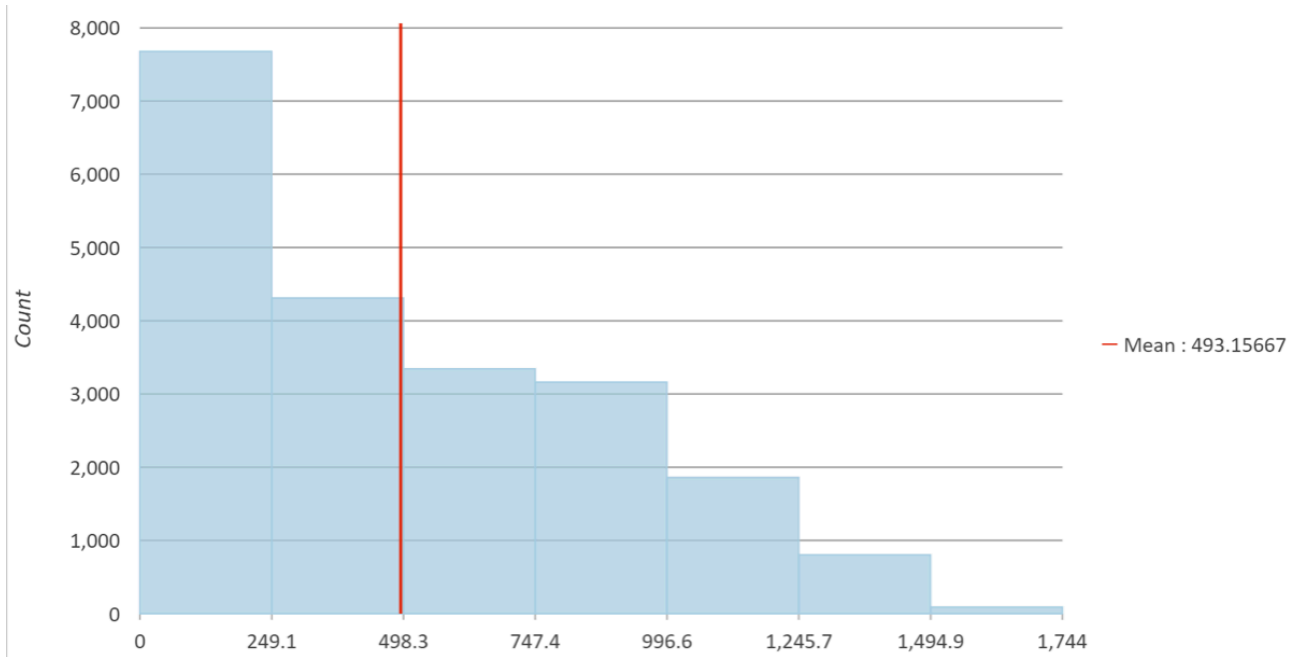


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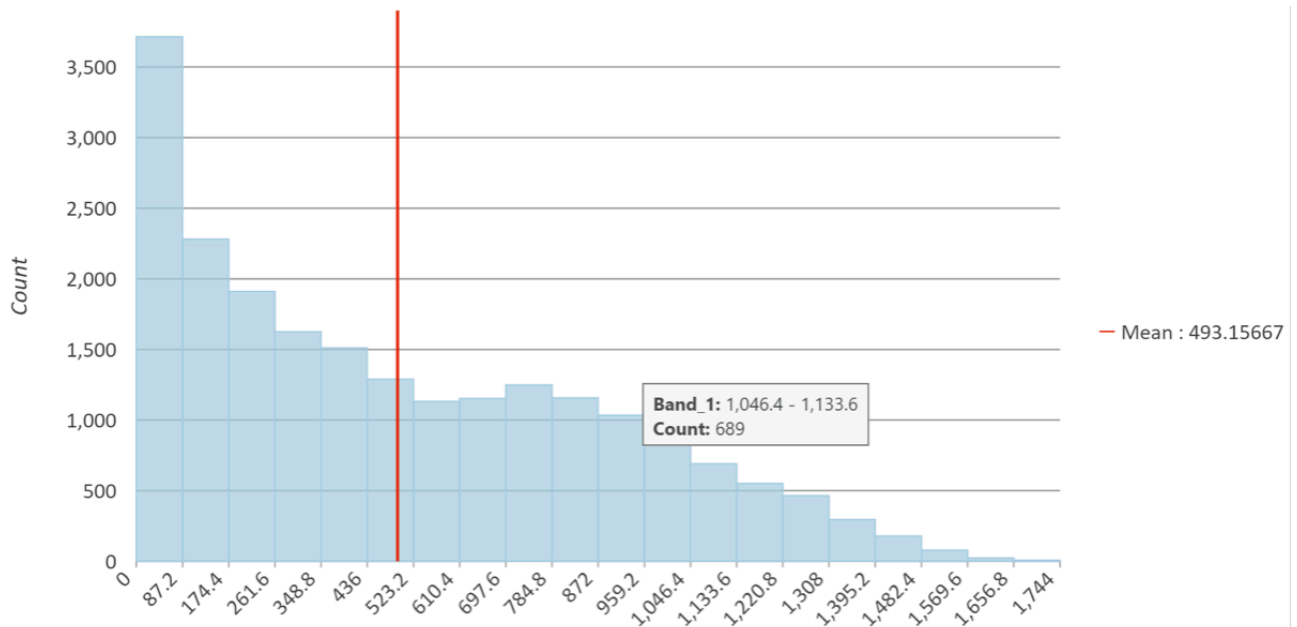
Username: zongchengd

StudentID: 1096319

Q1: Distribution for elevation of 7 classes:



Distribution for elevation of 20 classes:



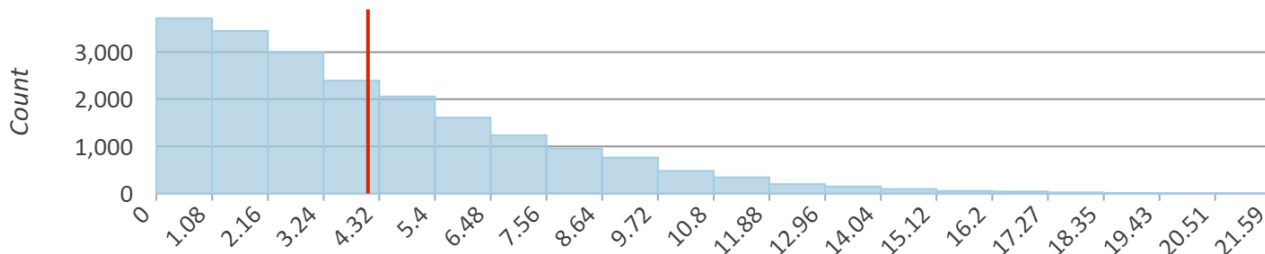
The distribution around 0 has most samples. Overall, as Band_1 increases, count gradually decreases. From 610.4 to 784.8, the count increases a little.

Compared to 7 classes, the means, maximums, minimums are the same because they are calculated from the same data. The trends of distributions are similar. The samples around zero is much more than others. Besides, the range of count number for 7 classes

are larger than 20 classes since the abscissa interval are wider. The elevation of 20 classes has more details.

In a words, the distribution are not very different, but elevation of 20 classes is more refines.

Q2: Slopes are mainly low. The distribution of slope is following



Based on the histogram, the count number are decreases as the slope increases. The count numbers of several intervals on the left are much larger than the others. Therefore, for most places, the slope are low.

Besides, the statistical table of slope is shown below.

Band Name	Minimum	Maximum	Mean	Std. Deviation
Band_1	0.00451699458	21.5922298431	4.10198873690	3.27415288602

The ranger of slope is around 21.5. The minimum is around 0, and the Maximum is 21.59. However, the Mean is just 4.1 and standard deviation is small. We can conclude most samples have low slopes.

The number of grid cells for LOW is 12084.

The number of grid cells for FLAT is 13891.

The number of grid cells for WET is 13928.

Q3: The number of grid cells for “LOW & FLAT & WET” is 6182. The real area is around 6182 km². (Using exactly cell size data, the area is 6244 km²).

Most of the matching areas are in the southeast of the map. Only a very small part is randomly distributed in other location of the map.

Q4: Because the restriction is “LOW | FLAT | WET”, it’s much looser than the previous. The new layer is cover all the grid cells in Q3, and contains more than 90% area in the whole map.

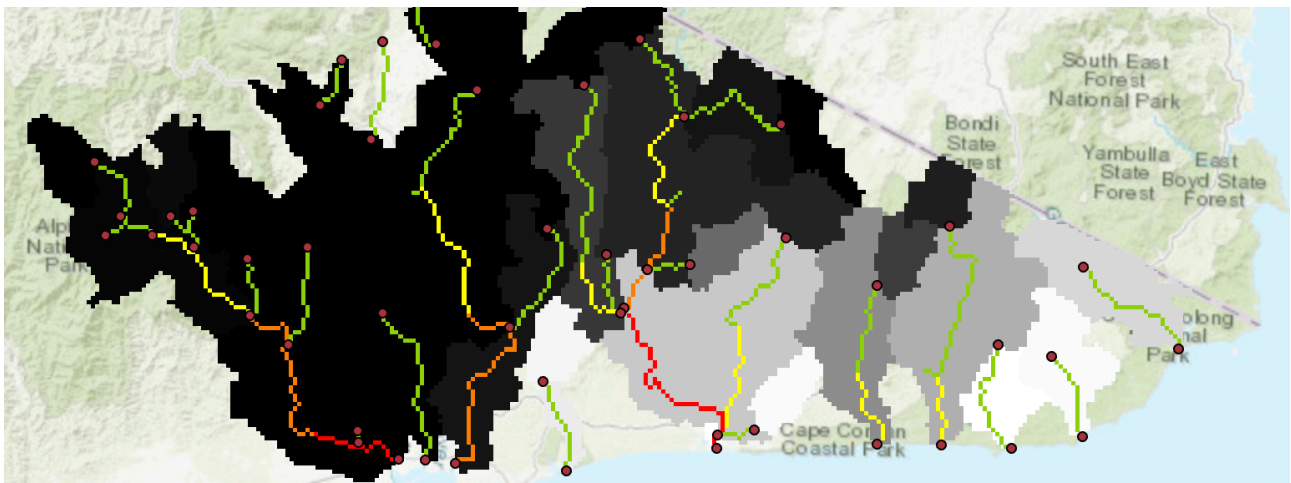
The number of grid cells for “LOW & FLAT & WET” is 18965. The real area is around 18965 km². (Using exactly cell size data, the area is 19155 km²).

Q5: This map has 4 parts. The 0 means this area meets 0 condition of Low, Flat or Wet. The 1 means this area meets only 1 condition of Low, Flat or Wet. The 2 means this area meets only 2 conditions of Low, Flat or Wet. The 3 means this area meets all conditions of Low, Flat or Wet.

I think it's an ordinal map.

Q6: The map of model 3 divided the area that meets the condition in model into 3 parts. In other words, the area of 1 in Model 2 = the area of 1 in Model 3 + the area of 2 in Model 3 + the area of 3 in Model 3. Based on how many conditions is met, the map in model 3 is more clear.

Q7: Watershed area in the lower right corner which is pure white is the best conform with the most suitable cow habitat site. The following image is used zonal operation.



I tried 4 operations, local, focal, zonal and global. I think the zonal is most suitable. The watershed map divided is into many parts. When we need to determine which part is most likely cow habitat, we should use the operation to calculate a number to represent this part which is zonal's job. Local is related with itself area. Focal depend on its neighbour, and global is calculated for whole map. They are all not suitable for this problem.