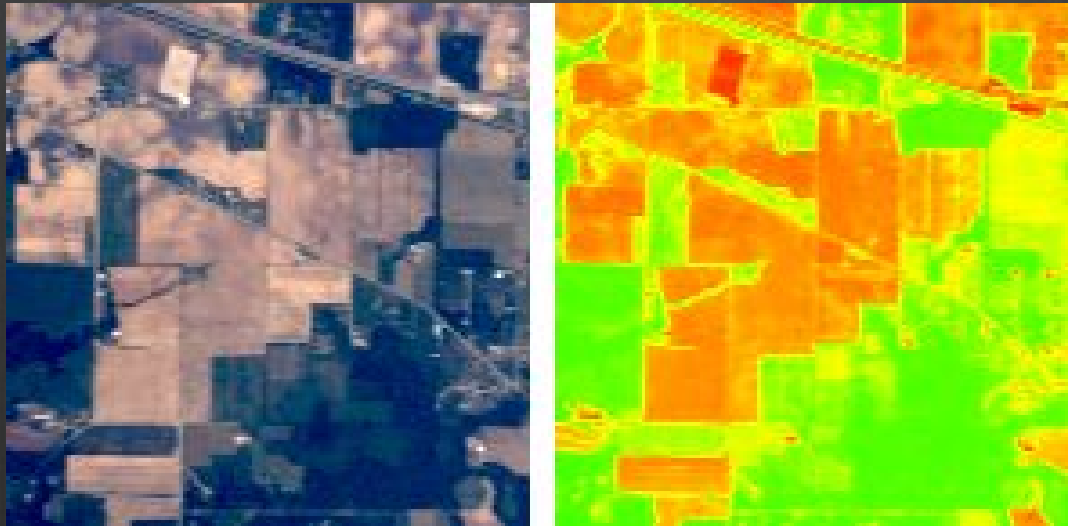


Spectral Weighting and Spatial Biasing for Hyperspectral K-Means Clustering



Daniel Hanson, Sam Kreter
Brendan Marsh, Christina Mosnick

Data Visualization

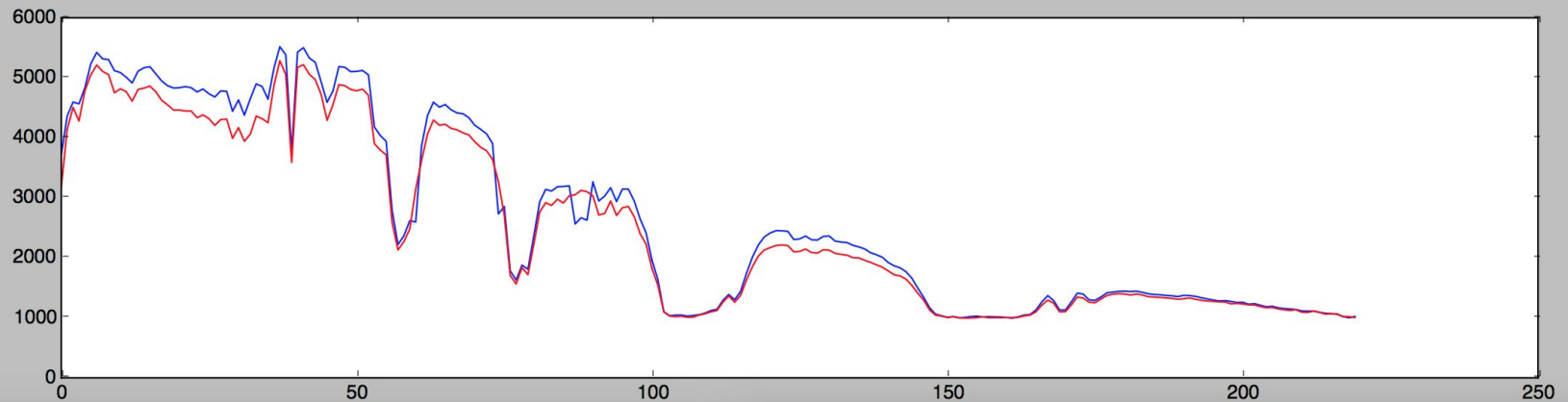
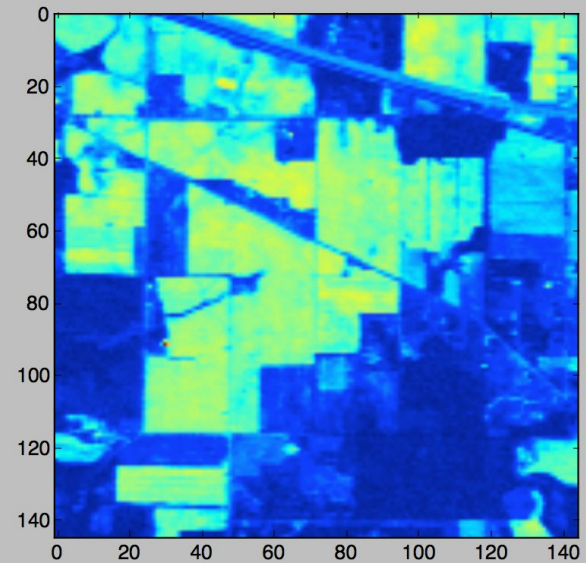
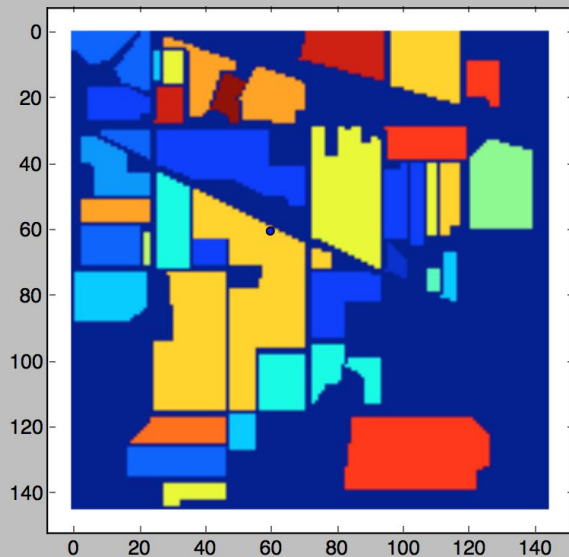
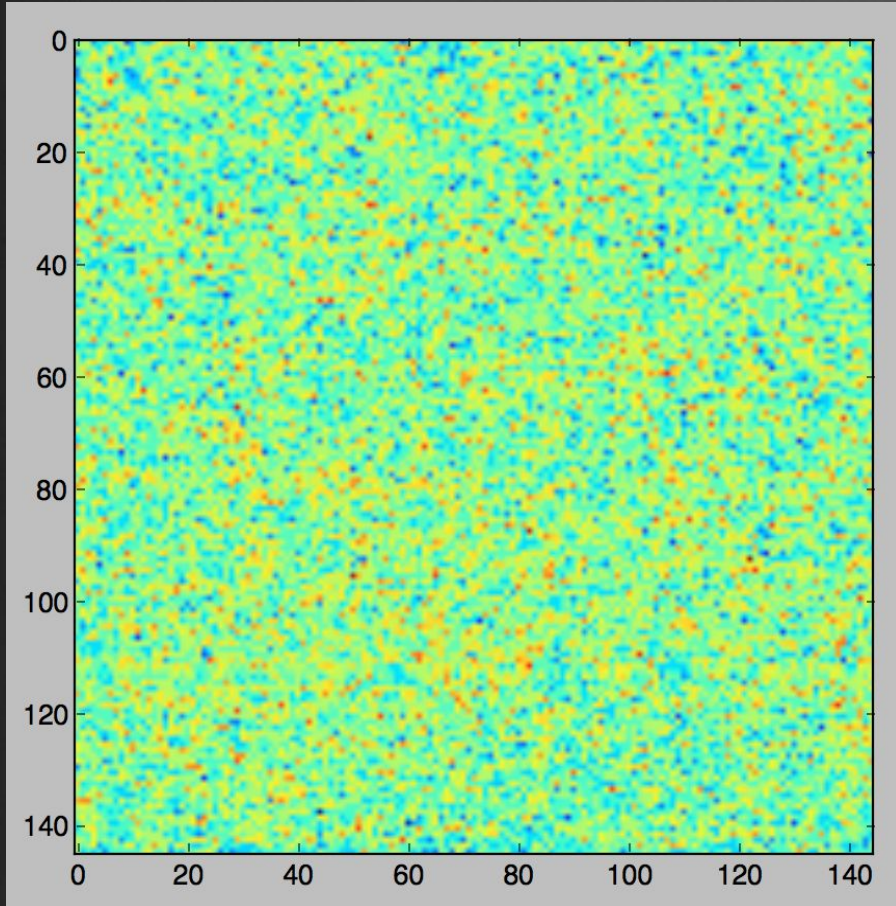


Figure 1

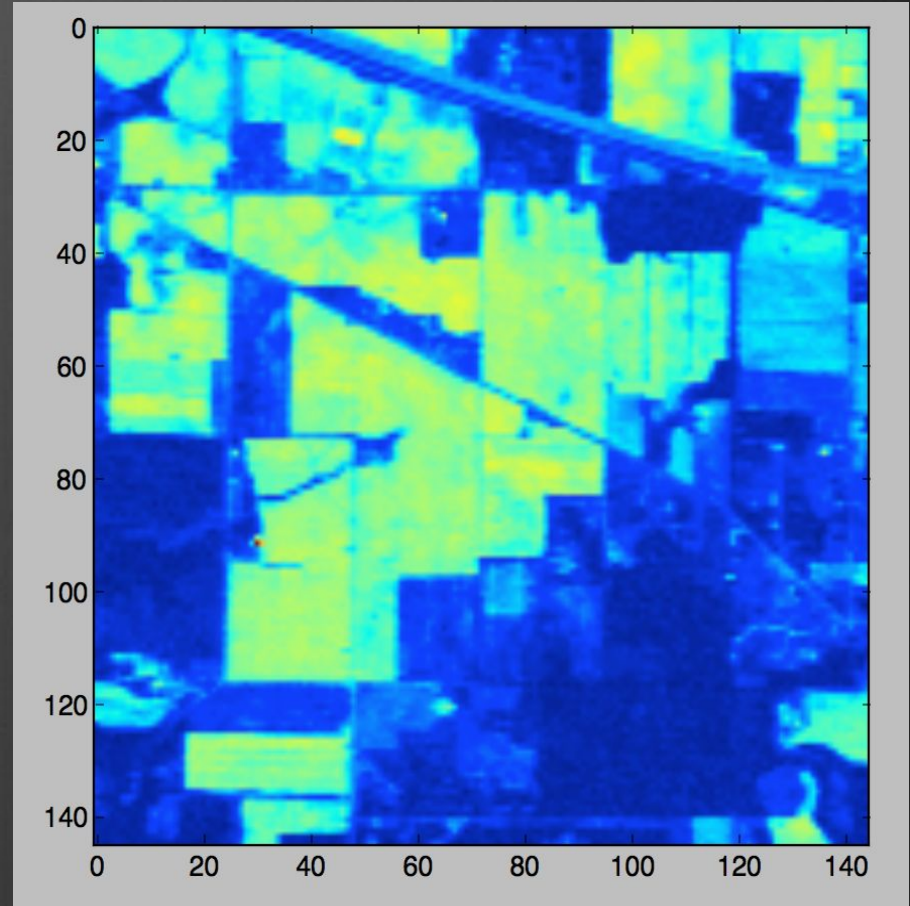
Figure 2



Spectral Slices



band 150



band 167

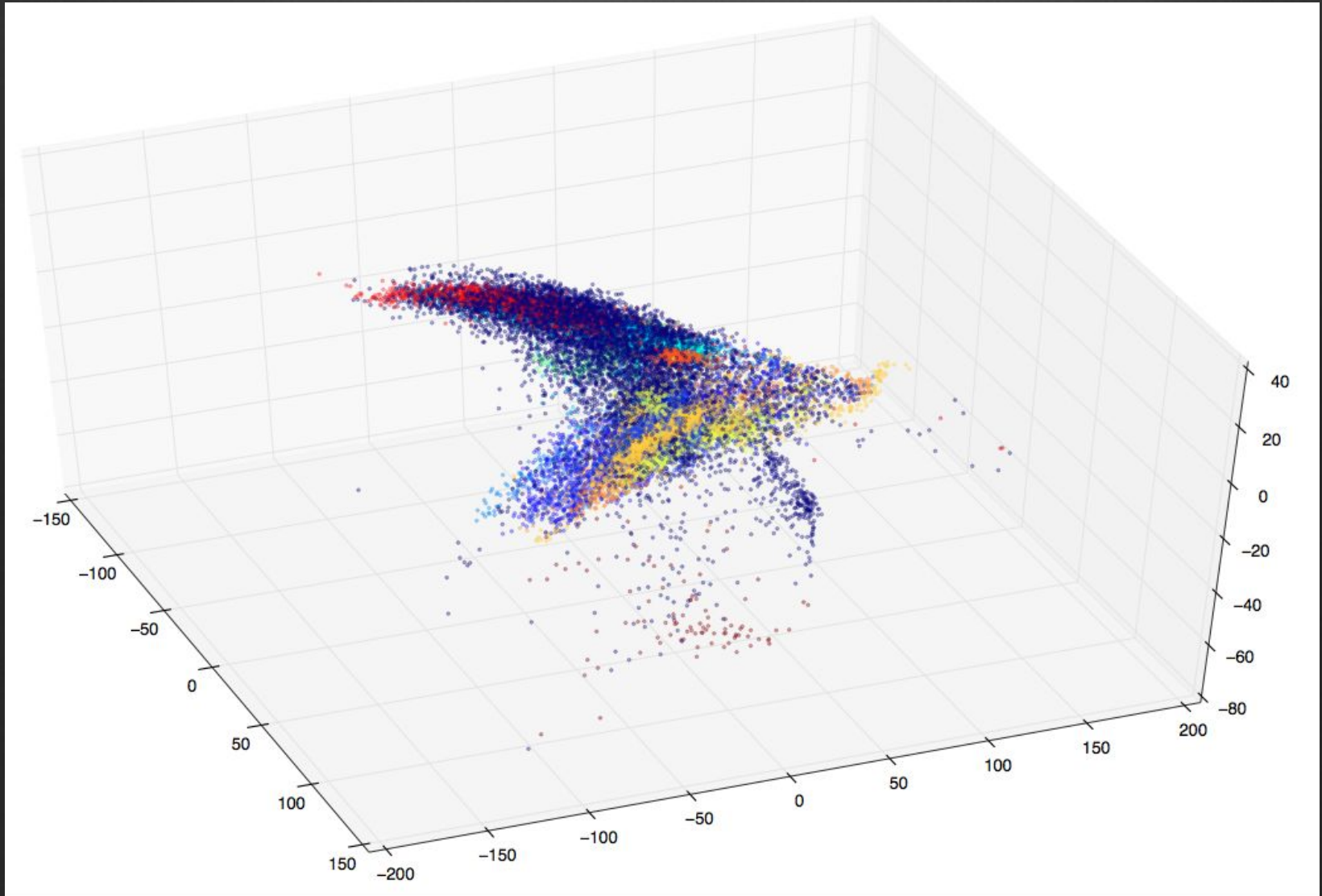
Why K-Means?

- Tried DBSCAN and Soft K-Means
- Known Number of Clusters

Weighted Features for K-Means

- Weight all spectral bands by .001.
- Choose appropriate bands to weight more heavily
- Add weighted X and Y coords into feature vectors
- Run Scikit-learn K-means

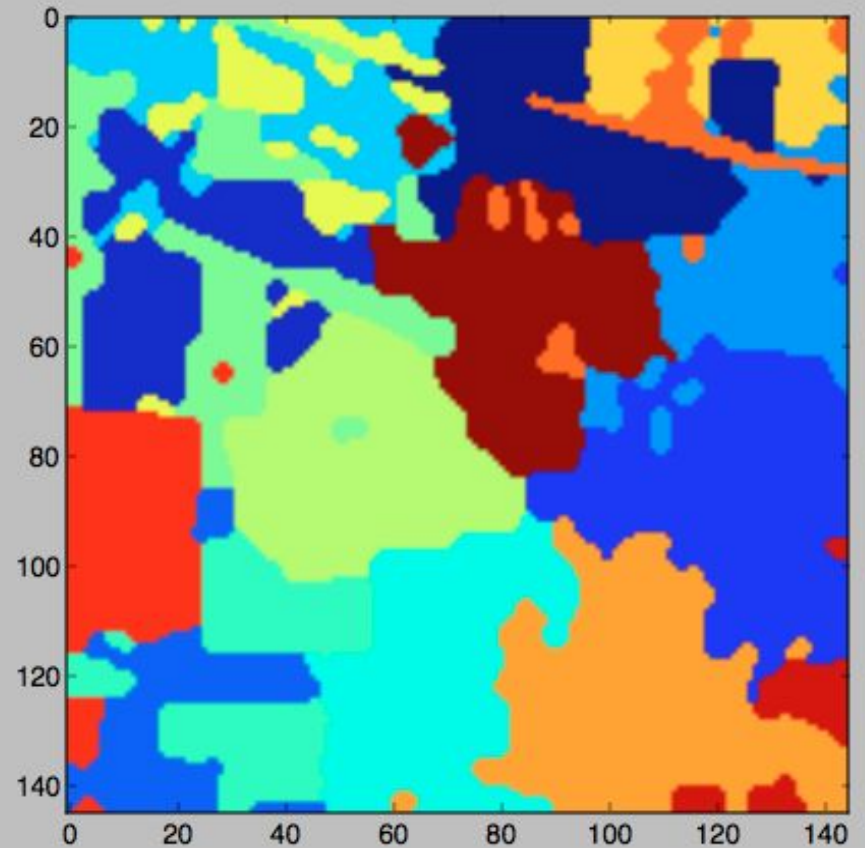
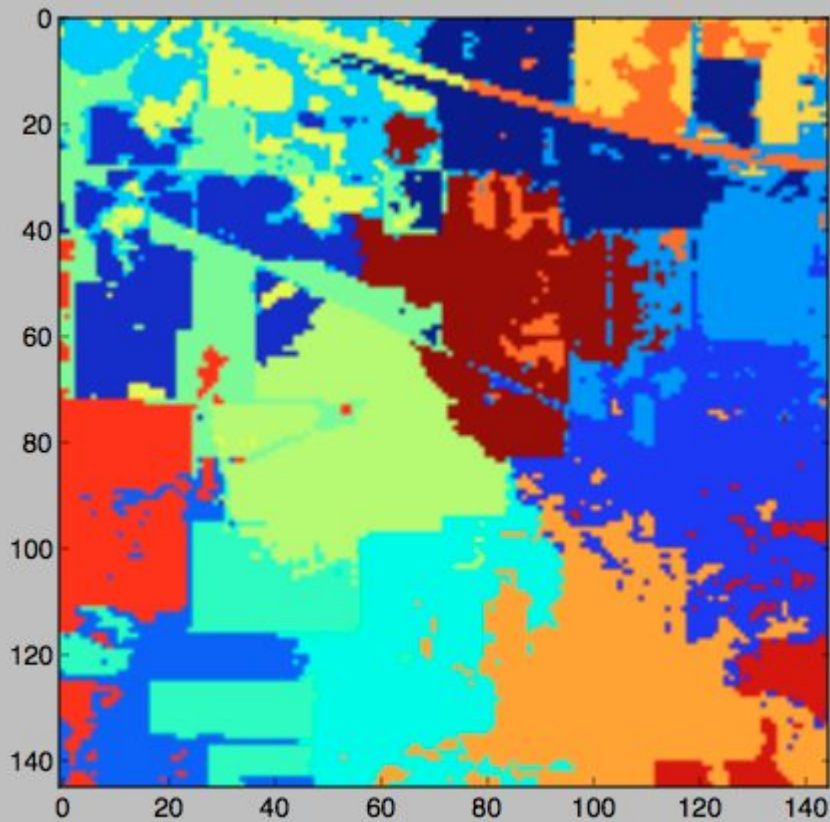
PCA Projection Into Three Dimensions



Neighborhood Bias

- Spatially close points are spectrally similar
- Uses 'majority vote' approach
- Smooths out local inconsistencies

Neighborhood Bias



Results

- Weighting of Spectral Layers
- Selection of Spectral Images

Final Rand Index

0.886272

