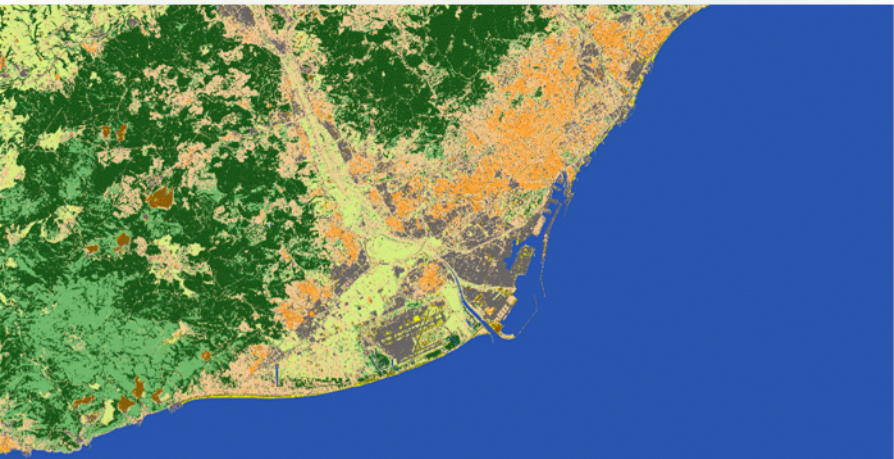


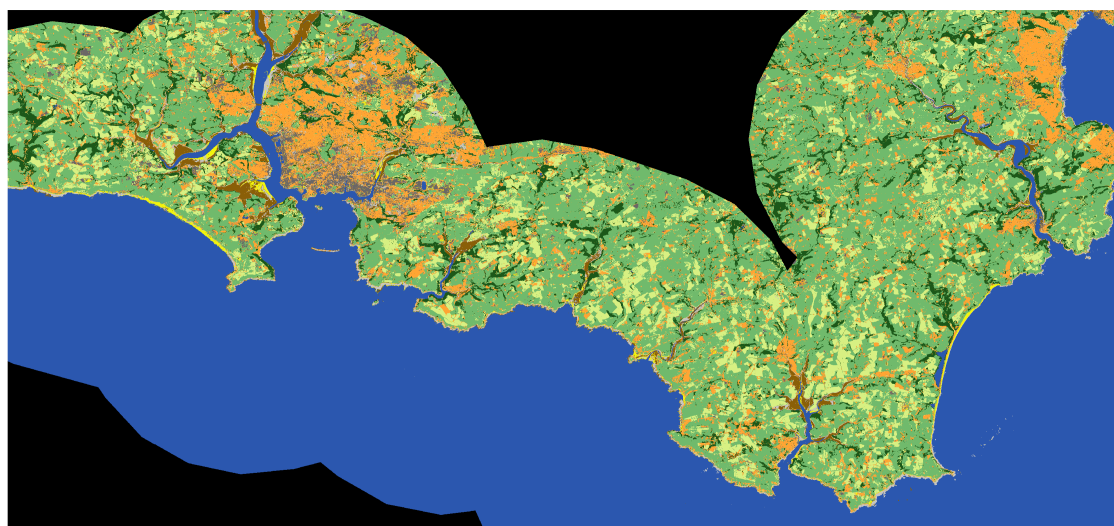
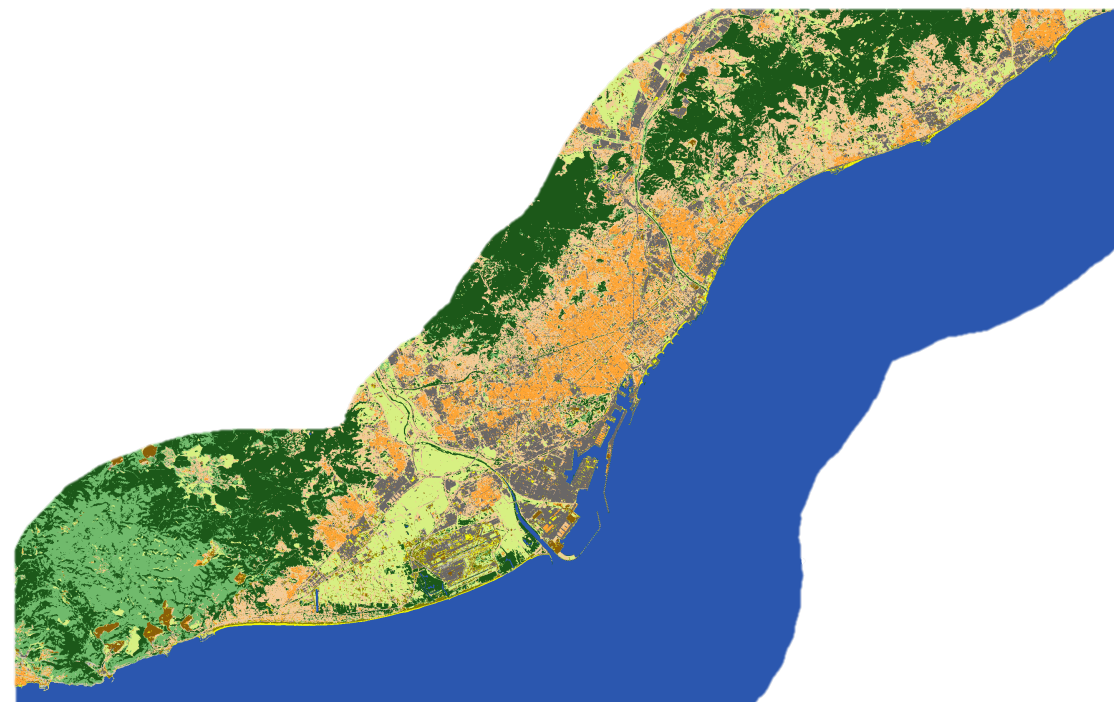


# Classification maps Quality control





## Internal Quality Control





## Internal Quality Control

2020-05-25 19:37:31 (INFO) ComputeConfusionMatrix: Confusion matrix (rows = reference labels, columns = produced labels):

	[ 1]	[ 2]	[ 3]	[ 4]	[ 5]	[ 6]	[10]	[11]	[20]	[21]	[22]	[30]
[ 1]	579	4	0	0	0	0	0	0	22	0	0	0
[ 2]	7	357	0	0	0	0	0	36	0	0	3	0
[ 3]	1	0	679	0	0	0	0	0	0	0	0	0
[ 4]	0	1	27	719	0	0	1	0	0	0	0	0
[ 5]	6	0	0	0	623	0	0	0	0	0	0	0
[ 6]	1	0	10	0	0	704	0	1	0	0	0	0
[10]	0	0	0	0	4	0	267	0	3	0	0	0
[11]	0	4	0	0	0	3	25	224	0	0	2	0
[20]	22	1	0	0	0	0	0	0	168	0	0	0
[21]	0	0	0	0	0	0	0	19	0	252	0	7
[22]	0	0	0	0	0	0	0	1	0	34	202	0
[30]	0	0	0	0	0	0	0	0	0	0	0	290

2020-05-25 19:37:31 (INFO) ComputeConfusionMatrix: Precision of class [1] vs all: 0.939935  
2020-05-25 19:37:31 (INFO) ComputeConfusionMatrix: Recall of class [1] vs all: 0.957025  
2020-05-25 19:37:31 (INFO) ComputeConfusionMatrix: F-score of class [1] vs all: 0.948403  
2020-05-25 19:37:31 (INFO) ComputeConfusionMatrix: Precision of class [2] vs all: 0.972752  
2020-05-25 19:37:31 (INFO) ComputeConfusionMatrix: Recall of class [2] vs all: 0.885856  
2020-05-25 19:37:31 (INFO) ComputeConfusionMatrix: F-score of class [2] vs all: 0.927273  
2020-05-25 19:37:31 (INFO) ComputeConfusionMatrix: Precision of class [3] vs all: 0.948324  
2020-05-25 19:37:31 (INFO) ComputeConfusionMatrix: Recall of class [3] vs all: 0.998529  
2020-05-25 19:37:31 (INFO) ComputeConfusionMatrix: F-score of class [3] vs all: 0.972779  
2020-05-25 19:37:31 (INFO) ComputeConfusionMatrix: Precision of class [4] vs all: 1  
2020-05-25 19:37:31 (INFO) ComputeConfusionMatrix: Recall of class [4] vs all: 0.96123  
2020-05-25 19:37:31 (INFO) ComputeConfusionMatrix: F-score of class [4] vs all: 0.980232  
2020-05-25 19:37:31 (INFO) ComputeConfusionMatrix: Precision of class [5] vs all: 0.99362  
2020-05-25 19:37:31 (INFO) ComputeConfusionMatrix: Recall of class [5] vs all: 0.990461  
2020-05-25 19:37:31 (INFO) ComputeConfusionMatrix: F-score of class [5] vs all: 0.992038  
2020-05-25 19:37:31 (INFO) ComputeConfusionMatrix: Precision of class [6] vs all: 0.995757  
2020-05-25 19:37:31 (INFO) ComputeConfusionMatrix: Recall of class [6] vs all: 0.98324  
2020-05-25 19:37:31 (INFO) ComputeConfusionMatrix: F-score of class [6] vs all: 0.989459  
2020-05-25 19:37:31 (INFO) ComputeConfusionMatrix: Precision of class [10] vs all: 0.911263  
2020-05-25 19:37:31 (INFO) ComputeConfusionMatrix: Recall of class [10] vs all: 0.974453  
2020-05-25 19:37:31 (INFO) ComputeConfusionMatrix: F-score of class [10] vs all: 0.941799  
2020-05-25 19:37:31 (INFO) ComputeConfusionMatrix: Precision of class [11] vs all: 0.797153  
2020-05-25 19:37:31 (INFO) ComputeConfusionMatrix: Recall of class [11] vs all: 0.868217  
2020-05-25 19:37:31 (INFO) ComputeConfusionMatrix: F-score of class [11] vs all: 0.831169  
2020-05-25 19:37:31 (INFO) ComputeConfusionMatrix: Precision of class [20] vs all: 0.870466  
2020-05-25 19:37:31 (INFO) ComputeConfusionMatrix: Recall of class [20] vs all: 0.879581  
2020-05-25 19:37:31 (INFO) ComputeConfusionMatrix: F-score of class [20] vs all: 0.875  
2020-05-25 19:37:31 (INFO) ComputeConfusionMatrix: Precision of class [21] vs all: 0.881119  
2020-05-25 19:37:31 (INFO) ComputeConfusionMatrix: Recall of class [21] vs all: 0.906475  
2020-05-25 19:37:31 (INFO) ComputeConfusionMatrix: F-score of class [21] vs all: 0.893617  
2020-05-25 19:37:31 (INFO) ComputeConfusionMatrix: Precision of class [22] vs all: 0.975845  
2020-05-25 19:37:31 (INFO) ComputeConfusionMatrix: Recall of class [22] vs all: 0.852321  
2020-05-25 19:37:31 (INFO) ComputeConfusionMatrix: F-score of class [22] vs all: 0.90991  
2020-05-25 19:37:31 (INFO) ComputeConfusionMatrix: Precision of class [30] vs all: 0.976431  
2020-05-25 19:37:31 (INFO) ComputeConfusionMatrix: Recall of class [30] vs all: 1  
2020-05-25 19:37:31 (INFO) ComputeConfusionMatrix: F-score of class [30] vs all: 0.988075



## Internal Quality Control

```
2020-05-25 19:37:31 (INFO) ComputeConfusionMatrix: Precision of the different classes: [0.939935, 0.972752, 0.948324, 1, 0.99362, 0.995757, 0.911263, 0.797153, 0.870466, 0.881119, 0.975845, 0.976431]
2020-05-25 19:37:31 (INFO) ComputeConfusionMatrix: Recall of the different classes: [0.957025, 0.885856, 0.998529, 0.96123, 0.990461, 0.98324, 0.974453, 0.868217, 0.879581, 0.906475, 0.852321, 1]
2020-05-25 19:37:31 (INFO) ComputeConfusionMatrix: F-score of the different classes: [0.948403, 0.927273, 0.972779, 0.980232, 0.992038, 0.989459, 0.941799, 0.831169, 0.875, 0.893617, 0.90991, 0.988075]
```

```
2020-05-25 19:37:31 (INFO) ComputeConfusionMatrix: Kappa index: 0.94866
2020-05-25 19:37:31 (INFO) ComputeConfusionMatrix: Overall accuracy index: 0.953852
```



## Internal Quality Control

OA & KAPPA	F-Score	Recall & Precision	Message
< 0,70	/	/	Insufficient quality of the training data set, classification aborted



## Internal Quality Control

OA & KAPPA	F-Score	Recall & Precision	Message
$< 0,70$	/	/	Insufficient quality of the training data set, classification aborted
$0,70 > X > 0,80$	$< 0,7$	Recall $<$ Precision	Underestimation of the class, need to review training data set (the sample selected are not enough – too selective)



# Internal Quality Control

KAPPA : 0.742 OA : 0.791

	Urban	house	Crops1	Crops2	Forest	Natural	SandyBeach	BeachVegetation	Sea	Mudflat	Rappel	F-Score
Urban	318	8					5				0.851	0.847
house	15	400	1	1	21						0.901	0.528
Crops1			250				12				0.954	0.971
Crops2		285	2	626	1			5			0.681	0.763
Forest		253		94	157E+3	10					0.814	0.889
Natural	1	2				98					0.970	0.575
SandyBeach	53	12				1	402		5	2	0.846	0.898
BeachVegetation	2	51			6	131	1	56			0.221	0.356
Sea									65		1.000	0.963
Mudflat										113	1.000	0.991
Precision	0.842	0.374	0.988	0.868	0.979	0.408	0.957	0.903	0.929	0.983		

## Internal Quality Control

OA & KAPPA	F-Score	Recall & Precision	Message
$< 0,70$	/	/	Insufficient quality of the training data set, classification aborted
$0,70 > X > 0,80$	$< 0,7$	Recall $<$ Precision	Underestimation of the class, need to review training data set (the sample selected are not enough – too selective)
		Recall $>$ Precision	Over-estimation of the class, training data set is not selective enough, too many variability in a class, or two class that need to be grouped



# Internal Quality Control

KAPPA : 0.742 OA : 0.791

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## Internal Quality Control

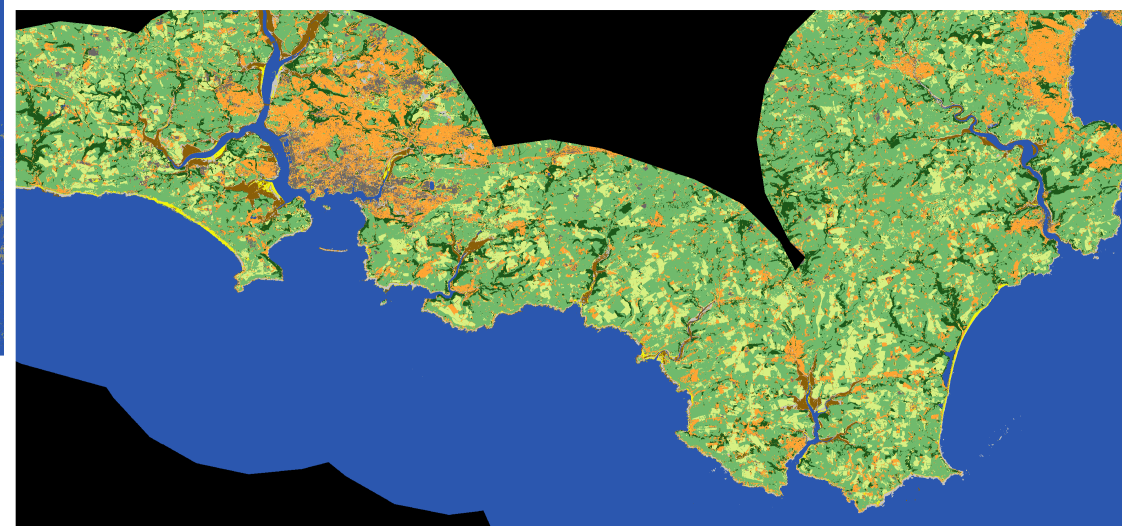
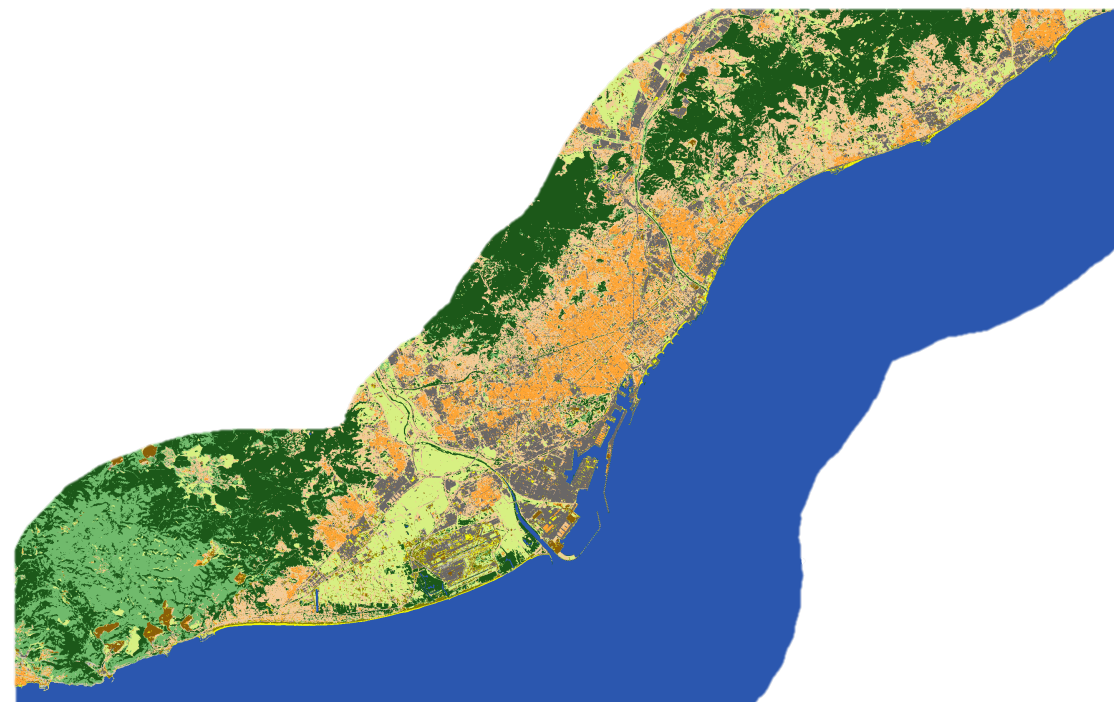
OA & KAPPA	F-Score	Recall & Precision	Message
$< 0,70$	/	/	Insufficient quality of the training data set, classification aborted
$0,70 > X > 0,80$	$< 0,7$	Recall $<$ Precision	Underestimation of the class, need to review training data set (the sample selected are not enough – too selective)
		Recall $>$ Precision	Over-estimation of the class, training data set is not selective enough, too many variability in a class, or two class that need to be grouped
$0,80 > X > 0,90$	/	/	External QC process needed

## Internal Quality Control

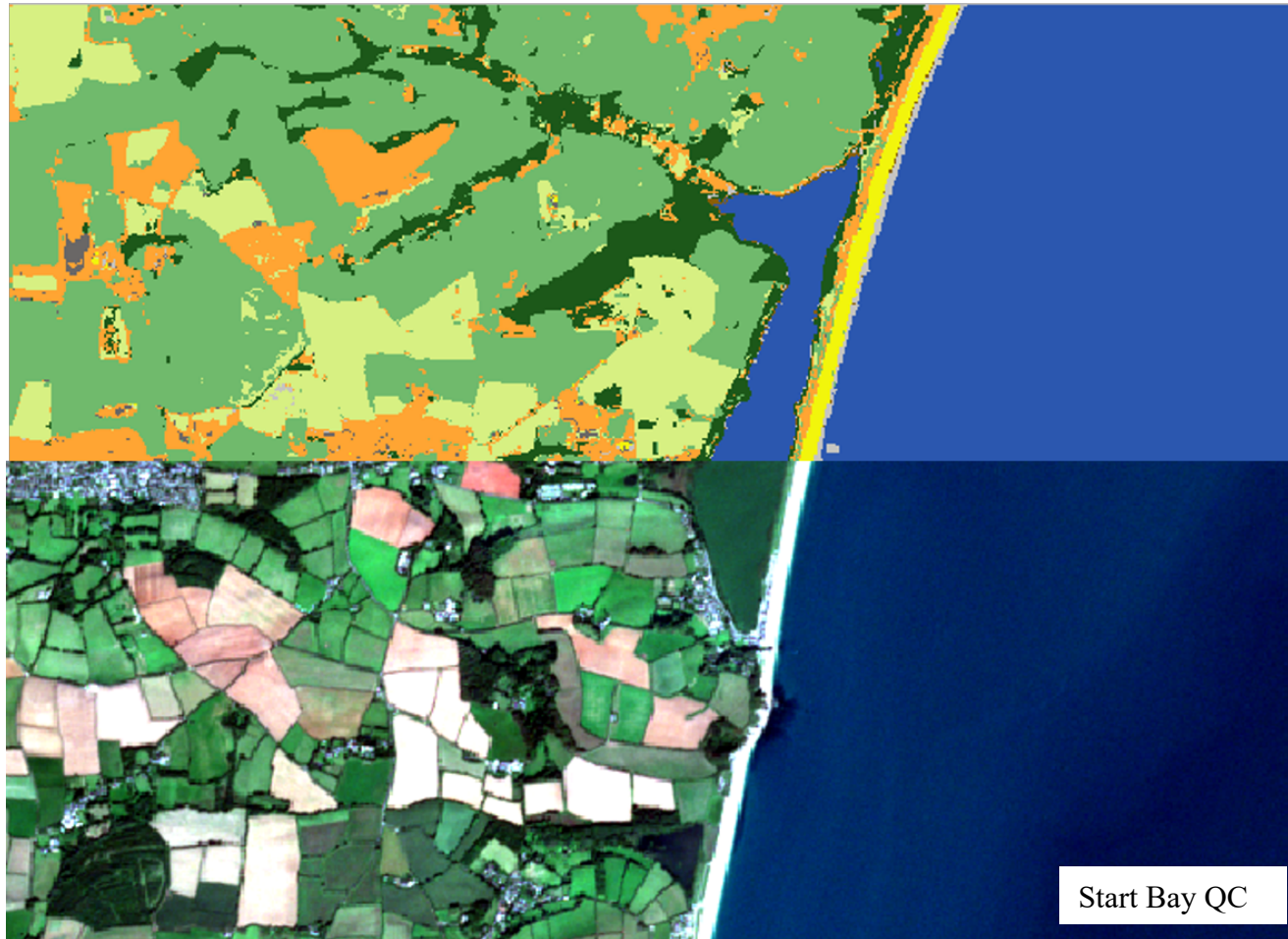
OA & KAPPA	F-Score	Recall & Precision	Message
$< 0,70$	/	/	Insufficient quality of the training data set, classification aborted
$0,70 > X > 0,80$	$< 0,7$	Recall $<$ Precision	Underestimation of the class, need to review training data set (the sample selected are not enough – too selective)
		Recall $>$ Precision	Over-estimation of the class, training data set is not selective enough, too many variability in a class, or two class that need to be grouped
$0,80 > X > 0,90$	/	/	External QC process needed
$> 0,90$	/	/	Classification accepted



## External Quality Control



## External Quality Control





## External Quality Control

