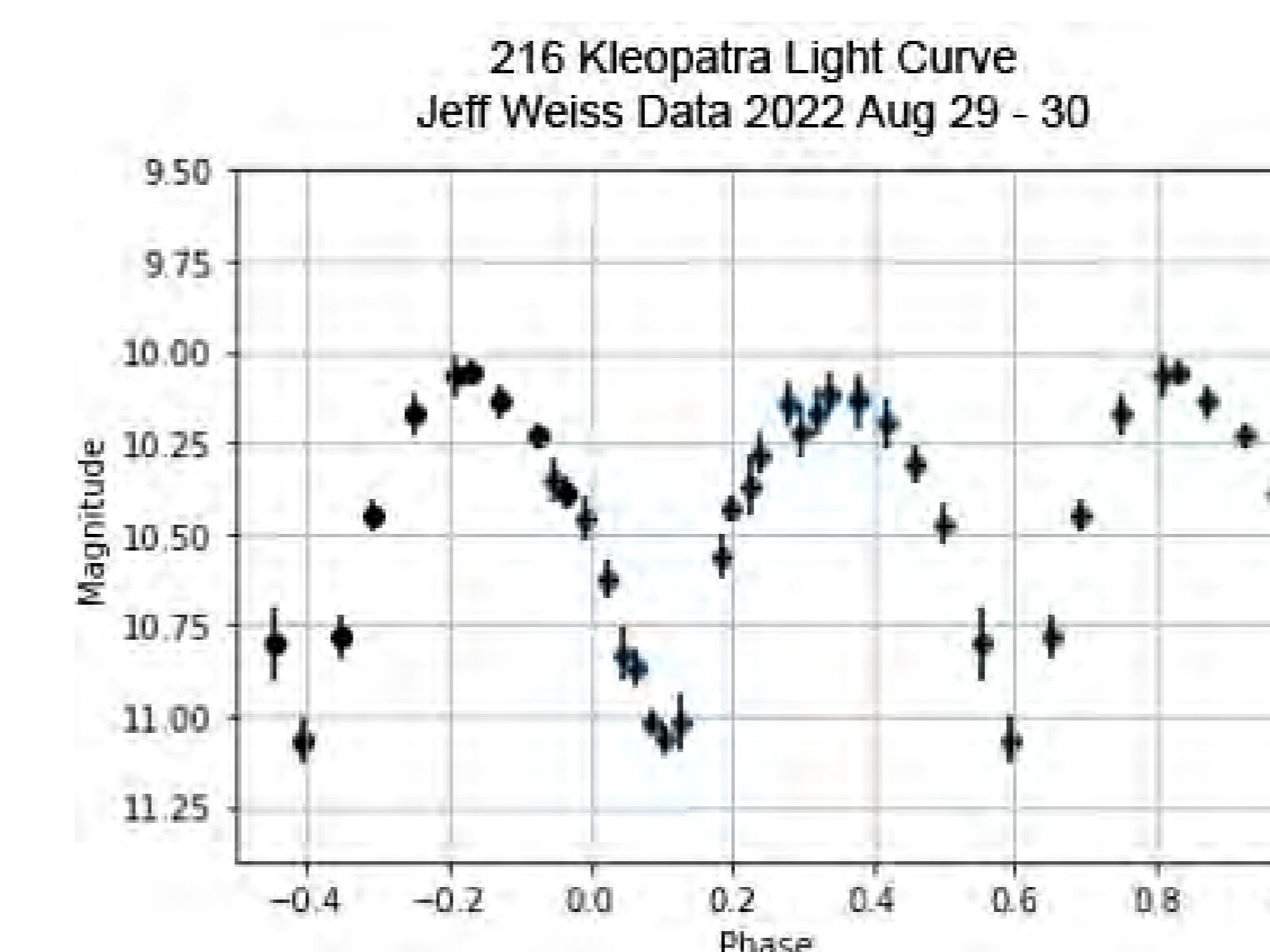
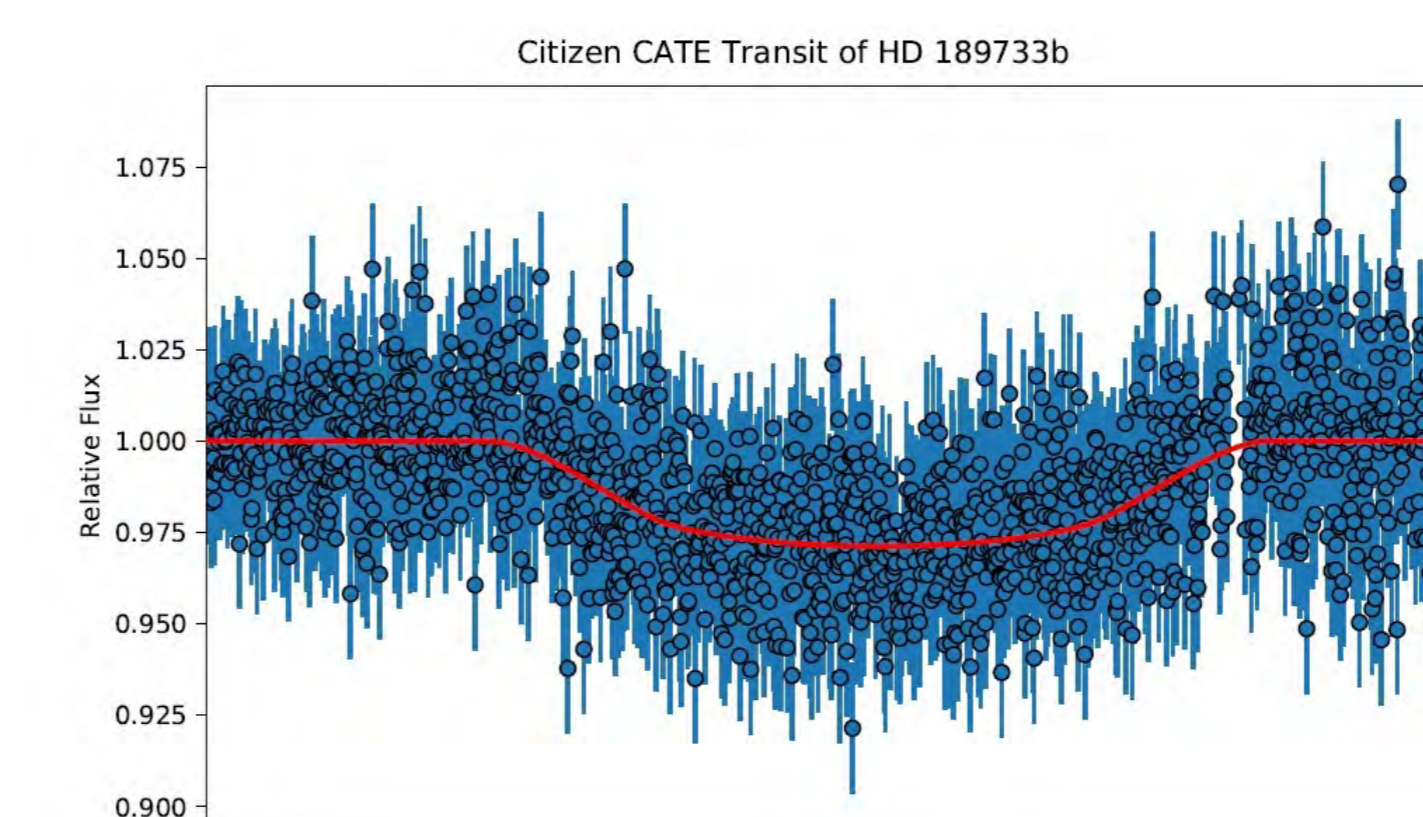
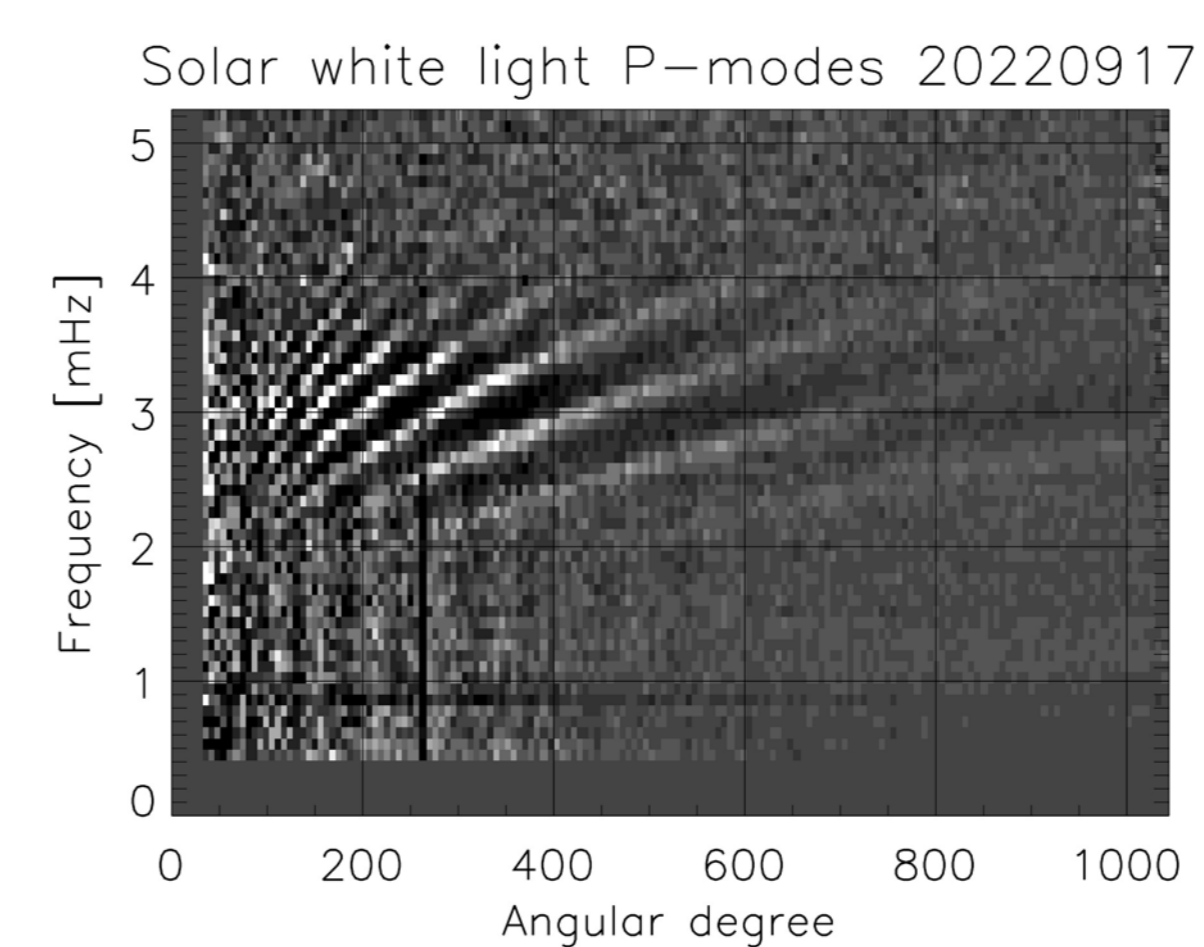
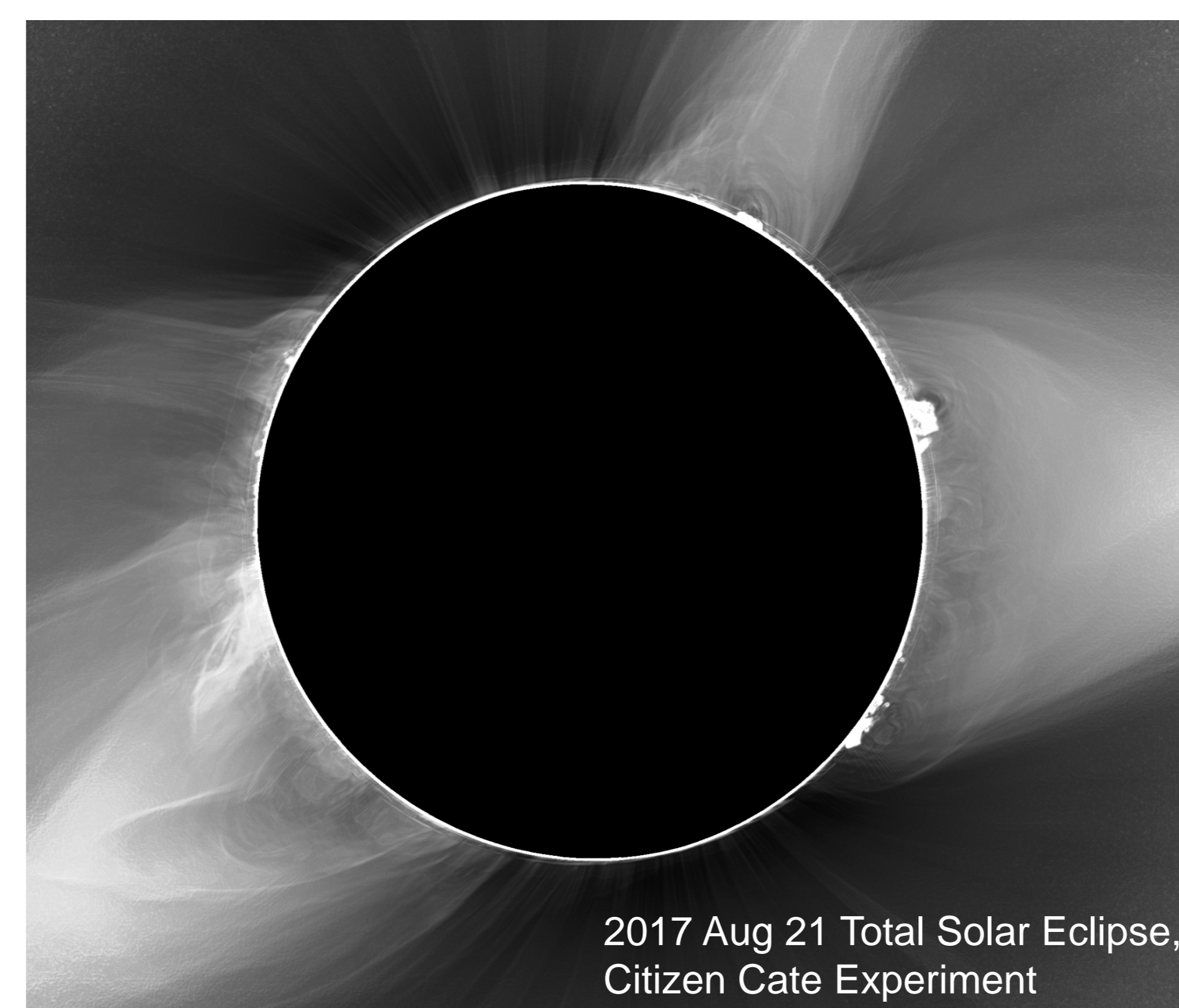
Our 2017 data is freely available at:

<https://www2.physics.siu.edu/cate/>

Heliophysics Citizen Science for the 2023 and 2024 Solar Eclipses and Beyond



- Solar observations will be made to study oscillations and flares during the lead-in to ASE 2023 and TSE 2024.
- Exoplanet transits, asteroid and variable star light curves will be observed with +/-30 millimag errors.
 - Lunar limb profile will be measured during ASE2023.
 - Plasma acceleration in the corona will be measured in TSE2024, and correlated with disk activity from out-of-totally observing sites.
- Lunar eclipses will be measured to study variation in the Earth's shadow and to create 3-D movies.



Join the DEB Initiative!

We are seeking observation team leaders for sites both in and outside the path of totality in the US, Canada and Mexico.

Email: deb.initiative@gmail.com

We will train your team to:

- Observe with our COTS equipment package.
- Use community standard software such as SharpCap Pro and PlanetarySystemStacker.

All Team members participate in:

- Publications
- Observations
- Software Development
- Equipment Testing
- Data Analysis

Selected teams receive a complete imaging setup.

More information at: <https://debinitiative.org>



SIU Southern Illinois University
CARBONDALE



This material is based upon work supported by the National Science Foundation under Grant No. 2215167



This material is based upon work supported by the National Aeronautics and Space Administration under Grant No. 80NSSC23K0948 issued through Science Mission Directorate.