CATE
From Indonesia to South Carolina
SCSU Team

• March 9, 2016 (Indonesia)
  – Myles McKay (undergraduate physics major)
  – Donald Walter

• August 21, 2017 (South Carolina)
  – Jennifer Cash
  – Daniel Smith
The Citizen Continental America Telescope Eclipse (CATE) Experiment

THE CITIZEN CATE EXPERIMENT
2500 MILES • 60 TELESCOPES • 90 MINUTES OF TOTALITY • AUGUST 21, 2017
CATE

• 60 to 100 identical telescopes across the path of totality during the eclipse of August 21, 2017
• Sites distributed from the Oregon coast to South Carolina
• Acquiring images of the solar corona
• 90 minutes continuous coverage of the dynamics of the solar corona during totality
• Sites operated by a collection of scientists, students and citizen scientists.
CATE Sites
NASA Funding

Lead is National Solar Observatory

• Four Universities
  ➢ SC State
  ➢ University of Wyoming
  ➢ Southern Illinois University
  ➢ Western Kentucky University

• Other Organizations
  ➢ Naval Research Lab, ....

• Citizen Scientists

• Corporate Sponsors

• Coordinators for each state
• SC State coordinate South Carolina participants
CATE Science
(more than pretty pictures)

- Some coronal features only visible during totality
- Single site gets only a few minutes
- Combined sites will get up to 90 continuous minutes
- Will look for changes in density, outflow, inflow throughout the corona
- Calibrated digital imagery will allow for accurate measurements of size, speed, brightness, etc.
Changing Polar Plume Features

Pasachoff et al. (2009)
Evolution of Pockets of Different Density

Evolution of RT instabilities in prominences and coronal structure (label “5”) believed to be the same instability moving from the cool prominence into the hot corona.
Pre-trip Testing
Pre-trip Testing
Pre-trip Testing
Site Set-up Ternate
7 exposure sequence – 48 hrs before
7 Exposure Sequence - Totality
SCSU Team at Ternate
SIU Best Single Frame
SCSU left, SIU Right
Summed SIU
2 miles south of SCSU Ternate site
EPO at Ternate
Ternate - City
Ternate - City
Island Tour
Island Tour
Island Tour
Island Tour
August 21, 2017

Total Solar Eclipse of 2017 August 21