Coronal Dynamics at Recent Solar Eclipses

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Total solar eclipses are the most exciting thing anybody on Earth can see—and we’ll have one crossing the whole United States from west to east in 2017, the first such totality path in 99 years. My colleagues, students, and I have observed the total solar eclipses over the most recent solar-activity cycle with special concentration on dynamics. For example, we have measured velocities for a coronal mass ejection during the 2012 total eclipse, observed from our site in Australia and compared with observations from a Pacific-Ocean site. At the 2013 eclipse that we observed from Gabon, we measured motions of the two coronal mass ejections and the erupting prominence that were visible by comparing our observations with those from three other sites across Africa. We compare our eclipse results with those from spacecraft, including several from NASA and the European Space Agency, with NASA, Lockheed/Smithsonian, and Naval Research Laboratory instruments. With those comparisons, we can trace ejections from their origins on the solar disk through the region of the corona best visible at eclipses and into the outer corona. Finally, I will report our recent observations of the March 20, 2015, total solar eclipse in Svalbard in the Arctic (halfway between the top of Norway and the North Pole) as well as plans for Great American Eclipse that will sweep across the Continental United States from Oregon to South Carolina on August 21, 2017.

Our recent eclipse studies have been supported by the Solar Terrestrial Research program of the National Science Foundation and the Committee for Research and Exploration of the National Geographic Society. Our website for the Working Group on Solar Eclipses of the International Astronomical Union is at http://www.eclipses.info.

Friday, April 17, 2015 at 4:00 PM
in the Karl Herzfeld Auditorium of Hannan Hall - Room 108
Reception immediately following lecture

Parking and other information: (202) 319-5315 or http://physics.cua.edu/Herzfeld.cfm