Andrea Gomez successfully defended her doctoral thesis Wednesday, April 1, to become the first NOAA CESSRST Fellow to earn her PhD and, because of the coronavirus pandemic, the first candidate to present her defense remotely. Dr. Gomez is a Cohort 1 NOAA EPP funded graduate fellow of the Center for Earth System Sciences and Remote Sensing Technology (CESSRST). She is based at The City College of New York (CCNY), and she will receive her degree from the Graduate Center, CUNY, in Earth & Environmental Science. NOAA CESSRST is a NOAA EPP/MSI funded program under award NA16SEC4810008.

“Doing a remote thesis defense was an interesting experience,” Dr. Gomez said. “It felt like giving a webinar, and I had never given a virtual presentation before. It was very quiet. There were no coughs in the room. It went well, but I prefer giving live presentations, obviously.”

Dr. Gomez’ thesis is titled “Evaluating Satellite-Based Sea Surface Temperatures and In Situ Observations, and Coral Symbioses in Southwestern Puerto Rico.” Her research investigated the relationship between NOAA Coral Reef Watch’s (CRW) 5km satellite-based sea surface temperatures (SST) product and in-situ temperature loggers deployed at Cayo Enrique and Cayo Mario, in La Parguera, Puerto Rico. It sought to characterize the seasonal changes of the algae symbionts’ identity and density.

Coral play vital roles in sustaining marine ecology and economy by offering various ecological services including, shoreline protection, supporting fisheries, ecotourism, and medical research. However, when they become bleached, and more susceptible to disease, the symbiotic algae living in their polyps are expelled due to temperature (climate) change, land-based pollution, or over-fishing.

Dr. Gomez conducted statistical analyses of the in-situ measurements against NOAA CRW’s 5km at varying depths in coral reef communities that will help fill the in situ environmental data gap. In addition, the qPCR analysis she conducted on two Caribbean coral species to identify and compare the symbiont clade and density dynamics by season will advance scientists’ understanding of seasonal symbiont shuffling. The coral species she worked with were *O. faveolata* and *M. cavernosa*. 
Although she grew up in a small northern California city 100 miles east of the Pacific Ocean, visits to the Monterey Aquarium on family vacations stirred her passion for marine biology. Dr. Gomez enrolled at University of California, Santa Cruz, where she was awarded a B.S. in marine biology in 2011.

In order to work in a different research environment and expand her network, she moved to New York for graduate school and earned an M.S. in biology from CCNY in 2015. One of her Professors, Dr. Robert Anderson, informed her about the NOAA CESSRST program, then known as NOAA CREST, and, after meeting with the Associate Director, Dr. Shakila Merchant, she was recruited as a NOAA CESSRST doctoral fellow in 2016. Prior to her doctoral degree, Andrea was also supported by NOAA EPP funding to complete her MS degree [2013-2015] before beginning her PhD degree in 2016.

“They (Reza Khanbilvardi and Shakila Merchant) always believed in me,” Dr. Gomez said. “I was so lucky to be recruited in the NOAA CREST (2011) program to pursue my Master’s degree. Without the NOAA EPP funding, I would have had to seek for part-time jobs to support my living in New York City. Without support by the NOAA CREST and CESSRST mentors to do my research, I couldn’t have pursued my career pathway.

I was also given several NOAA funded internships opportunities that honed my skills needed to successfully complete my research and training. I am very thankful to NOAA Educational Partnership Program for their funding through the NOAA CREST and NOAA CESSRST centers. I wouldn’t have been able to accomplish MS and PhD research and educational training without this critical support provided by the NOAA Center, both financially and professionally.”

Currently working as, a Research Scientist within the laboratory of Dr. Gilda Barabino of the Biomedical Engineering department at the Grove School of Engineering at CCNY, Dr. Gomez says she wants to continue working in ocean or coral conversation, ideally with NOAA or NASA. She has interned with the Shedd Aquarium in Chicago (2019), NOAA Atlantic Oceanographic & Meteorological Lab in Virginia Key, FL (2017), and, the NOAA Coral Reef Watch in College Park, MD (2015).

Dr. Kyle McDonald, CCNY Professor of Earth & Atmospheric Sciences, was Dr. Gomez’ academic mentor and thesis advisor. Her NOAA mentors were James Hendee with the Office of Oceanic and Atmospheric Research (OAR), Karsten Shein with NESDIS (National Environmental Satellite and Data Information Service), and Mark Eakin with NOAA’s Coral Reef Watch Program.

About NOAA-EPP CESSRST

NOAA Center for Earth System Sciences and Remote Sensing Technologies (CESSRST), a Cooperative Science Center (CSC), was established in 2016 through a national competition and is funded by the National Oceanic and Atmospheric Administration (“NOAA-EPP/MSI Grant # NA16SEC4810008”). It is a National leader in STEM workforce development and supporting NOAA mission related to Earth Systems observations, monitoring through application of environmental satellites and ground-based remote sensing technologies. The Center’s mission is to educate, train and graduate a new generation of diverse and competent cadre of students, and to create a diverse and skilled workforce in NOAA mission-aligned STEM and social science disciplines through participation in state-of-the-art research.