BRIDGE TO COLLEGE
Satellite Surveillance of a Changing Earth
2022-23 PROGRAM REPORT

PREPARED BY
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Program Overview

At the City College Academy of the Arts (CCAA), the Middle School College Awareness Institute aims to gradually expose students to college awareness and readiness programs as they progress from 6th to 8th grade. The final program, the Bridge-to-College-Satellite Surveillance of a Changing Earth, will be the culmination of their preparation for higher education.

The 8th grade Bridge-to-College program offers CCAA students the opportunity to study with CCNY instructors and professors on campus, giving them a sense of what college courses will be like and a taste of college culture. The adjuncts and organizations involved in the program play a critical role in preparing the eighth graders for the challenges they will face as they begin taking college courses in the 9th grade.

The collaboration with the CUNY CREST Institute began in the Fall of 2016, as students advocated for more paths in STEM and the institute was introduced with the opportunity for students to partake in remote sensing analysis and workshops.

The Bridge-to-College (B2C) is an innovative program that provides hands-on training in Earth System Science and Engineering modules, to New York City high schoolers to help them make a successful transition to college.
Bridge to college initiative began in 2015-2016 to engage, inspire, and motivate a cohort of middle school (8th graders) students in NOAA mission driven STEM focused hands-on activities. Each year, 10-15 students along with their teacher(s) participate in this 7-week long seminar style learning that focuses on "Earth Observation and Surveillance." The seminars and modules are carefully designed to ensure that the students are engaged and fully immersed during the once-a-week session that runs for 7-weeks in the fall semester each year.

The modules are presented to the B2C learners by CUNY CREST faculty, scientists and staff members. Early engagement and inspiration help students to be better prepared in choosing the right STEM careers as they enter into high school. B2C also serves as a recruitment pipeline for the CUNY HIRES program for the City College Academy of Arts students. HIRES is a out-of-school college readiness program for 9-12 graders. B2C adds value and knowledge for many traditionally underserved minority students who are curious to learn and gain STEM training and knowledge.

"Early engagement of students in the STEM fields is pivotal to help them become college ready. B2C is an example that inspires a cohort of middle school students, particularly from underserved communities in STEM fields and thus empower them to be ready for STEM education at high school and college."
OUR TEAM

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Lesly Munoz
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NOAA CESSRST II Graduate Scholar

Cesar Ortiz
Student Affairs Manager

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Communication Manager

Claudia Solano Rodríguez
Budget Analyst
Impact of the Training

Fifteen (15) students were trained during the 2022-2023 Bridge to College Program.
The B2C program orientation was held on December 2, 2022. Students participated in a guided tour of the Grove School of Engineering including the City University of New York Remote Sensing Earth System Institute (CUNY CREST) Institute. They were also introduced to the CUNY CREST B2C program schedule.

Further, students learned about the history, mission, vision, and nine focal areas of National Oceanic and Atmospheric Administration (NOAA). They were intrigued by NOAA's commitment towards the development of its science and commercial infrastructure that serves the public interest. Lastly, students introduced themselves and talked about their interests in Environmental Science/Remote Sensing as well as elaborated on their expectations from the B2C program.

During the course of the program, students also engaged in academic and professional development workshops led by accomplished scientists, faculty, and management from NOAA Center for Earth System Sciences and Remote Sensing Technologies (CESSRST) and CUNY CREST Institute.
During the workshop, students learned about the basics of remote sensing and explored how satellite data is used to monitor deforestation and growth of urban areas. After learning about the parts of the spectrum, they examined actual landsat data that they could relate to images of vegetation, buildings, and water.

Further, students devised mathematical rules to classify regions by their spectral signature, and the rules were tested on a mystery image. From participating in the hands-on activities during this workshop, students learnt that satellite data is not merely pictures, but a trove of data that can be mined to answer questions about our changing world.
The second workshop of the series titled visiting the weather station site was held on January 6, 2023. The workshop was conducted by Dr. Tarendra Lakhankar, Senior Research Scientist, CCNY.

During the workshop, students took their first nature walk around the CCNY campus through St. Nicholas Park towards Eagle Academy for Young Men of Harlem. At the school, they explored an installed weather station that measures rainfall, temperature, humidity and soil moisture and is part of the weather station network within New York City (NYC).

Further, students learned about the difference in weather and climate and understood the impact that extreme weather and climate change can have on their day-to-day lives.
The third workshop of the series titled Astronomy Day was held on January 13, 2023. The workshop was conducted by Brian Levine, NOAA CESSRST II Administrative Coordinator.

The workshop focussed on models and scale models, maps, and the major objects of the Solar System, with both a take-home model that each student constructed, and a tour in the CCNY planetarium with Professor James Hedberg.

Students learned about the concept of remote sensing through observing and analyzing street atlas style map of NYC alongside a subway map. Comparing/contrasting to the subway map, students identified what features the subway map was showing, how that differed from the street map, and determined that the subway map is not to scale. Further, students learned about object distance and scale distortion through hands-on modeling of the solar system.

Lastly, at the planetarium located at CCNY, students participated in an interactive tour around the solar system that included keynotes about different satellites in space. They also learned about the process of creating this 3D model using remote sensing data.
The forth workshop of the series titled Hands-on with the Weather Station was held on January 20, 2023. The workshop was conducted by Dr. Tarendra Lakhankar, Senior Research Scientist, CCNY.

During the workshop, students used the precipitation & temperature data from the Weather Station. With that, they were able to graph the average precipitation in Harlem, NY. They also learned about surface temperature and thermal energy. Further, they understood how heat varies from surface ground to atmosphere by using an infrared thermometer.

Students were able to explore the surrounding objects and places to measure their emitting heat and use the data collected to create bar graphs. At the end of the workshop, students presented their graphs and developed curiosity about the objects they would like to measure in the future.
This workshop was part of the Satellite Surveillance of a Changing Earth course, hosted by the non-profit organization, STEM Hive. Students learned about how Vision Boards can help create a physical representation of their future goals and aspirations in STEM. They also explored what a vision board looks like through an example presented by Carolina Perez.

Further, students created a draft of their vision boards based on their chosen topic which was related to previous sessions covered in the B2C program such as Satellite image classification, astronomy, and weather stations. Using Google Jamboard, they worked on their vision boards digitally.
Sneak Peek into Vision Boards

**Student Name:** Brady tavarez

**Future Me:** I will try to be a professional at something, like one dream I have is being a photographer.

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**Topic:** Satellite Image classification

**Future Research:** I will start looking at satellite pictures and see where they don't have any pictures at.

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**Using my Brain:** I will start thinking on where the best pictures are at.

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**Topic:** Remote sensing

**Remote sensing is the process of how we gather information in an area without needing to be there. An example of this could be a satellite.**

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**Edward Jerez 😊**

**Future me will hopefully be in England in Manchester City seeing Hualand and touring the place.**
**Sneak Peek into Vision Boards**

**Future Me: real estate agent**

**Using my Brain:** We learned how big the sun is, how many planets there are, and how far apart the planets are to each other.

**Student Name:** Valery Leyva

**Topic:** Astronomy day

**Future Me:** The future me would like to go to a good college and focus on my studies and hopefully become an interior designer.

**Student Name:** Hayam Zaid

**Topic:** Space

**Future Research:** In the future I would like to try creating better models for measure outer space.
Sneak Peek into Vision Boards

Student Name: Ryan Delarosa

- Future Research: being able to change the weather knowing weather for the whole month, learning more on weather.
- Topic: Weather station
- Using my Brain: Shows us what the weather is next week, using rain to produce more information.
- Future me: Fashion designer
- Leany Cabrera
- Birds
- Sleep less and dream more.
- Future Research:
  - Natural selection
  - Evolution on beaks and what they consume.
- Get paid very well!!!
Students presented their experience of the B2C program including learnings from the workshops and activities that they participated in and shared insights into what they enjoyed the most during the program.

Students also got the opportunity to share their digital vision board and talk about their future goals and interests in STEM. Thus, the program ended on a hopeful and positive note.

The B2C program ended with presentations from students and closing remarks from Dr. Shakila Merchant, on February 10, 2023.