

National Aeronautics and
Space Administration



EXPLORE SCIENCE

University Engineering Students Present their
GLOBE Instrumentation Projects Virtually

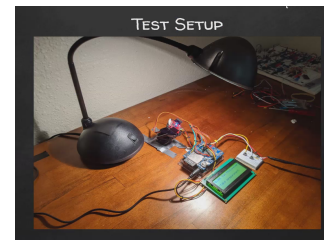
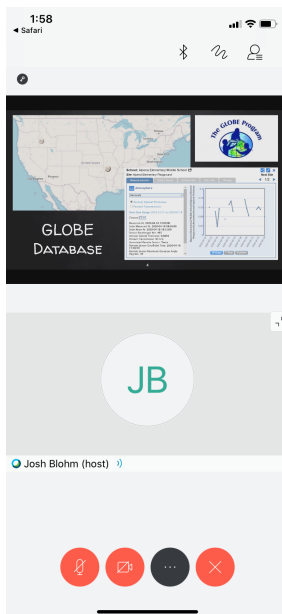
Dr. Kevin Czajkowski

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University Engineering Students Present their GLOBE Instrumentation Projects Virtually

Boston University's
College of Engineering

Two groups of engineering students from University of Toledo and Boston University designed instrumentation for GLOBE protocols this past semester. The University of Toledo and Boston University Colleges of Engineering held virtual events on May 1 and May 4, 2020 respectively on their senior design projects. Both groups hope that high school students build and use these sensors.




Design team: Daniel Astorino, Matthew Bosman, Joshua Blohm, Aaron Rieman and Christopher Weis

Faculty advisors: Glenn Lipscomb, PHD and Ezzatollah Salari, PHD

The sun photometer aims to be a low-cost and easily assembled device used by students to measure and log particulate aerosol optical thickness (AOT) in the atmosphere. This sensor can optimize the angle of capture, measure six channels of visible light, calculate AOT from light intensity, and log the data on a SD card.


NASA GLOBE Autonomous Weather Station



GLOBE

The GLOBE (Global Learning and Observations to Benefit the Environment) Program is an initiative by the National Aeronautics and Space Administration (NASA) to encourage citizens from all technical backgrounds, predominantly Kindergarten through Grade 12 students, to get involved with science, technology, engineering and mathematics by collecting and uploading their local weather data. The GLOBE Program not only engages children and teenagers in environmental science, but it also provides NASA with an extensive database of ground measurements to verify their satellite data.

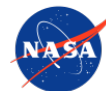
The NASA GLOBE Autonomous Weather Station aims to act as a vehicle for this citizen science network. With a simple design, made only of commercially available parts, anyone can construct one. A comprehensive report explains the operational theory and guides users through the assembly of the device. We have also performed an in-depth power analysis in order to effectively choose the solar panel and battery, and created a functional spreadsheet so that any product replicants may do the same. Ultimately, the goal is for this product to be replicated on a global scale to assist GLOBE in compiling an extensive database of weather conditions, and provide valuable STEM exposure to the world's future scientists and engineers.



Faculty Advisor:
William Hauser

Client:
Prof. Caleb Farny, BUMECHE

Team Members:
May Alsaleh
Andrew Schenck
Meryl Shea
Thy Vu



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