This document contains the following things.

1. Results when SEVIRI images rather than google earth engine images are used to find the existence of clouds over a particular rain gauge station.

1. Image intensity of a cropped region over a particular period.

1. Intensity distribution of colors in cropped regions.

The following images show the the intensity of the cropped region.

Area 0.1 = 22 kilometer square with center at rain gauge.

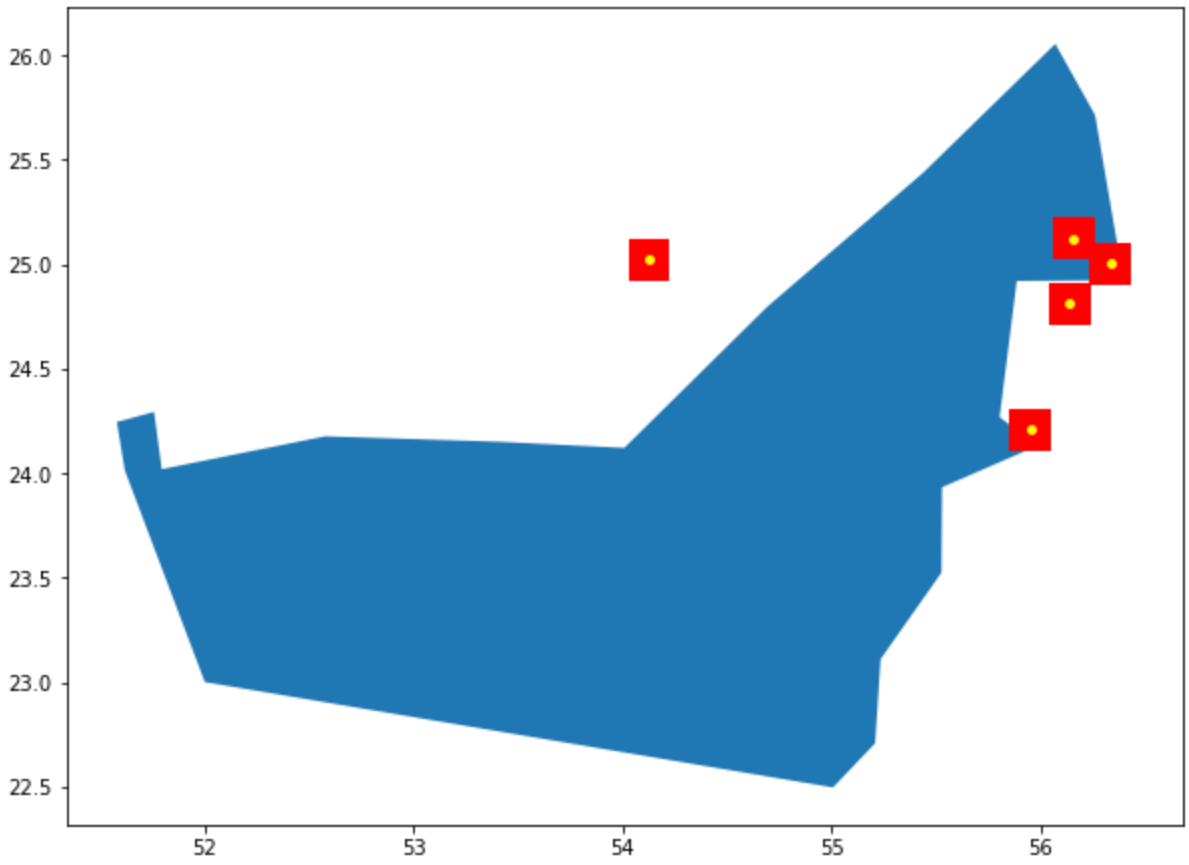
Area 0.3 = 67 kilometer

Area 0.5 = 111 kilometer

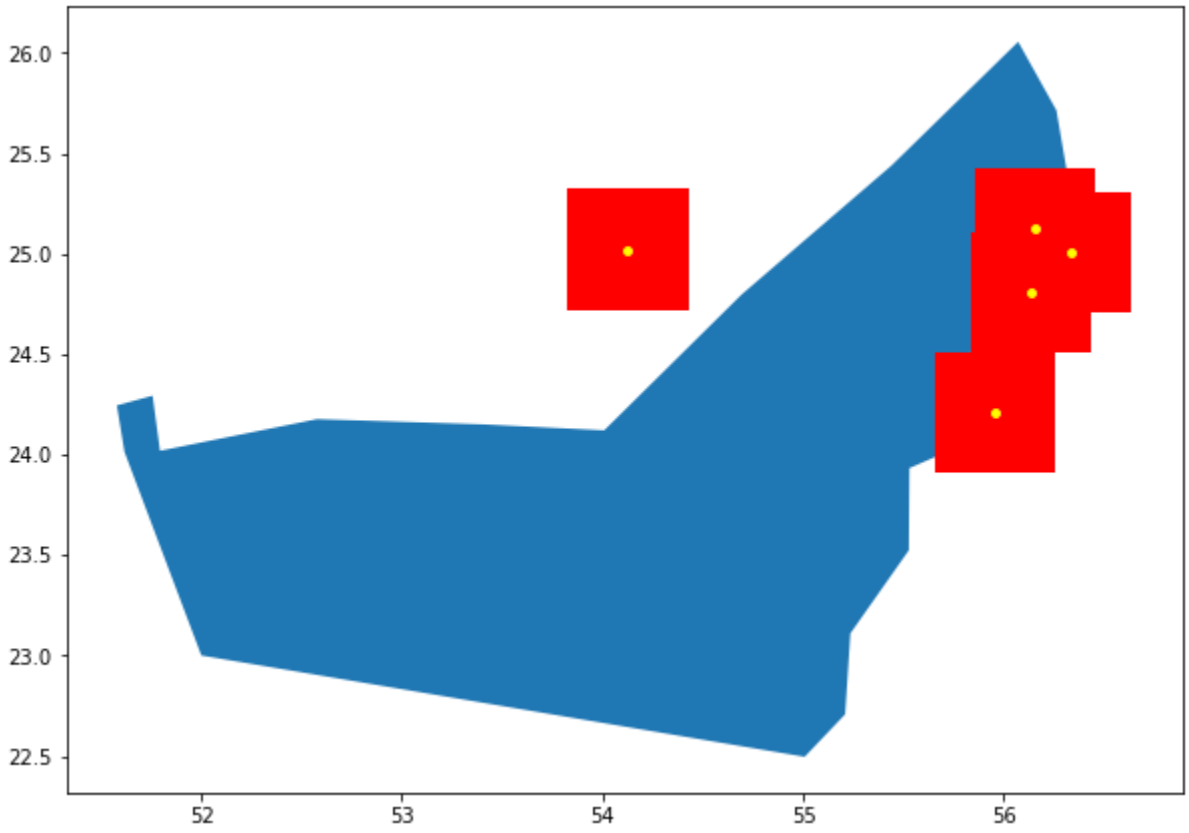
Area 1.0 = 222 kilometer

The yellow dot shows the position of the rain gauge.

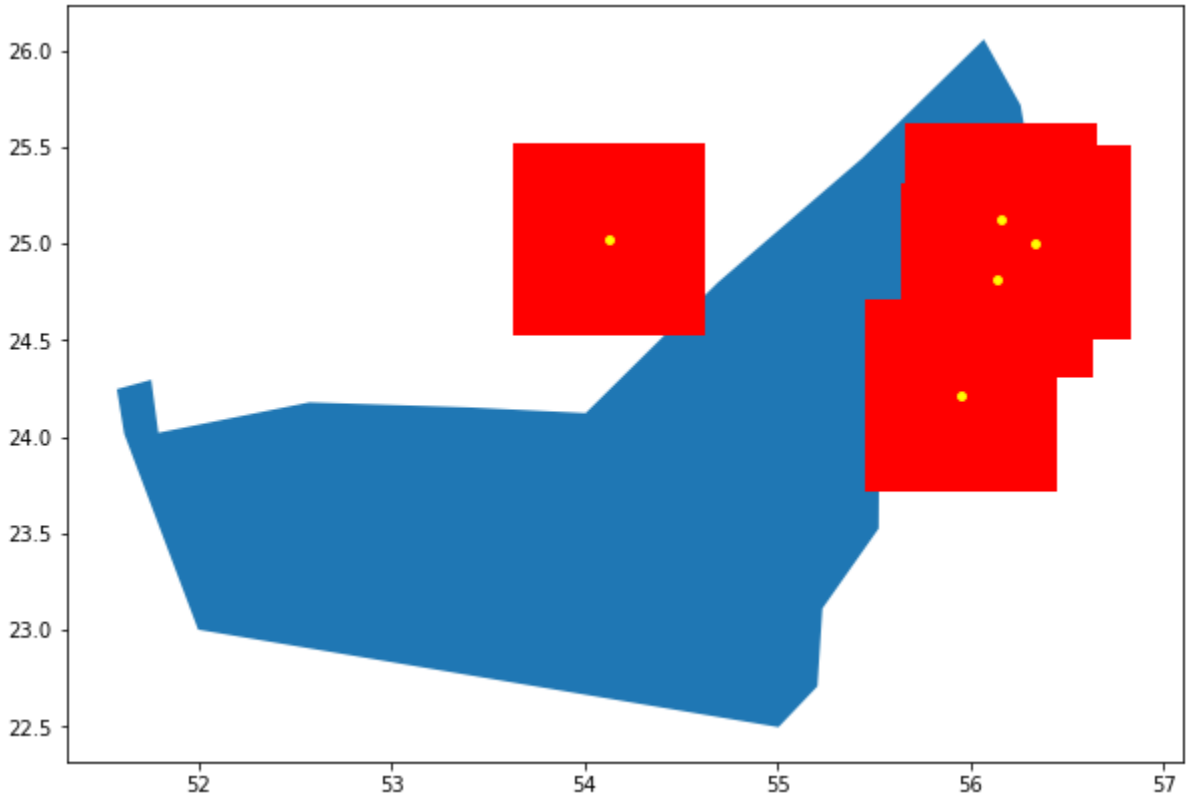
Area = 0.1



Area = 0.3



Area = 0.5



Area = 1.0

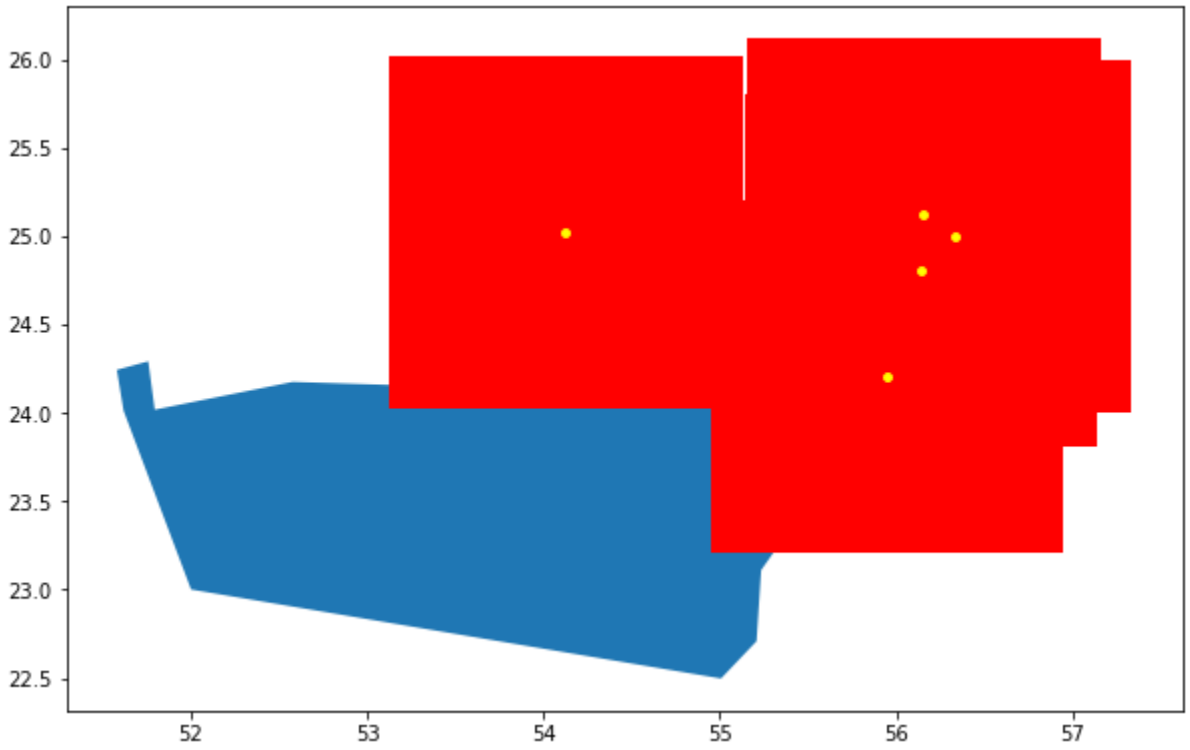
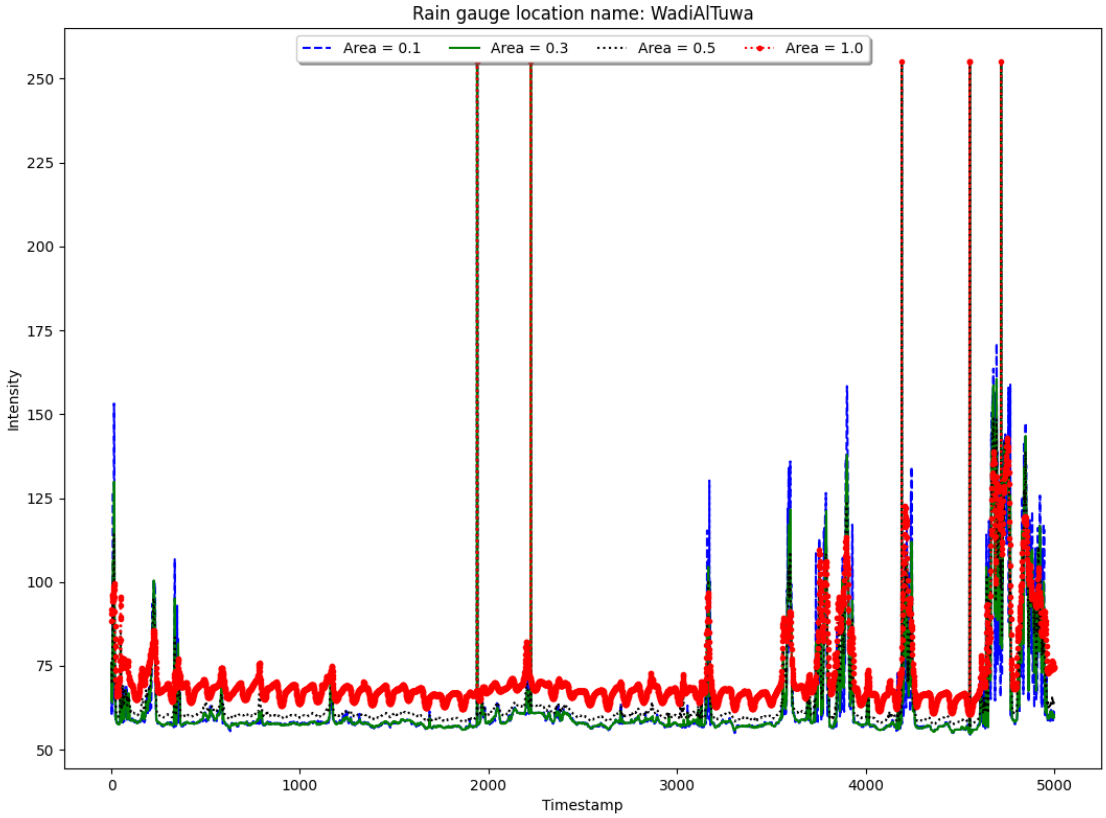
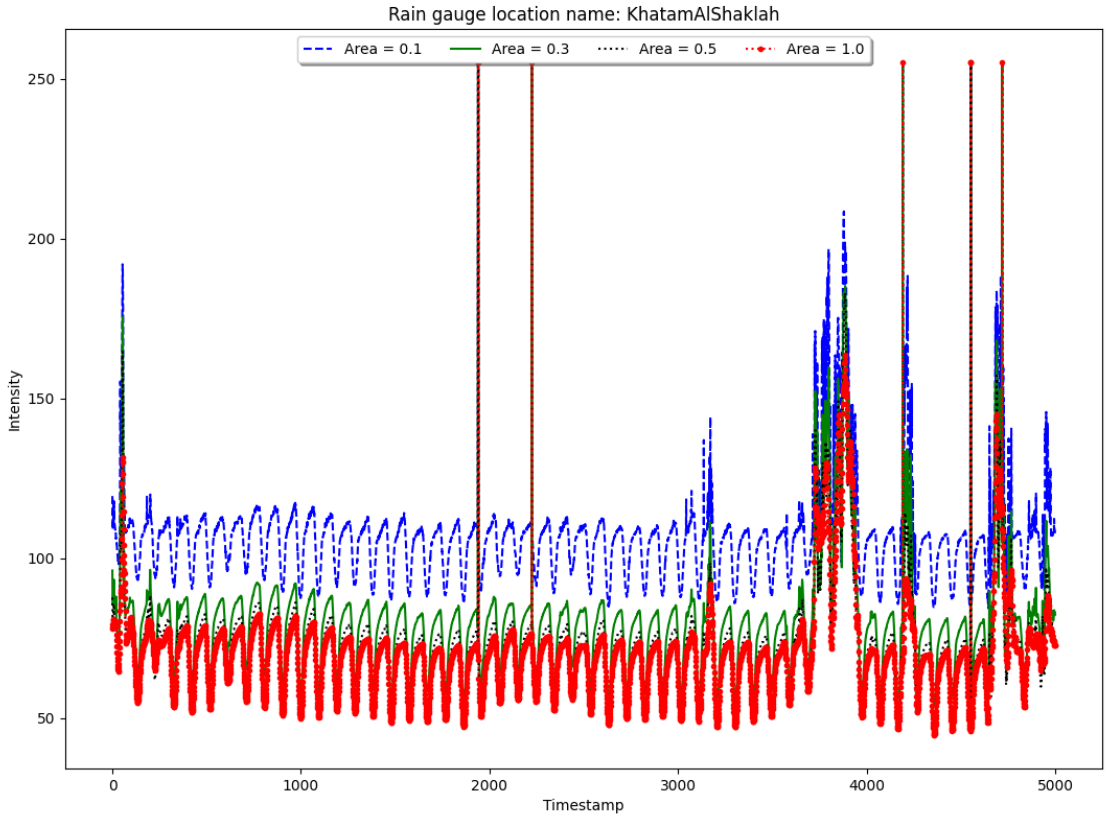
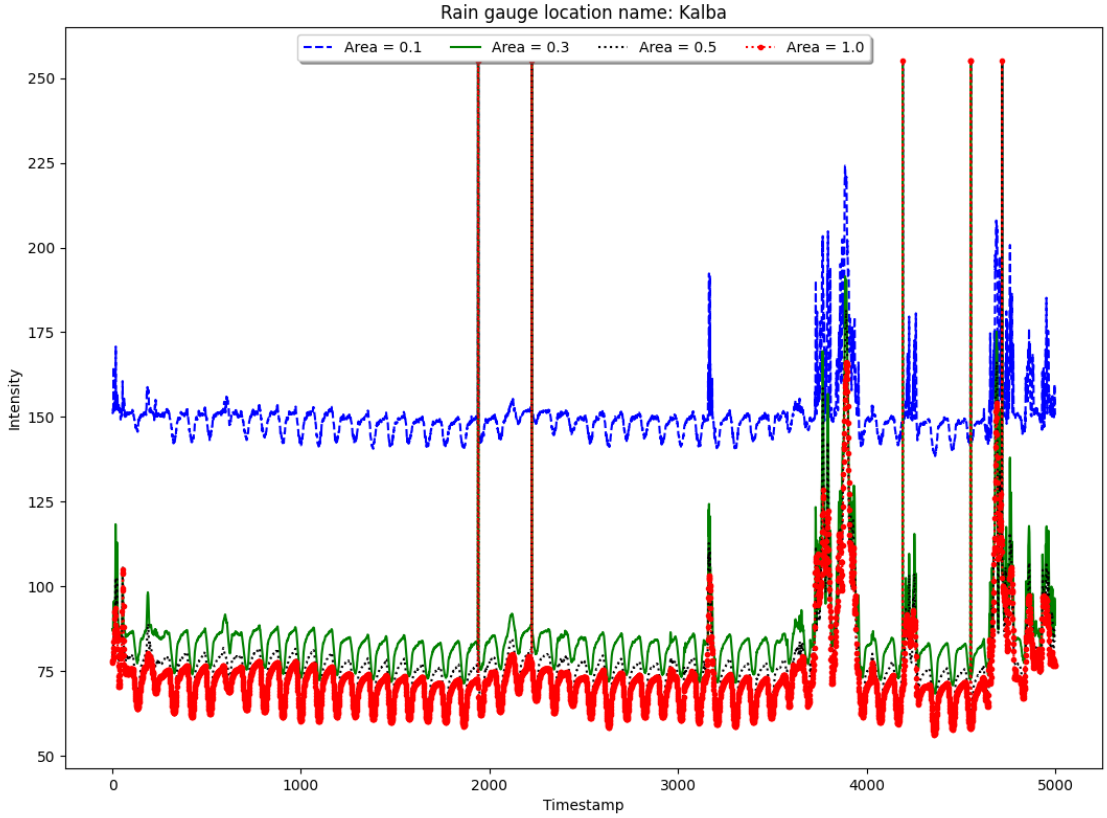
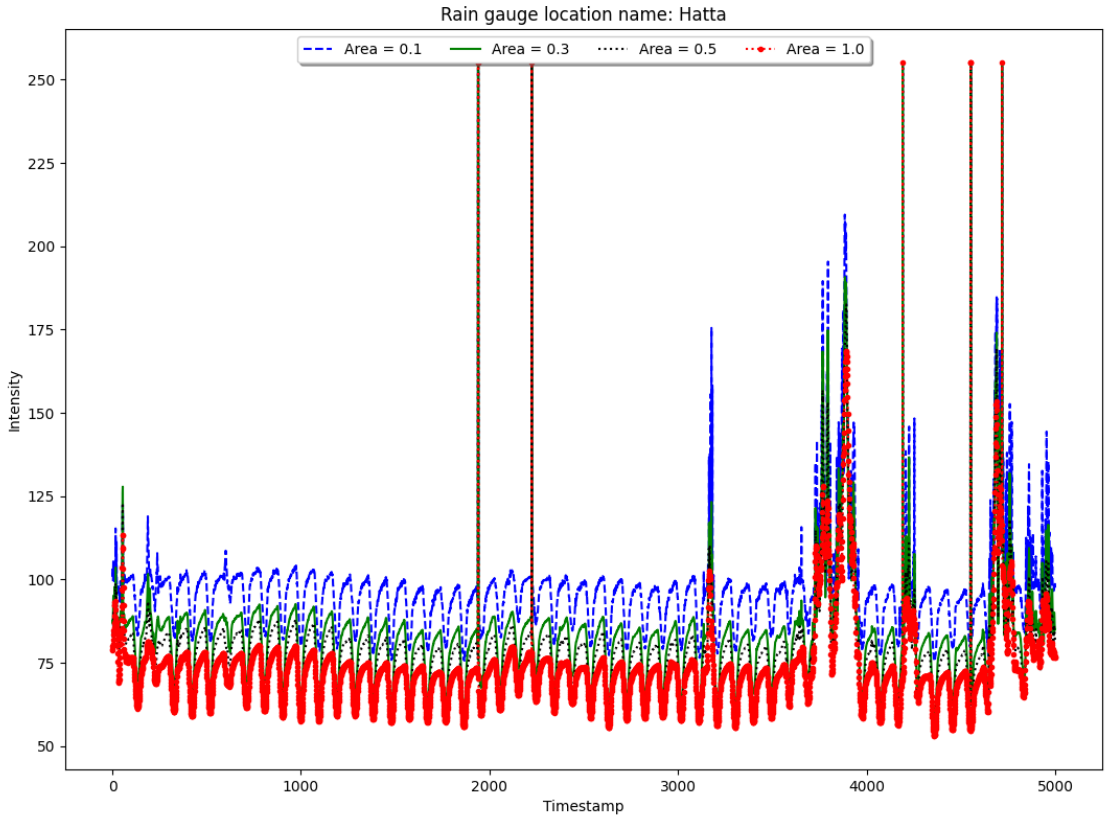


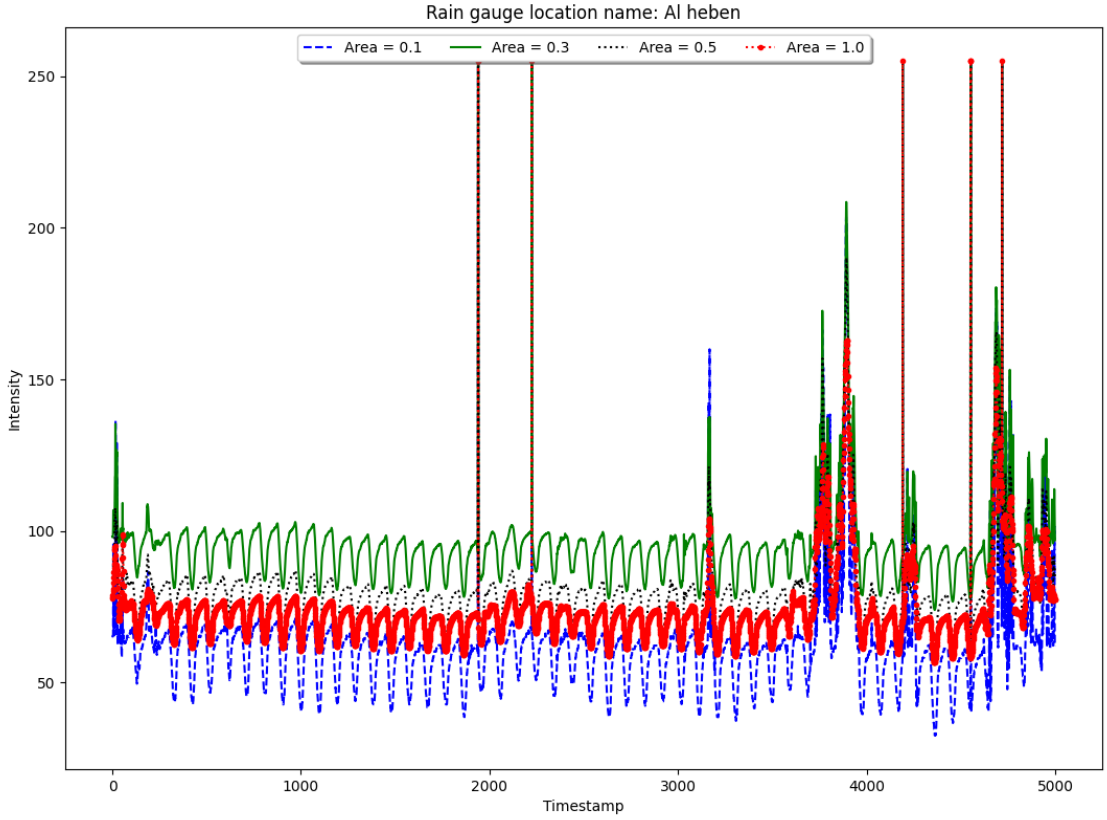
Image intensity of a cropped region over a particular period.



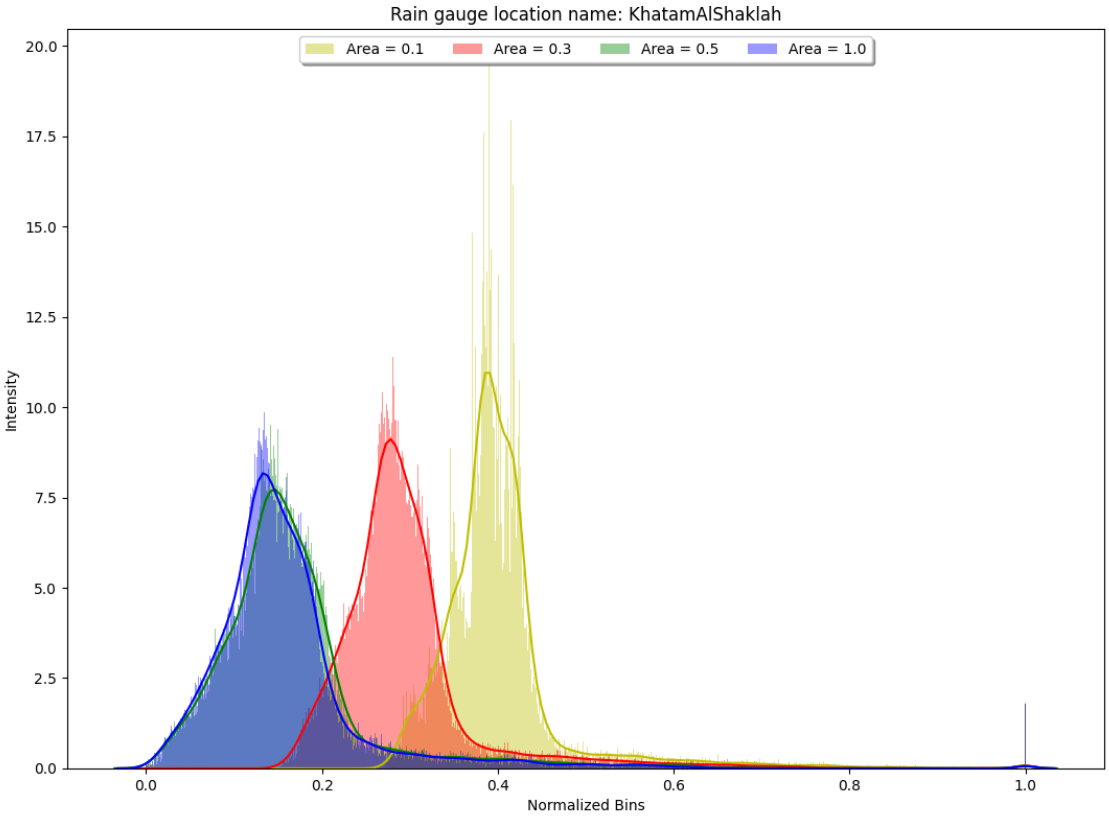

Rain gauge location name: KhatamAlShaklah
Area = 0.1
Area = 0.3
Area = 0.5
Area = 1.0
Intensity
Timestamp
250
200
150
100
50
0
1000
2000
3000
4000
5000

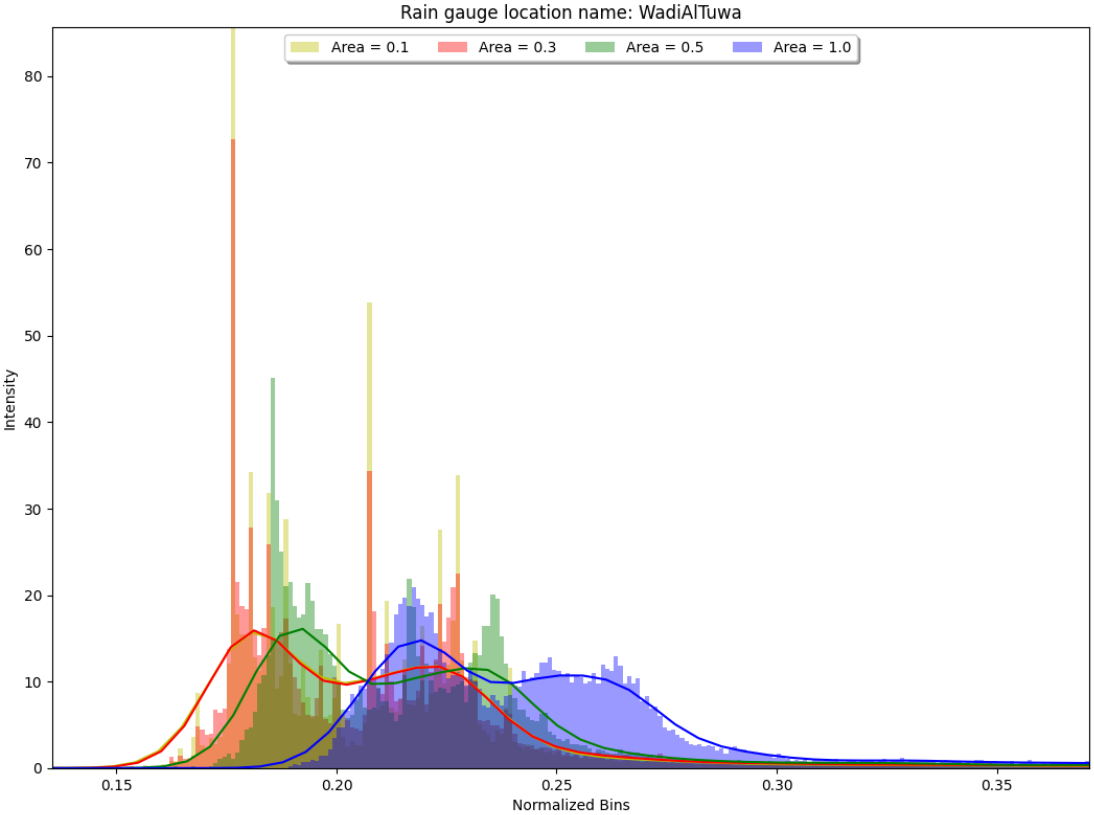

Rain gauge location name: Kalba
Area = 0.1
Area = 0.3
Area = 0.5
Area = 1.0
Intensity
Timestamp
250
225
200
175
150
125
100
75
50
0
1000
2000
3000
4000
5000

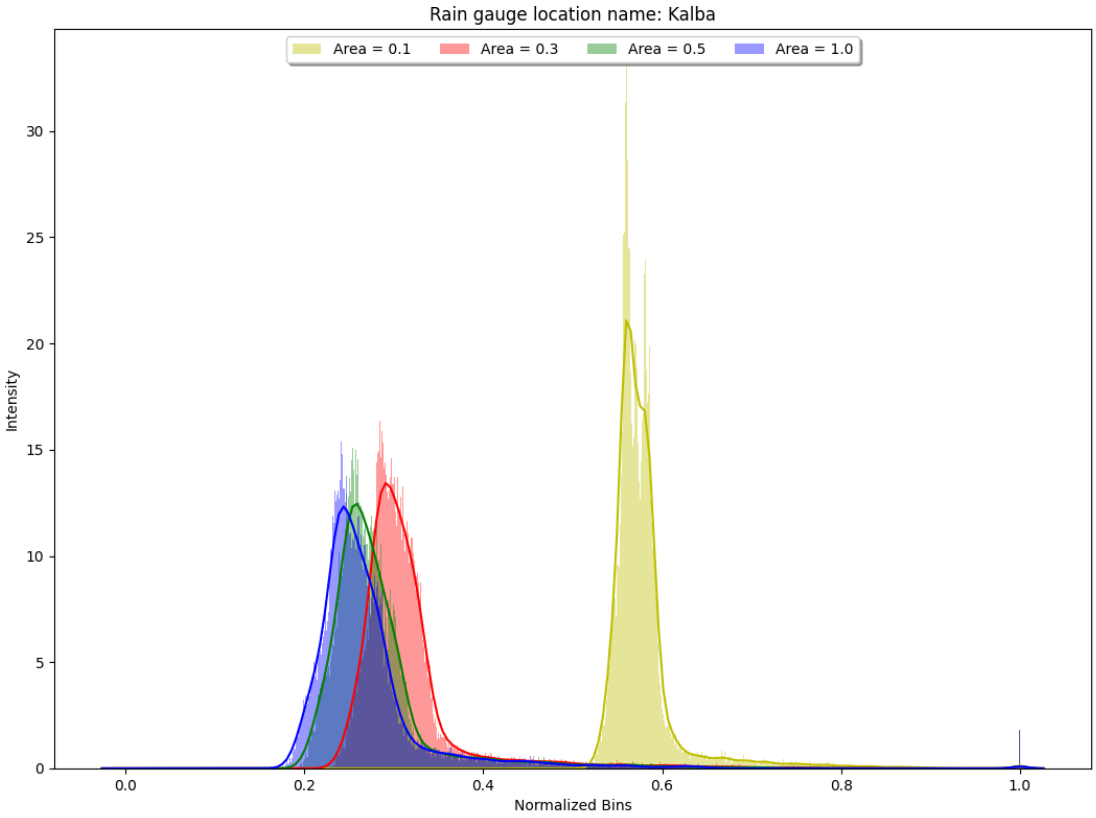


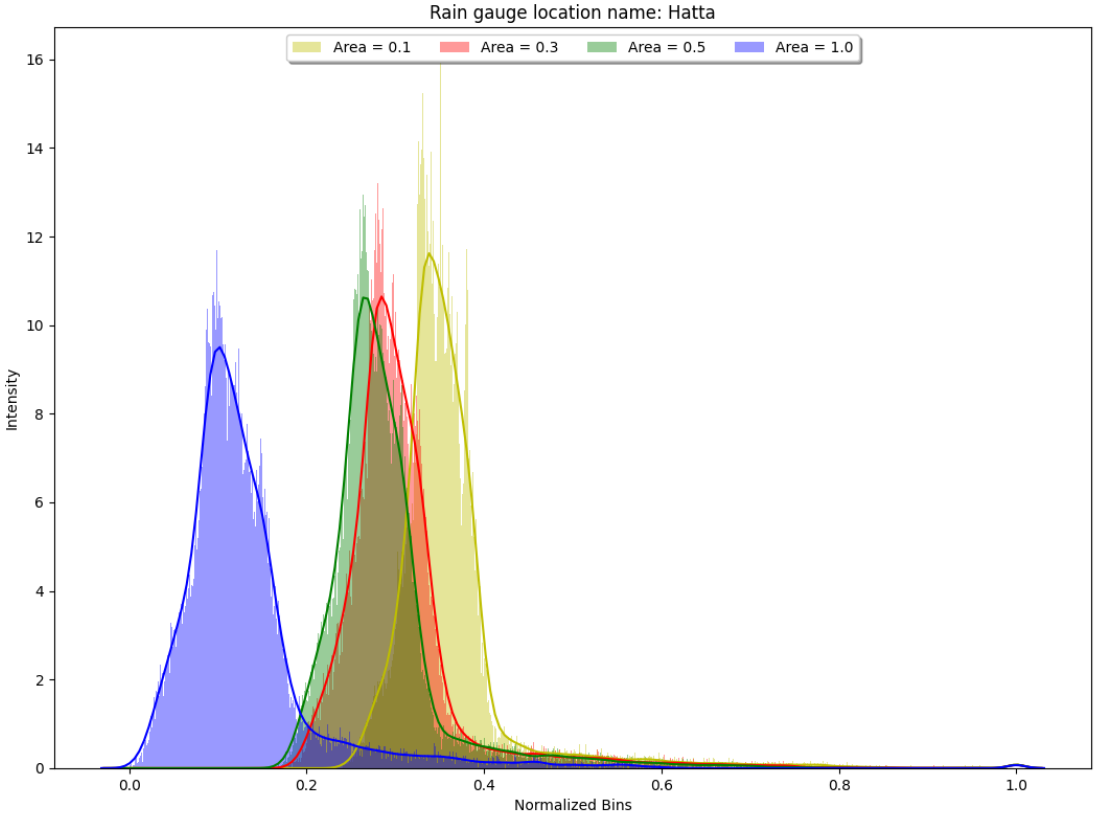


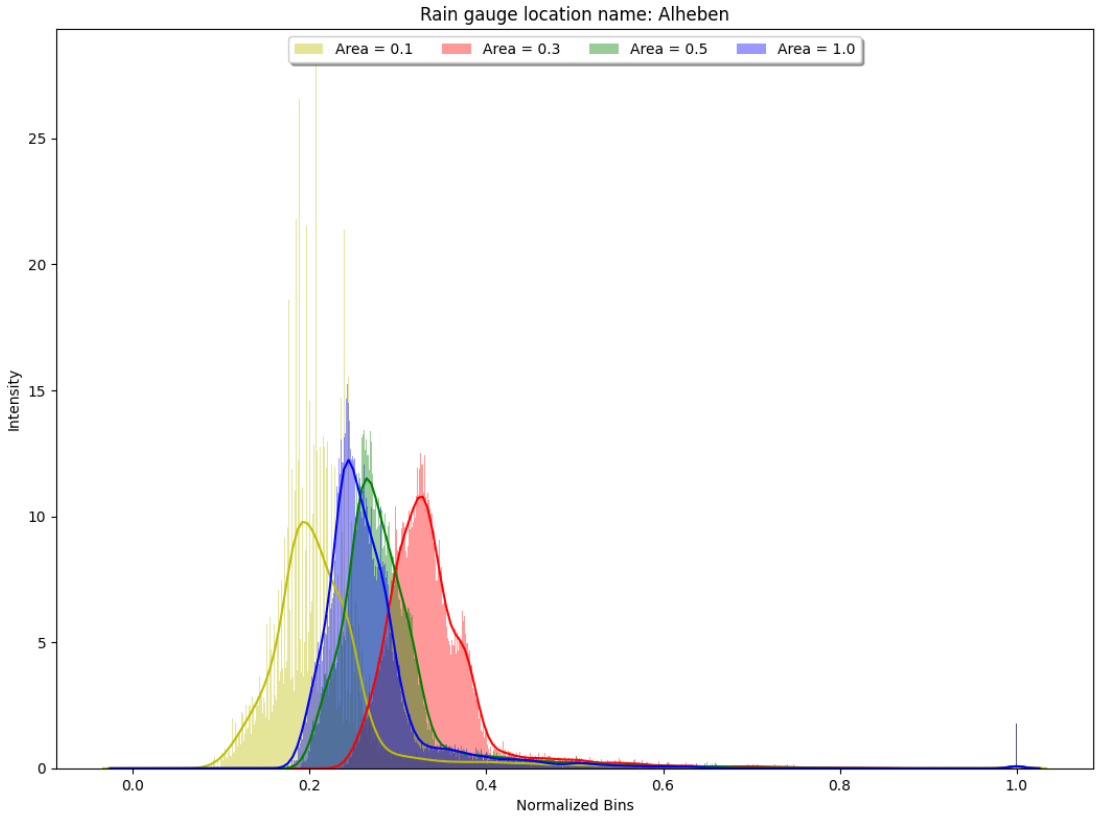
Intensity distribution of colors in cropped regions.


Rain gauge location name: KhatamAlShaklah
Area = 0.1
Area = 0.3
Area = 0.5
Area = 1.0
Intensity
Normalized Bins
0.0
2.5
5.0
7.5
10.0
12.5
15.0
17.5
20.0
0.0
0.2
0.4
0.6
0.8
1.0


Rain gauge location name: WadiAlTuwa
Area = 0.1
Area = 0.3
Area = 0.5
Area = 1.0
Intensity
Normalized Bins
0
10
20
30
40
50
60
70
80
0.15
0.20
0.25
0.30
0.35


Rain gauge location name: Kalba
Area = 0.1
Area = 0.3
Area = 0.5
Area = 1.0
Intensity
Normalized Bins
0
5
10
15
20
25
30
0.0
0.2
0.4
0.6
0.8
1.0


Rain gauge location name: Hatta
Area = 0.1
Area = 0.3
Area = 0.5
Area = 1.0
Intensity
Normalized Bins
0
2
4
6
8
10
12
14
16
0.0
0.2
0.4
0.6
0.8
1.0



Results for: Khatam Al Shaklah X: NaiveBayes0.0.csv Accuracy: 71.6 Cloud Threshold 0

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Results for: Khatam Al Shaklah X: NaiveBayes0.0.csv Accuracy: 71.6 Cloud Threshold 0

Results for: Khatam Al Shaklah X: NaiveBayes0.0.csv Accuracy: 71.6 Cloud Threshold 0

Results for: Kalba X: LinearSVM0.0.csv Accuracy: 79.2 Cloud Threshold 0

Results for: Kalba X: LinearSVM0.0.csv Accuracy: 79.2 Cloud Threshold 0

Results for: Kalba X: LinearSVM0.0.csv Accuracy: 79.2 Cloud Threshold 0

Results for: Kalba X: LinearSVM0.0.csv Accuracy: 79.2 Cloud Threshold 0

Results for: Wadi Al Tuwa X: LinearSVM0.0.csv Accuracy: 71.0 Cloud Threshold 0

Results for: Wadi Al Tuwa X: LinearSVM0.0.csv Accuracy: 71.0 Cloud Threshold 0

Results for: Wadi Al Tuwa X: LinearSVM0.0.csv Accuracy: 71.0 Cloud Threshold 0

Results for: Wadi Al Tuwa X: LinearSVM0.0.csv Accuracy: 71.0 Cloud Threshold 0

Results for: Hatta X: NaiveBayes0.0.csv Accuracy: 64.2 Cloud Threshold 0

Results for: Hatta X: LinearSVM0.0.csv Accuracy: 87.6 Cloud Threshold 0

Results for: Hatta X: LinearSVM0.0.csv Accuracy: 87.6 Cloud Threshold 0

Results for: Hatta X: LinearSVM0.0.csv Accuracy: 87.6 Cloud Threshold 0

Results for: Al Heben X: NaiveBayes0.0.csv Accuracy: 67.6 Cloud Threshold 0

Results for: Al Heben X: LinearSVM0.0.csv Accuracy: 71.6 Cloud Threshold 0

Results for: Al Heben X: LinearSVM0.0.csv Accuracy: 71.6 Cloud Threshold 0

Results for: Al Heben X: LinearSVM0.0.csv Accuracy: 71.6 Cloud Threshold 0

Detailed results at this link.

https://github.com/MuhammadMuneeb007/Approach-2---Rain-prediction-using-climate-data-and-cloud-presence-information-from-SERVIR-images

area0.1 contains the results for all stations when the cropped region is 22-kilometer square.

area0.3 contains the results for all stations when the cropped region is 67-kilometer square.

area0.5 contains the results for all stations when the cropped region is 111-kilometer square.

area1.0 contains the results for all stations when the cropped region is 222-kilometer square.

Each file has the following format.

Threshold: Cloud threshold (ranges from 0 to 100 with an interval of 5).

TrainAUC: Training Area under the ROC Curve (With 4-fold stratified cross-validation).

TestAUC: Test Area under the ROC Curve (With 5-fold stratified cross-validation).

Test CM: Test confusion matrix (Average of 5-folds). If the confusion matrix for the particular row is missing, then it means after the cloud threshold, there is only one category left.

Train CM: Training confusion matrix (Average of 5-folds). If the confusion matrix for the particular row is missing, then it means there is only one category left after the cloud threshold.

NoRain_NoCloud: Number of samples for no rain and no cloud for a particular cloud threshold.

NoRain_Cloud: Number of samples for no rain and cloud for a particular cloud threshold.

Rain_NoCloud: Number of samples for rain and no cloud for a particular cloud threshold.

Rain_Cloud: Number of samples for rain and cloud for a particular cloud threshold.

S0train: Number of instances of class NoRain_Cloud in training data.

S1train: Number of instances of class Rain_Cloud in test data.

S0test: Number of instances of class NoRain_Cloud in test data.

S1test: Number of instances of class Rain_Cloud in test data.

In [ ]:

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