Tutorial MUSTIC

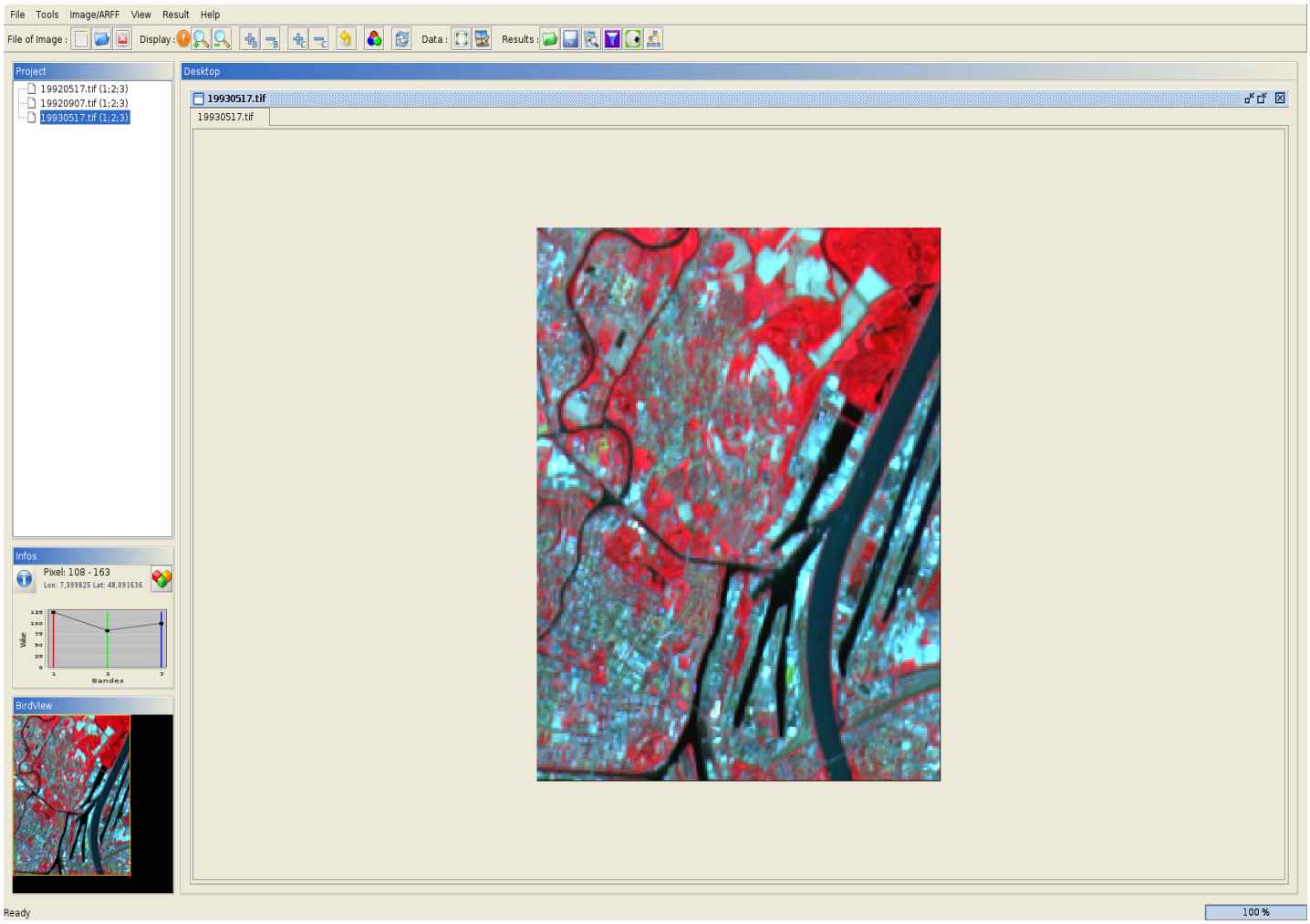
To lauch mustic : ./s*tartMusticOTB.sh*

To do exercise #4.1, you have to use Mustic v5.3 (via Eclipse)

Remark : The figures in TUTO/MUSTIC_SNAPSHOOT show some key steps you should achieve to accomplish the exercises.

Part 1 - Handing the tool

Open three images from *SPOT3* folder



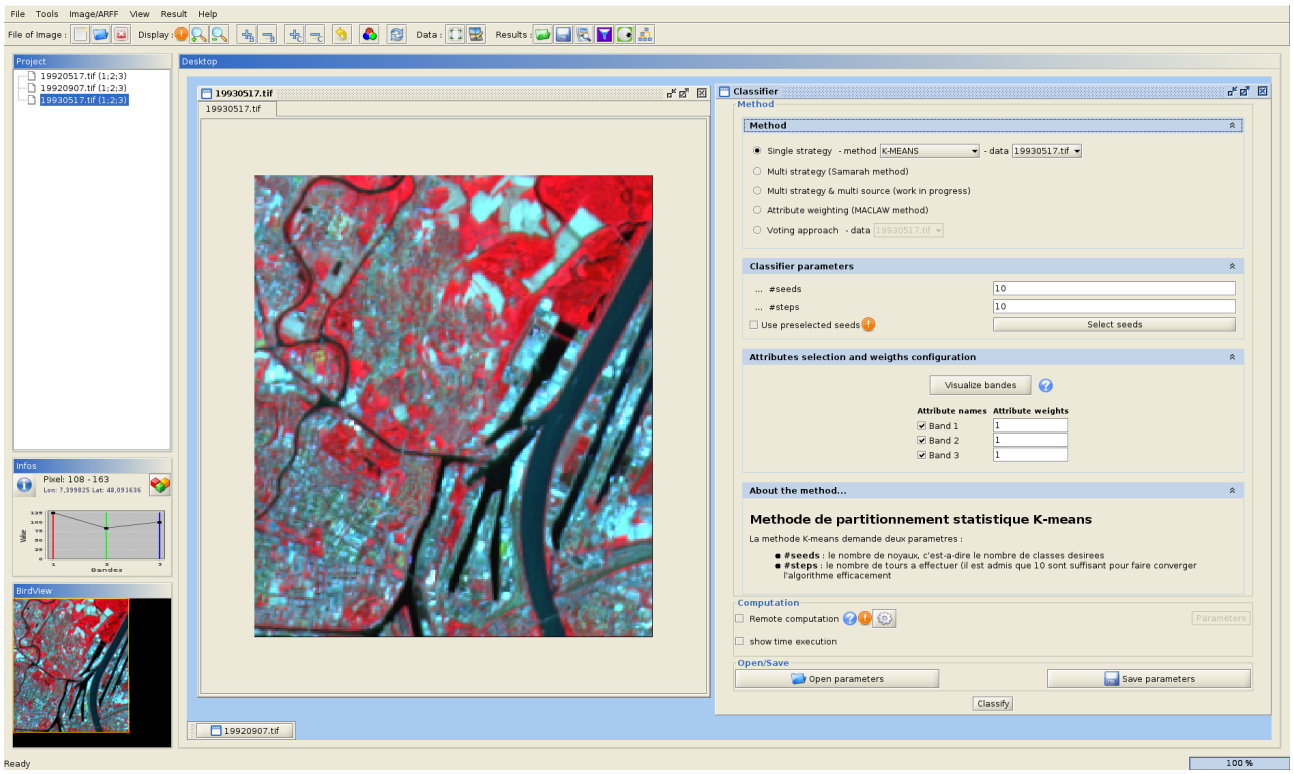
Navigate into the images and menu to familiar you with the basic tools: zoom, brigthness, birdview, ...

Make a crop (60 x 60 pixels) from an image.(Will be used in Part 3)

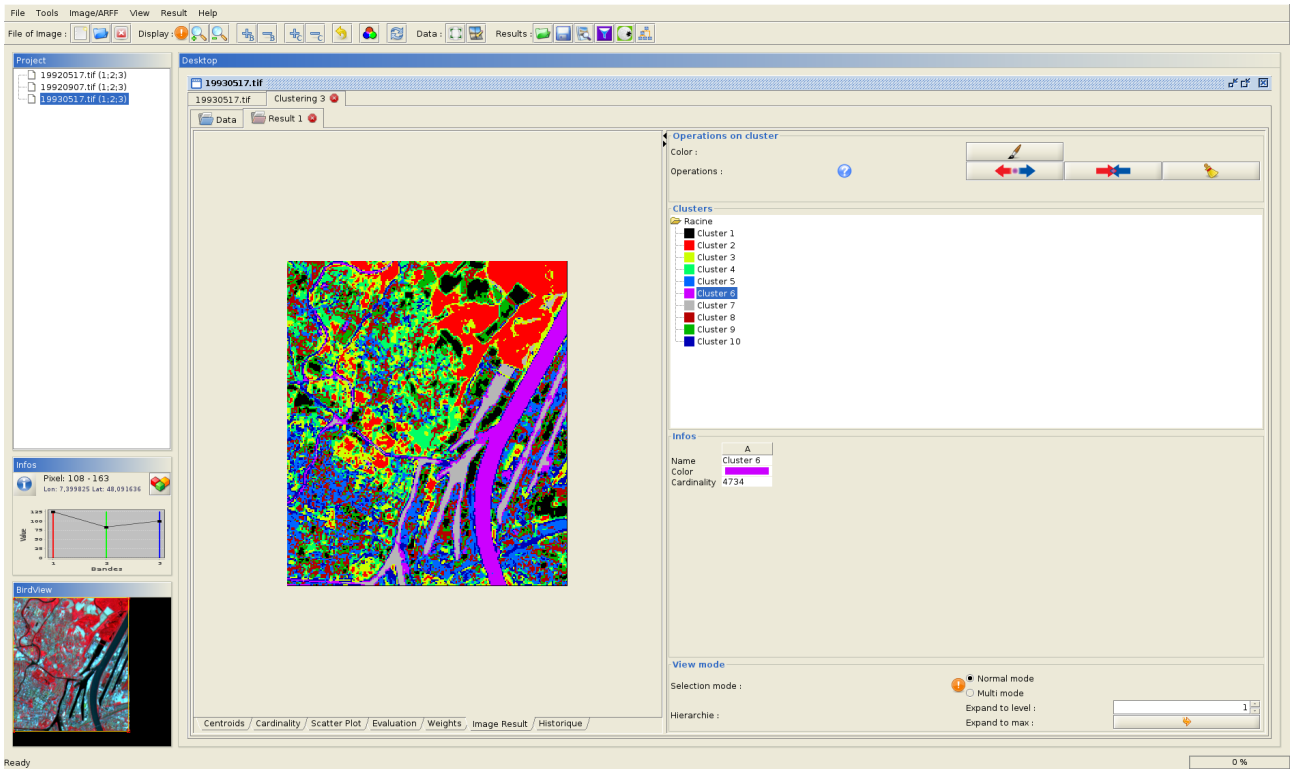
Part 2 - Monostrategy per pixels analysis.

2.1) Clustering

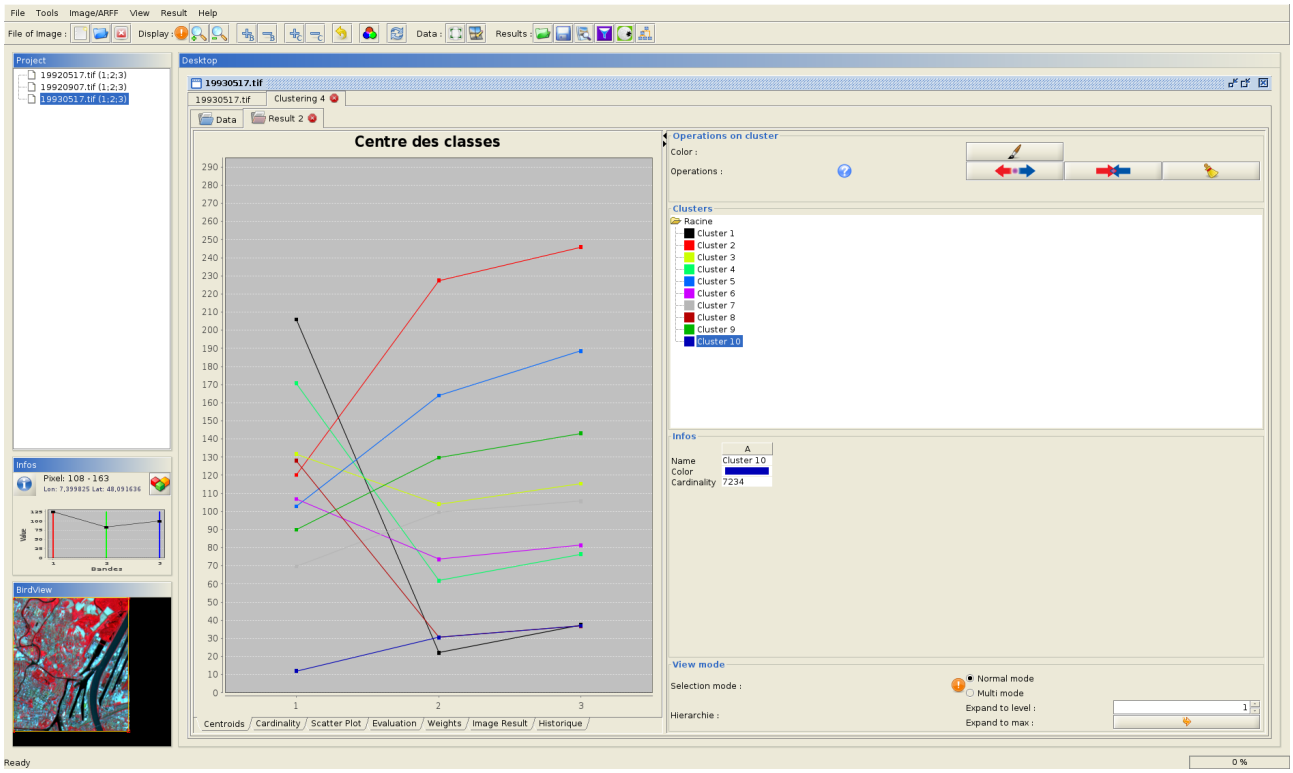
On one of the images, open the classifier menu panel.



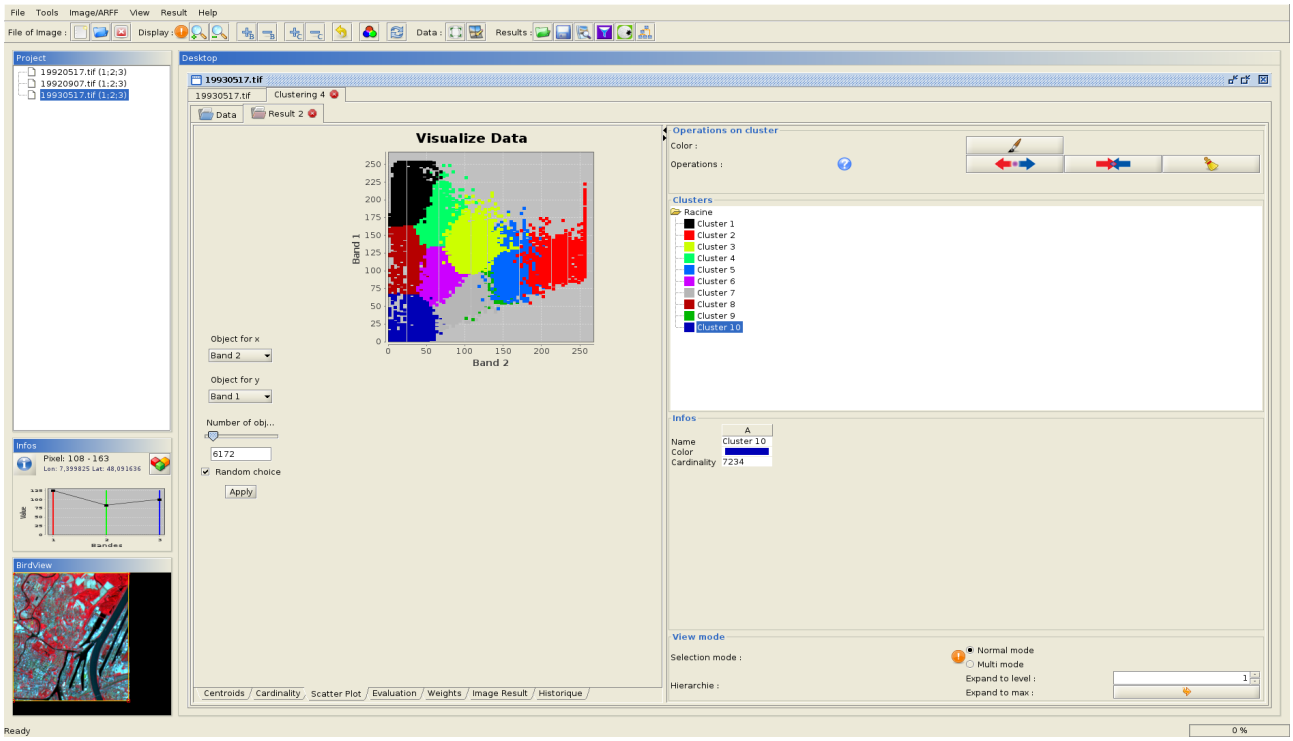
First, carry out a clustering with 10 clusters using Kmeans.



What is the quality of the clustering result? (Find the "Inertia criterion")
Compare the centroids from the different clusters.
Do you recognize the "Water" classe without refeer to the image?
Highligth the "Water" cluster. Check on the SPOT image.



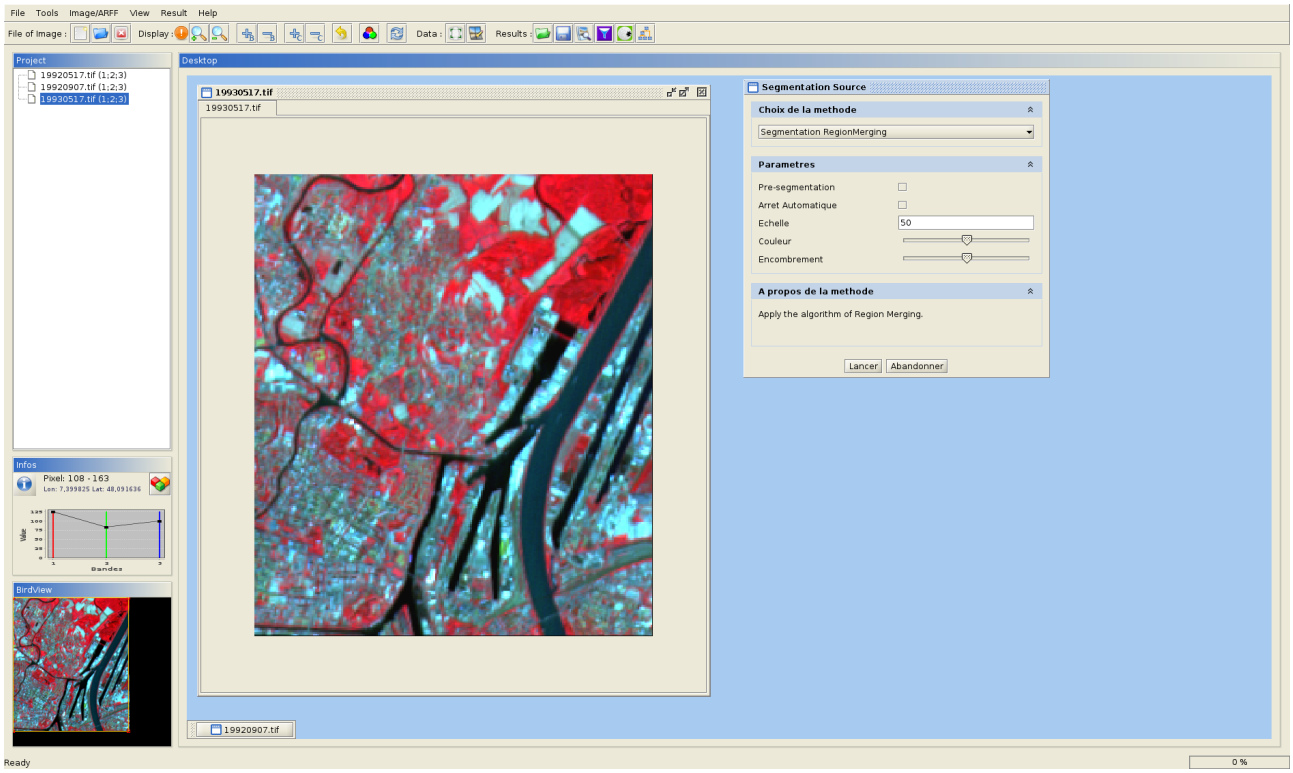
Visualize the partition of the data space.



Redo the same with SOM and 16 classes and with Kmeans and 100 clusters. From this last clustering, generate an hierarchy of clusters.

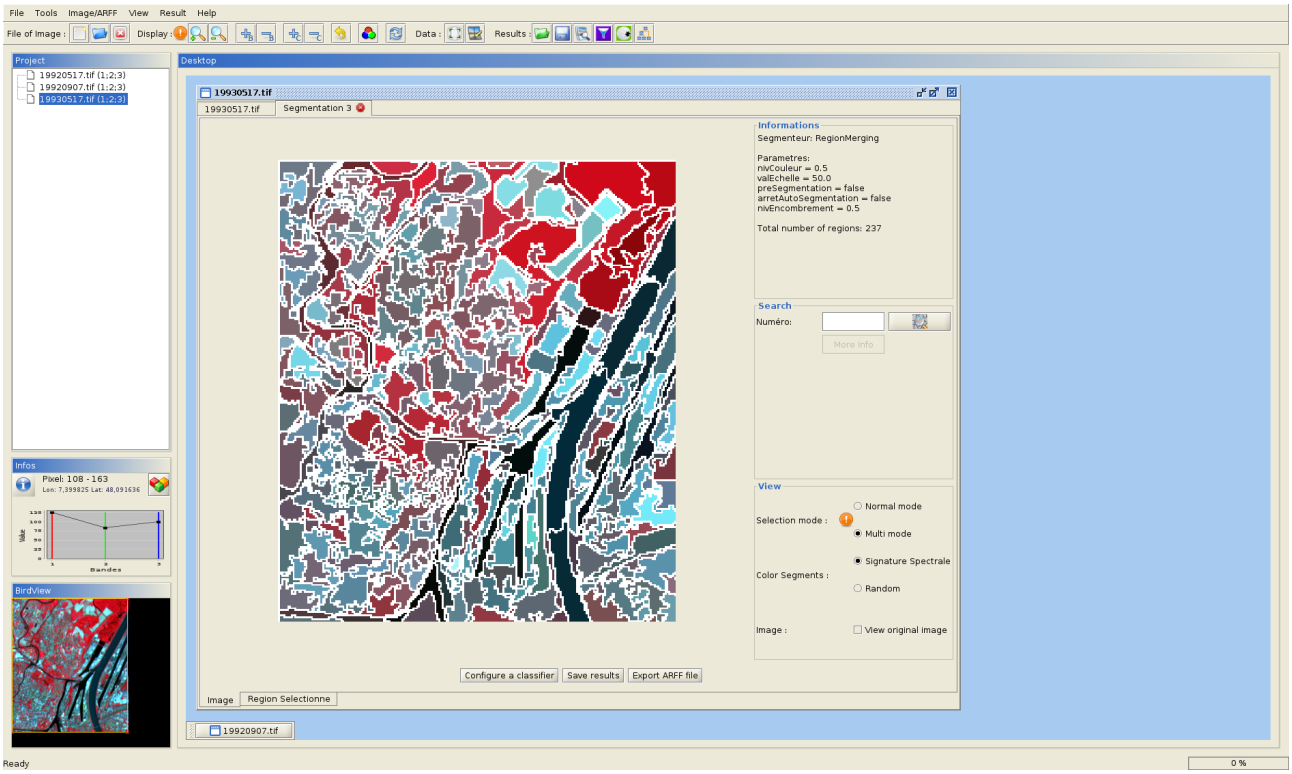
2.1) Segmentation

On one of the images, open the segmentation menu panel



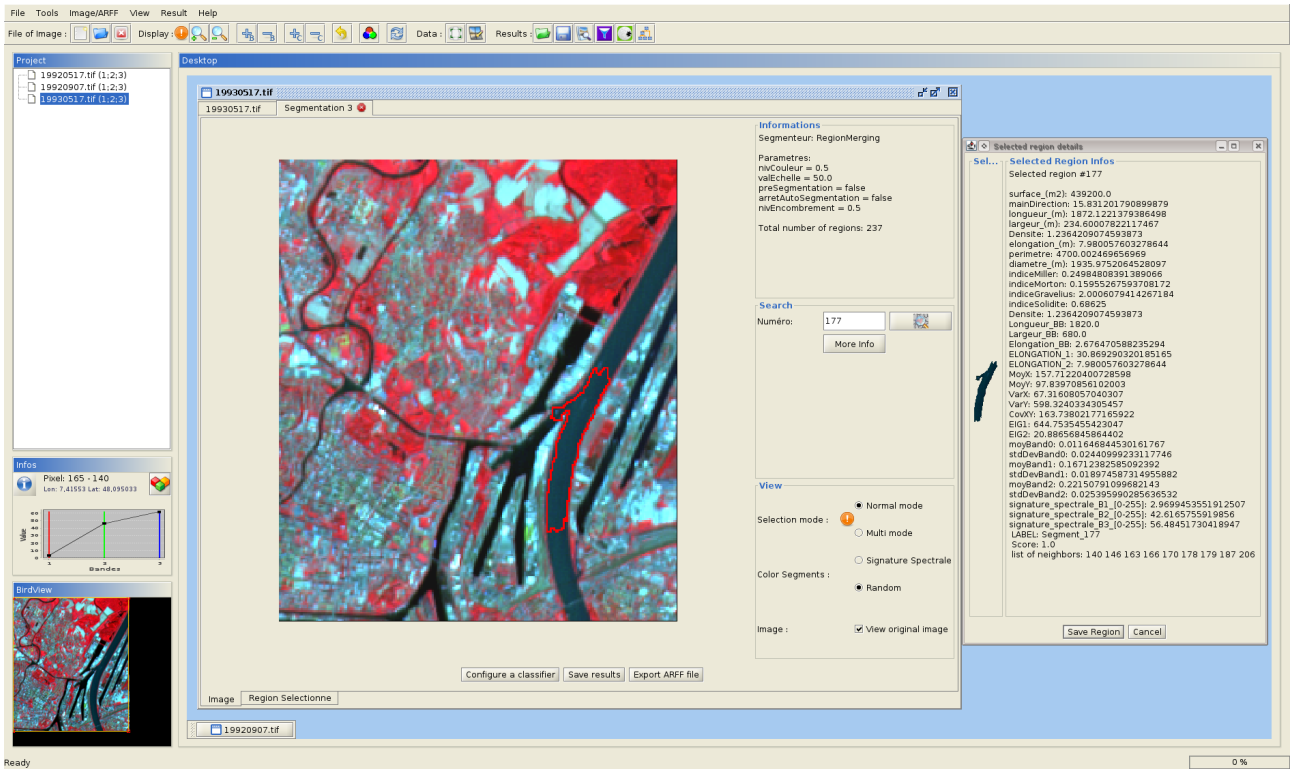
Try two segmentation algorithms:

- Region merging
- Watershed



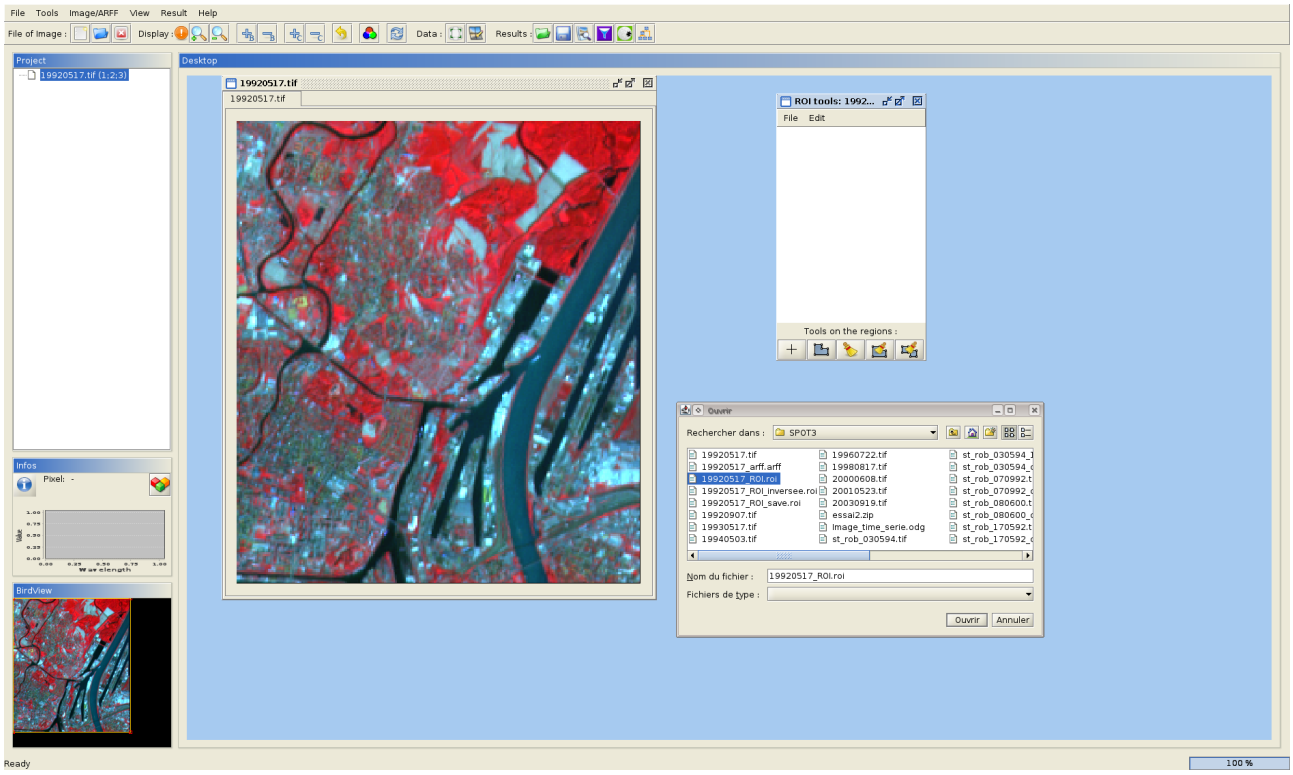
Try each one with different parameters.

How many segments is the Rhine composed?
Study the features associed to a "Water" segment.

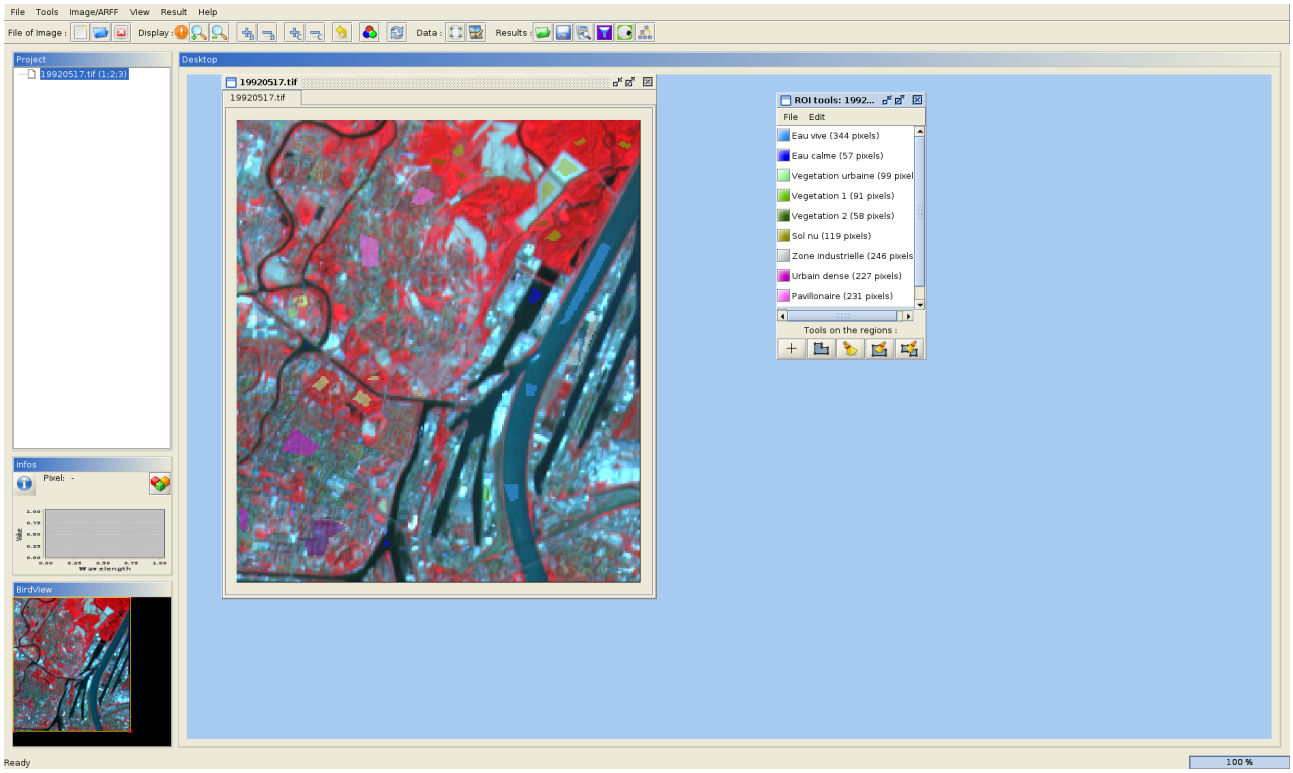


3.3) Ground-truth

Open the "ROI" menu panel

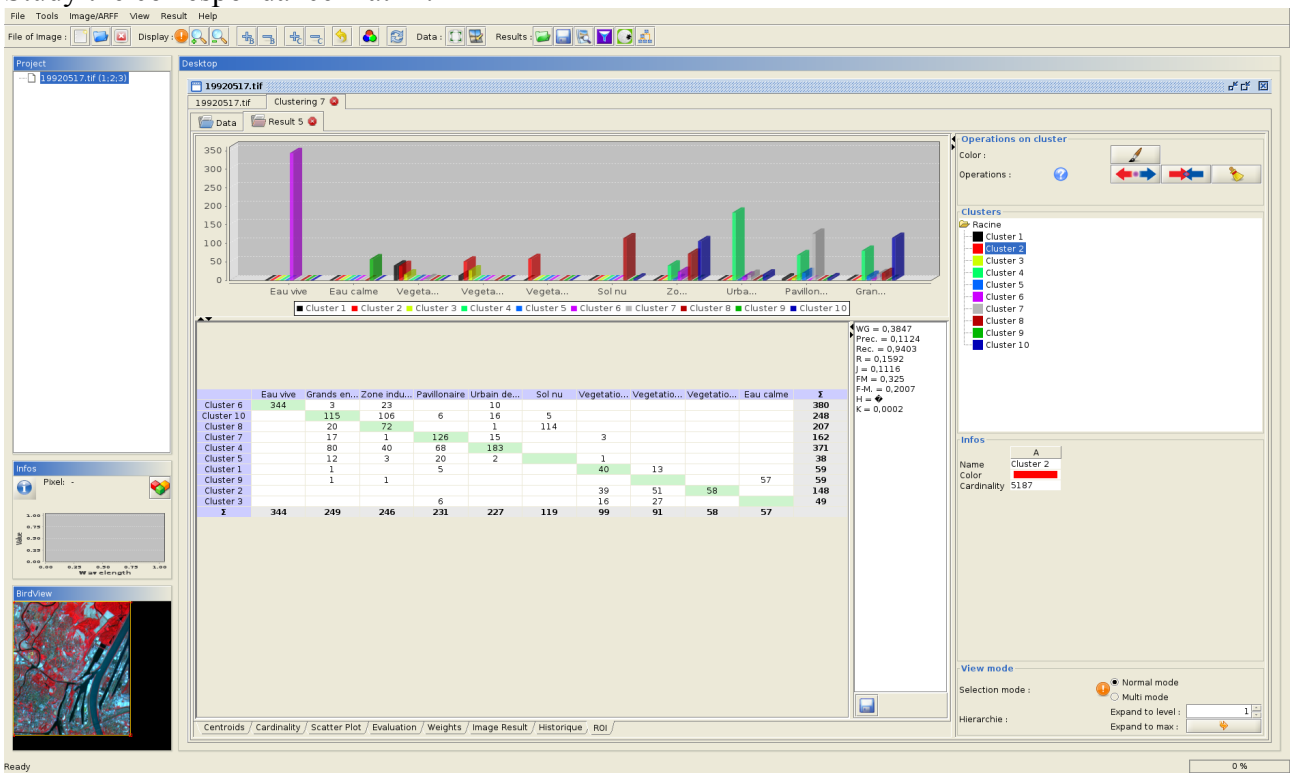


Load the file associated to the image "19920517.tif" in *SPOT3* folder

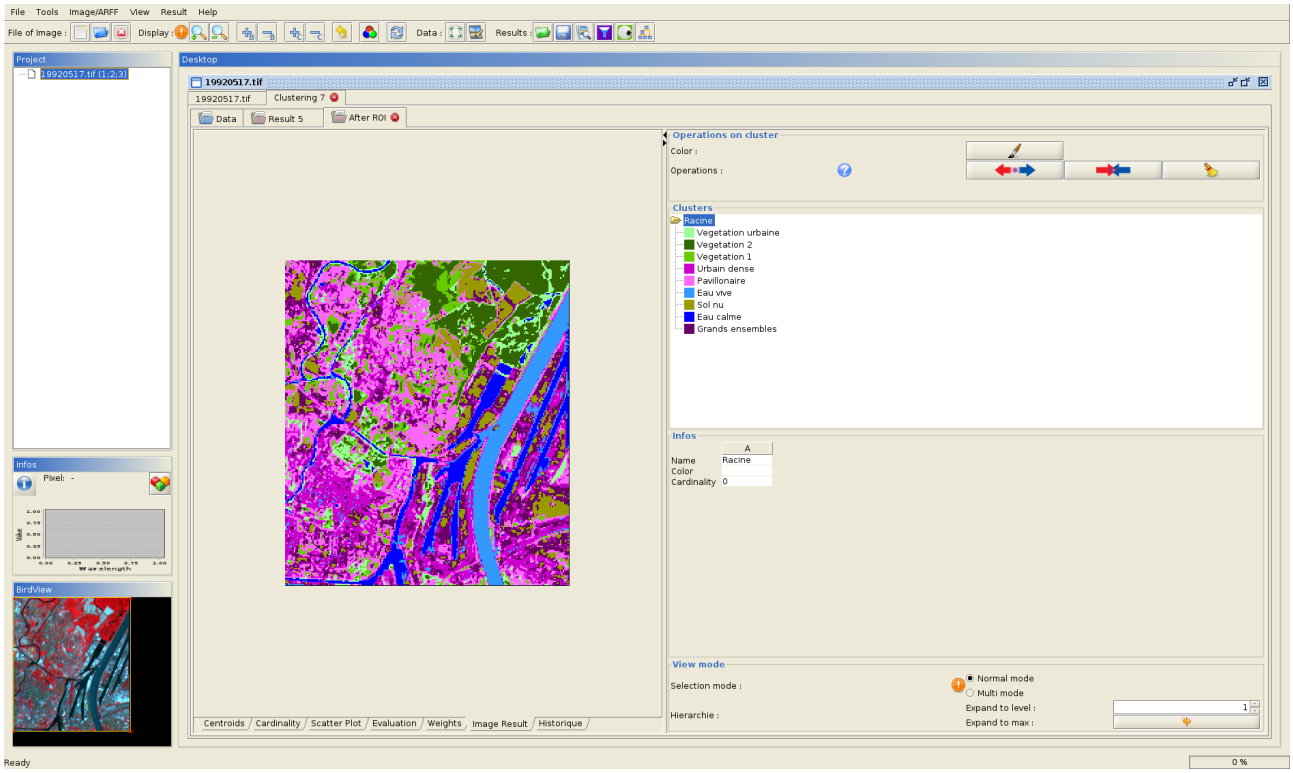


Add an area in the "Eau vive" class (in ligth blue) which contains 30 pixels approx.
Don't save the file (or with another name ...).

Make a clustering with 10 clusters.
Select in "ROI Evaluation" target on the main menu.
Reopen the file associated to the image "19920517.tif".
Study the correspondance matrix.

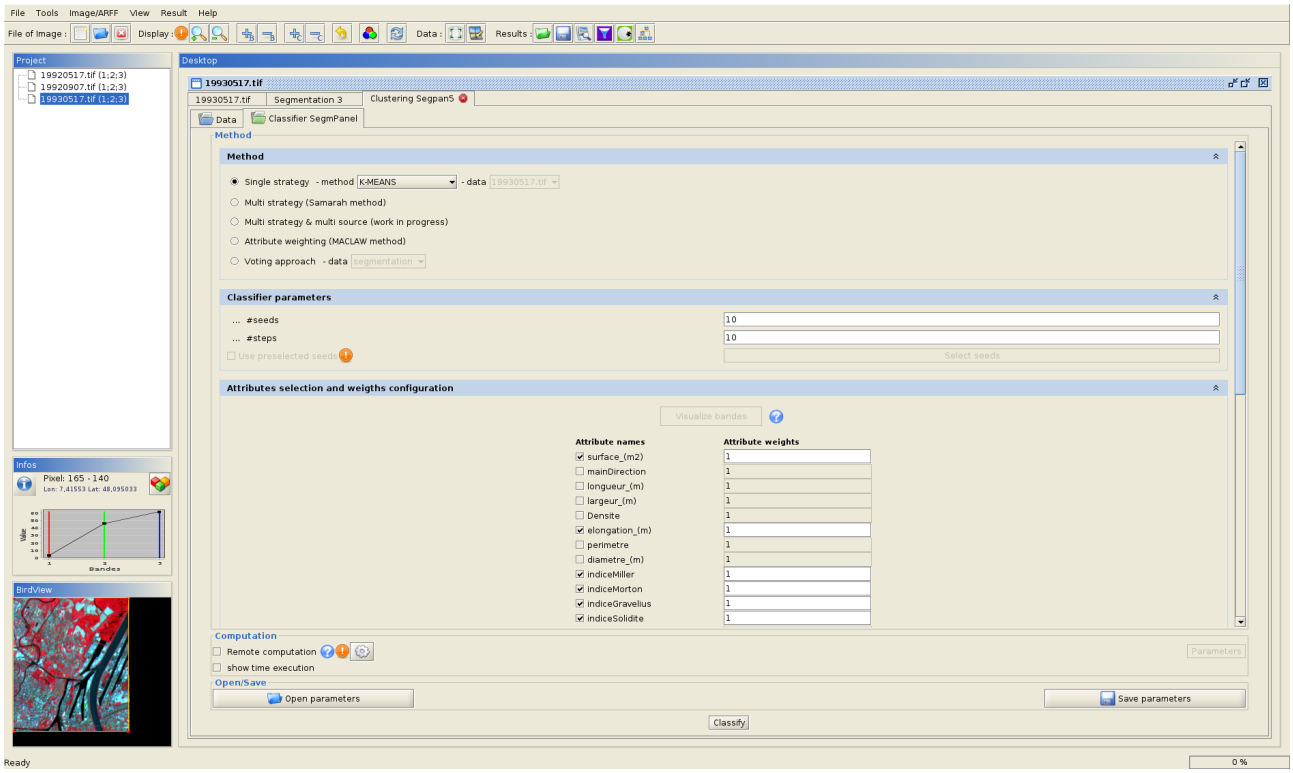


Select "ROI Colorisation" target in the main menu. What happens?

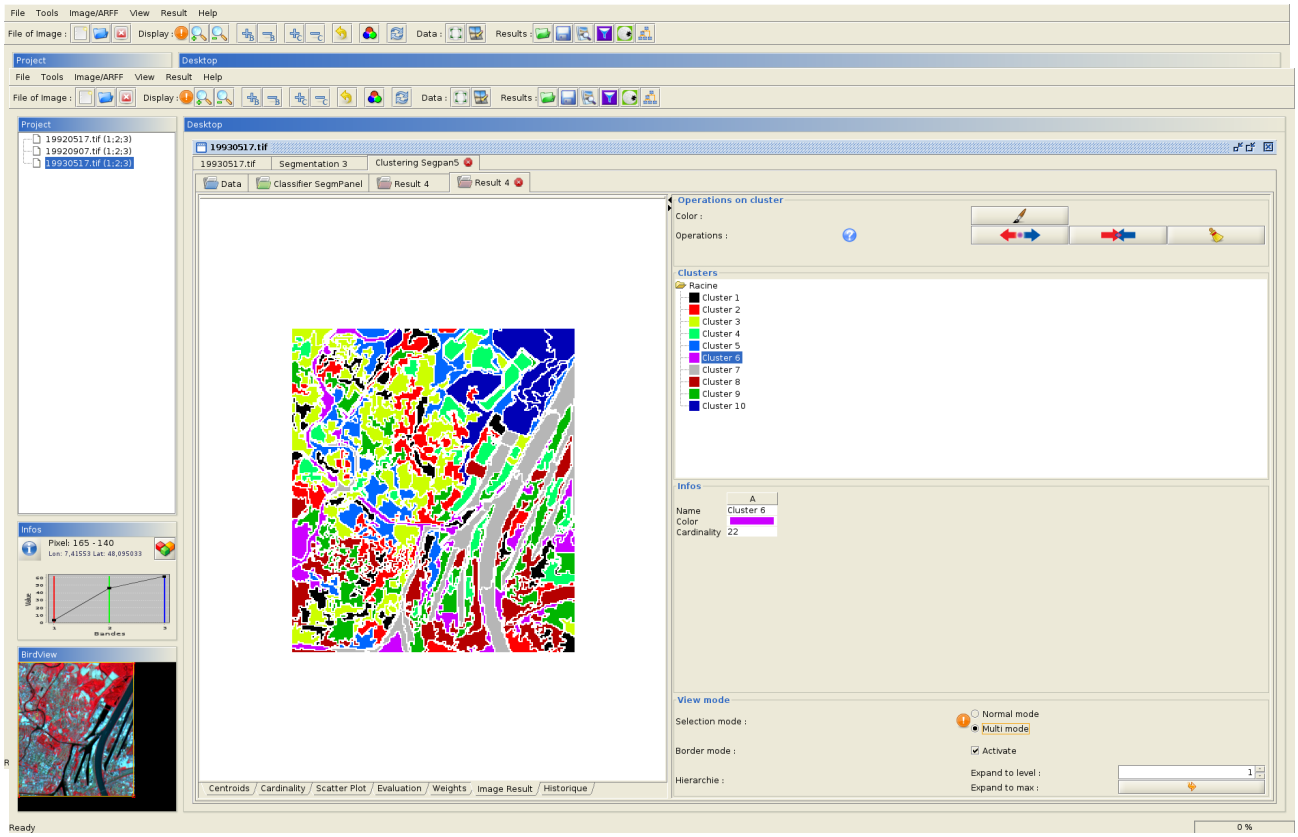


3.4) Region-based clustering

On a segmentation (with no too many segments), configure a classifier, for instance Kmeans with 10 clusters.



Select the attributes that you consider as relevant. Clusterize the regions using them.



Compare with the per-pixels clustering.

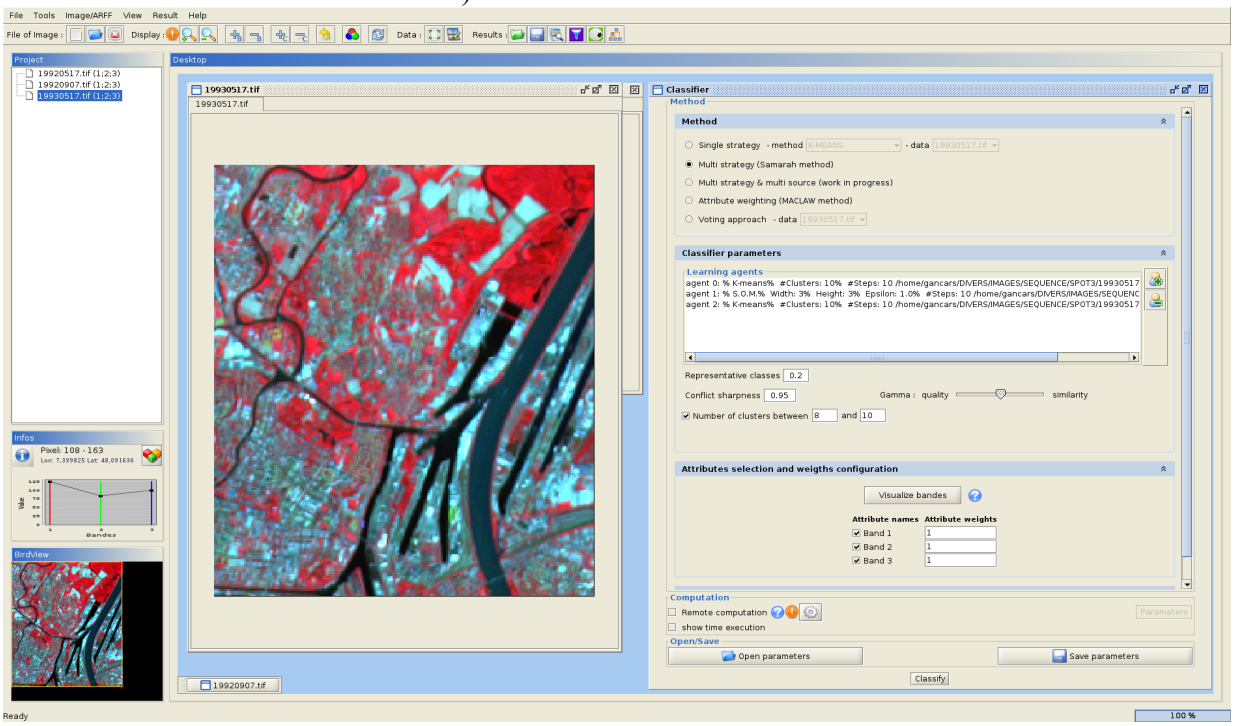
Part 4 – Multistrategy collaborative clustering

4.1) Evidence accumulation

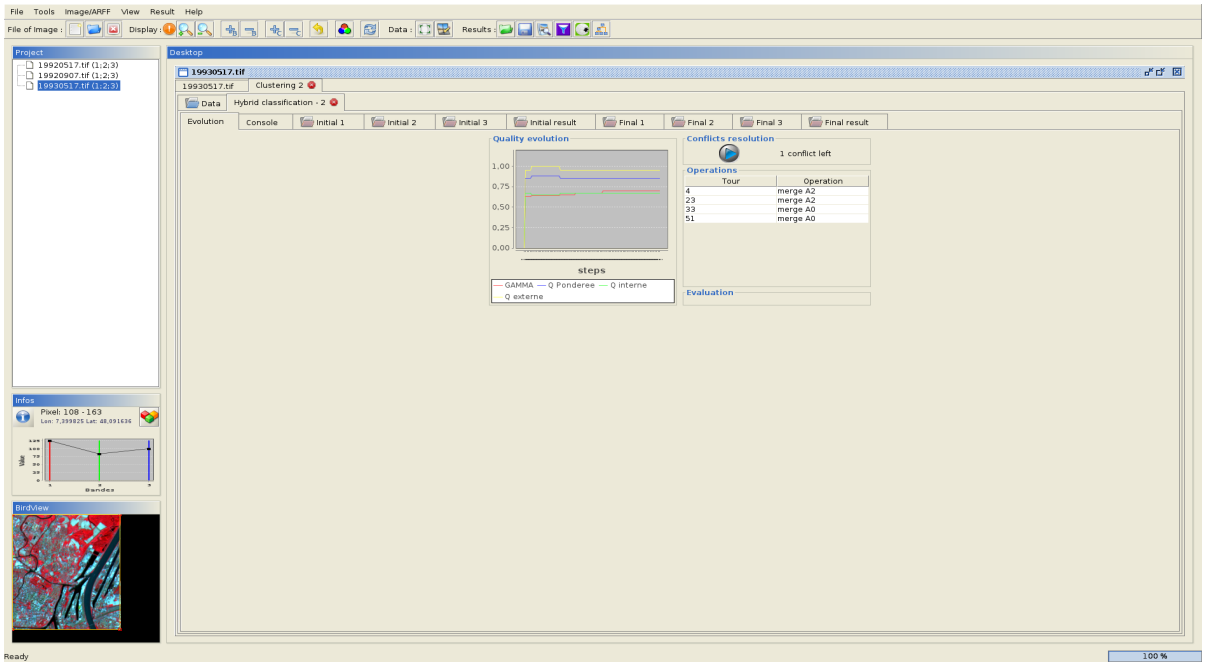
MUSTIC integrates a Voting algorithm similar to a Evidence accumulation algorithm .
You can apply it only ON A CROP (max 60 X 60 pixels). Why?
What is the quality of the result? Why?

4.2) SAMARAH

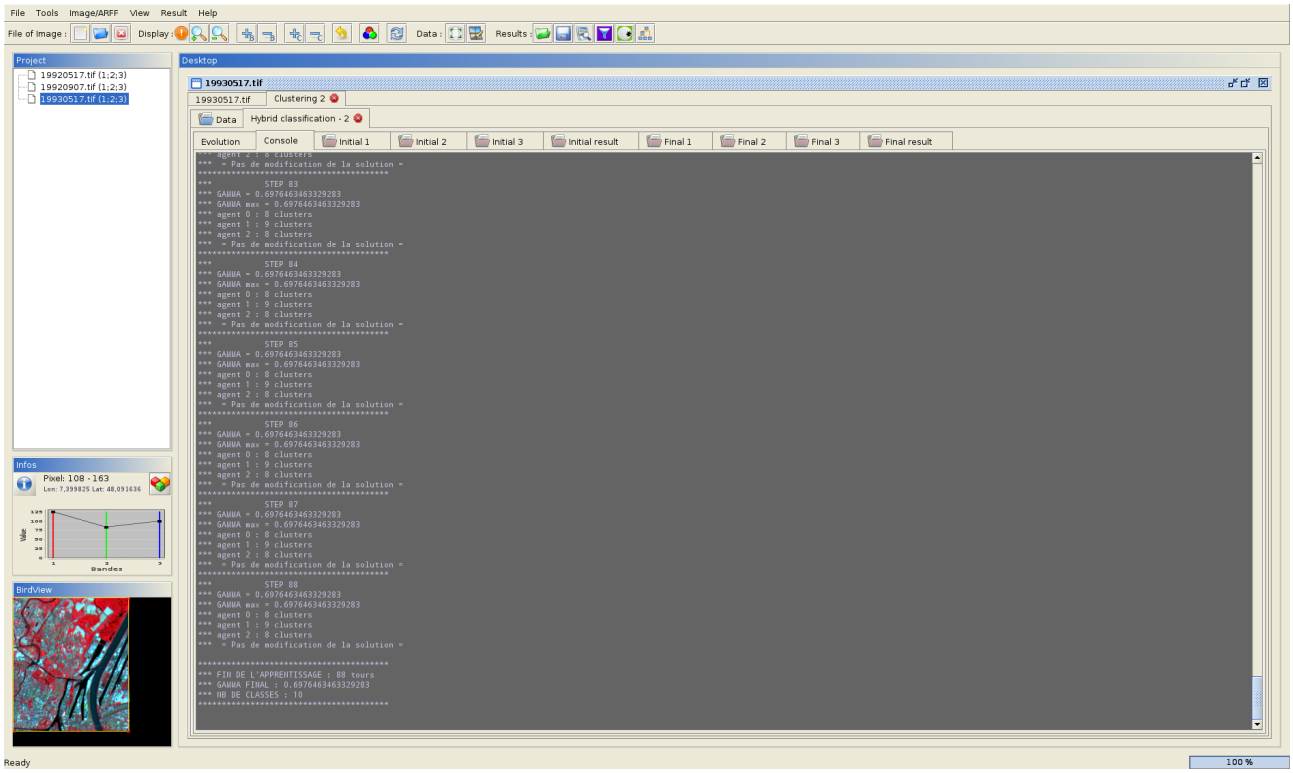
Open the Multistraty menu panel and configure SAMARAH with 3 agents (2 kmeans with 10 classes and a SOM with 9x9 neurones). Lauch it.



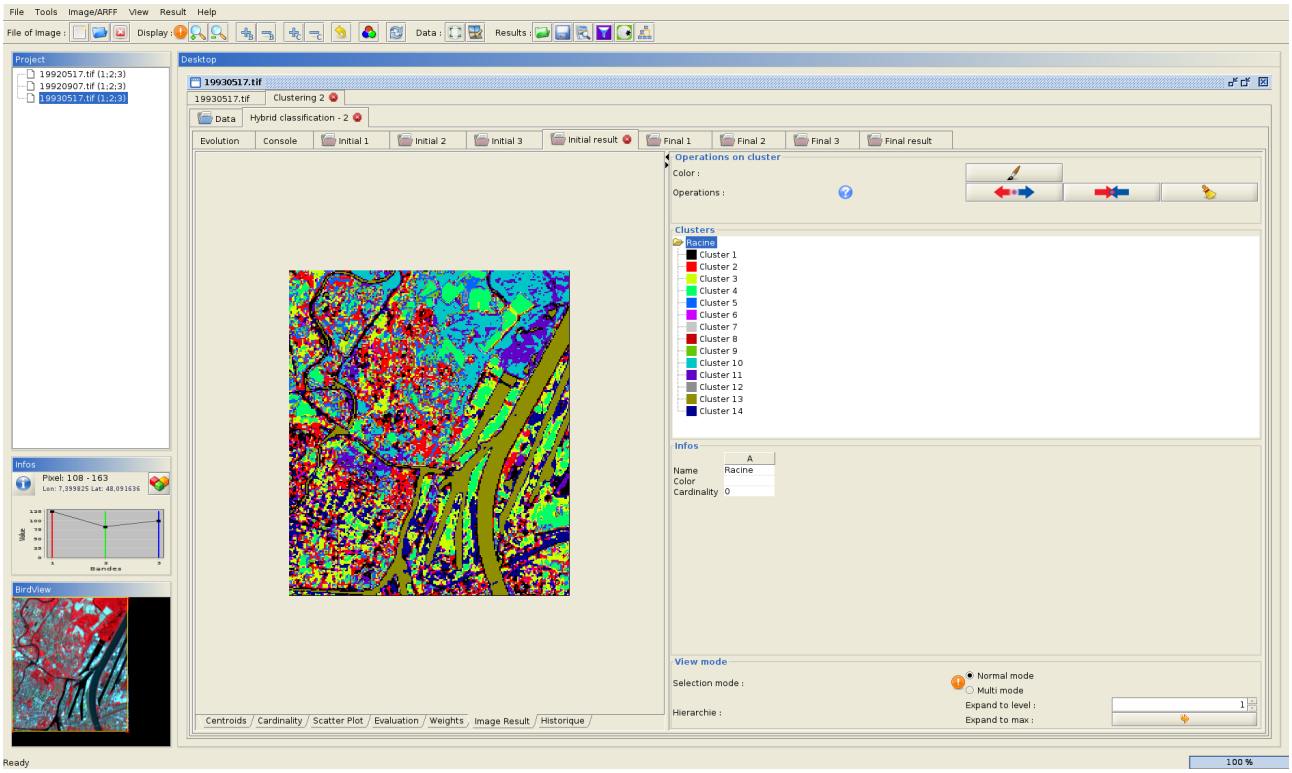
See the evolution of the quality along the time.



How many conflicts have been solved?

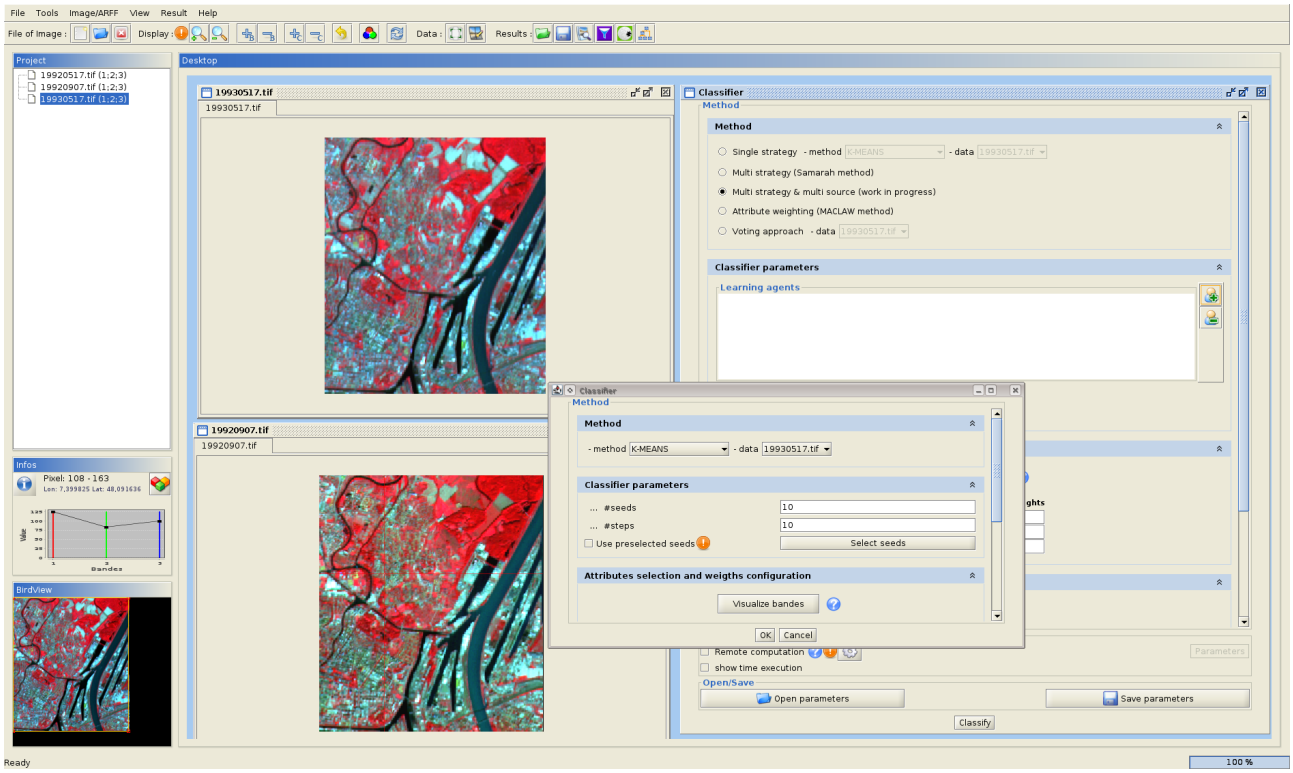


Compare the different results (intermediates and finals)



Redo the same with a number of classes in the final result in [8, 10] and/or a different ratios between Similarity and Quality.

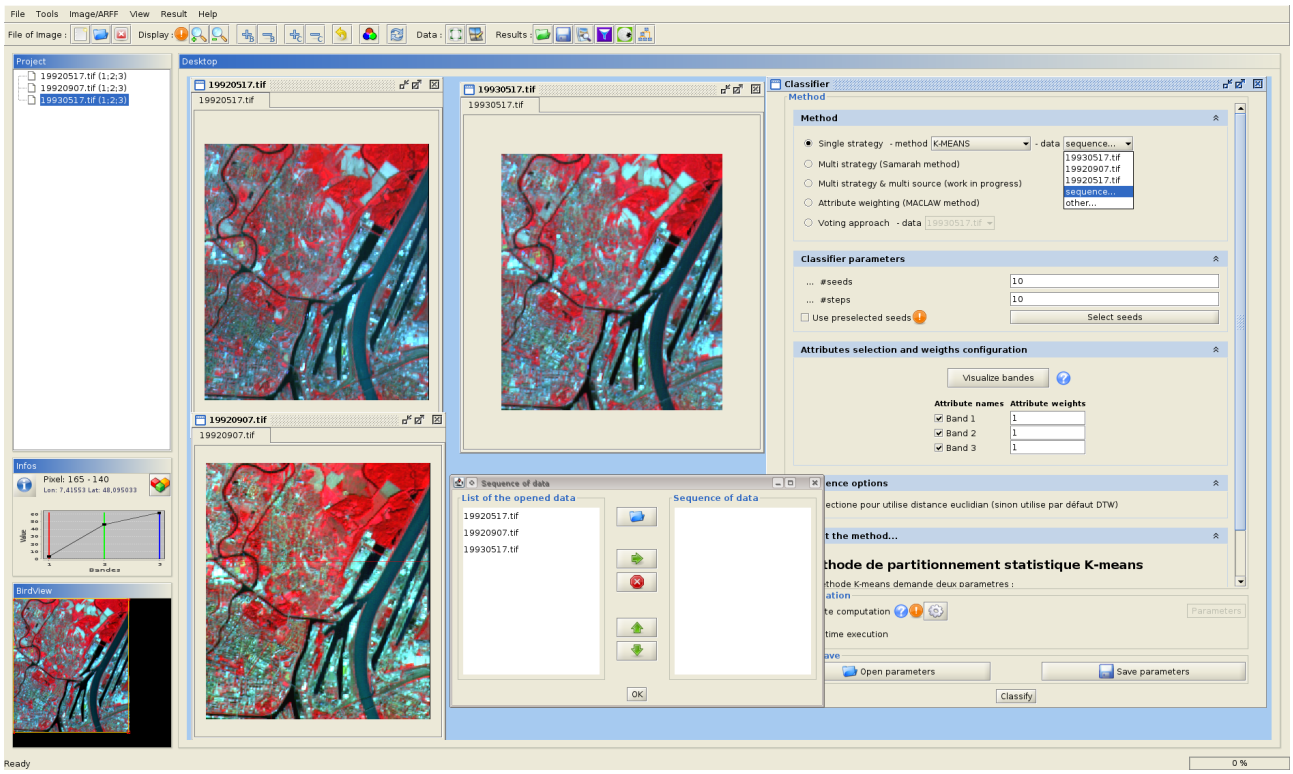
Redo the experiments but each method uses a different image.


File Tools Image/ARFF View Result Help
Project
19920517.tif (1;2;3)
19920907.tif (1;2;3)
19930517.tif (1;2;3)
Desktop
19930517.tif
Classifier
Method
Single strategy - method K-MEANS - data 19930517.tif
Multi strategy (Samarah method)
Multi strategy & multi source (work in progress)
Attribute weighting (MACLAW method)
Voting approach - data 19930517.tif
Classifier parameters
Learning agents
19920907.tif
Infos
Pixel: 108 - 163
Bandes
Birdview
- method K-MEANS - data 19930517.tif
... #seeds 10
... #steps 10
Use preselected seeds
Select seeds
Attributes selection and weigths configuration
Visualize bandes
OK Cancel
Remote computation
show time execution
Open/Save
Open parameters
Save parameters
Classify
Ready
100 %

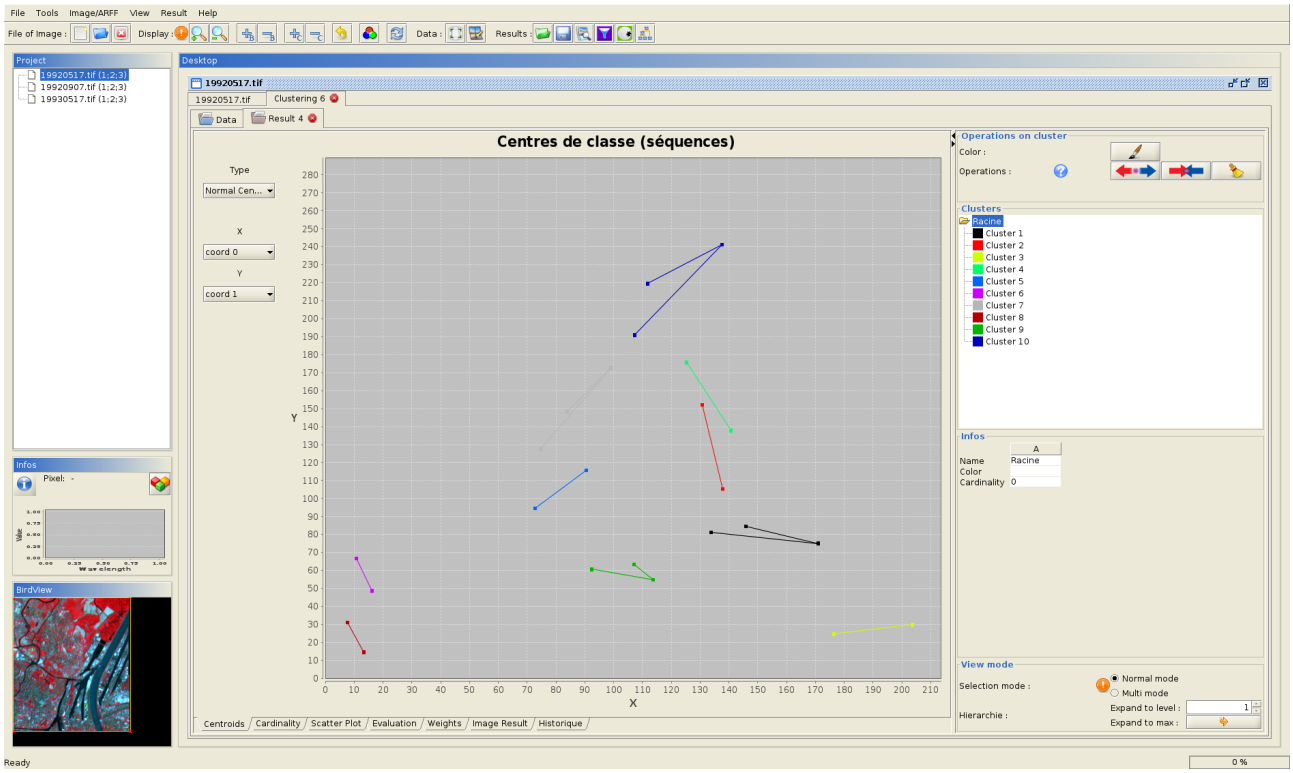
Part 5 – Multitemporal clustering

5.1) Time series clustering

Through the "Clustering" menu panel, clustering sequences of pixels from three images.



Study the behavior of pixels from "Water" class.



5.2) Paysage evolution

Using Mustic, study evolution of the Arcachon area? (--> *Arcachon-NDVI* folder*)*
Where are the urbanization areas? salt meadows? ...

Part 6 – Multiresolution collaborative segmentation/clustering

Not implemented in Mustic yet.
Coming soon (may be ...)