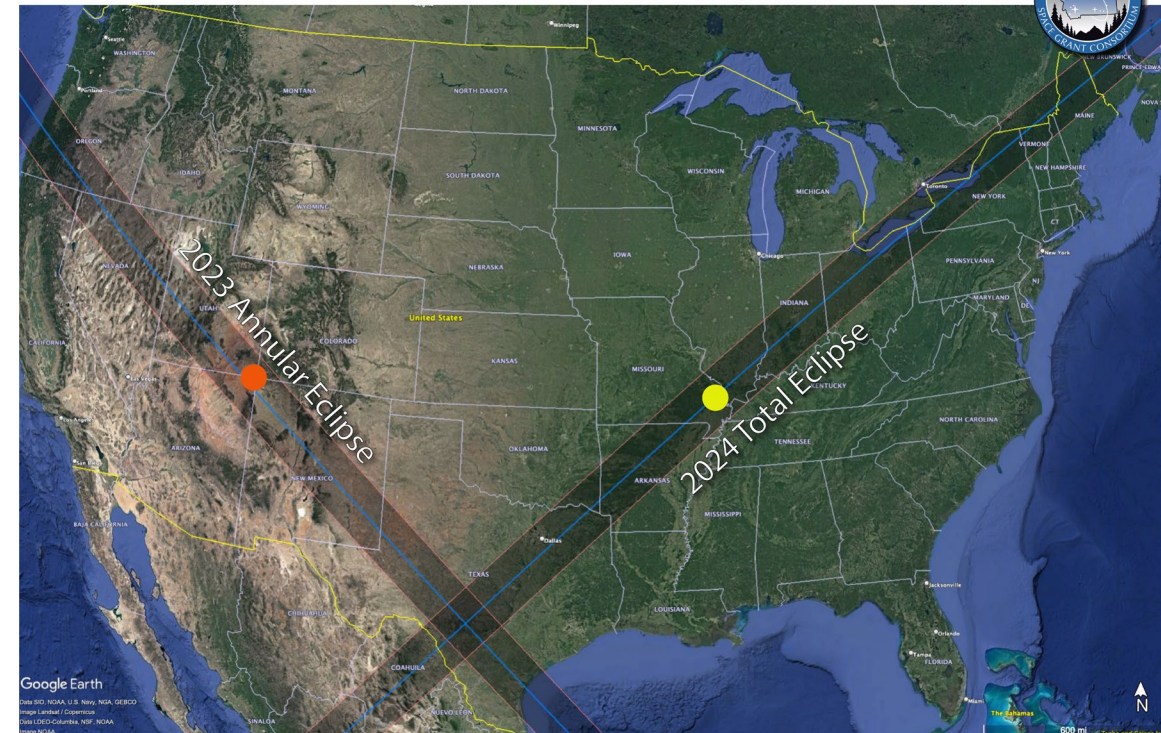


# WV High Altitude Balloon Mission – Part of NEBP

- Trinity Christian School (TCS) and West Virginia Space Grant Consortium (WVSGC) has been selected as part of the NASA Nation-wide Eclipse Balloon (NEBP) Project to build, launch, and operate stratospheric balloons during the 2023 and 2024 solar eclipses
- Mission Launch
  - Annular Eclipse - October 14, 2023
  - Total Solar Eclipse - April 8, 2024
- Overarching Goal: Design, develop, test, deploy, and recover stratospheric ballooning systems.
- Team will fly balloon platforms lifting 12 pounds of student-designed and built payloads to ~100,000 feet, streaming live video and collecting critical data
- Project Web Site:
  - <https://www.wvspacegrant.org/national-eclipse-ballooning-project/>
- Leads:
  - Marcus Fisher (mfisher@tcsww.org)
  - Candy Cordwell (Candy.Cordwell@mail.wvu.edu)

Nationwide Eclipse Ballooning Project - Eclipse Paths



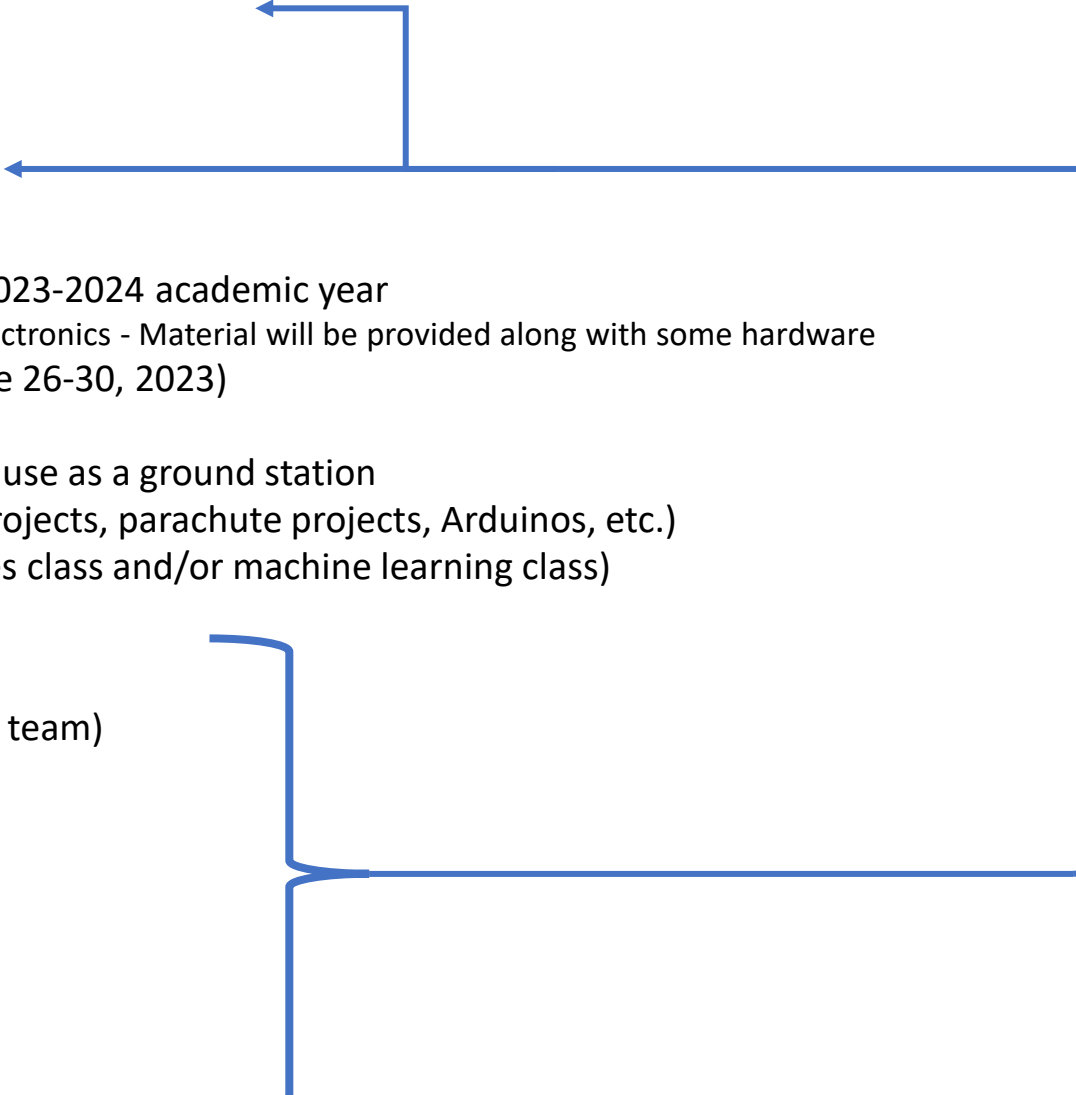
Annular Eclipse: October 14, 2023  
Time of peak obscuration at location ●: 16:32:49 UTC

Total Eclipse: April 8, 2024  
Time of eclipse totality at location ●: 19:00:15 UTC

# WV NEBP: Mission Concept and Activities

- Develop High Altitude Balloon Systems and Ground Stations that provide real-time video of solar eclipses to NASA websites
- Conduct monthly lunch and learns broadcasted across state
- Conduct state-wide challenge for WV's mission logo
- Conduct state-wide initiative to have public submit their names to fly on board
- Conduct outreach across the state regarding HAB and eclipse science
- Develop High School engineering class in cybersecurity and HAB
- Develop University class in systems engineering with HAB as project
- Develop System model and software-only simulation of HAB system
- Recruit schools across WV to participate:
  - Participation can be in various ways (i.e., outreach, data analysis, payload development)

# Opportunities for Groups and Schools to Participate:

- October 2023 Eclipse Flight
    - One Payload is available to be built
    - Second flight system – 6 payload opportunities
  - April 2024 Eclipse Flight
    - One Payload is available to be built
    - Second flight system – 6 payload opportunities
  - Initiatives:
    - Offer High School class in computer engineering 2023-2024 academic year
      - Electronics, Arduino, Linux, Raspberry Pi, Pi and Electronics - Material will be provided along with some hardware
    - Summer Workshop at Trinity Christian School (June 26-30, 2023)
    - Participate in monthly lunch & learns
    - Explore Amazon Ground Services to investigate its use as a ground station
    - Conduct outreach across the state (e.g., Balloon projects, parachute projects, Arduinos, etc.)
    - Data Analysis on post flight data (e.g., data sciences class and/or machine learning class)
    - Design Mission Logo
  - Payload Ideas:
    - Basic weather station package (e.g., middle school team)
    - Artificial Intelligence (AI) generated code
    - Image processing investigations and AI/ML
    - Quantum Experiment
    - Near Infrared Camera
    - Glider that returns to launch site
    - Long duration flight
    - Electron Density
    - Active attitude control and GN&C
- 
- A blue diagram consisting of lines and arrows. A horizontal line connects the 'October 2023 Eclipse Flight' and 'April 2024 Eclipse Flight' items. From the top of this line, a vertical line goes up and then a horizontal line goes left, ending in an arrow pointing to the 'October 2023 Eclipse Flight' item. From the bottom of the horizontal line, a vertical line goes down and then a horizontal line goes left, ending in an arrow pointing to the 'April 2024 Eclipse Flight' item. A large bracket on the right side of the 'Payload Ideas' list extends upwards and then left, connecting to the 'Initiatives' section.