



Amanda O'Connor, Remote Sensing Domain Expert at HARRIS GEOSPATIAL SOLUTIONS, INC.

Topic: vegetation, deep learning, open data, optical/LiDAR/SAR/Thermal data

Country: USA

Email: aoconn05@harris.com

Extracting Precision Agricultural Information from Remote Sensing Modalities

Many new sensors are collecting data to improve agricultural productivity. Working with the data appropriately to yield scientifically accurate information does not have to be difficult. Many workflows may be automated and deployed to cloud environments. This session will explore

- Different collection modalities—UAS, SAR, Aerial and Satellite
- Preprocessing steps
- Information that can be extracted from these modalities
- Demonstrate the ENVI Precision Agriculture Toolkit
- Product creation such as shapefiles and GeoPDFs
- Deploying products to the enterprise and batch processing options

The Right Data for the Right Application: Deep Learning, Analytics, Visualization

With an abundance of data options, free data, and remote sensing data getting used by non-remote sensing scientists, the selection of data can be a series of chutes and ladders. Data may be free, but the spatial, spectral, or temporal resolution isn't sufficient to solve the problem you've decided to tackle. Free data can be as bad as a free puppy, you still must house it, work around it, and deal with funders' questions of "why can't you just use that?". This session will walk through creating a data driven

project plan for developing a deep learning, feature extraction approach, creating analytics products temporally, and requirements for data visualization. We will discuss free data option and the limitation and other modalities for data collection such as LiDAR, SAR, Thermal, Active/Passive and synthetic.

Vegetation Analysis, why it's hard and what you can do

Remote Sensing of Vegetation has been around as long as remote sensing as a science has been, but it still confounds users on how to observe vegetation condition, species, and change. This session will give a background on vegetation remote sensing, how to improve outcomes for observation, modalities for best observing vegetation including small sats and UAVs. Scientific metrics, like NPP, Fractional Cover, pigment concentration that can be derived from imagery will be discussed. Agricultural analytics like crop counting, zone metrics, management zones, change detection and other tools and associated proper data will be presented.

Amanda O'Connor is a graduate from the University of Colorado with her M.S. in geology. She studied cross correlation of AVIRIS and Landsat data for High Plains Vegetation Analysis in her thesis. Following graduation, she worked at Stennis Space Center on calibration projects, sensor noise simulations, and the commercialization of remote sensing. After her stint in Mississippi, she headed west to Carnegie Institution Department of Global Ecology based at Stanford University working for Greg Asner on tropical ecology projects using AVIRIS, Landsat, Hyperion and LiDAR. There she became an expert at vegetation remote sensing and using imagery to extract robust scientific results. She has been with Harris Geospatial 15 years in a variety of roles supporting government, commercial, and educational customers with the use of ENVI, IDL and developing custom solutions for hard to solve remote sensing problems. Her passion is enabling people to use remotely sensed data accurately to achieve their mission requirements. Outside of work she loves traveling, reading, and mentoring geospatial students.