Vector and Raster analysis
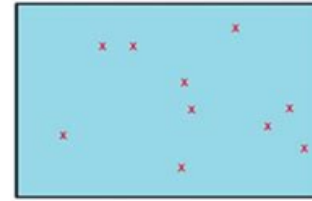
Open the bash terminal and run
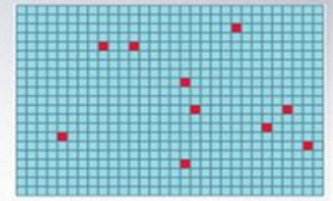
cd $HOME

rm -fr $HOME/SE_data

git clone https://github.com/selvaje/SE_data.git
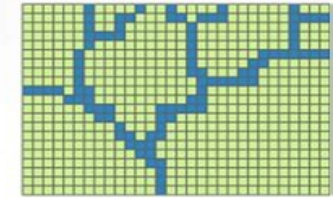

Point features

Raster point features

Line features

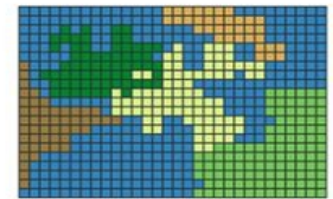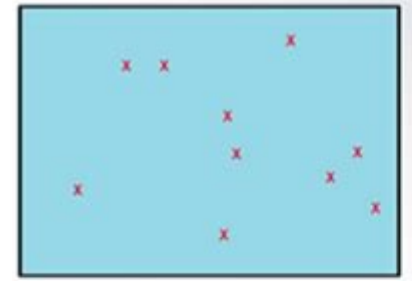Raster line features

Polygon features

Raster polygon features

Vector analysis

Point features

Vector analysis can be performed at
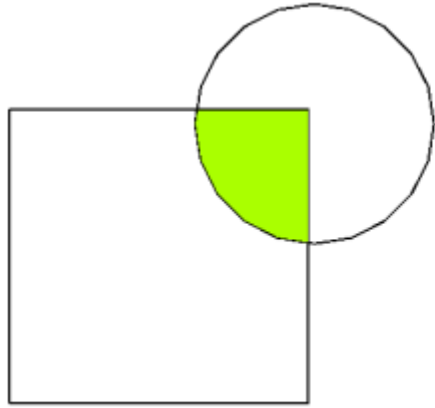
Single Layer
Multiple Layer
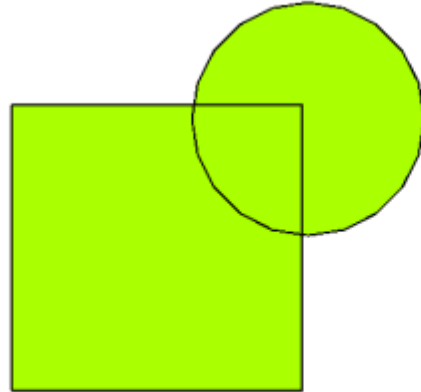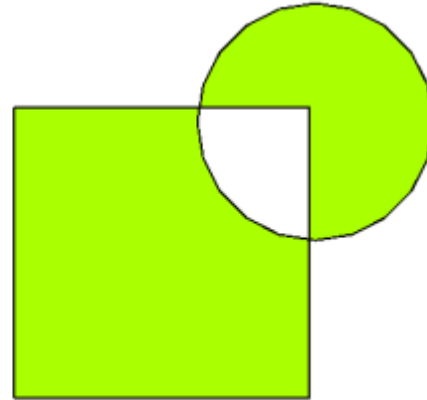

Line features

Polygon features

Polygon overlay

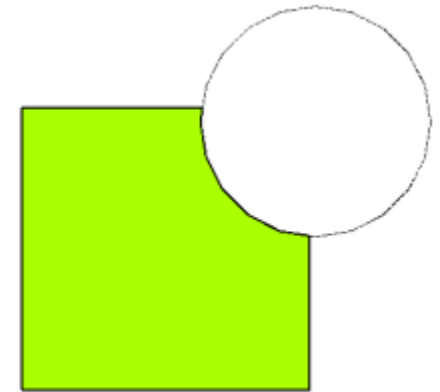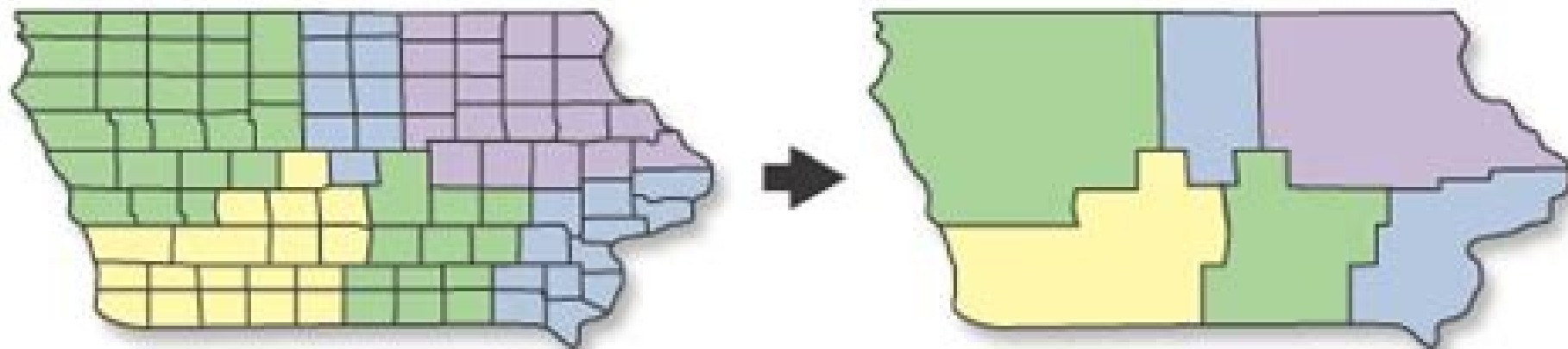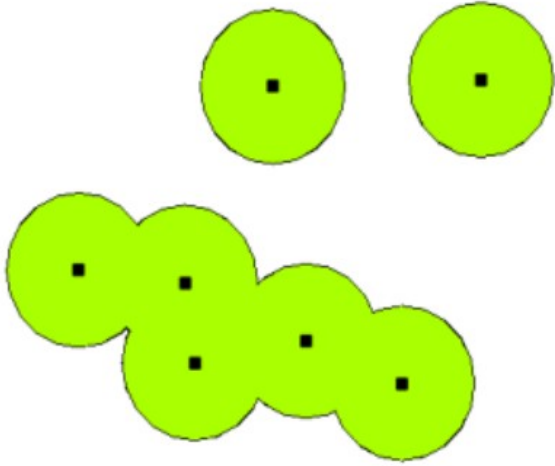Intersection   Union   Symetrical Difference   Difference
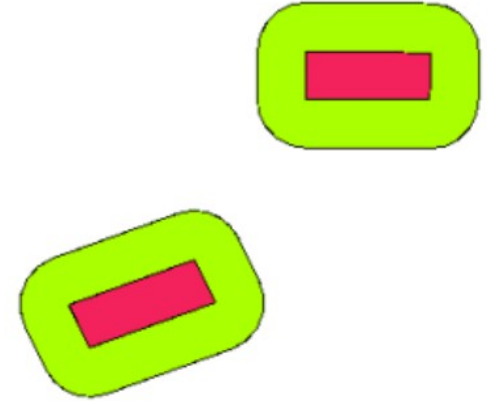
Dissolve

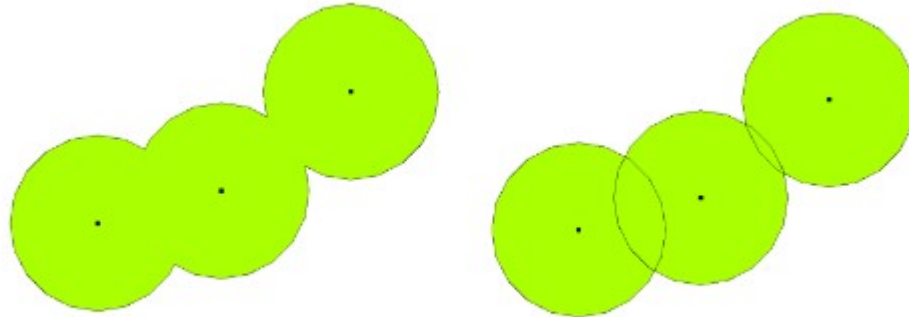
INPUT   OUTPUT

Buffer

A buffer zone around vector points.
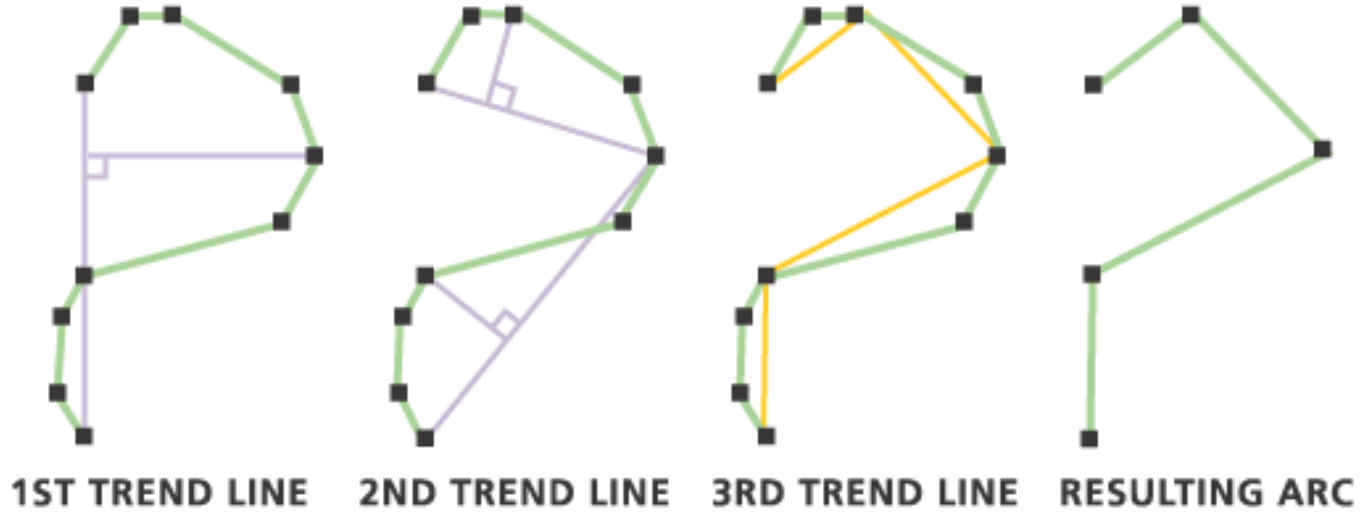
A buffer zone around vector polylines.

A buffer zone around vector polylines.

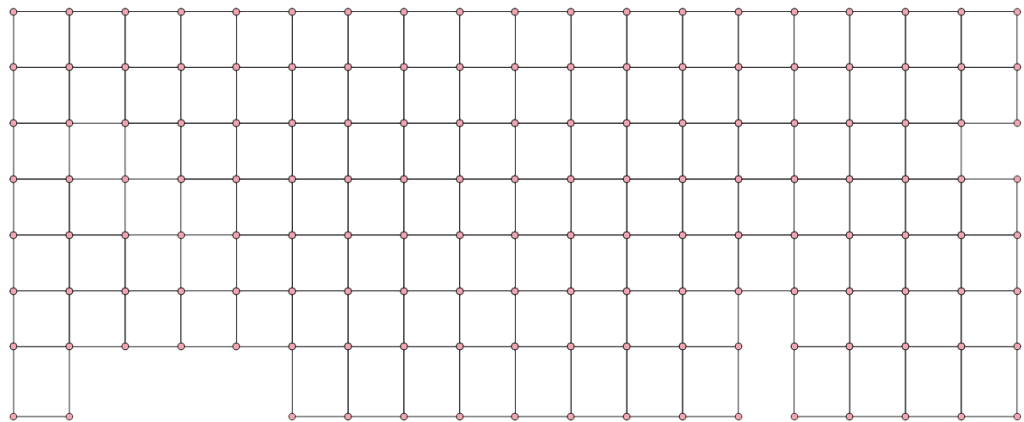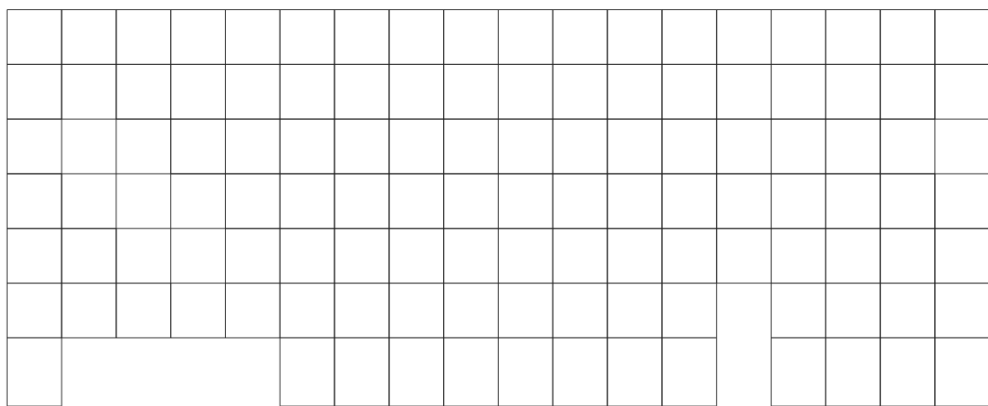Buffer zones with dissolved (left) and with intact boundaries (right) showing overlapping areas.

Simplify

1ST TREND LINE 2ND TREND LINE 3RD TREND LINE RESULTING ARC

SIMPLIFICATION TOLERANCE

Extract vertex

Other vector analysis

- Spatial Index

- Fix Geometry

- Distance Matrix

- List unique values

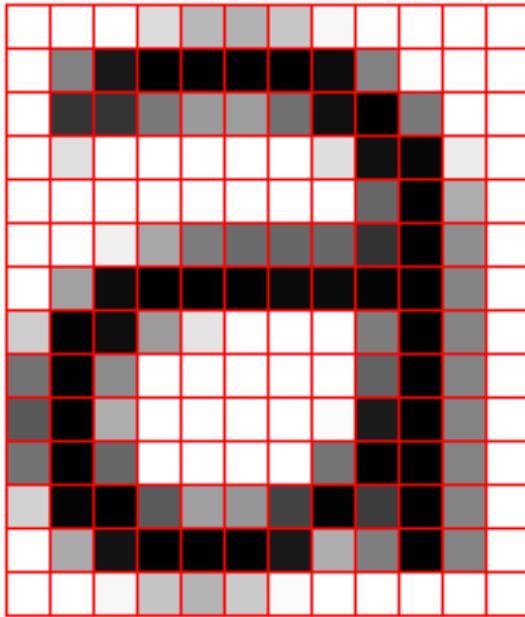- Join attributes by location

- gdal/ogr commands in qgis

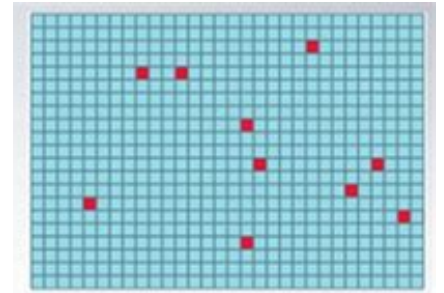https://docs.qgis.org/3.10/en/docs/training_manual/vector_analysis/index.html#
https://courses.spatialthoughts.com/advanced-qgis.html
https://www.qgistutorials.com/en/docs/3/handling_invalid_geometries.html

Raster analysis

a

Raster point features

Raster line features
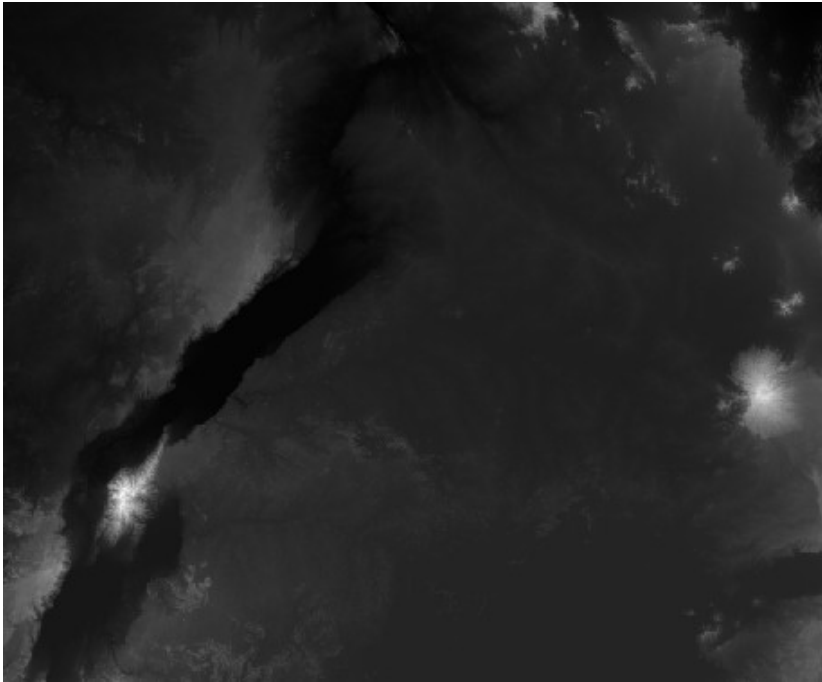
Raster polygon features

Raster Clipping / Cropping

Clipping / Cropping = reduce the coverage of the regional extent

Resampling/Aggregate

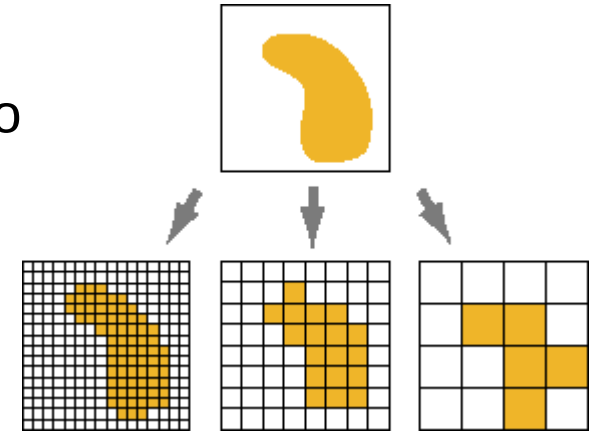Resampling/Aggregate/Disaggregate = change pixel reso

- Continues data
  - Nearest Neighbor
  - Average
  - Median
  - Bilinear Interpolation (weighted average of the 4 surrounding cells)
  - Cubic Convolution Interpolation (weighted average of the 16 surrounding cells)
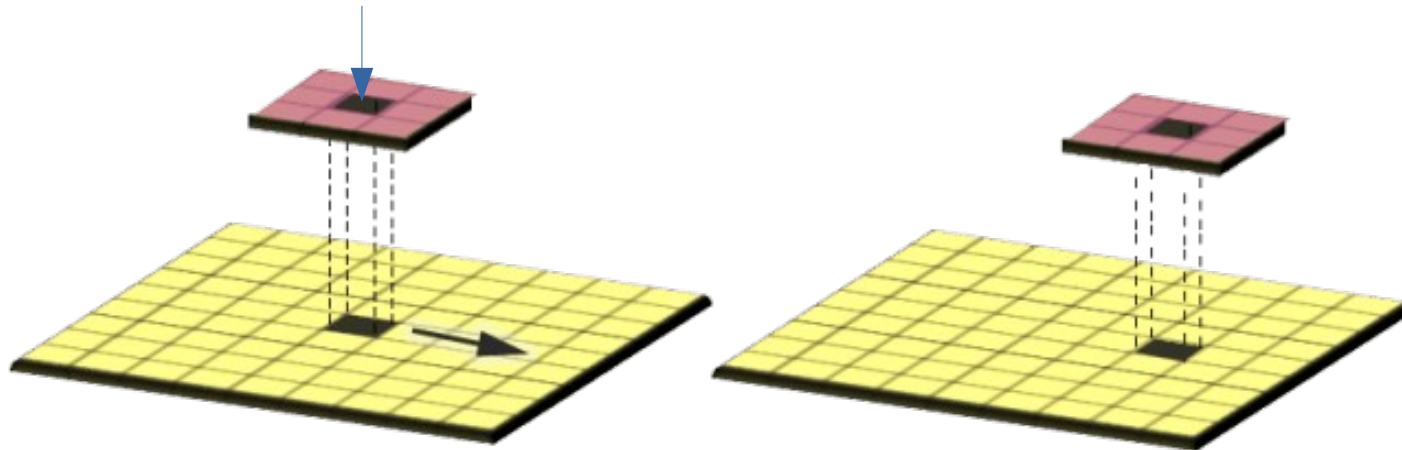- Categorical data
  - Nearest Neighbor
  - Count
  - Majority

Filtering

- Moving window (dimension of the pixel do not change)
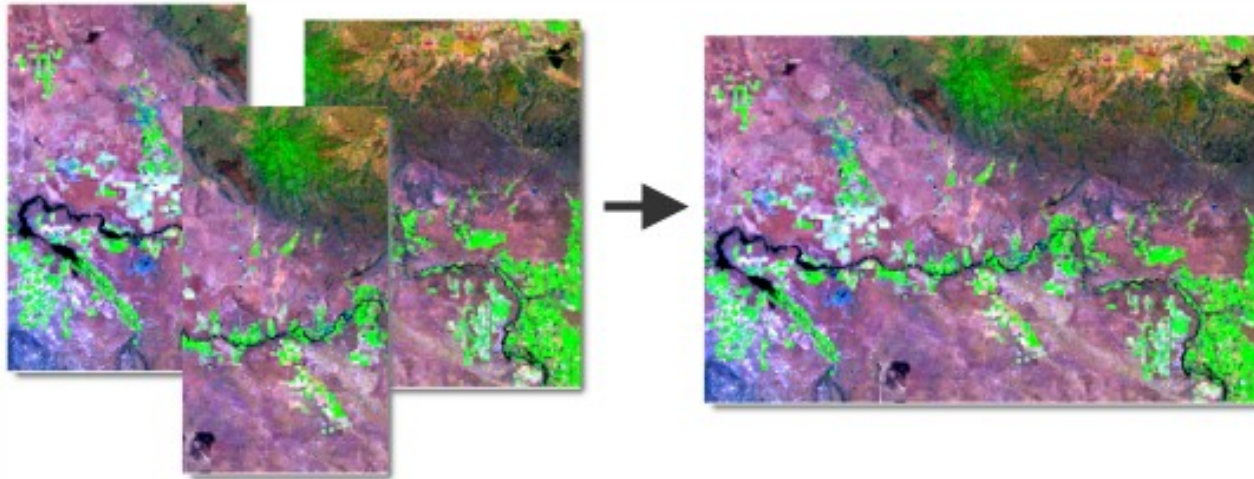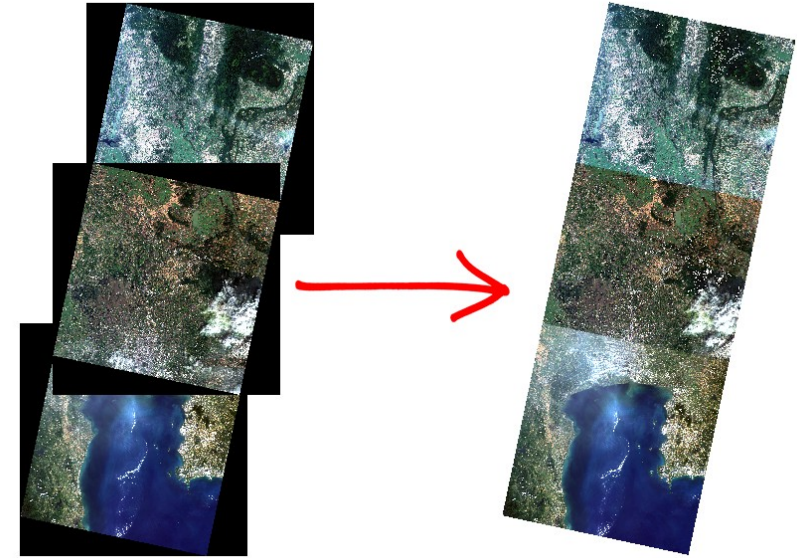 - median, variance, min, max, sum, mean, dilate, erode, close, open, percentile, count, majority

Focal cell (value computed base on the 9 cells within the moving window)

Masking

Mosaicking/Merging

Raster calculator

- Mathematical operation at raster level → operation among matrix

- Better if the raster have same extent and pixel resolution