

Multidimensional Data Techniques for Clustering Satellite Image Data





Ashton Lee¹, Caroline Schwab², Oleksandr Kozlenko³, Dr. Ronak Etemadpour³

¹2019 High School Initiative in Remote Sensing of the Earth Systems Science & Engineering (HIRES) Scholar ²NOAA EPP Summer Bridge Program Scholar, The City College of New York ³Department of Computer Science, The City College of New York



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Background & Rationale

- Environmental science relies on multidimensional data
- Cluster & optimize data Cosine & Euclidean
- How do you visualize relationships beyond a 3D graph?
- Visualization is crucial to all fields of research, particularly with environmental



data

 It is important to understand which methods to use in different scenarios

Problem & Question

- There are a variety of clustering methods
- Which method is best to visualize?

Methods

- Tried different clustering tools
- Assessed in Java VCS
- First used 500 Dimensions, then repeated with 1000
- Used Altair to compare clustering type, number, and silhouette score

The Data

NOAA Satellite image data of 1000 dimensions



Conclusions

- Euclidean had better segregation
- The optimal number of clusters was 2
- Projection was more accurate than clustering
- Increasing the number of dimensions improved the clustering



R. Etemadpour, R. Motta, J. G. d. S. Paiva, R. Minghim, M. C. F. de Oliveira and L. Linsen, "Perception-Based Evaluation of Projection Methods for Multidimensional Data Visualization," in IEEE Transactions on Visualization and Computer Graphics, vol. 21, no. 1, pp. 81-94, 1 Jan. 2015. doi: 10.1109/TVCG.2014.2330617



