Session 38: Leveraging Geospatial Technology to Support Restoration and Resilience Efforts

Introduction

Greater Everglades Ecological Restoration Conference
Coral Springs, FL
April 24, 2025

Geospatial Technology: Many Platforms Available

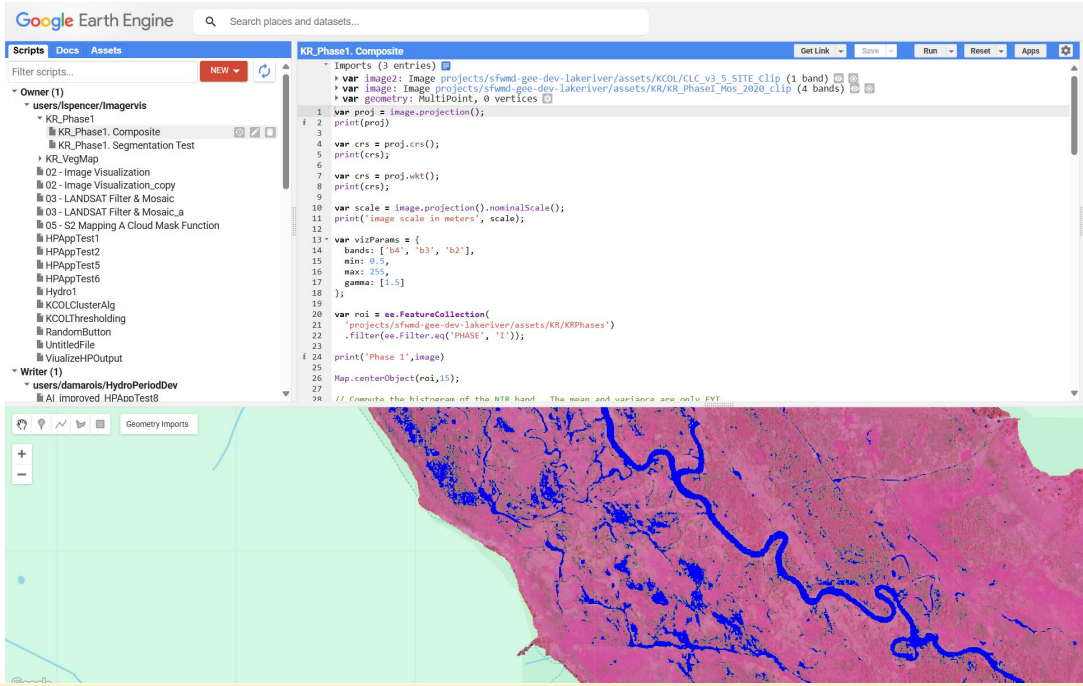
- **Satellite Sensors:**
  - **Passive Systems**
    - **Landsat** (NASA)
    - **Sentinel 2 and 3** (ESA)
    - **Planet**
    - **WorldView**
    - **PACE (P**lankton, **A**erosol, **C**loud, ocean **E**cosystem**)** (NASA**)**
  - **Active Systems**
    - **SAR – ICEYE, NISAR, Sentinel 1**
    - **LiDAR – ICESat, CALIPSO**
- **Aerial Sensors**
  - **Traditional Aircraft – Imagery and LiDAR**
  - **Drones – Imagery and LiDAR**

This means there's a lot of data available now.

Geospatial Technology: Tools and Techniques

Methods of processing and modeling data expanded:

- Object-Based Image Analysis (OBIA)
- Machine Learning (Deep Learning)
- Google Earth Engine
- R, Java, Python scripting
- Segmentation Algorithms
- Classification Algorithms
- Etc.



Important Reasons to Use these Tools and Techniques

1. **Help to determine what's going on in a landscape**
   - What's there?
   - How has it changed?
2. **Help to make management decisions about a landscape**
   - Should we manage differently?
   - Where would it be effective to apply a solution?

Today's Presentations

Christine Carlson

- **ICEYE Flood Insights: Gaining A Regional Perspective on Flooding**

Madelyn Rinka

- **Using GIS To Enhance Efficacy and Efficiency of Drone Imagery Analysis**

Halley Carruthers

- **Examining Spatial And Temporal Changes To The Littoral Zone Of Lake Okeechobee Using Otsu's Method**

Camille Carroll

- **Patterns in Vegetation on Lake Kissimmee: Using Google Earth Engine to Develop a Long-term Dataset**

Lawrence Spencer

- **Mapping Kissimmee River Floodplain Vegetation: An Approach Using Machine Learning In Small Plots**

All presenters are from ***South Florida Water Management District***