



# NEW YORKVIEW 2019 – 2020 MINI-GRANT



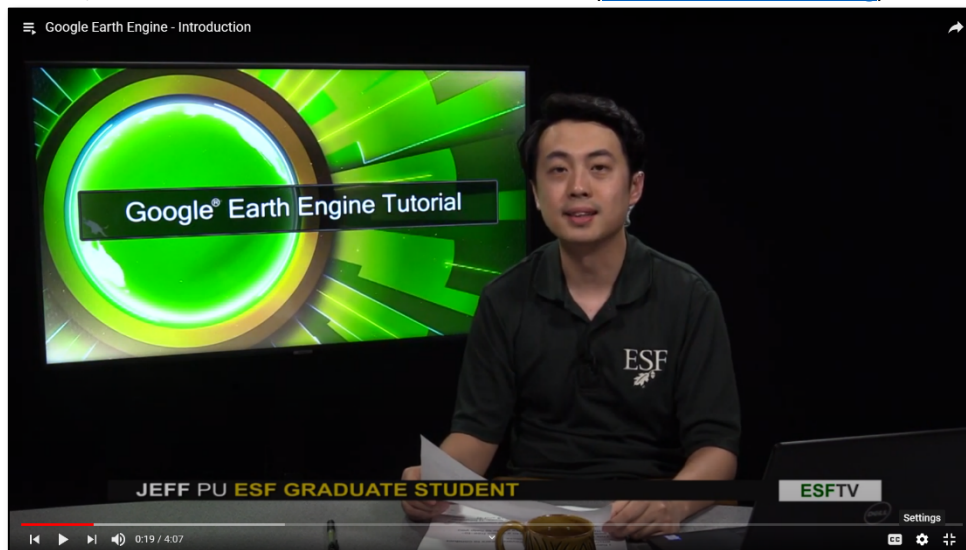
## NEW YORKVIEW 2019 – 2020 MINI-GRANT: GOOGLE EARTH ENGINE VIDEO TRAINING MODULES

Google Earth Engine (GEE) is a cloud-based platform that combines a catalog of satellite imagery and geospatial datasets with planetary-scale analysis capabilities. This platform is available for academic, non-profit, business, and government users to analyze and visualize the Earth's surface. In prior years, New YorkView (NYView) generated lab exercises supporting application of GEE, that are available on the AmericaView ([www.AmericaView.org](http://www.AmericaView.org)) and GEE ([developers.google.com/earth-engine/tutorials/edu](http://developers.google.com/earth-engine/tutorials/edu)) websites.

NYView has also collaborated with other StateViews to deliver workshops focused on GEE instruction at regional and national conferences.

The previously developed written training materials and workshops have been offered and distributed widely, but these materials are intended to be supported by class-based instruction and are not ideal for visual learners or those who cannot participate in a class or workshop.

During GY19, NYView developed a series of free-to-access Google Earth Engine training videos that transformed and expanded the prior written GEE training materials into online video modules. These modules have comprehensive coverage (from beginner to advanced) and demonstrate applications to support teaching, research, and outreach. The video modules and supporting code are available through the NYView webpage ([www.esf.edu/nyview](http://www.esf.edu/nyview)).



NYView funded doctoral student Jeff Pu on set during development of the Google Earth Engine Tutorial series.

### Beginner Level Modules

#### Introduction to Google Earth Engine

1. Code Editor Overview
2. Basic Java Commands
3. Images and Vector Display
4. Working with Multiple Images
5. Image Import and Export
6. Image Collection Exploration

#### Processing and Visualization

7. Image Projection
8. Shadow Detection and Remediation
9. Working with Clouds

### Intermediate Level: Digital Image Processing

10. Digital Image Processing I
11. Digital Image Processing II
12. Image Interpretation
13. Image Classification
14. Image Classification Accuracy

### Advanced Level Modules

15. Modules
16. User Interface and Applications



## BENEFITS TO NEW YORK STATE

NYView has been supporting the application of remote sensing data and products to solve challenges faced by New York State citizens as part of the AmericaView Consortium since 2009. Remotely sensed imagery provides a unique opportunity to observe the ground surface from above. This imagery is used for a wide range of applications in New York State including analyzing land use and land cover change, quantifying water quality, characterizing vegetation dynamics, planning or monitoring urban growth, and supporting response to a wide range of emergency situations.

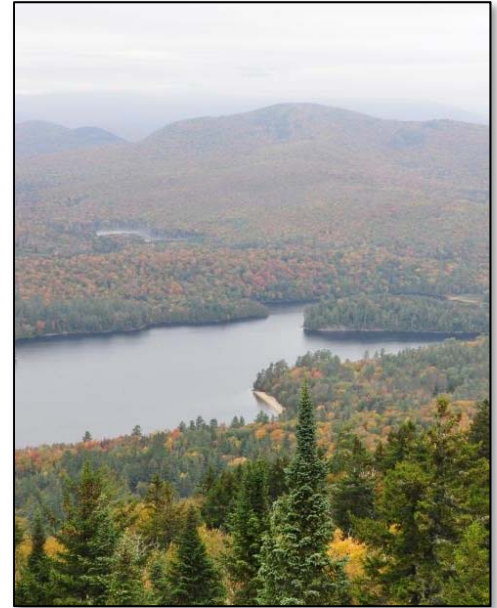
NYView initially focused on facilitating access to diverse remote sensing data and products, and supporting collaborative research, teaching, and outreach among consortium members. Since becoming a full member of AmericaView in 2014, NYView has also supported training of high school teachers, undergraduate and graduate students, and used Landsat change pairs from sites across the state to demonstrate applications of remote sensing data for visitors at the New York State Fair. NYView has also invested



*The reservoir of the Mount Morris Dam in the Genesee River in Letchworth State Park.*

time in developing video modules and lab exercises to support use of the cloud-based Google Earth Engine platform.

Beyond the important education focus described above, NYView has also performed research that explored the integration of airborne lidar and Landsat data to quantify forest aboveground biomass as well as investigating the utility of remote sensing and spatial analysis to assess trends in vegetation extent and vigor along riparian corridors.



*Rich Lake from Goodnow Mountain at the Adirondack Ecological Center in Newcomb, NY*

## NEW YORKVIEW CONSORTIUM MEMBERSHIP

Current NYView consortium members include: the State University of New York (SUNY) College of Environmental Science and Forestry (ESF), the Institute for Resource Information Sciences (IRIS) at Cornell University, SUNY Fredonia, and SUNY Plattsburgh. NYView aims to continue to support collaboration and enhance remote sensing activities across the state. Interested researchers and users of remote sensing data should visit the NYView webpage ([www.esf.edu/nyview](http://www.esf.edu/nyview)) or contact the NYView Principal Investigator for more information.



Cornell University



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