Answer Sheet

IMAGE CORRELATION MATRIX

Image1 Image2 Image3 Image4 Image5 Image6 Image7

Image1

Image2 0.0989

Image3 0.0497 0.5656

Image4 -0.0965 -0.9517 -0.2851

Image5 0.0915 -0.0114 -0.0187 0.0066

Image6 0.0032 0.0335 0.1372 0.0121 0.0182

Image7 -0.0131 0.0297 0.1520 0.0220 0.0283 0.9737

Image1 = bathym Image4 = pro\_curvature

Image2 = g\_curvature Image5 = q1

Image3 = plan\_curvature Image6 = rugosity

Image4 = pro\_curvature Image7 = slope

1. Lowest correlation coefficient: \_\_\_\_ bathym AND \_\_ pro\_curvature \_as \_ -0.0965

The weakest relationship is between these two variables: \_\_\_\_ bathym AND \_\_ pro\_curvature \_as \_ -0.0965

Highest correlation coefficient: \_\_\_\_0.9737\_\_\_\_\_\_

The strongest relationship is between these two variables: \_\_\_ rugosity \_\_and \_\_\_\_ slope \_\_

2. Which variables did you decide to reject? \_\_\_\_rugosity and slope\_

3. What is the main difference between the traditional k-means classifier and the modified k means classifier?

This tool is an unsupervised classification method to be applied to multi-spectral remotely sensed imagery. This classification algorithm is very similar to the traditional [*k*-Means Classification](about:blankkMeansClassification.html) method and the common ISODATA technique. The main difference between the traditional *k*-means and this technique is that the user does not need to specify the desired number of classes/clusters prior to running the tool. Instead, the algorithm initializes with a very liberal overestimate of the number of classes and then merges classes that have cluster centres that are separated by less than a user-defined threshold. The main difference between this algorithm and the ISODATA technique is that clusters can not be broken apart into two smaller clusters. This modified *k*-means algorithm is similar to that described by Mather (2004).

Main difference is that the modified k means the user does not need to specify the desired number of classes to run this tool.

4. How many clusters did you end up with? \_\_\_\_\_\_9\_\_\_\_\_\_ In how many iterations? \_\_\_4\_\_\_\_

Modified k-Means Classification Report

Centroid Vector

Image1 Image2 Image3 Image4 Image5 SD Pixels % Area

Cluster 0 -137.73 -0.03 -0.00 0.03 4.47 4.53 42477 2.91

Cluster 1 -77.61 -0.00 0.01 0.01 4.92 4.23 208772 14.32

Cluster 2 -63.49 -0.01 0.00 0.01 4.98 3.75 204503 14.02

Cluster 3 -40.50 0.00 0.00 0.00 5.10 3.52 167739 11.50

Cluster 4 -29.03 0.01 0.00 -0.00 5.29 4.13 65864 4.52

Cluster 5 -52.52 0.00 0.00 0.00 4.77 3.56 204592 14.03

Cluster 6 -153.68 -0.11 -0.01 0.10 4.78 5.04 18851 1.29

Cluster 7 -123.37 -0.02 -0.00 0.02 4.55 4.90 121456 8.33

Cluster 8 -107.43 -0.00 0.00 0.01 4.94 4.94 196954 13.50

Cluster 9 -92.39 -0.01 0.00 0.01 4.77 4.62 227205 15.58

Number of unassigned pixels (class = -1): 0

Image1 = bathym

Image2 = g\_curvature

Image3 = plan\_curvature

Image4 = pro\_curvature

Image5 = q1

Cluster Centroid Distance Analysis:

Clus. 0 Clus. 1 Clus. 2 Clus. 3 Clus. 4 Clus. 5 Clus. 6 Clus. 7 Clus. 8 Clus. 9

Cluster 0 0.00 60.13 74.25 97.24 108.70 85.21 15.95 14.36 30.31 45.34

Cluster 1 0.00 14.12 37.11 48.58 25.09 76.07 45.76 29.82 14.78

Cluster 2 0.00 22.99 34.46 10.97 90.19 59.88 43.94 28.90

Cluster 3 0.00 11.46 12.03 113.18 82.88 66.93 51.90

Cluster 4 0.00 23.49 124.64 94.34 78.40 63.36

Cluster 5 0.00 101.16 70.85 54.91 39.87

Cluster 6 0.00 30.31 46.25 61.28

Cluster 7 0.00 15.95 30.98

Cluster 8 0.00 15.04

Cluster 9 0.00

Cluster Merger History:

Iteration Number of Clusters Percent Changed

1 10000 100.0

2 10 100.0

3 10 5.244193517199861

4 10 3.2285779131151466

5. What type of habitat map did you make, and which strategy did you use? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

6. What is the reference system of the data and the final map?

WGS\_1984\_UTM\_Zone\_19N

WKID: 32619 Authority: EPSG

Projection: Transverse\_Mercator

False\_Easting: 500000.0

False\_Northing: 0.0

Central\_Meridian: -69.0

Scale\_Factor: 0.9996

Latitude\_Of\_Origin: 0.0

Linear Unit: Meter (1.0)

7. Don’t forget to submit your map!