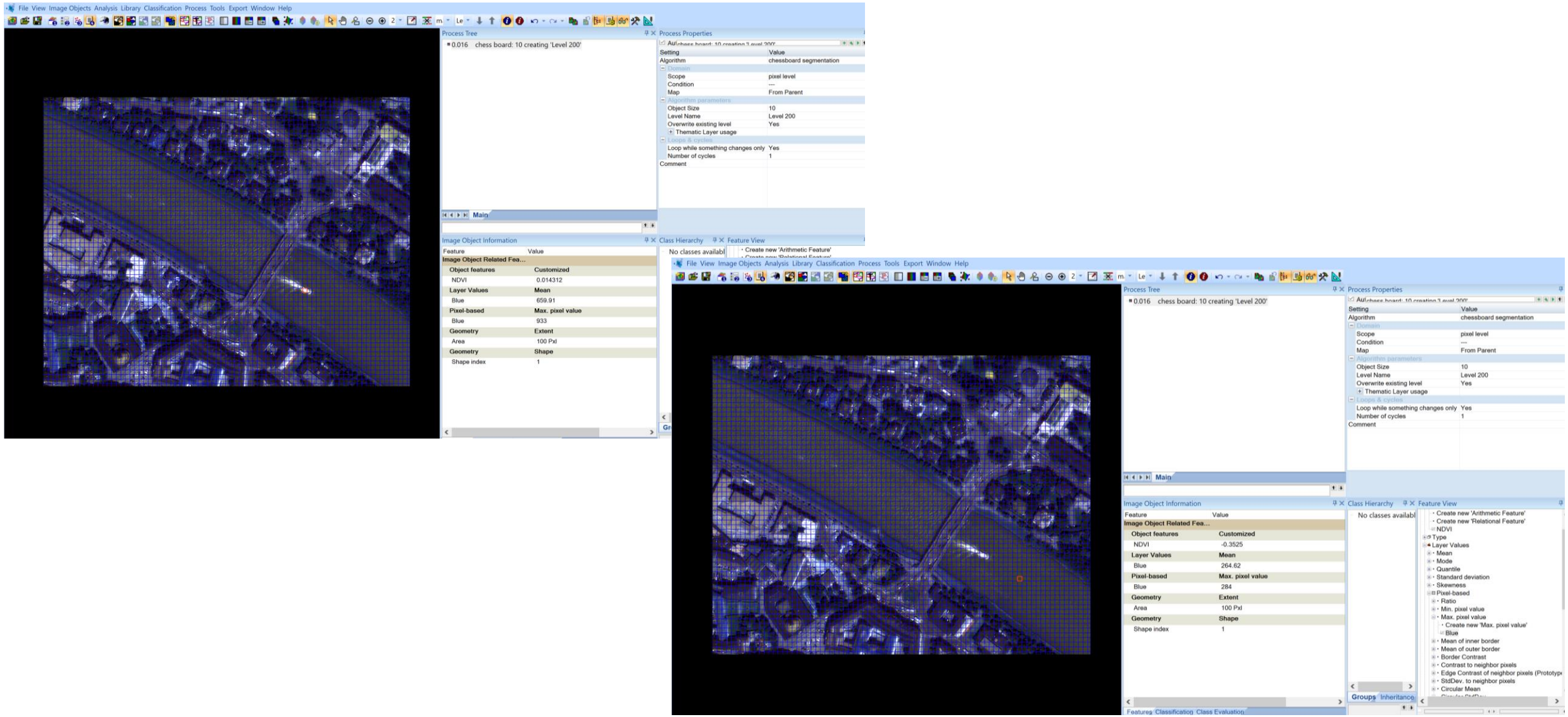
Object Based Image Analysis In E-Cognition

Opeyemi Kazeem-Jimoh

Advance Remote Sensing

Example 1: Chessboard Segmentation

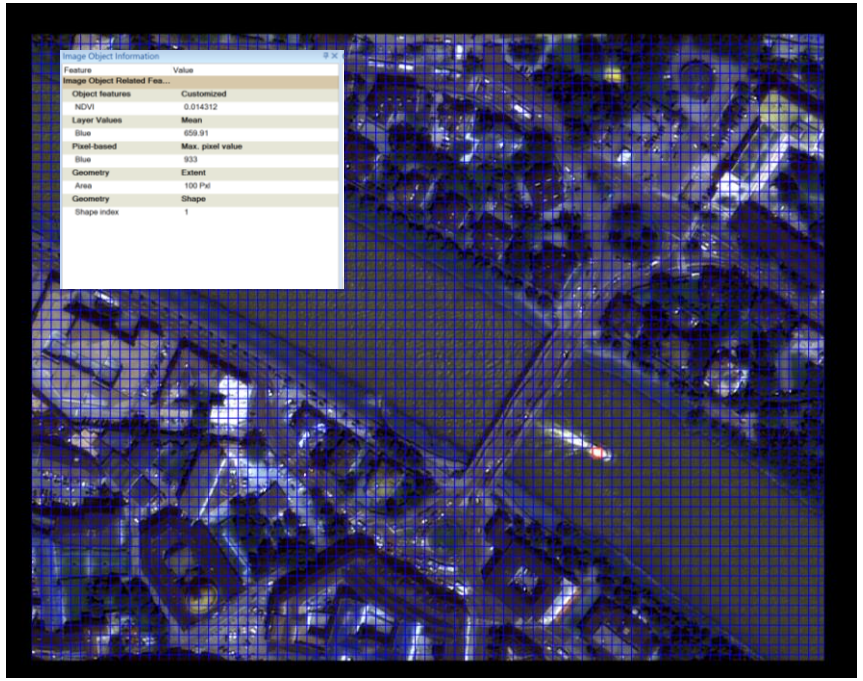


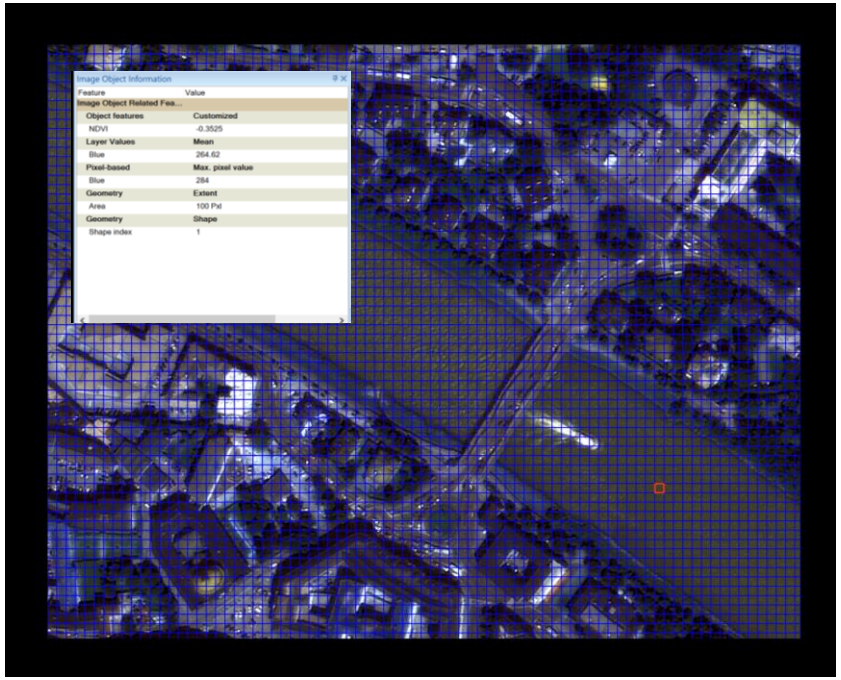
Question 1: What become obvious if you compare the values for the two objects of the chessboard segmentation (Boat and River)

Answer:

As evidenced by the screenshot to the right, the 10 by 10 px object at the center of the **Boat** has higher reflectance in the blue band, as well as all other band, with a corresponding low NDVI although not as low as the NDVI value in the middle of the **River.**

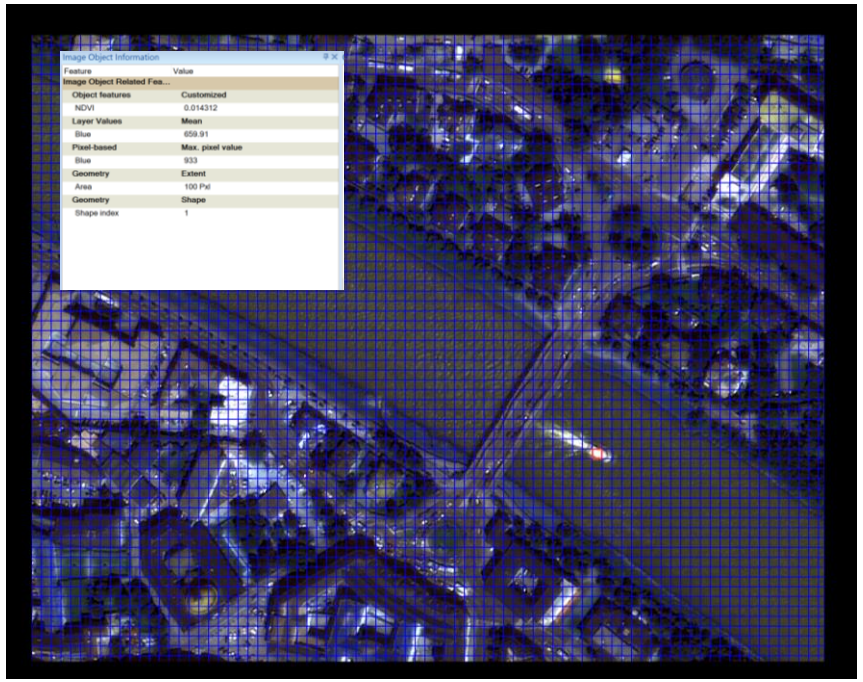
However, the low NDVI values are justified because NDVI is used to detect vegetation which is not present in the 2 instances.

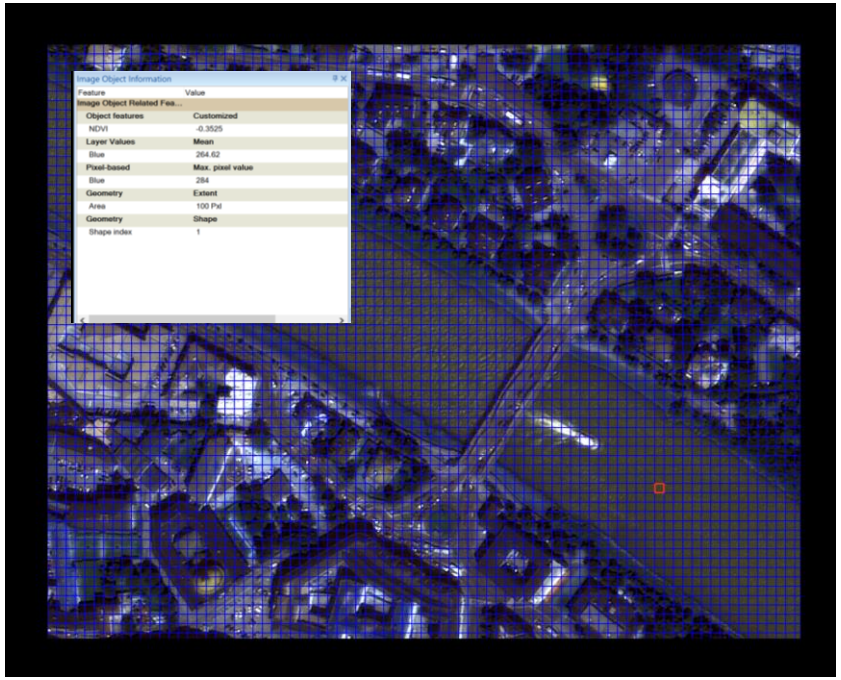




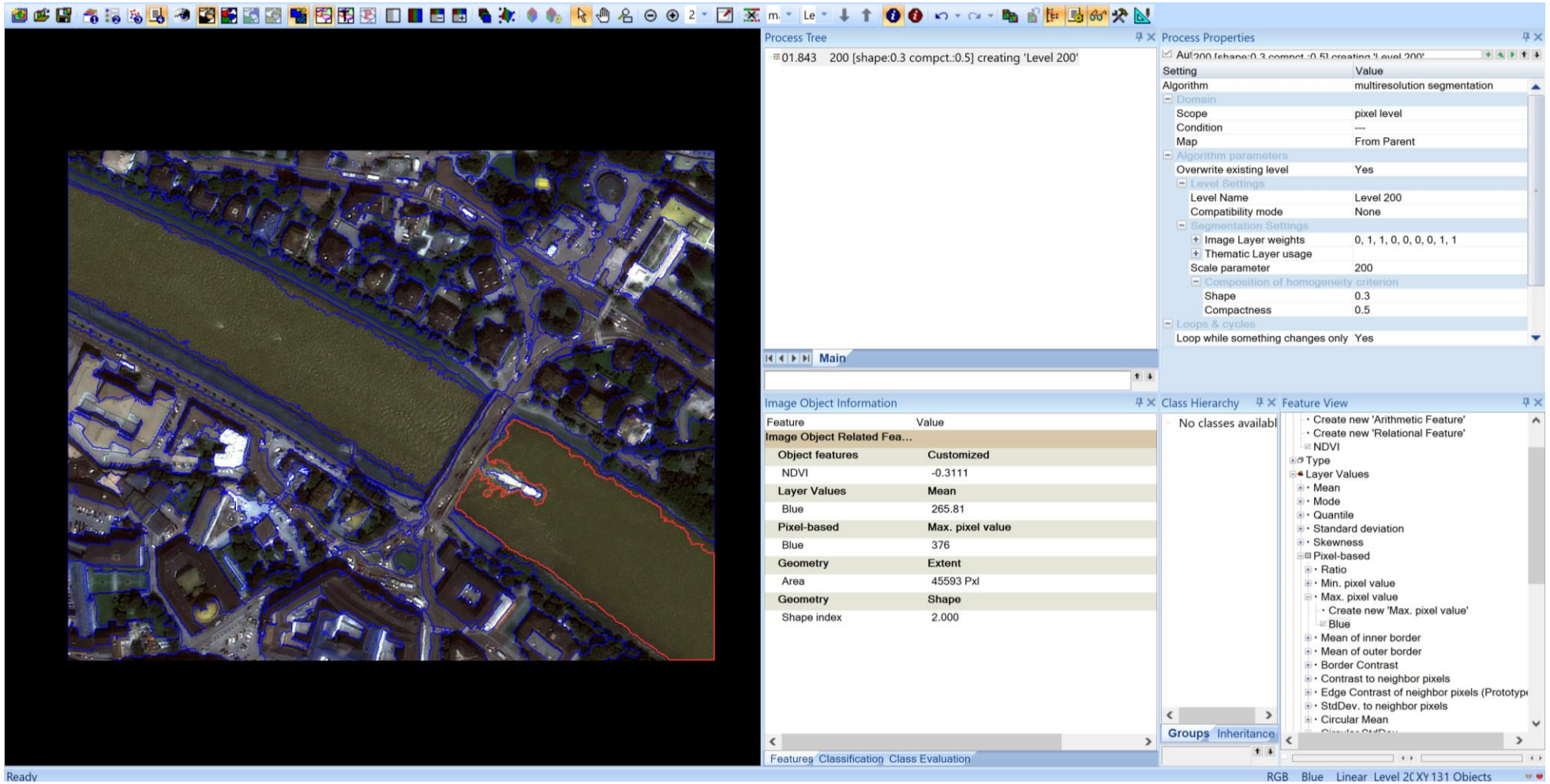
Question 2: What features don't make sense.

Answer: The geometry and shape index are the same, meaning that object feature values are only considered by pixel, and not neighborhood values.

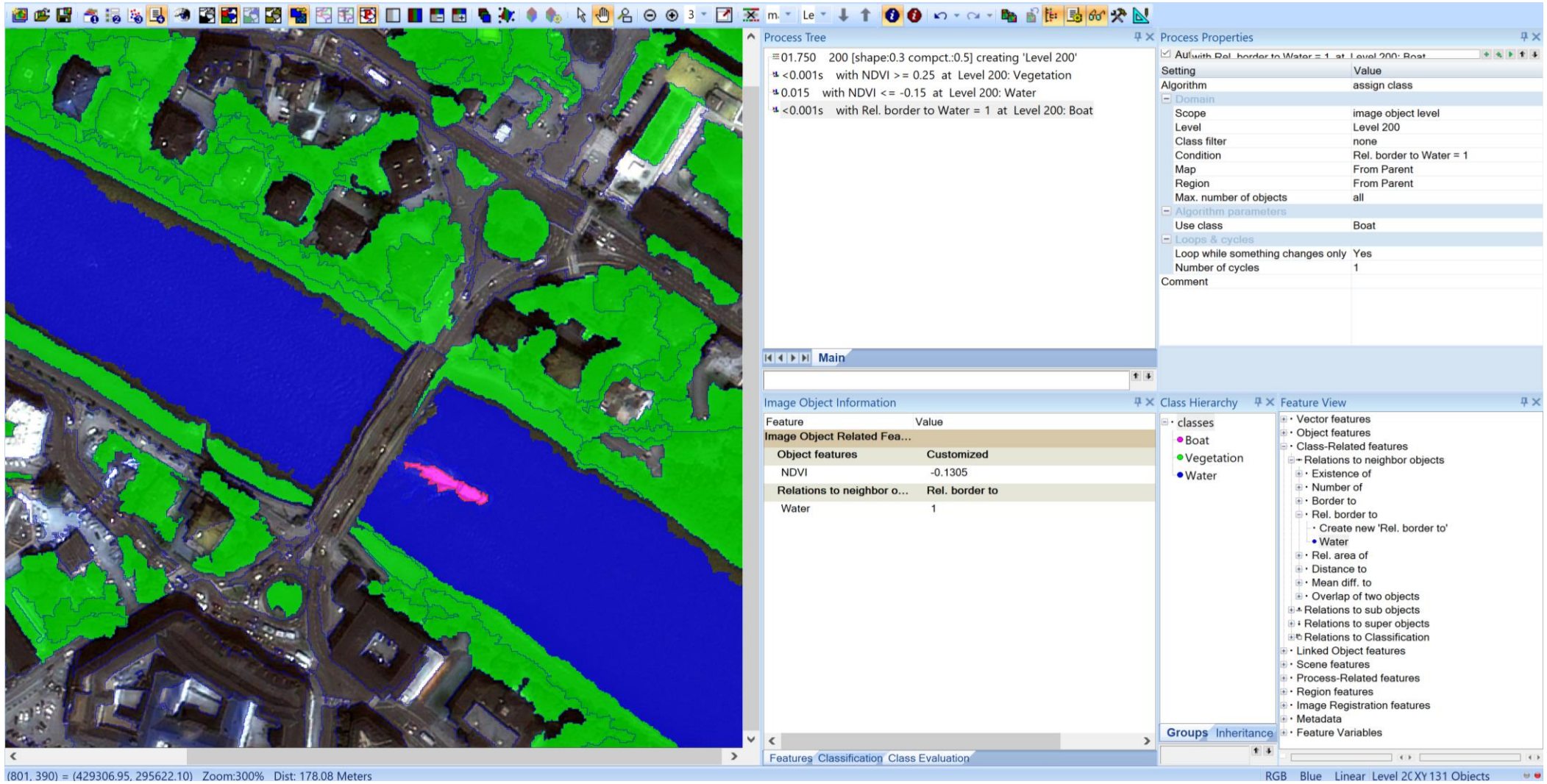




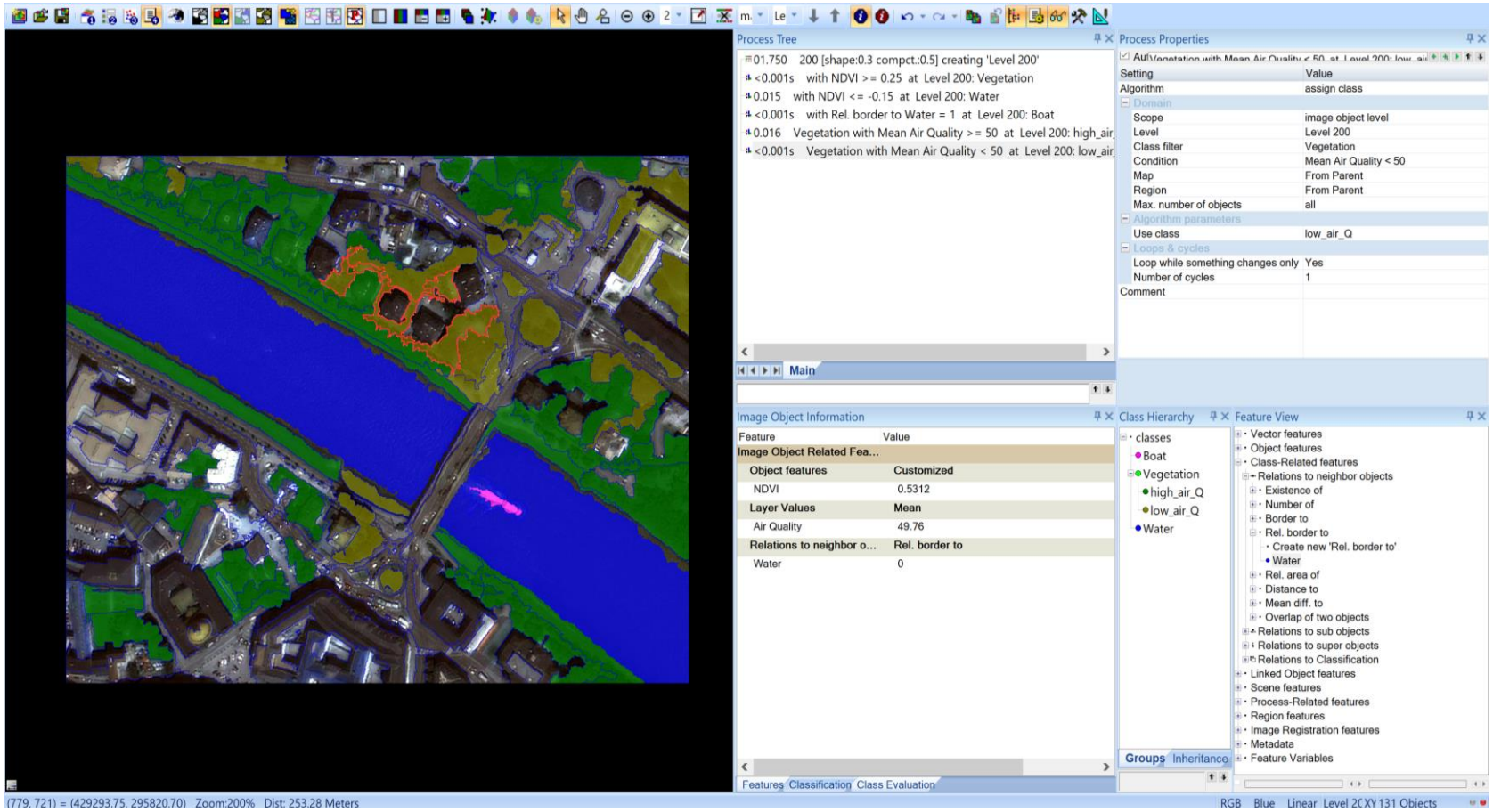
Example 2: Multiresolution Segmentation



Example 3 and 4 : NDVI Based Classification (Water, Vegetation, Boat)/ Related Boarder to water

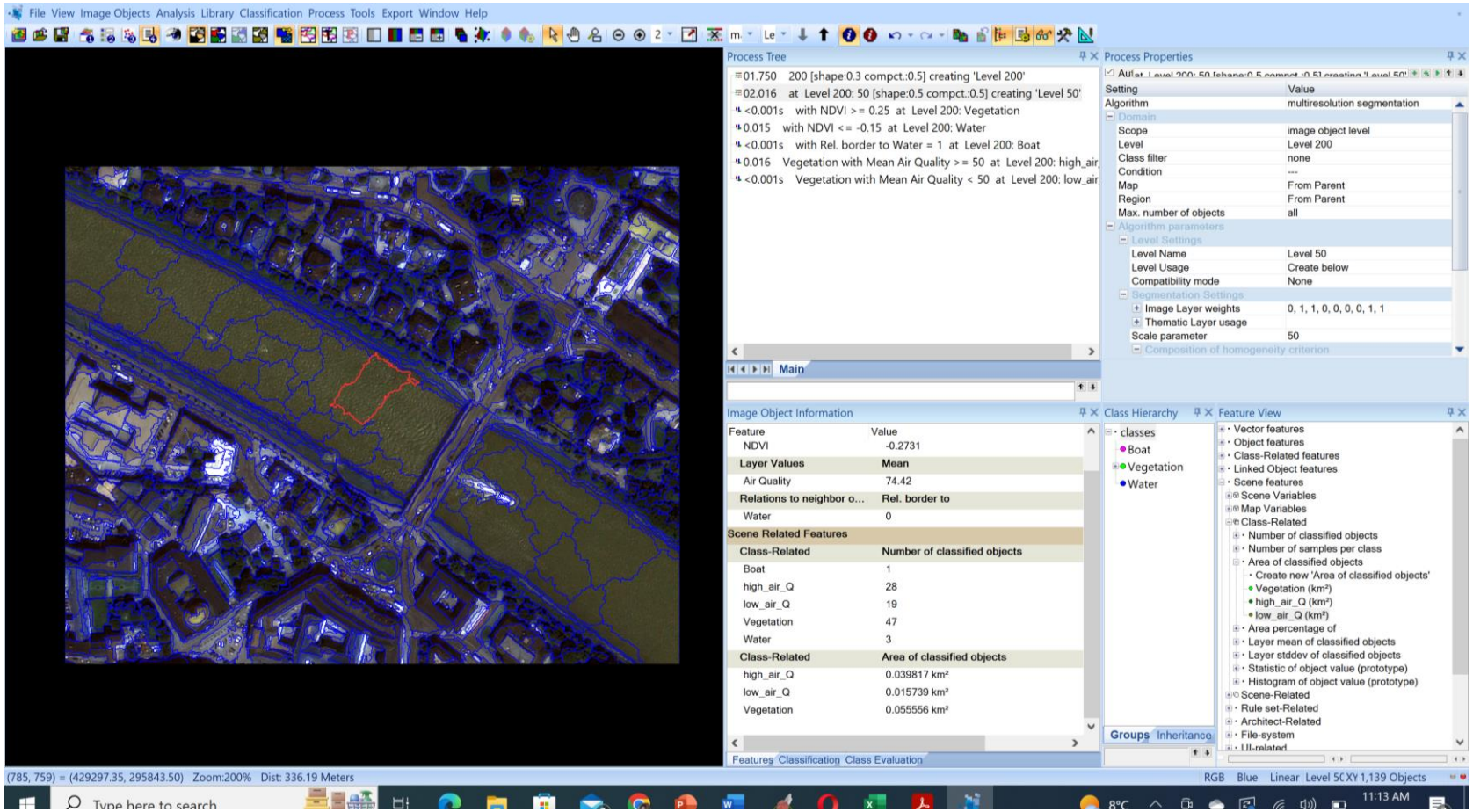


Example 4 :Classifying Vegetation by Air Quality



Boat is related by boarder to water 100% therefore 1

Example 4 : Creating multiple levels



The level 50, with a scale parameter of 50 is created below level 200 (Scale parameter 200)

Question 3 and 4: How many objects were classified as “water", and Area of the whole vegetation class.

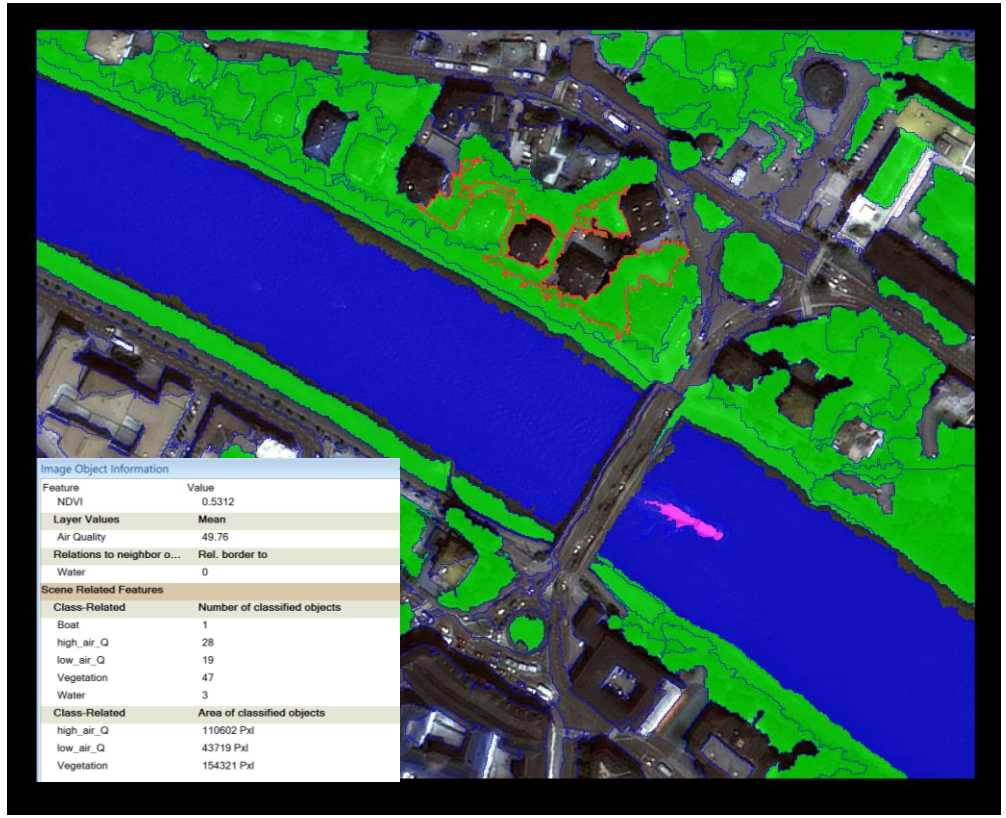
Answer

3 image objects are classified as **water**, as seen in the screenshot, while the **total area classified as vegetation is 154321 pxl** or 0.056km (screenshot below).

As suggested, the vegetation area is a summation of its subclass values. (110602pxl + 43719pxl = 154321pxl)

Image Object Information

Feature	Value
NDVI	0.5312
Layer Values	**Mean**
Air Quality	49.76
Relations to neighbor o…	**Rel. border to**
Water	0
Scene Related Features	
Class-Related	**Number of classified objects**
Boat	1
high_air_Q	28
low_air_Q	19
Vegetation	47
Water	3
Class-Related	**Area of classified objects**
high_air_Q	0.039817 km²
low_air_Q	0.015739 km²
Vegetation	0.055556 km²



Question 5: What is the meaning of the distance value when you create the feature?

Answer

The feature created is Relation to existence of superclass objects.

This means that the algorithm identifies and select only features whose superclass has been assigned a classification. In this case belong to the vegetation superclass. i.e. it creates a distinction between all objects that have a superclass-subclass relation, in this case only vegetation and its subclasses high and low air quality, which are assigned a value of 1.

Others that don't share such relationship with the vegetation class (therefore whose superclass is unclassified) are assigned 0.

This relationship is useful to analyse and classify features based on their object hierarchy level.

Please see screenshot below.