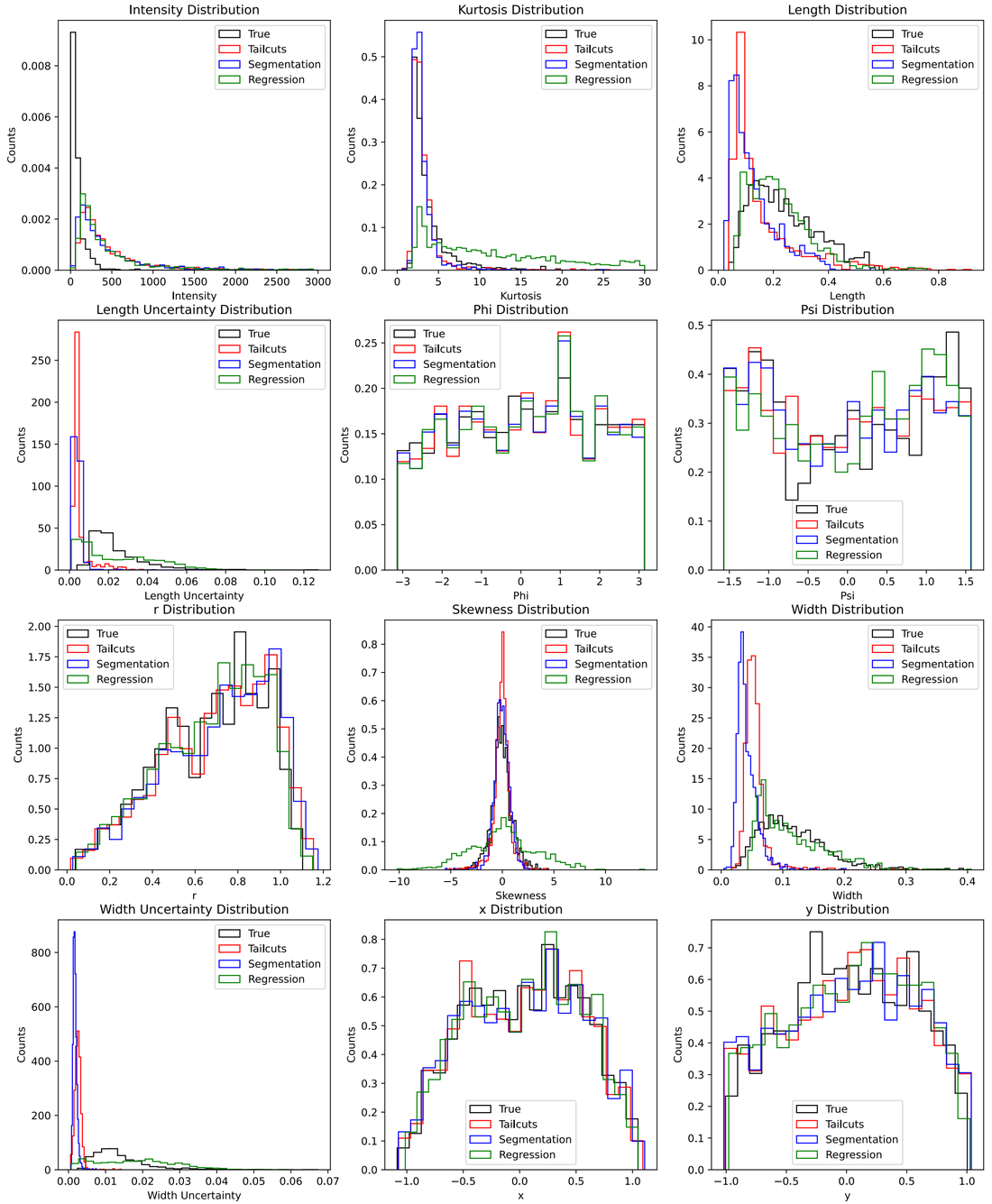
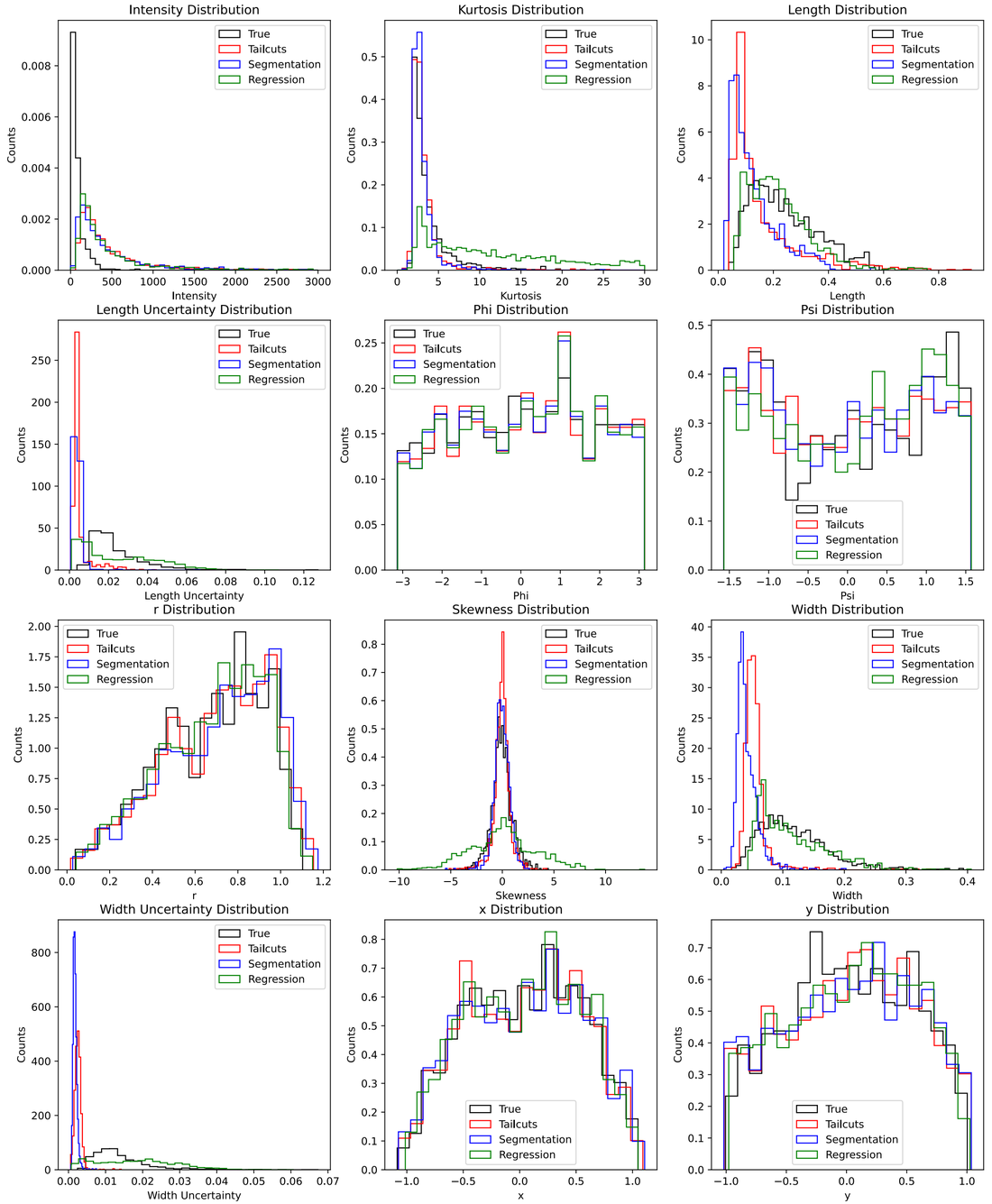
However, 3 errors:

1. Not rounded to integers
2. True parameters calculated as binary mask
3. Rounding errors for images with large intensity

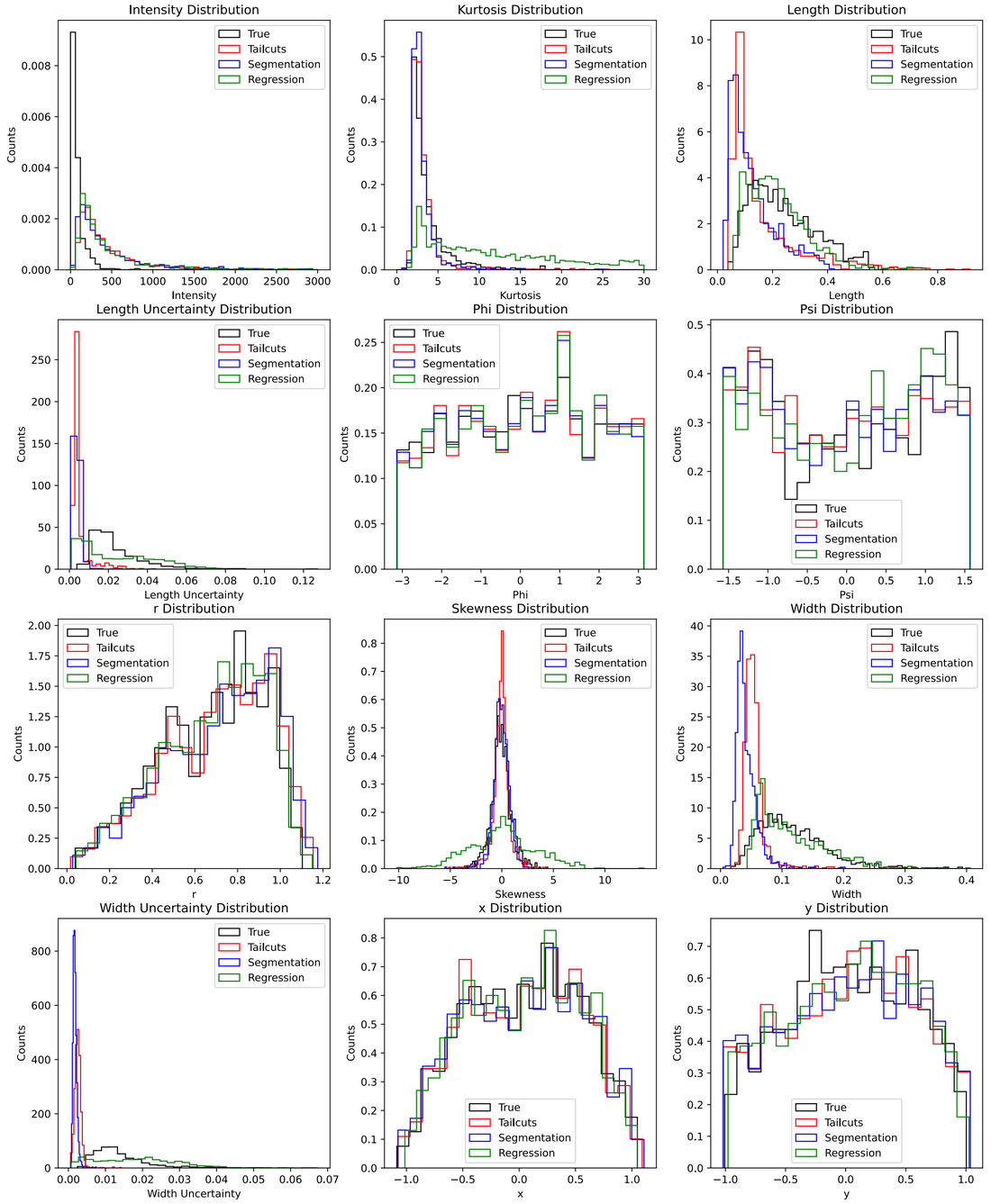



Intensity Distribution
Kurtosis Distribution
Length Distribution
Length Uncertainty Distribution
Phi Distribution
Psi Distribution
r Distribution
Skewness Distribution
Width Distribution
Width Uncertainty Distribution
x Distribution
y Distribution
True
Tailcuts
Segmentation
Regression
Counts
Intensity
Kurtosis
Length
Length Uncertainty
Phi
Psi
r
Skewness
Width
Width Uncertainty
x
y

1. Not rounded to integers

This effect smooths out the distribution more, leading for example to a higher kurtosis.

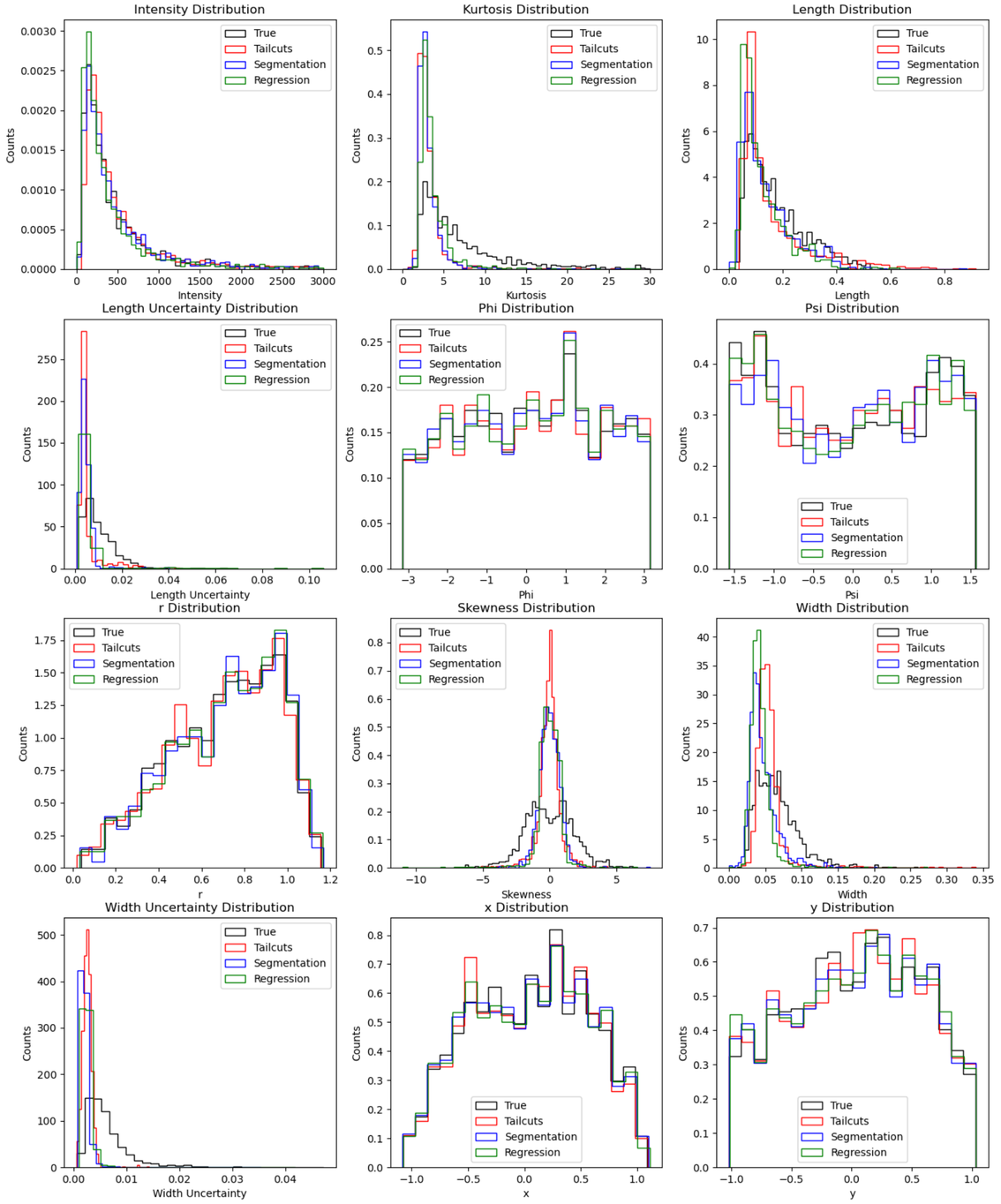
Also length and width are getting estimated higher, as the values go on further out.



2. True parameters from binary mask images

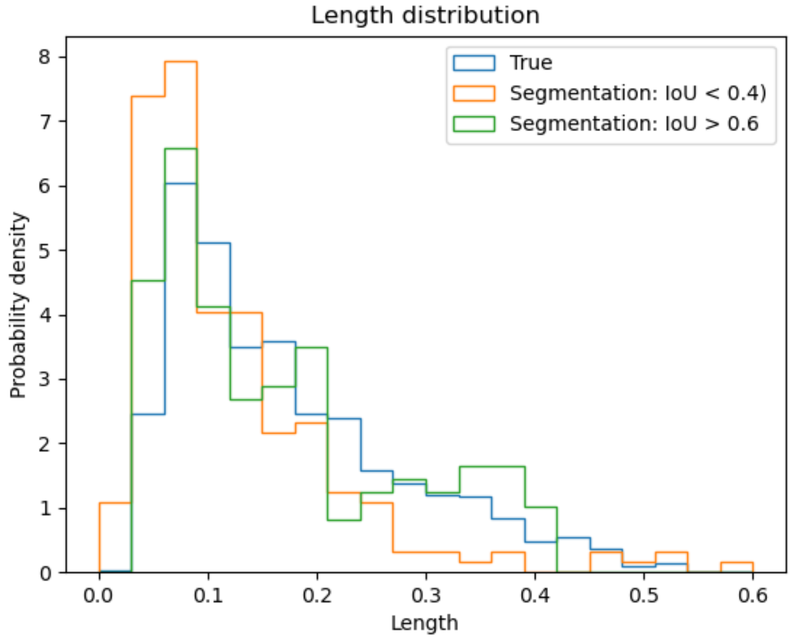
When you correct for this —>

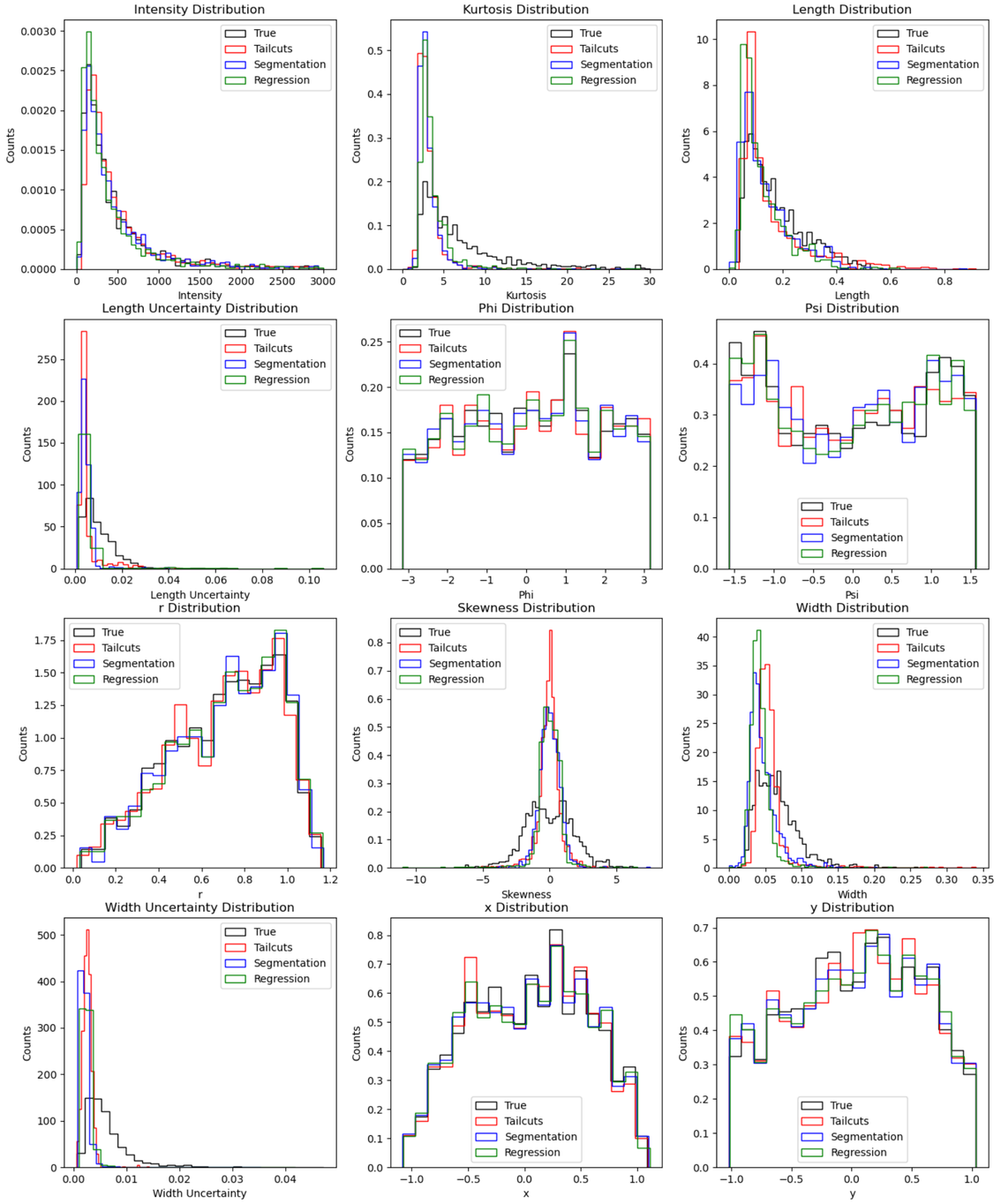
Length and width still often underestimated slightly, but seems logical as the cleaning might not guess the entire shape



2. True parameters from binary mask images

Length and width still often underestimated slightly, but seems logical as the cleaning might not guess the entire shape

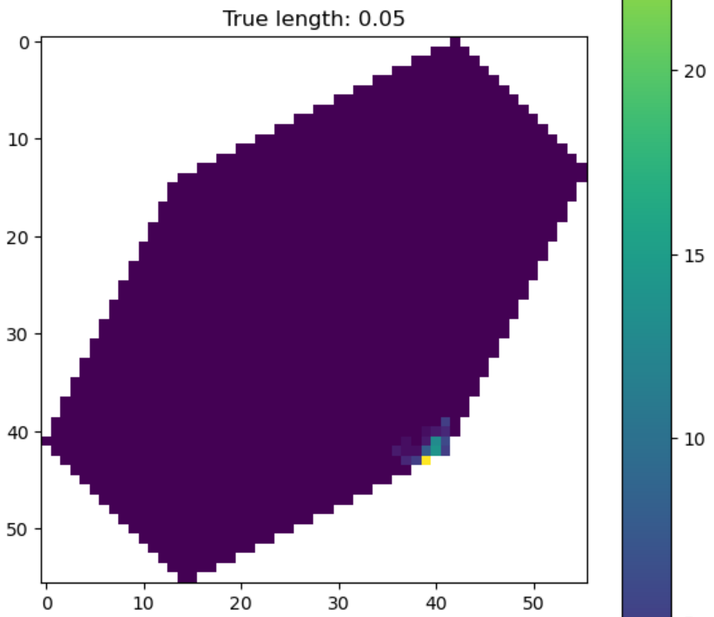


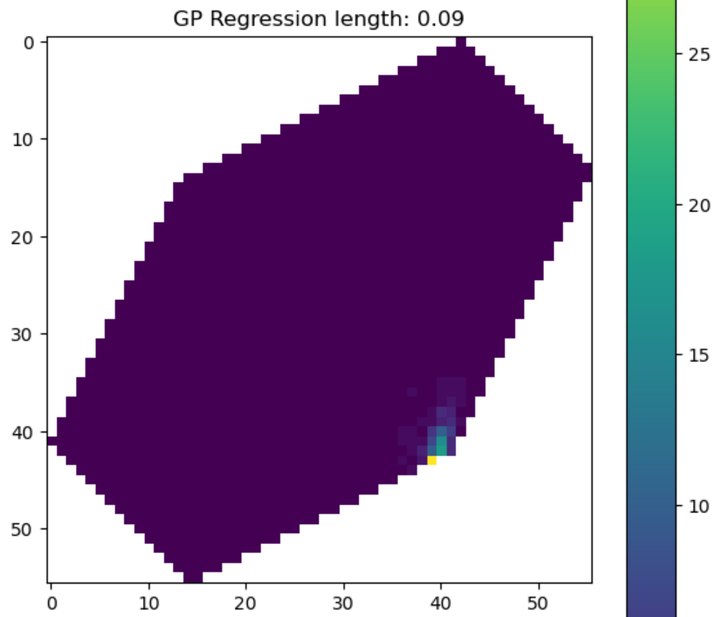


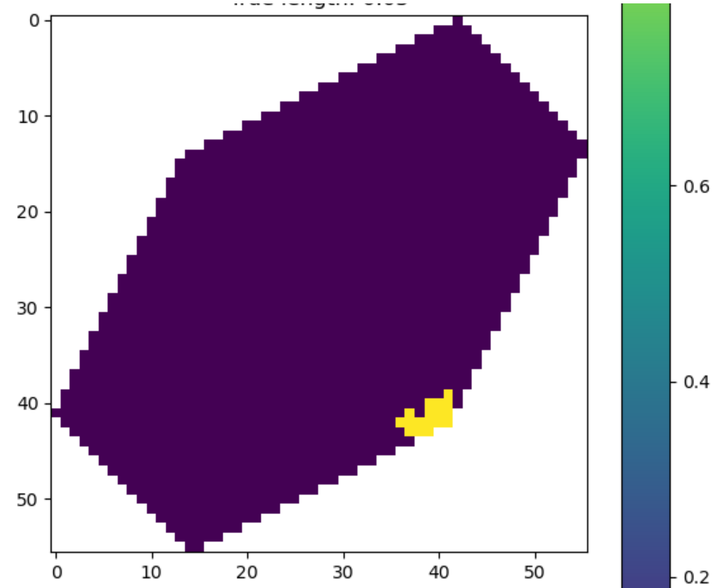
3. Rounding errors for images with large intensity

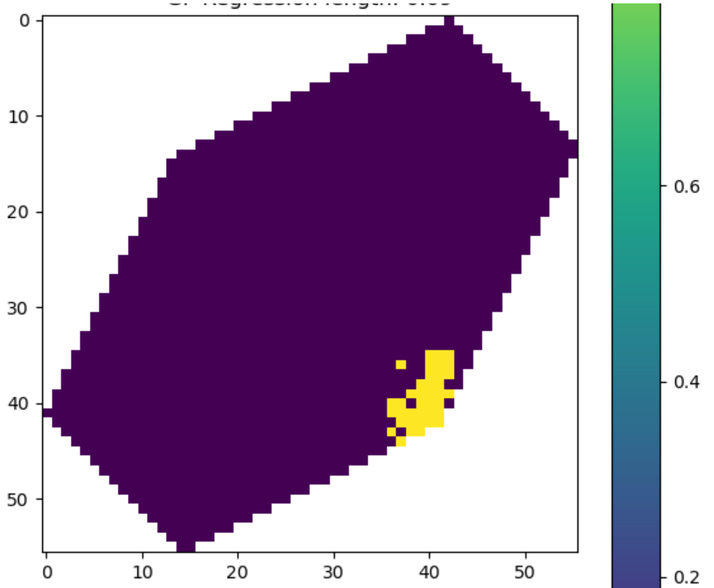
Binary mask of true and clean

Max pixel: 35





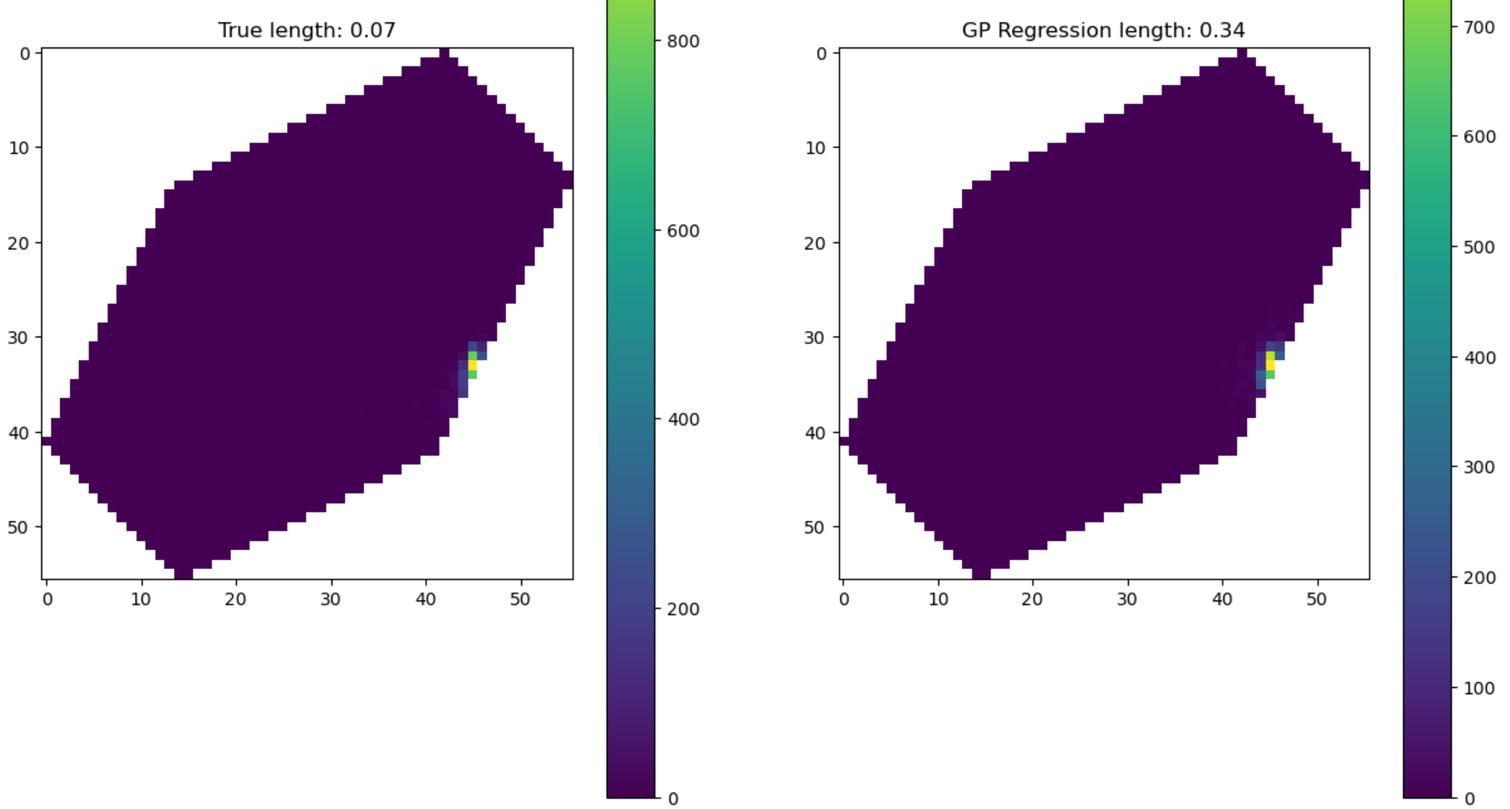


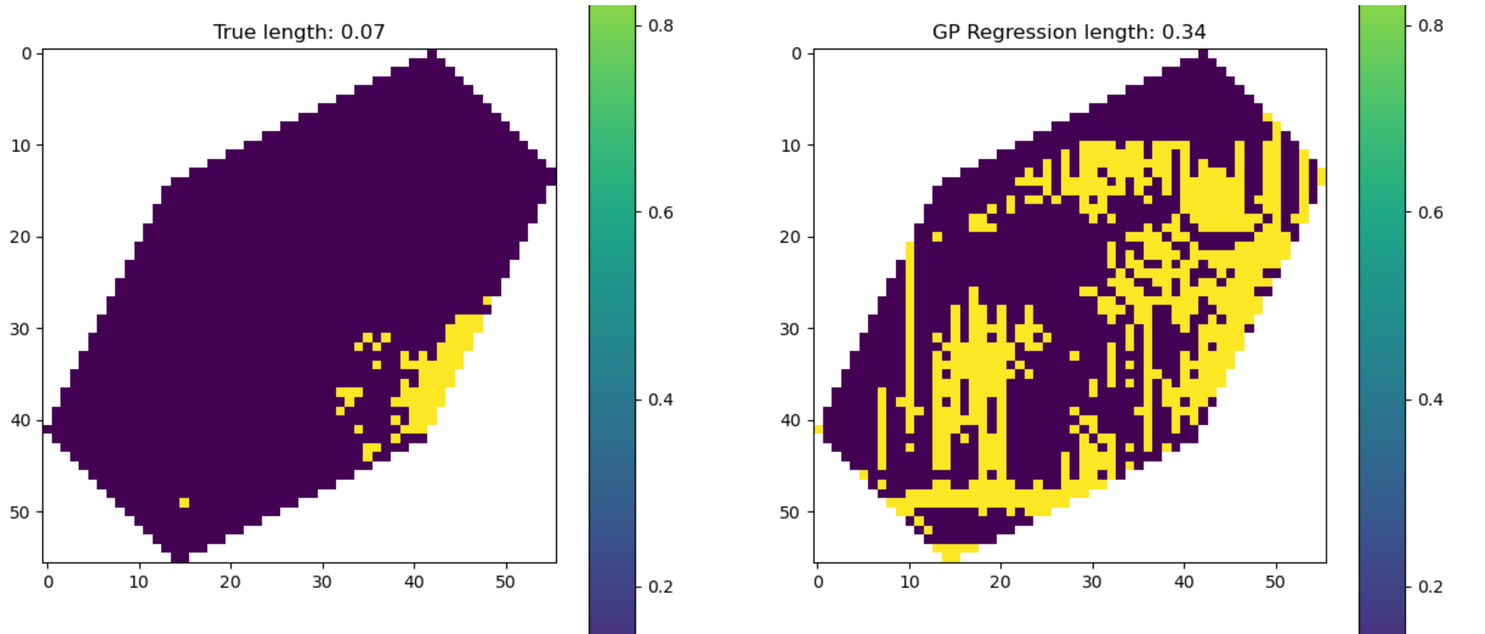


3. Rounding errors for images with large intensity

Binary mask of true and clean

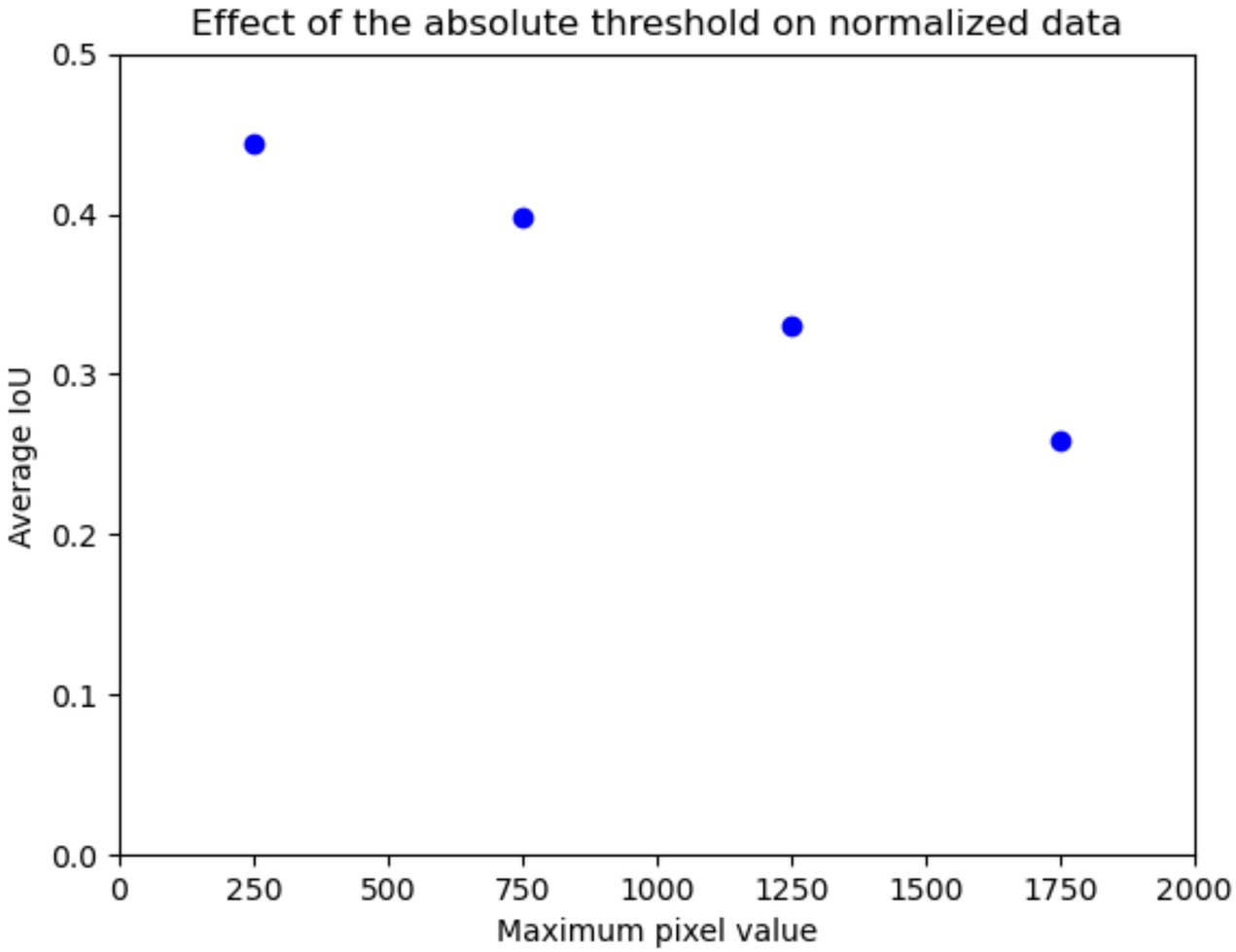
Max pixel: ~1000





3. Rounding errors for images with large intensity

Reason: Data is normalized in model, but pixels are included when > 0.5. This means for images with high maximum pixels that extremely low normalized pixel values are also included

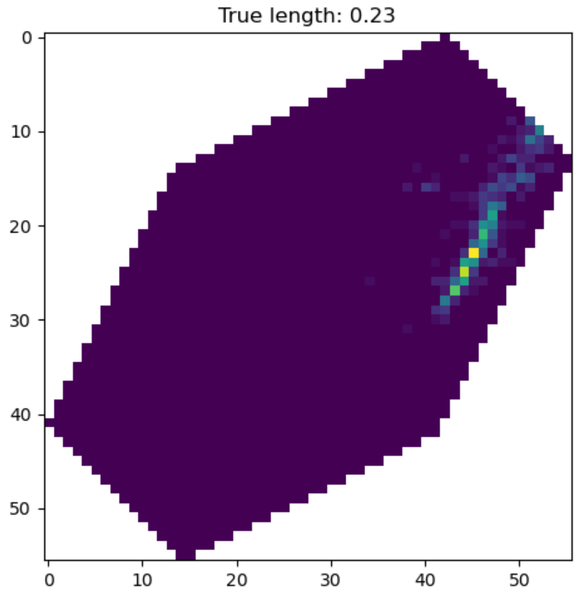


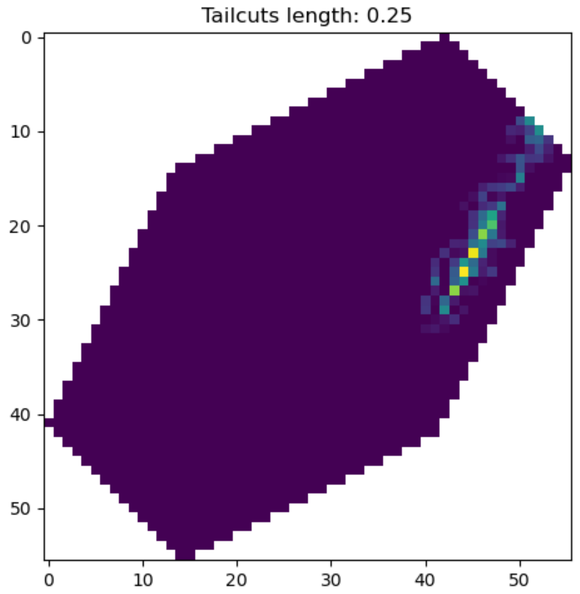
3. Rounding errors for images with large intensity

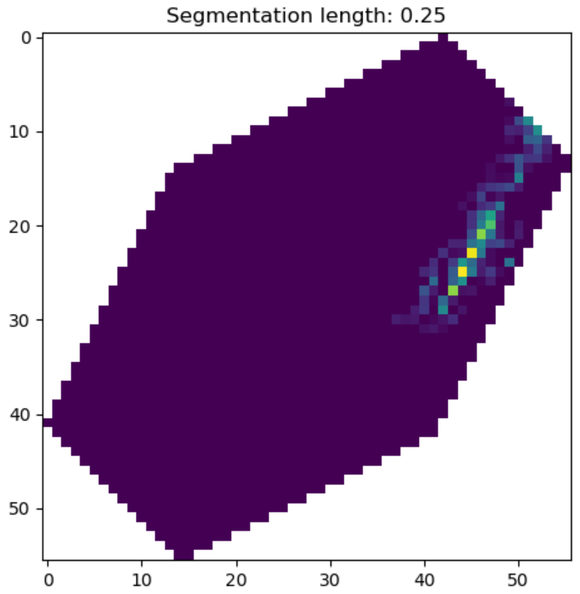
Solution: Combine an absolute threshold with a relative threshold

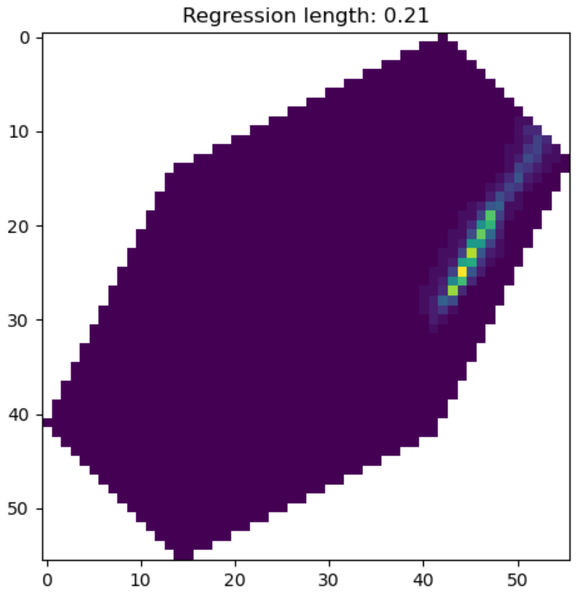
Some other stuff…

Example 1

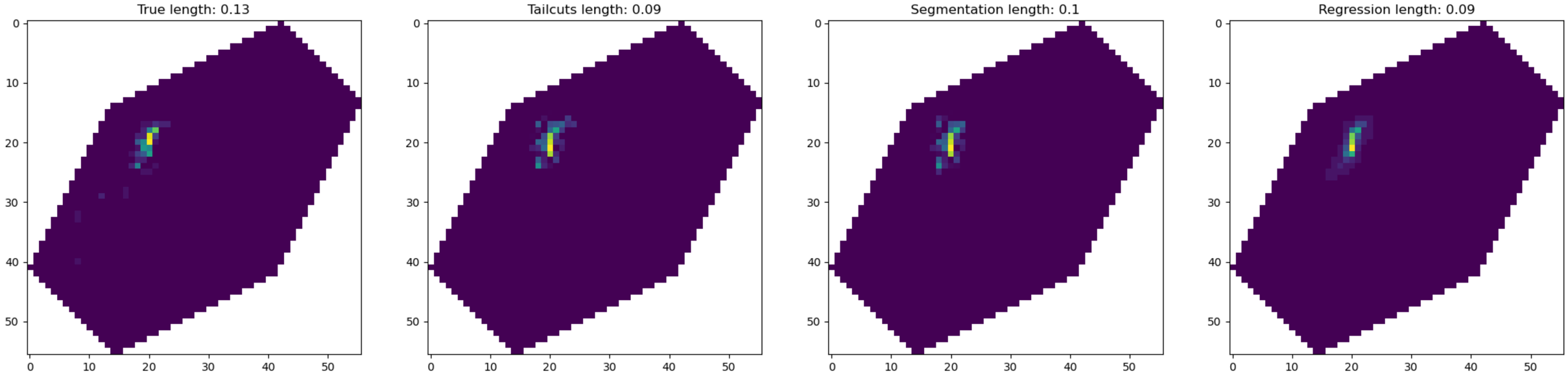

True length: 0.23
0
10
20
30
40
50
0
10
20
30
40
50


Tailcuts length: 0.25
0
10
20
30
40
50
0
10
20
30
40
50

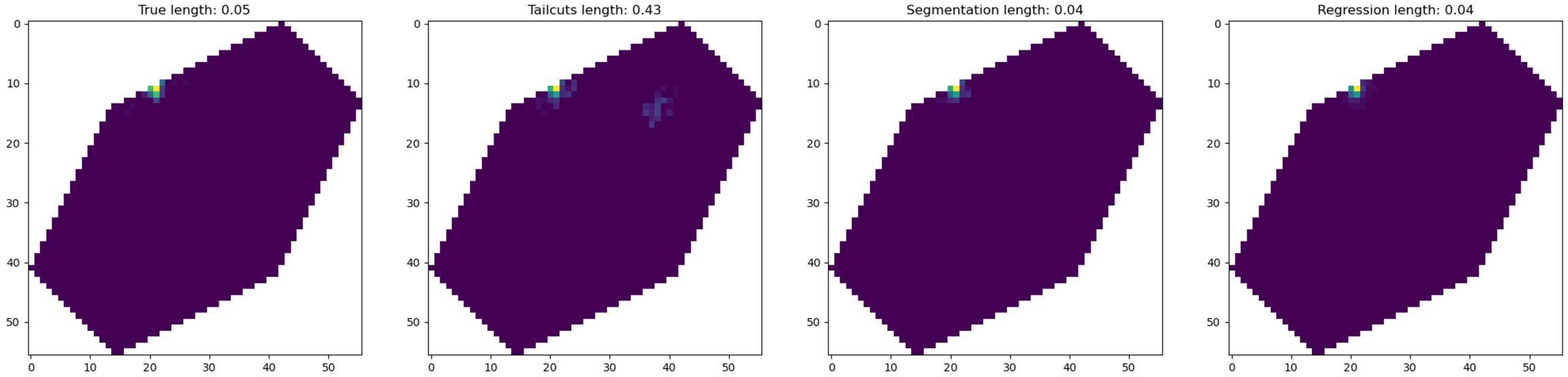

Segmentation length: 0.25
0
10
20
30
40
50
0
10
20
30
40
50


Regression length: 0.21
0
10
20
30
40
50
0
10
20
30
40
50

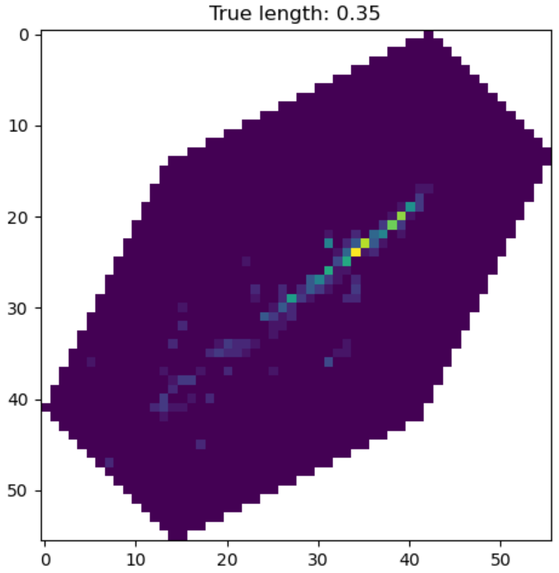
Example 2

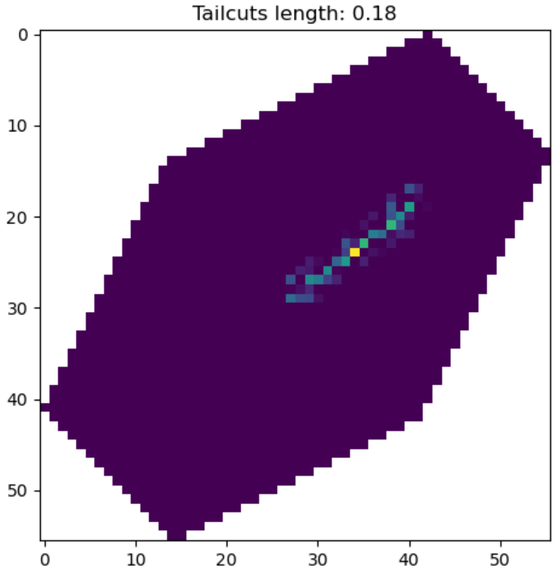

True length: 0.13
Tailcuts length: 0.09
Segmentation length: 0.1
Regression length: 0.09
0
10
20
30
40
50

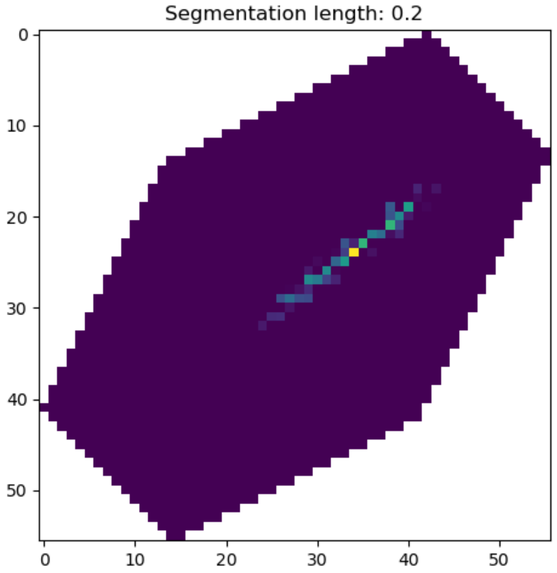
Example 3

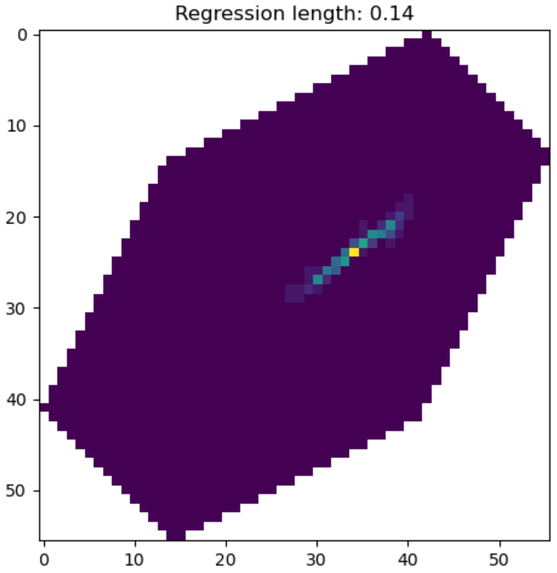

True length: 0.05
Tailcuts length: 0.43
Segmentation length: 0.04
Regression length: 0.04
0
10
20
30
40
50

Example 4

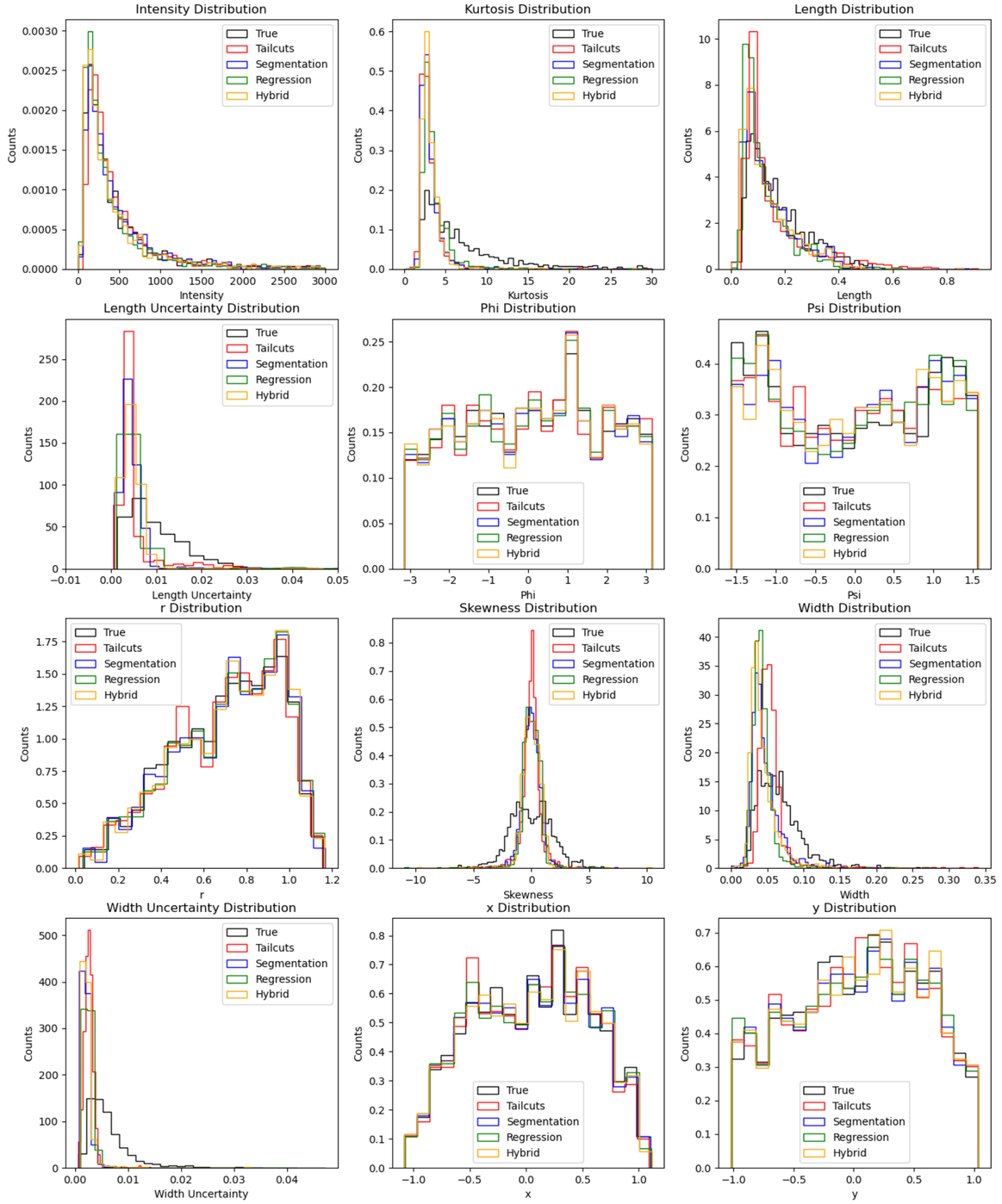
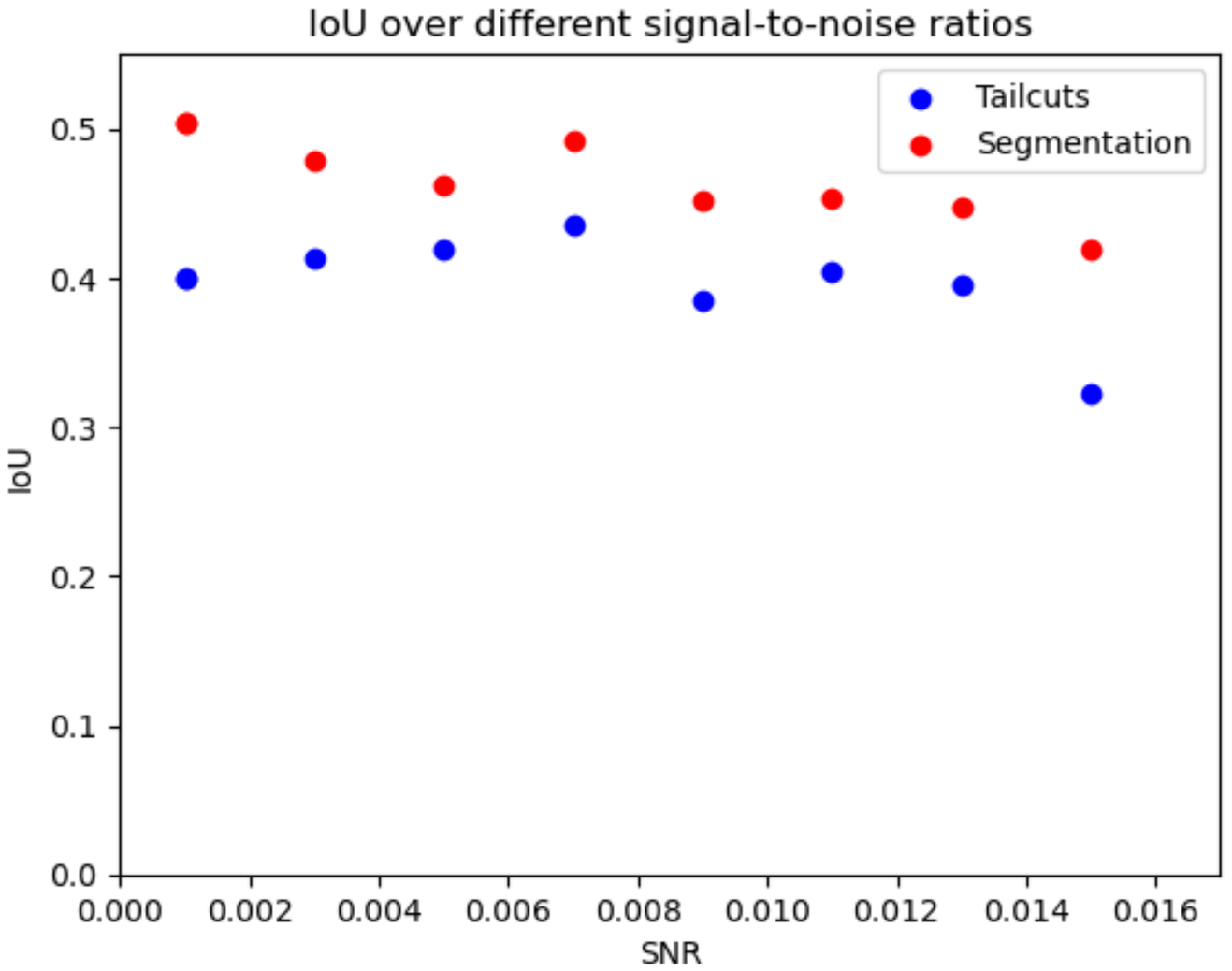

True length: 0.35
0
10
20
30
40
50
0
10
20
30
40
50


Tailcuts length: 0.18
0
10
20
30
40
50
0
10
20
30
40
50


Segmentation length: 0.2
0
10
20
30
40
50
0
10
20
30
40
50


Regression length: 0.14
0
10
20
30
40
50
0
10
20
30
40
50

Hybrid Hillas parameters



Exploring performance and SNR