**Research Question:** Can satellite data, ground measurements, and machine learning techniques be used to assess environmental exposures and promote environmental justice among Metro Atlanta’s EJ communities?

**Research Gaps:**

* Limited ground monitoring within EJ communities results in lack of data on environmental exposures in such communities
* Feasibility of applying satellite data to EJ issues is unknown

**Study Population and Design:**

* Community engagement
  + PRECEDE-PROCEED model
  + 4 community workshops
* Data sources
  + NASA environmental remote sensing data products
  + MODIS
    - Heat, PM2.5, green space, flood hazards, drought hazards
  + TROPOMI
    - Ozone pollution, NO2 pollution, SO2 pollution
  + Landsat
    - Urban structure
* Exposure modeling
  + Ensemble model (GAM + GAMM + Random forest + XGBoost)
* Study domain: Cobb, Gwinnett, Dekalb, Fulton, Clayton counties

**Project Timeline:**

* January: Workshop 1: introduce NASA data to EJ community stakeholders, determine relevant environmental issues
* February/March: learning, initial analysis, present at Atlanta Science Festival
* April: Workshop 2: present initial analysis to EJ community stakeholders, gather feedback on project direction
* April/May: compile exposure dataset, paper writing (Intro + Methods)
* June: Workshop 3: present final results to EJ community stakeholders, generate report with community inputs
* July/August: paper writing (results + discussion)
* August/September: Workshop 4: present research findings/report along with EJ community stakeholders, generate potential strategies for improving health in study domain
* September: Wrap-up

**Project Outcomes:**

* Develop a high-resolution dataset of environmental exposures in Metro Atlanta EJ communities
* Educational materials on health effects of environmental exposures and use of Earth Observations