

DIAGTOOL REPORT



Round Robin (GT cotier) : Range. Medsea. J3. Mle4 vs Adaptive vs Ales.

7 juillet 2022

Table of Contents

1	General description	8
2	Processing	8
2.1	sla formula	8
2.1.1	Mle4 product ' sla	8
2.1.2	Adaptive product ' sla	8
2.1.3	Ales product ' sla	8
2.2	Binning	9
2.3	Filtering	9
3	Spatial coherence analysis	10
3.1	Range	10
3.1.1	Range 's count	10
3.2	sla	16
3.2.1	sla 's count	16
3.2.2	sla 's std	22
3.2.3	sla 's mean	28
4	Histograms	34
4.1	sla	34
5	Along-track analysis	37
5.1	Range	37
5.1.1	Range 's count	37
5.2	sla	38
5.2.1	sla 's count	38
5.2.2	sla 's std	39
5.2.3	sla 's mean	40
6	Comparison with Insitu Data (Tide Gauge)	41
6.1	Station : SETE	41
6.1.1	correlation visualization in maps view % SETE tide gauge	41
6.1.2	rmsd visualization in maps view % SETE tide gauge	42
6.1.3	std visualization in maps view % SETE tide gauge	43
6.1.4	valid_data_percent visualization in maps view % SETE tide gauge	44
6.1.5	Valid data (%) in function of distance to coast/SETE station	44
6.1.6	Std in function of distance to coast/SETE station	46
6.1.7	Correlation in function of distance to coast/SETE station	47
6.1.8	Taylor Diagram	48
6.1.9	Mean statistics table of products comparison with SETE tide gauge data	48
6.1.10	The most correlated sla altimetry Time series with the tide gauge sla time serie	49
6.2	Station : Mentès	51
6.2.1	correlation visualization in maps view % Mentès tide gauge	52
6.2.2	rmsd visualization in maps view % Mentès tide gauge	53
6.2.3	std visualization in maps view % Mentès tide gauge	54

6.2.4	valid_data_percent visualization in maps view % Mentès tide gauge	55
6.2.5	Valid data (%) in function of distance to coast/Mentès station	55
6.2.6	Std in function of distance to coast/Mentès station	57
6.2.7	Correlation in function of distance to coast/Mentès station	58
6.2.8	Taylor Diagram	59
6.2.9	Mean statistics table of products comparison with Mentès tide gauge data	59
6.2.10	The most correlated sla altimetry Time series with the tide gauge sla time serie	60
6.3	Station : Ibiza	63
6.3.1	correlation visualization in maps view % Ibiza tide gauge	64
6.3.2	rmsd visualization in maps view % Ibiza tide gauge	65
6.3.3	std visualization in maps view % Ibiza tide gauge	66
6.3.4	valid_data_percent visualization in maps view % Ibiza tide gauge	67
6.3.5	Valid data (%) in function of distance to coast/Ibiza station	67
6.3.6	Std in function of distance to coast/Ibiza station	69
6.3.7	Correlation in function of distance to coast/Ibiza station	70
6.3.8	Taylor Diagram	71
6.3.9	Mean statistics table of products comparison with Ibiza tide gauge data	71
6.3.10	The most correlated sla altimetry Time series with the tide gauge sla time serie	72
6.4	Station : LA_FIGUEIRETTE	74
6.4.1	correlation visualization in maps view % LA_FIGUEIRETTE tide gauge	75
6.4.2	rmsd visualization in maps view % LA_FIGUEIRETTE tide gauge	76
6.4.3	std visualization in maps view % LA_FIGUEIRETTE tide gauge	77
6.4.4	valid_data_percent visualization in maps view % LA_FIGUEIRETTE tide gauge	78
6.4.5	Valid data (%) in function of distance to coast/LA_FIGUEIRETTE station	78
6.4.6	Std in function of distance to coast/LA_FIGUEIRETTE station	80
6.4.7	Correlation in function of distance to coast/LA_FIGUEIRETTE station	81
6.4.8	Taylor Diagram	82
6.4.9	Mean statistics table of products comparison with LA_FIGUEIRETTE tide gauge data	82
6.4.10	The most correlated sla altimetry Time series with the tide gauge sla time serie	83
6.5	Station : Ancona	86
6.5.1	correlation visualization in maps view % Ancona tide gauge	87
6.5.2	rmsd visualization in maps view % Ancona tide gauge	88
6.5.3	std visualization in maps view % Ancona tide gauge	89
6.5.4	valid_data_percent visualization in maps view % Ancona tide gauge	90
6.5.5	Valid data (%) in function of distance to coast/Ancona station	90
6.5.6	Std in function of distance to coast/Ancona station	92
6.5.7	Correlation in function of distance to coast/Ancona station	93
6.5.8	Taylor Diagram	94
6.5.9	Mean statistics table of products comparison with Ancona tide gauge data	94
6.5.10	The most correlated sla altimetry Time series with the tide gauge sla time serie	95
6.6	Station : Livourne	97
6.6.1	correlation visualization in maps view % Livourne tide gauge	98
6.6.2	rmsd visualization in maps view % Livourne tide gauge	99
6.6.3	std visualization in maps view % Livourne tide gauge	100
6.6.4	valid_data_percent visualization in maps view % Livourne tide gauge	101

6.6.5	Valid data (%) in function of distance to coast/Livourne station	101
6.6.6	Std in function of distance to coast/Livourne station	103
6.6.7	Correlation in function of distance to coast/Livourne station	104
6.6.8	Taylor Diagram	105
6.6.9	Mean statistics table of products comparison with Livourne tide gauge data	105
6.6.10	The most correlated sla altimetry Time series with the tide gauge sla time serie	106
6.7	Station : MONACO_FONTVIEILLE	109
6.7.1	correlation visualization in maps view % MONACO_FONTVIEILLE tide gauge	110
6.7.2	rmsd visualization in maps view % MONACO_FONTVIEILLE tide gauge	111
6.7.3	std visualization in maps view % MONACO_FONTVIEILLE tide gauge	112
6.7.4	valid_data_percent visualization in maps view % MONACO_FONTVIEILLE tide gauge	113
6.7.5	Valid data (%) in function of distance to coast/MONACO_FONTVIEILLE station	113
6.7.6	Std in function of distance to coast/MONACO_FONTVIEILLE station	115
6.7.7	Correlation in function of distance to coast/MONACO_FONTVIEILLE station	116
6.7.8	Taylor Diagram	117
6.7.9	Mean statistics table of products comparison with MONACO_FONTVIEILLE tide gauge data	117
6.7.10	The most correlated sla altimetry Time series with the tide gauge sla time serie	118
6.8	Station : Erdemli	120
6.8.1	correlation visualization in maps view % Erdemli tide gauge	121
6.8.2	rmsd visualization in maps view % Erdemli tide gauge	122
6.8.3	std visualization in maps view % Erdemli tide gauge	123
6.8.4	valid_data_percent visualization in maps view % Erdemli tide gauge	124
6.8.5	Valid data (%) in function of distance to coast/Erdemli station	124
6.8.6	Std in function of distance to coast/Erdemli station	126
6.8.7	Correlation in function of distance to coast/Erdemli station	127
6.8.8	Taylor Diagram	128
6.8.9	Mean statistics table of products comparison with Erdemli tide gauge data	128
6.8.10	The most correlated sla altimetry Time series with the tide gauge sla time serie	129
6.9	Station : Almeria	132
6.9.1	correlation visualization in maps view % Almeria tide gauge	133
6.9.2	rmsd visualization in maps view % Almeria tide gauge	134
6.9.3	std visualization in maps view % Almeria tide gauge	135
6.9.4	valid_data_percent visualization in maps view % Almeria tide gauge	136
6.9.5	Valid data (%) in function of distance to coast/Almeria station	136
6.9.6	Std in function of distance to coast/Almeria station	138
6.9.7	Correlation in function of distance to coast/Almeria station	139
6.9.8	Taylor Diagram	140
6.9.9	Mean statistics table of products comparison with Almeria tide gauge data	140
6.9.10	The most correlated sla altimetry Time series with the tide gauge sla time serie	141
6.10	Station : Civitavecchia	144
6.10.1	correlation visualization in maps view % Civitavecchia tide gauge	145
6.10.2	rmsd visualization in maps view % Civitavecchia tide gauge	146
6.10.3	std visualization in maps view % Civitavecchia tide gauge	147
6.10.4	valid_data_percent visualization in maps view % Civitavecchia tide gauge	148
6.10.5	Valid data (%) in function of distance to coast/Civitavecchia station	148

6.10.6	Std in function of distance to coast/Civitavecchia station	150
6.10.7	Correlation in function of distance to coast/Civitavecchia station	151
6.10.8	Taylor Diagram	152
6.10.9	Mean statistics table of products comparison with Civitavecchia tide gauge data	152
6.10.10	The most correlated sla altimetry Time series with the tide gauge sla time serie	153
6.11	Station : FOS-SUR-MER	156
6.11.1	correlation visualization in maps view % FOS-SUR-MER tide gauge	157
6.11.2	rmsd visualization in maps view % FOS-SUR-MER tide gauge	158
6.11.3	std visualization in maps view % FOS-SUR-MER tide gauge	159
6.11.4	valid_data_percent visualization in maps view % FOS-SUR-MER tide gauge	160
6.11.5	Valid data (%) in function of distance to coast/FOS-SUR-MER station	160
6.11.6	Std in function of distance to coast/FOS-SUR-MER station	162
6.11.7	Correlation in function of distance to coast/FOS-SUR-MER station	163
6.11.8	Taylor Diagram	164
6.11.9	Mean statistics table of products comparison with FOS-SUR-MER tide gauge data	164
6.11.10	The most correlated sla altimetry Time series with the tide gauge sla time serie	165

Table des figures

1	Spatial coherence analysis of the count of the Mle4 version of Range variable	10
2	Spatial coherence analysis of the count of the Adaptive version of Range variable	11
3	Spatial coherence analysis of the count of the Ales version of Range variable	12
4	Spatial coherence analysis of the Difference in Range 's count between Adaptive and Mle4	13
5	Spatial coherence analysis of the Difference in Range 's count between Ales and Mle4	14
6	Spatial coherence analysis of the Difference in Range 's count between Ales and Adaptive	15
7	Spatial coherence analysis of the count of the Mle4 version of sla variable	16
8	Spatial coherence analysis of the count of the Adaptive version of sla variable	17
9	Spatial coherence analysis of the count of the Ales version of sla variable	18
10	Spatial coherence analysis of the Difference in sla 's count between Adaptive and Mle4	19
11	Spatial coherence analysis of the Difference in sla 's count between Ales and Mle4	20
12	Spatial coherence analysis of the Difference in sla 's count between Ales and Adaptive	21
13	Spatial coherence analysis of the std of the Mle4 version of sla variable	22
14	Spatial coherence analysis of the std of the Adaptive version of sla variable	23
15	Spatial coherence analysis of the std of the Ales version of sla variable	24
16	Spatial coherence analysis of the Difference in sla 's std between Adaptive and Mle4	25
17	Spatial coherence analysis of the Difference in sla 's std between Ales and Mle4	26
18	Spatial coherence analysis of the Difference in sla 's std between Ales and Adaptive	27
19	Spatial coherence analysis of the mean of the Mle4 version of sla variable	28
20	Spatial coherence analysis of the mean of the Adaptive version of sla variable	29
21	Spatial coherence analysis of the mean of the Ales version of sla variable	30
22	Spatial coherence analysis of the Difference in sla 's mean between Adaptive and Mle4	31
23	Spatial coherence analysis of the Difference in sla 's mean between Ales and Mle4	32
24	Spatial coherence analysis of the Difference in sla 's mean between Ales and Adaptive	33
25	Histogram of each of sla version	34
26	Histograms of difference of each sla version and reference one	35

27	Histograms of the standard deviation of each sla version	36
28	Along-track analysis of Range 's count	37
29	Along-track analysis of sla 's count	38
30	Along-track analysis of sla 's std	39
31	Along-track analysis of sla 's mean	40
32	correlation visualization in maps view % SETE tide gauge	41
33	rmsd visualization in maps view % SETE tide gauge	42
34	std visualization in maps view % SETE tide gauge	43
35	valid_data_percent visualization in maps view % SETE tide gauge	44
36	Valid data (%) in function of distance to coast/SETE station	45
37	Std in function of the distance to the coast/SETE station	46
38	Correlation in function of the distance to the coast/SETE station	47
39	Taylor diagram	48
40	Mean statistics table of the common points in the altimetry products	49
41	The 1st most correlated sla altimetry Time serie with tide gauge sla time serie	50
42	The 2nd most correlated sla altimetry Time serie with tide gauge sla time serie	51
43	correlation visualization in maps view % Mentès tide gauge	52
44	rmsd visualization in maps view % Mentès tide gauge	53
45	std visualization in maps view % Mentès tide gauge	54
46	valid_data_percent visualization in maps view % Mentès tide gauge	55
47	Valid data (%) in function of distance to coast/Mentès station	56
48	Std in function of the distance to the coast/Mentès station	57
49	Correlation in function of the distance to the coast/Mentès station	58
50	Taylor diagram	59
51	Mean statistics table of the common points in the altimetry products	60
52	The 1st most correlated sla altimetry Time serie with tide gauge sla time serie	61
53	The 2nd most correlated sla altimetry Time serie with tide gauge sla time serie	62
54	The 3rd most correlated sla altimetry Time serie with tide gauge sla time serie	63
55	correlation visualization in maps view % Ibiza tide gauge	64
56	rmsd visualization in maps view % Ibiza tide gauge	65
57	std visualization in maps view % Ibiza tide gauge	66
58	valid_data_percent visualization in maps view % Ibiza tide gauge	67
59	Valid data (%) in function of distance to coast/Ibiza station	68
60	Std in function of the distance to the coast/Ibiza station	69
61	Correlation in function of the distance to the coast/Ibiza station	70
62	Taylor diagram	71
63	Mean statistics table of the common points in the altimetry products	72
64	The 1st most correlated sla altimetry Time serie with tide gauge sla time serie	73
65	The 2nd most correlated sla altimetry Time serie with tide gauge sla time serie	74
66	correlation visualization in maps view % LA_FIGUEIRETTE tide gauge	75
67	rmsd visualization in maps view % LA_FIGUEIRETTE tide gauge	76
68	std visualization in maps view % LA_FIGUEIRETTE tide gauge	77
69	valid_data_percent visualization in maps view % LA_FIGUEIRETTE tide gauge	78
70	Valid data (%) in function of distance to coast/LA_FIGUEIRETTE station	79
71	Std in function of the distance to the coast/LA_FIGUEIRETTE station	80

72	Correlation in function of the distance to the coast/LA_FIGUEIRETTE station	81
73	Taylor diagram	82
74	Mean statistics table of the common points in the altimetry products	83
75	The 1st most correlated sla altimetry Time serie with tide gauge sla time serie	84
76	The 2nd most correlated sla altimetry Time serie with tide gauge sla time serie	85
77	The 3rd most correlated sla altimetry Time serie with tide gauge sla time serie	86
78	correlation visualization in maps view % Ancona tide gauge	87
79	rmsd visualization in maps view % Ancona tide gauge	88
80	std visualization in maps view % Ancona tide gauge	89
81	valid_data_percent visualization in maps view % Ancona tide gauge	90
82	Valid data (%) in function of distance to coast/Ancona station	91
83	Std in function of the distance to the coast/Ancona station	92
84	Correlation in function of the distance to the coast/Ancona station	93
85	Taylor diagram	94
86	Mean statistics table of the common points in the altimetry products	95
87	The 1st most correlated sla altimetry Time serie with tide gauge sla time serie	96
88	The 2nd most correlated sla altimetry Time serie with tide gauge sla time serie	97
89	correlation visualization in maps view % Livourne tide gauge	98
90	rmsd visualization in maps view % Livourne tide gauge	99
91	std visualization in maps view % Livourne tide gauge	100
92	valid_data_percent visualization in maps view % Livourne tide gauge	101
93	Valid data (%) in function of distance to coast/Livourne station	102
94	Std in function of the distance to the coast/Livourne station	103
95	Correlation in function of the distance to the coast/Livourne station	104
96	Taylor diagram	105
97	Mean statistics table of the common points in the altimetry products	106
98	The 1st most correlated sla altimetry Time serie with tide gauge sla time serie	107
99	The 2nd most correlated sla altimetry Time serie with tide gauge sla time serie	108
100	The 3rd most correlated sla altimetry Time serie with tide gauge sla time serie	109
101	correlation visualization in maps view % MONACO_FONTVIEILLE tide gauge	110
102	rmsd visualization in maps view % MONACO_FONTVIEILLE tide gauge	111
103	std visualization in maps view % MONACO_FONTVIEILLE tide gauge	112
104	valid_data_percent visualization in maps view % MONACO_FONTVIEILLE tide gauge	113
105	Valid data (%) in function of distance to coast/MONACO_FONTVIEILLE station	114
106	Std in function of the distance to the coast/MONACO_FONTVIEILLE station	115
107	Correlation in function of the distance to the coast/MONACO_FONTVIEILLE station	116
108	Taylor diagram	117
109	Mean statistics table of the common points in the altimetry products	118
110	The 1st most correlated sla altimetry Time serie with tide gauge sla time serie	119
111	The 2nd most correlated sla altimetry Time serie with tide gauge sla time serie	120
112	correlation visualization in maps view % Erdemli tide gauge	121
113	rmsd visualization in maps view % Erdemli tide gauge	122
114	std visualization in maps view % Erdemli tide gauge	123
115	valid_data_percent visualization in maps view % Erdemli tide gauge	124
116	Valid data (%) in function of distance to coast/Erdemli station	125

117	Std in function of the distance to the coast/Erdemli station	126
118	Correlation in function of the distance to the coast/Erdemli station	127
119	Taylor diagram	128
120	Mean statistics table of the common points in the altimetry products	129
121	The 1st most correlated sla altimetry Time serie with tide gauge sla time serie	130
122	The 2nd most correlated sla altimetry Time serie with tide gauge sla time serie	131
123	The 3rd most correlated sla altimetry Time serie with tide gauge sla time serie	132
124	correlation visualization in maps view % Almeria tide gauge	133
125	rmsd visualization in maps view % Almeria tide gauge	134
126	std visualization in maps view % Almeria tide gauge	135
127	valid_data_percent visualization in maps view % Almeria tide gauge	136
128	Valid data (%) in function of distance to coast/Almeria station	137
129	Std in function of the distance to the coast/Almeria station	138
130	Correlation in function of the distance to the coast/Almeria station	139
131	Taylor diagram	140
132	Mean statistics table of the common points in the altimetry products	141
133	The 1st most correlated sla altimetry Time serie with tide gauge sla time serie	142
134	The 2nd most correlated sla altimetry Time serie with tide gauge sla time serie	143
135	The 3rd most correlated sla altimetry Time serie with tide gauge sla time serie	144
136	correlation visualization in maps view % Civitavecchia tide gauge	145
137	rmsd visualization in maps view % Civitavecchia tide gauge	146
138	std visualization in maps view % Civitavecchia tide gauge	147
139	valid_data_percent visualization in maps view % Civitavecchia tide gauge	148
140	Valid data (%) in function of distance to coast/Civitavecchia station	149
141	Std in function of the distance to the coast/Civitavecchia station	150
142	Correlation in function of the distance to the coast/Civitavecchia station	151
143	Taylor diagram	152
144	Mean statistics table of the common points in the altimetry products	153
145	The 1st most correlated sla altimetry Time serie with tide gauge sla time serie	154
146	The 2nd most correlated sla altimetry Time serie with tide gauge sla time serie	155
147	The 3rd most correlated sla altimetry Time serie with tide gauge sla time serie	156
148	correlation visualization in maps view % FOS-SUR-MER tide gauge	157
149	rmsd visualization in maps view % FOS-SUR-MER tide gauge	158
150	std visualization in maps view % FOS-SUR-MER tide gauge	159
151	valid_data_percent visualization in maps view % FOS-SUR-MER tide gauge	160
152	Valid data (%) in function of distance to coast/FOS-SUR-MER station	161
153	Std in function of the distance to the coast/FOS-SUR-MER station	162
154	Correlation in function of the distance to the coast/FOS-SUR-MER station	163
155	Taylor diagram	164
156	Mean statistics table of the common points in the altimetry products	165
157	The 1st most correlated sla altimetry Time serie with tide gauge sla time serie	166
158	The 2nd most correlated sla altimetry Time serie with tide gauge sla time serie	167

1 General description

- Figures and notes have been included in this report to evaluate different altimetry products.
- In order to test different version of the Range used to calculate the sea level anomaly. Each version has been compared with a reference version. In this case the Mle4 is the reference one.
- The sea level anomaly has been calculated using each version of the variable and has been compared to the sea level anomaly calculated using the reference version.
- The region of study is Medsea
- Mission : J3
- Git last tag :
- Git changeset number : 3b970d7-2022-07-05

2 Processing

2.1 sla formula

2.1.1 Mle4 product ' sla

sla = ORBIT.ALT.CNES_POE_F -
RANGE.ALT -
MEAN_SEA_SURFACE.MODEL.CNESCLS15 -
SEA_STATE_BIAS.ALT -
IONOSPHERIC_CORRECTION.MODEL.GIM -
WET_TROPOSPHERIC_CORRECTION.RAD -
DRY_TROPOSPHERIC_CORRECTION.MODEL.ECMWF -
DYNAMICAL_ATMOSPHERIC_CORRECTION.MODEL.MOG2D_HR -
OCEAN_TIDE_HEIGHT.MODEL.FES14B -
SOLID_EARTH_TIDE_HEIGHT.MODEL.CARTWRIGHT_TAYLER_71 -
POLE_TIDE_HEIGHT.MODEL.DESAI_2015

2.1.2 Adaptive product ' sla

sla = ORBIT.ALT.CNES_POE_F -
RANGE.ALT.RTK_ADAPTIVE_PROTO -
MEAN_SEA_SURFACE.MODEL.CNESCLS15 -
SEA_STATE_BIAS.ALT.ADAPTIVE_PROTO -
IONOSPHERIC_CORRECTION.MODEL.GIM -
WET_TROPOSPHERIC_CORRECTION.RAD -
DRY_TROPOSPHERIC_CORRECTION.MODEL.ECMWF -
DYNAMICAL_ATMOSPHERIC_CORRECTION.MODEL.MOG2D_HR -
OCEAN_TIDE_HEIGHT.MODEL.FES14B -
SOLID_EARTH_TIDE_HEIGHT.MODEL.CARTWRIGHT_TAYLER_71 -
POLE_TIDE_HEIGHT.MODEL.DESAI_2015

2.1.3 Ales product ' sla

sla = ORBIT.ALT.CNES_POE_F -
range_20hz_ales -
MEAN_SEA_SURFACE.MODEL.CNESCLS15 -
sea_state_bias_20hz_ales -
IONOSPHERIC_CORRECTION.MODEL.GIM -
WET_TROPOSPHERIC_CORRECTION.RAD -
DRY_TROPOSPHERIC_CORRECTION.MODEL.ECMWF -
DYNAMICAL_ATMOSPHERIC_CORRECTION.MODEL.MOG2D_HR -

OCEAN_TIDE_HEIGHT.MODEL.FES14B -
SOLID_EARTH_TIDE_HEIGHT.MODEL.CARTWRIGHT_TAYLER_71 -
POLE_TIDE_HEIGHT.MODEL.DESAI_2015

2.2 Binning

Each track has been divided to a set of sections, where the center of each section is separated by the sample frequency of the satellite times it's velocity.

The data located within the sections limits represent the altimetry time-series on which the statistics will be calculated and visualized in this report.

2.3 Filtering

- The sla has been filtered by a threshold of 1 m.
- Each sla time-serie has been filtred by a window of $[-4\sigma, 4\sigma]$, where σ is the standard deviation of the sla time serie

3 Spatial coherence analysis

3.1 Range

3.1.1 Range 's count

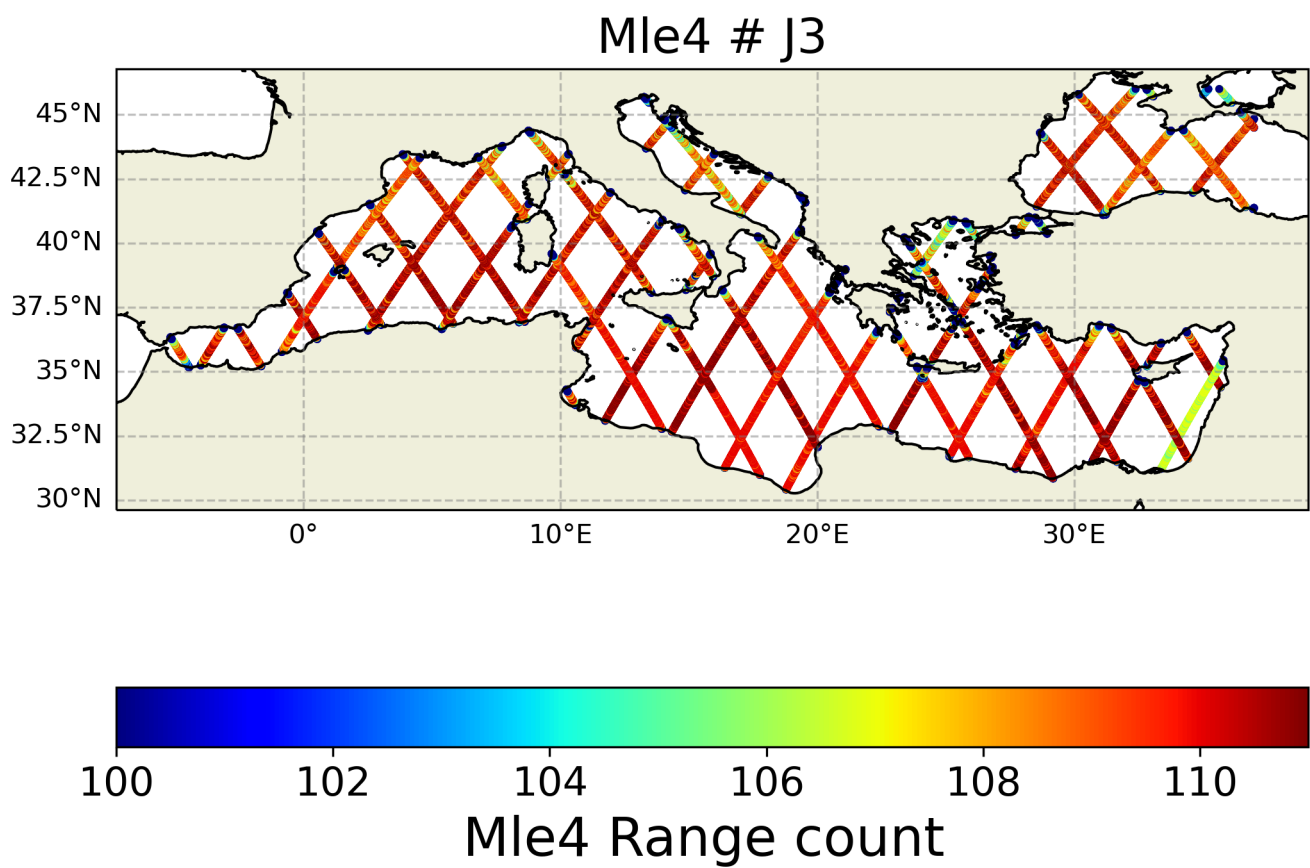


FIGURE 1 – Spatial coherence analysis of the count of the Mle4 version of Range variable

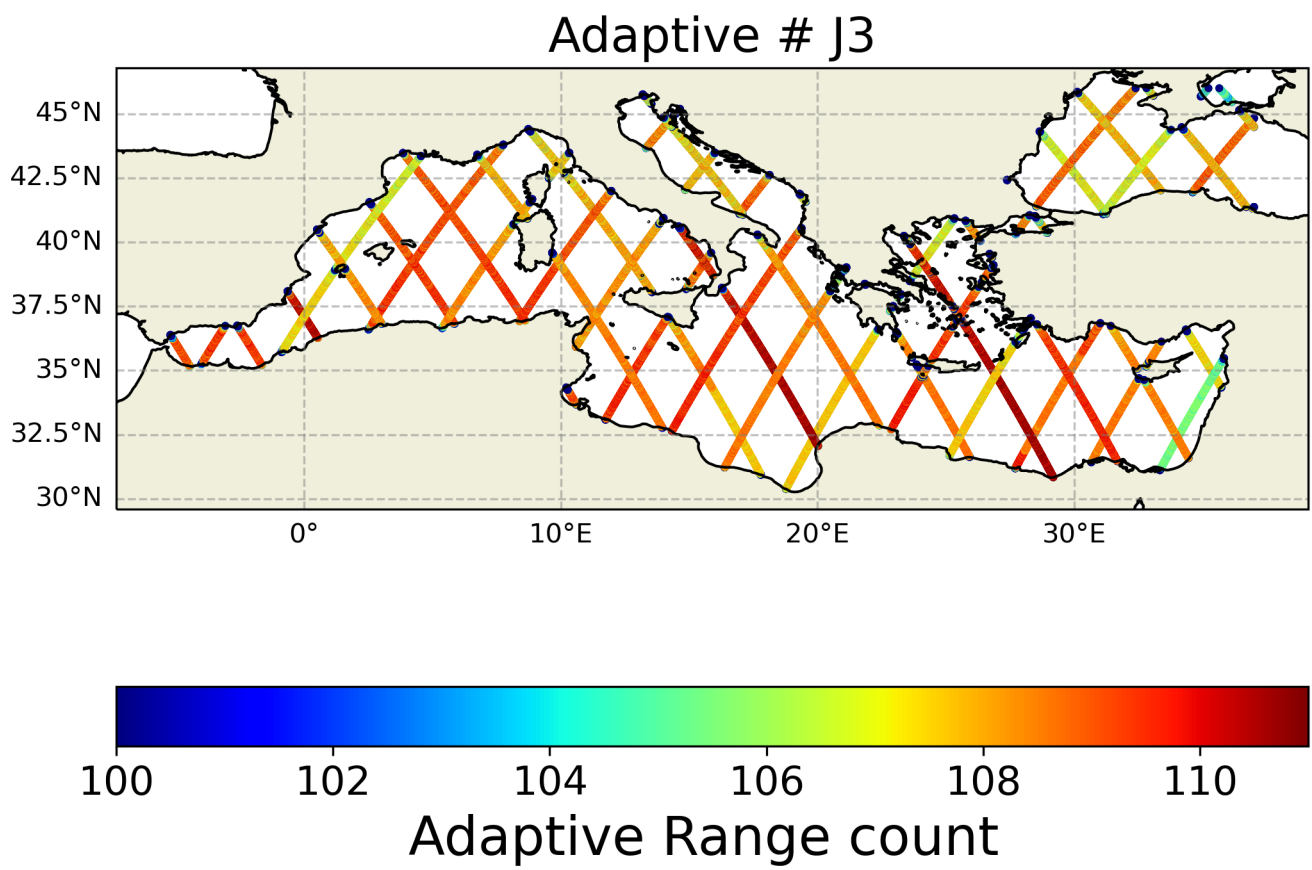


FIGURE 2 – Spatial coherence analysis of the count of the Adaptive version of Range variable

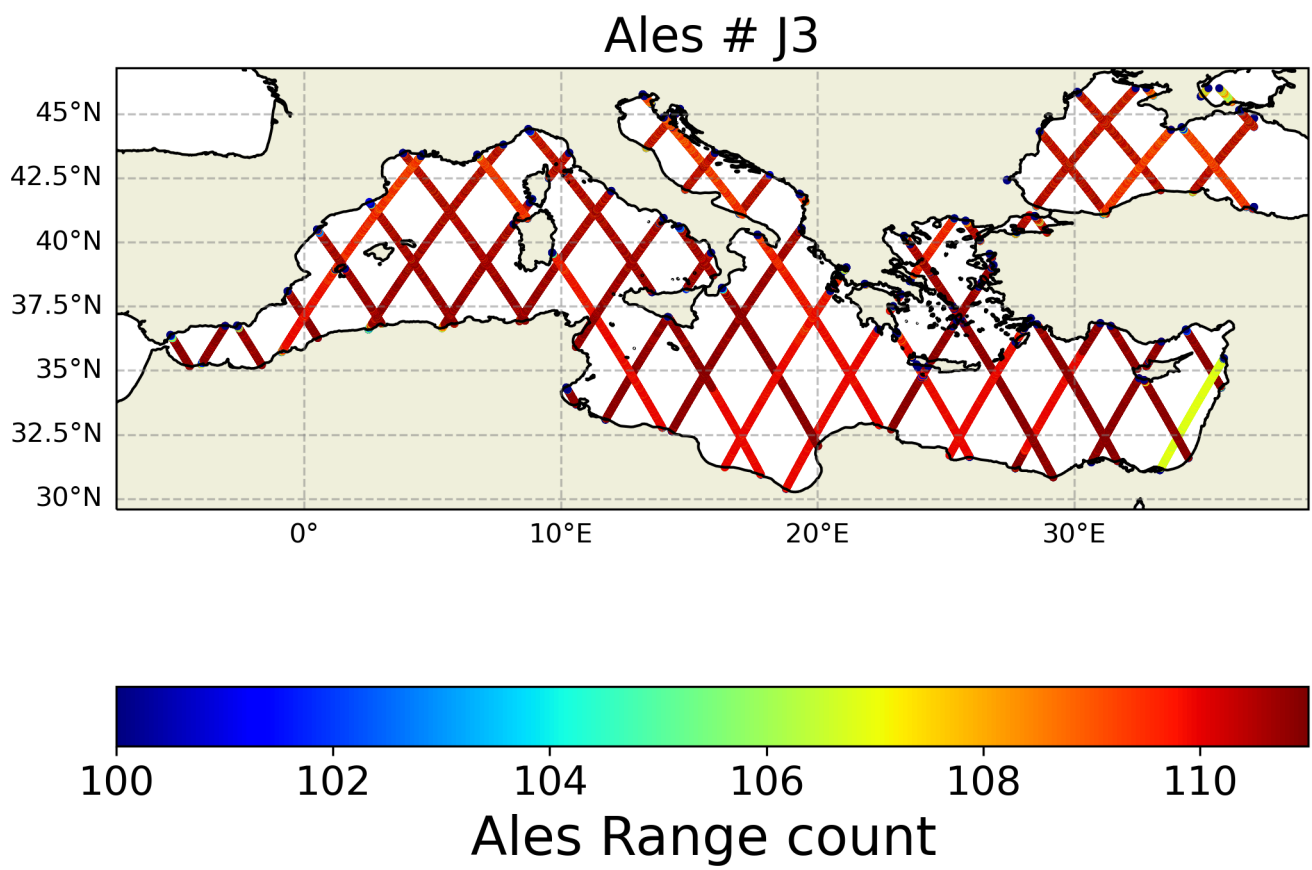


FIGURE 3 – Spatial coherence analysis of the count of the Ales version of Range variable

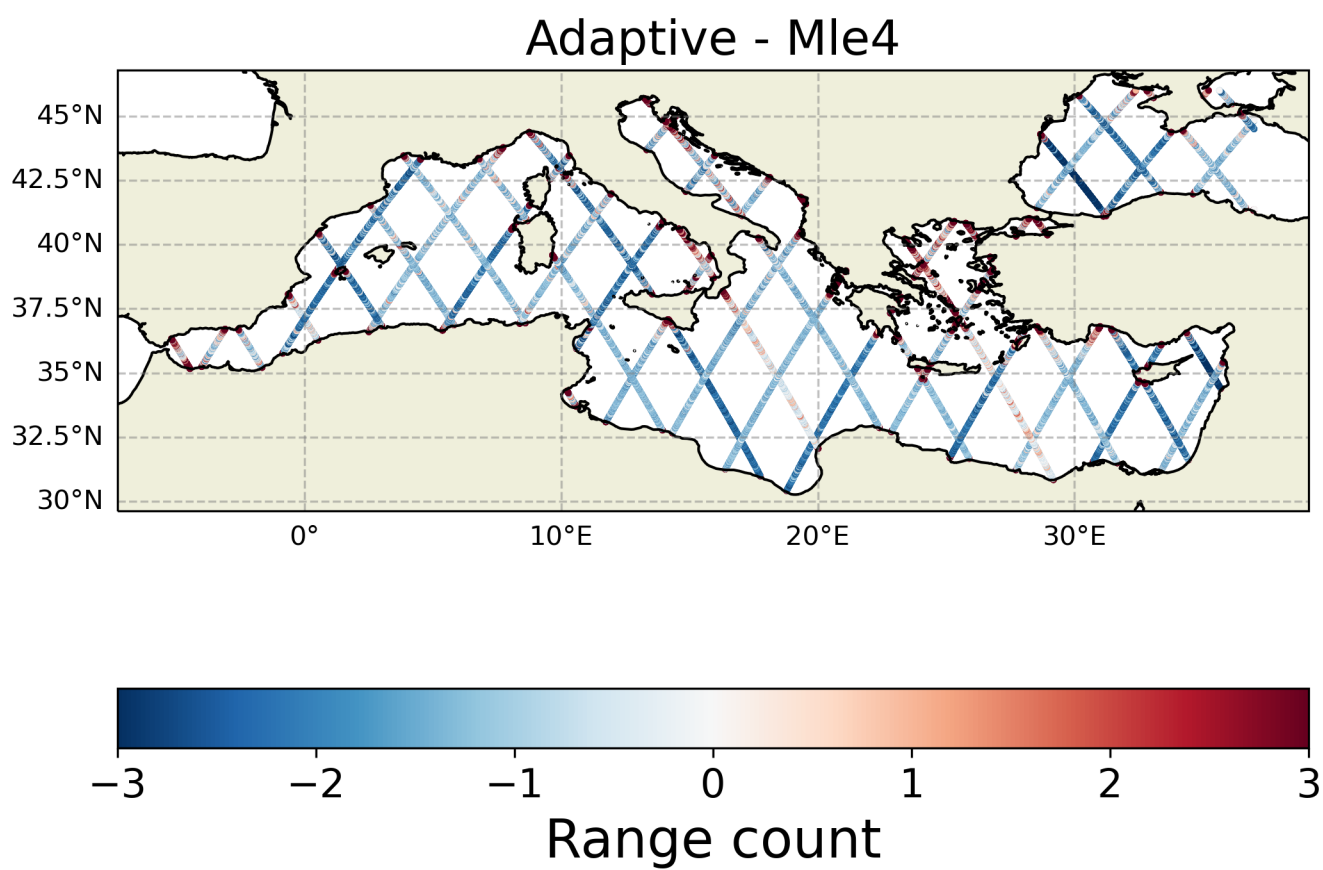


FIGURE 4 – Spatial coherence analysis of the Difference in Range 's count between Adaptive and Mle4

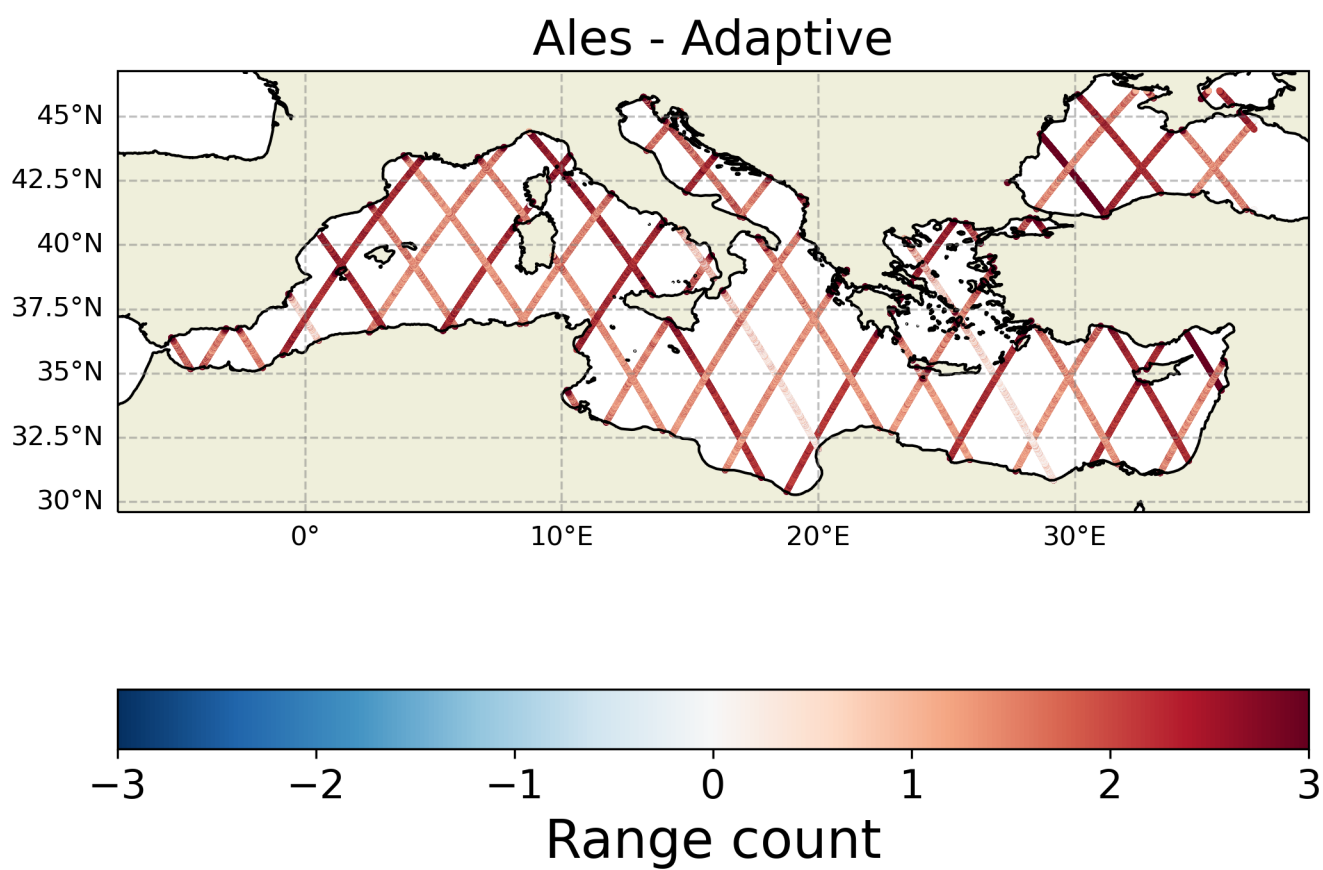


FIGURE 6 – Spatial coherence analysis of the Difference in Range 's count between Ales and Adaptive

3.2 sla

3.2.1 sla's count

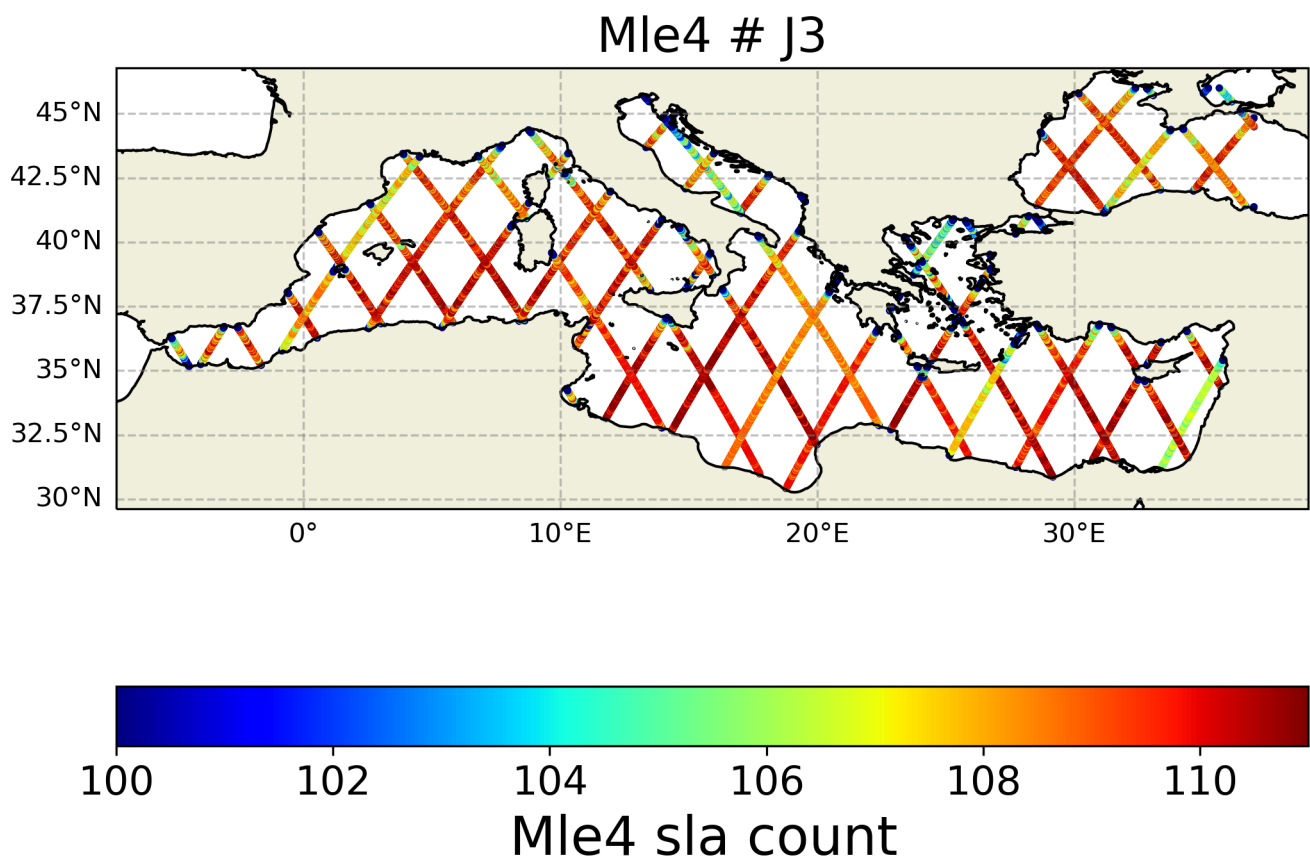


FIGURE 7 – Spatial coherence analysis of the count of the Mle4 version of sla variable

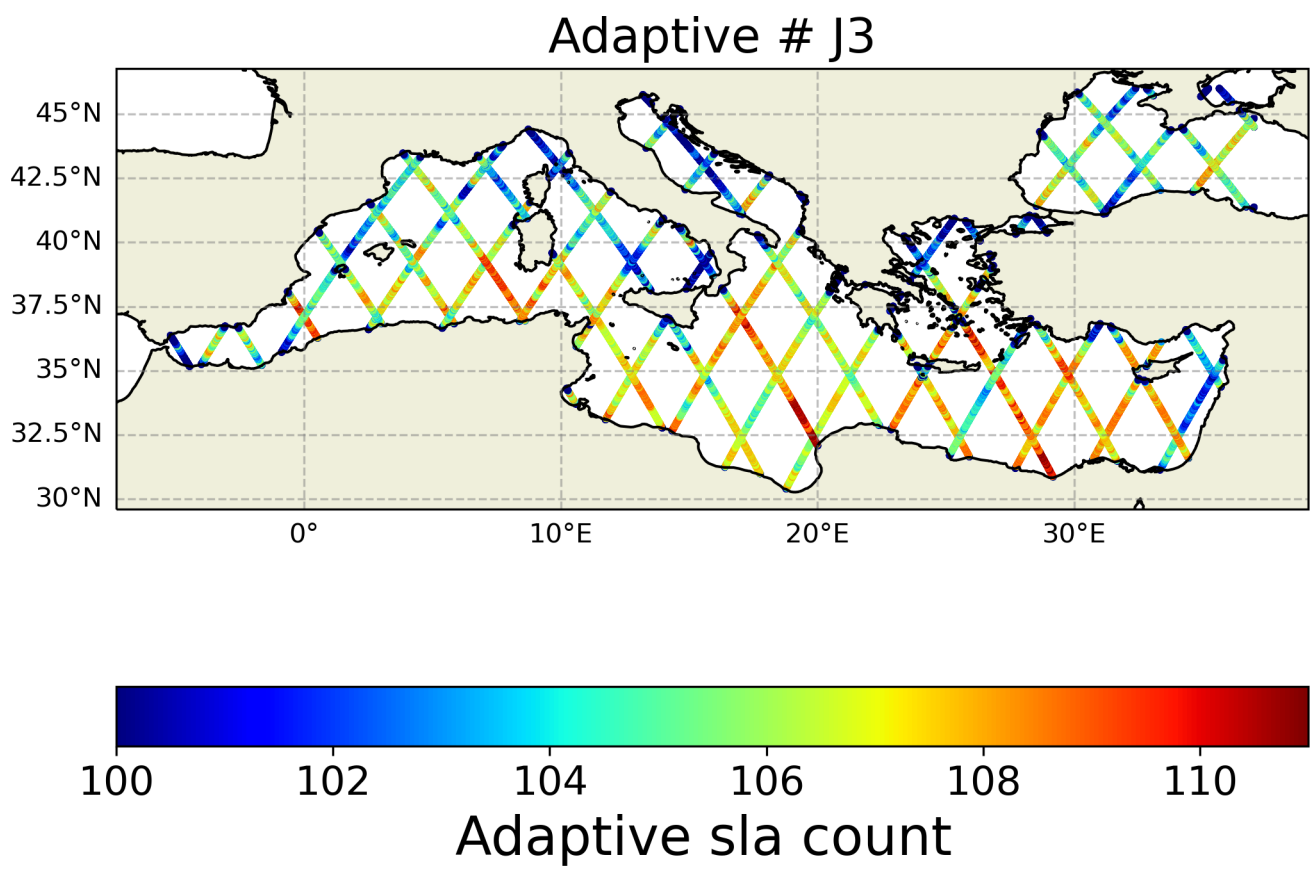


FIGURE 8 – Spatial coherence analysis of the count of the Adaptive version of sla variable

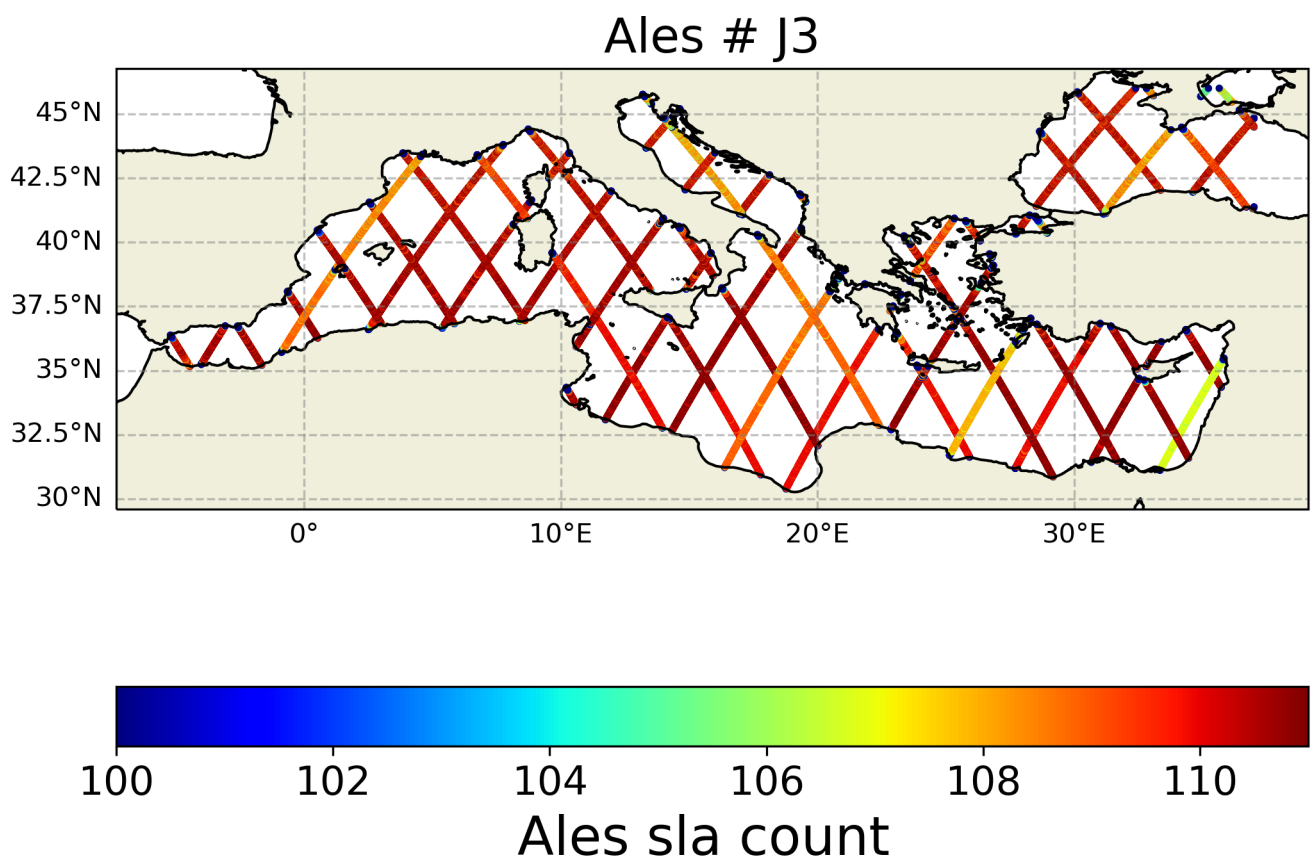


FIGURE 9 – Spatial coherence analysis of the count of the Ales version of sla variable

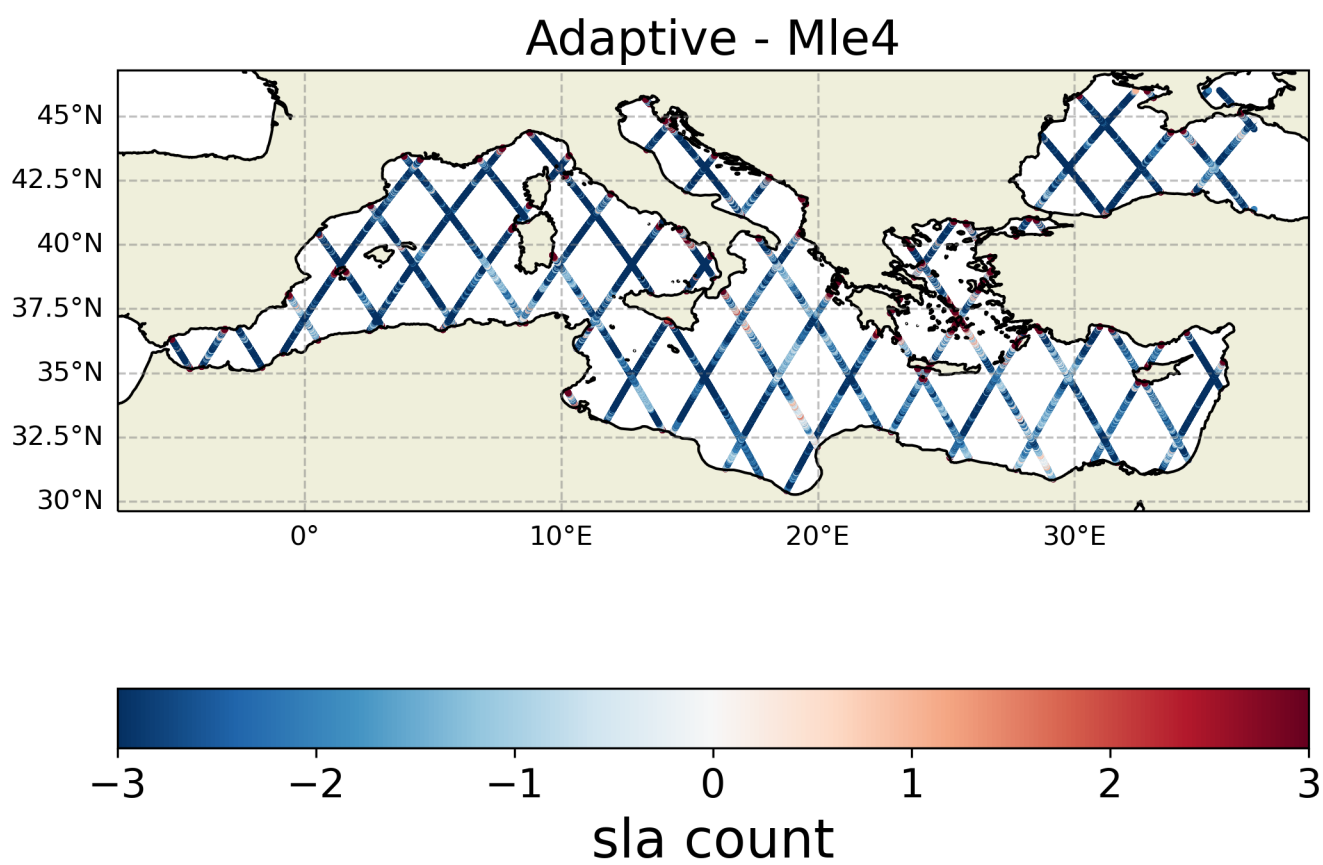


FIGURE 10 – Spatial coherence analysis of the Difference in sla 's count between Adaptive and Mle4

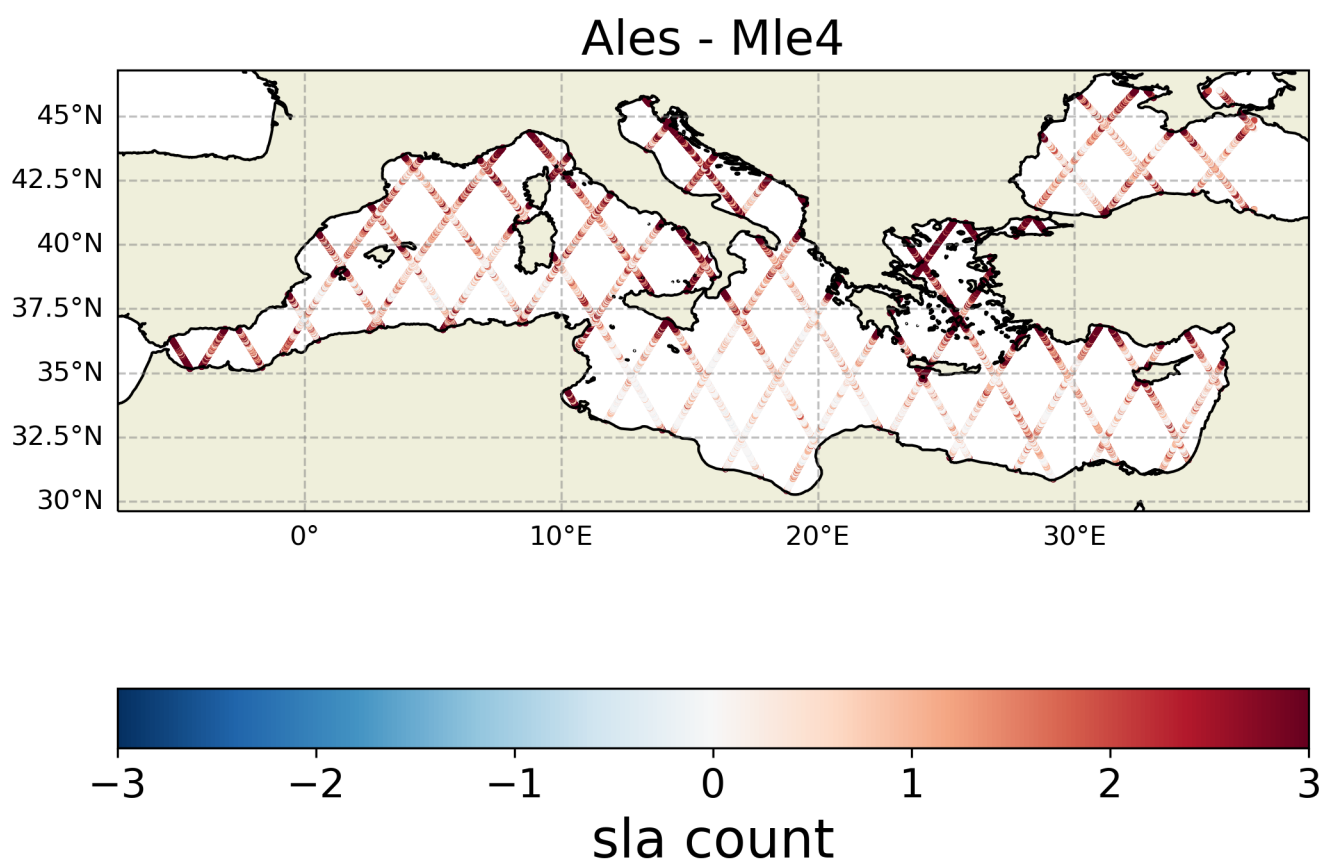


FIGURE 11 – Spatial coherence analysis of the Difference in sla 's count between Ales and Mle4

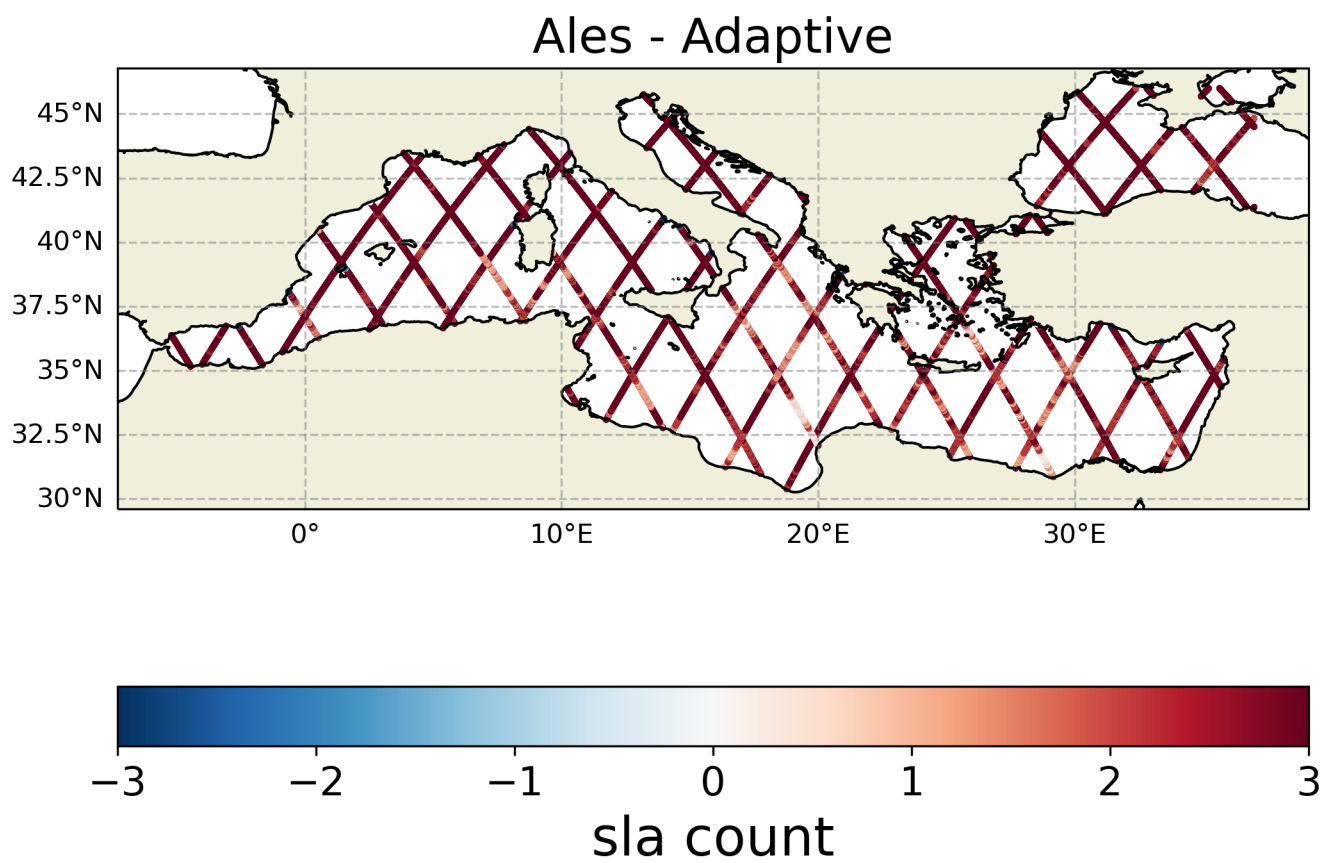


FIGURE 12 – Spatial coherence analysis of the Difference in sla 's count between Ales and Adaptive

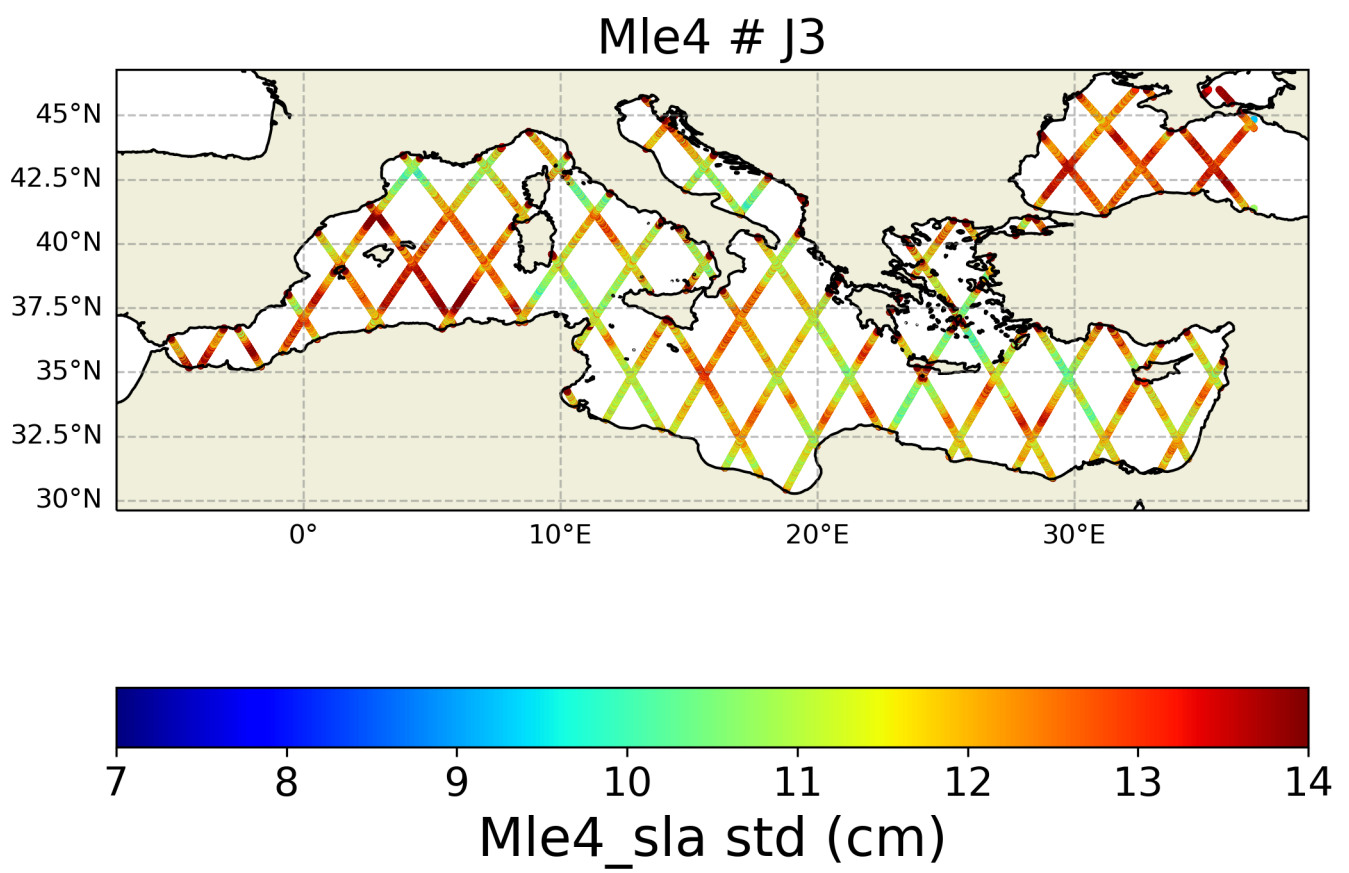


FIGURE 13 – Spatial coherence analysis of the std of the Mle4 version of sla variable

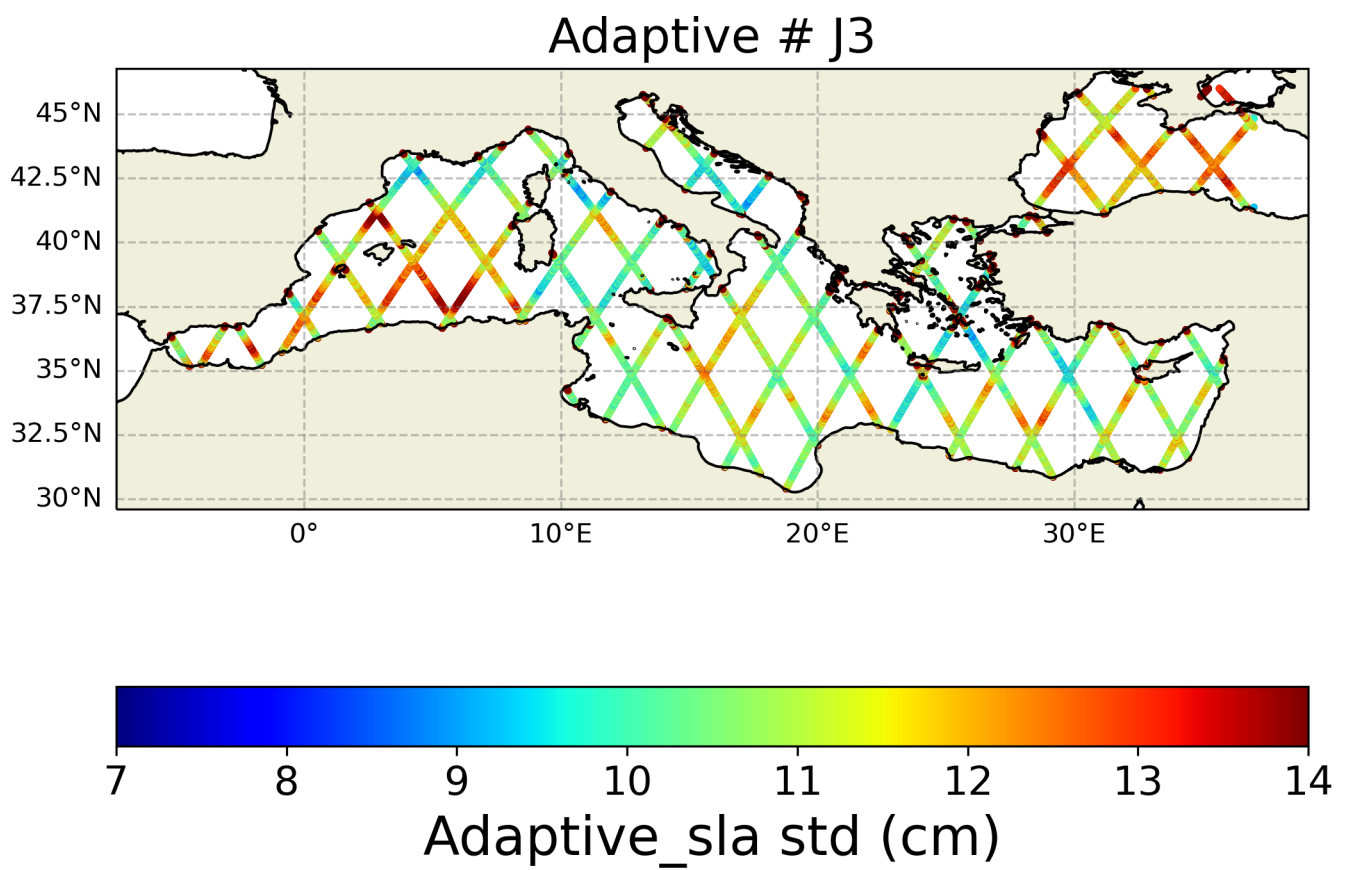


FIGURE 14 – Spatial coherence analysis of the std of the Adaptive version of sla variable

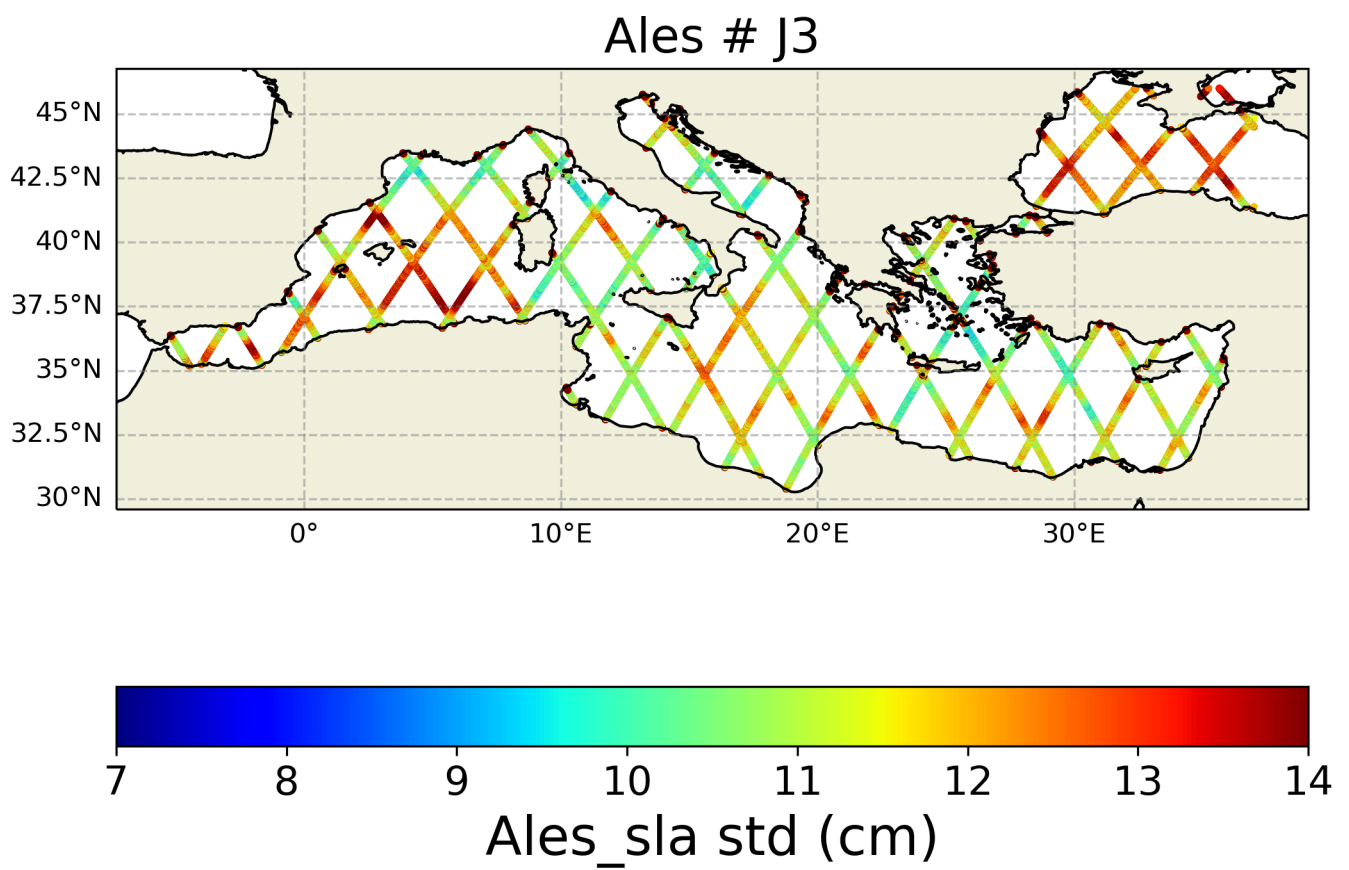


FIGURE 15 – Spatial coherence analysis of the std of the Ales version of sla variable

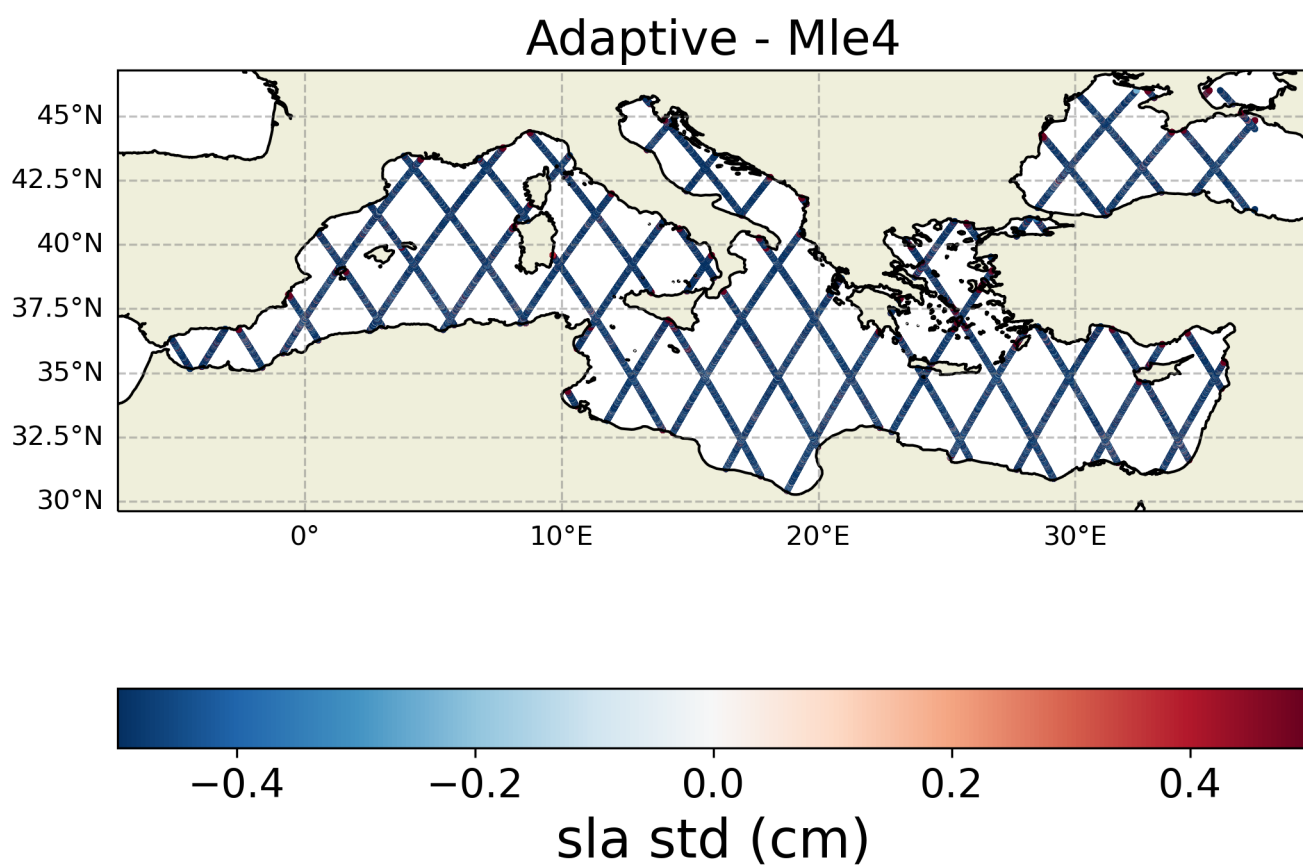


FIGURE 16 – Spatial coherence analysis of the Difference in sla 's std between Adaptive and Mle4

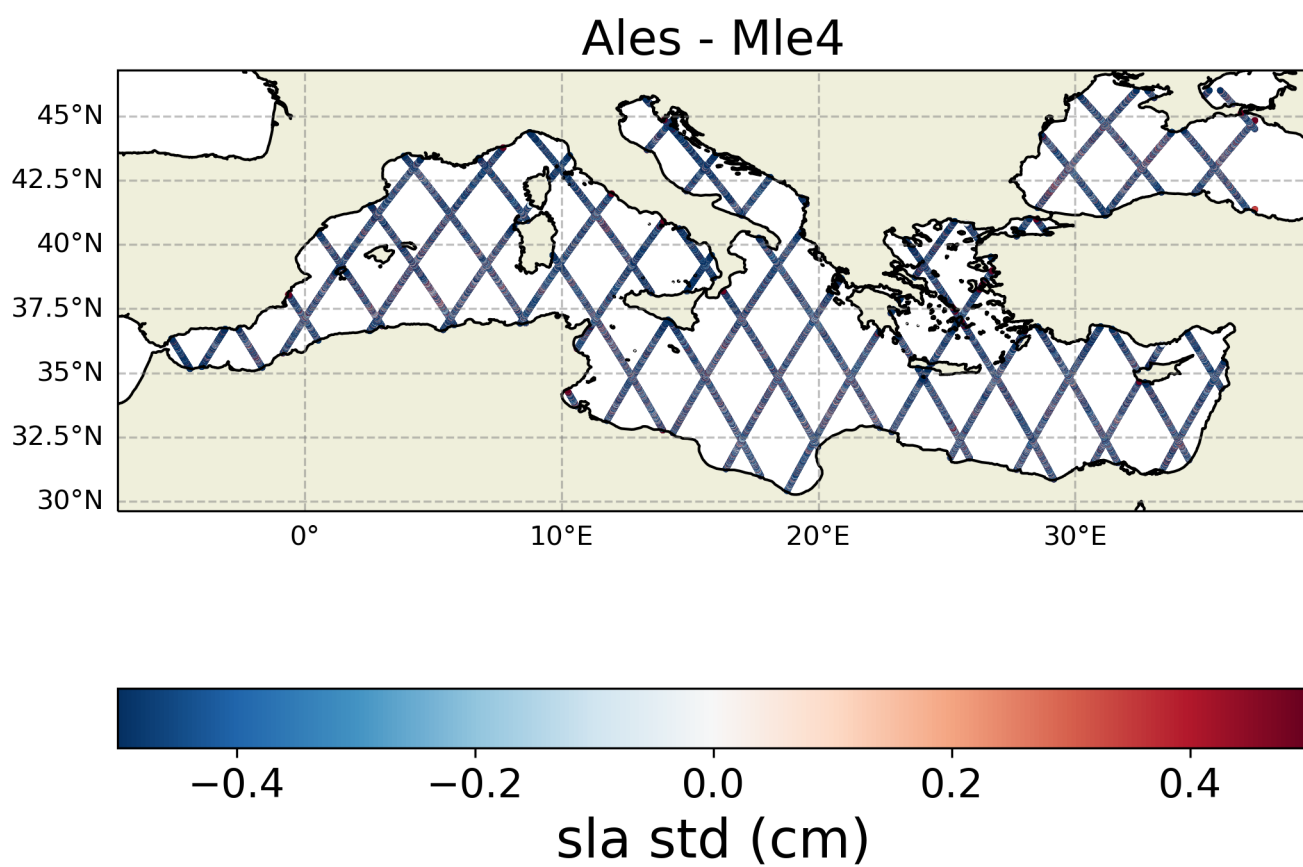


FIGURE 17 – Spatial coherence analysis of the Difference in sla 's std between Ales and Mle4

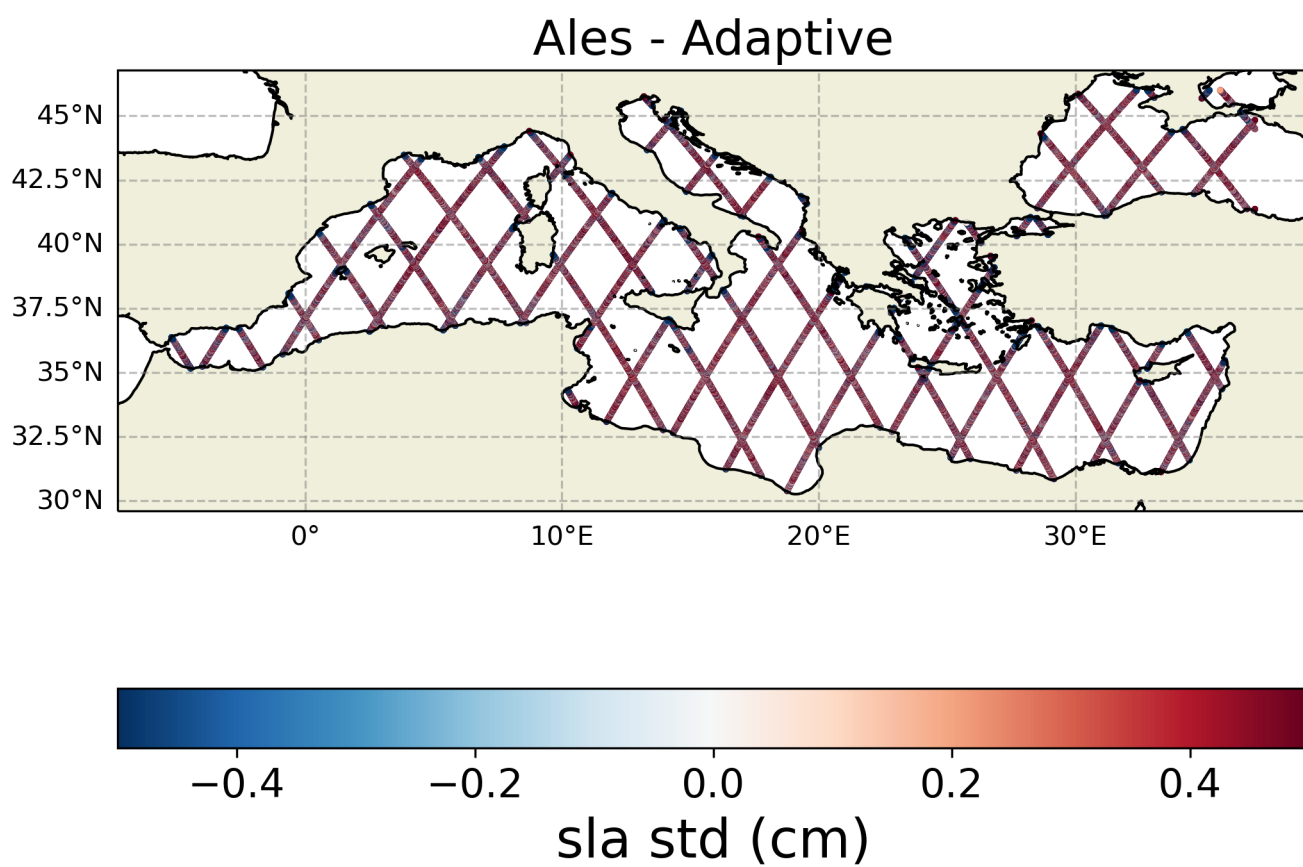


FIGURE 18 – Spatial coherence analysis of the Difference in sla 's std between Ales and Adaptive

3.2.3 sla's mean

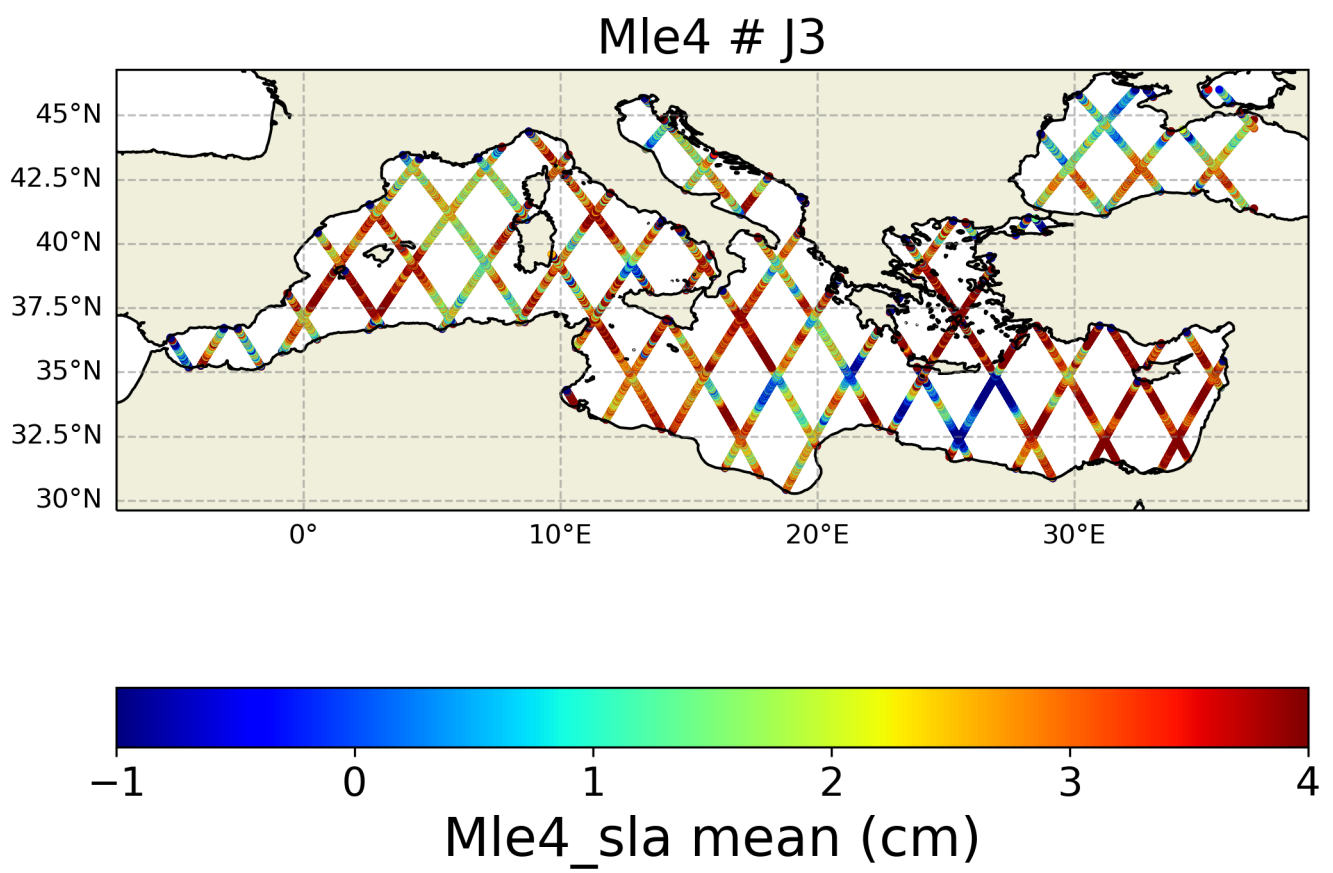


FIGURE 19 – Spatial coherence analysis of the mean of the Mle4 version of sla variable

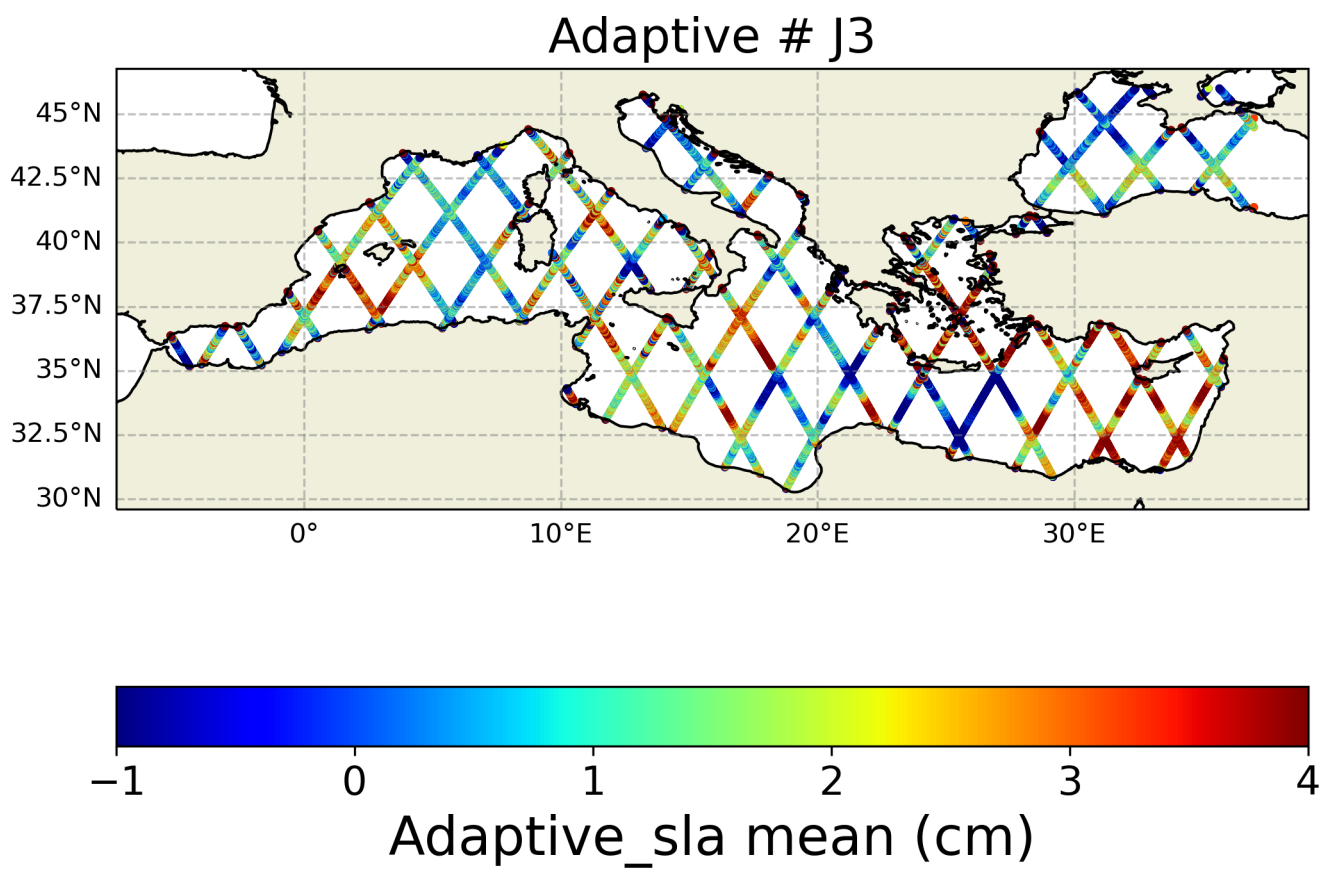


FIGURE 20 – Spatial coherence analysis of the mean of the Adaptive version of sla variable

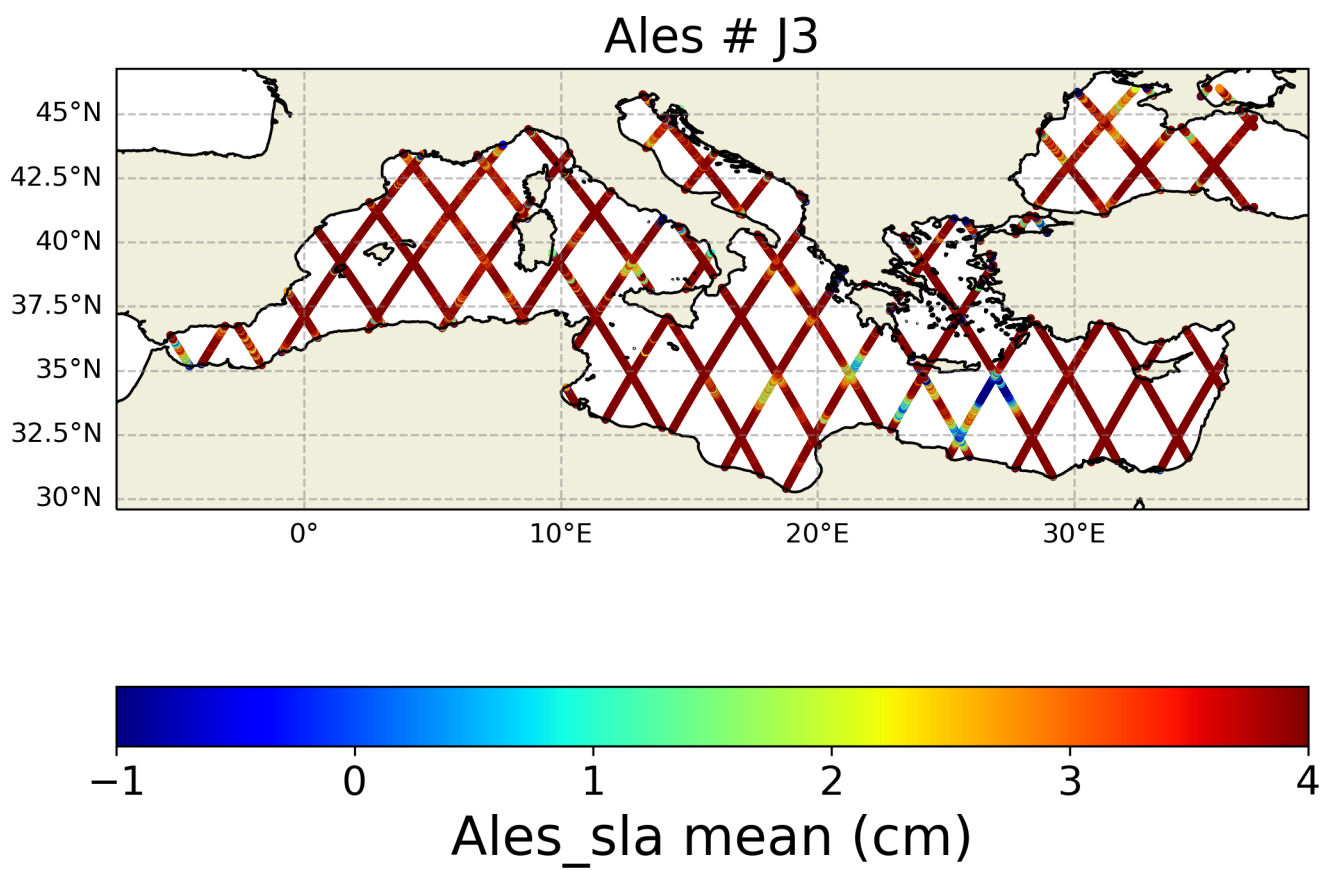


FIGURE 21 – Spatial coherence analysis of the mean of the Ales version of sla variable

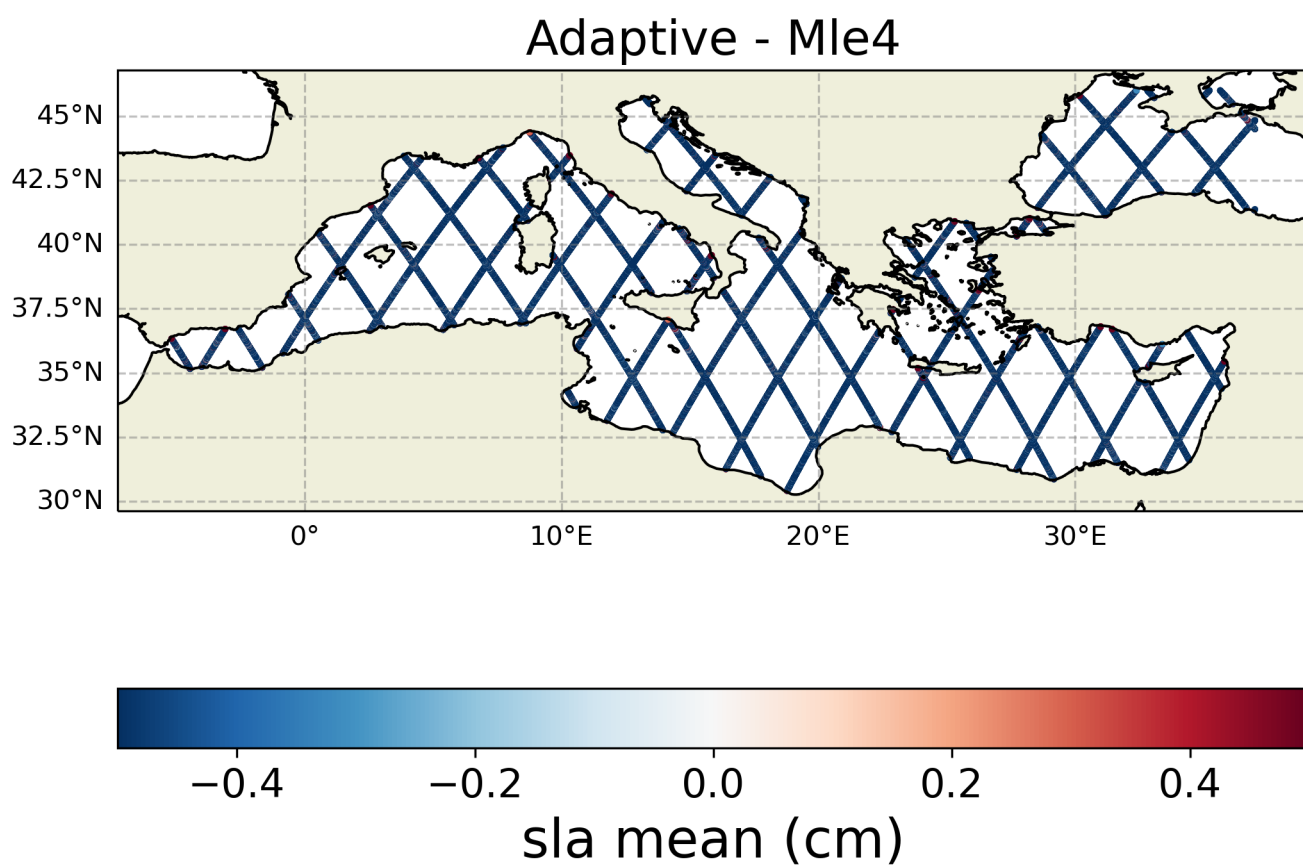


FIGURE 22 – Spatial coherence analysis of the Difference in sla 's mean between Adaptive and Mle4

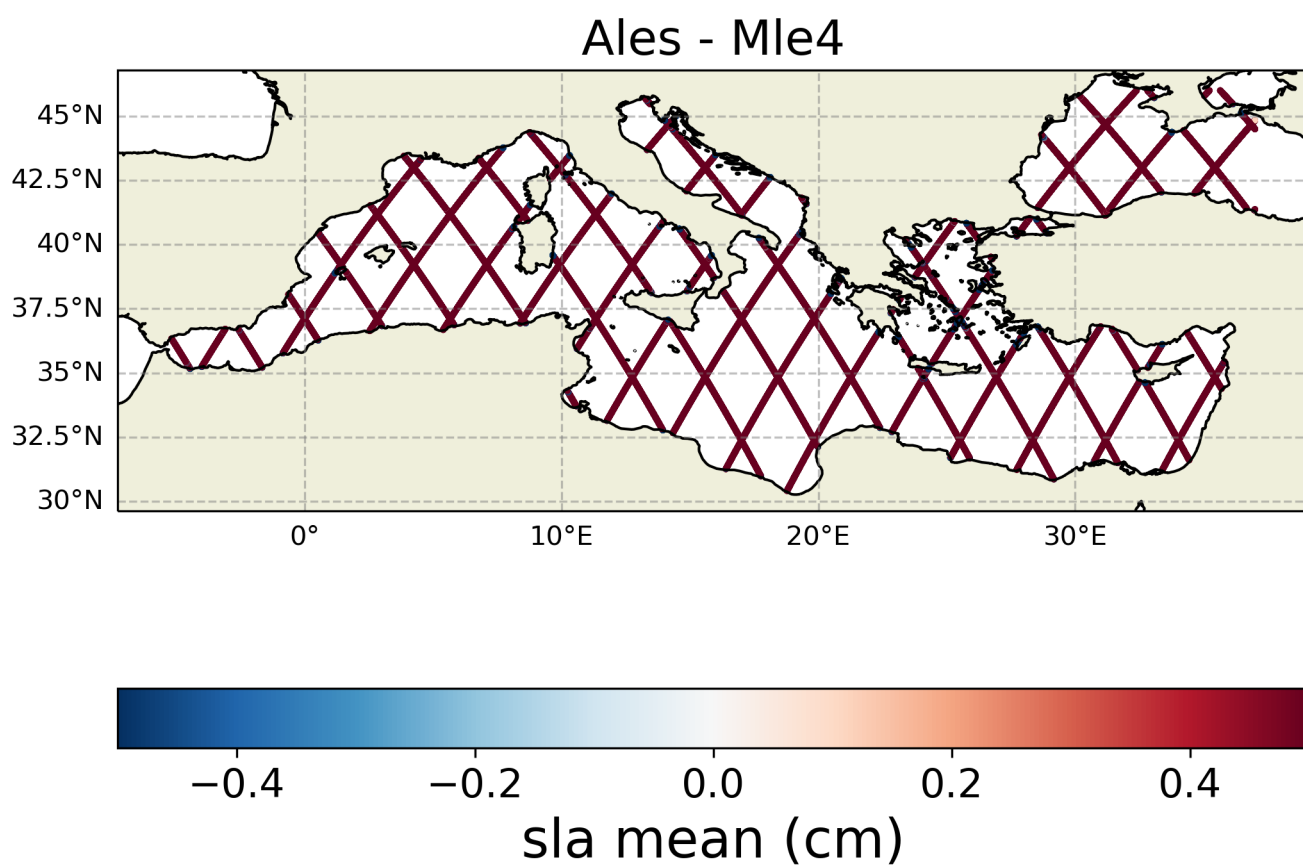


FIGURE 23 – Spatial coherence analysis of the Difference in sla 's mean between Ales and Mle4

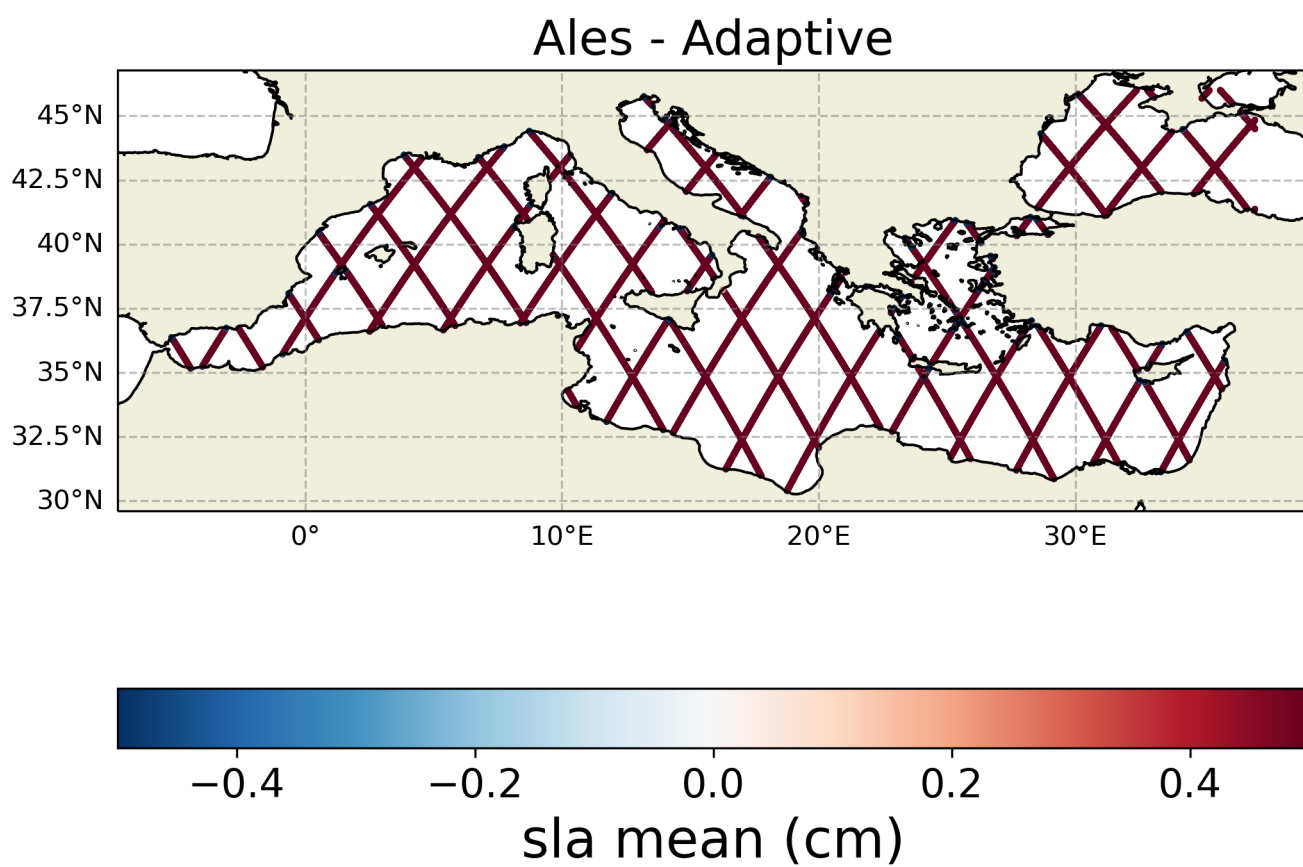


FIGURE 24 – Spatial coherence analysis of the Difference in sla 's mean between Ales and Adaptive

4 Histograms

4.1 sla

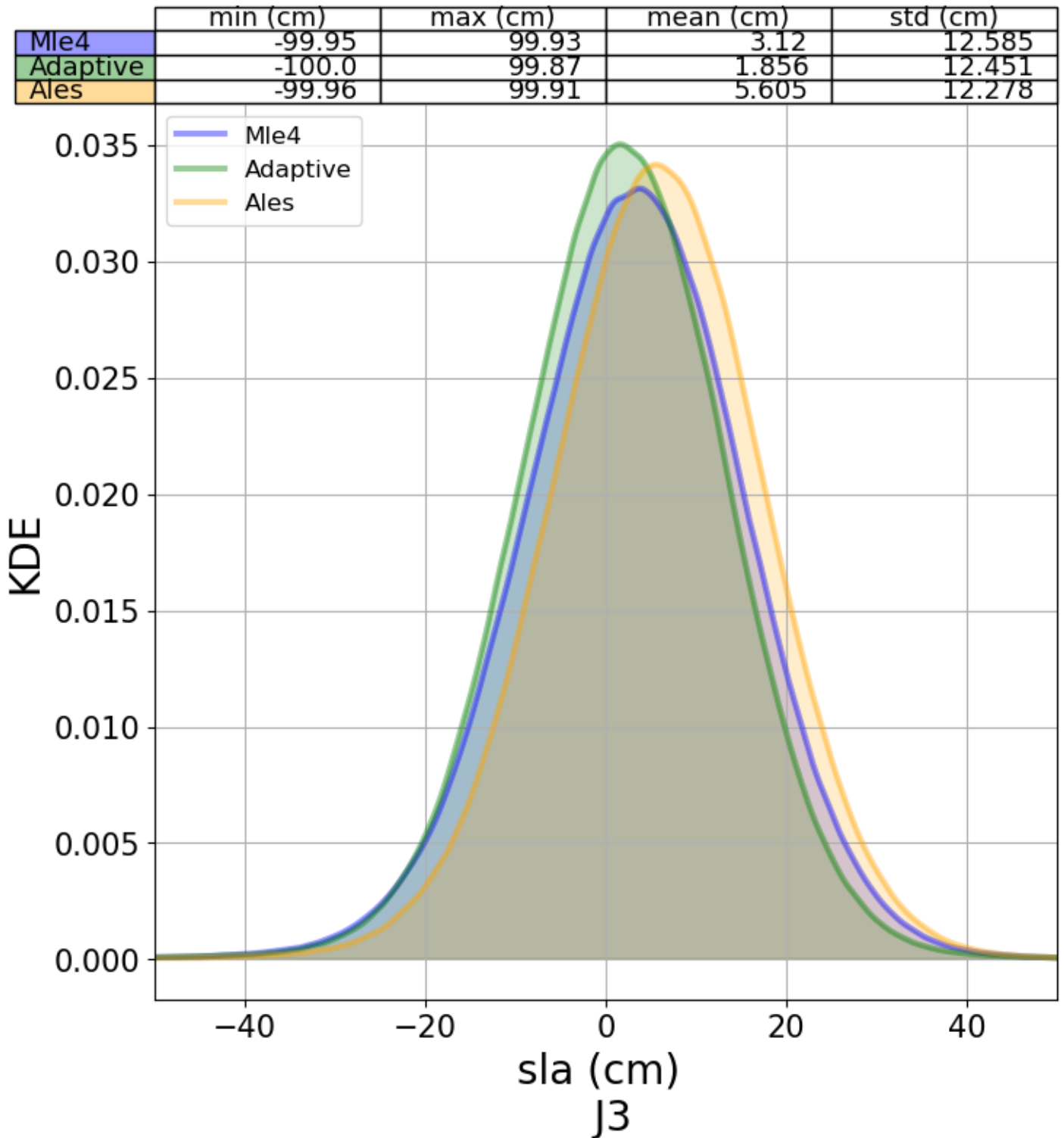


FIGURE 25 – Histogram of each of sla version

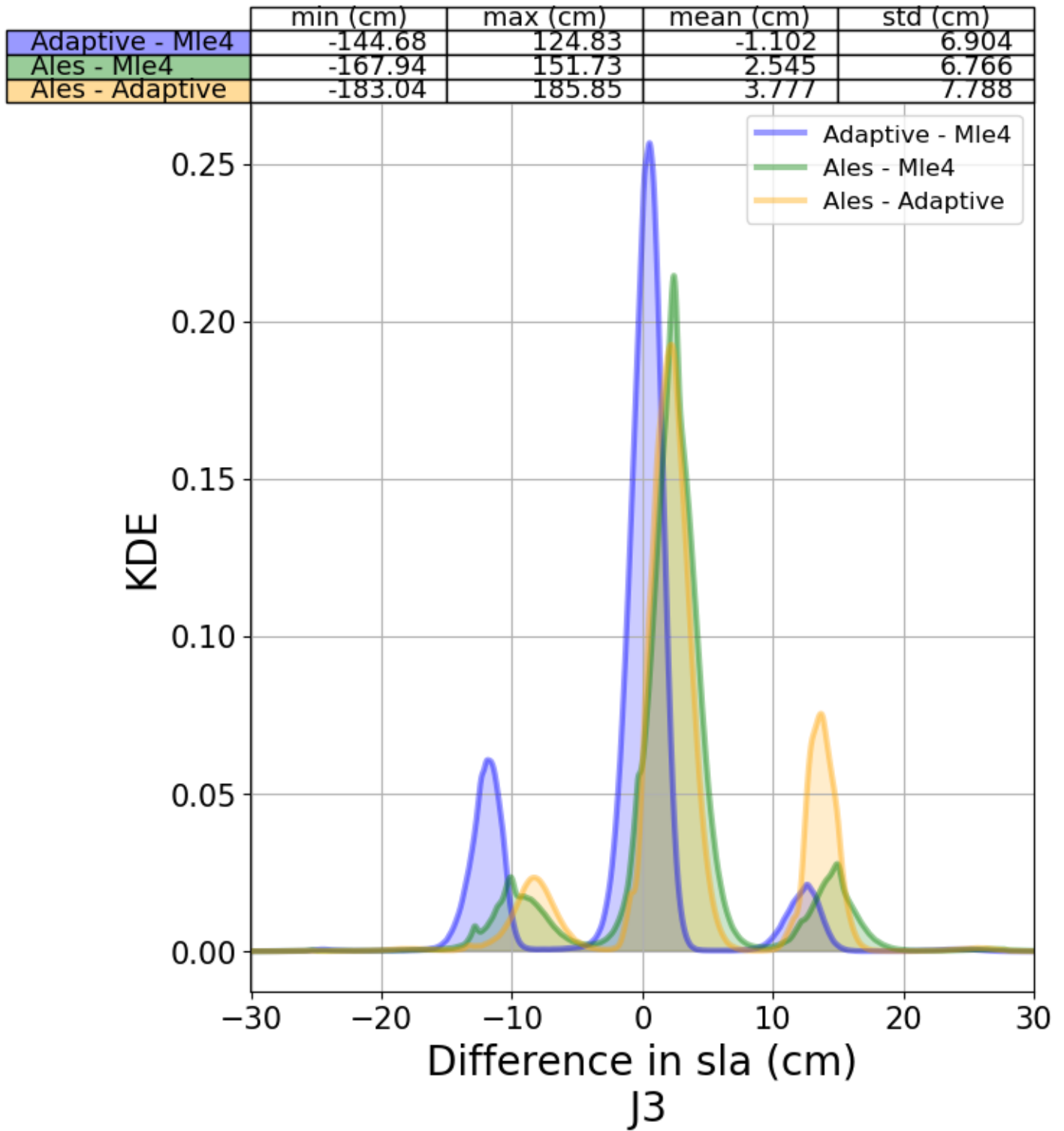


FIGURE 26 – Histograms of difference of each sla version and reference one

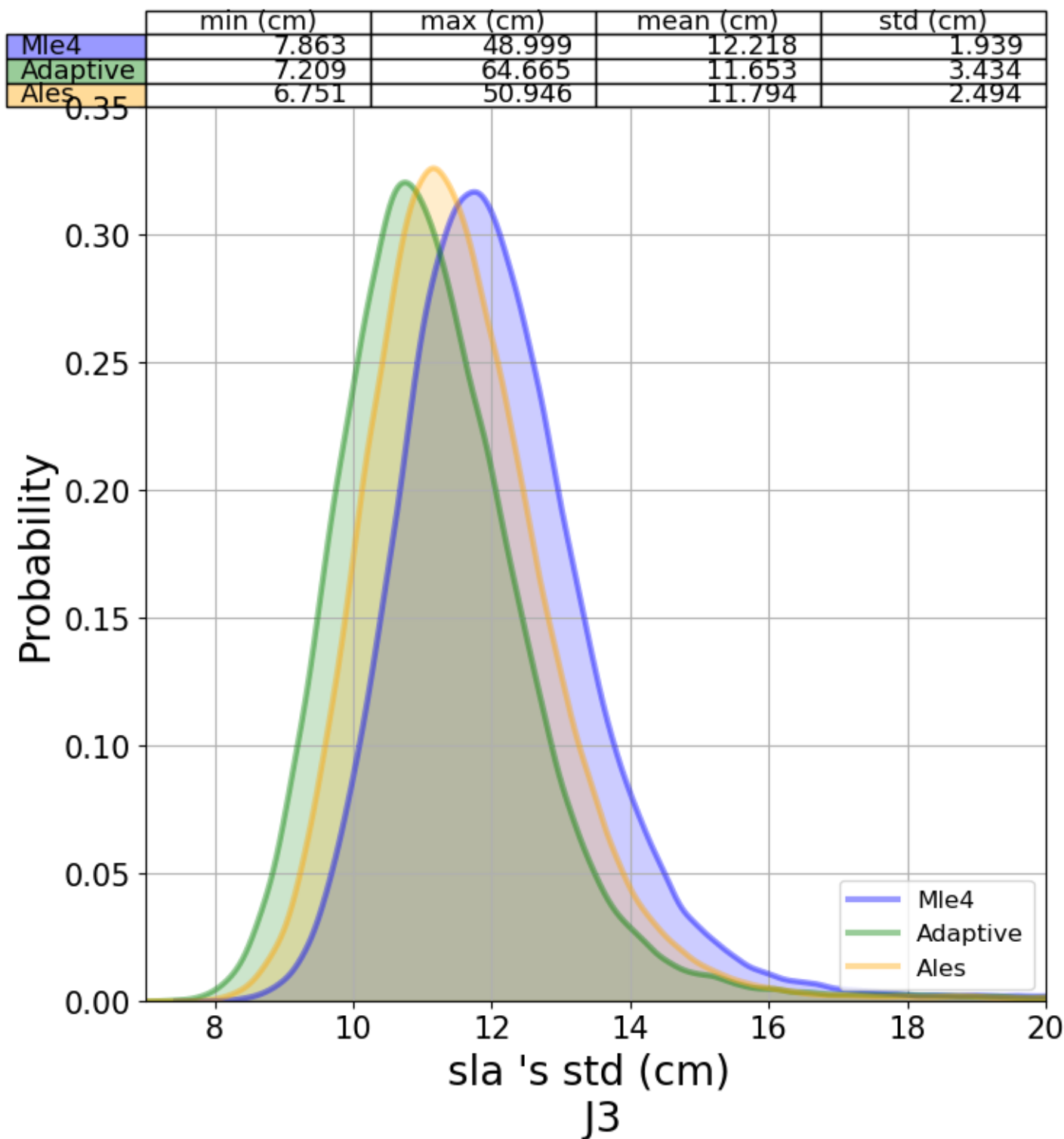


FIGURE 27 – Histograms of the standard deviation of each sla version

5 Along-track analysis

5.1 Range

5.1.1 Range 's count

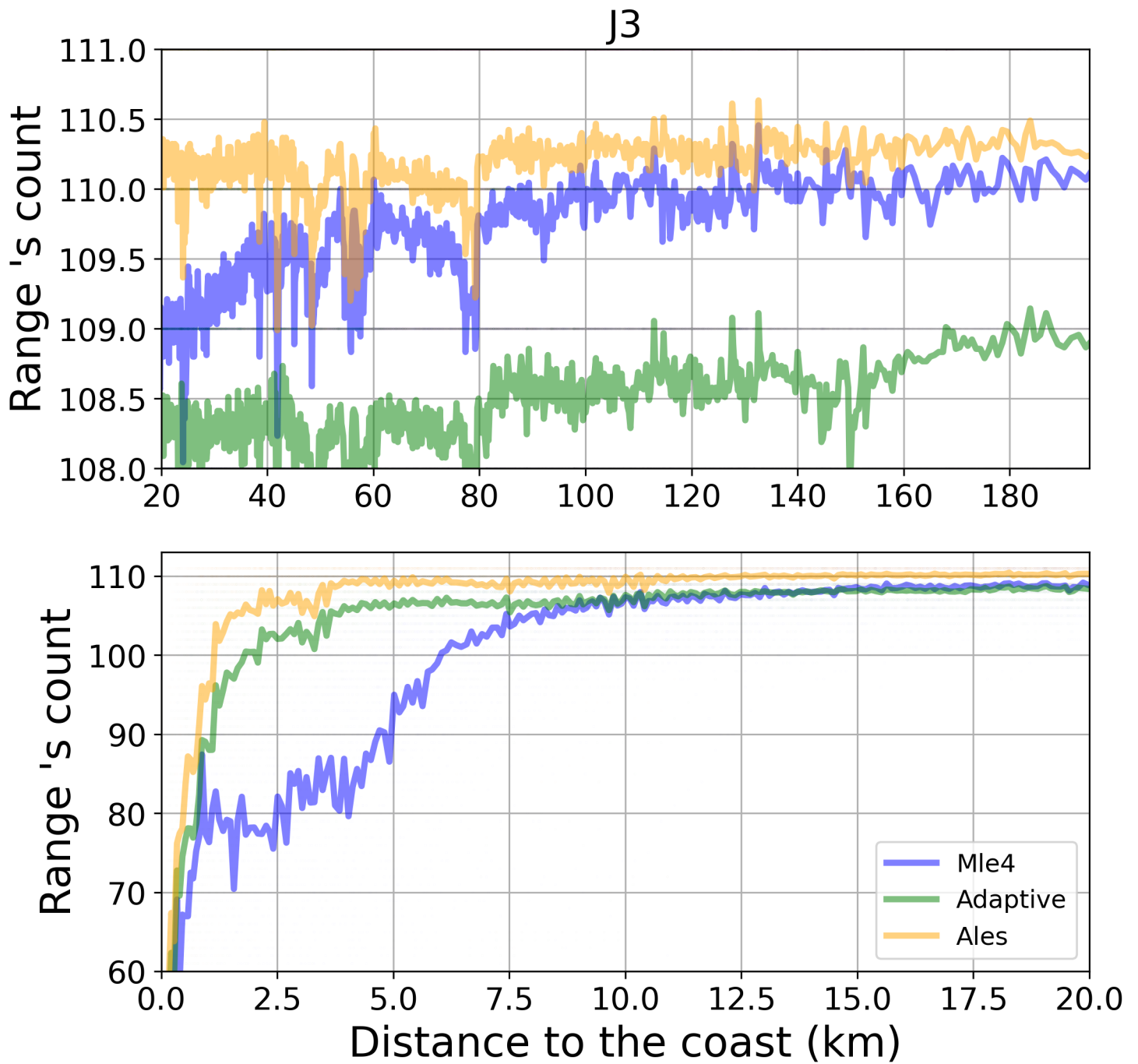


FIGURE 28 – Along-track analysis of Range 's count

5.2 sla

5.2.1 sla's count

J3

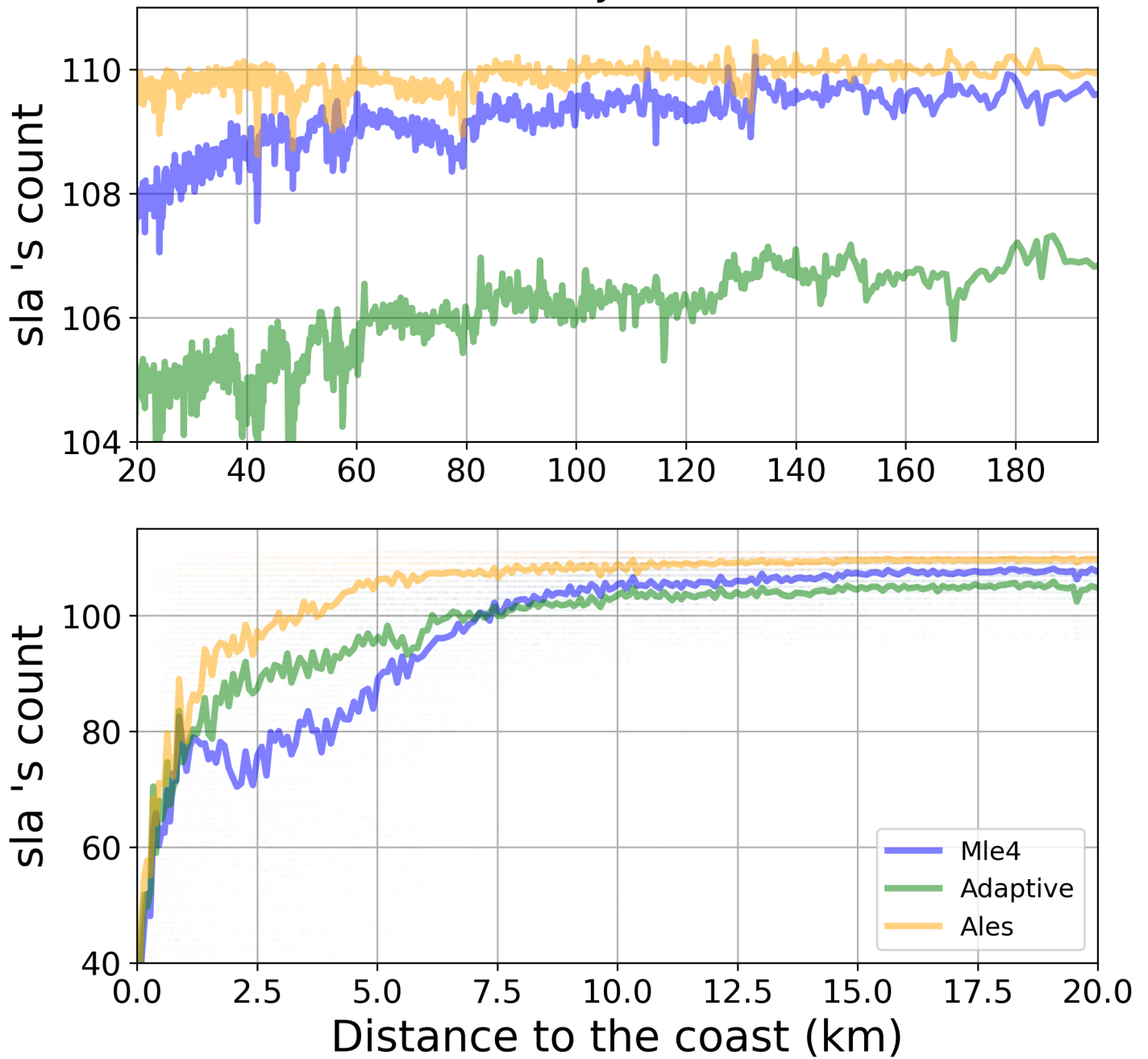


FIGURE 29 – Along-track analysis of sla's count

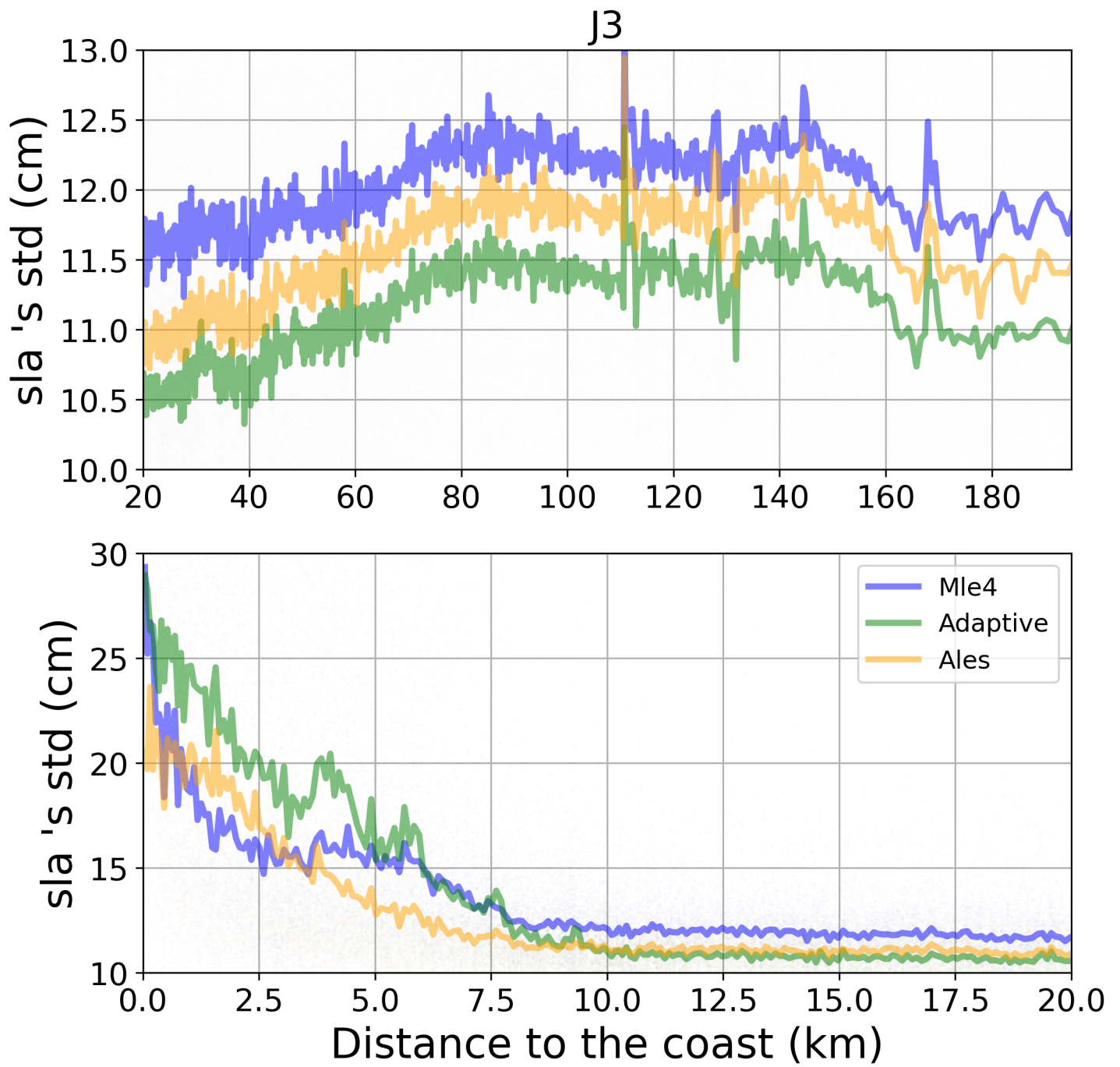


FIGURE 30 – Along-track analysis of sla 's std

J3

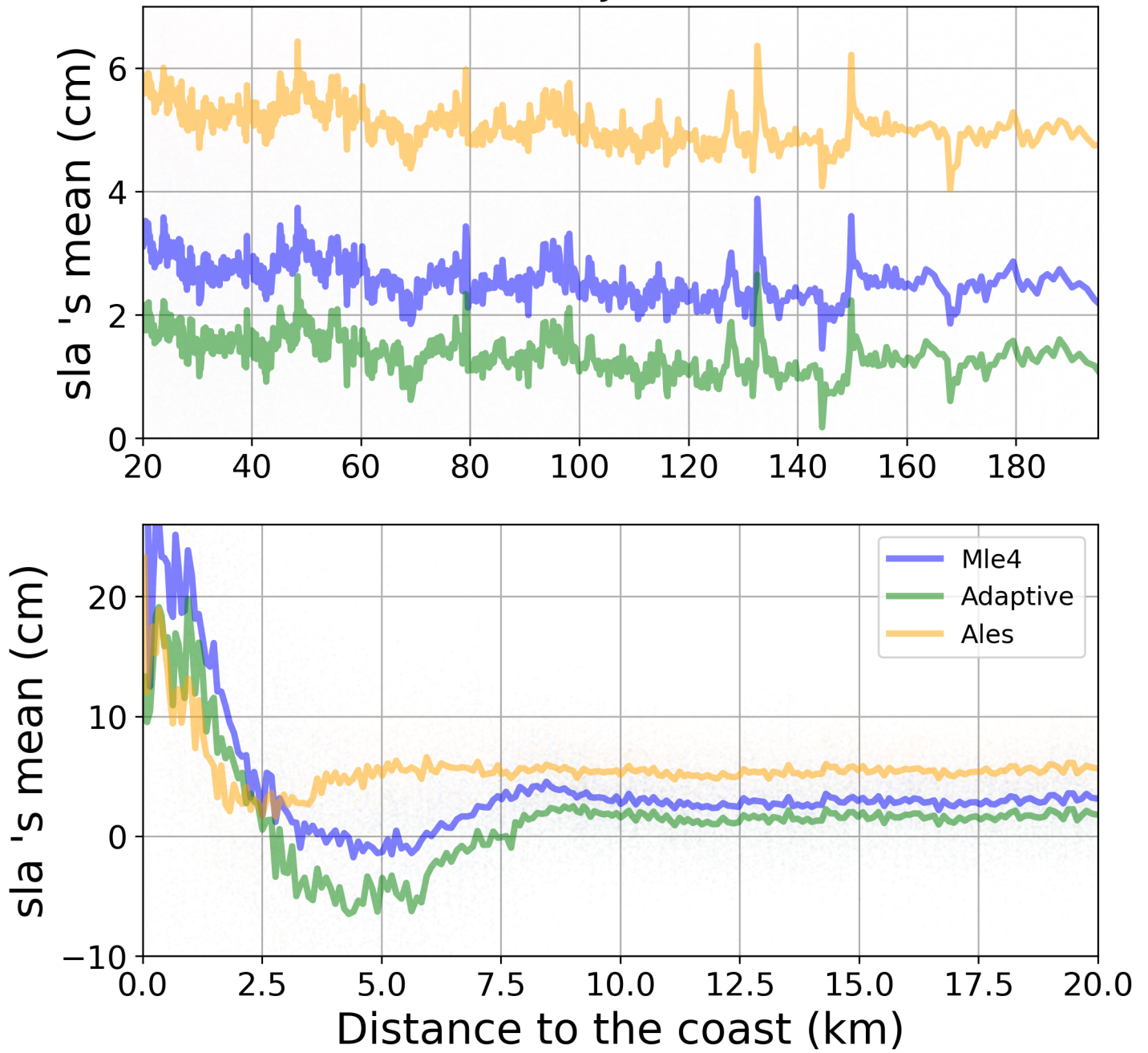


FIGURE 31 – Along-track analysis of sla 's mean

6 Comparison with Insitu Data (Tide Gauge)

The size of the marker representing each point in the figures below increase by getting closer to the coast

6.1 Station : SETE

- Nearest track to SETE station is the track number track146
- The area of interest is limited by :
 - A circle which it's center is the SETE tide gauge station location and has a Radius of 40 Km
 - Maximum distance to the coast : 20 Km

6.1.1 correlation visualization in maps view % SETE tide gauge

Correlation Altimetry data with respect to SETE Tide gauge data

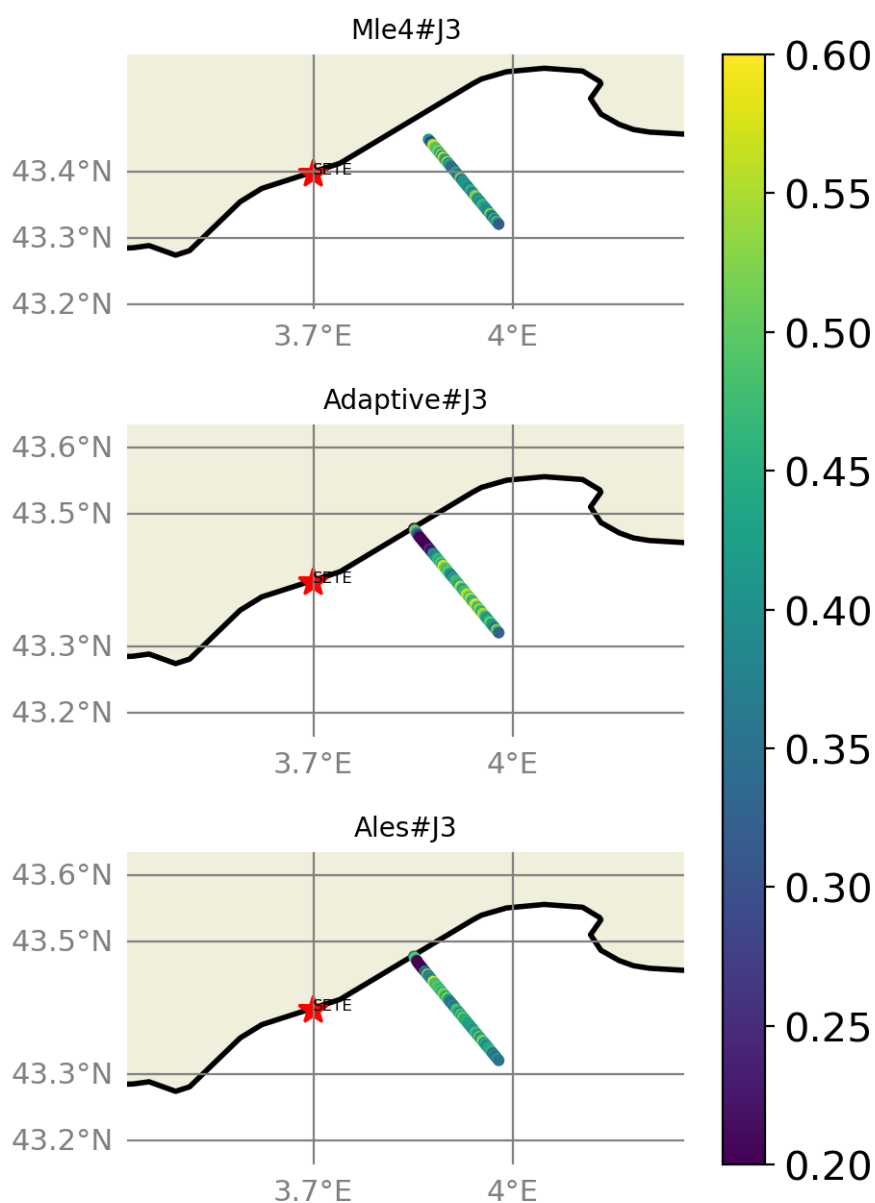


FIGURE 32 – correlation visualization in maps view % SETE tide gauge

6.1.2 rmsd visualization in maps view % SETE tide gauge

Rmsd (m) Altimetry data with respect to SETE Tide gauge data

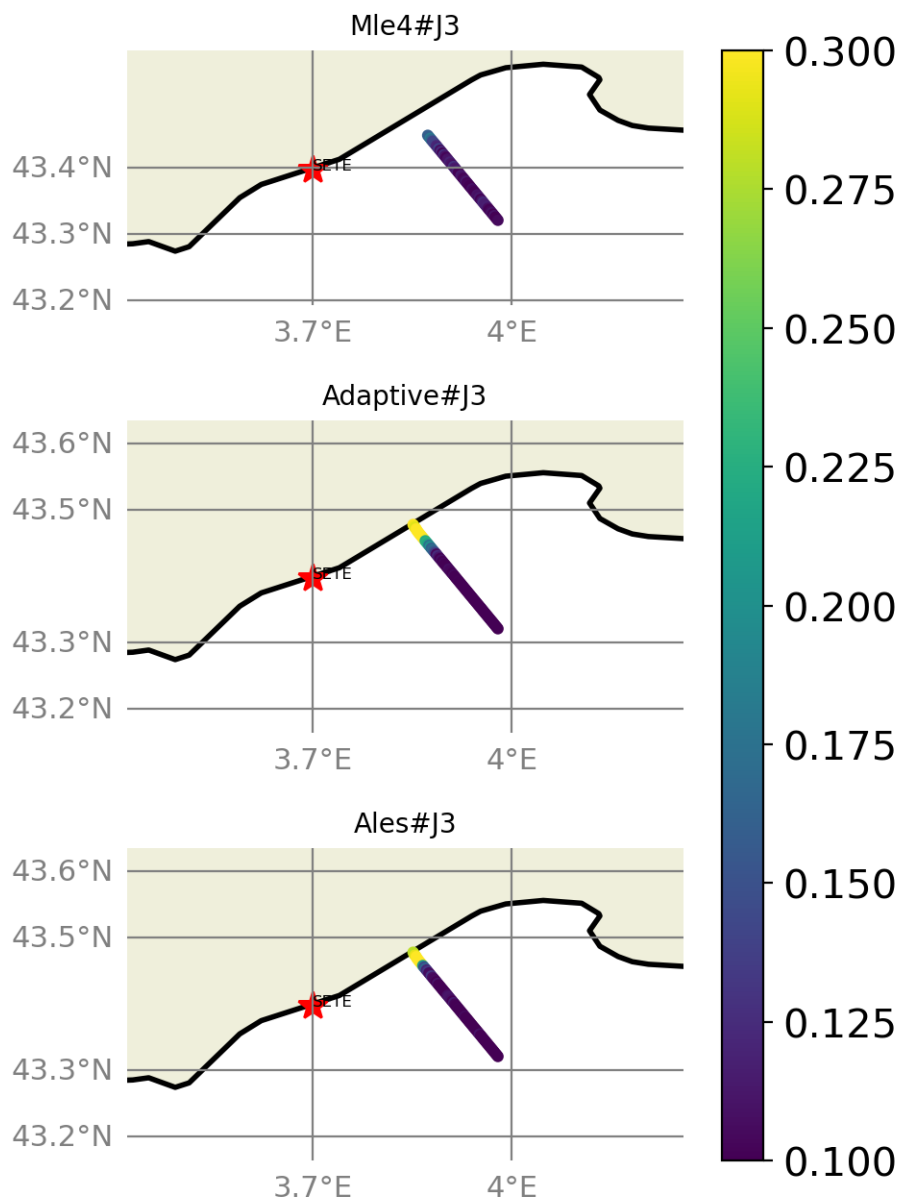


FIGURE 33 – rmsd visualization in maps view % SETE tide gauge

6.1.3 std visualization in maps view % SETE tide gauge

Std (m) Altimetry data with respect to SETE Tide gauge data

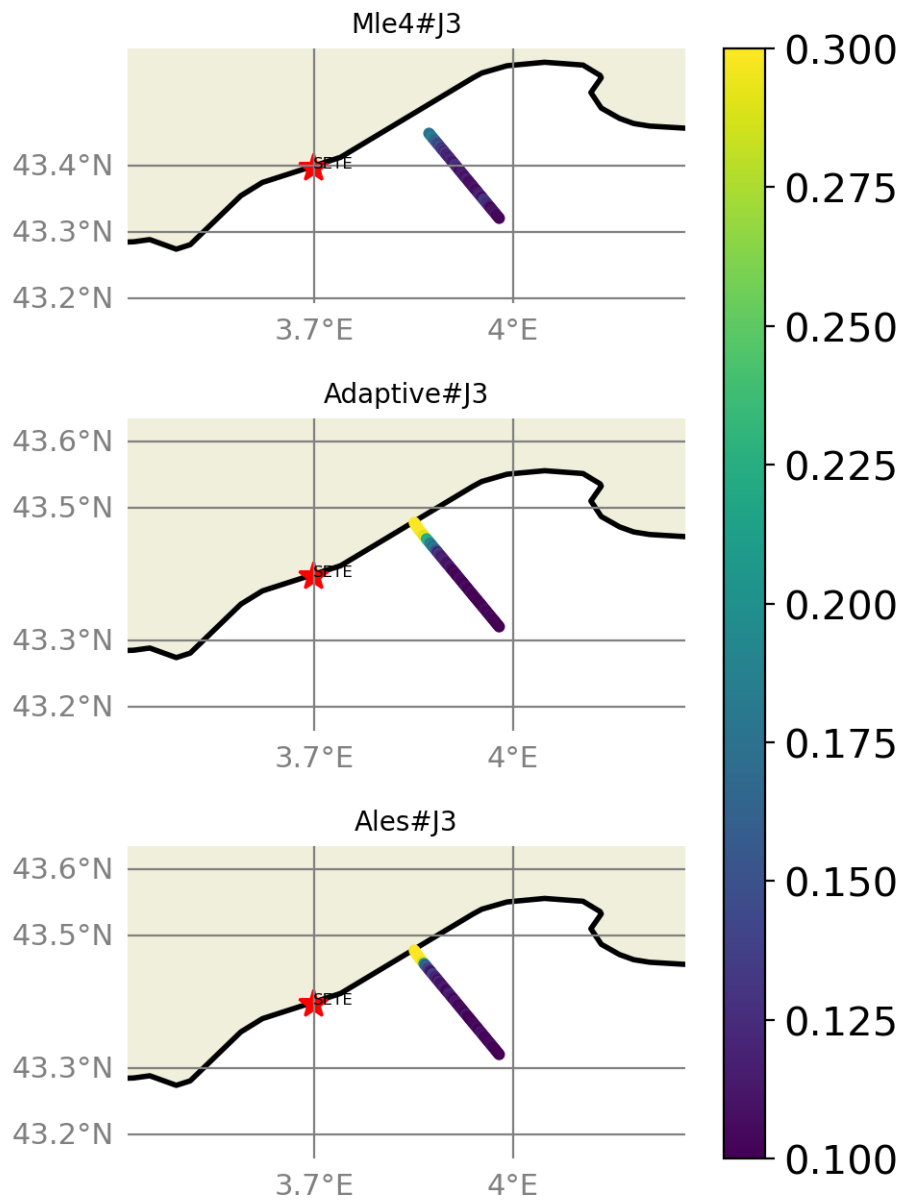


FIGURE 34 – std visualization in maps view % SETE tide gauge

6.1.4 valid_data_percent visualization in maps view % SETE tide gauge

Valid_Data_Percent (%) Altimetry data with respect to SETE Tide gauge data

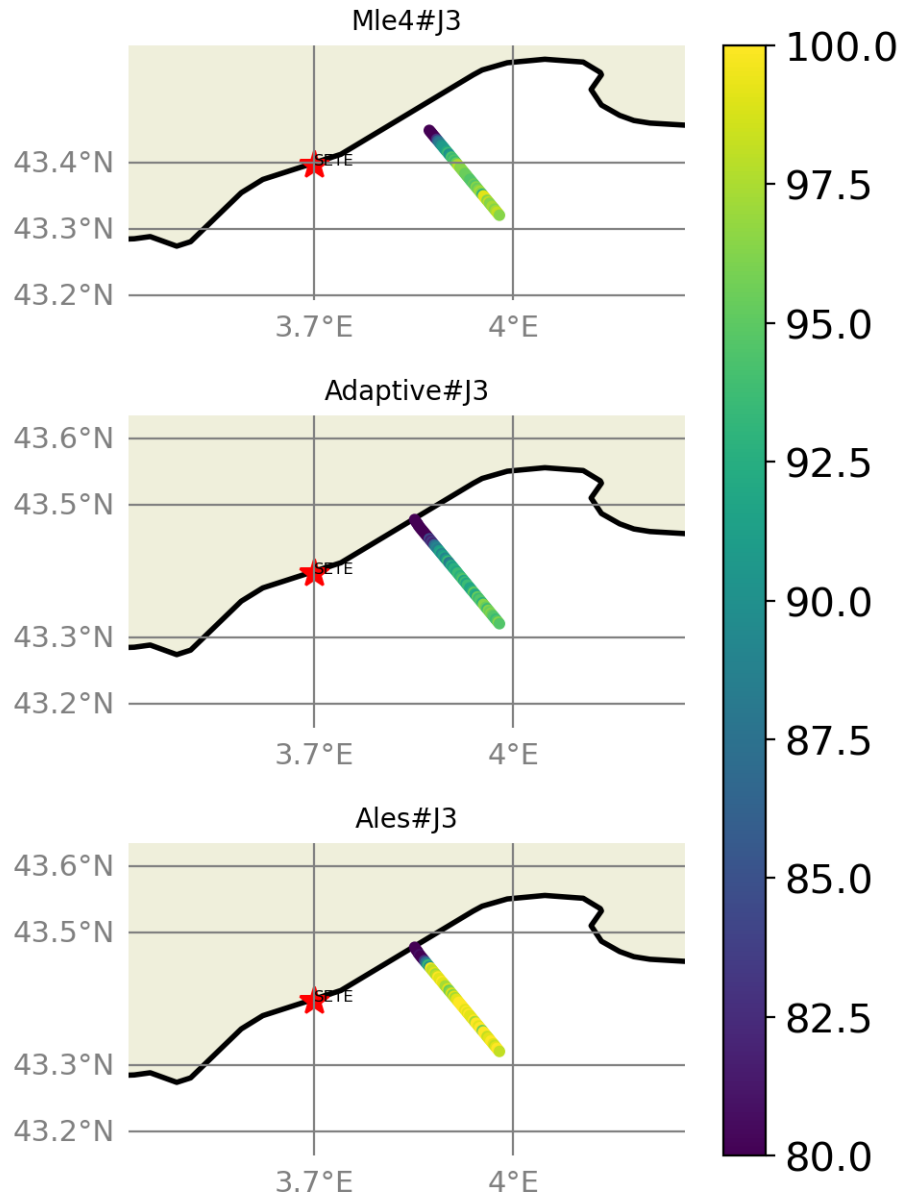


FIGURE 35 – valid_data_percent visualization in maps view % SETE tide gauge

6.1.5 Valid data (%) in function of distance to coast/SETE station

The formula to calculate the percentage of valid data in each time serie is;

$$pvd_i = \frac{nvd_i}{maxNB}, i = 1, np$$

Where pvd and nvd are the percentage of data and the number of altimetry data in the period covered by the tide gauge sla time serie, respectively in the time serie, i is the index of the time serie, np is the number of the selected altimetry time series. $maxNB = 110$ point is the maximum number of valid altimetry points in the set of all the altimetry sla time series covered by the period of time of the Tide gauge sla time serie.

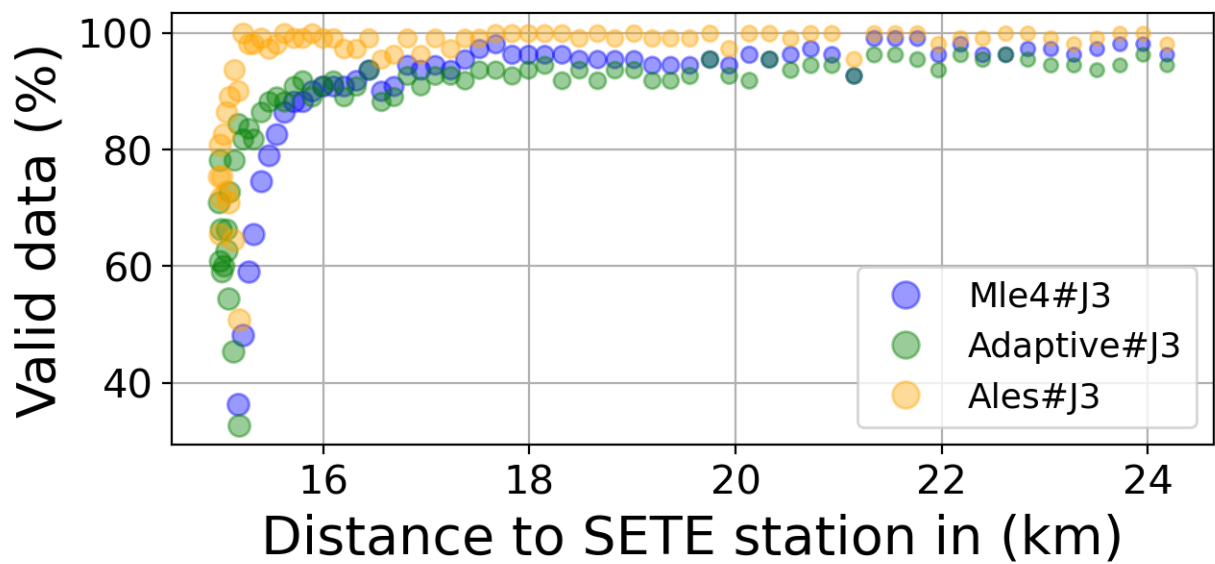
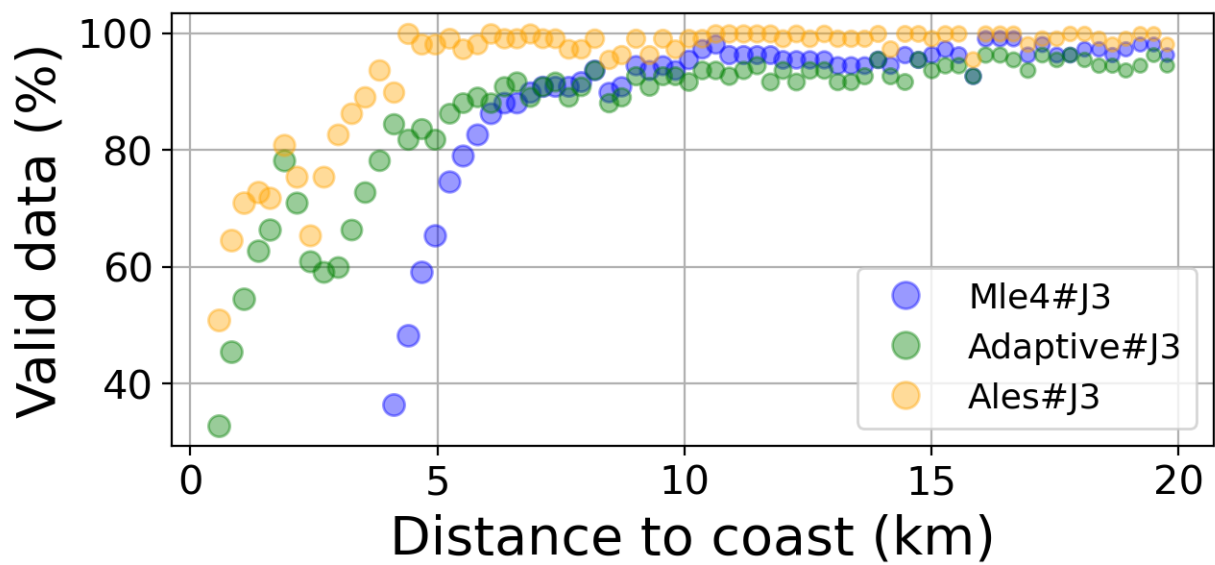


FIGURE 36 – Valid data (%) in function of distance to coast/SETE station

6.1.6 Std in function of distance to coast/SETE station

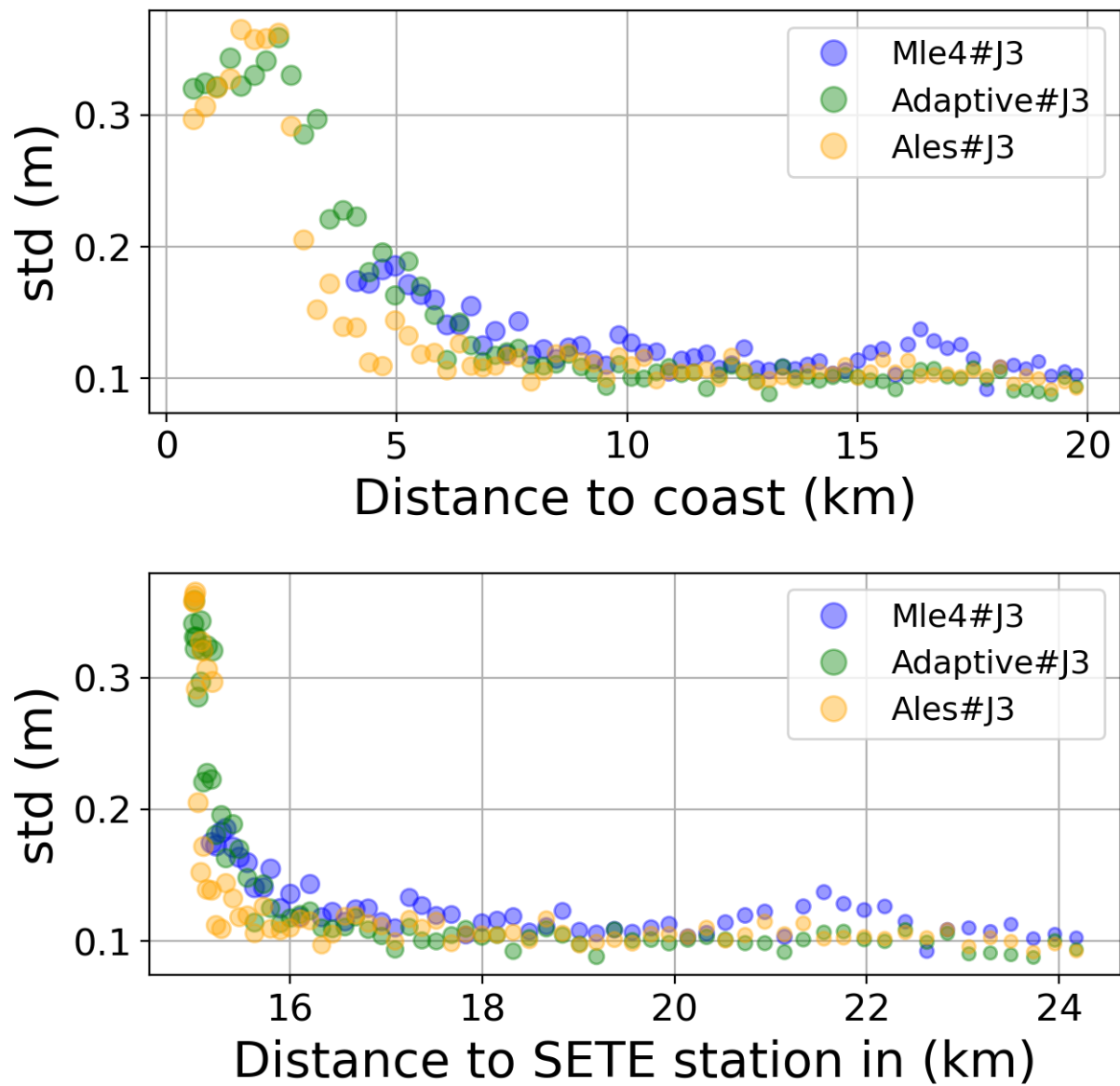


FIGURE 37 – Std in function of the distance to the coast/SETE station

6.1.7 Correlation in function of distance to coast/SETE station

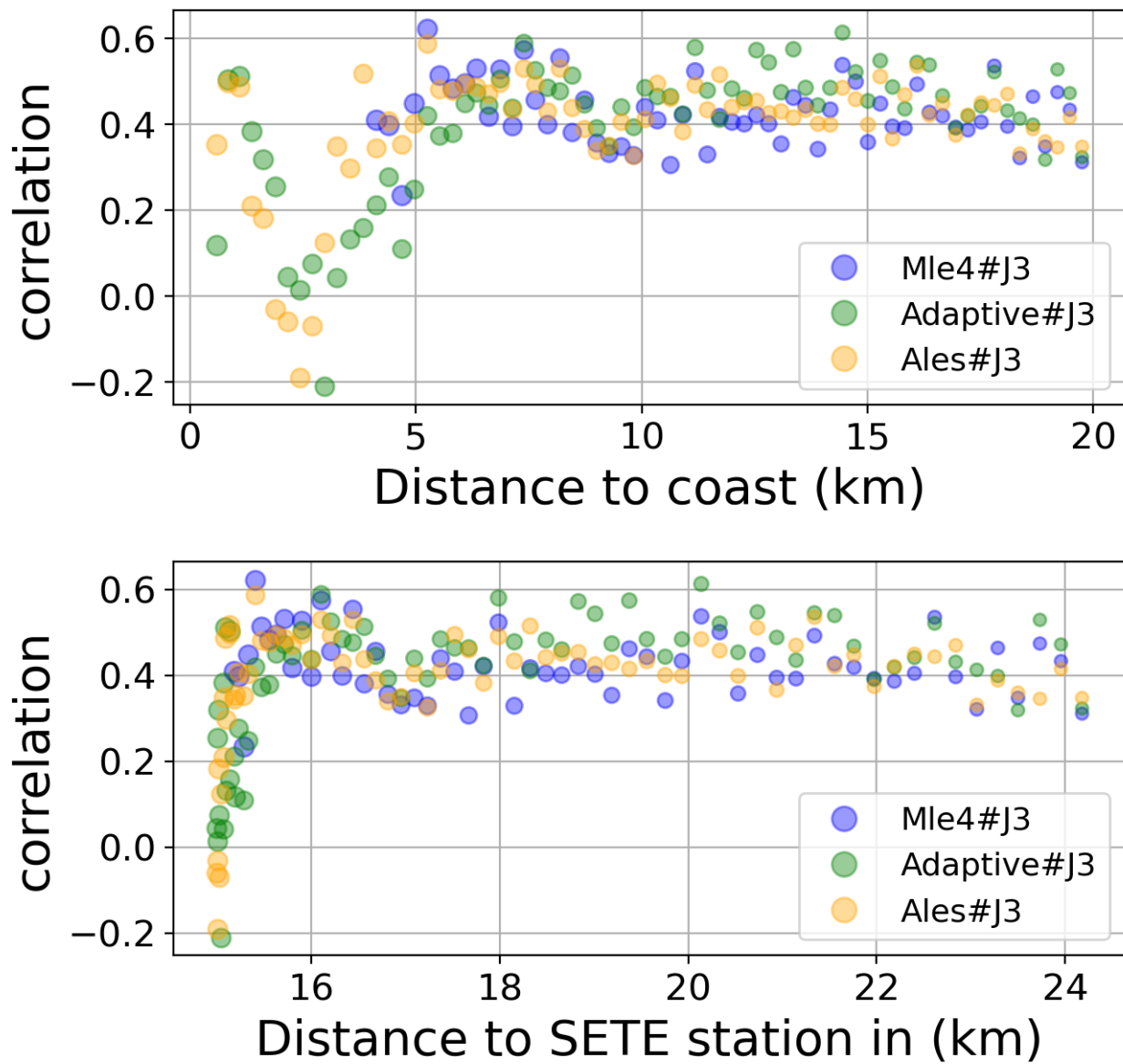


FIGURE 38 – Correlation in function of the distance to the coast/SETE station

6.1.8 Taylor Diagram

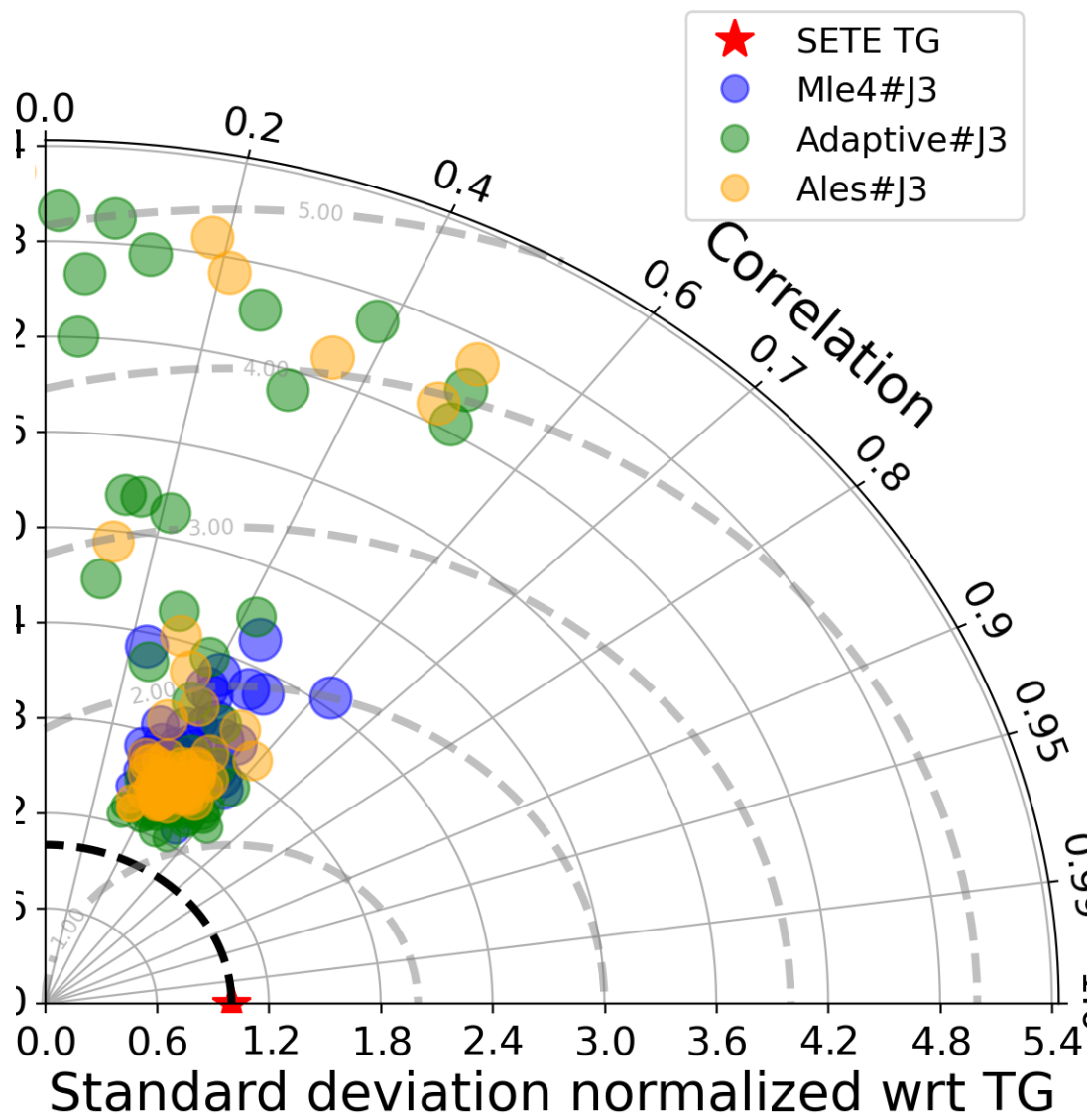


FIGURE 39 – Taylor diagram

6.1.9 Mean statistics table of products comparison with SETE tide gauge data

The table below contains the mean statistics of the common points between the different products in the selected area.

Product	Valid data (%)	Correlation	std (m)	rmsd (m)
Mle4#J3	91.129	0.425	0.125	0.115
Adaptive#J3	92.132	0.45	0.114	0.104
Ales#J3	98.809	0.434	0.109	0.1

FIGURE 40 – Mean statistics table of the common points in the altimetry products

6.1.10 The most correlated sla altimetry Time series with the tide gauge sla time serie

The maximum number of valid altimetry points in the set of all the altimetry sla time series covered by the period of time of the Tide gauge sla time serie is 110 point.

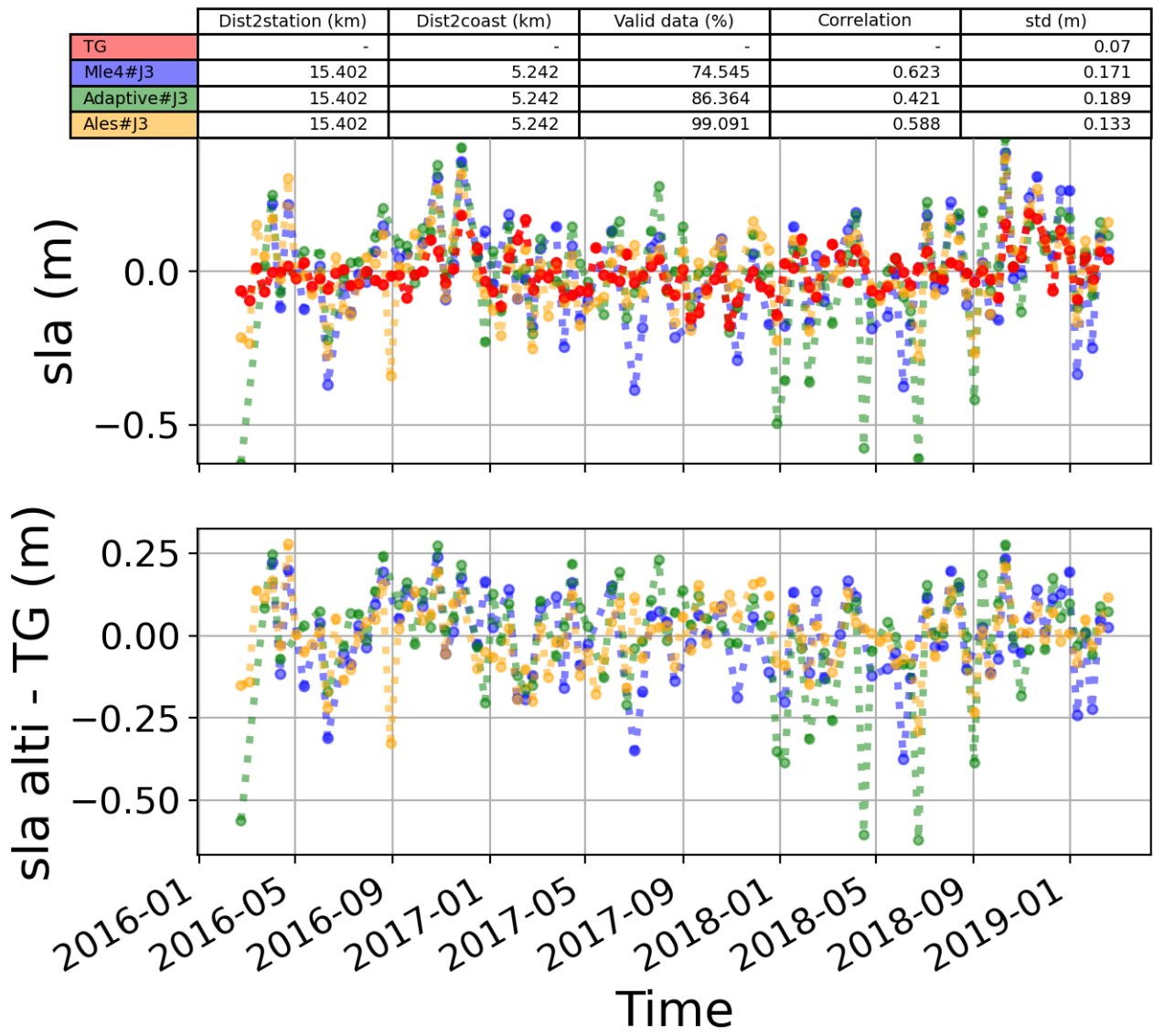


FIGURE 41 – The 1st most correlated sla altimetry Time serie with tide gauge sla time serie

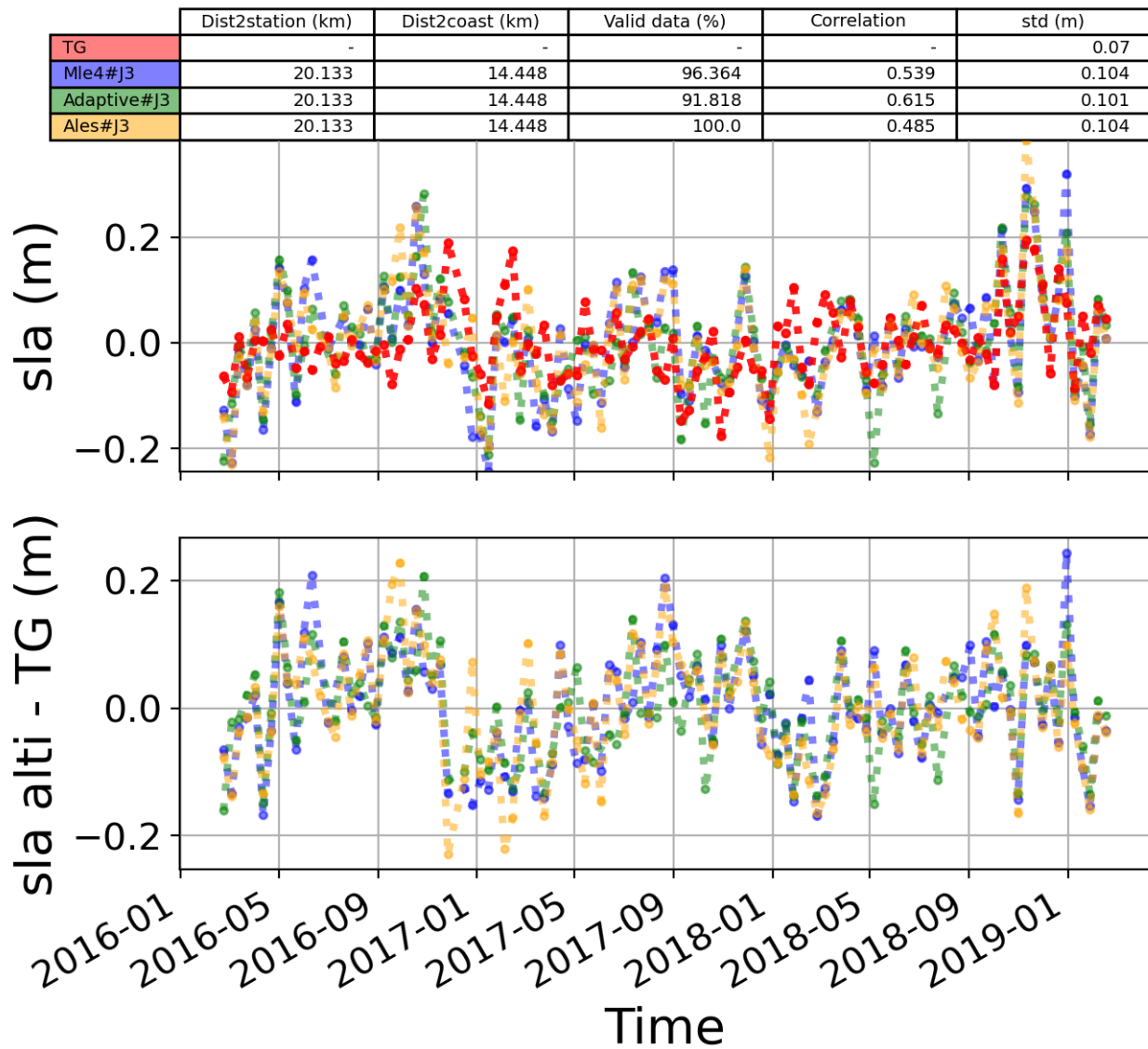


FIGURE 42 – The 2nd most correlated sla altimetry Time serie with tide gauge sla time serie

6.2 Station : Mentès

- Nearest track to Mentès station is the track number track109
- The area of interest is limited by :
 - A circle which it's center is the Mentès tide gauge station location and has a Radius of 40 Km
 - Maximum distance to the coast : 20 Km
 - Latitude limits : $[38.5, 39]^\circ$

6.2.1 correlation visualization in maps view % Mentès tide gauge

Correlation Altimetry data with respect to Mentès Tide gauge data

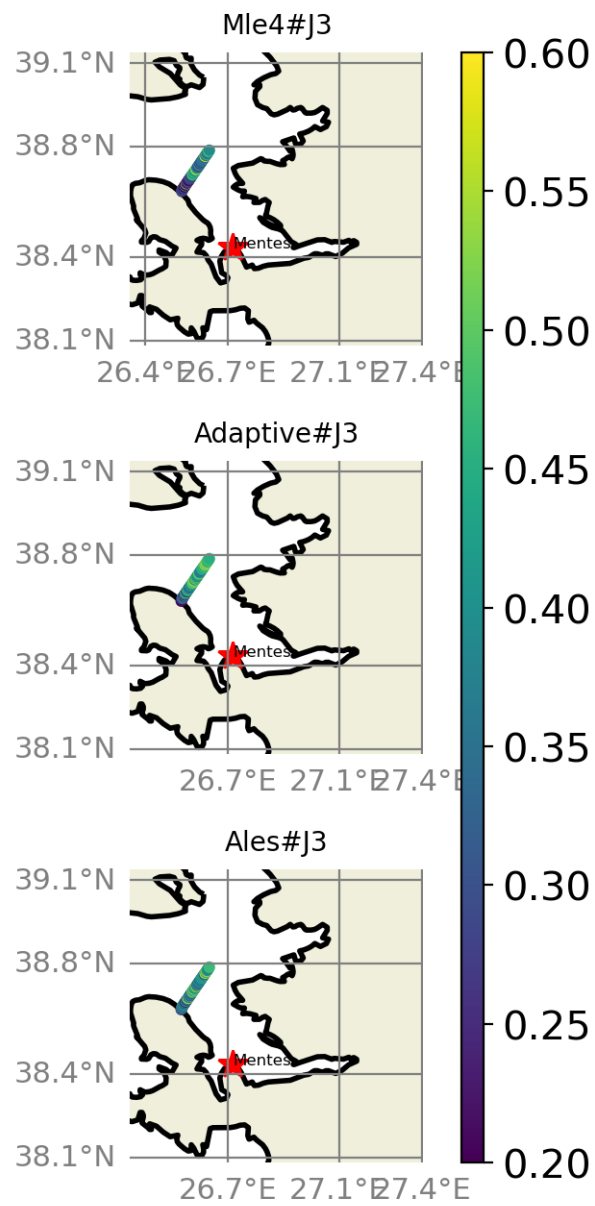


FIGURE 43 – correlation visualization in maps view % Mentès tide gauge

6.2.2 rmsd visualization in maps view % Mentès tide gauge

Rmsd (m) Altimetry data with respect to Mentès Tide gauge data

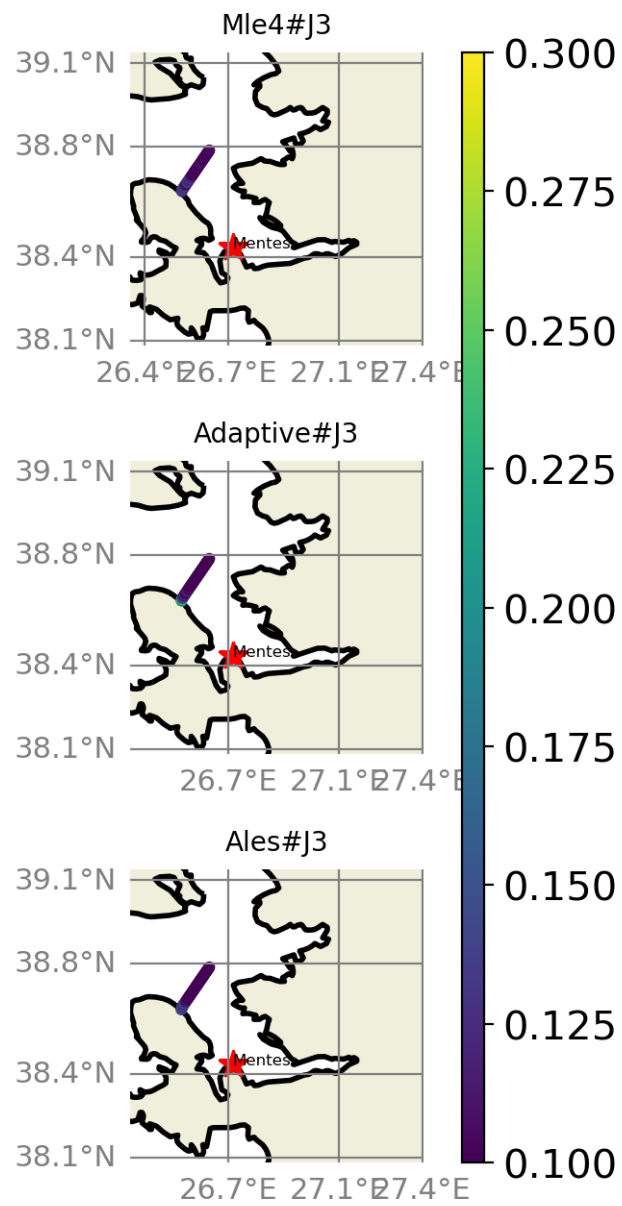


FIGURE 44 – rmsd visualization in maps view % Mentès tide gauge

6.2.3 std visualization in maps view % Mentès tide gauge

Std (m) Altimetry data with respect to Mentès Tide gauge data

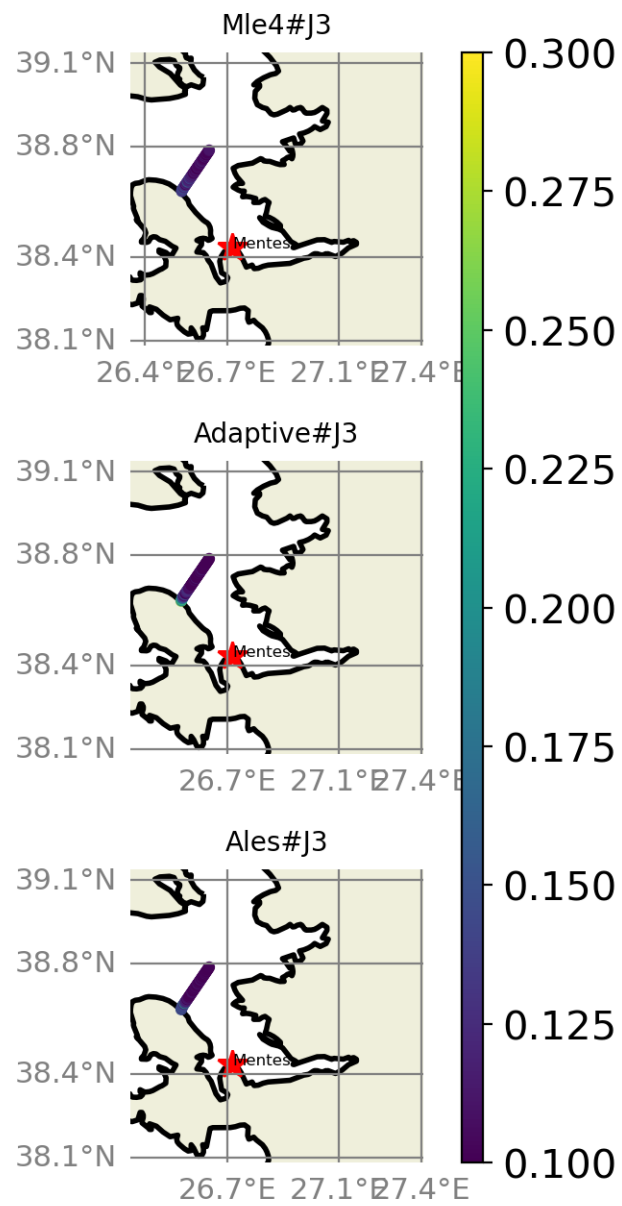


FIGURE 45 – std visualization in maps view % Mentès tide gauge

6.2.4 valid_data_percent visualization in maps view % Mentos tide gauge

Valid_Data_Percent (%) Altimetry data with respect to Mentos Tide gauge data

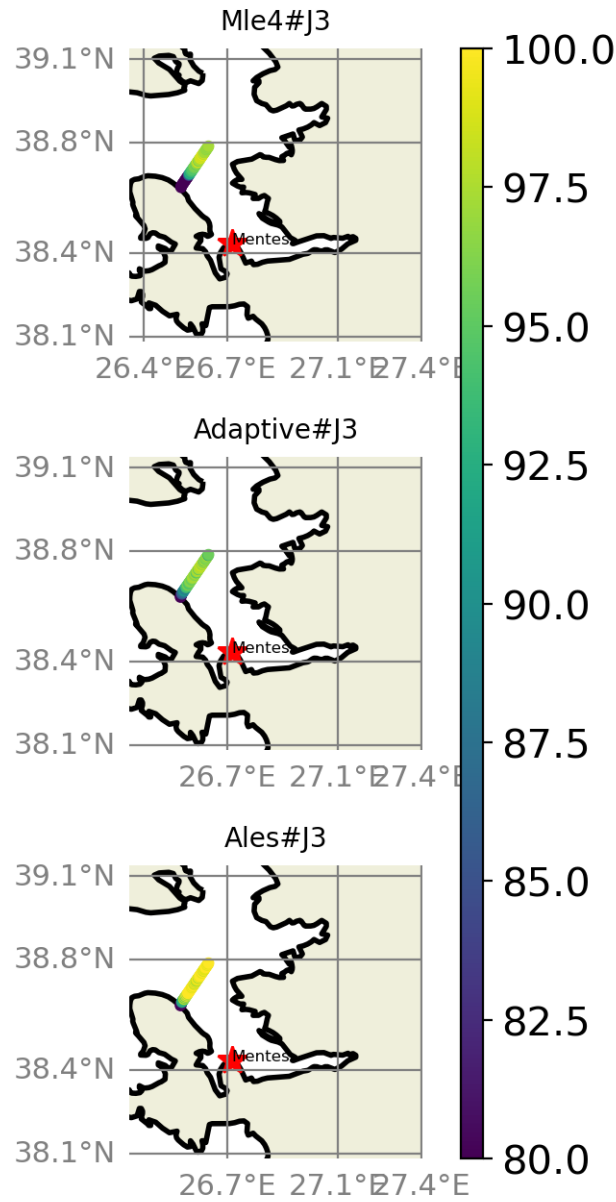


FIGURE 46 – valid_data_percent visualization in maps view % Mentos tide gauge

6.2.5 Valid data (%) in function of distance to coast/Mentos station

The formula to calculate the percentage of valid data in each time serie is;

$$pvd_i = \frac{nvd_i}{maxNB}, i = 1, np$$

Where pvd and nvd are the percentage of data and the number of altimetry data in the period covered by the tide gauge sla time serie, respectively in the time serie, i is the index of the time serie, np is the number of the selected altimetry time series. $maxNB = 111$ point is the maximum number of valid altimetry points in the set of all the altimetry sla time series covered by the period of time of the Tide gauge sla time serie.

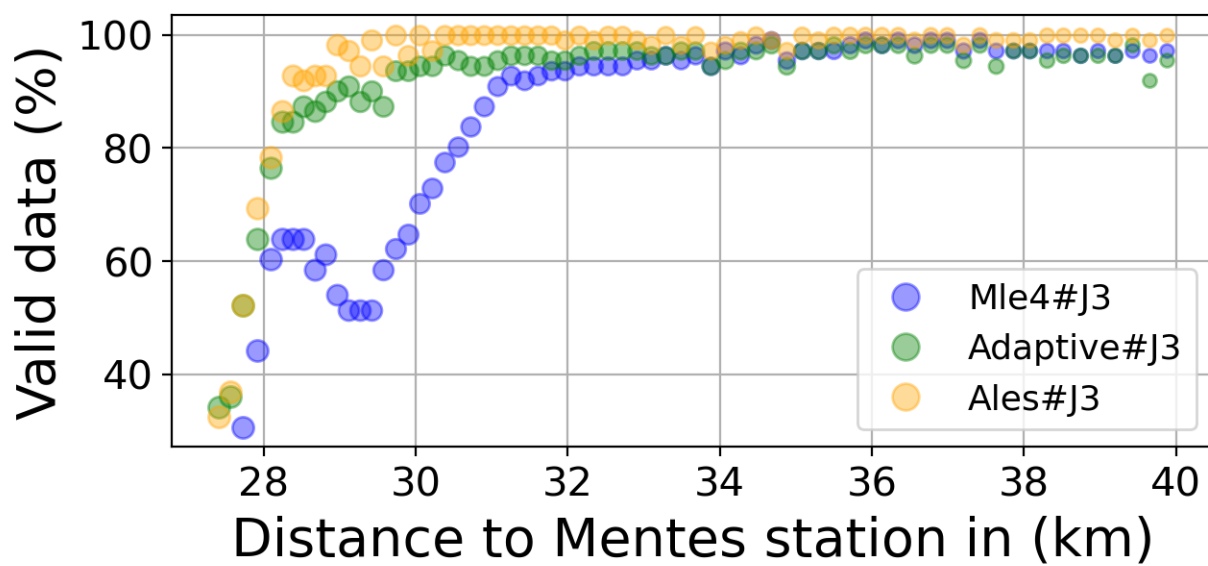
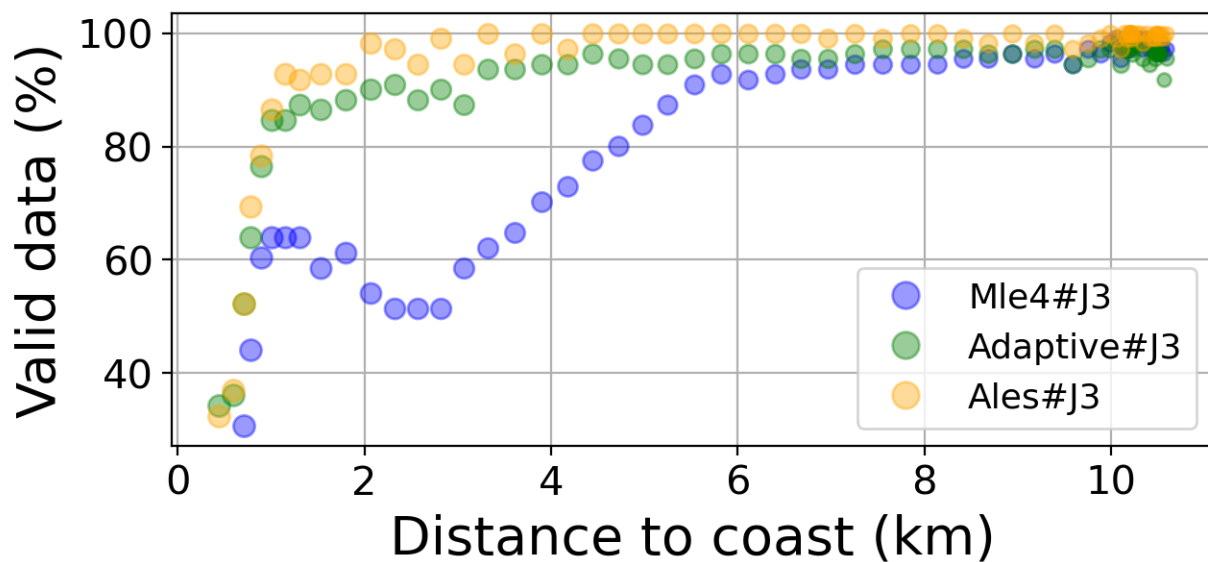


FIGURE 47 – Valid data (%) in function of distance to coast/Mentés station

6.2.6 Std in function of distance to coast/Mentes station

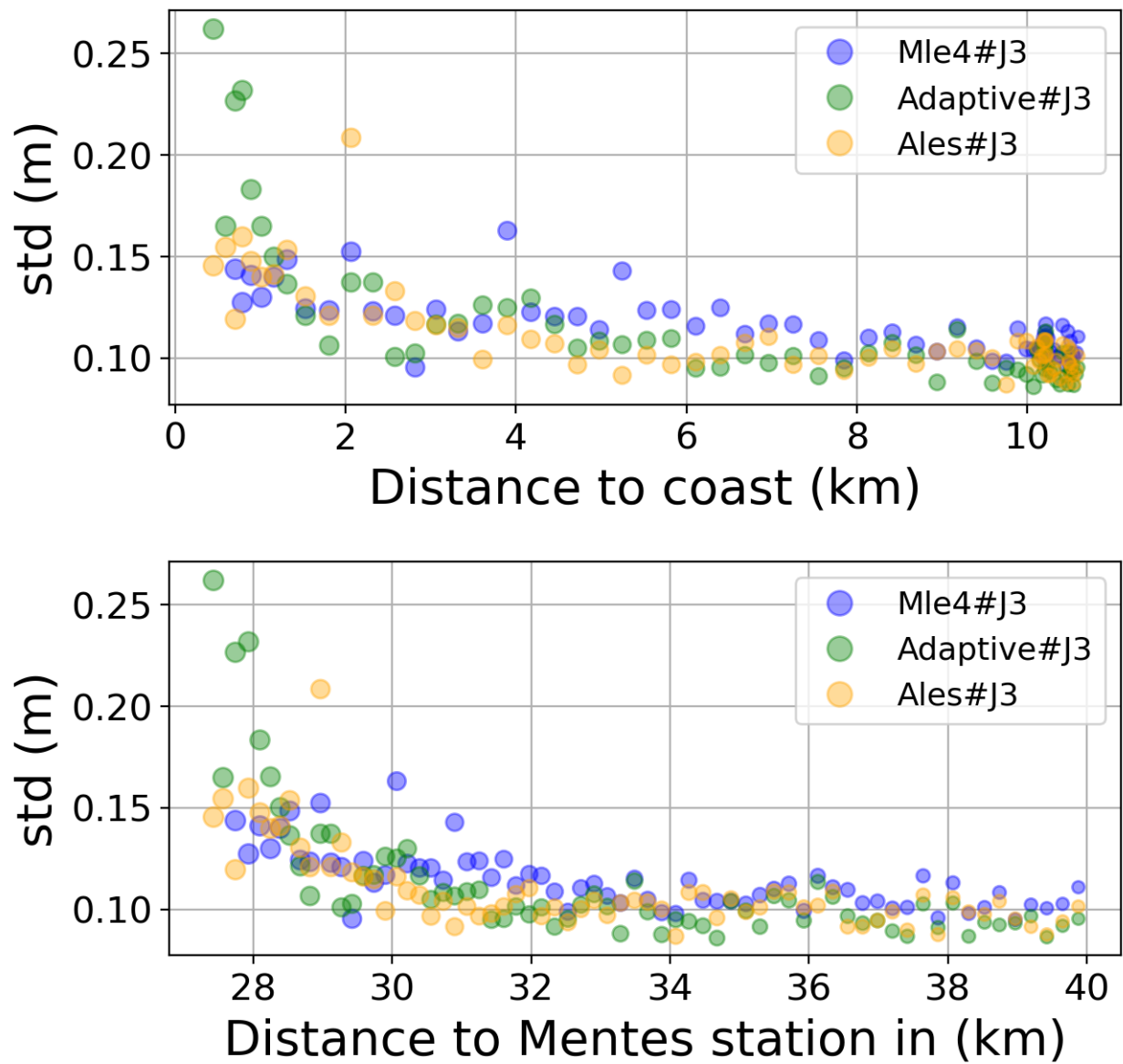


FIGURE 48 – Std in function of the distance to the coast/Mentes station

6.2.7 Correlation in function of distance to coast/Mentes station

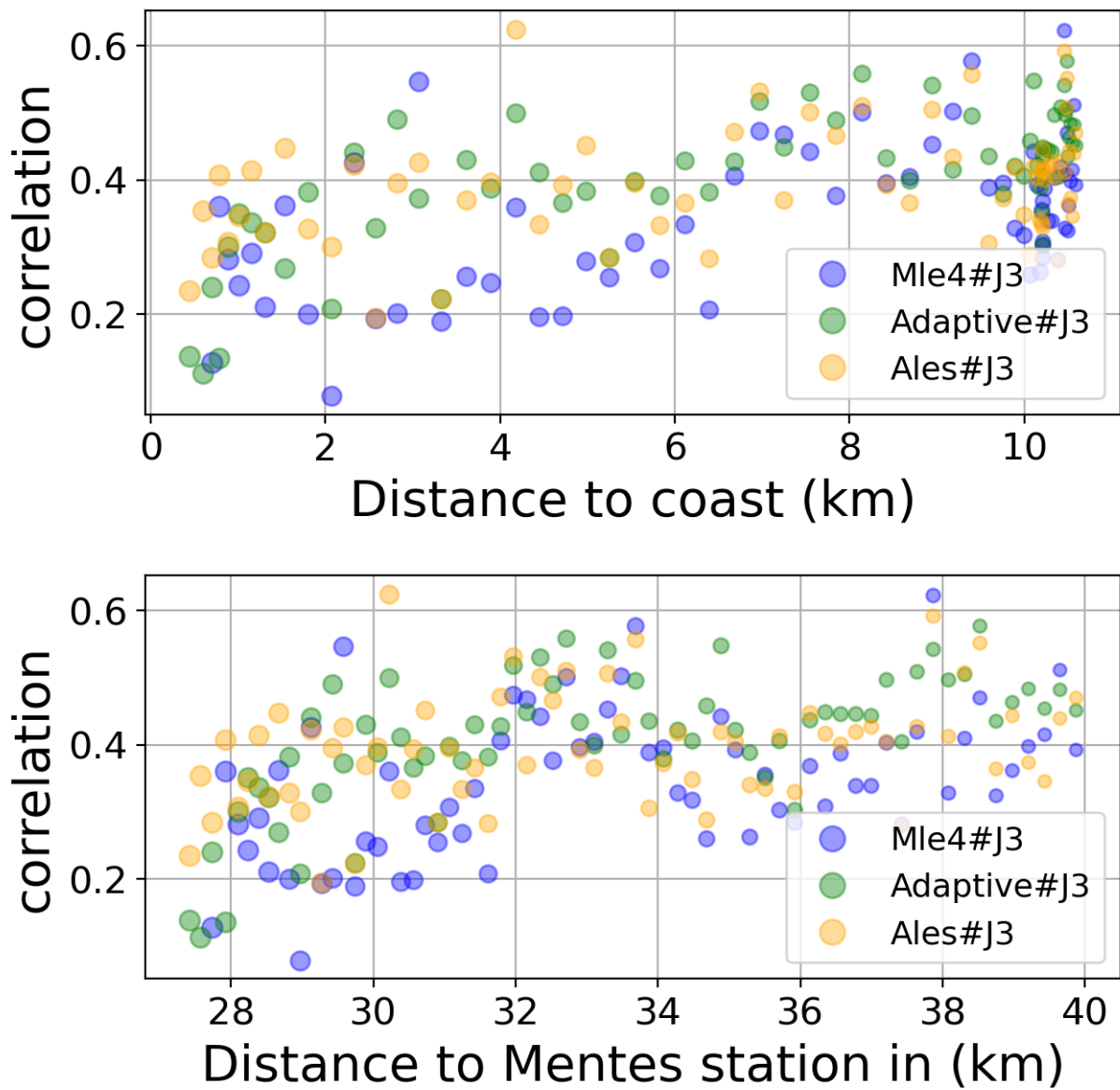


FIGURE 49 – Correlation in function of the distance to the coast/Mentes station

6.2.8 Taylor Diagram

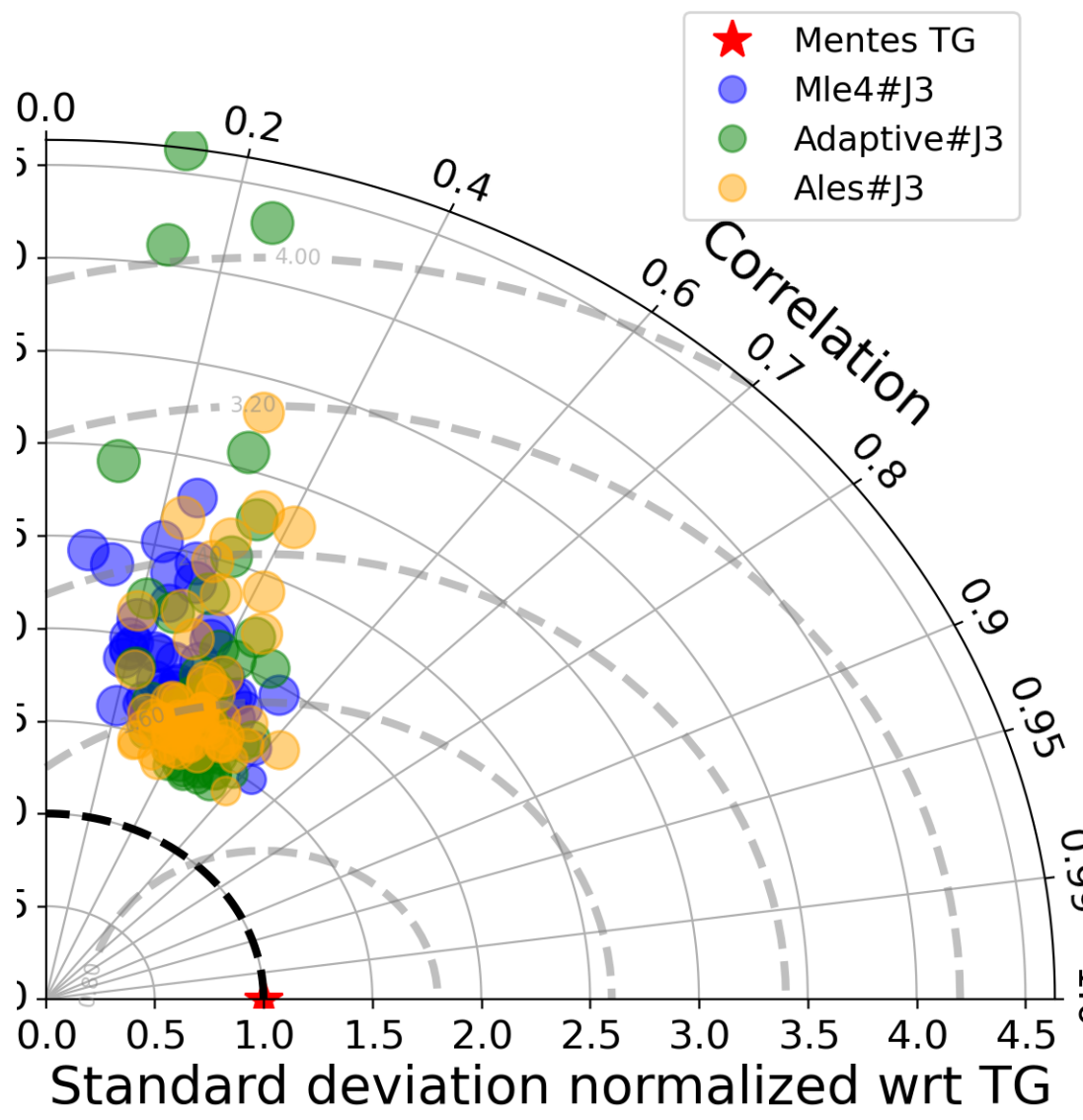


FIGURE 50 – Taylor diagram

6.2.9 Mean statistics table of products comparison with Mentos tide gauge data

The table below contains the mean statistics of the common points between the different products in the selected area.

Product	Valid data (%)	Correlation	std (m)	rmsd (m)
Mle4#J3	85.447	0.346	0.115	0.11
Adaptive#J3	93.569	0.416	0.11	0.102
Ales#J3	97.089	0.398	0.108	0.102

FIGURE 51 – Mean statistics table of the common points in the altimetry products

6.2.10 The most correlated sla altimetry Time series with the tide gauge sla time serie

The maximum number of valid altimetry points in the set of all the altimetry sla time series covered by the period of time of the Tide gauge sla time serie is 111 point.

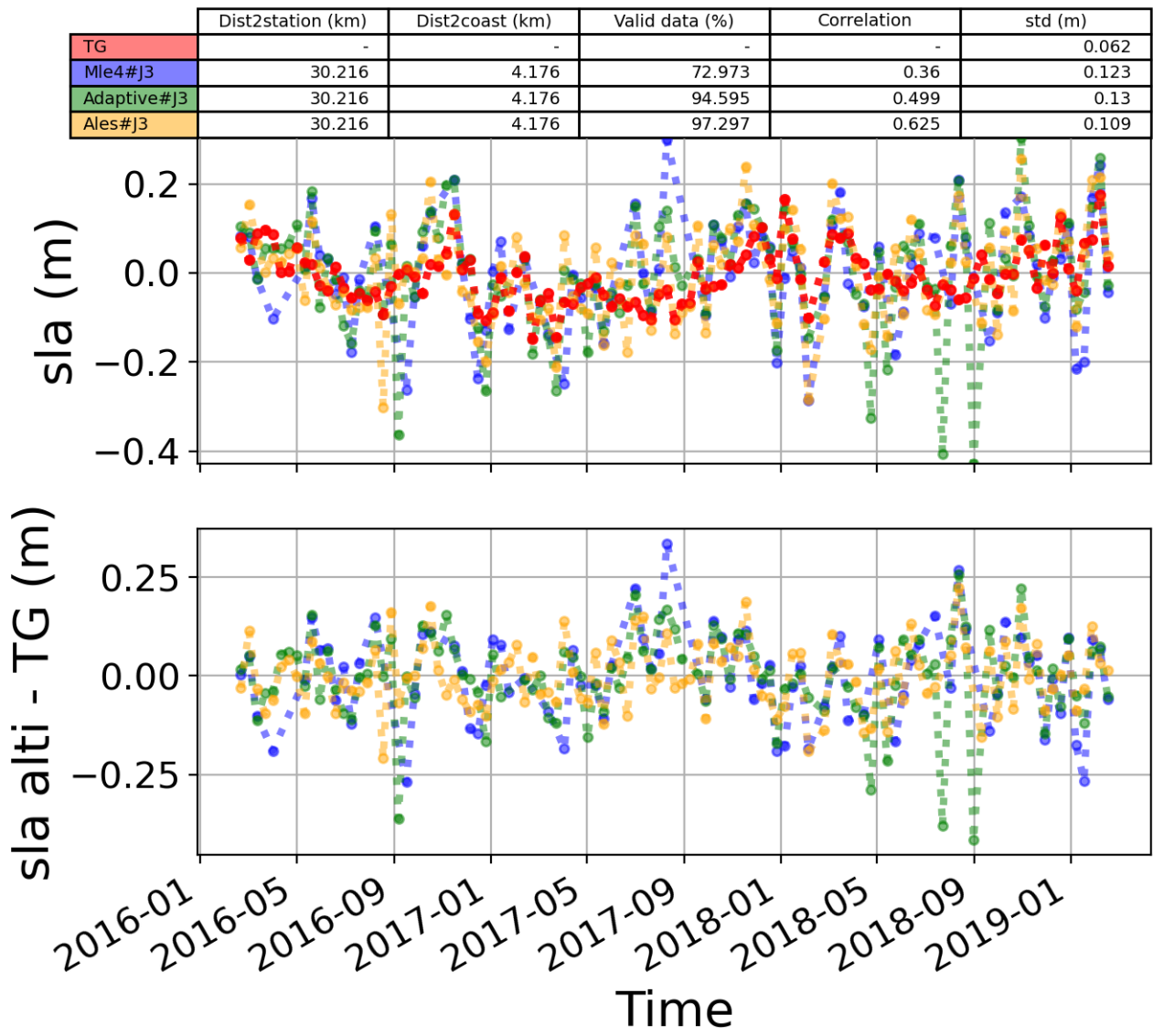


FIGURE 52 – The 1st most correlated sla altimetry Time serie with tide gauge sla time serie

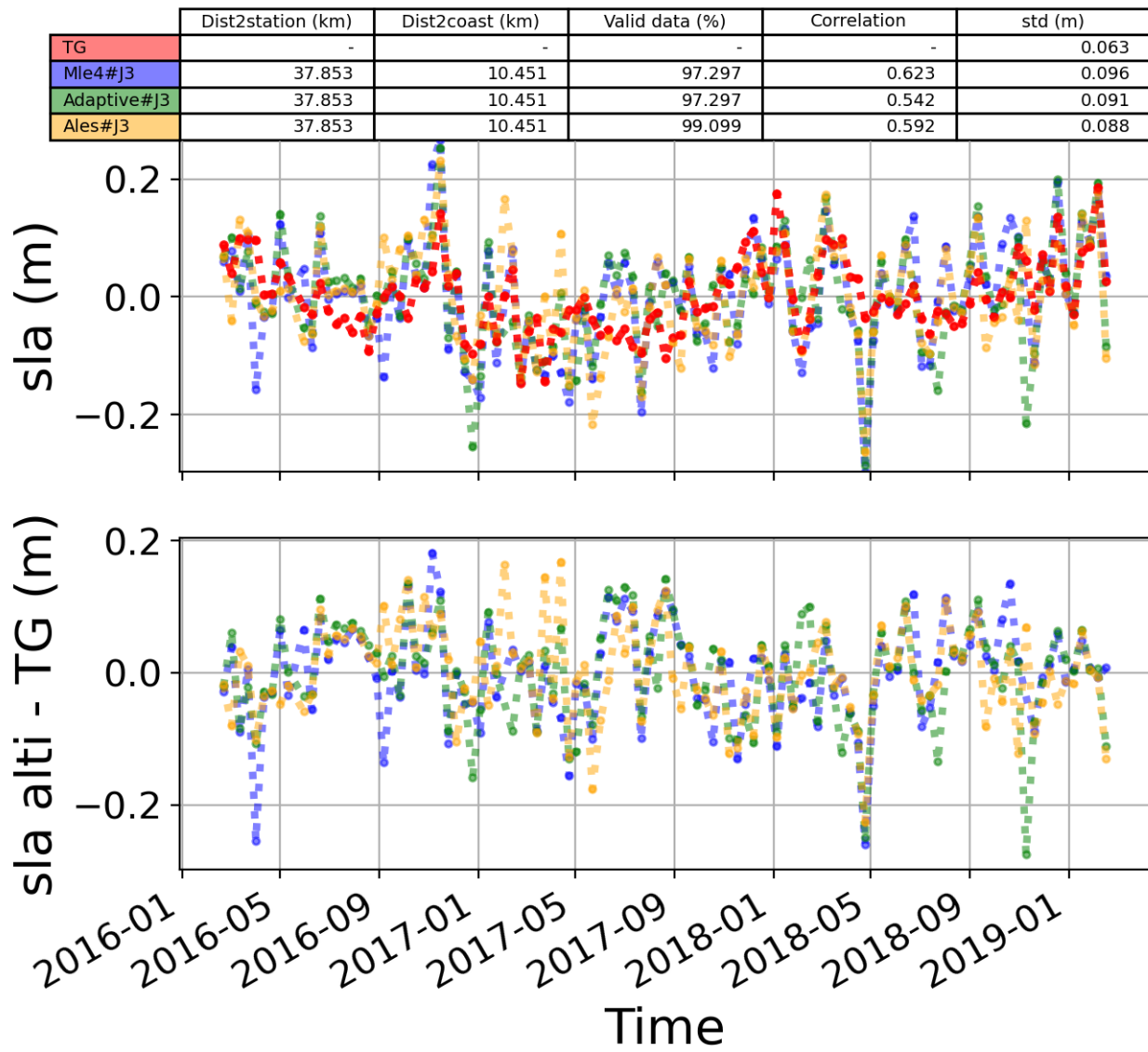


FIGURE 53 – The 2nd most correlated sla altimetry Time serie with tide gauge sla time serie

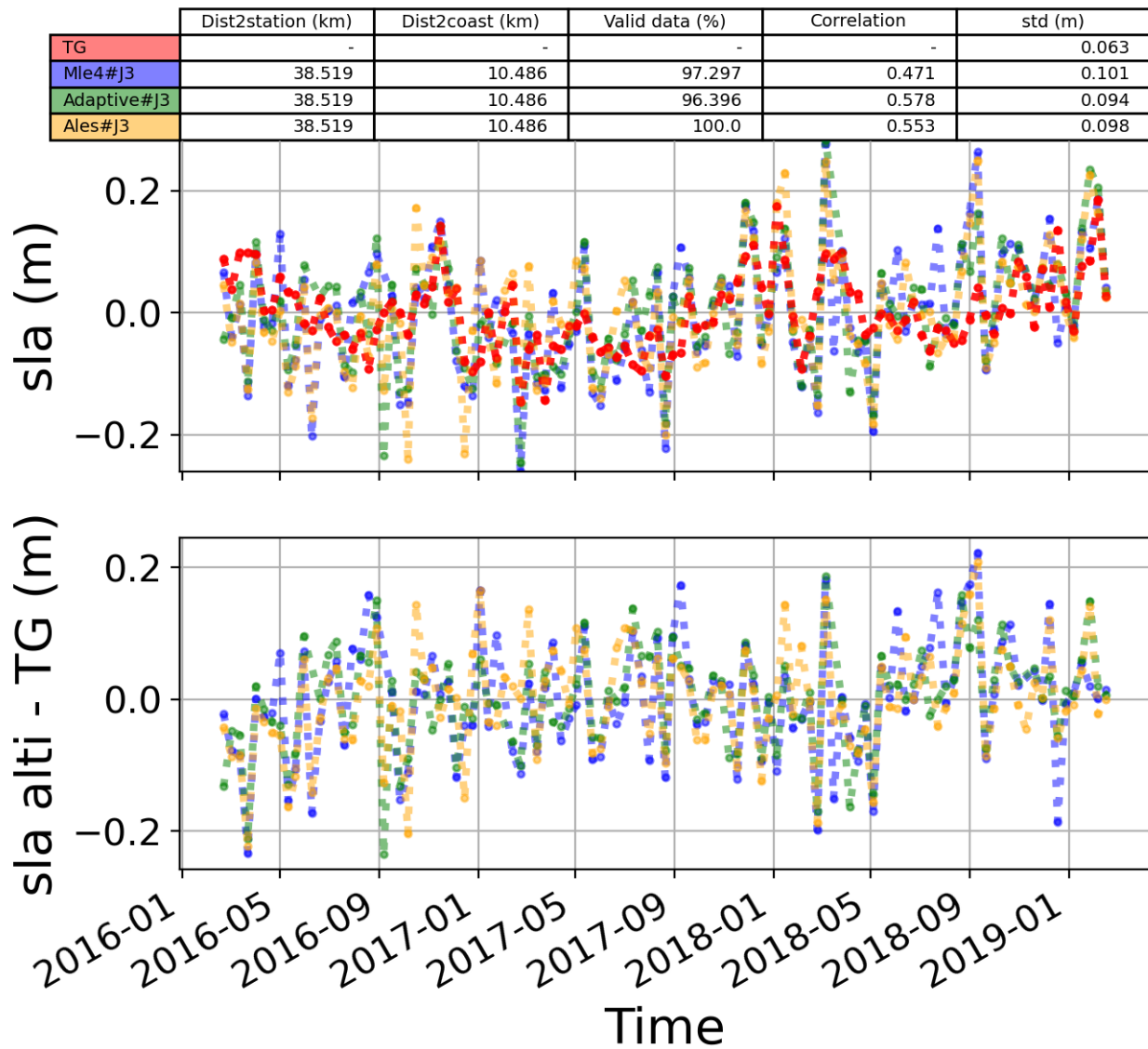


FIGURE 54 – The 3rd most correlated sla altimetry Time serie with tide gauge sla time serie

6.3 Station : Ibiza

- Nearest track to Ibiza station is the track number track248
- The area of interest is limited by :
 - A circle which it's center is the Ibiza tide gauge station location and has a Raduis of 40 Km
 - Maximum distance to the coast : 20 Km
 - Latitude limits : $[38.6, 39.05]^\circ$

6.3.1 correlation visualization in maps view % Ibiza tide gauge

Correlation Altimetry data with respect to Ibiza Tide gauge data

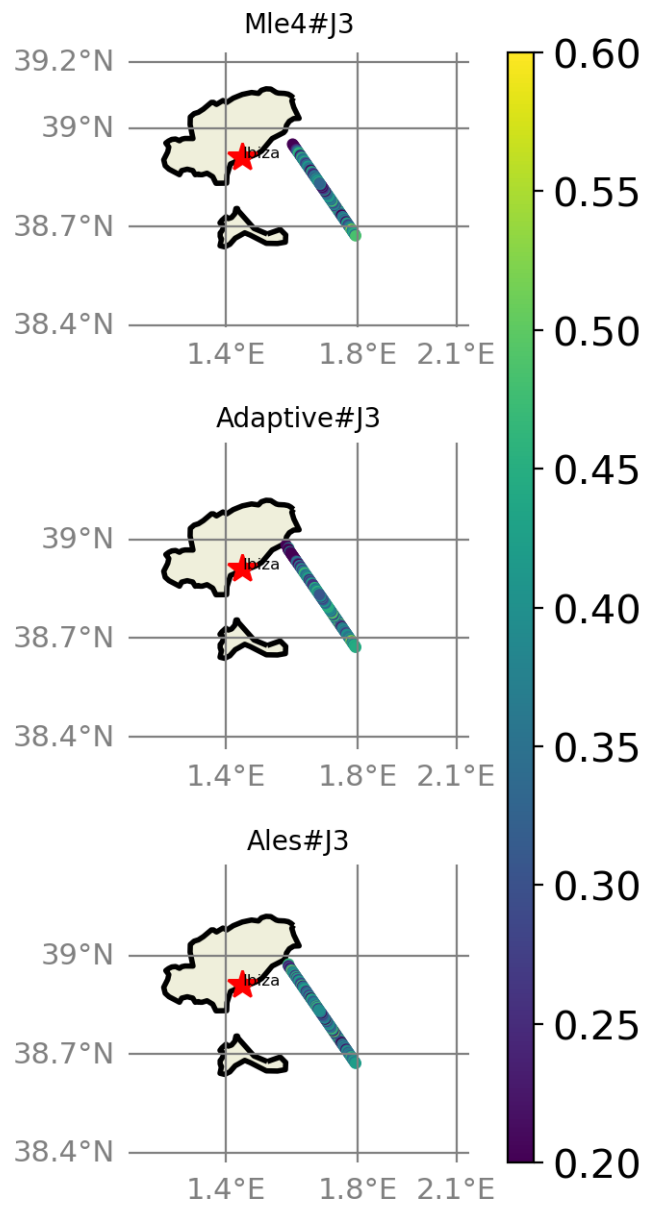


FIGURE 55 – correlation visualization in maps view % Ibiza tide gauge

6.3.2 rmsd visualization in maps view % Ibiza tide gauge

Rmsd (m) Altimetry data with respect to Ibiza Tide gauge data

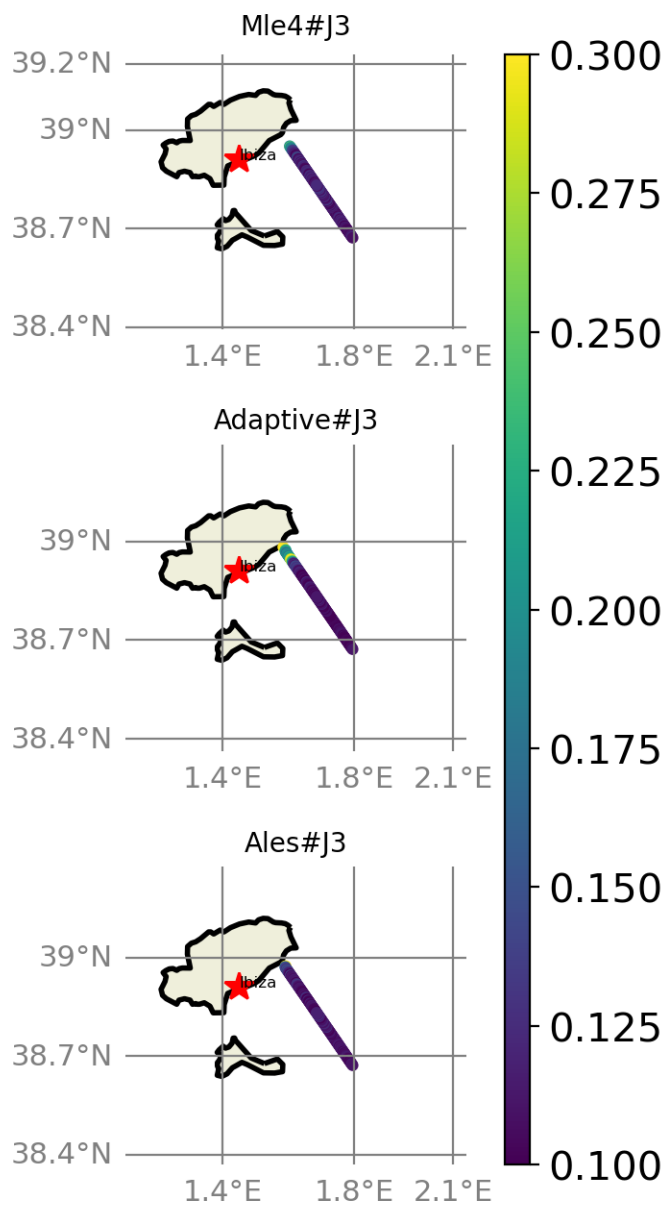


FIGURE 56 – rmsd visualization in maps view % Ibiza tide gauge

6.3.3 std visualization in maps view % Ibiza tide gauge

Std (m) Altimetry data with respect to Ibiza Tide gauge data

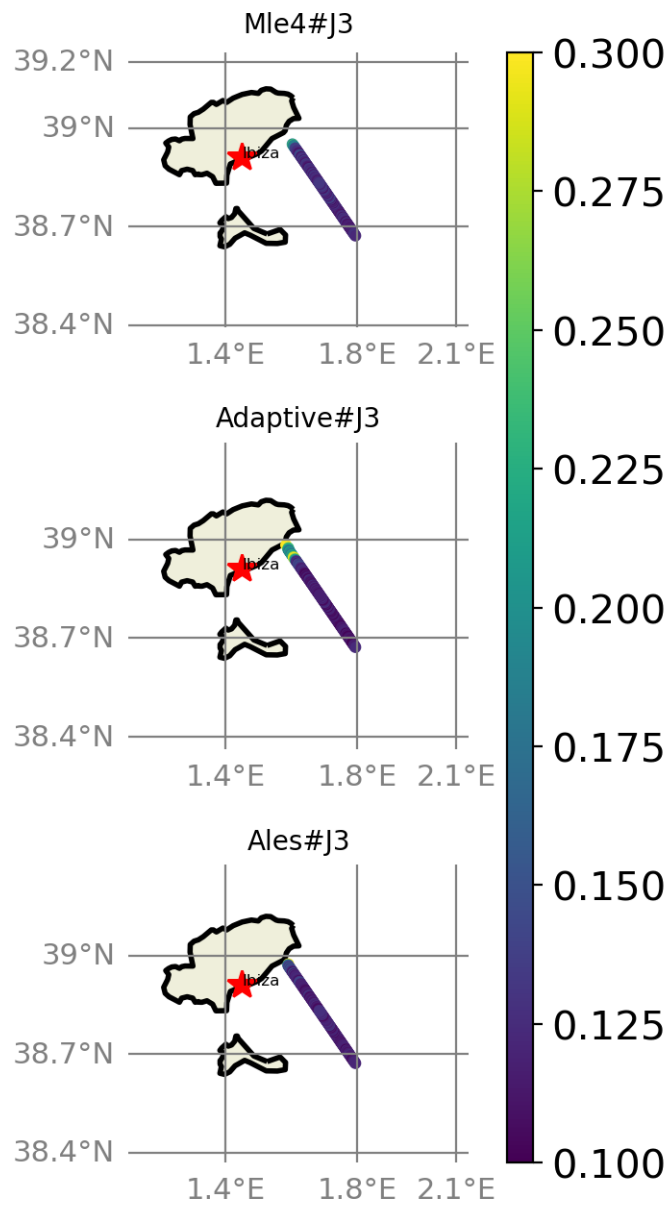


FIGURE 57 – std visualization in maps view % Ibiza tide gauge

6.3.4 valid_data_percent visualization in maps view % Ibiza tide gauge

Valid_Data_Percent (%) Altimetry data with respect to Ibiza Tide gauge data

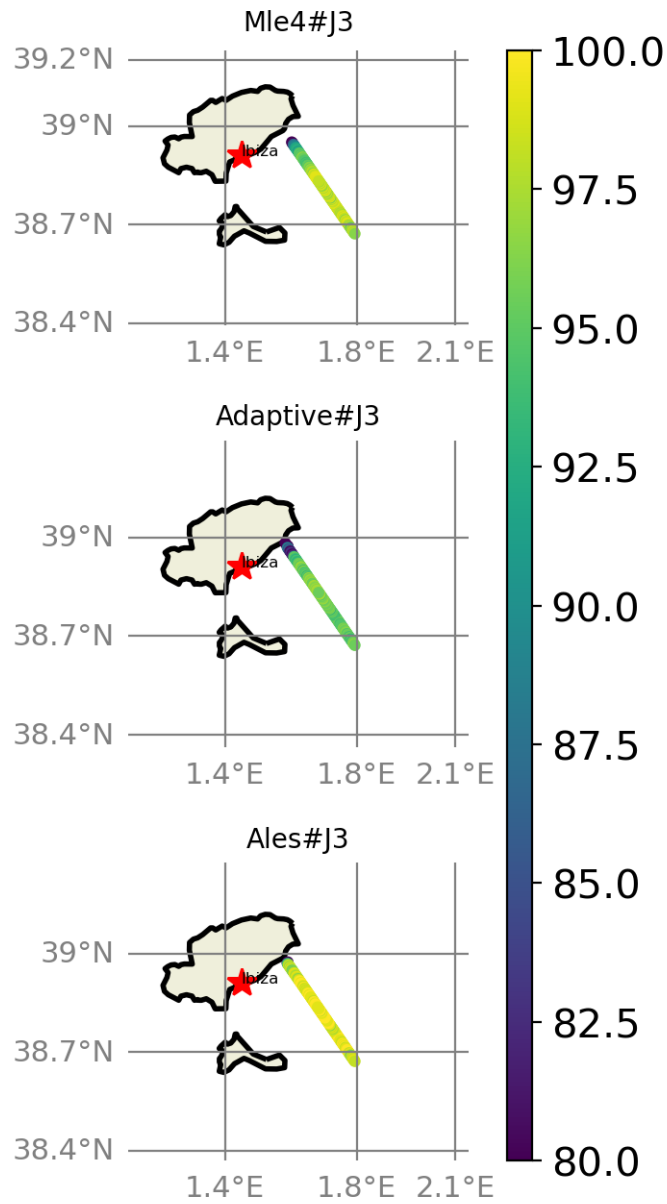


FIGURE 58 – valid_data_percent visualization in maps view % Ibiza tide gauge

6.3.5 Valid data (%) in function of distance to coast/Ibiza station

The formula to calculate the percentage of valid data in each time serie is;

$$pvd_i = \frac{nvd_i}{maxNB}, i = 1, np$$

Where pvd and nvd are the percentage of data and the number of altimetry data in the period covered by the tide gauge sla time serie, respectively in the time serie, i is the index of the time serie, np is the number of the selected altimetry time series. $maxNB = 111$ point is the maximum number of valid altimetry points in the set of all the altimetry sla time series covered by the period of time of the Tide gauge sla time serie.

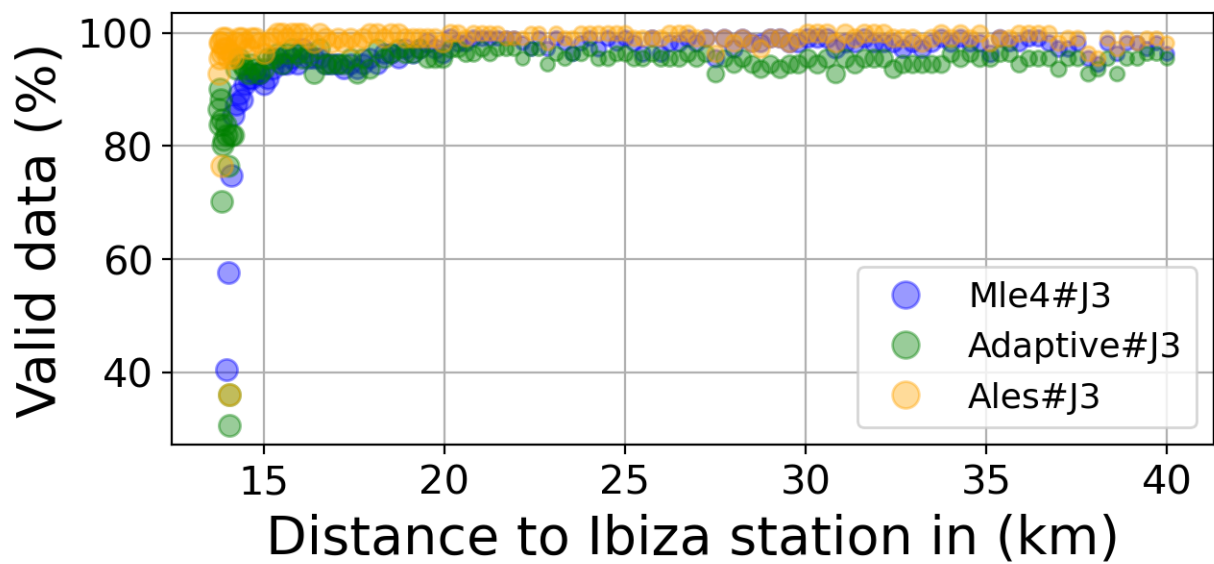
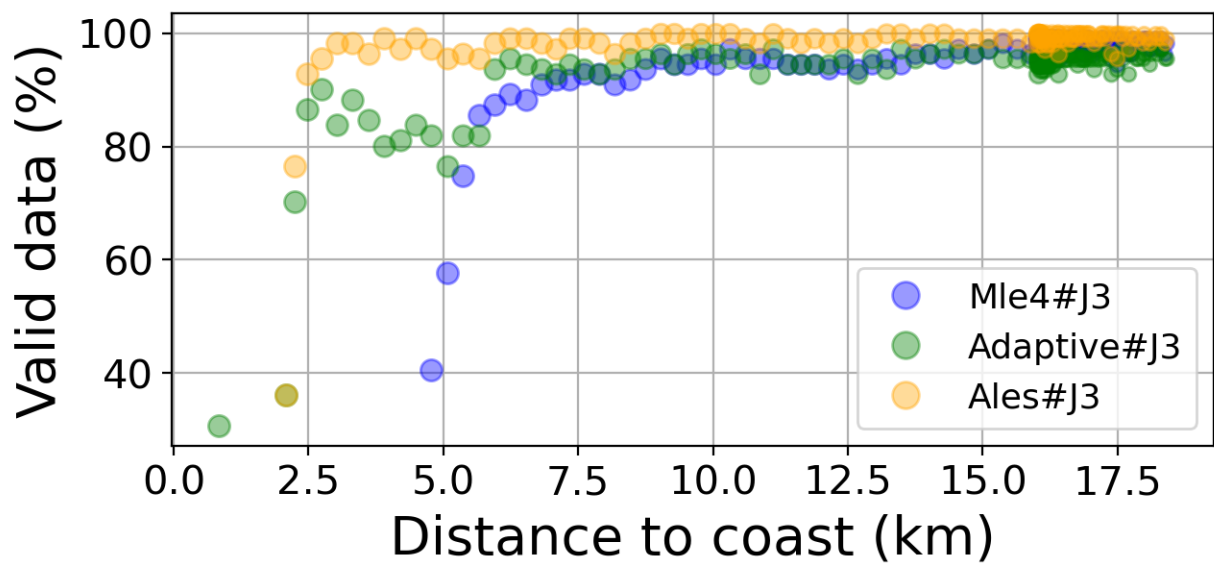


FIGURE 59 – Valid data (%) in function of distance to coast/Ibiza station

6.3.6 Std in function of distance to coast/Ibiza station

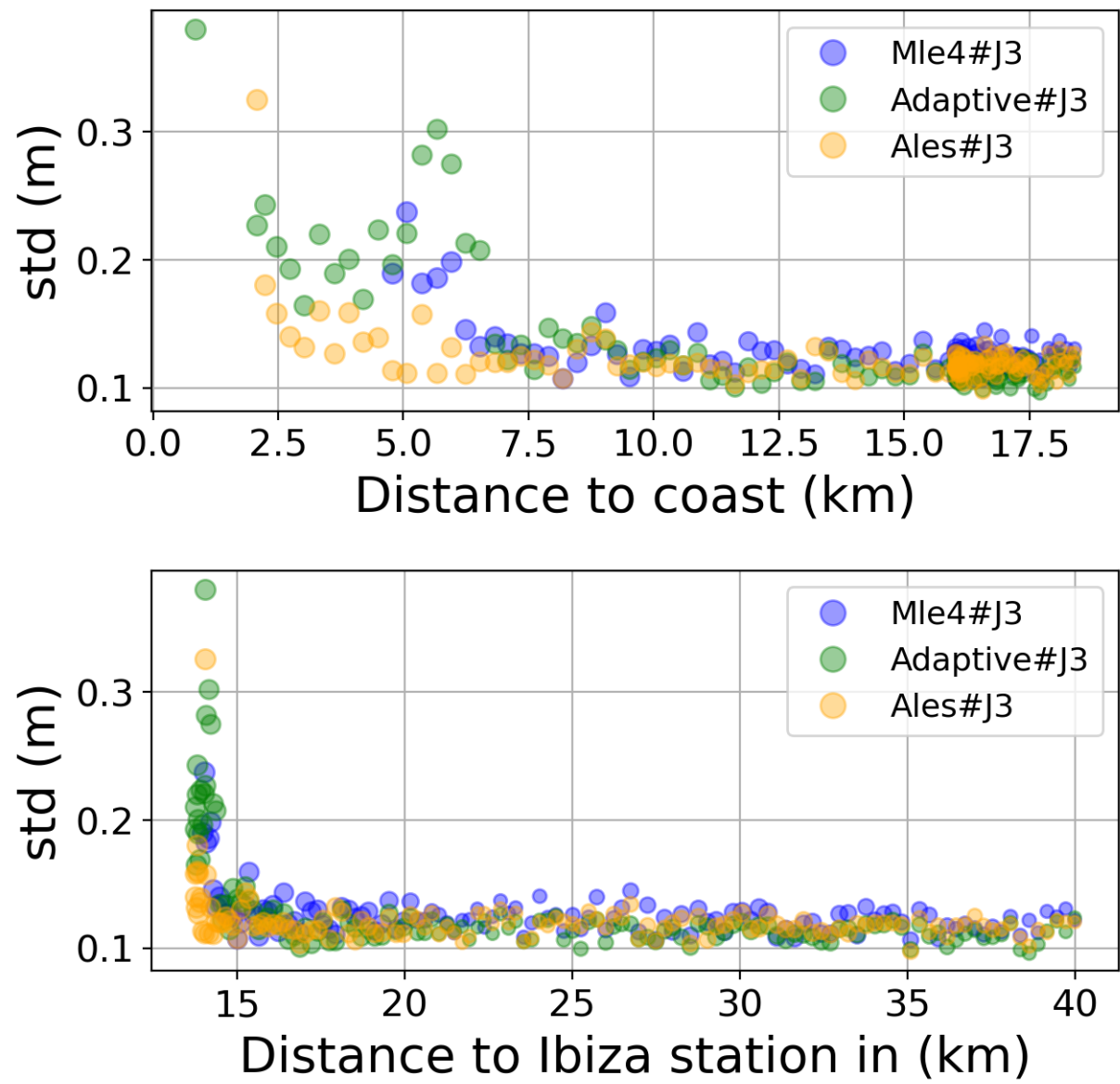


FIGURE 60 – Std in function of the distance to the coast/Ibiza station

6.3.7 Correlation in function of distance to coast/Ibiza station

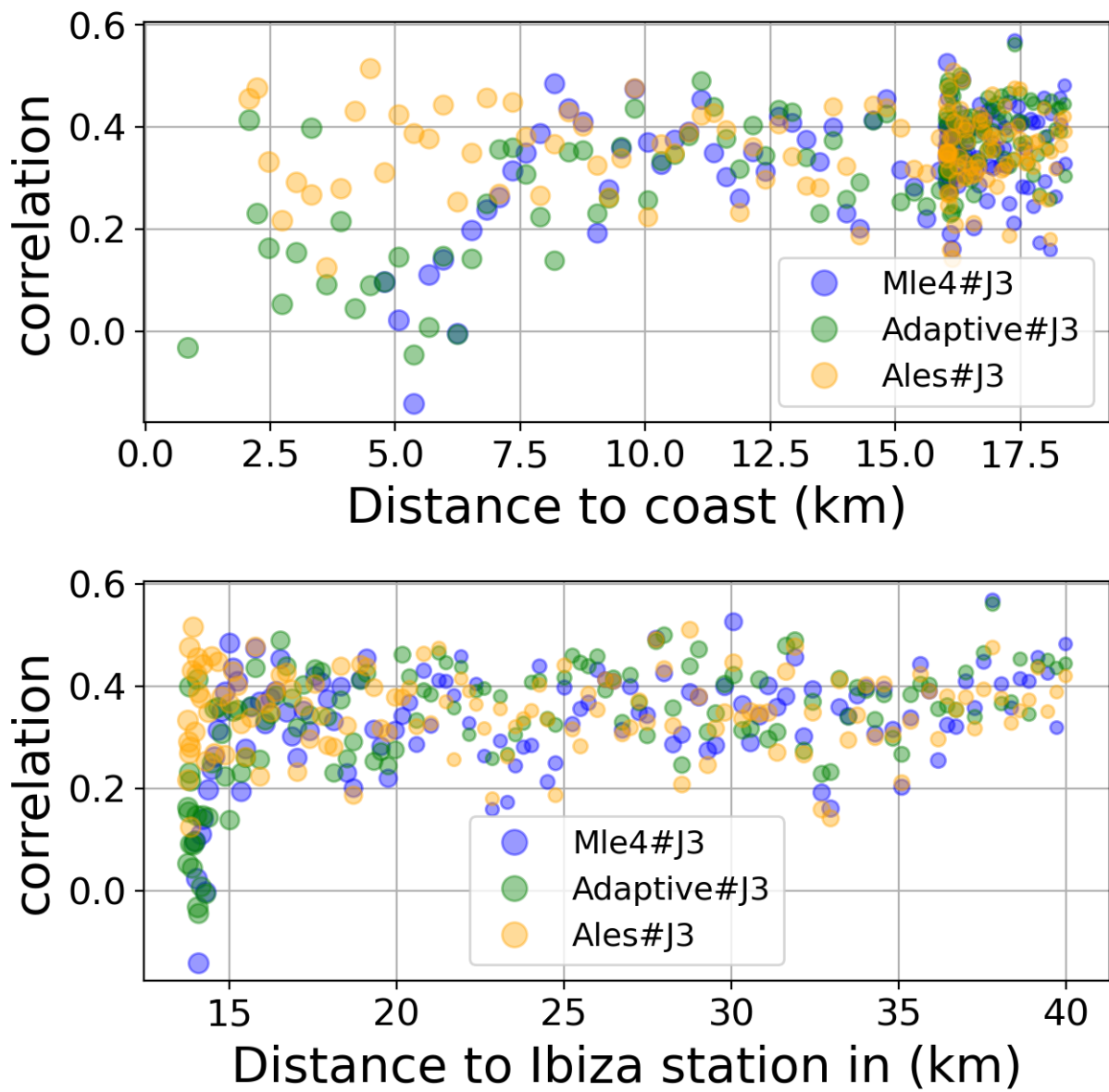


FIGURE 61 – Correlation in function of the distance to the coast/Ibiza station

6.3.8 Taylor Diagram

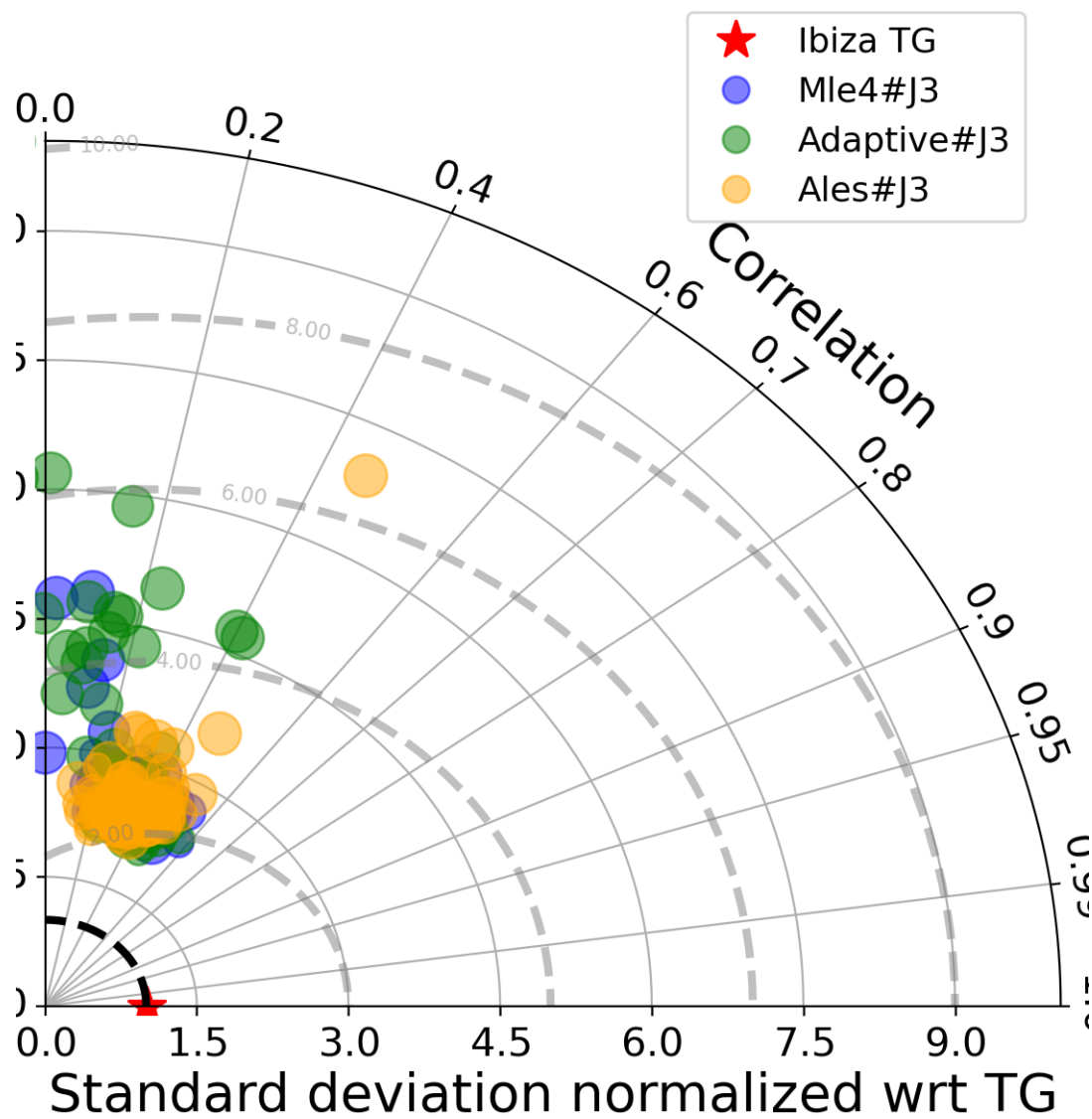


FIGURE 62 – Taylor diagram

6.3.9 Mean statistics table of products comparison with Ibiza tide gauge data

The table below contains the mean statistics of the common points between the different products in the selected area.

Product	Valid data (%)	Correlation	std (m)	rmsd (m)
Mle4#J3	95.823	0.336	0.127	0.119
Adaptive#J3	94.907	0.35	0.123	0.116
Ales#J3	99.032	0.354	0.118	0.111

FIGURE 63 – Mean statistics table of the common points in the altimetry products

6.3.10 The most correlated sla altimetry Time series with the tide gauge sla time serie

The maximum number of valid altimetry points in the set of all the altimetry sla time series covered by the period of time of the Tide gauge sla time serie is 111 point.

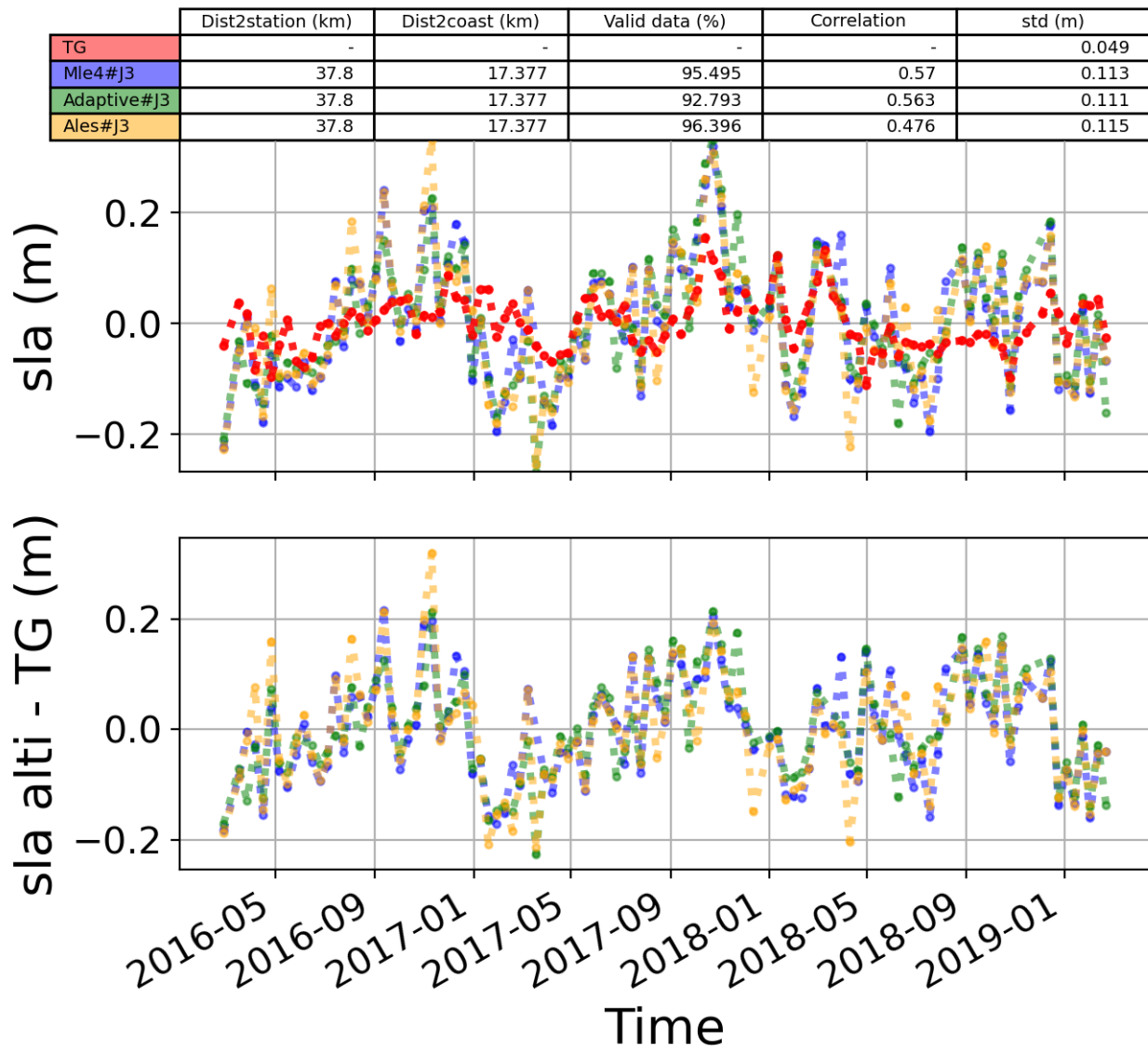


FIGURE 64 – The 1st most correlated sla altimetry Time serie with tide gauge sla time serie

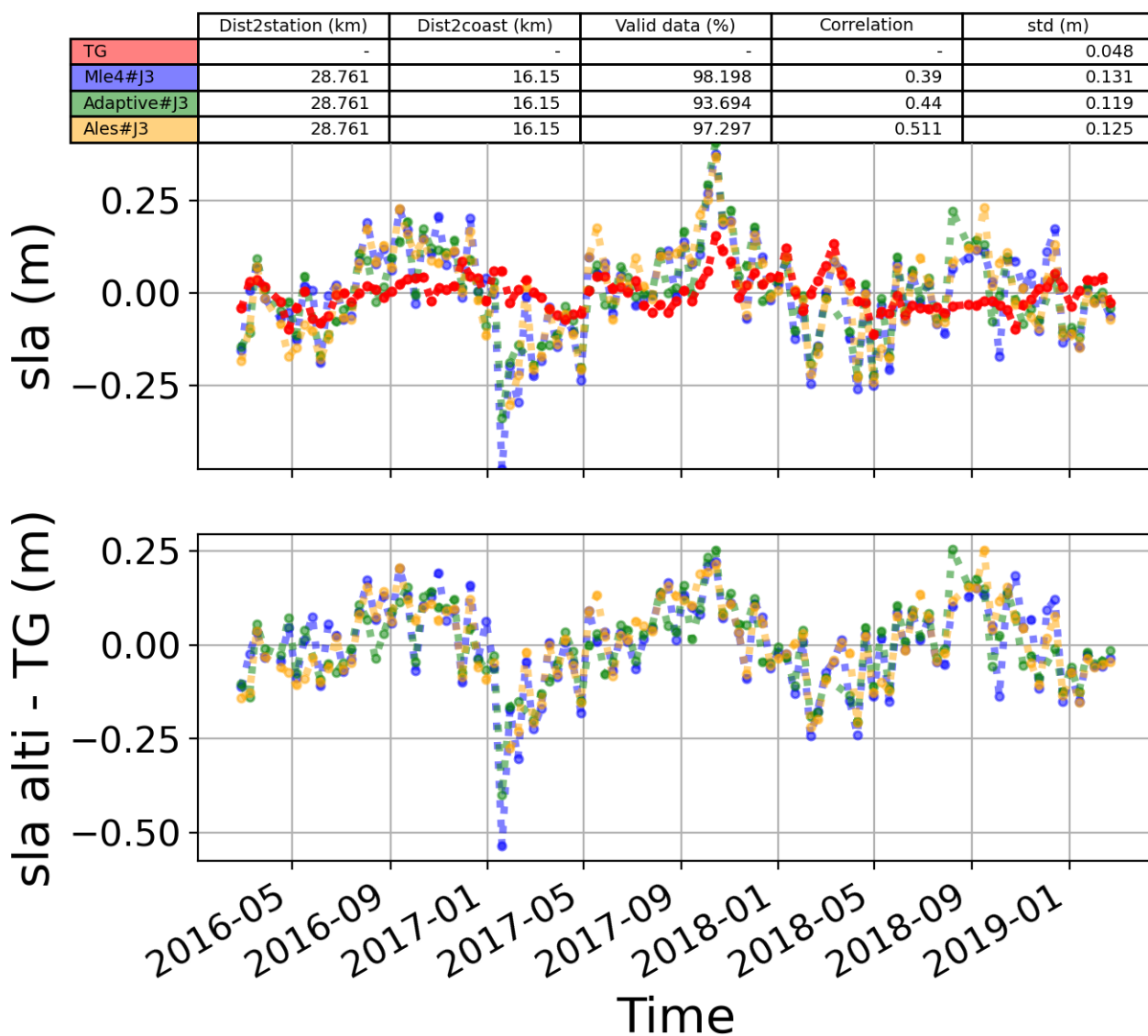


FIGURE 65 – The 2nd most correlated sla altimetry Time serie with tide gauge sla time serie

6.4 Station : LA_FIGUEIRETTE

- Nearest track to LA_FIGUEIRETTE station is the track number track222
- The area of interest is limited by :
 - A circle which it's center is the LA_FIGUEIRETTE tide gauge station location and has a Raduis of 40 Km
 - Maximum distance to the coast : 20 Km

6.4.1 correlation visualization in maps view % LA_FIGUEIRETTE tide gauge

Correlation Altimetry data with respect to LA_FIGUEIRETTE Tide gauge data

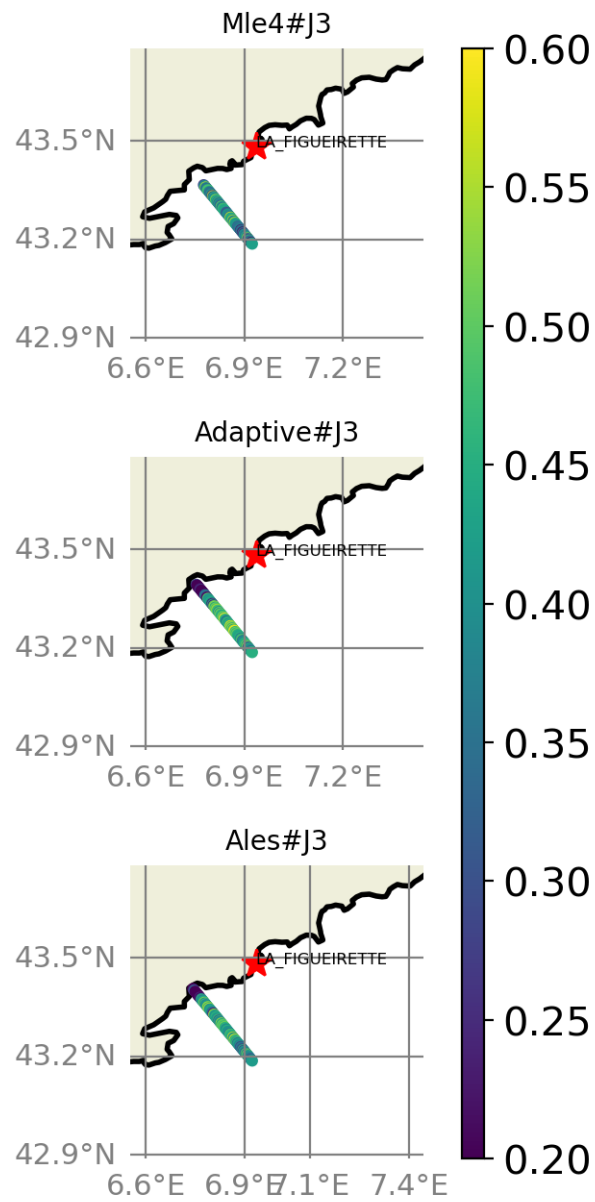


FIGURE 66 – correlation visualization in maps view % LA_FIGUEIRETTE tide gauge

6.4.2 rmsd visualization in maps view % LA_FIGUEIRETTE tide gauge

Rmsd (m) Altimetry data with respect to LA_FIGUEIRETTE Tide gauge data

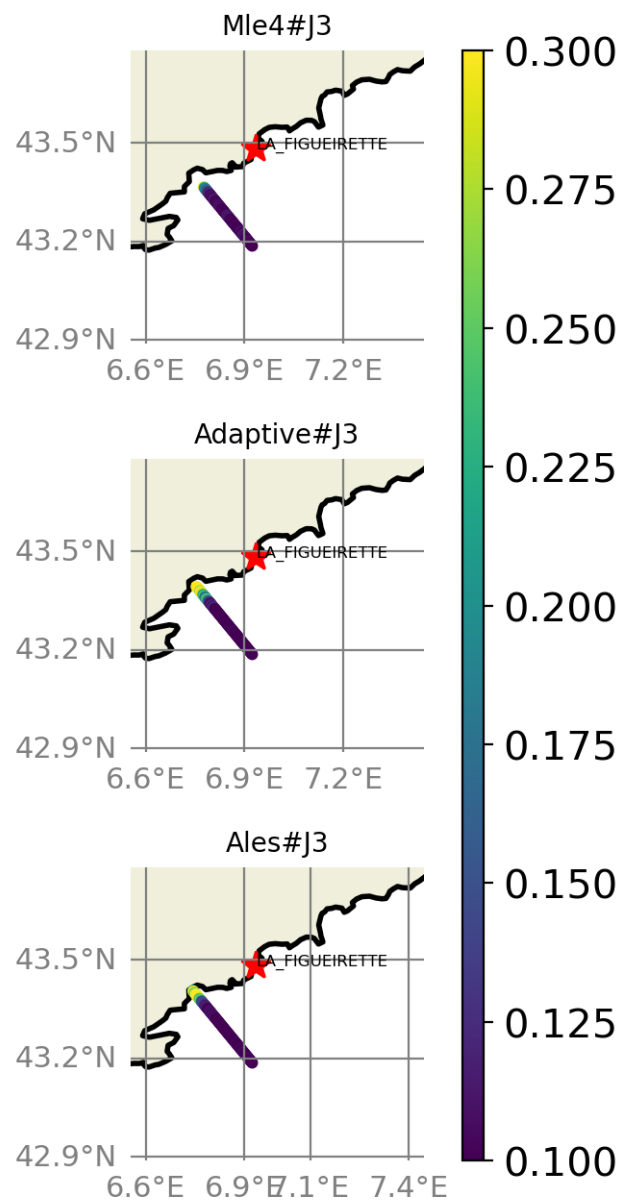


FIGURE 67 – rmsd visualization in maps view % LA_FIGUEIRETTE tide gauge

6.4.3 std visualization in maps view % LA_FIGUEIRETTE tide gauge

Std (m) Altimetry data with respect to LA_FIGUEIRETTE Tide gauge data

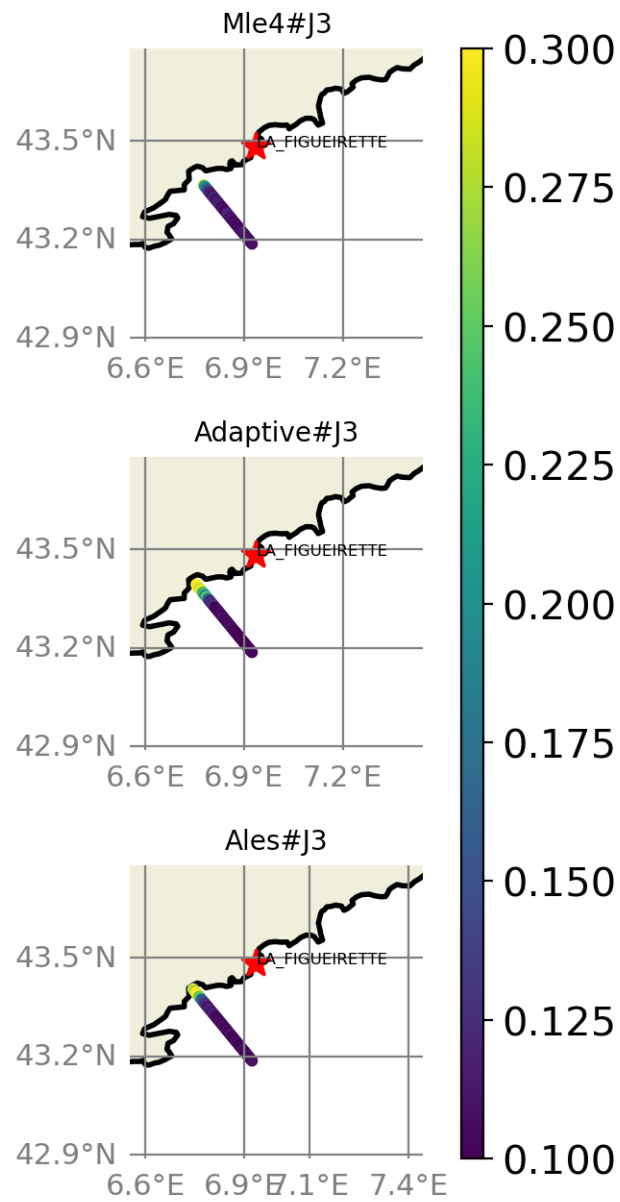


FIGURE 68 – std visualization in maps view % LA_FIGUEIRETTE tide gauge

6.4.4 valid_data_percent visualization in maps view % LA_FIGUEIRETTE tide gauge

Valid_Data_Percent (%) Altimetry data with respect to LA_FIGUEIRETTE Tide gauge data

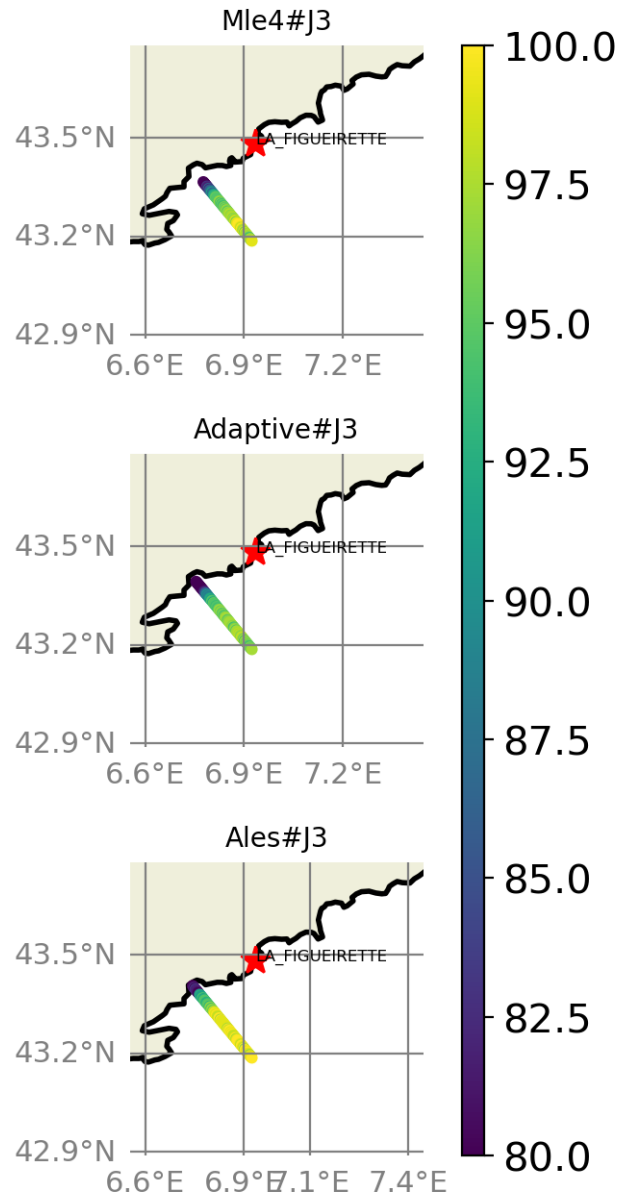


FIGURE 69 – valid_data_percent visualization in maps view % LA_FIGUEIRETTE tide gauge

6.4.5 Valid data (%) in function of distance to coast/LA_FIGUEIRETTE station

The formula to calculate the percentage of valid data in each time series is;

$$pvd_i = \frac{nvd_i}{maxNB}, i = 1, np$$

Where pvd and nvd are the percentage of data and the number of altimetry data in the period covered by the tide gauge sla time serie, respectively in the time serie, i is the index of the time serie, np is the number of the selected altimetry time series. $maxNB = 110$ point is the maximum number of valid altimetry points in the set of all the altimetry sla time series covered by the period of time of the Tide gauge sla time serie.

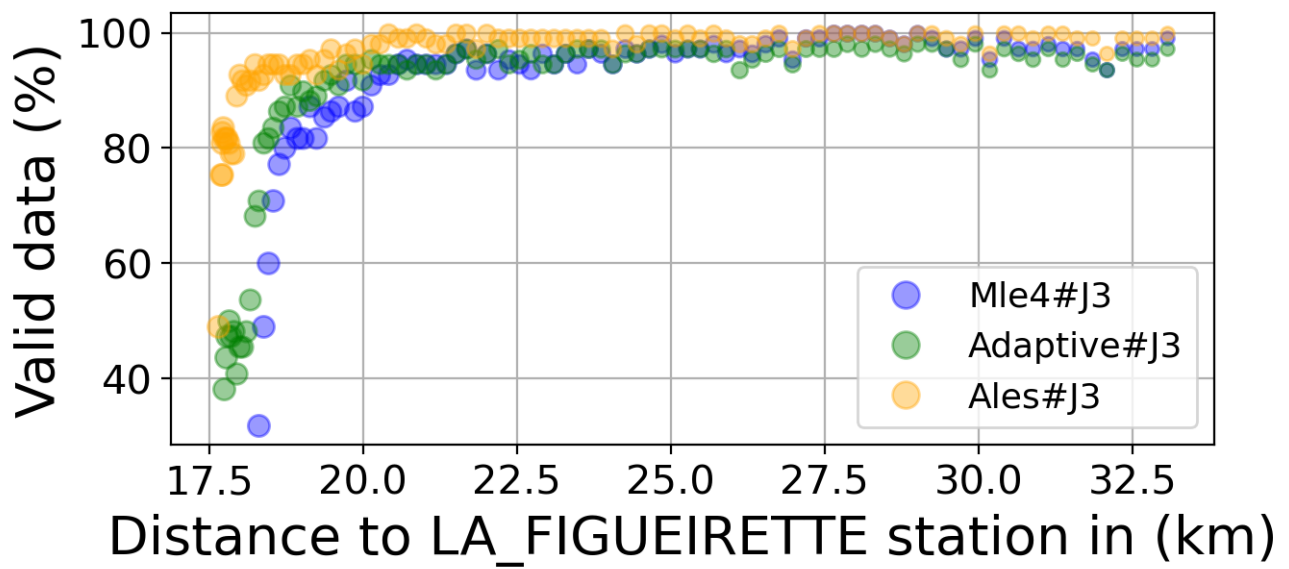
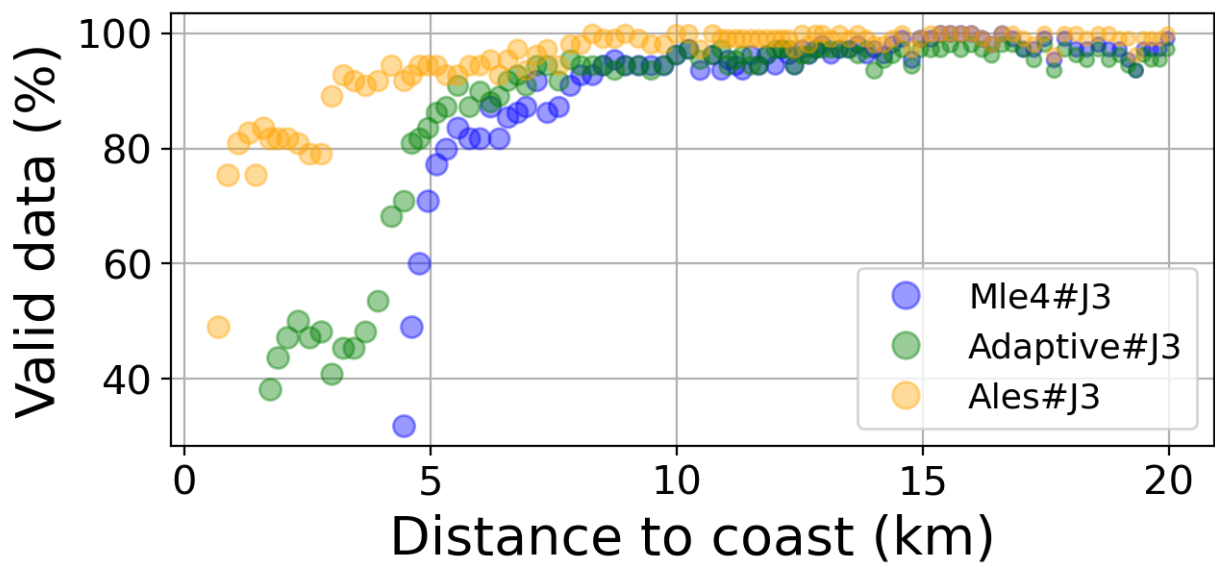


FIGURE 70 – Valid data (%) in function of distance to coast/LA_FIGUEIRETTE station

6.4.6 Std in function of distance to coast/LA_FIGUEIRETTE station

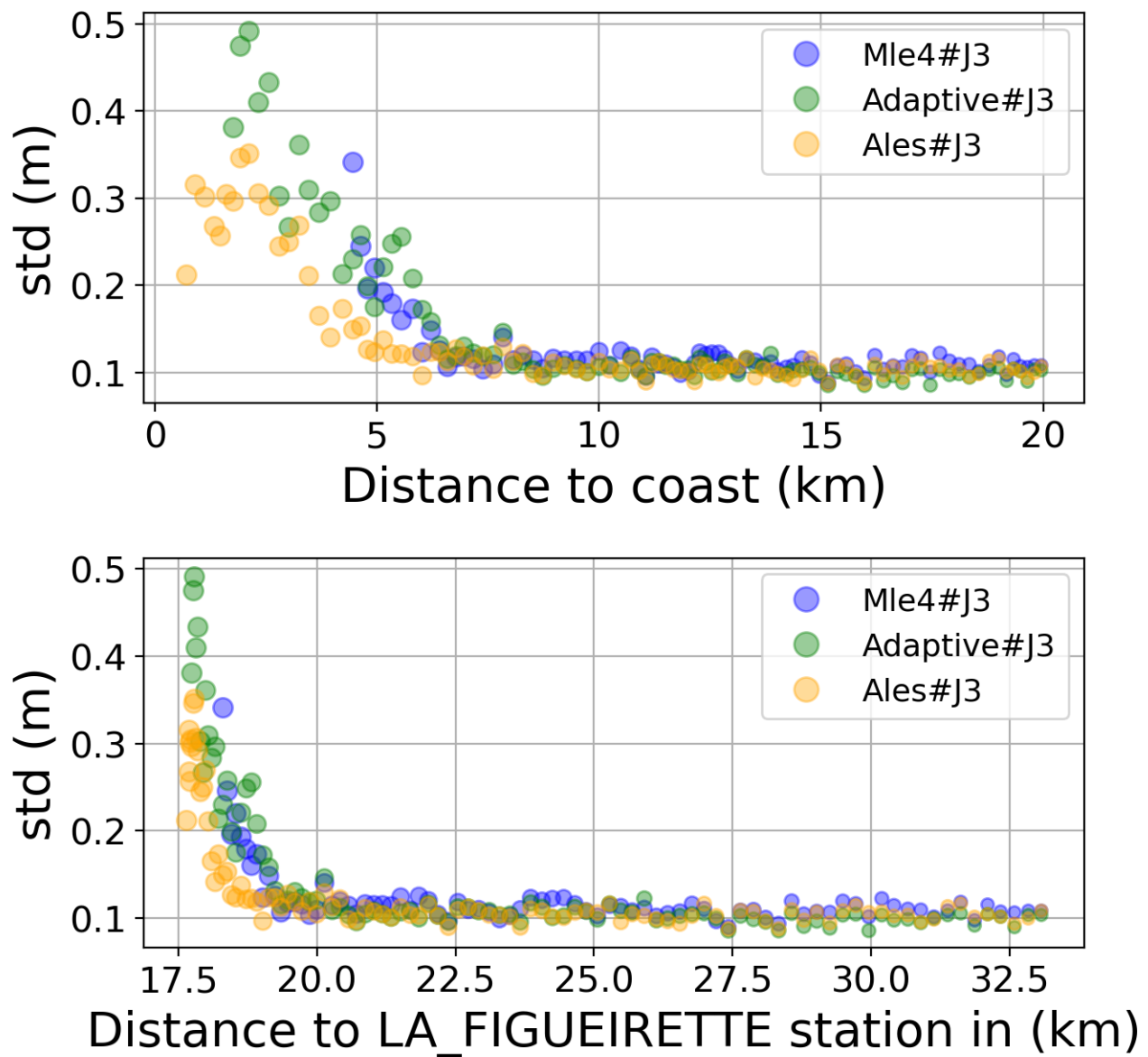


FIGURE 71 – Std in function of the distance to the coast/LA_FIGUEIRETTE station

6.4.7 Correlation in function of distance to coast/LA_FIGUEIRETTE station

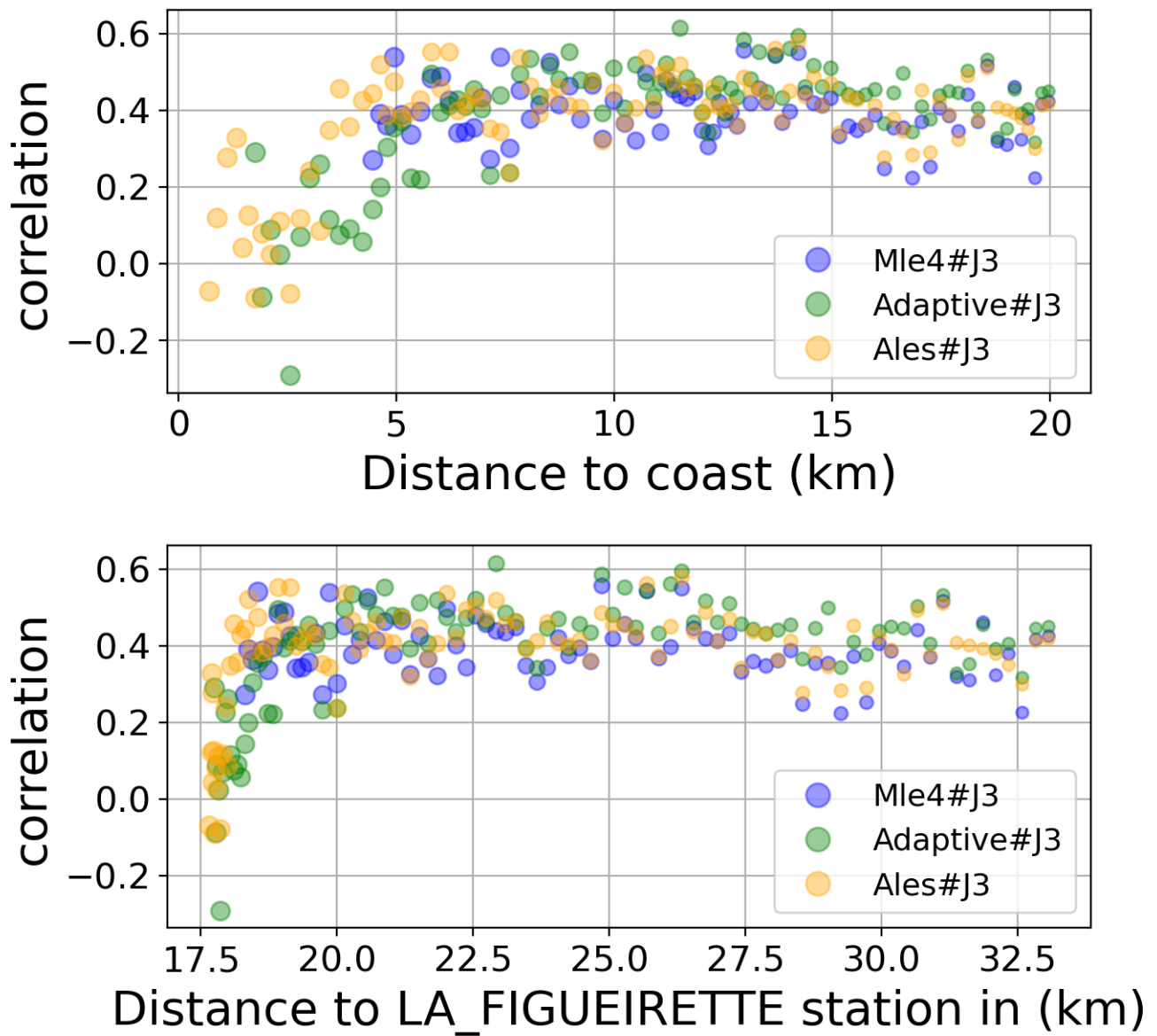


FIGURE 72 – Correlation in function of the distance to the coast/LA_FIGUEIRETTE station

6.4.8 Taylor Diagram

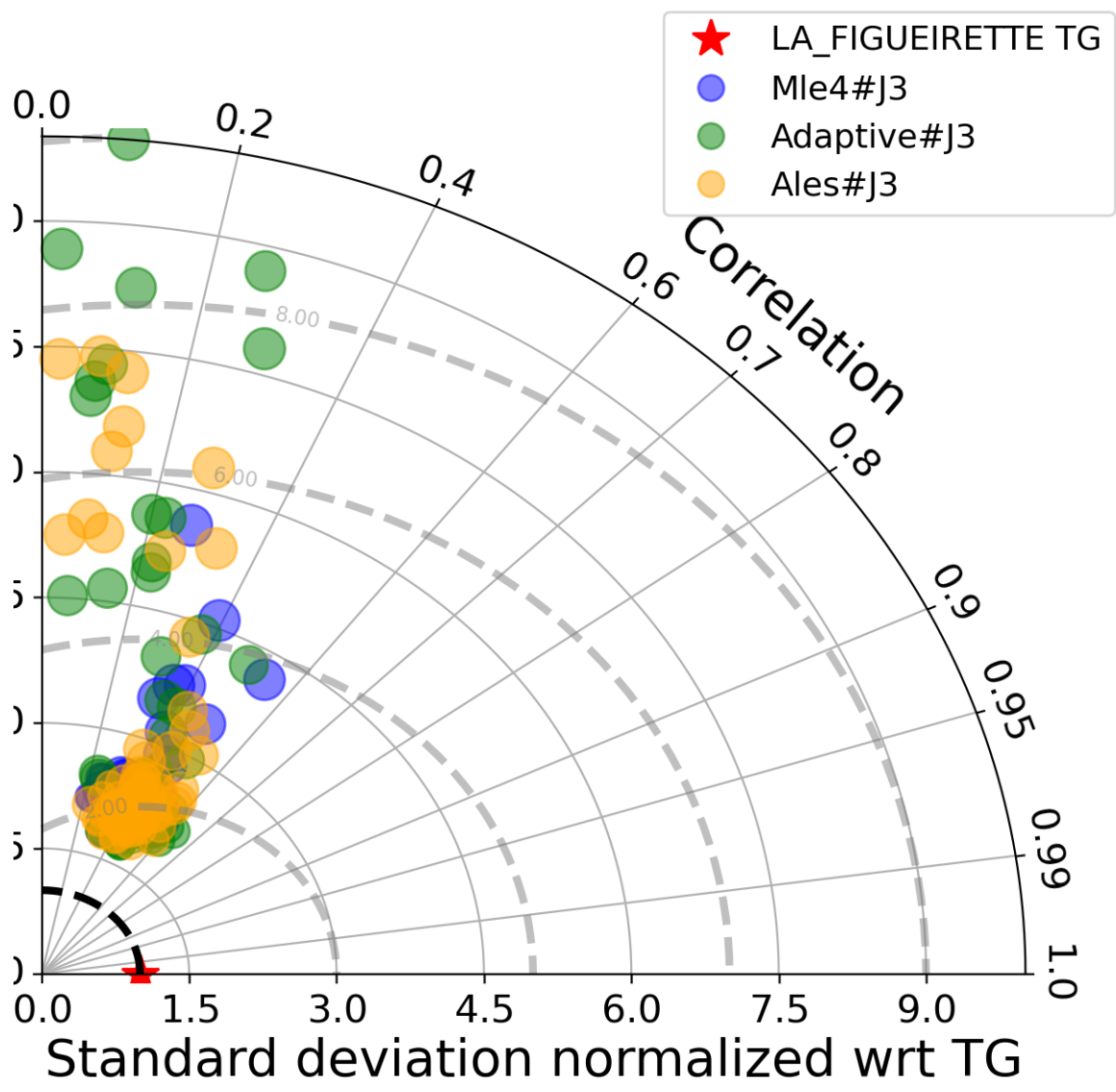


FIGURE 73 – Taylor diagram

6.4.9 Mean statistics table of products comparison with LA_FIGUEIRETTE tide gauge data

The table below contains the mean statistics of the common points between the different products in the selected area.

Product	Valid data (%)	Correlation	std (m)	rmsd (m)
Mle4#J3	92.548	0.395	0.122	0.113
Adaptive#J3	94.377	0.434	0.119	0.108
Ales#J3	98.148	0.423	0.109	0.099

FIGURE 74 – Mean statistics table of the common points in the altimetry products

6.4.10 The most correlated sla altimetry Time series with the tide gauge sla time serie

The maximum number of valid altimetry points in the set of all the altimetry sla time series covered by the period of time of the Tide gauge sla time serie is 110 point.

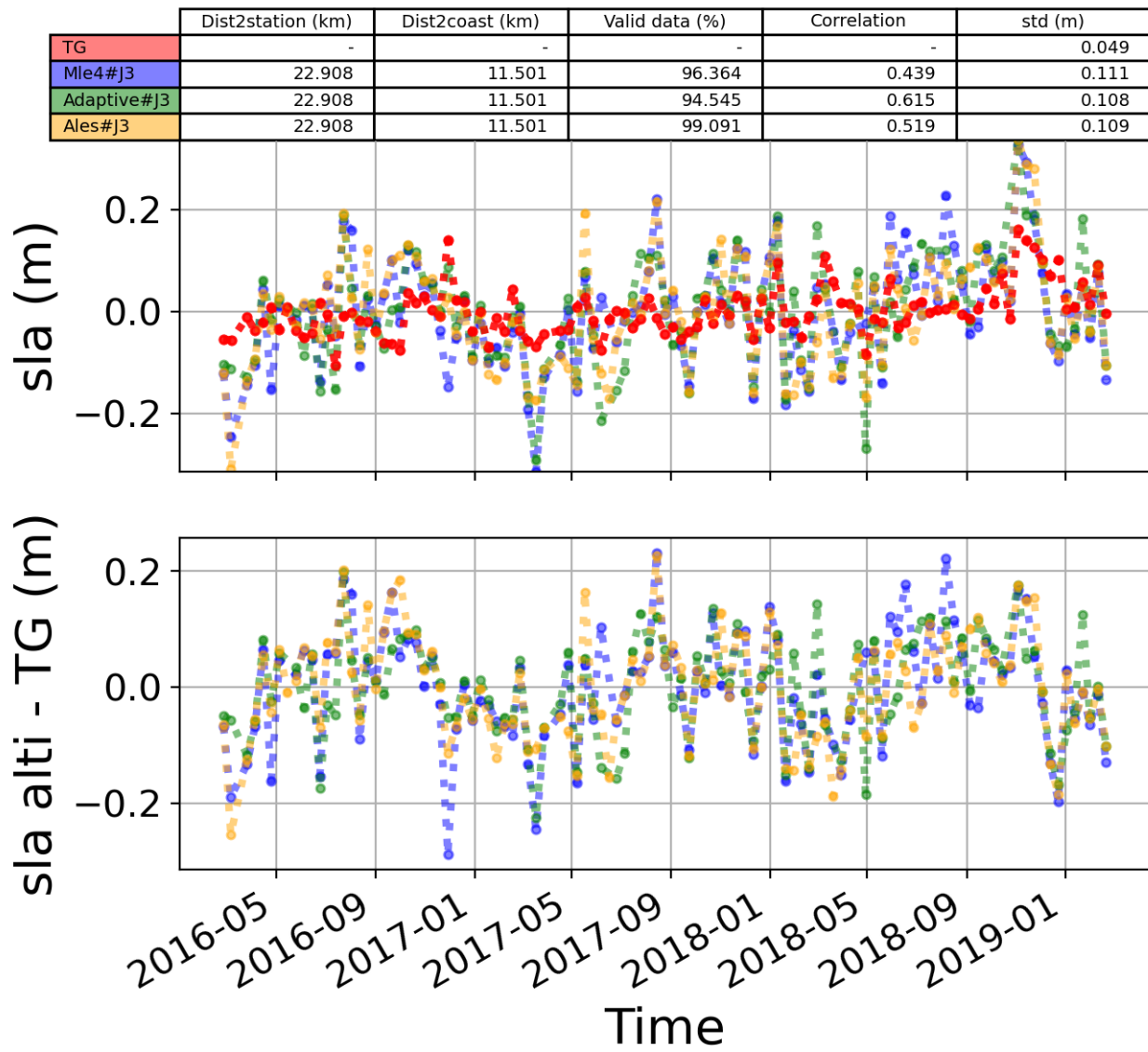


FIGURE 75 – The 1st most correlated sla altimetry Time serie with tide gauge sla time serie

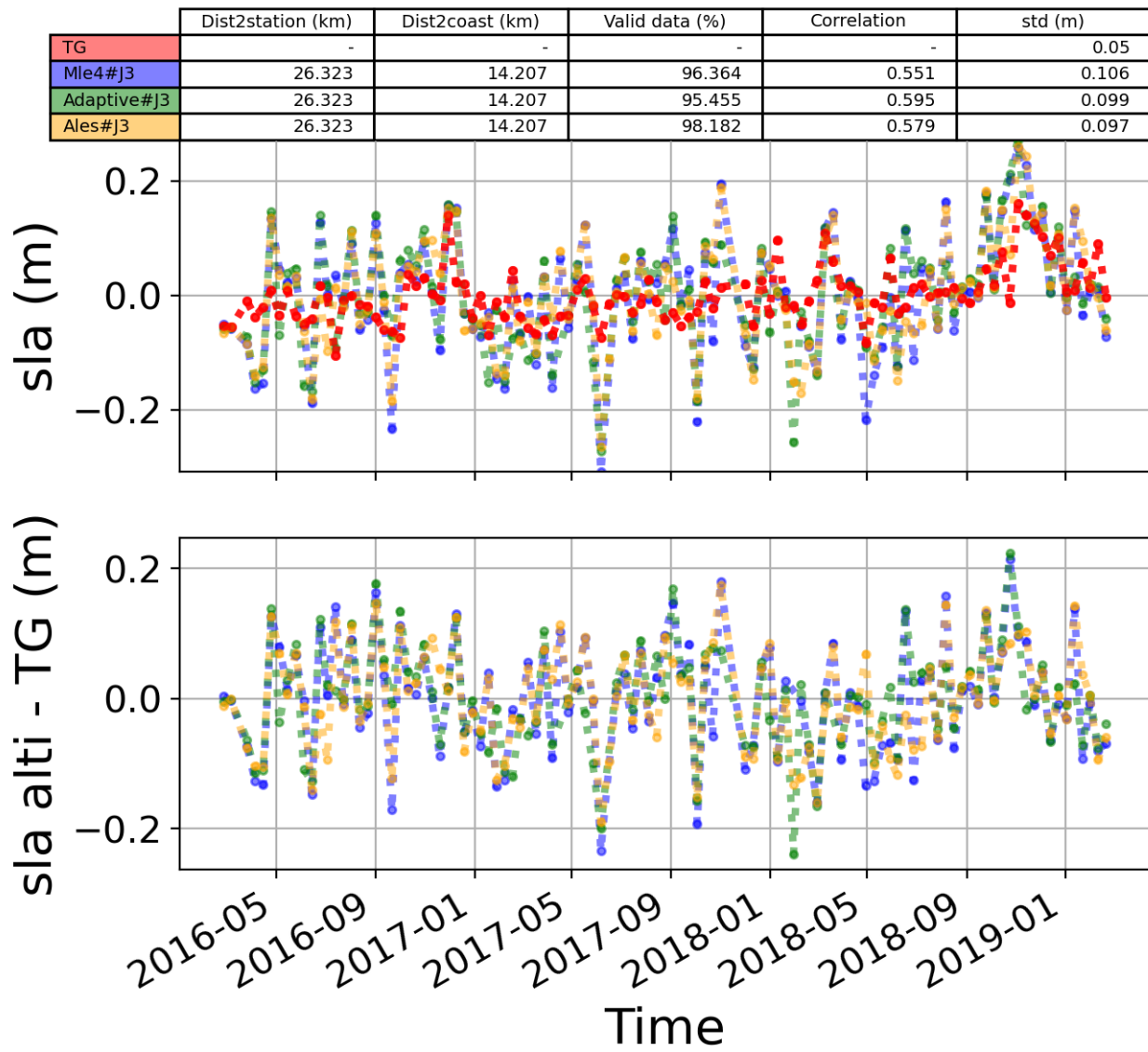


FIGURE 76 – The 2nd most correlated sla altimetry Time serie with tide gauge sla time serie

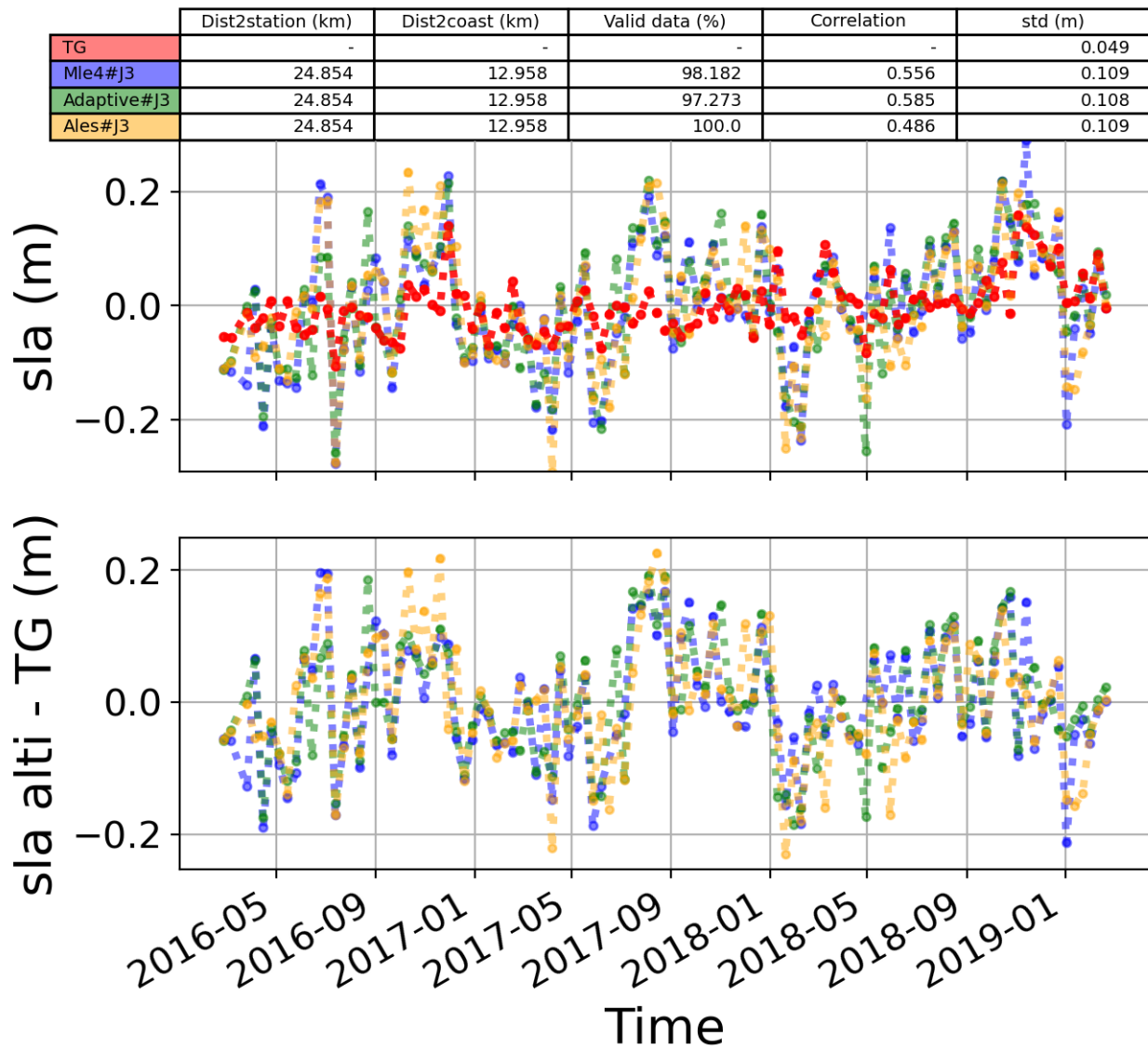


FIGURE 77 – The 3rd most correlated sla altimetry Time serie with tide gauge sla time serie

6.5 Station : Ancona

- Nearest track to Ancona station is the track number track161
- The area of interest is limited by :
 - A circle which it's center is the Ancona tide gauge station location and has a Raduis of 40 Km
 - Maximum distance to the coast : 20 Km

6.5.1 correlation visualization in maps view % Ancona tide gauge

Correlation Altimetry data with respect to Ancona Tide gauge data

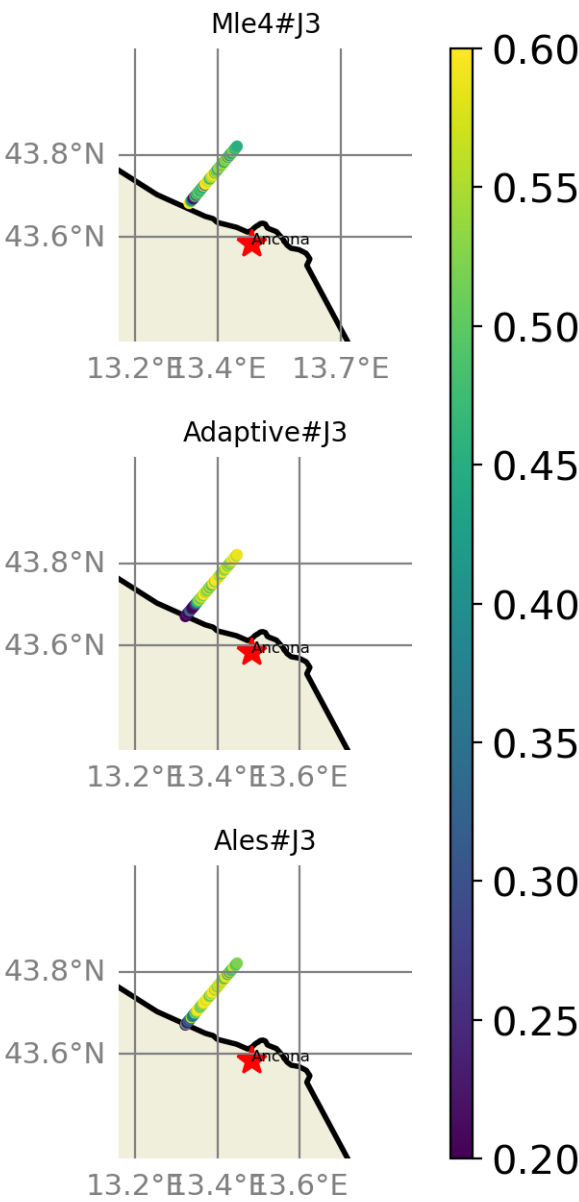


FIGURE 78 – correlation visualization in maps view % Ancona tide gauge

6.5.2 rmsd visualization in maps view % Ancona tide gauge

Rmsd (m) Altimetry data with respect to Ancona Tide gauge data

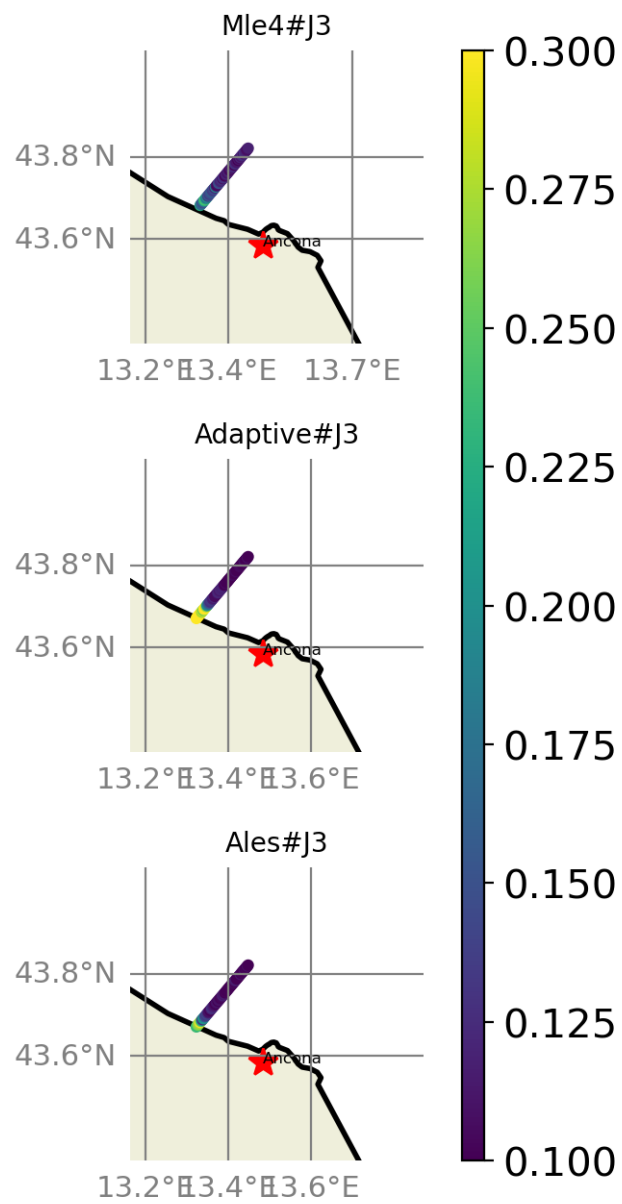


FIGURE 79 – rmsd visualization in maps view % Ancona tide gauge

6.5.3 std visualization in maps view % Ancona tide gauge

Std (m) Altimetry data with respect to Ancona Tide gauge data

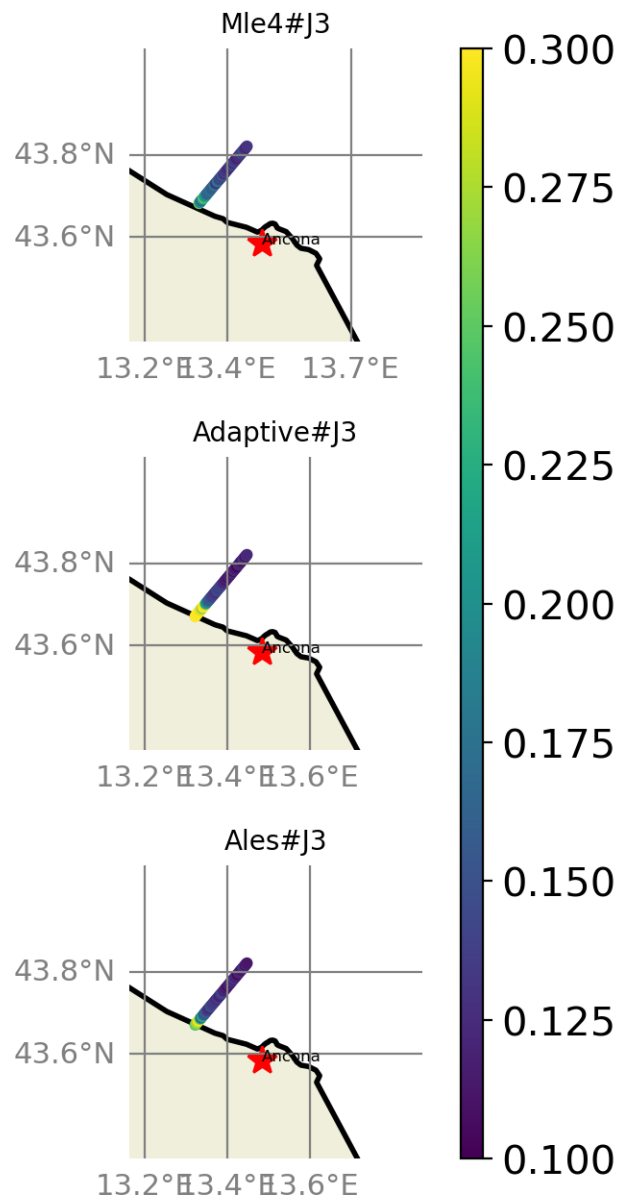


FIGURE 80 – std visualization in maps view % Ancona tide gauge

6.5.4 valid_data_percent visualization in maps view % Ancona tide gauge

Valid_Data_Percent (%) Altimetry data with respect to Ancona Tide gauge data

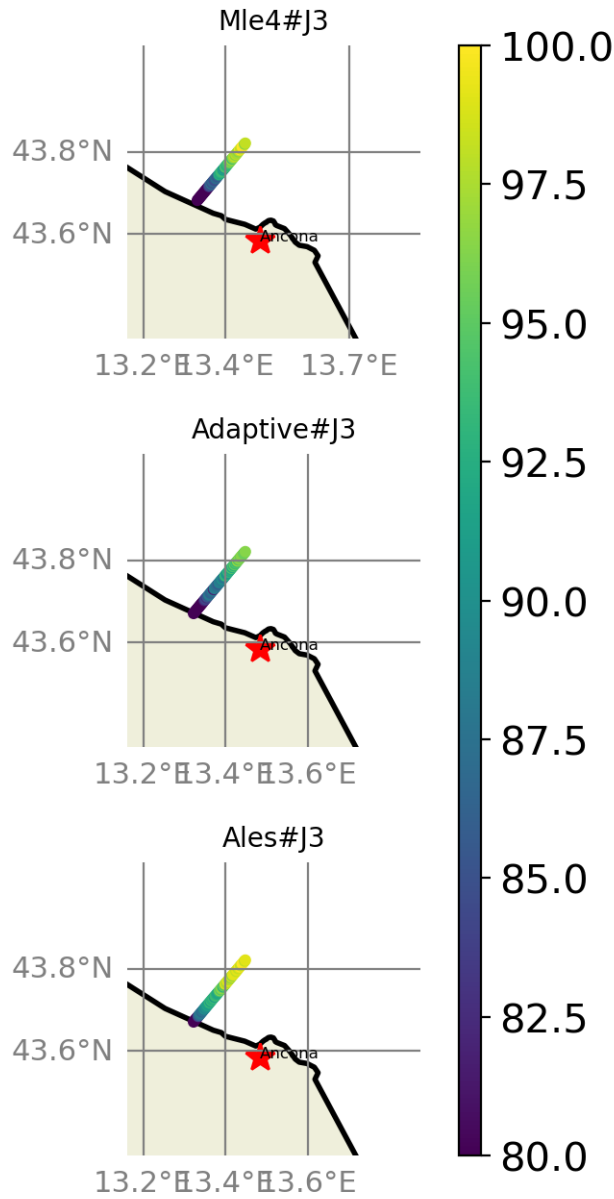


FIGURE 81 – valid_data_percent visualization in maps view % Ancona tide gauge

6.5.5 Valid data (%) in function of distance to coast/Ancona station

The formula to calculate the percentage of valid data in each time serie is;

$$pvd_i = \frac{nvd_i}{maxNB}, i = 1, np$$

Where pvd and nvd are the percentage of data and the number of altimetry data in the period covered by the tide gauge sla time serie, respectively in the time serie, i is the index of the time serie, np is the number of the selected altimetry time series. $maxNB = 110$ point is the maximum number of valid altimetry points in the set of all the altimetry sla time series covered by the period of time of the Tide gauge sla time serie.

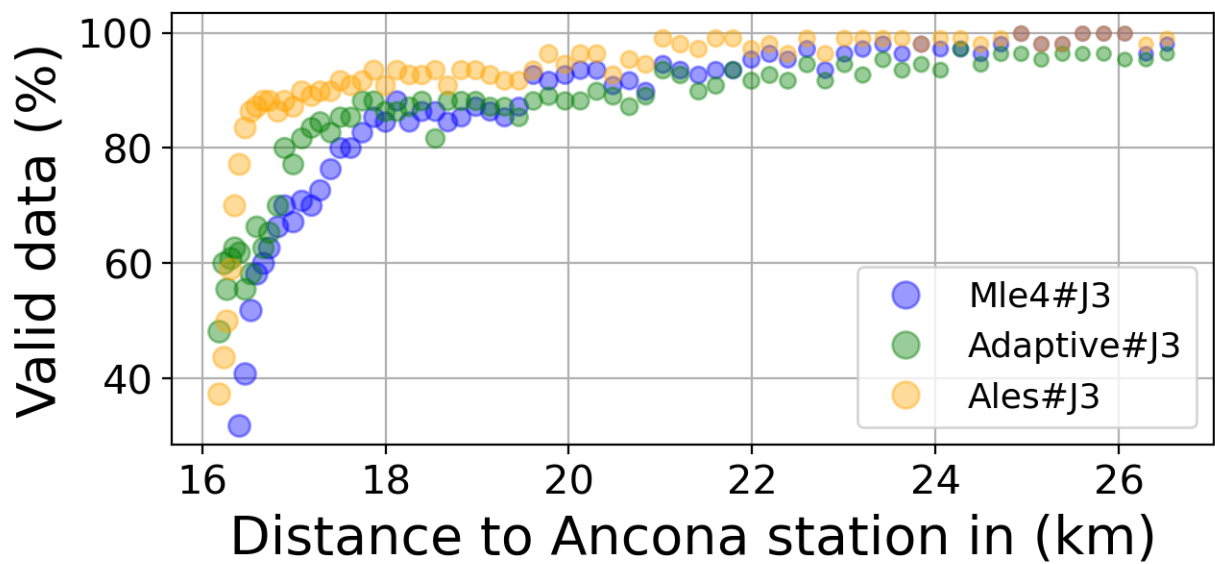
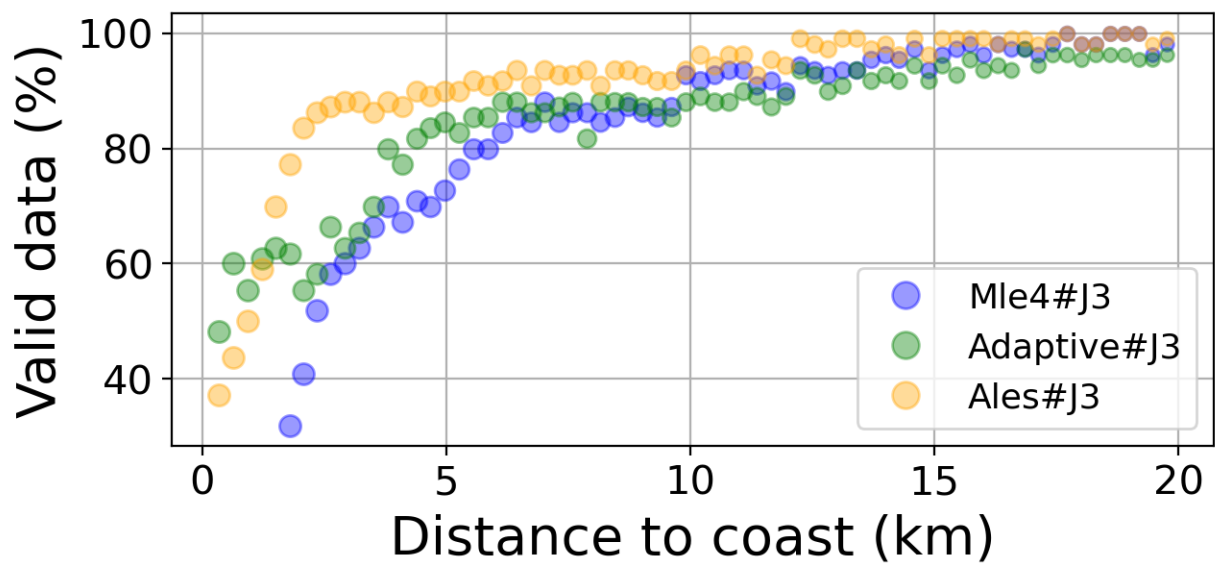


FIGURE 82 – Valid data (%) in function of distance to coast/Ancona station

6.5.6 Std in function of distance to coast/Ancona station

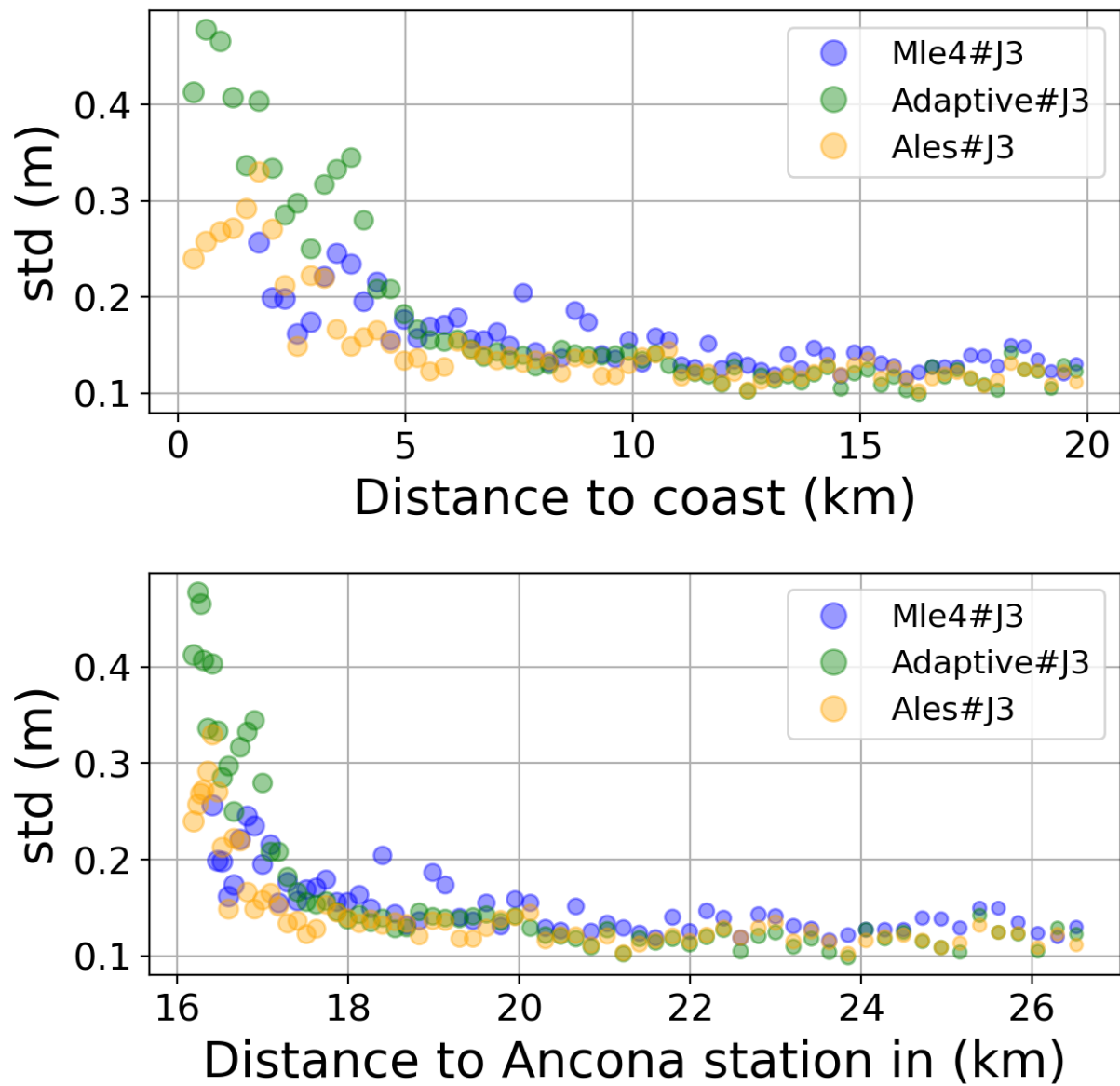


FIGURE 83 – Std in function of the distance to the coast/Ancona station

6.5.7 Correlation in function of distance to coast/Ancona station

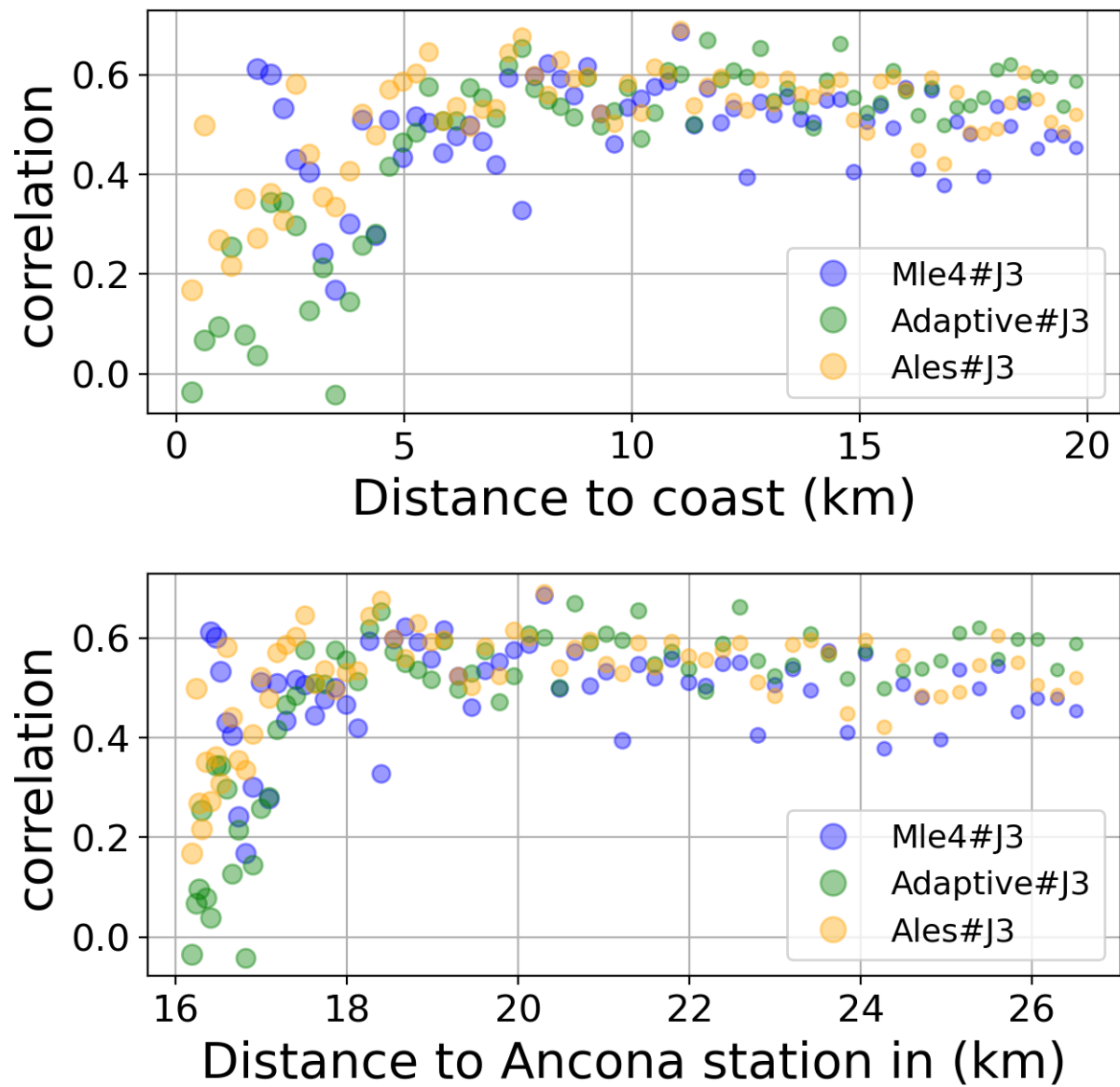


FIGURE 84 – Correlation in function of the distance to the coast/Ancona station

6.5.8 Taylor Diagram

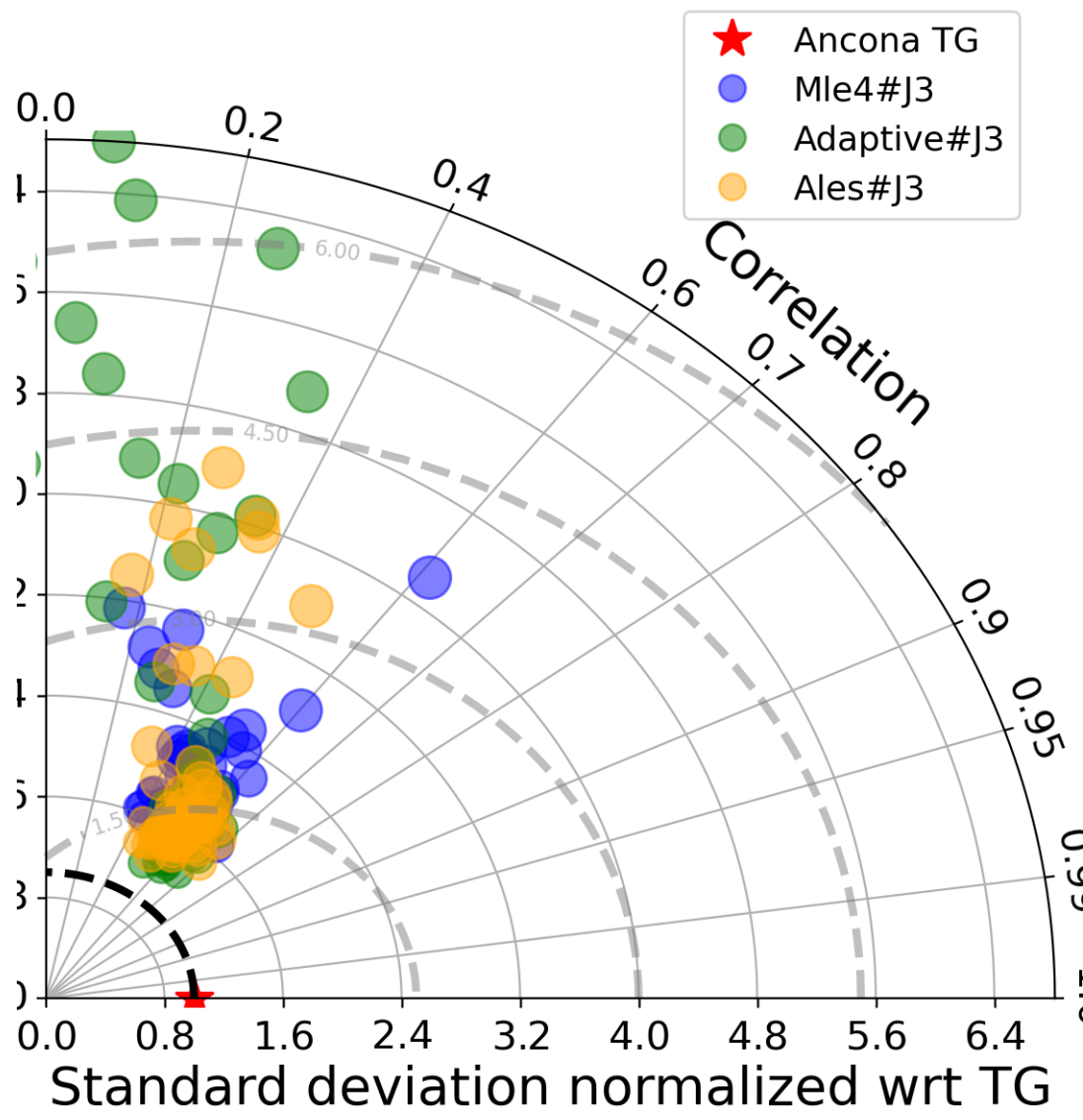


FIGURE 85 – Taylor diagram

6.5.9 Mean statistics table of products comparison with Ancona tide gauge data

The table below contains the mean statistics of the common points between the different products in the selected area.

Product	Valid data (%)	Correlation	std (m)	rmsd (m)
Mle4#J3	86.089	0.494	0.154	0.135
Adaptive#J3	87.071	0.502	0.158	0.139
Ales#J3	94.315	0.534	0.138	0.118

FIGURE 86 – Mean statistics table of the common points in the altimetry products

6.5.10 The most correlated sla altimetry Time series with the tide gauge sla time serie

The maximum number of valid altimetry points in the set of all the altimetry sla time series covered by the period of time of the Tide gauge sla time serie is 110 point.

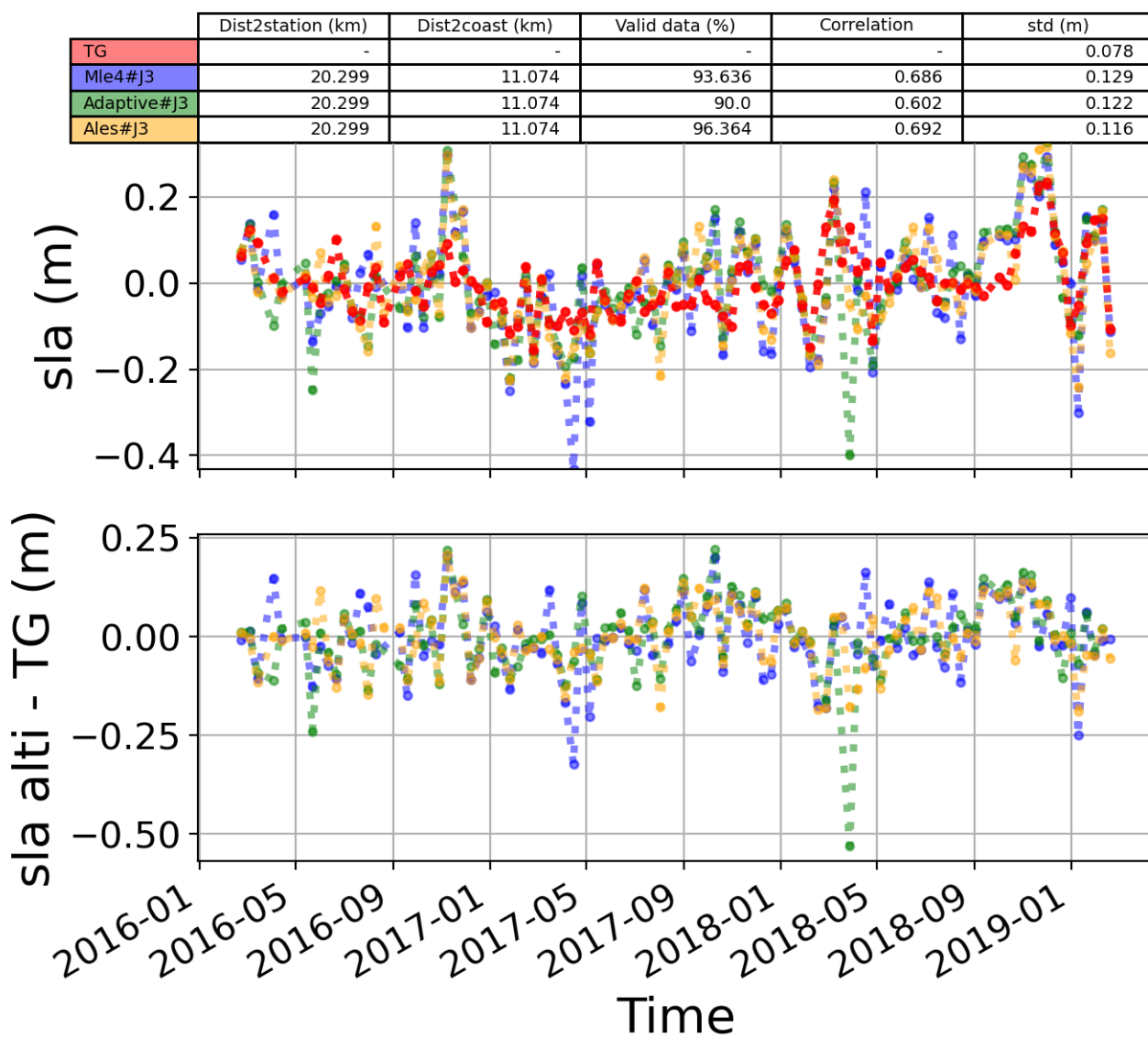


FIGURE 87 – The 1st most correlated sla altimetry Time serie with tide gauge sla time serie

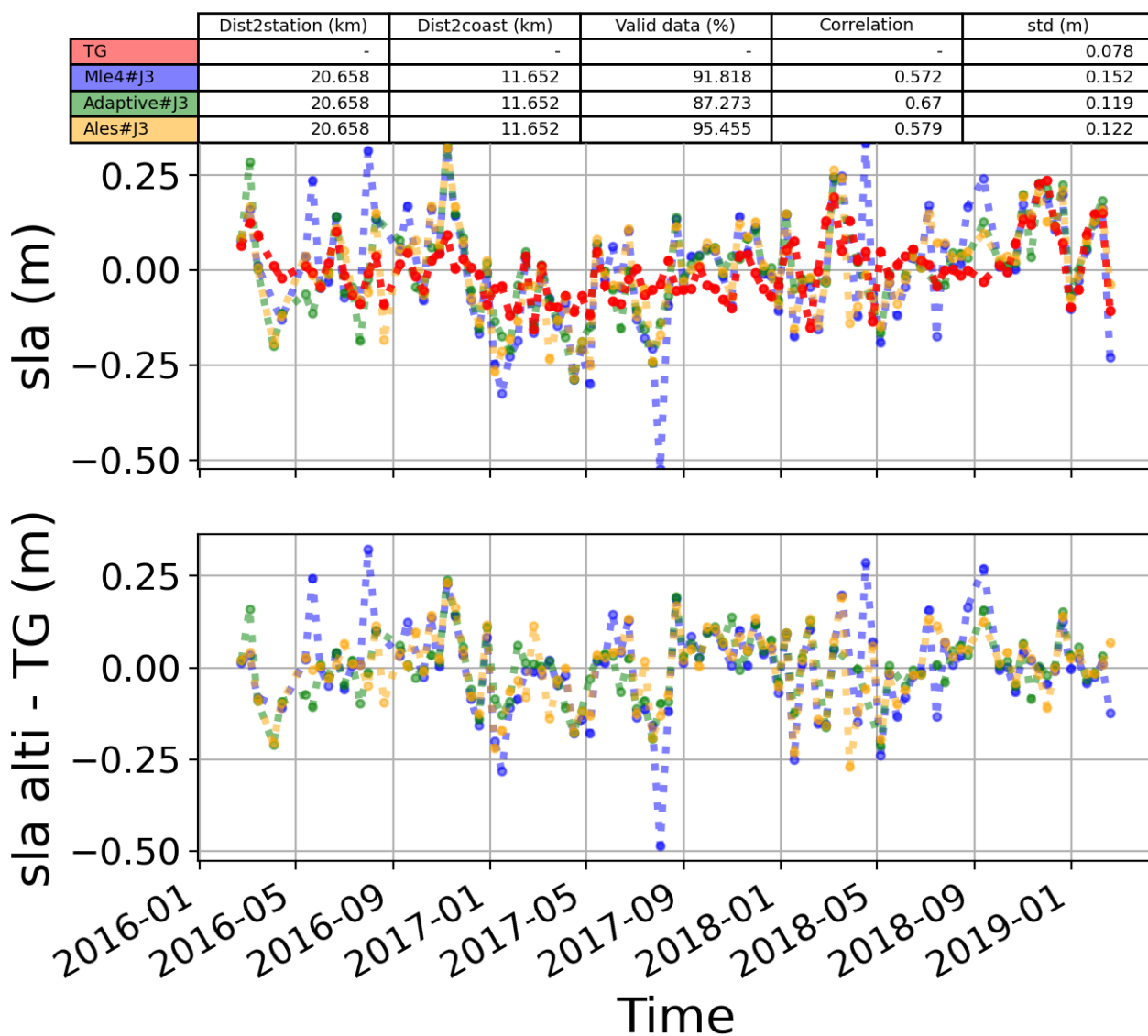


FIGURE 88 – The 2nd most correlated sla altimetry Time serie with tide gauge sla time serie

6.6 Station : Livourne

- Nearest track to Livourne station is the track number track85
- The area of interest is limited by :
 - A circle which it's center is the Livourne tide gauge station location and has a Raduis of 40 Km
 - Maximum distance to the coast : 20 Km

6.6.1 correlation visualization in maps view % Livourne tide gauge

Correlation Altimetry data with respect to Livourne Tide gauge data

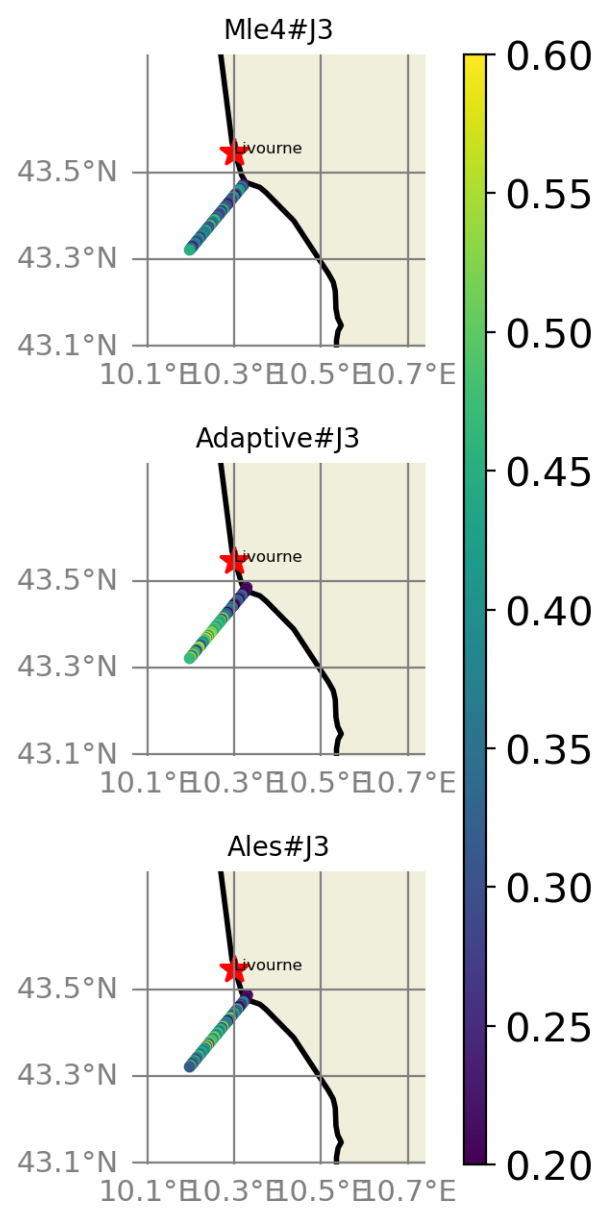


FIGURE 89 – correlation visualization in maps view % Livourne tide gauge

6.6.2 rmsd visualization in maps view % Livourne tide gauge

Rmsd (m) Altimetry data with respect to Livourne Tide gauge data

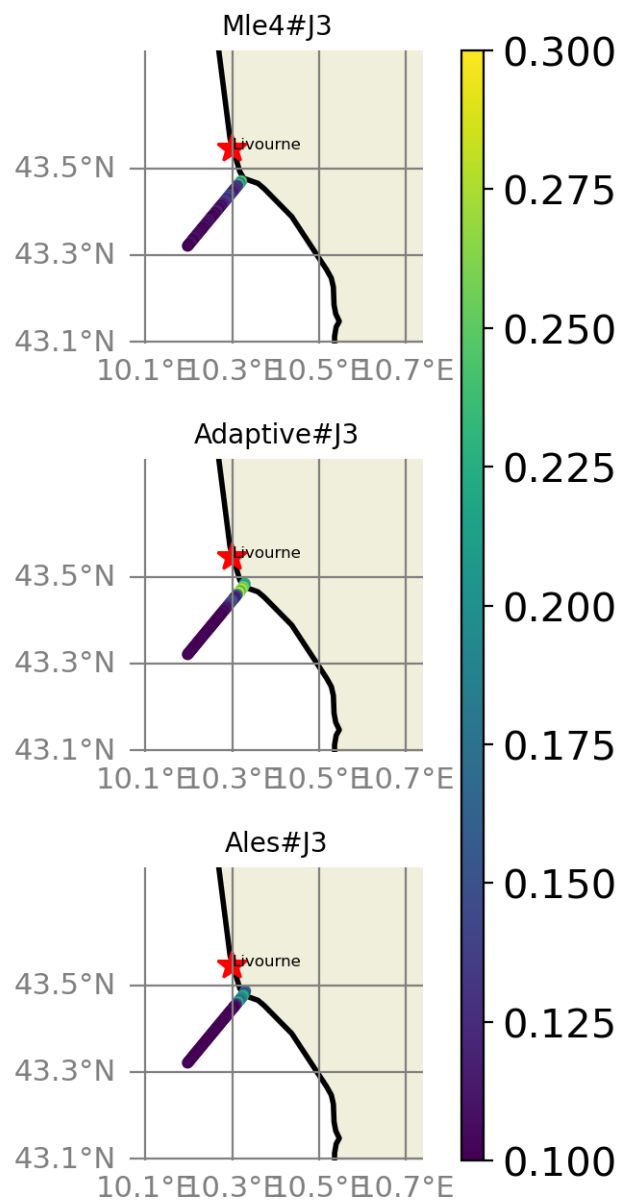


FIGURE 90 – rmsd visualization in maps view % Livourne tide gauge

6.6.3 std visualization in maps view % Livourne tide gauge

Std (m) Altimetry data with respect to Livourne Tide gauge data

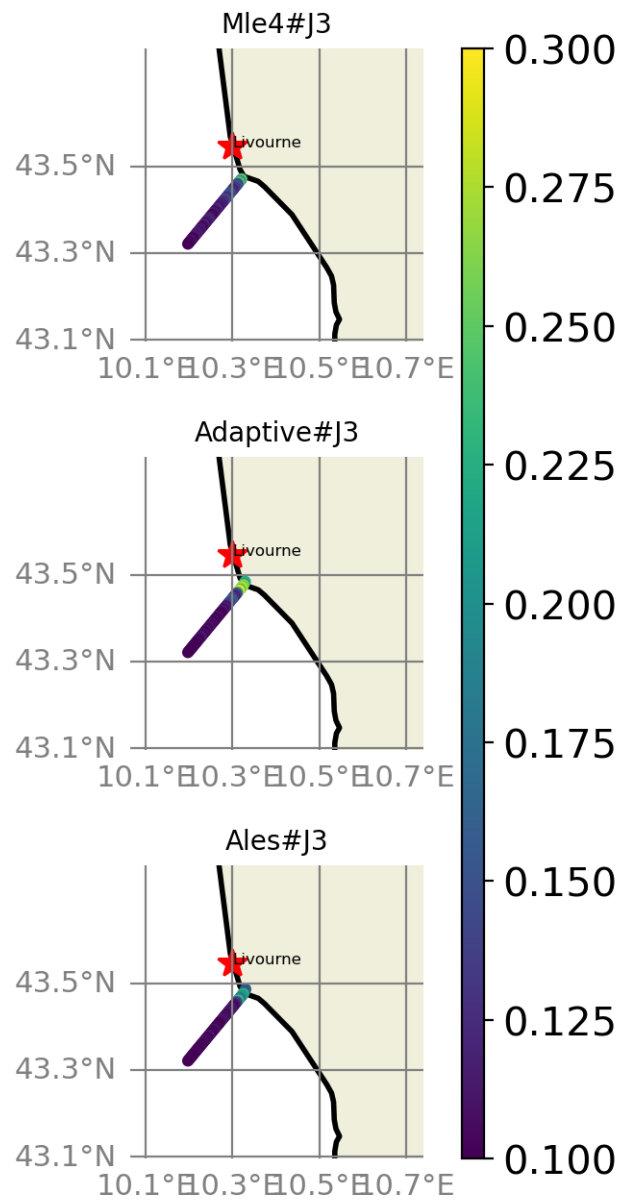


FIGURE 91 – std visualization in maps view % Livourne tide gauge

6.6.4 valid_data_percent visualization in maps view % Livourne tide gauge

Valid_Data_Percent (%) Altimetry data with respect to Livourne Tide gauge data

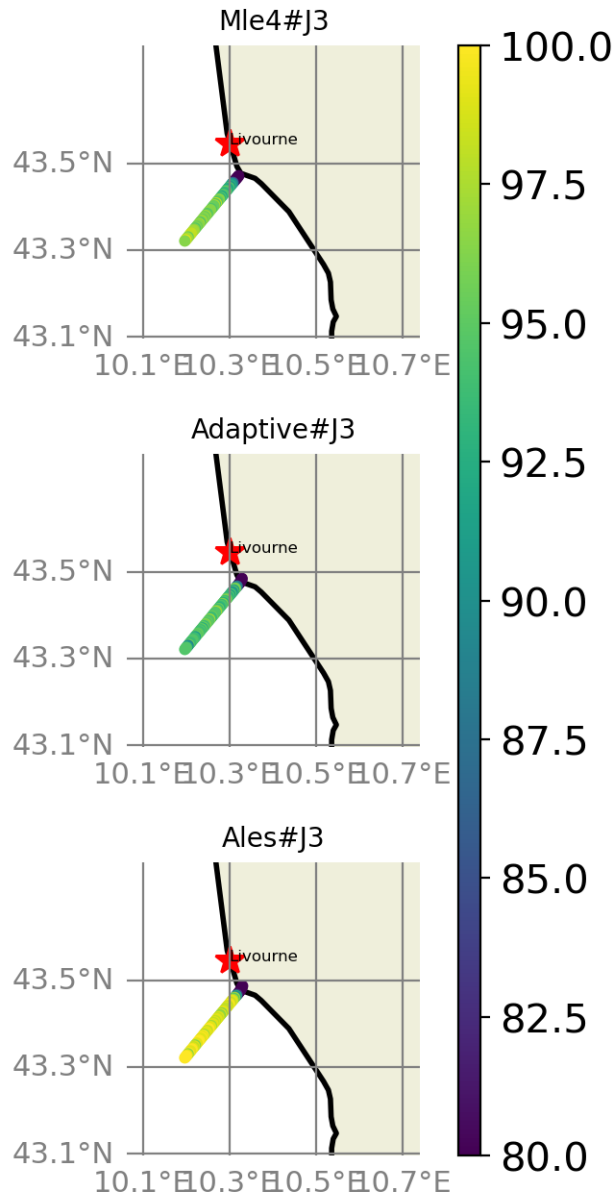


FIGURE 92 – valid_data_percent visualization in maps view % Livourne tide gauge

6.6.5 Valid data (%) in function of distance to coast/Livourne station

The formula to calculate the percentage of valid data in each time serie is;

$$pvd_i = \frac{nvd_i}{maxNB}, i = 1, np$$

Where pvd and nvd are the percentage of data and the number of altimetry data in the period covered by the tide gauge sla time serie, respectively in the time serie, i is the index of the time serie, np is the number of the selected altimetry time series. $maxNB = 110$ point is the maximum number of valid altimetry points in the set of all the altimetry sla time series covered by the period of time of the Tide gauge sla time serie.

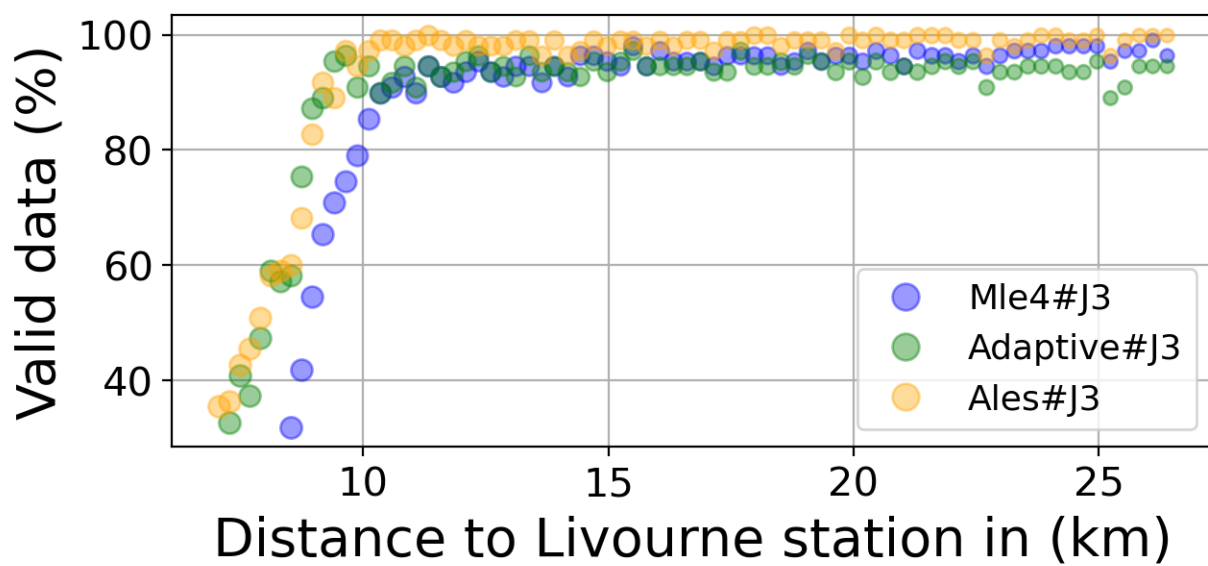
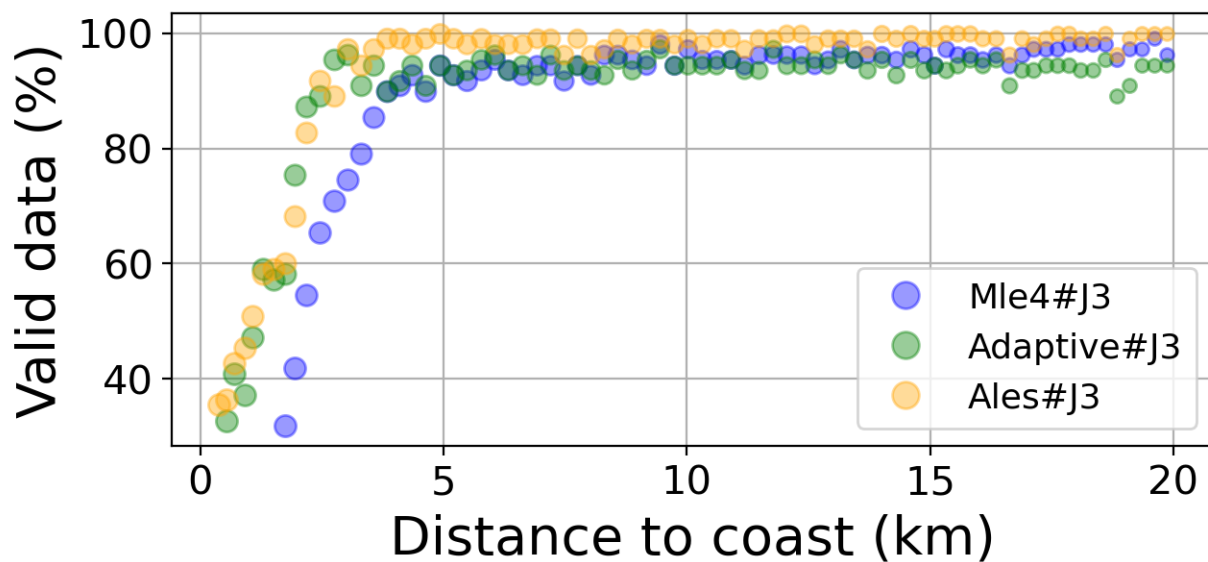


FIGURE 93 – Valid data (%) in function of distance to coast/Livourne station

6.6.6 Std in function of distance to coast/Livourne station

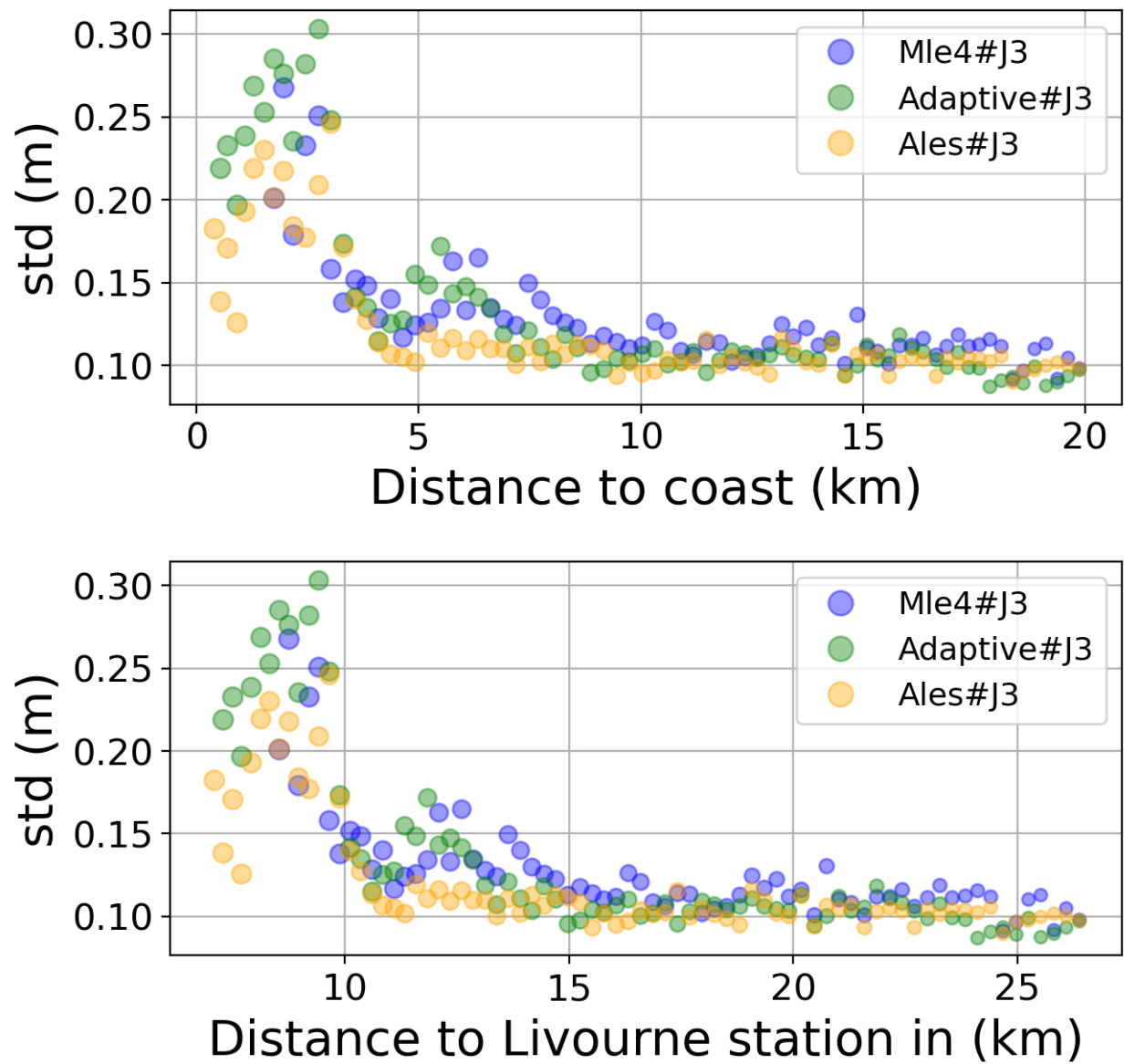


FIGURE 94 – Std in function of the distance to the coast/Livourne station

6.6.7 Correlation in function of distance to coast/Livourne station

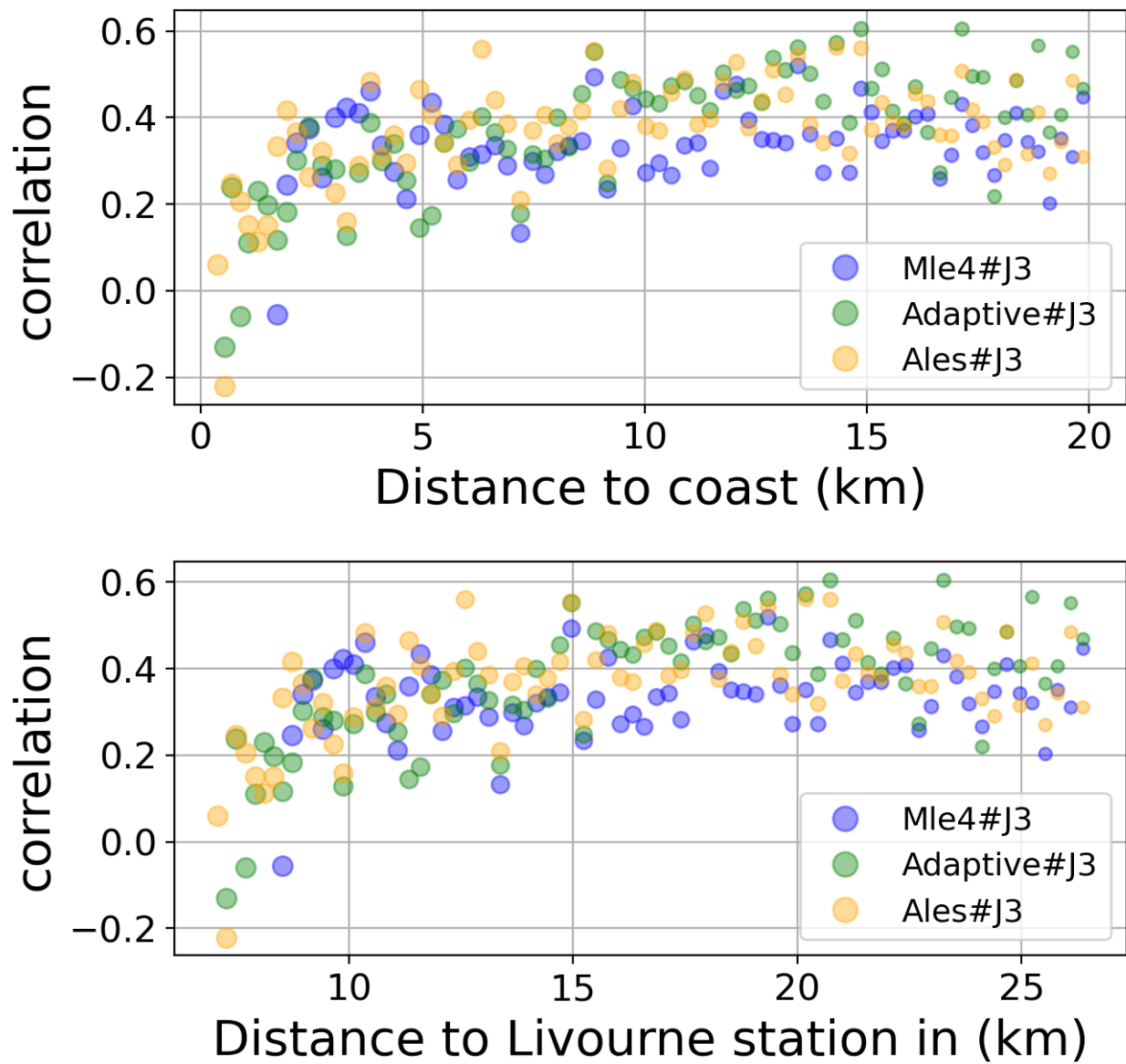


FIGURE 95 – Correlation in function of the distance to the coast/Livourne station

6.6.8 Taylor Diagram

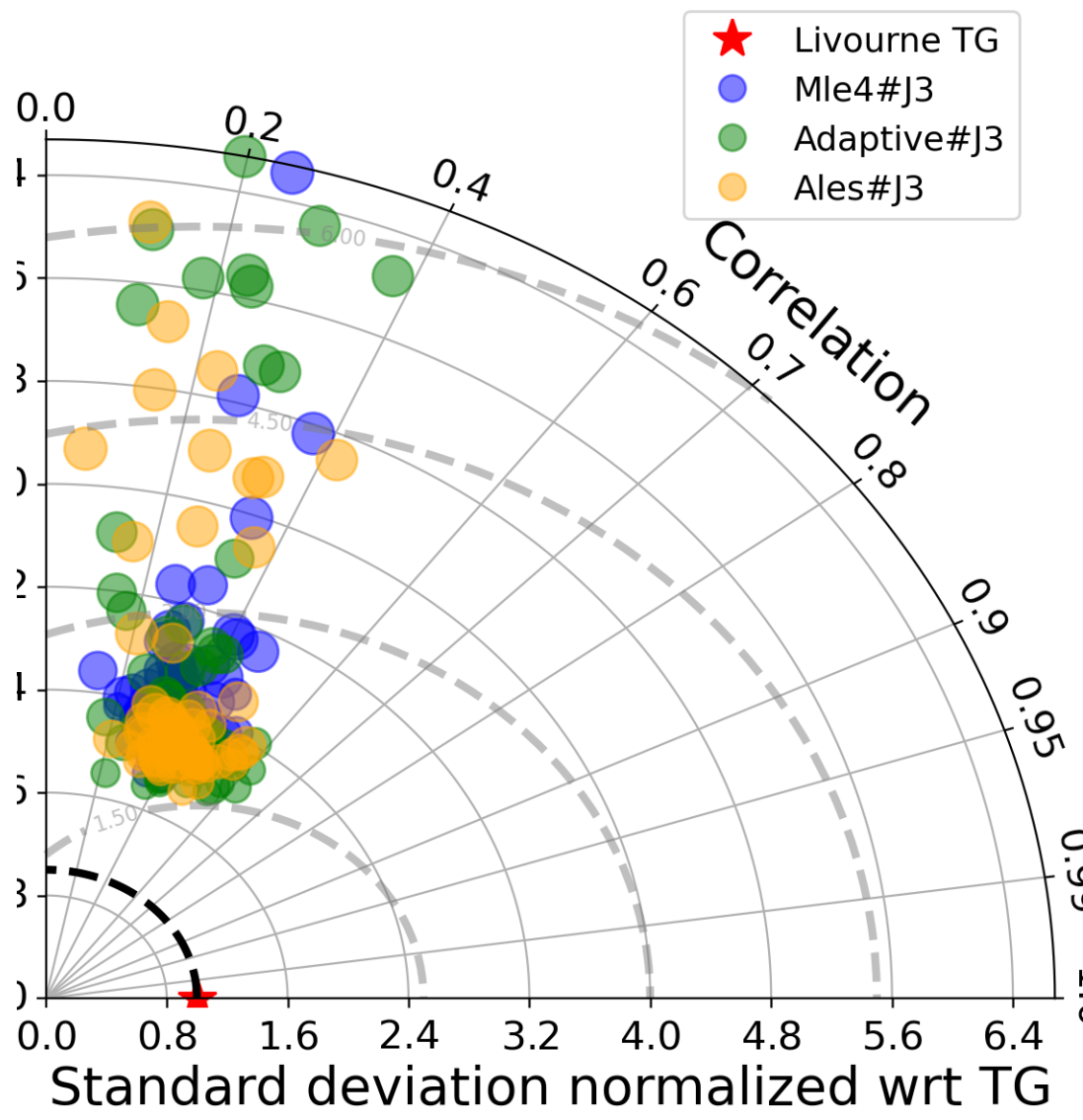


FIGURE 96 – Taylor diagram

6.6.9 Mean statistics table of products comparison with Livourne tide gauge data

The table below contains the mean statistics of the common points between the different products in the selected area.

Product	Valid data (%)	Correlation	std (m)	rmsd (m)
Mle4#J3	91.631	0.338	0.128	0.121
Adaptive#J3	93.195	0.396	0.126	0.116
Ales#J3	97.259	0.393	0.115	0.106

FIGURE 97 – Mean statistics table of the common points in the altimetry products

6.6.10 The most correlated sla altimetry Time series with the tide gauge sla time serie

The maximum number of valid altimetry points in the set of all the altimetry sla time series covered by the period of time of the Tide gauge sla time serie is 110 point.

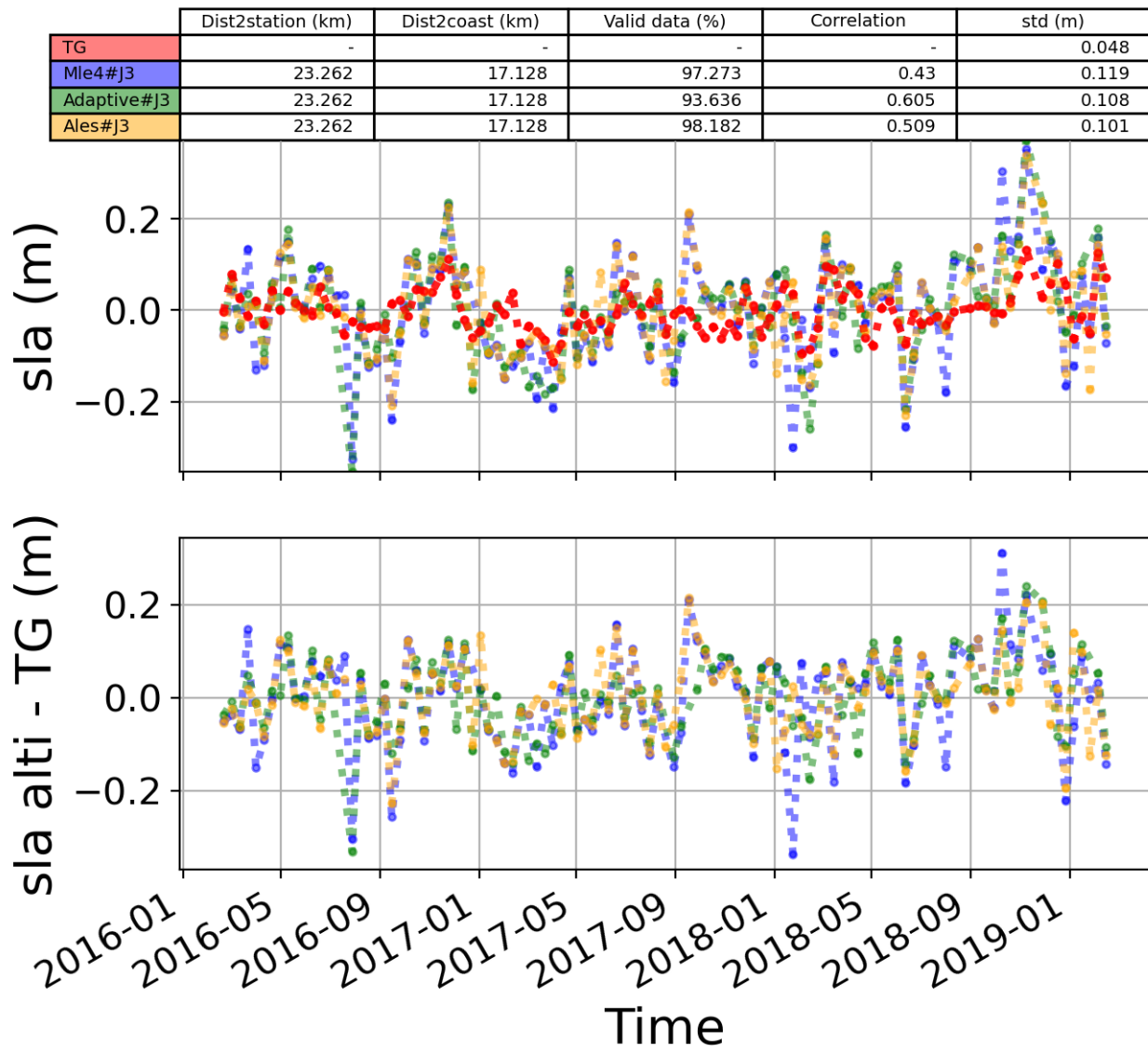


FIGURE 98 – The 1st most correlated sla altimetry Time serie with tide gauge sla time serie

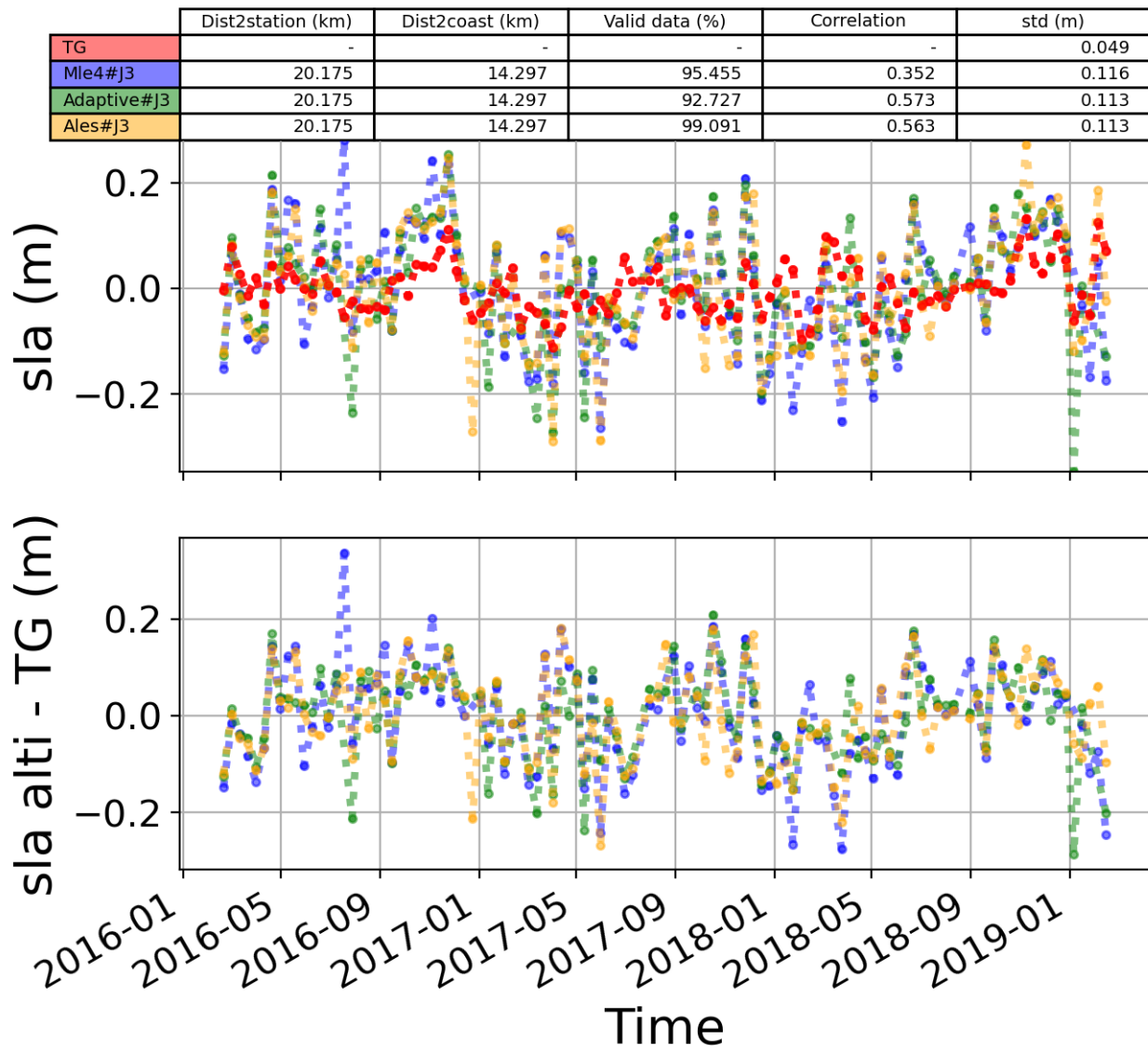


FIGURE 99 – The 2nd most correlated sla altimetry Time serie with tide gauge sla time serie

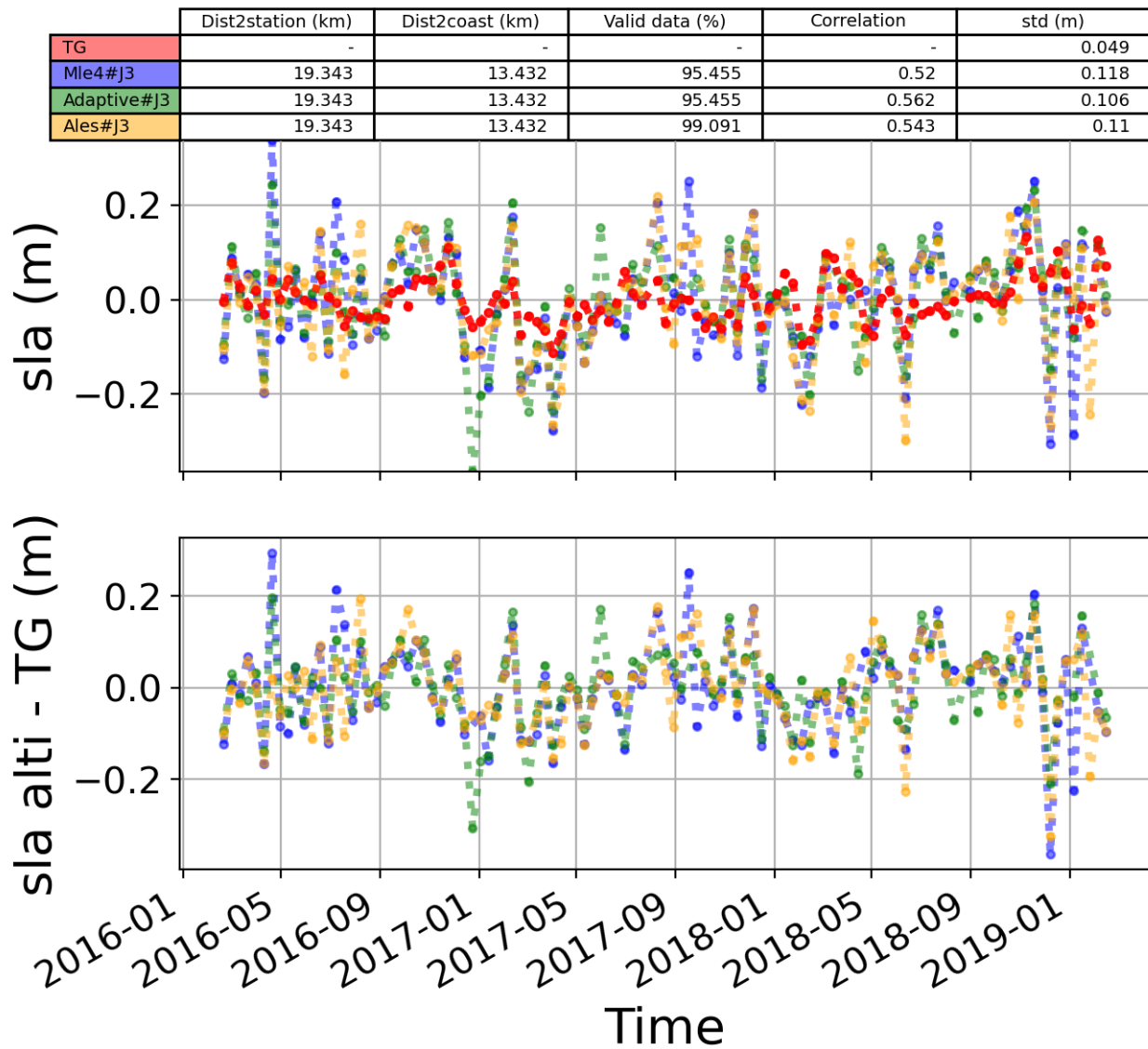


FIGURE 100 – The 3rd most correlated sla altimetry Time serie with tide gauge sla time serie

6.7 Station : MONACO_FONTVIEILLE

- Nearest track to MONACO_FONTVIEILLE station is the track number track9
- The area of interest is limited by :
 - A circle which it's center is the MONACO_FONTVIEILLE tide gauge station location and has a Raduis of 40 Km

6.7.1 correlation visualization in maps view % MONACO_FONTVIEILLE tide gauge

Correlation Altimetry data with respect to MONACO_FONTVIEILLE Tide gauge data

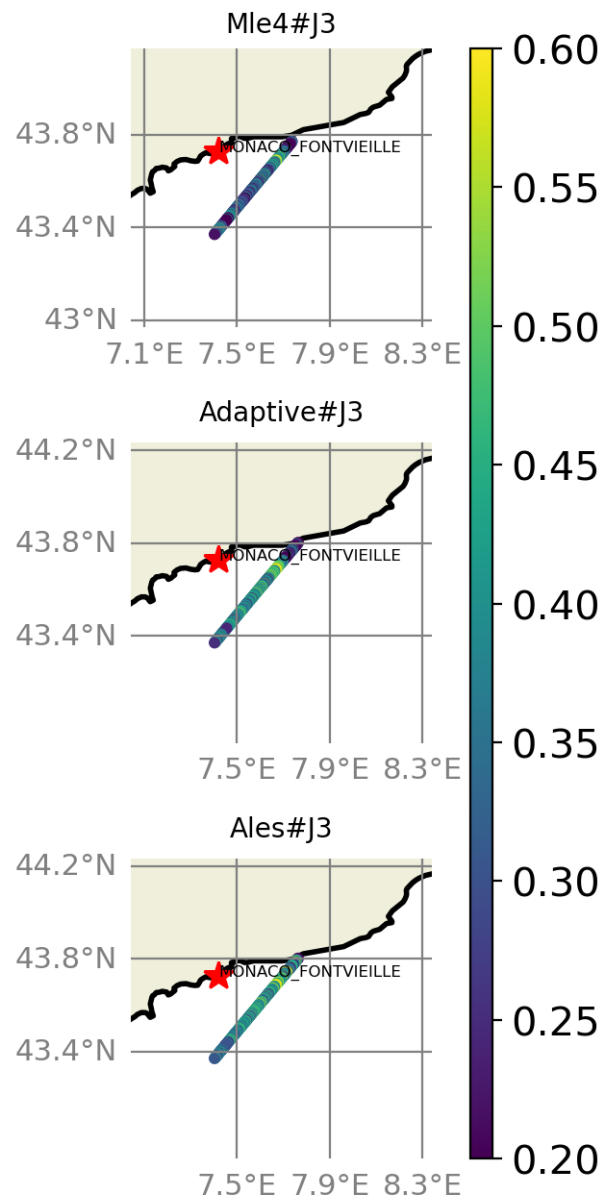


FIGURE 101 – correlation visualization in maps view % MONACO_FONTVIEILLE tide gauge

6.7.2 rmsd visualization in maps view % MONACO_FONTVIEILLE tide gauge

Rmsd (m) Altimetry data with respect to MONACO_FONTVIEILLE Tide gauge data

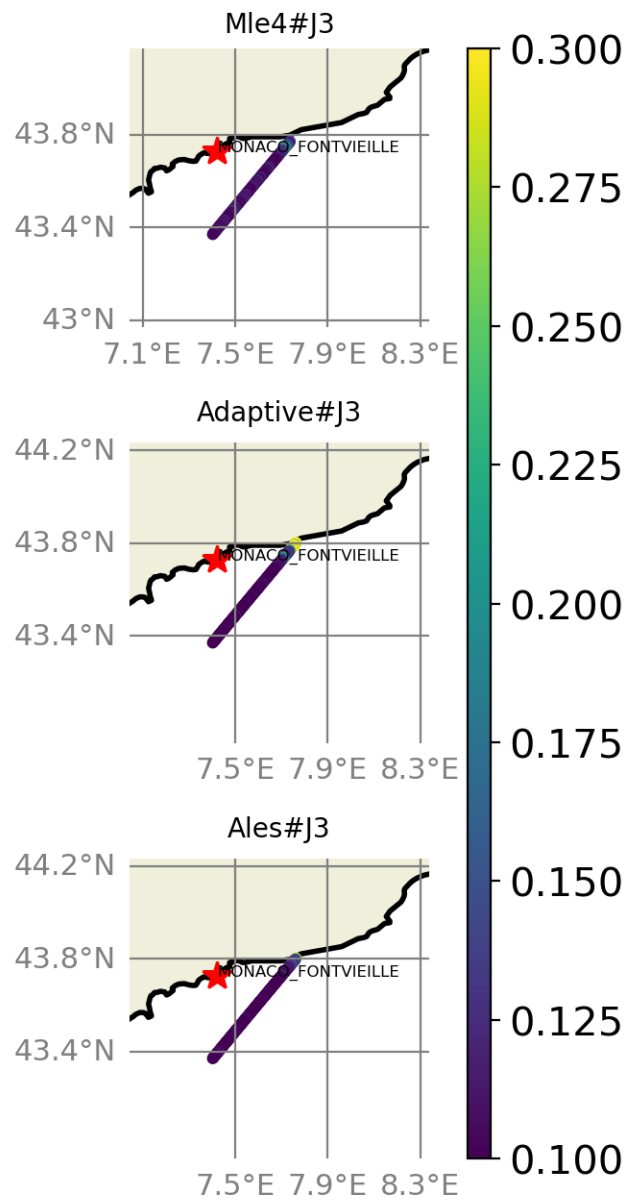


FIGURE 102 – rmsd visualization in maps view % MONACO_FONTVIEILLE tide gauge

6.7.3 std visualization in maps view % MONACO_FONTVIEILLE tide gauge

Std (m) Altimetry data with respect to MONACO_FONTVIEILLE Tide gauge data

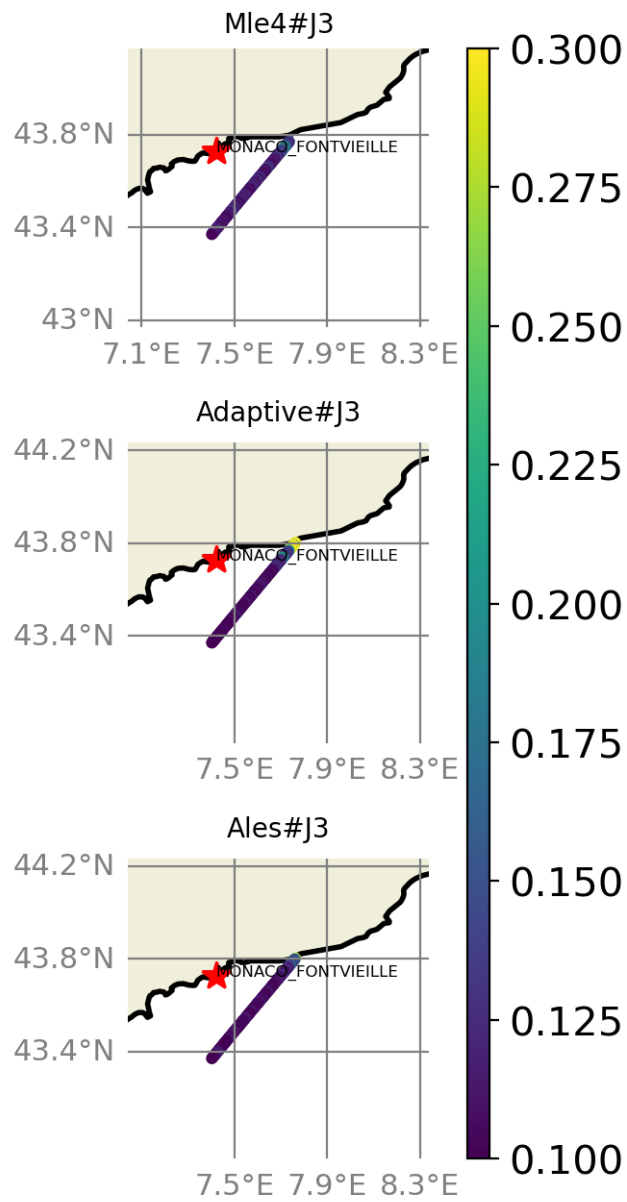


FIGURE 103 – std visualization in maps view % MONACO_FONTVIEILLE tide gauge

6.7.4 valid_data_percent visualization in maps view % MONACO_FONTVIEILLE tide gauge

Valid_Data_Percent (%) Altimetry data with respect to MONACO_FONTVIEILLE Tide gauge data

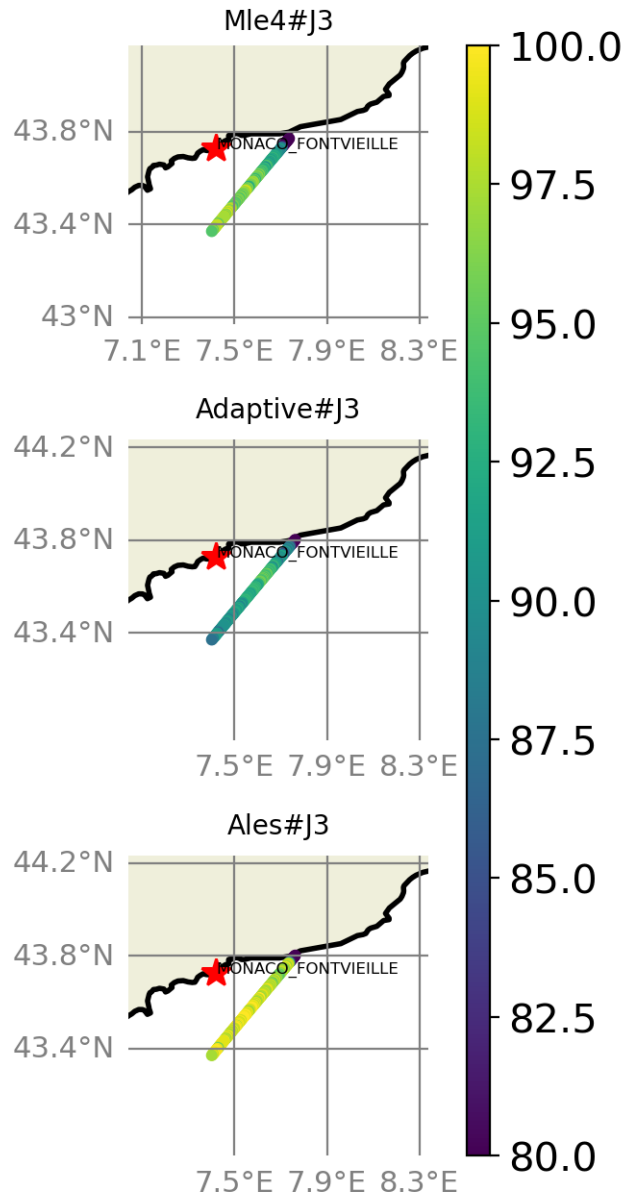


FIGURE 104 – valid_data_percent visualization in maps view % MONACO_FONTVIEILLE tide gauge

6.7.5 Valid data (%) in function of distance to coast/MONACO_FONTVIEILLE station

The formula to calculate the percentage of valid data in each time series is;

$$pvd_i = \frac{nvd_i}{maxNB}, i = 1, np$$

Where pvd and nvd are the percentage of data and the number of altimetry data in the period covered by the tide gauge sla time series, respectively in the time series, i is the index of the time series, np is the number of the selected altimetry time series. $maxNB = 111$ point is the maximum number of valid altimetry points in the set of all the altimetry sla time series covered by the period of time of the Tide gauge sla time series.

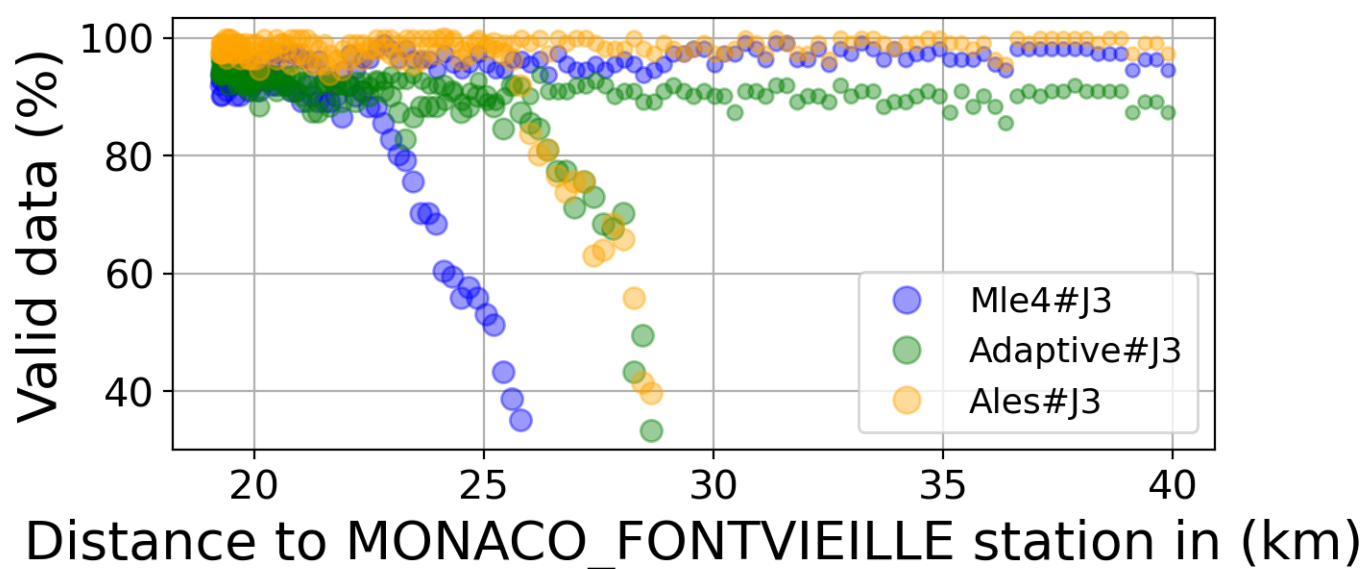
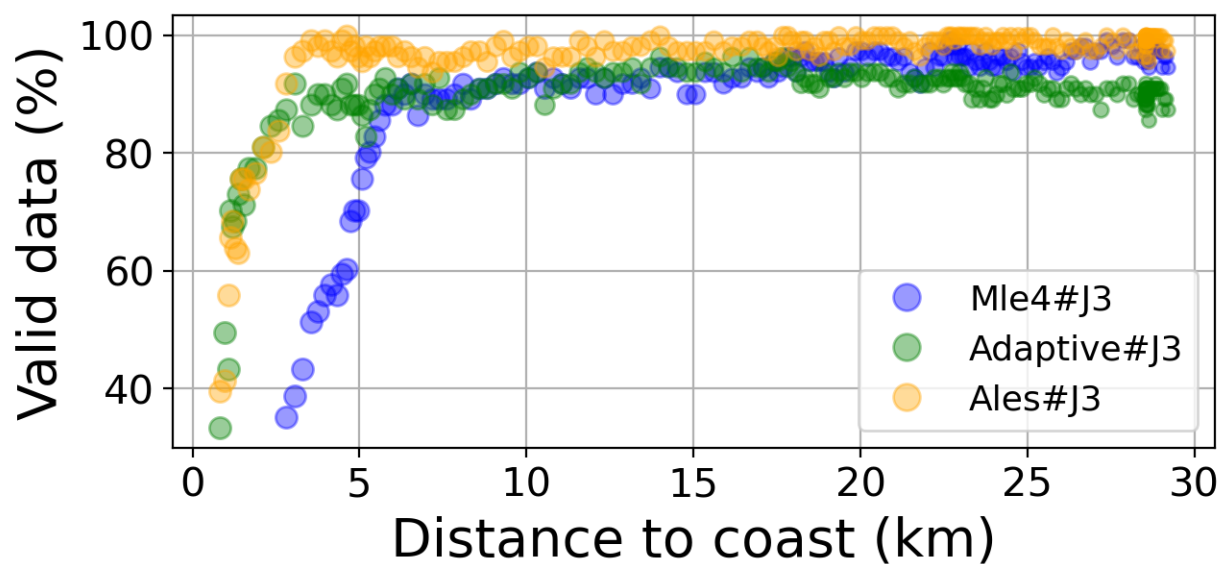


FIGURE 105 – Valid data (%) in function of distance to coast/MONACO_FONTVIEILLE station

6.7.6 Std in function of distance to coast/MONACO_FONTVIEILLE station

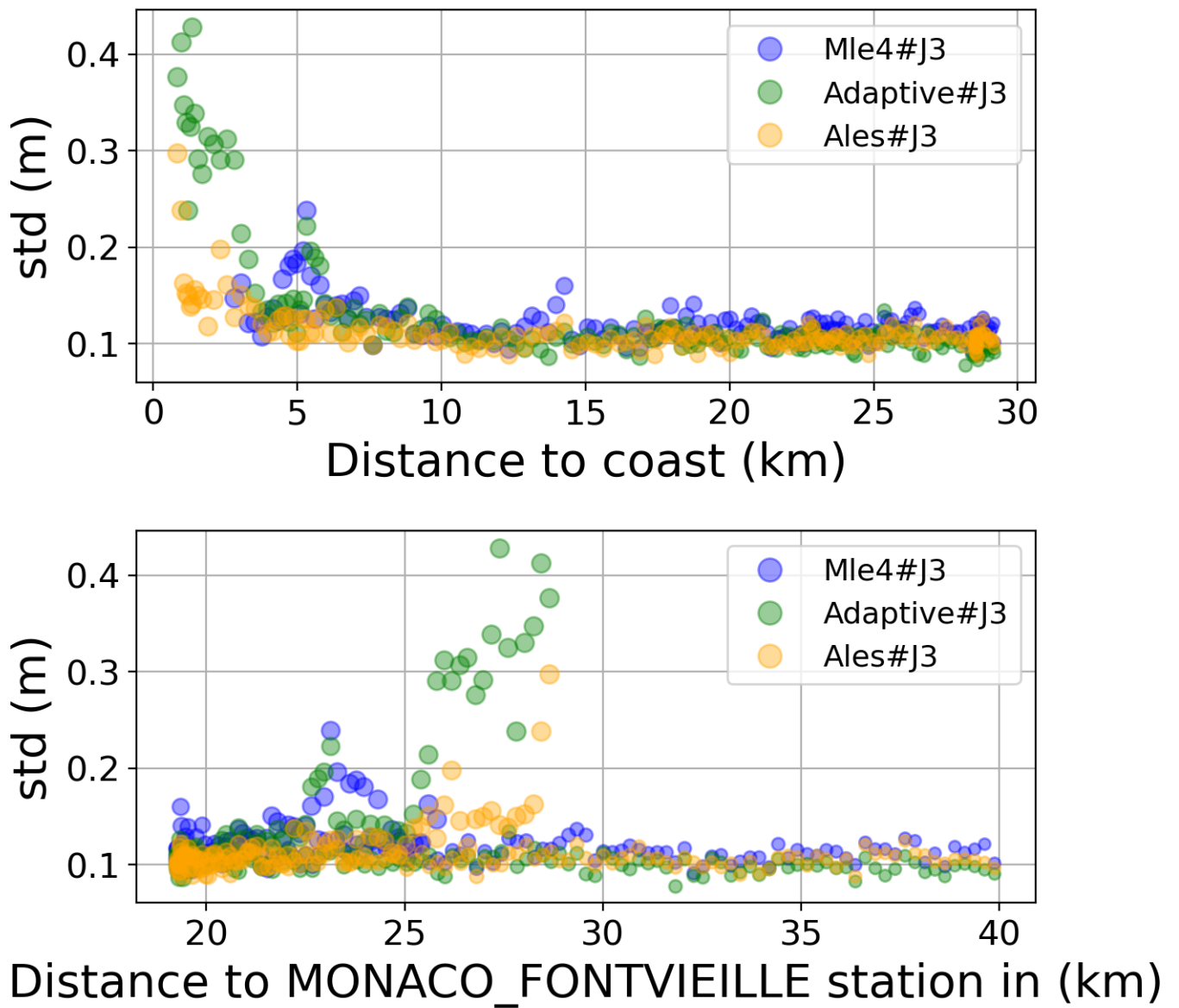


FIGURE 106 – Std in function of the distance to the coast/MONACO_FONTVIEILLE station

6.7.7 Correlation in function of distance to coast/MONACO_FONTVIEILLE station

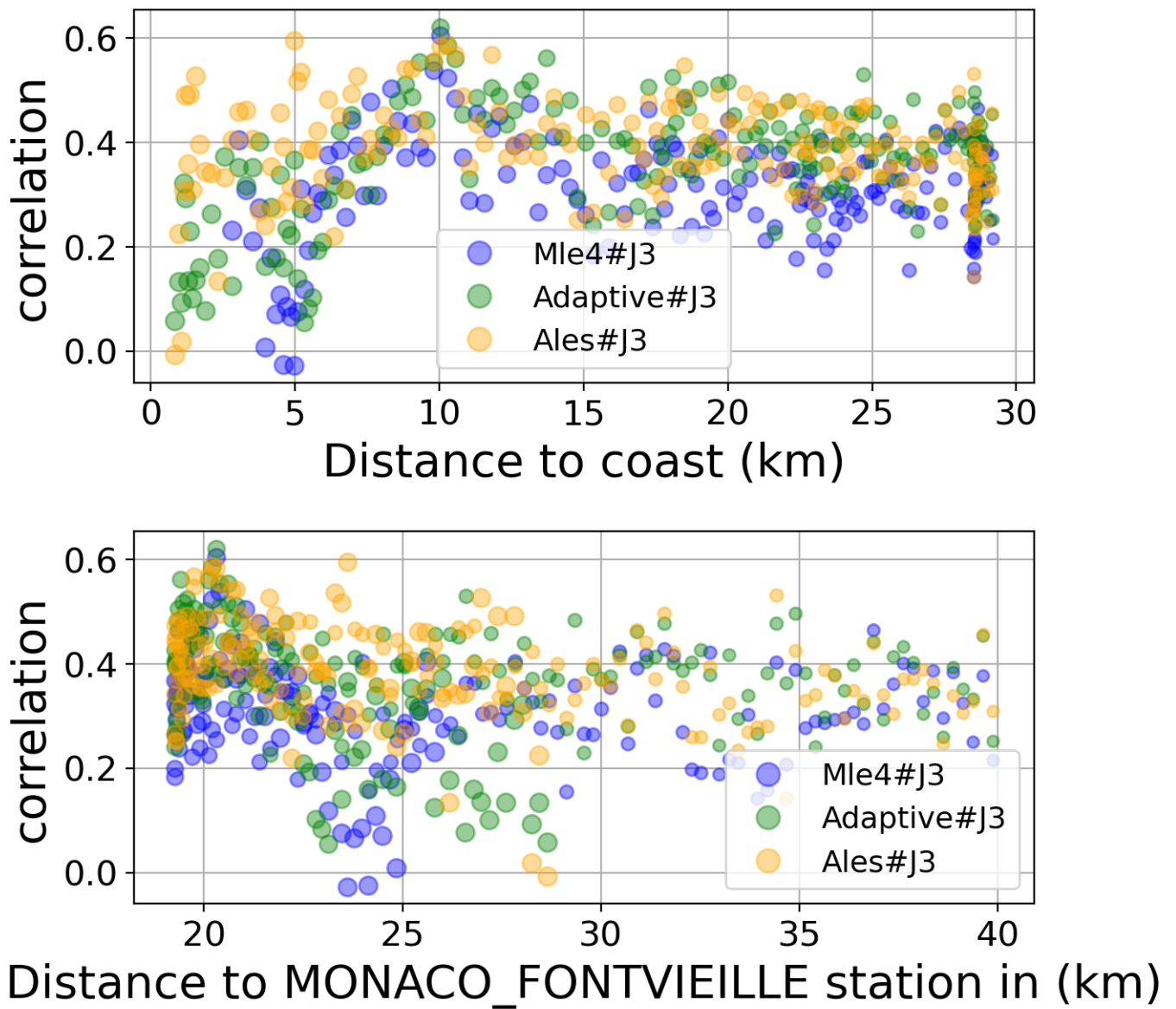


FIGURE 107 – Correlation in function of the distance to the coast/MONACO_FONTVIEILLE station

6.7.8 Taylor Diagram

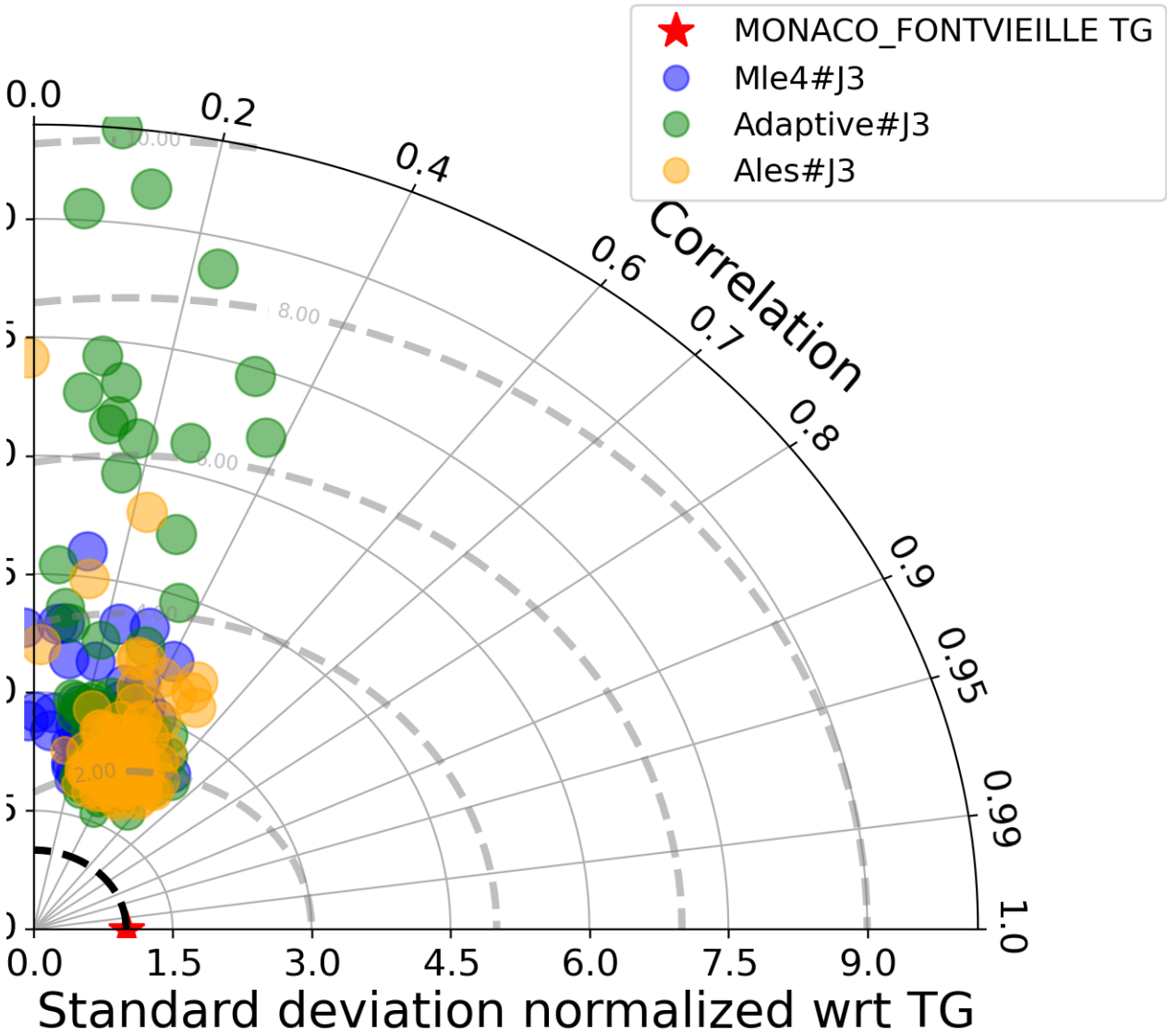


FIGURE 108 – Taylor diagram

6.7.9 Mean statistics table of products comparison with MONACO_FONTVIEILLE tide gauge data

The table below contains the mean statistics of the common points between the different products in the selected area.

Product	Valid data (%)	Correlation	std (m)	rmsd (m)
Mle4#J3	91.672	0.311	0.12	0.114
Adaptive#J3	91.366	0.378	0.112	0.104
Ales#J3	98.328	0.394	0.108	0.099

FIGURE 109 – Mean statistics table of the common points in the altimetry products

6.7.10 The most correlated sla altimetry Time series with the tide gauge sla time serie

The maximum number of valid altimetry points in the set of all the altimetry sla time series covered by the period of time of the Tide gauge sla time serie is 111 point.

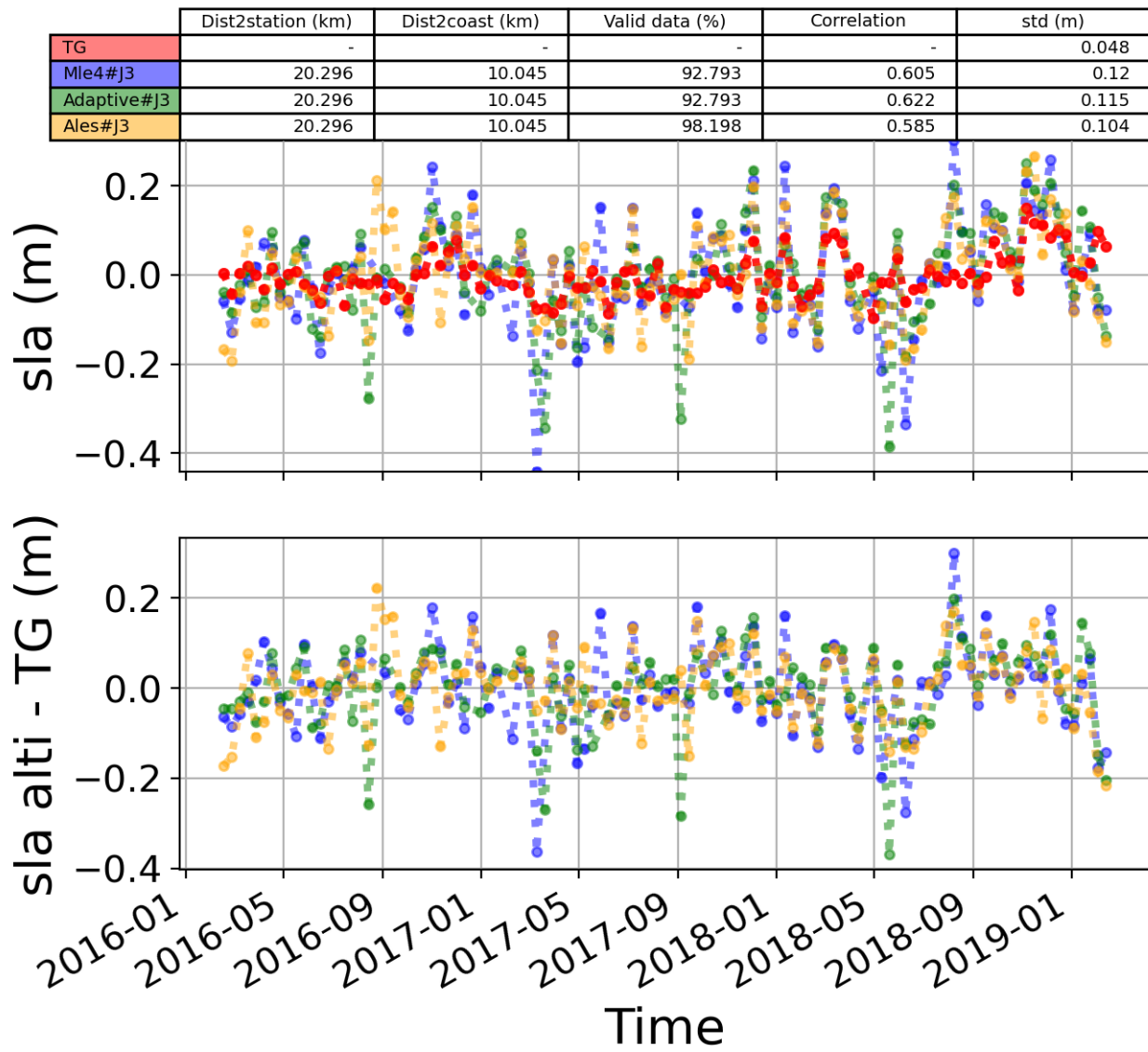


FIGURE 110 – The 1st most correlated sla altimetry Time serie with tide gauge sla time serie

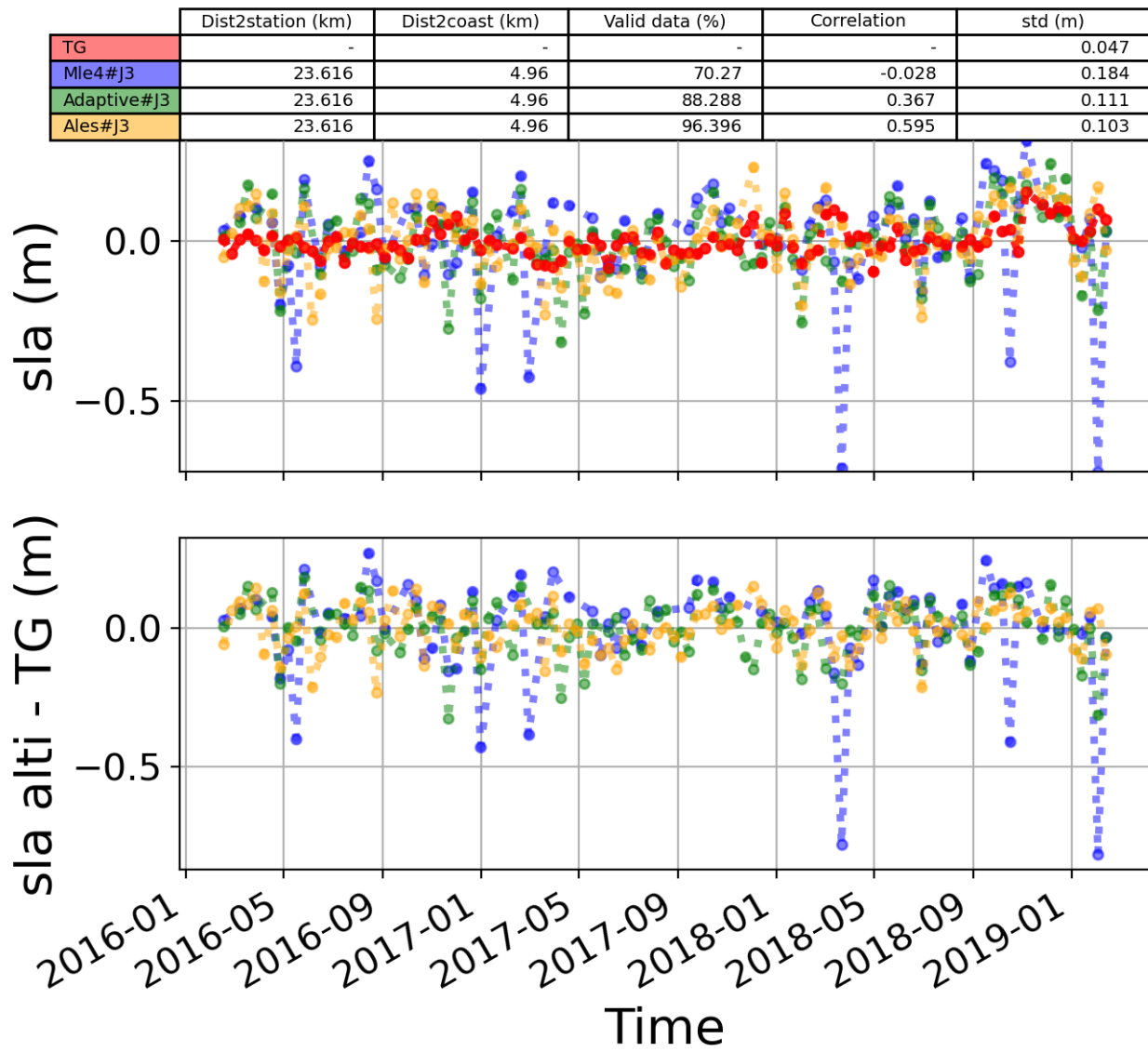


FIGURE 111 – The 2nd most correlated sla altimetry Time serie with tide gauge sla time serie

6.8 Station : Erdemli

- Nearest track to Erdemli station is the track number track68
- The area of interest is limited by :
 - A circle which it's center is the Erdemli tide gauge station location and has a Raduis of 40 Km

6.8.1 correlation visualization in maps view % Erdemli tide gauge

Correlation Altimetry data with respect to Erdemli Tide gauge data

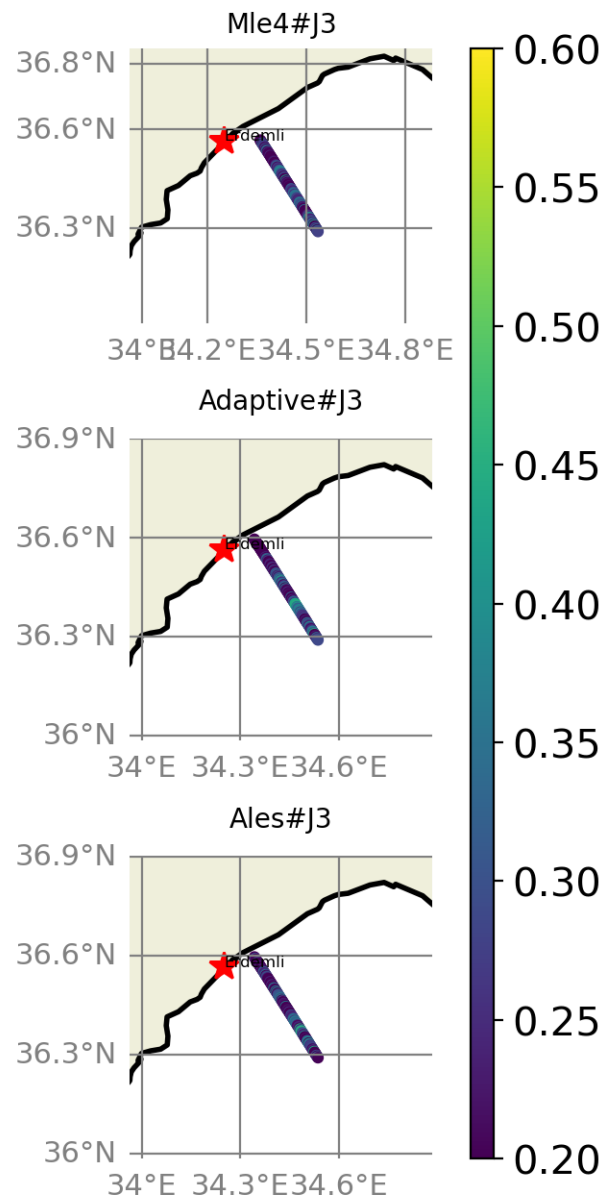


FIGURE 112 – correlation visualization in maps view % Erdemli tide gauge

6.8.2 rmsd visualization in maps view % Erdemli tide gauge

Rmsd (m) Altimetry data with respect to Erdemli Tide gauge data

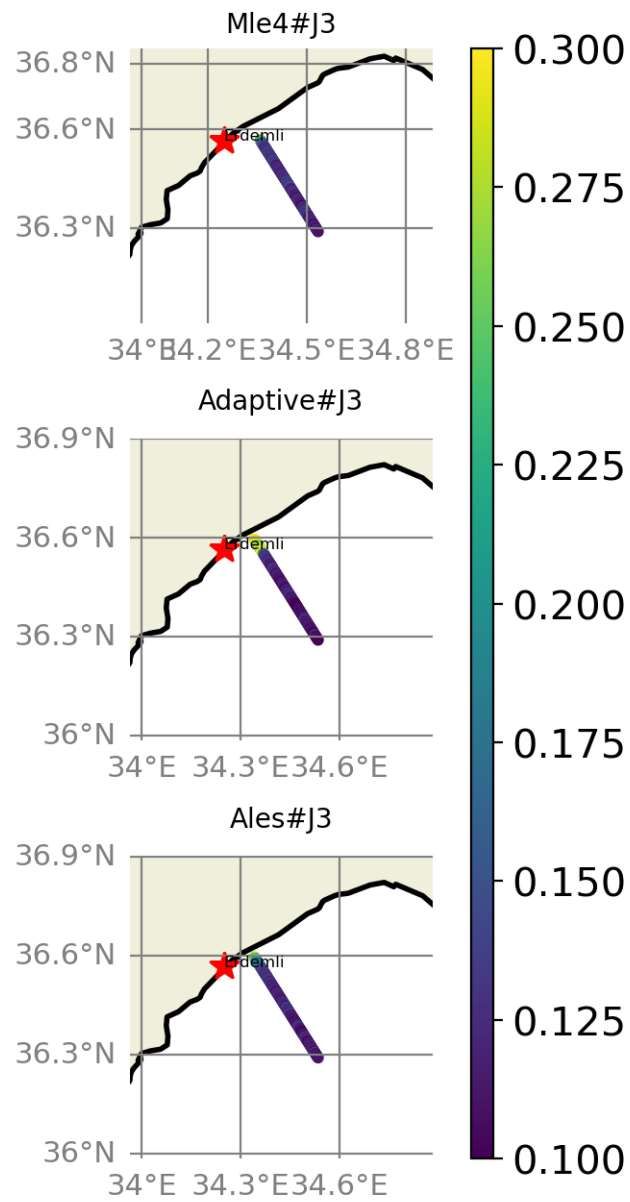


FIGURE 113 – rmsd visualization in maps view % Erdemli tide gauge

6.8.3 std visualization in maps view % Erdemli tide gauge

Std (m) Altimetry data with respect to Erdemli Tide gauge data

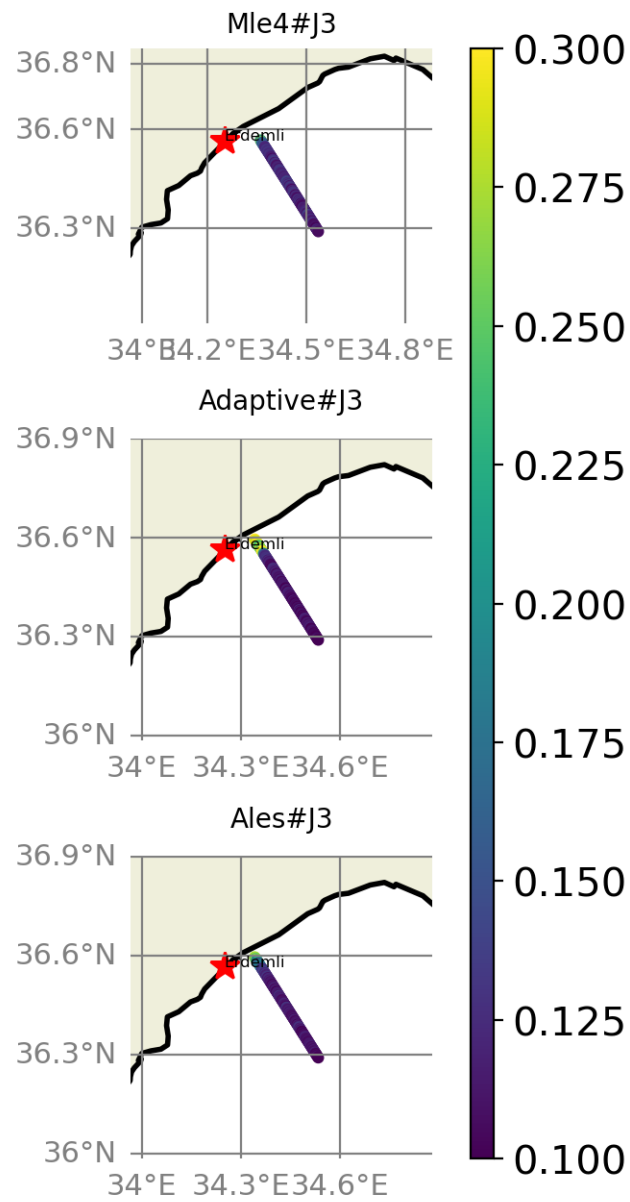


FIGURE 114 – std visualization in maps view % Erdemli tide gauge

6.8.4 valid_data_percent visualization in maps view % Erdemli tide gauge

Valid_Data_Percent (%) Altimetry data with respect to Erdemli Tide gauge data

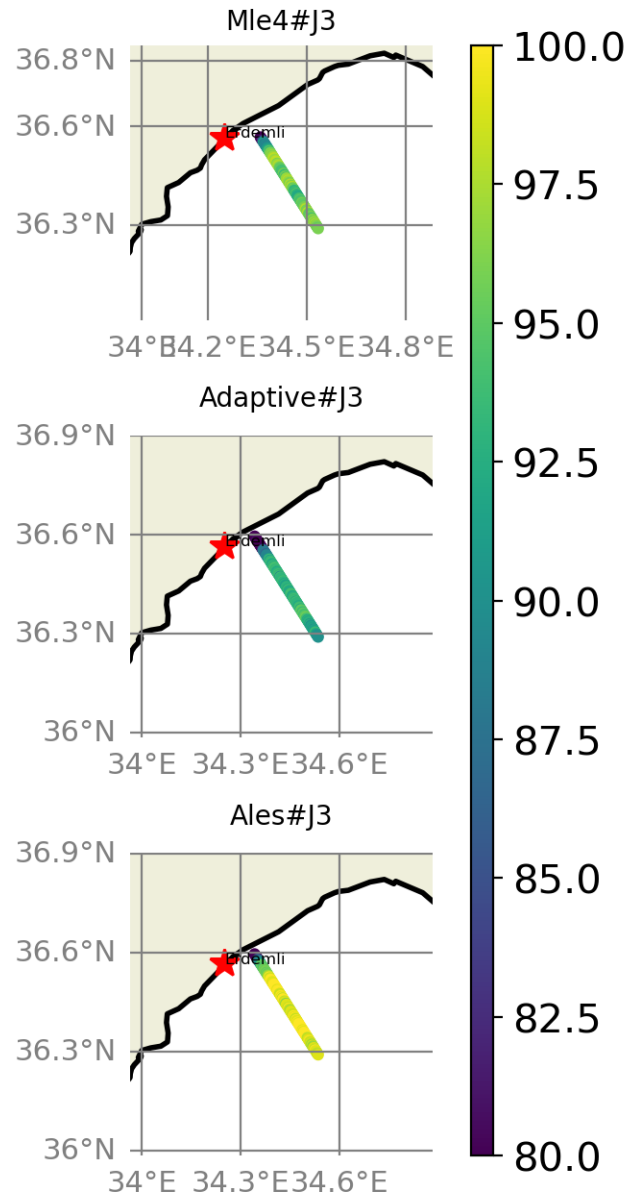


FIGURE 115 – valid_data_percent visualization in maps view % Erdemli tide gauge

6.8.5 Valid data (%) in function of distance to coast/Erdemli station

The formula to calculate the percentage of valid data in each time series is;

$$pvd_i = \frac{nvd_i}{maxNB}, i = 1, np$$

Where pvd and nvd are the percentage of data and the number of altimetry data in the period covered by the tide gauge sla time series, respectively in the time series, i is the index of the time series, np is the number of the selected altimetry time series. $maxNB = 100$ point is the maximum number of valid altimetry points in the set of all the altimetry sla time series covered by the period of time of the Tide gauge sla time series.

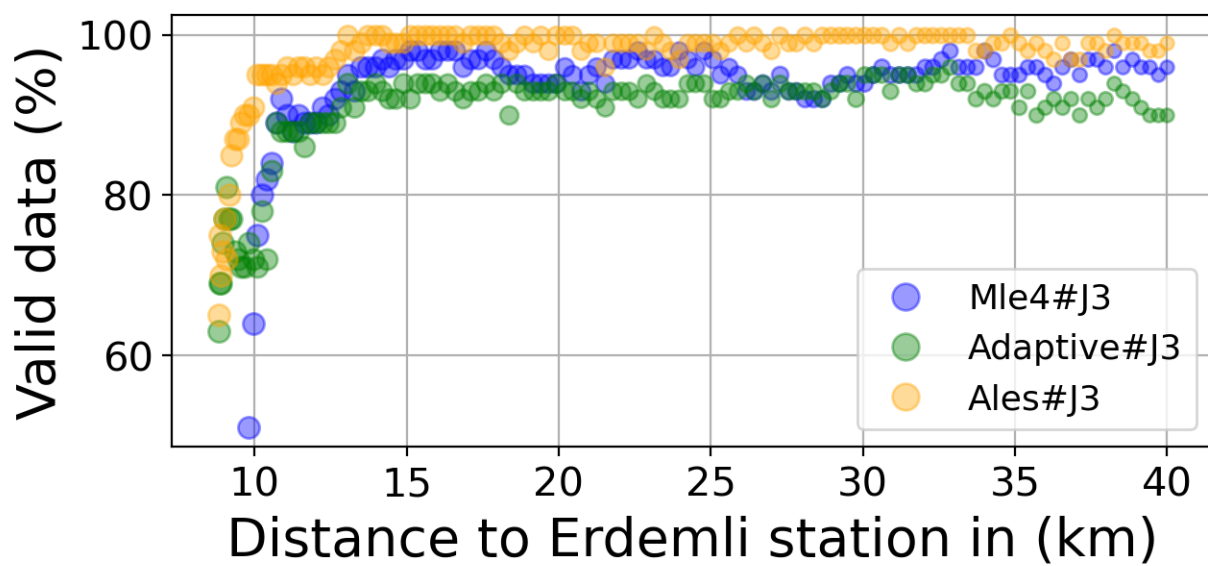
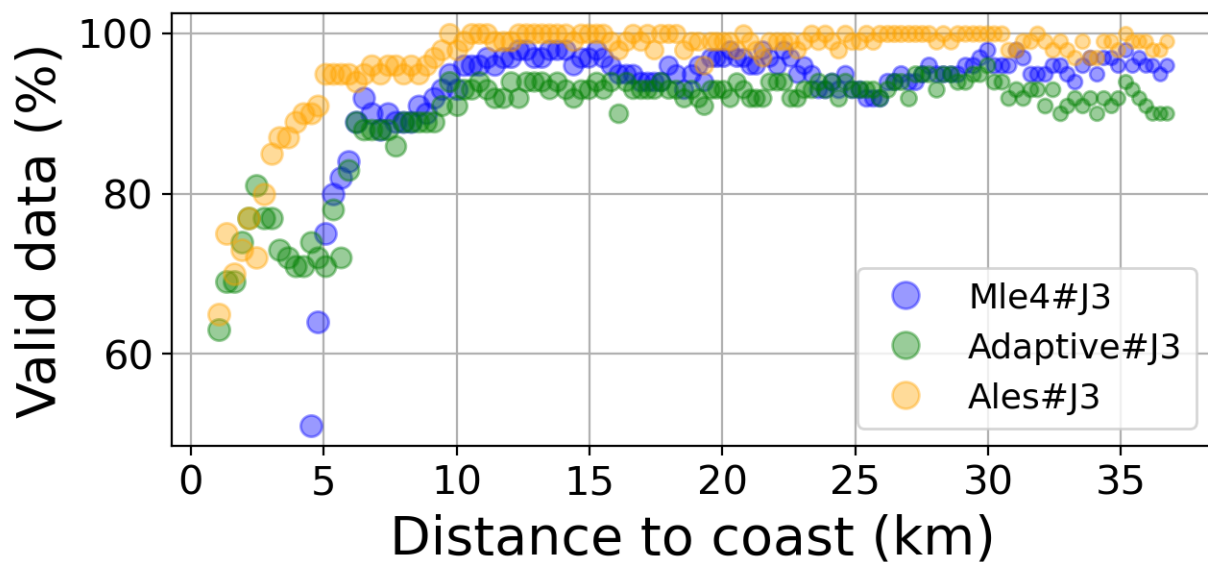


FIGURE 116 – Valid data (%) in function of distance to coast/Erdemli station

6.8.6 Std in function of distance to coast/Erdeмли station

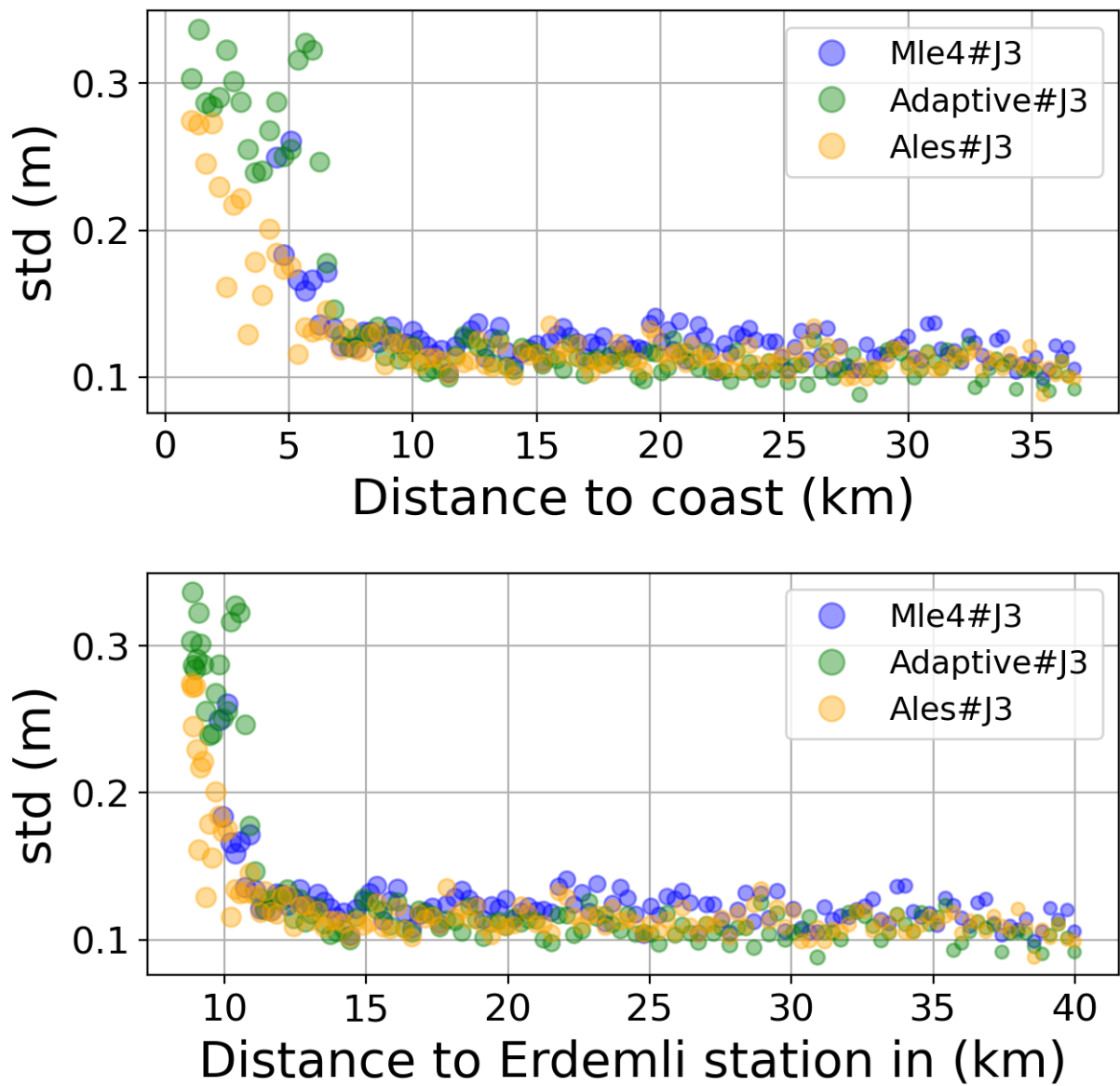


FIGURE 117 – Std in function of the distance to the coast/Erdeмли station

6.8.7 Correlation in function of distance to coast/Erdemli station

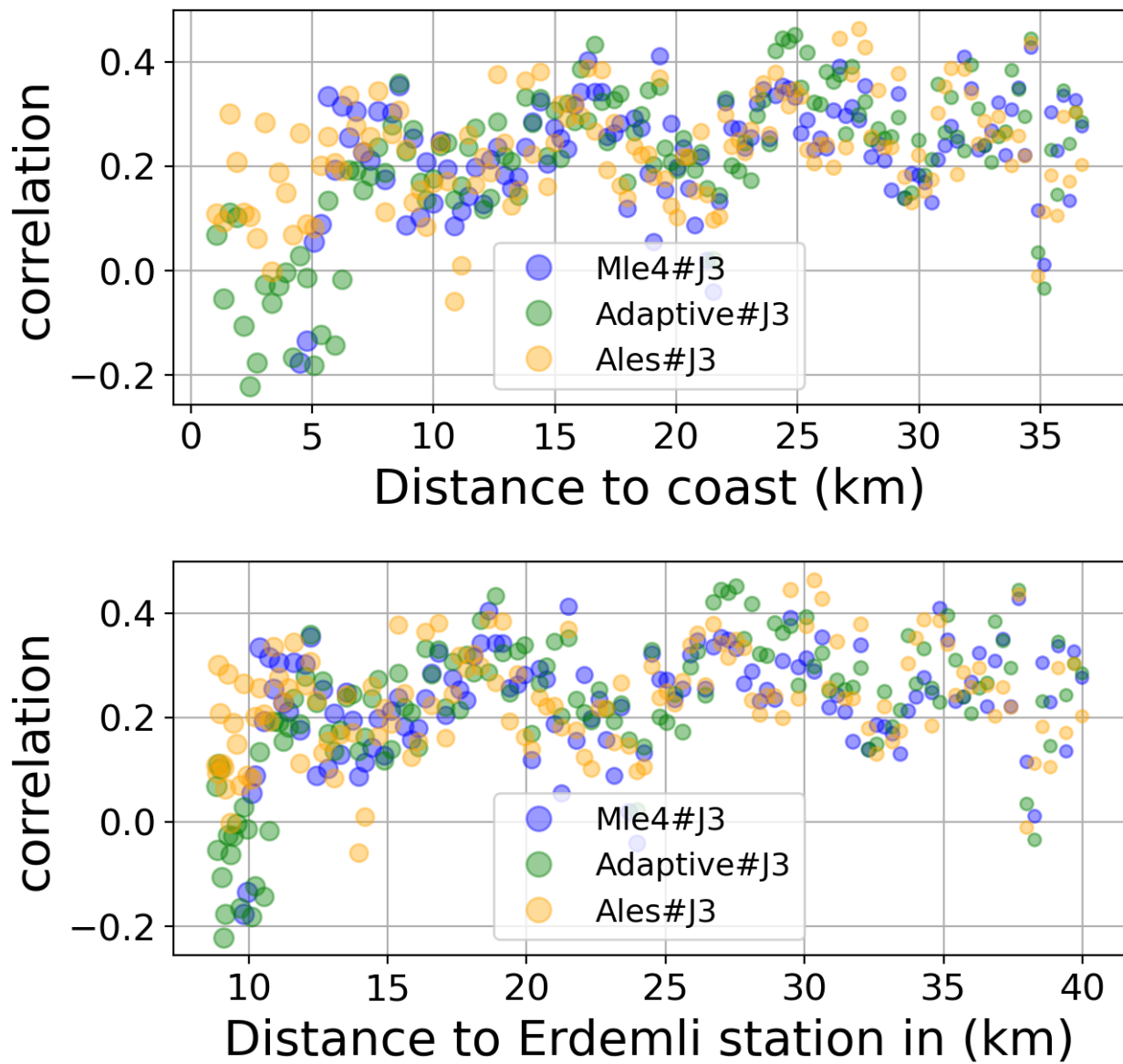


FIGURE 118 – Correlation in function of the distance to the coast/Erdemli station

6.8.8 Taylor Diagram

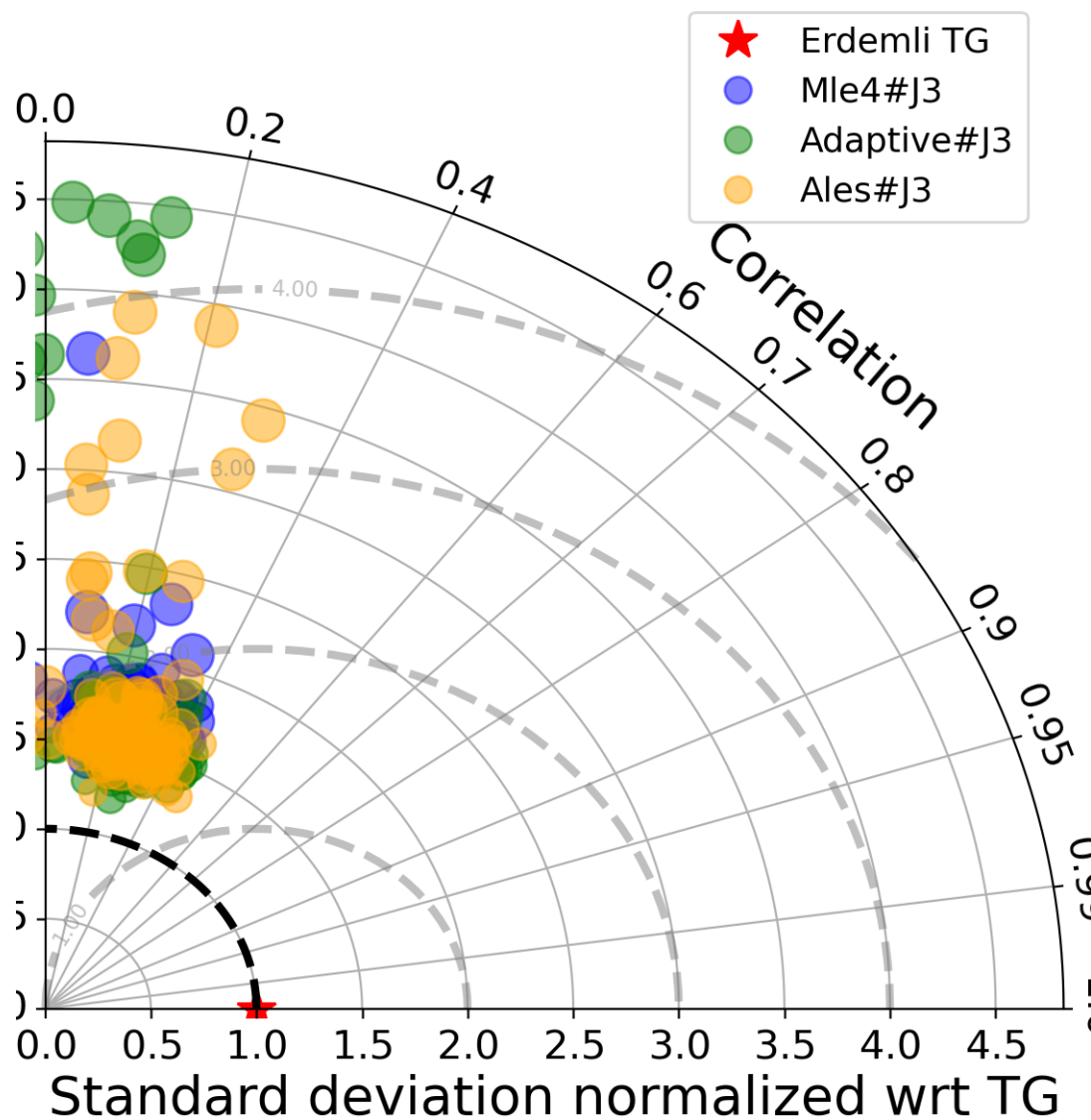


FIGURE 119 – Taylor diagram

6.8.9 Mean statistics table of products comparison with Erdemli tide gauge data

The table below contains the mean statistics of the common points between the different products in the selected area.

Product	Valid data (%)	Correlation	std (m)	rmsd (m)
Mle4#J3	93.975	0.233	0.125	0.13
Adaptive#J3	91.546	0.243	0.122	0.127
Ales#J3	98.538	0.241	0.116	0.121

FIGURE 120 – Mean statistics table of the common points in the altimetry products

6.8.10 The most correlated sla altimetry Time series with the tide gauge sla time serie

The maximum number of valid altimetry points in the set of all the altimetry sla time series covered by the period of time of the Tide gauge sla time serie is 100 point.

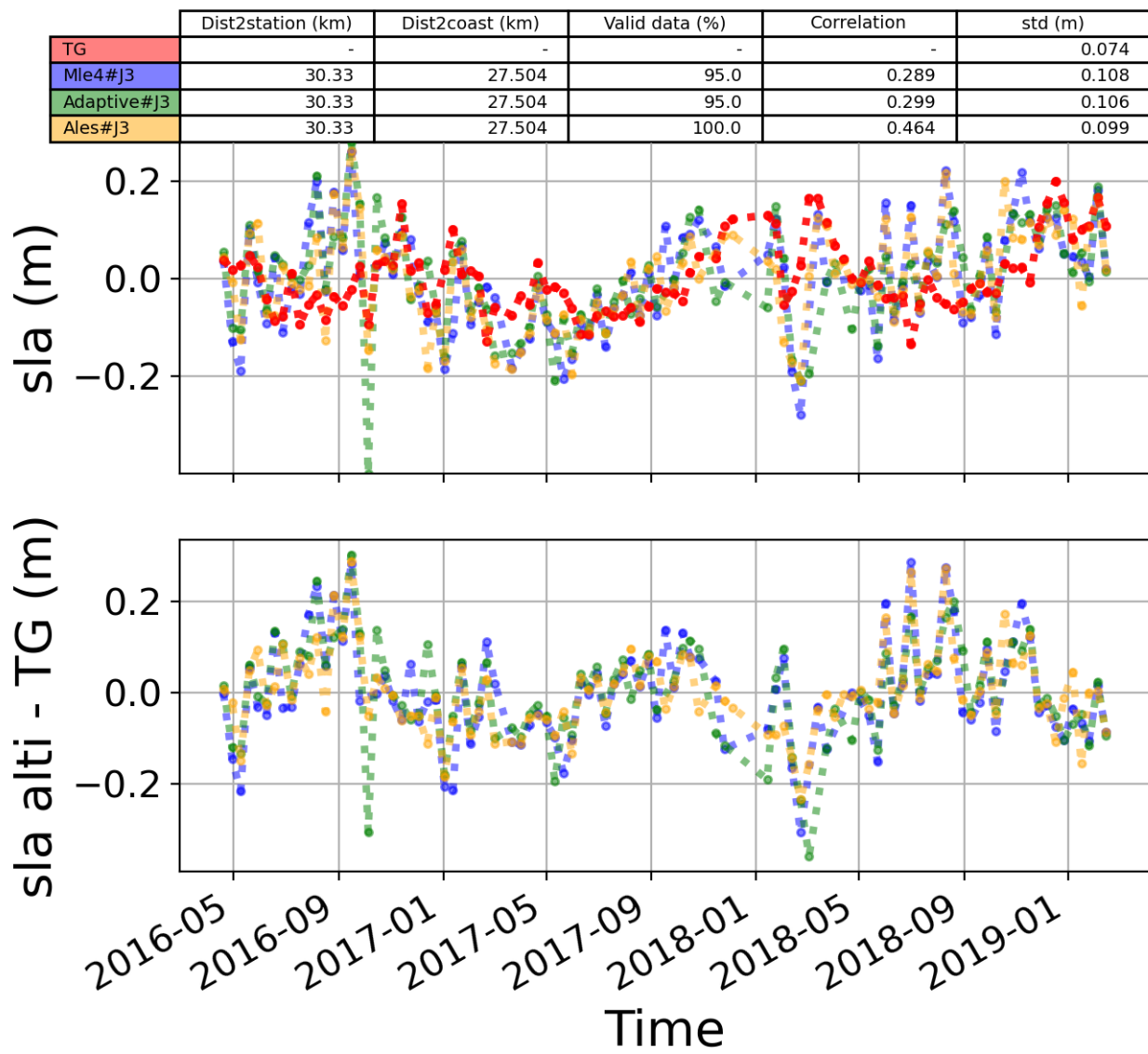


FIGURE 121 – The 1st most correlated sla altimetry Time serie with tide gauge sla time serie

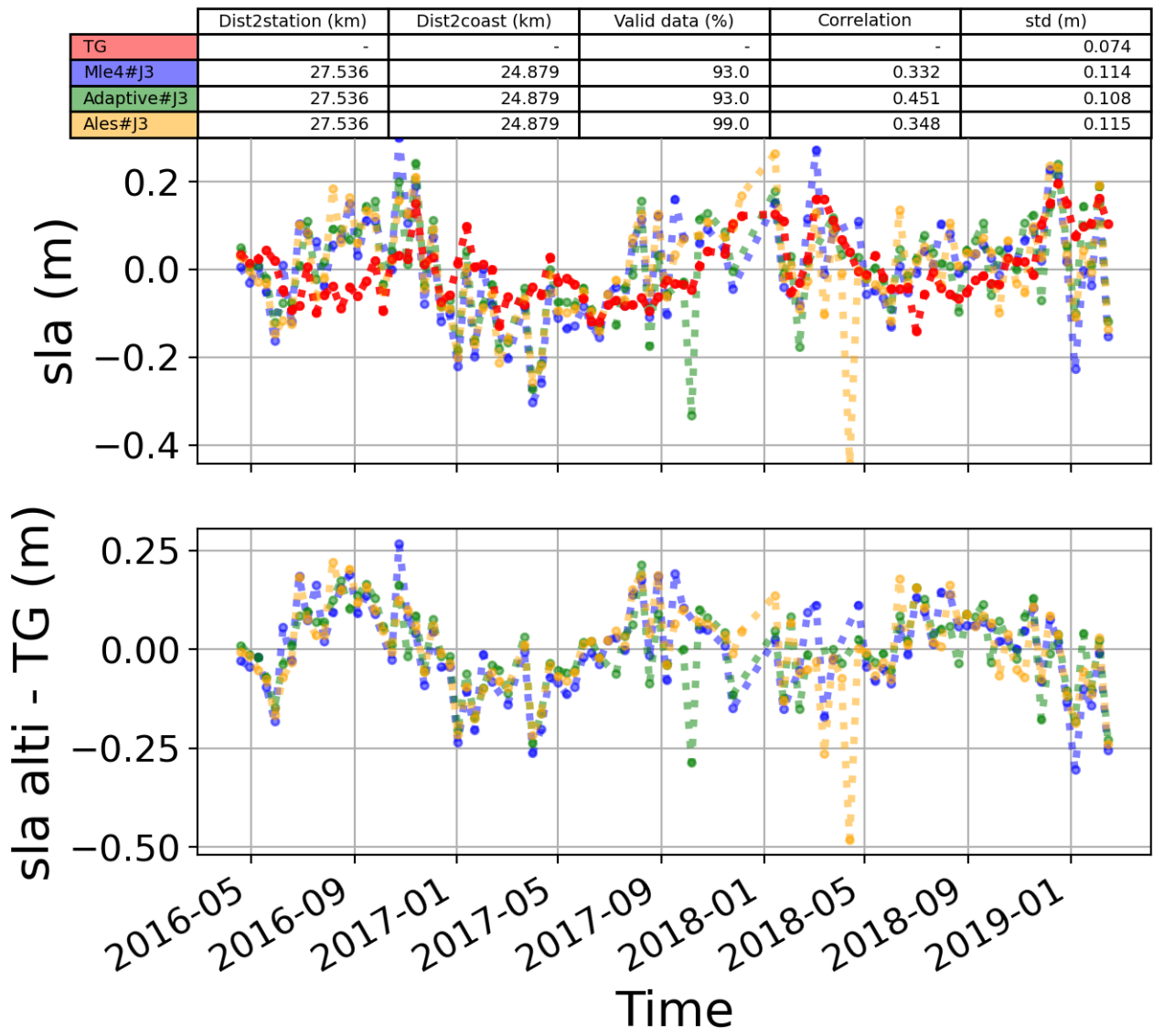


FIGURE 122 – The 2nd most correlated sla altimetry Time serie with tide gauge sla time serie

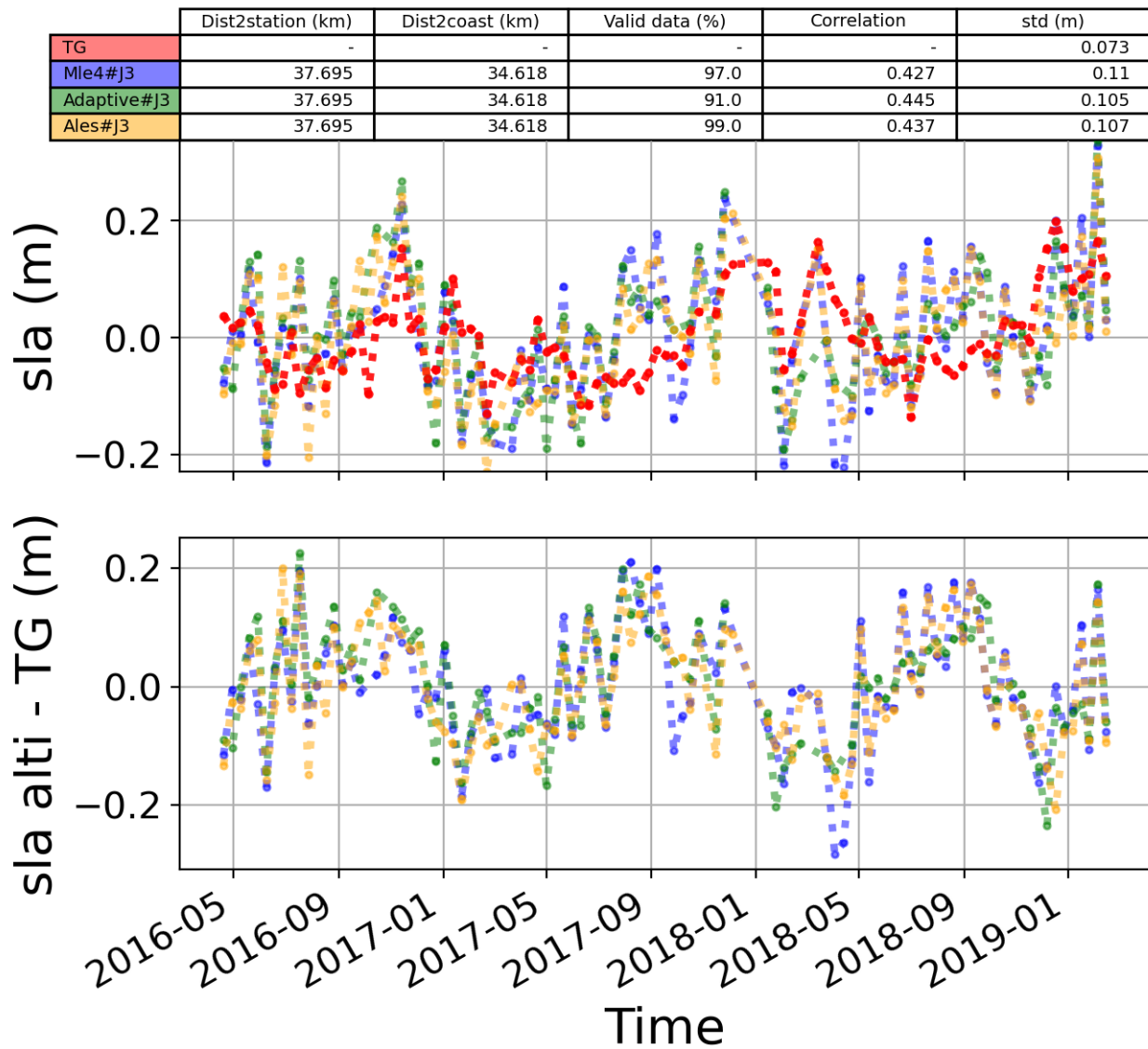


FIGURE 123 – The 3rd most correlated sla altimetry Time serie with tide gauge sla time serie

6.9 Station : Almeria

- Nearest track to Almeria station is the track number track96
- The area of interest is limited by :
 - A circle which it's center is the Almeria tide gauge station location and has a Raduis of 40 Km

6.9.1 correlation visualization in maps view % Almeria tide gauge

Correlation Altimetry data with respect to Almeria Tide gauge data

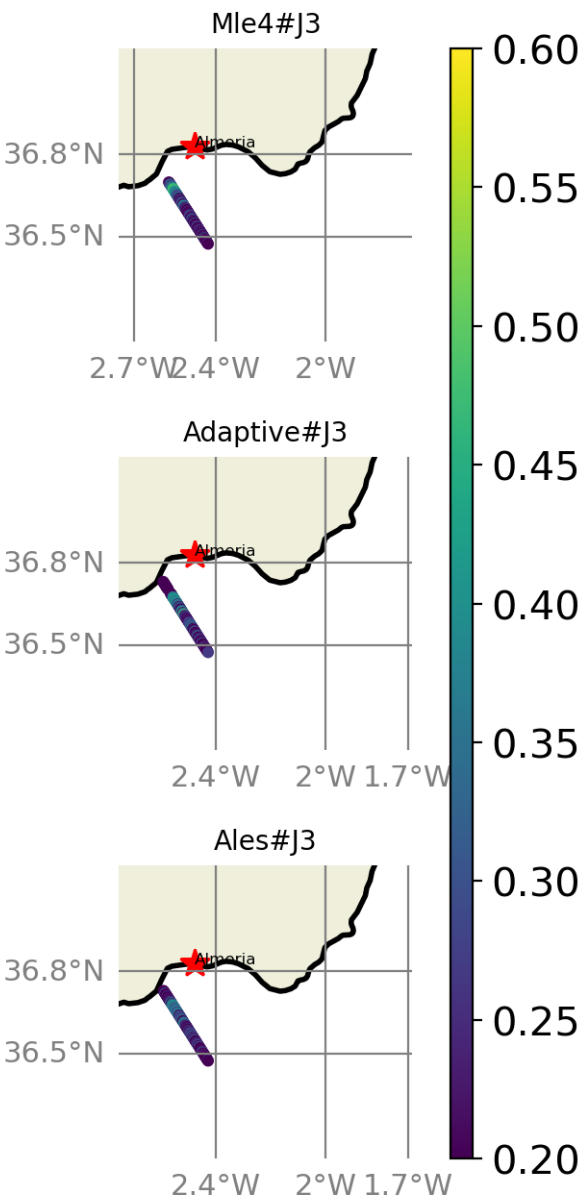


FIGURE 124 – correlation visualization in maps view % Almeria tide gauge

6.9.2 rmsd visualization in maps view % Almeria tide gauge

Rmsd (m) Altimetry data with respect to Almeria Tide gauge data

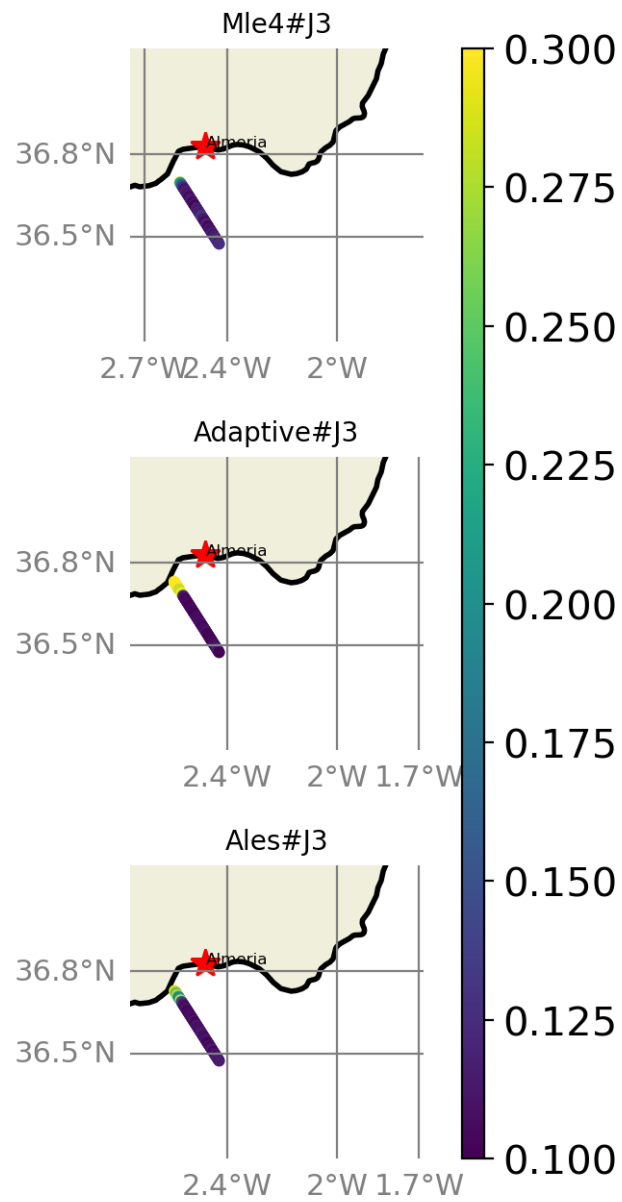


FIGURE 125 – rmsd visualization in maps view % Almeria tide gauge

6.9.3 std visualization in maps view % Almeria tide gauge

Std (m) Altimetry data with respect to Almeria Tide gauge data

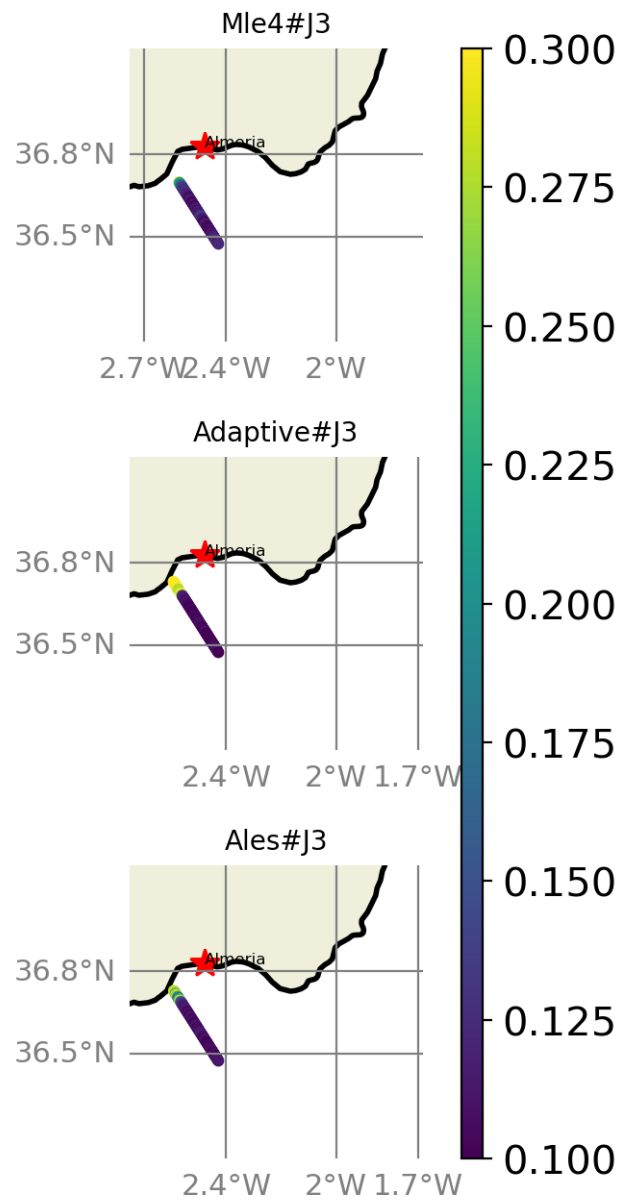


FIGURE 126 – std visualization in maps view % Almeria tide gauge

6.9.4 valid_data_percent visualization in maps view % Almeria tide gauge

Valid_Data_Percent (%) Altimetry data with respect to Almeria Tide gauge data

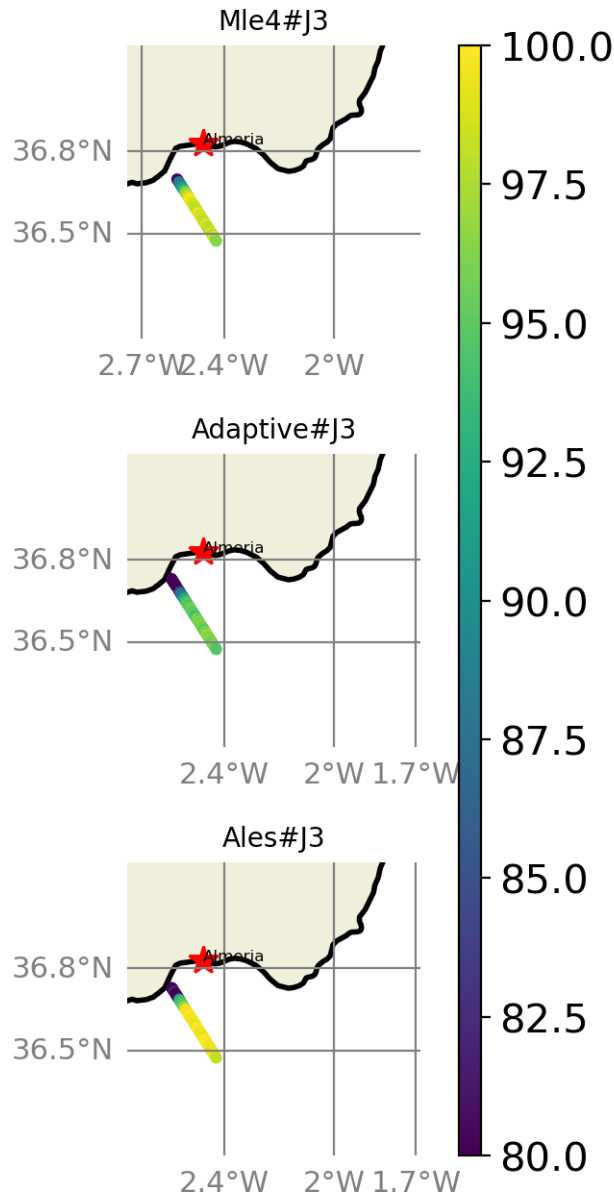


FIGURE 127 – valid_data_percent visualization in maps view % Almeria tide gauge

6.9.5 Valid data (%) in function of distance to coast/Almeria station

The formula to calculate the percentage of valid data in each time series is;

$$pvd_i = \frac{nvd_i}{maxNB}, i = 1, np$$

Where pvd and nvd are the percentage of data and the number of altimetry data in the period covered by the tide gauge sla time series, respectively in the time series, i is the index of the time series, np is the number of the selected altimetry time series. $maxNB = 109$ point is the maximum number of valid altimetry points in the set of all the altimetry sla time series covered by the period of time of the Tide gauge sla time series.

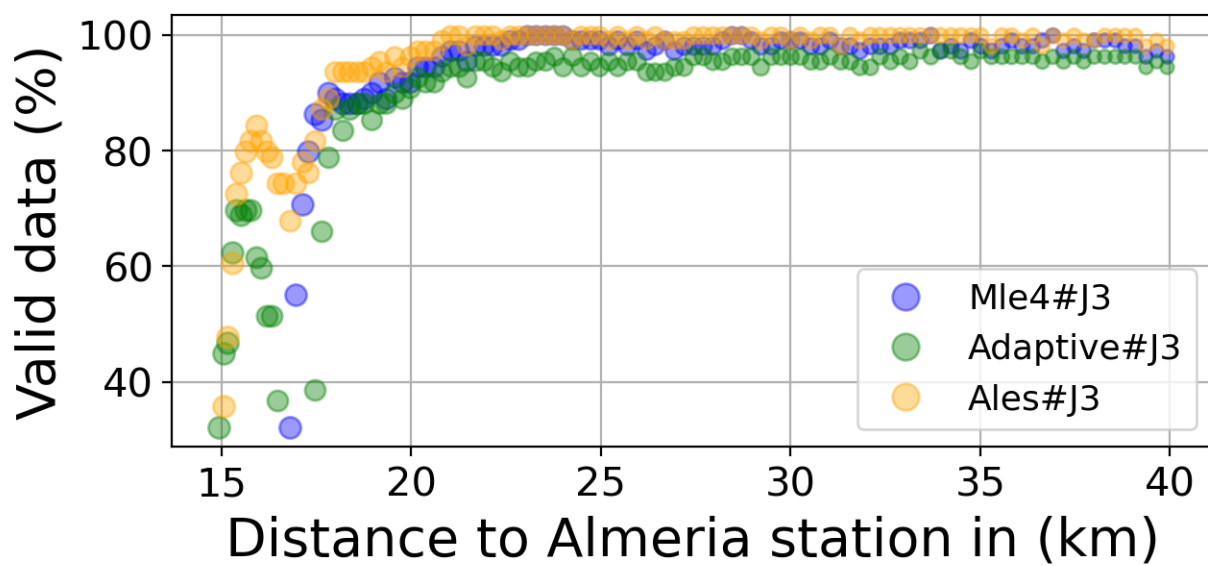
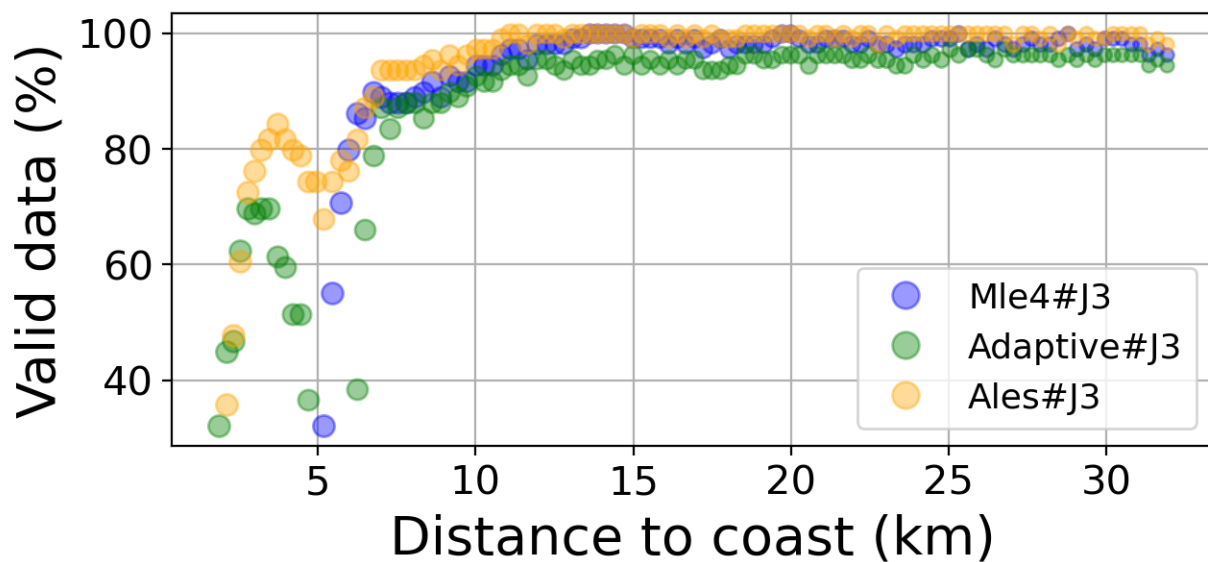


FIGURE 128 – Valid data (%) in function of distance to coast/Almeria station

6.9.6 Std in function of distance to coast/Almeria station

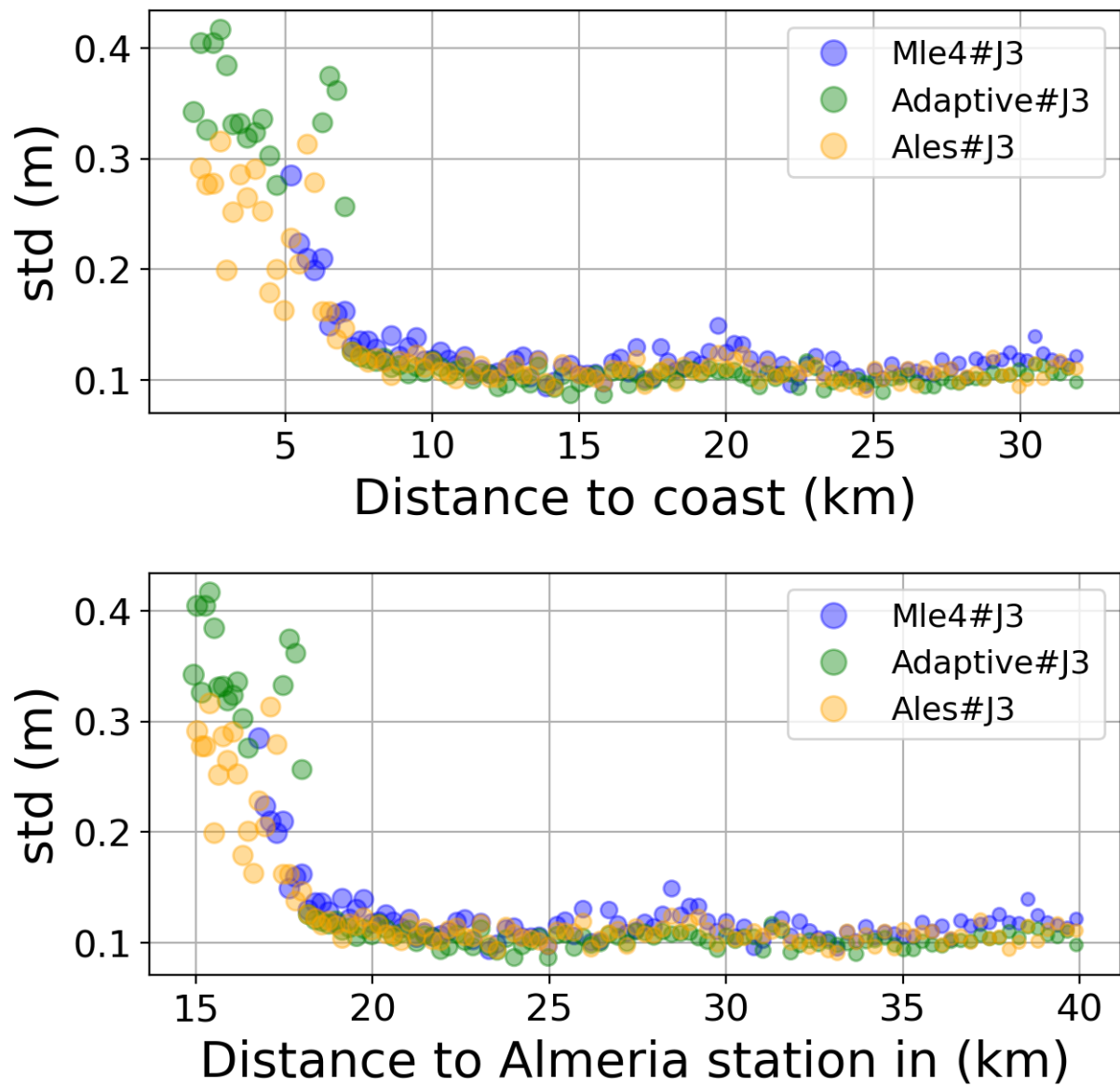


FIGURE 129 – Std in function of the distance to the coast/Almeria station

6.9.7 Correlation in function of distance to coast/Almeria station

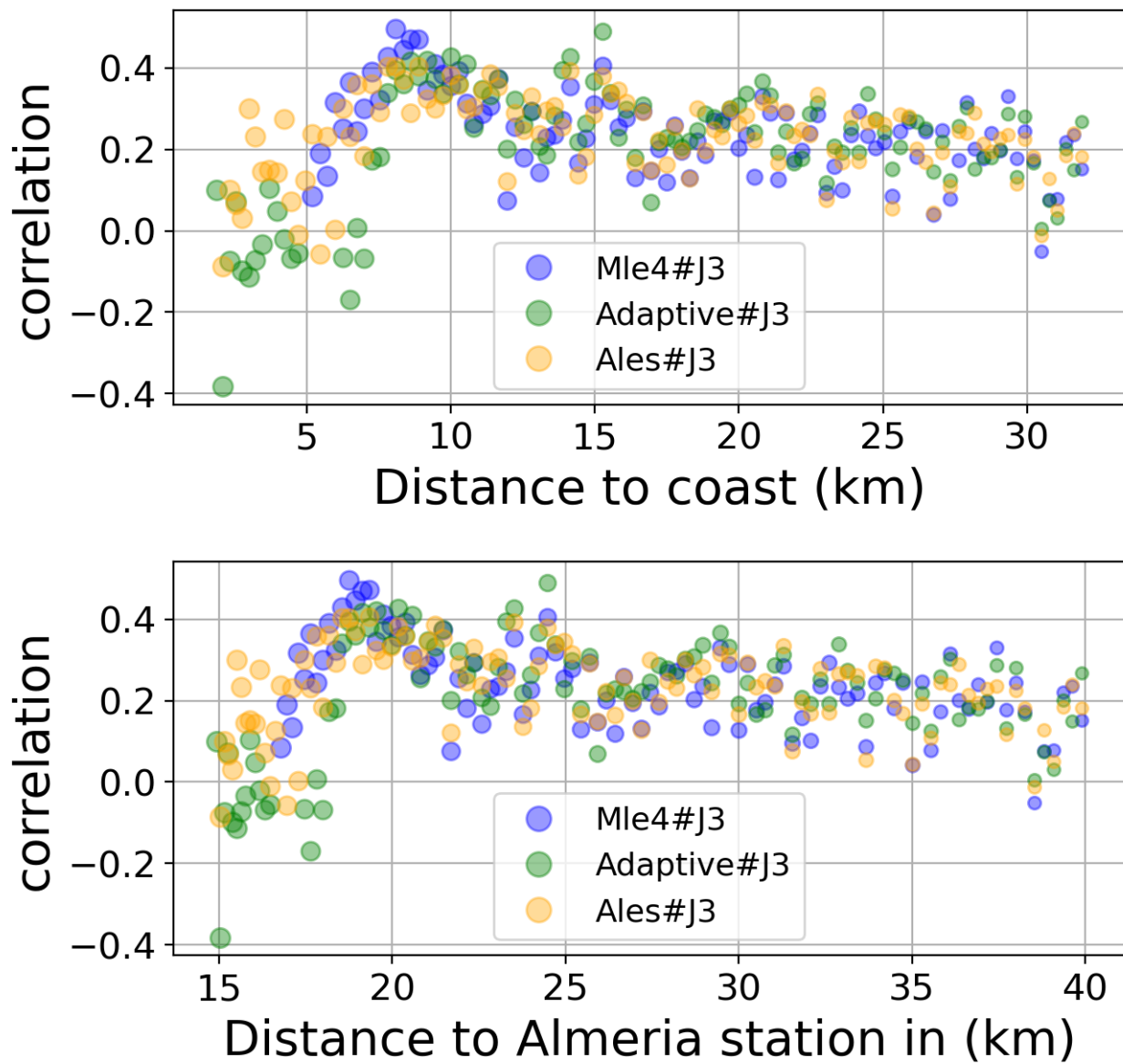


FIGURE 130 – Correlation in function of the distance to the coast/Almeria station

6.9.8 Taylor Diagram

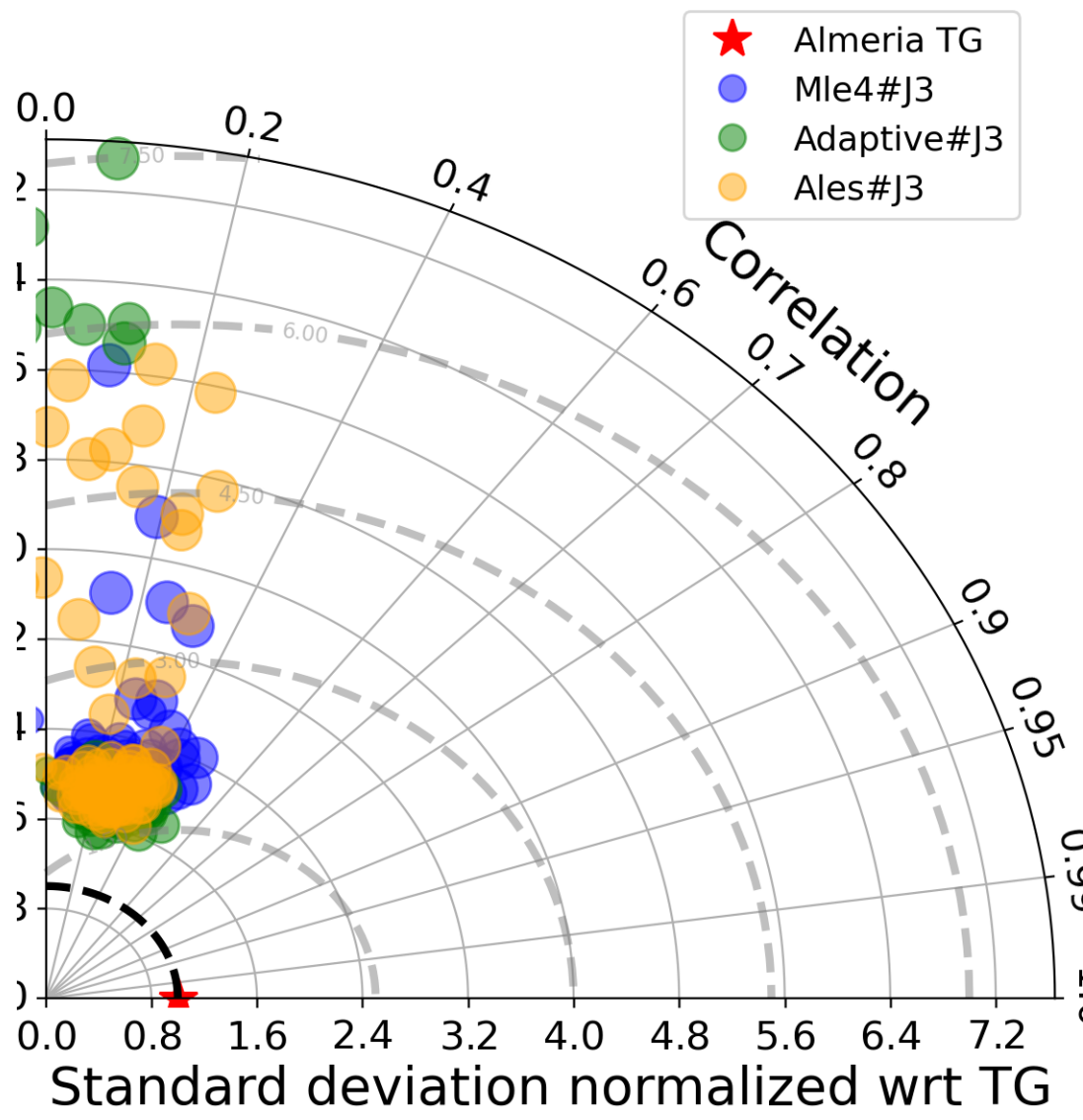


FIGURE 131 – Taylor diagram

6.9.9 Mean statistics table of products comparison with Almeria tide gauge data

The table below contains the mean statistics of the common points between the different products in the selected area.

Product	Valid data (%)	Correlation	std (m)	rmsd (m)
Mle4#J3	96.932	0.245	0.118	0.118
Adaptive#J3	93.361	0.244	0.114	0.115
Ales#J3	98.501	0.249	0.11	0.111

FIGURE 132 – Mean statistics table of the common points in the altimetry products

6.9.10 The most correlated sla altimetry Time series with the tide gauge sla time serie

The maximum number of valid altimetry points in the set of all the altimetry sla time series covered by the period of time of the Tide gauge sla time serie is 109 point.

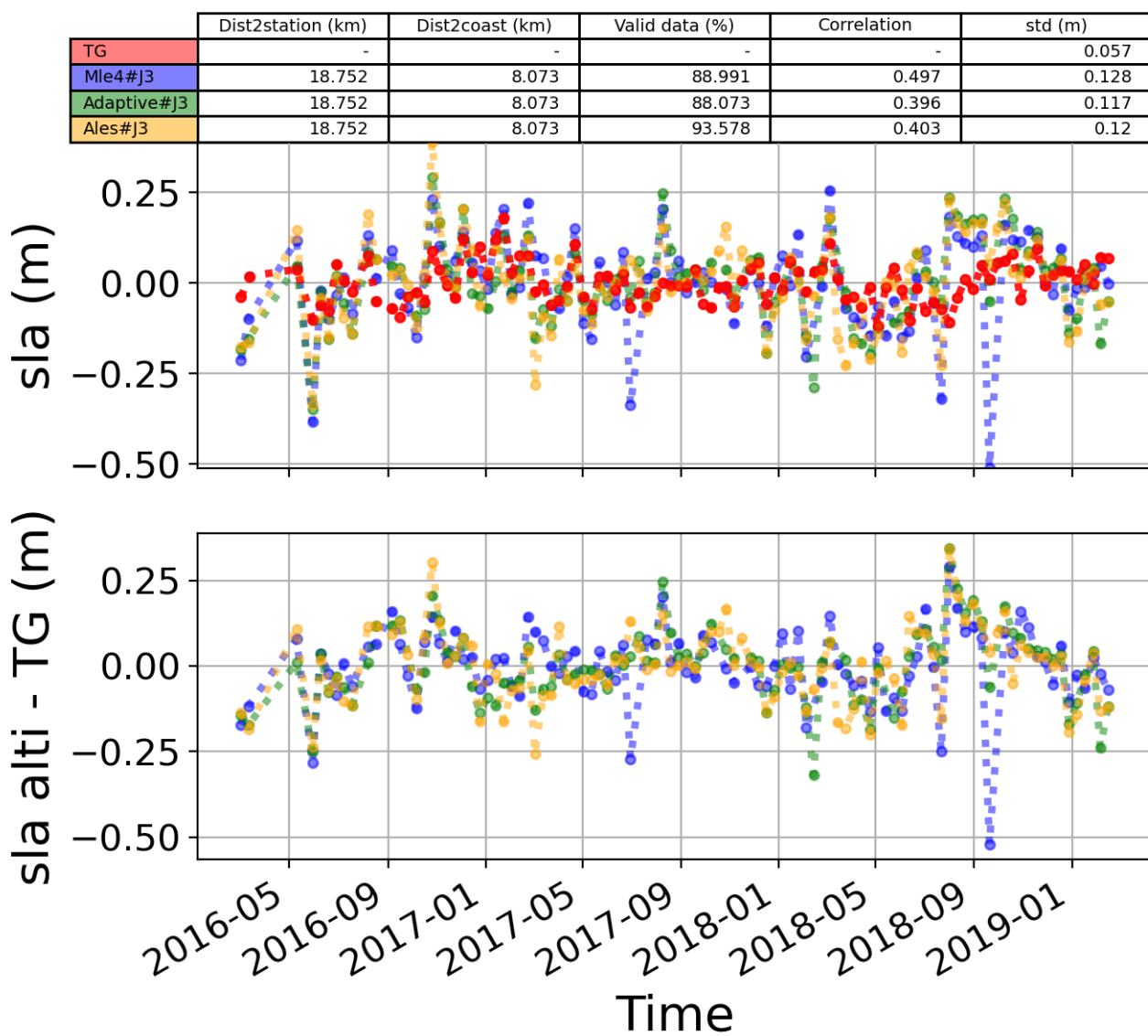


FIGURE 133 – The 1st most correlated sla altimetry Time serie with tide gauge sla time serie

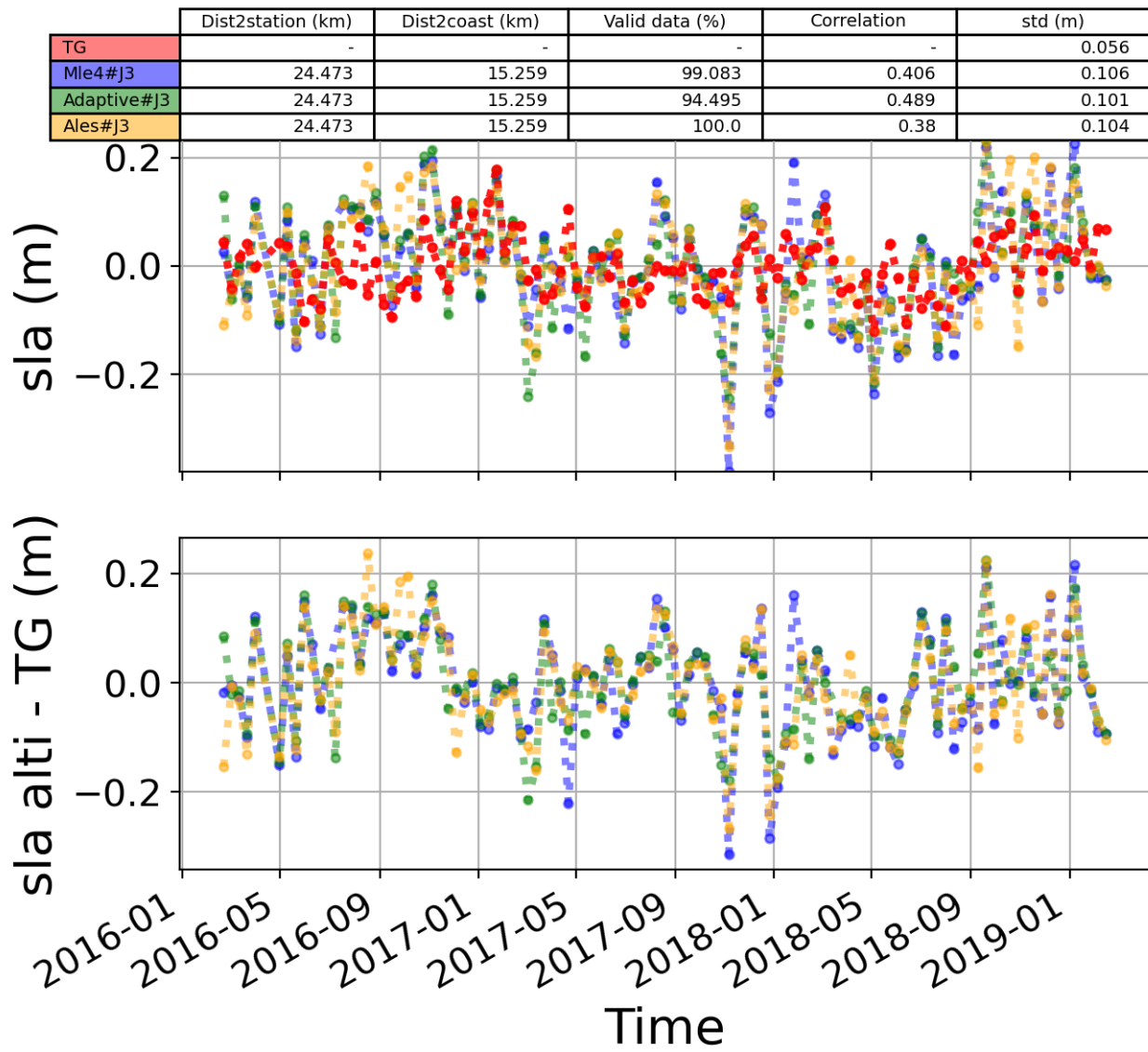


FIGURE 134 – The 2nd most correlated sla altimetry Time serie with tide gauge sla time serie

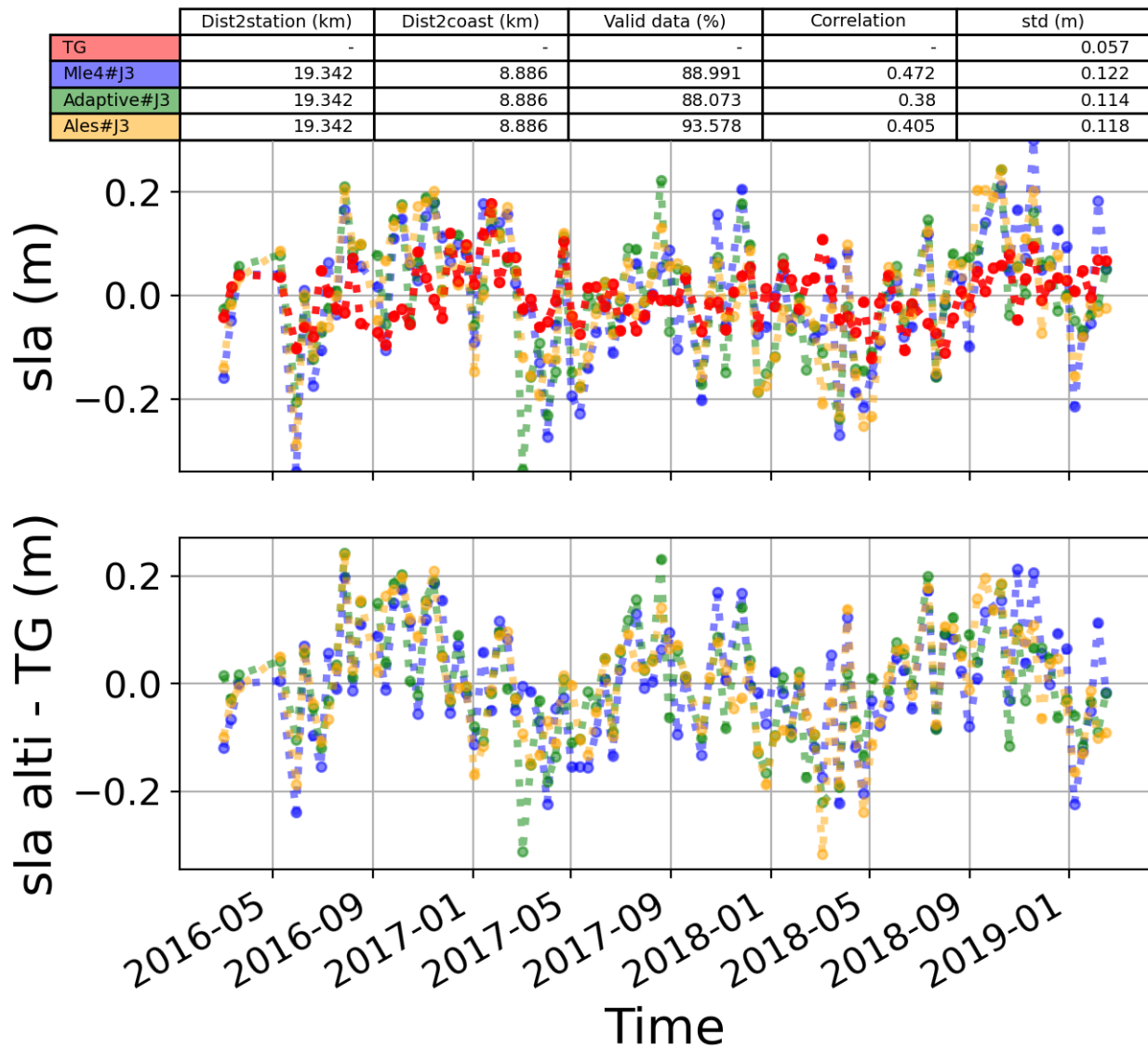


FIGURE 135 – The 3rd most correlated sla altimetry Time serie with tide gauge sla time serie

6.10 Station : Civitavecchia

- Nearest track to Civitavecchia station is the track number track161
- The area of interest is limited by :
 - A circle which it's center is the Civitavecchia tide gauge station location and has a Raduis of 40 Km

6.10.1 correlation visualization in maps view % Civitavecchia tide gauge

Correlation Altimetry data with respect to Civitavecchia Tide gauge data

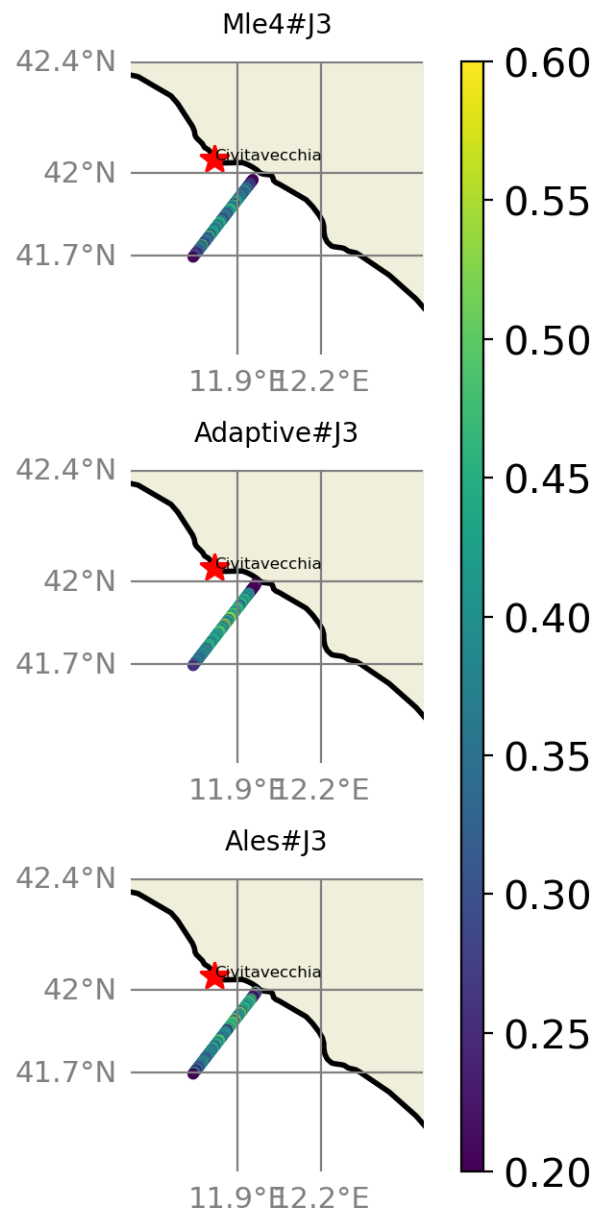


FIGURE 136 – correlation visualization in maps view % Civitavecchia tide gauge

6.10.2 rmsd visualization in maps view % Civitavecchia tide gauge

Rmsd (m) Altimetry data with respect to Civitavecchia Tide gauge data

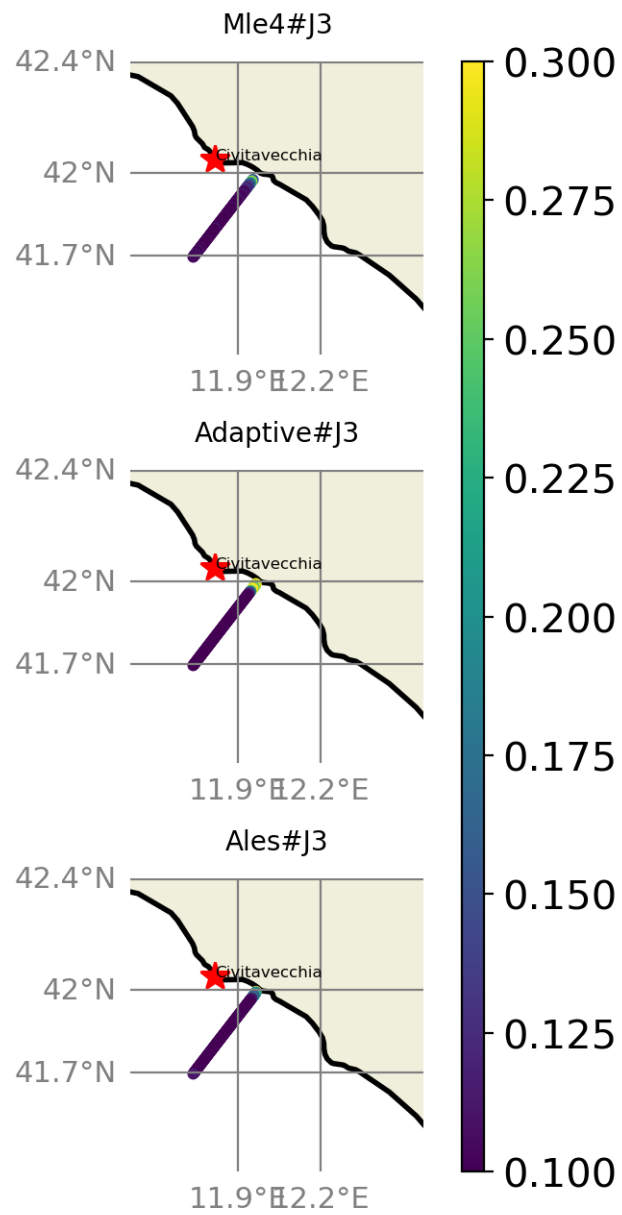


FIGURE 137 – rmsd visualization in maps view % Civitavecchia tide gauge

6.10.3 std visualization in maps view % Civitavecchia tide gauge

Std (m) Altimetry data with respect to Civitavecchia Tide gauge data

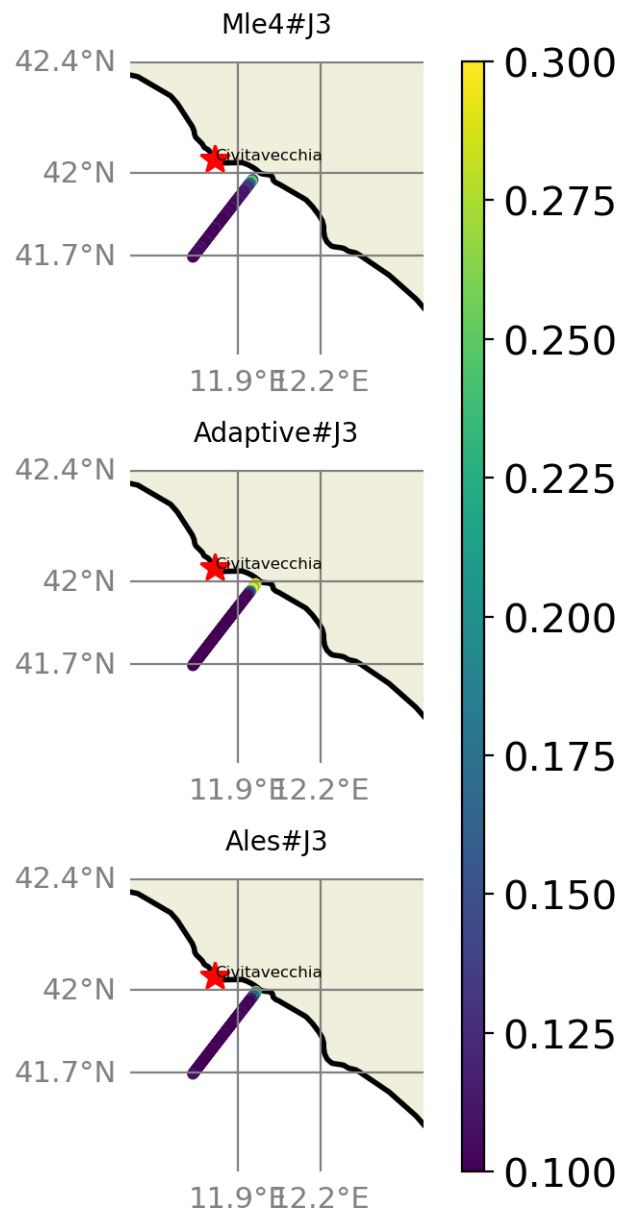


FIGURE 138 – std visualization in maps view % Civitavecchia tide gauge

6.10.4 valid_data_percent visualization in maps view % Civitavecchia tide gauge

Valid_Data_Percent (%) Altimetry data with respect to Civitavecchia Tide gauge data

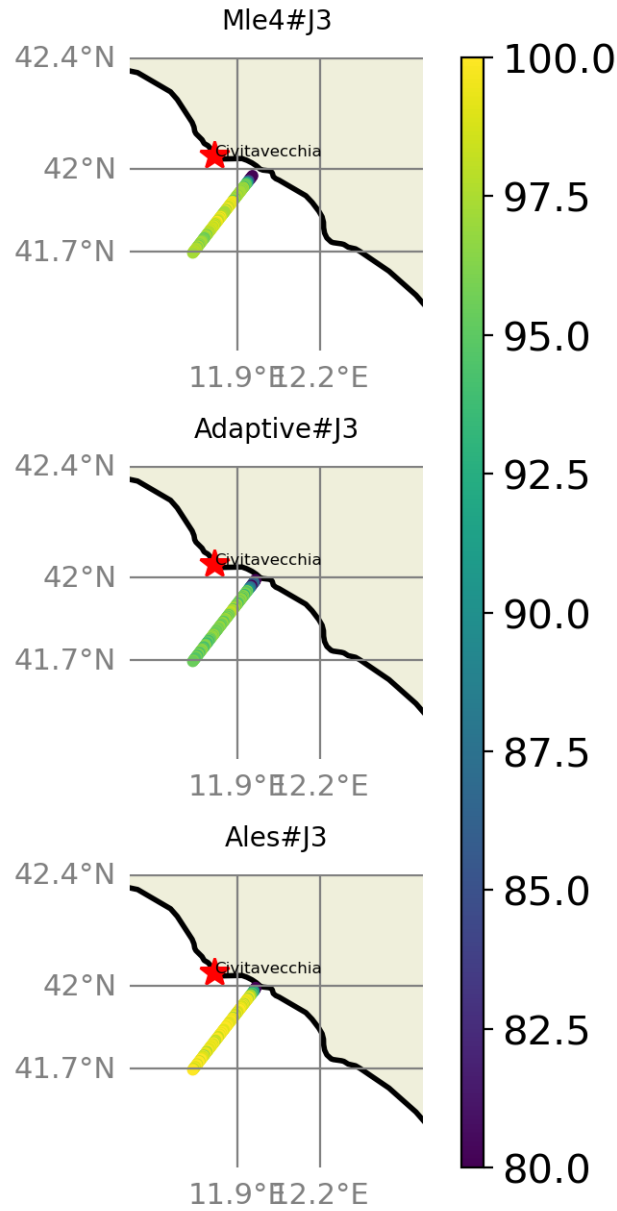


FIGURE 139 – valid_data_percent visualization in maps view % Civitavecchia tide gauge

6.10.5 Valid data (%) in function of distance to coast/Civitavecchia station

The formula to calculate the percentage of valid data in each time series is;

$$pvd_i = \frac{nvd_i}{maxNB}, i = 1, np$$

Where pvd and nvd are the percentage of data and the number of altimetry data in the period covered by the tide gauge sla time serie, respectively in the time serie, i is the index of the time serie, np is the number of the selected altimetry time series. $maxNB = 110$ point is the maximum number of valid altimetry points in the set of all the altimetry sla time series covered by the period of time of the Tide gauge sla time serie.

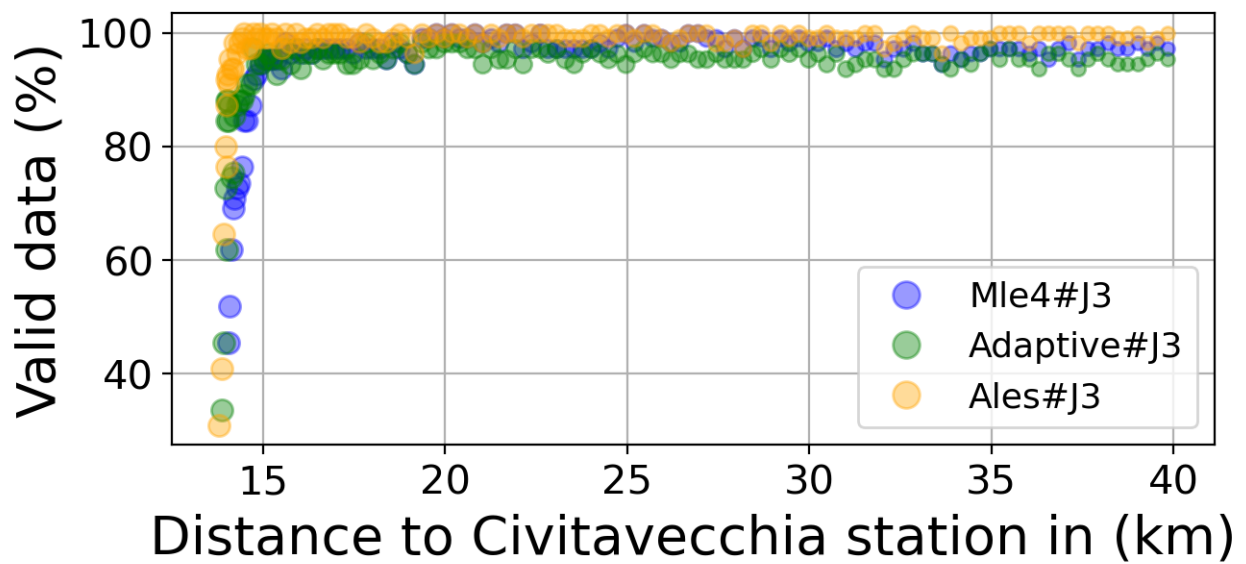
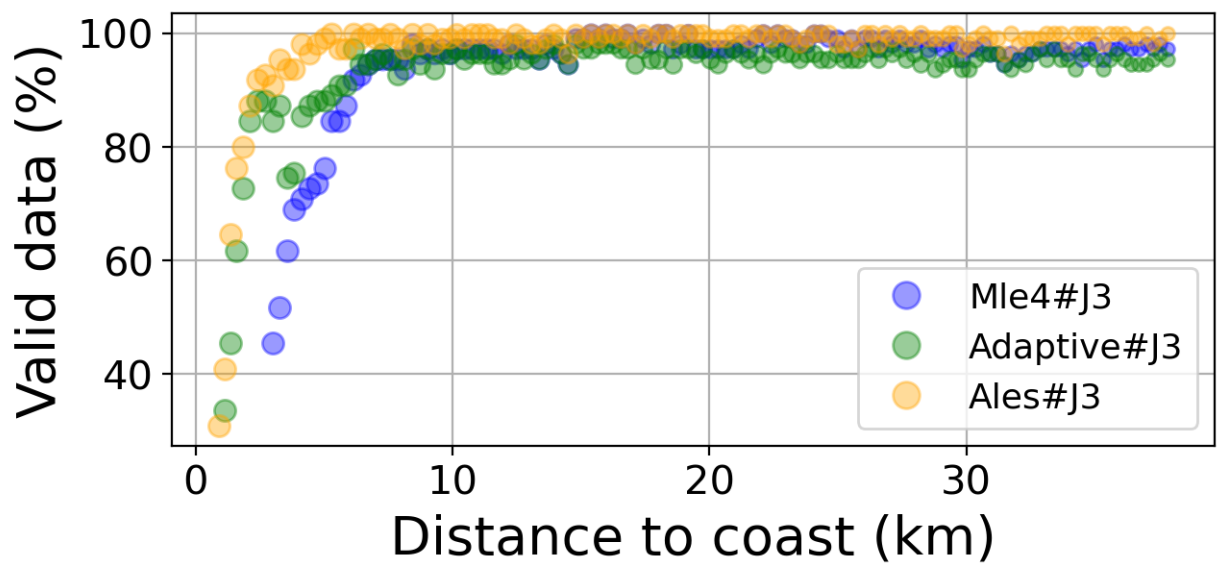


FIGURE 140 – Valid data (%) in function of distance to coast/Civitavecchia station

6.10.6 Std in function of distance to coast/Civitavecchia station

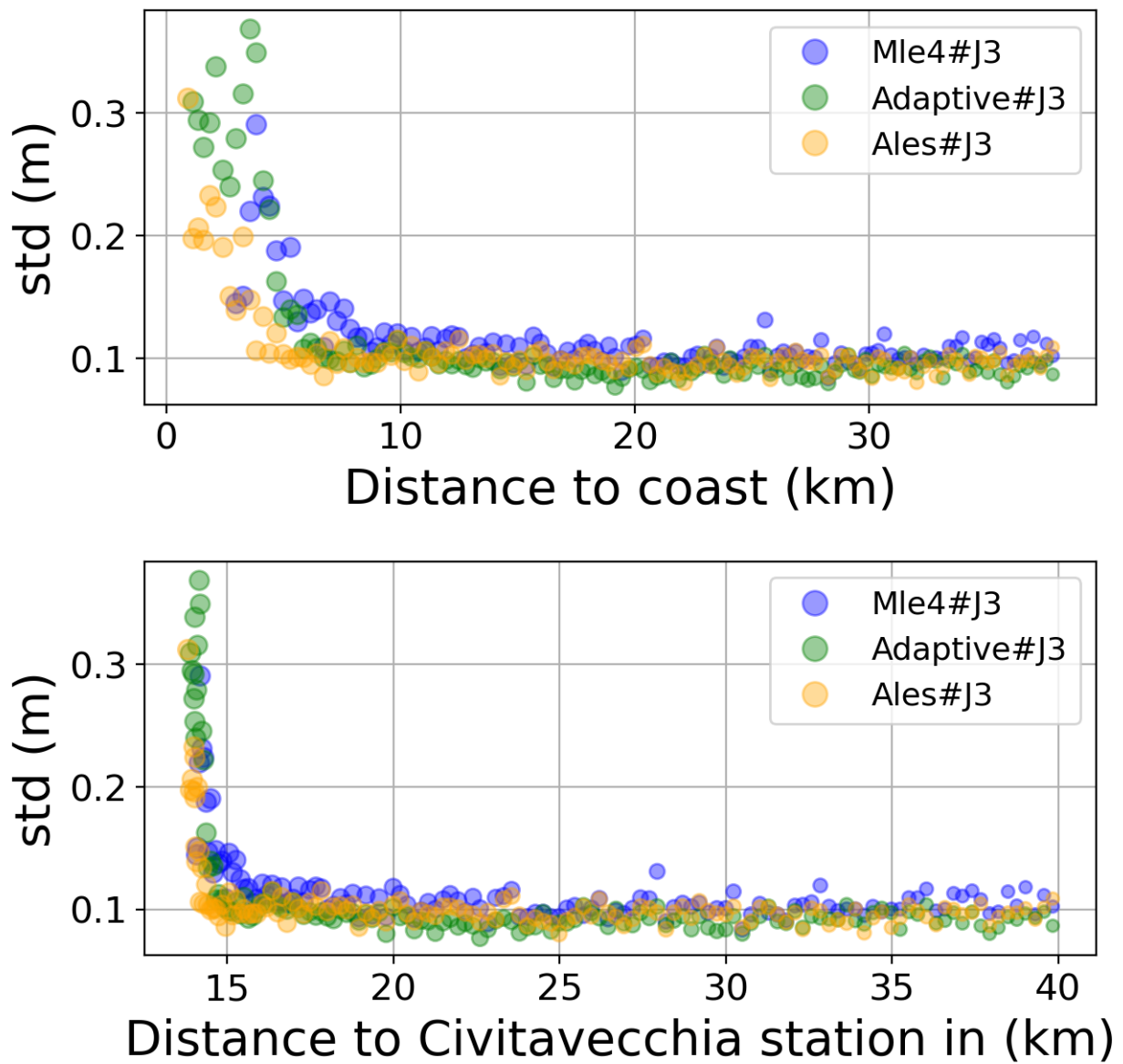


FIGURE 141 – Std in function of the distance to the coast/Civitavecchia station

6.10.7 Correlation in function of distance to coast/Civitavecchia station

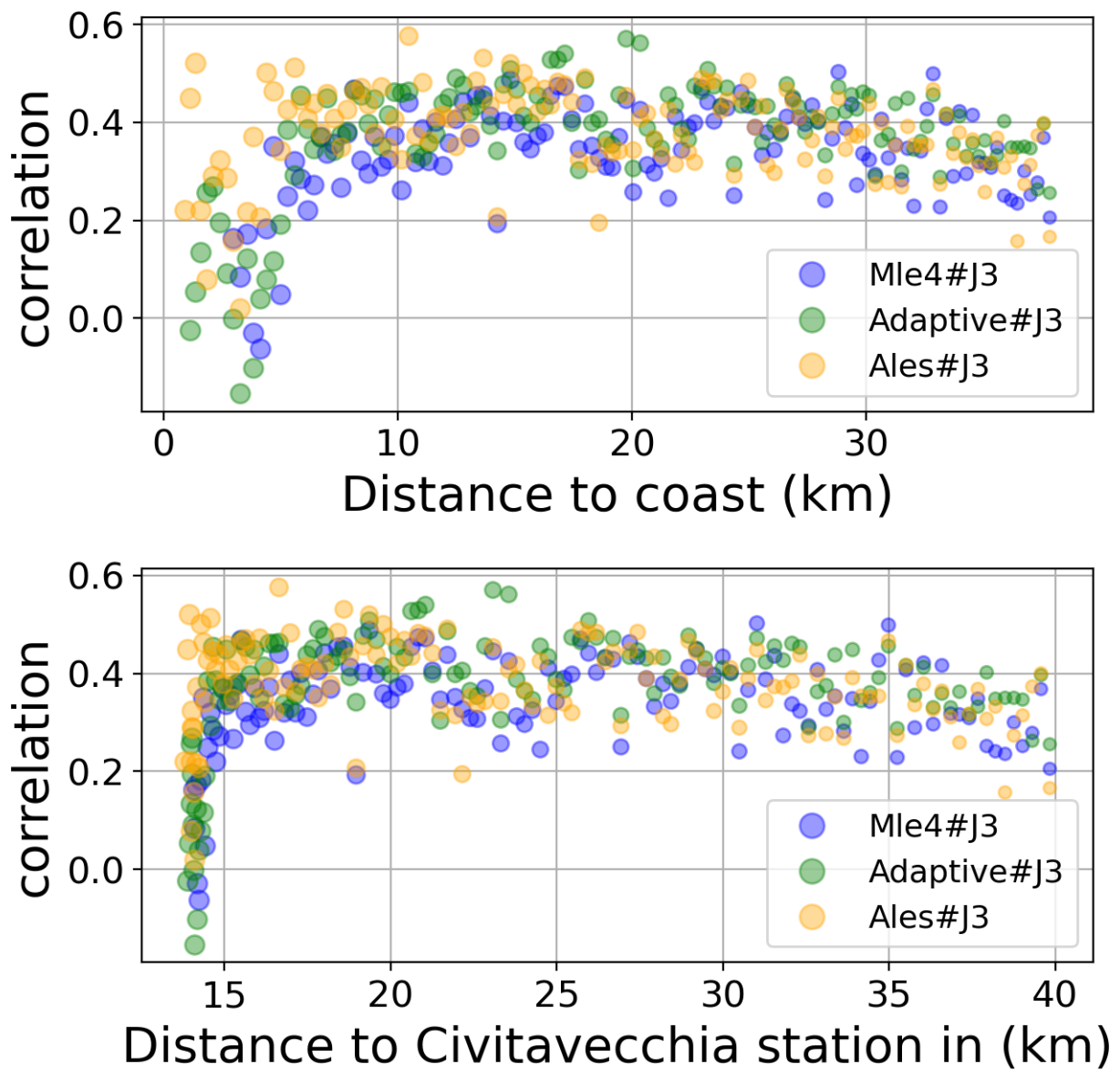


FIGURE 142 – Correlation in function of the distance to the coast/Civitavecchia station

6.10.8 Taylor Diagram

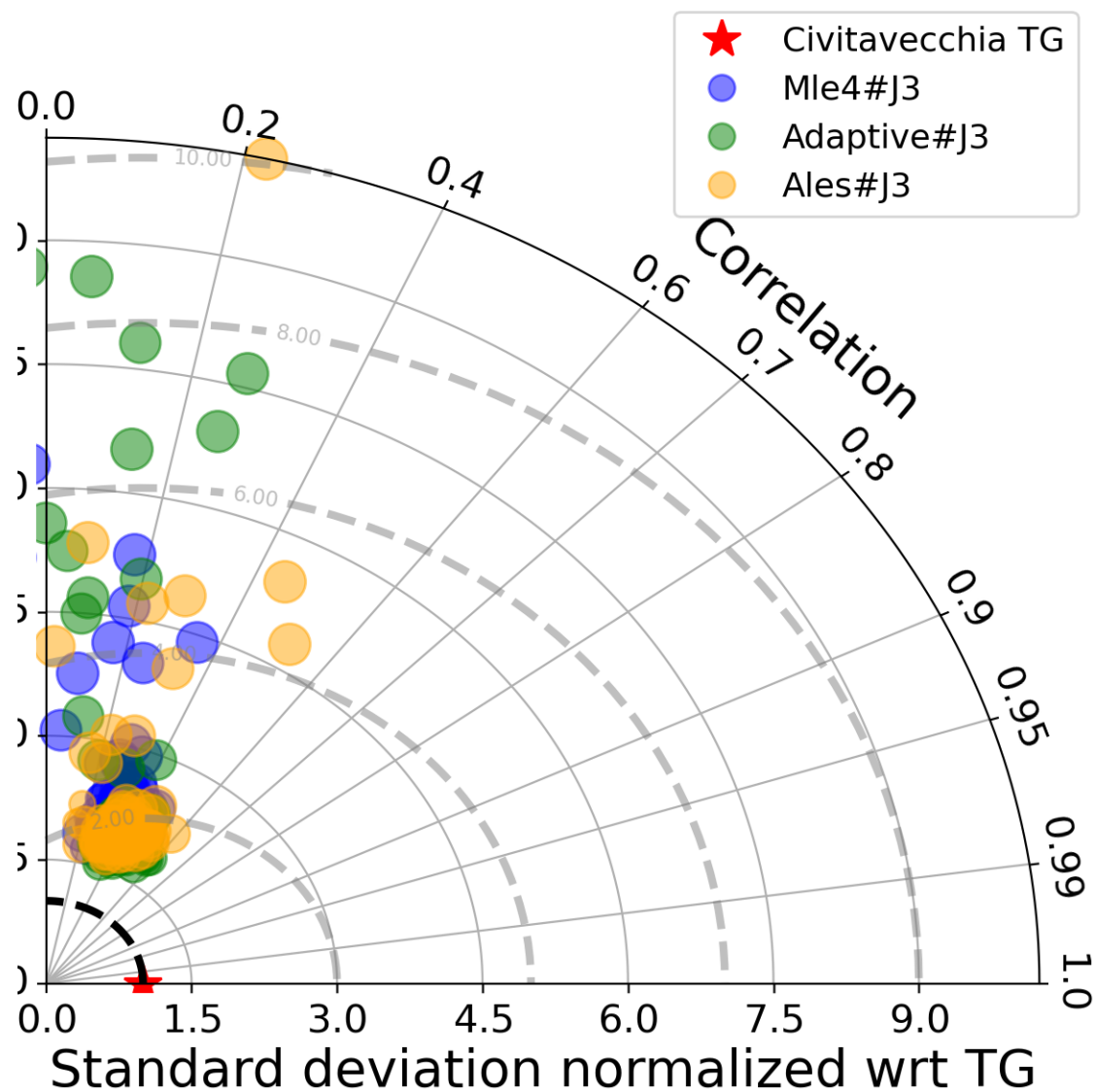


FIGURE 143 – Taylor diagram

6.10.9 Mean statistics table of products comparison with Civitavecchia tide gauge data

The table below contains the mean statistics of the common points between the different products in the selected area.

Product	Valid data (%)	Correlation	std (m)	rmsd (m)
Mle4#J3	95.154	0.342	0.114	0.108
Adaptive#J3	94.993	0.383	0.105	0.099
Ales#J3	99.04	0.382	0.1	0.093

FIGURE 144 – Mean statistics table of the common points in the altimetry products

6.10.10 The most correlated sla altimetry Time series with the tide gauge sla time serie

The maximum number of valid altimetry points in the set of all the altimetry sla time series covered by the period of time of the Tide gauge sla time serie is 110 point.

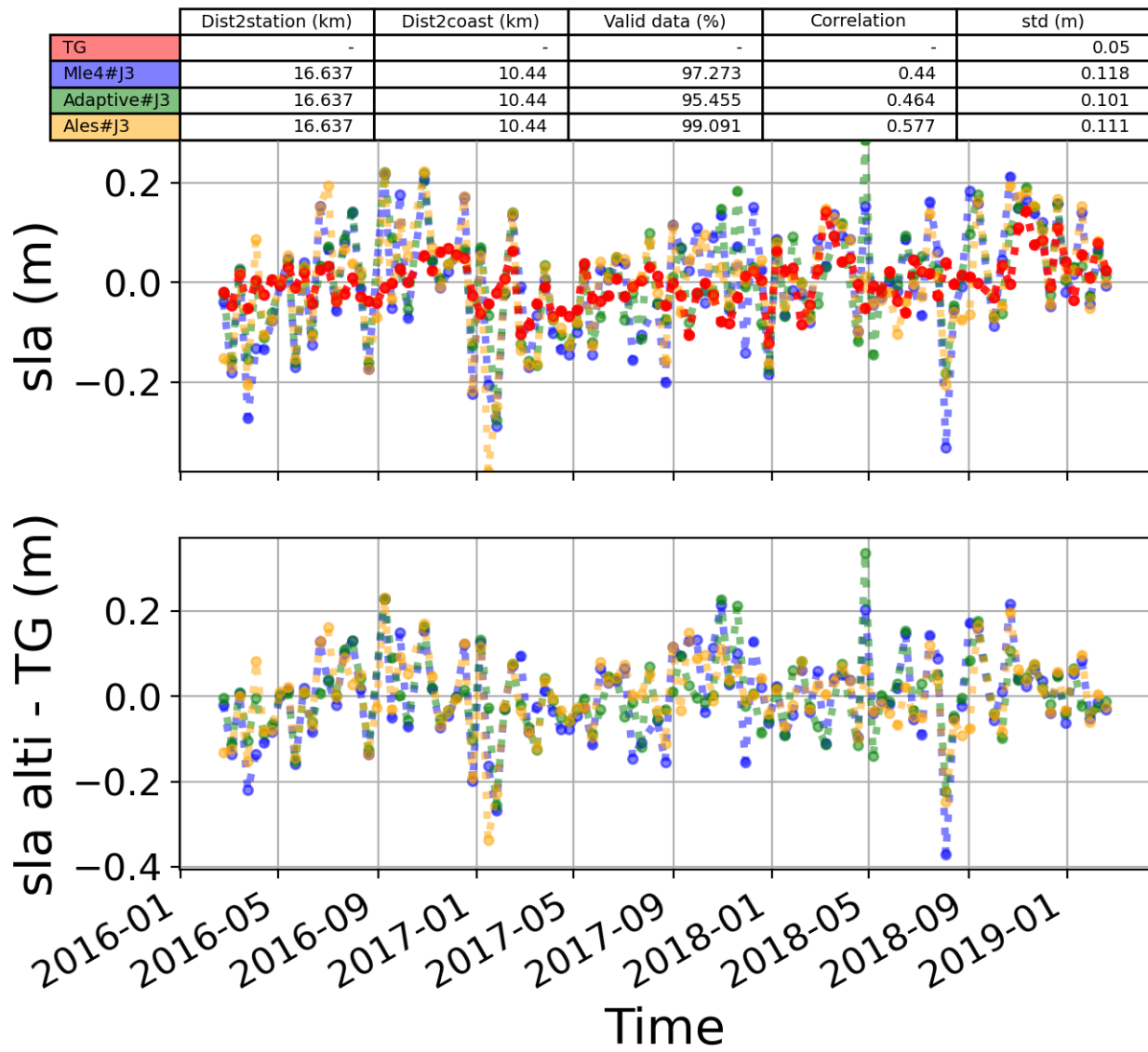


FIGURE 145 – The 1st most correlated sla altimetry Time serie with tide gauge sla time serie

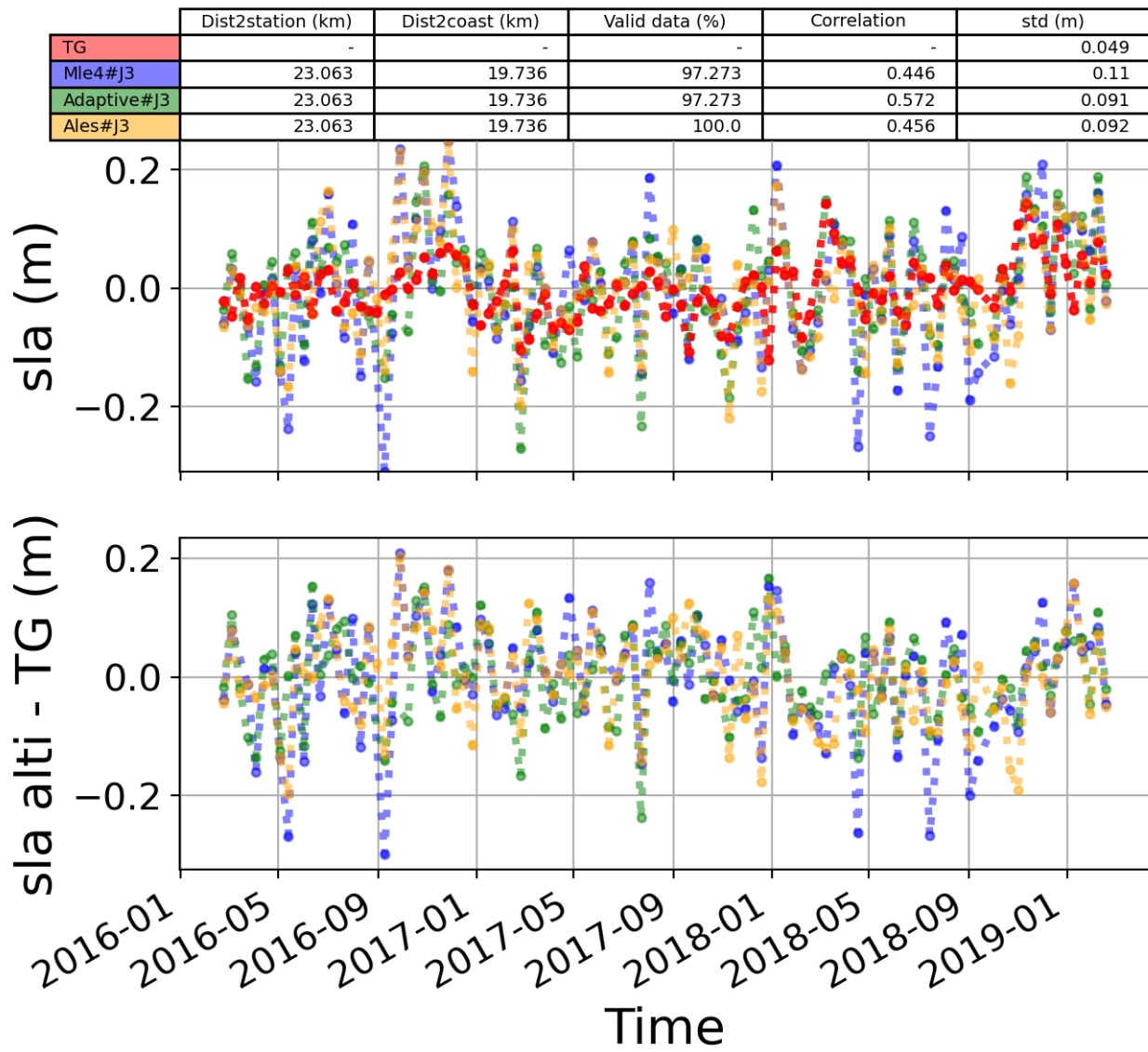


FIGURE 146 – The 2nd most correlated sla altimetry Time serie with tide gauge sla time serie

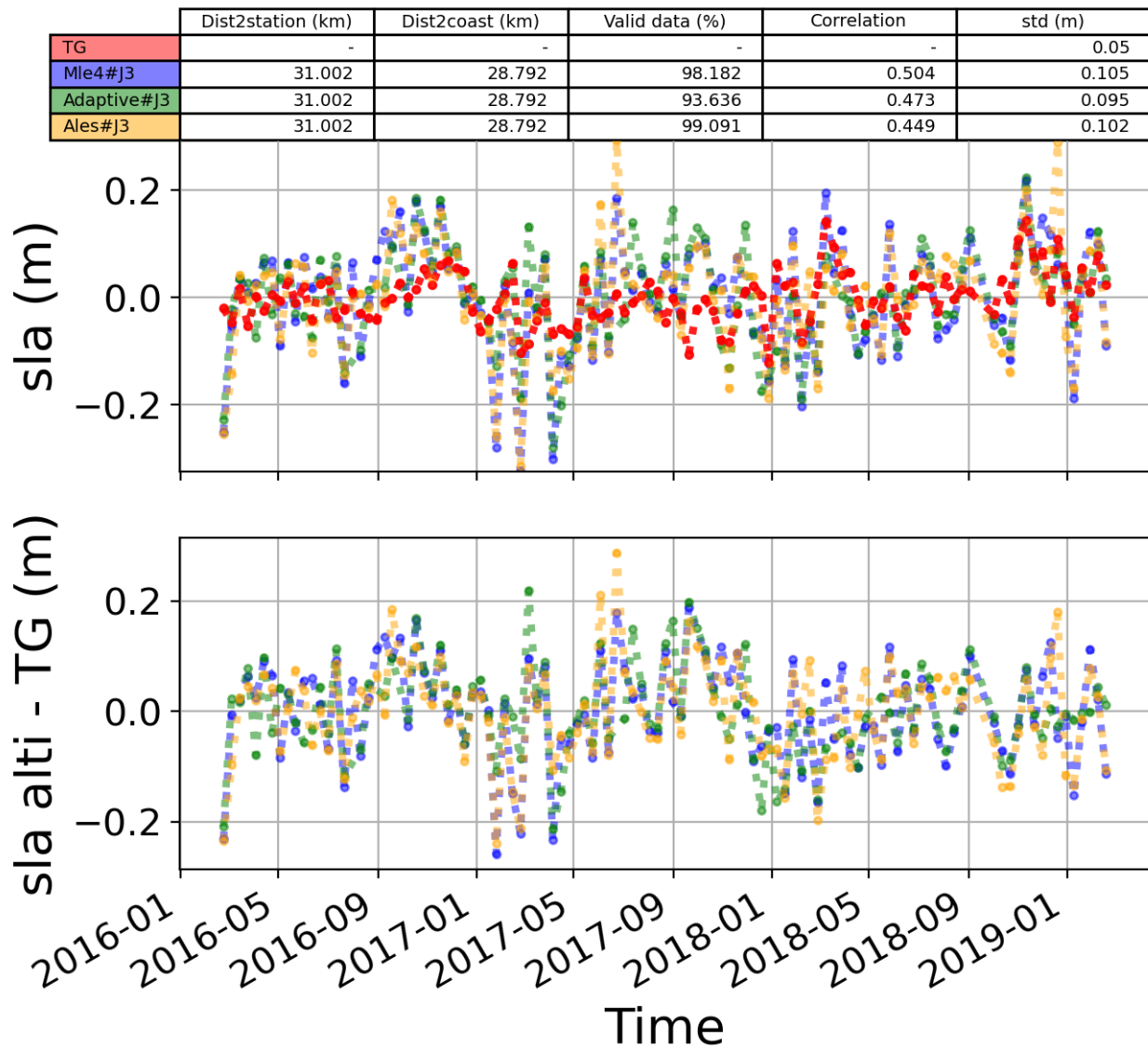


FIGURE 147 – The 3rd most correlated sla altimetry Time serie with tide gauge sla time serie

6.11 Station : FOS-SUR-MER

- Nearest track to FOS-SUR-MER station is the track number track187
- The area of interest is limited by :
 - A circle which it's center is the FOS-SUR-MER tide gauge station location and has a Raduis of 40 Km

6.11.1 correlation visualization in maps view % FOS-SUR-MER tide gauge

Correlation Altimetry data with respect to FOS-SUR-MER Tide gauge data

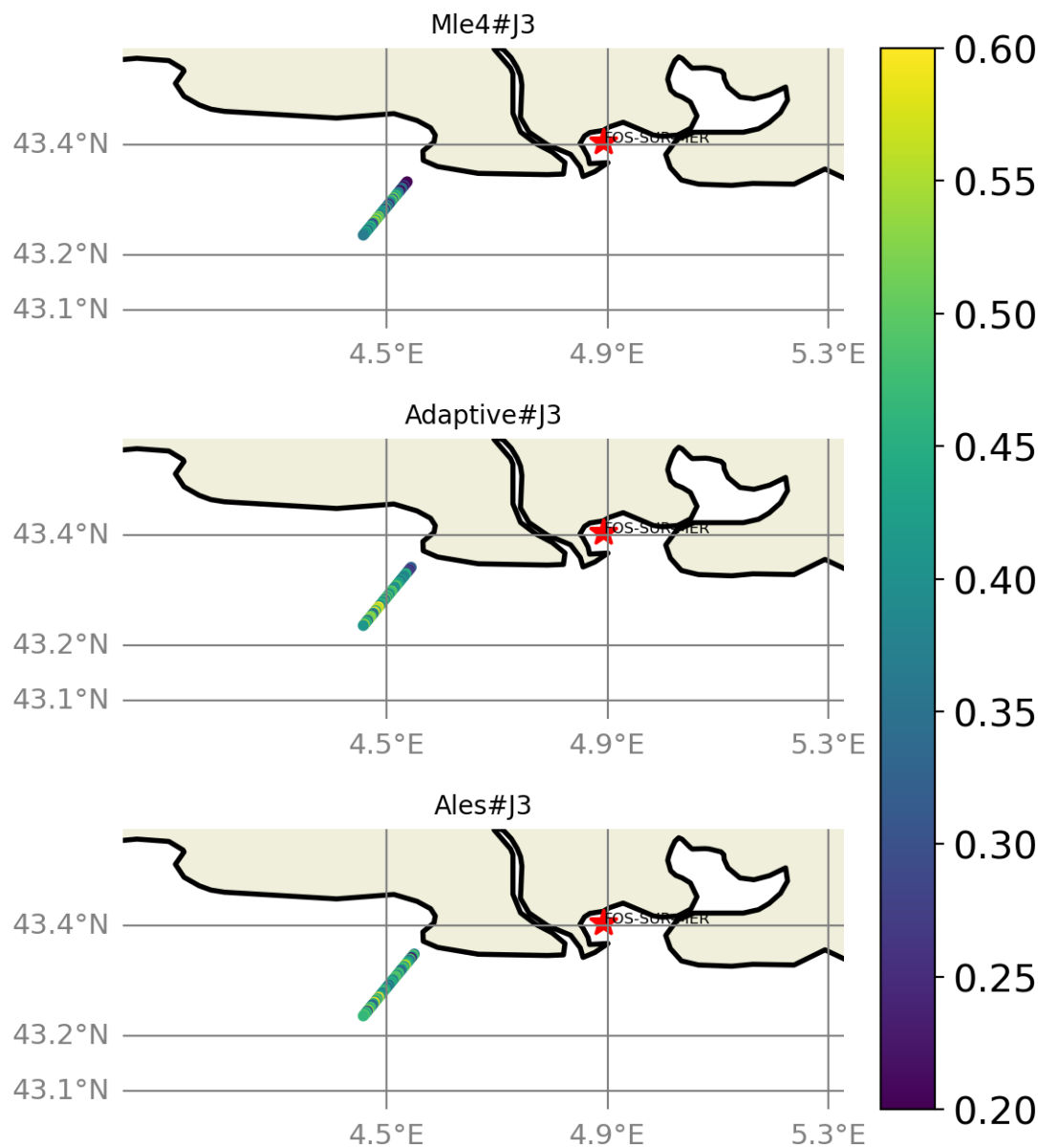


FIGURE 148 – correlation visualization in maps view % FOS-SUR-MER tide gauge

6.11.2 rmsd visualization in maps view % FOS-SUR-MER tide gauge

Rmsd (m) Altimetry data with respect to FOS-SUR-MER Tide gauge data

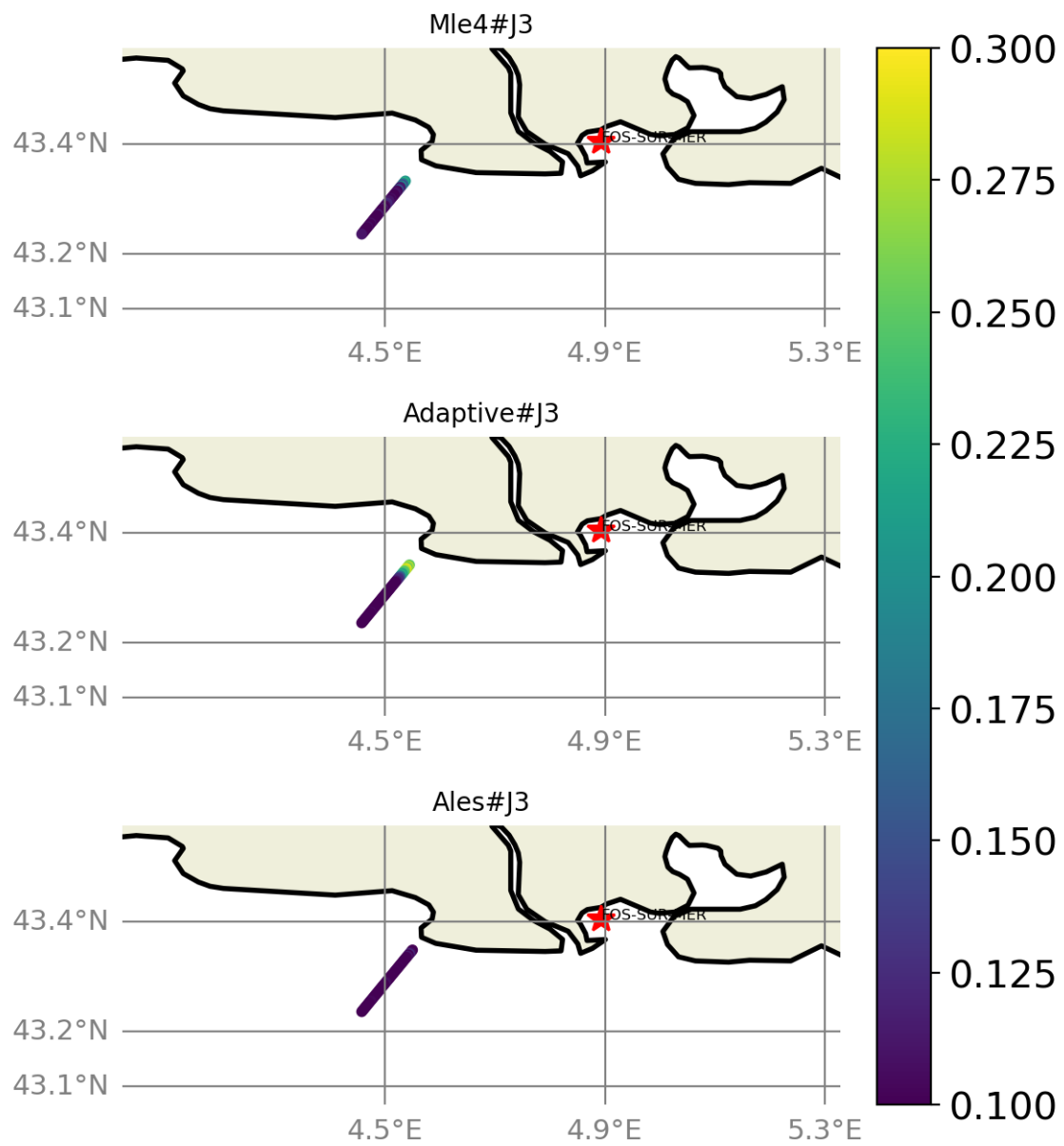


FIGURE 149 – rmsd visualization in maps view % FOS-SUR-MER tide gauge

6.11.3 std visualization in maps view % FOS-SUR-MER tide gauge

Std (m) Altimetry data with respect to FOS-SUR-MER Tide gauge data

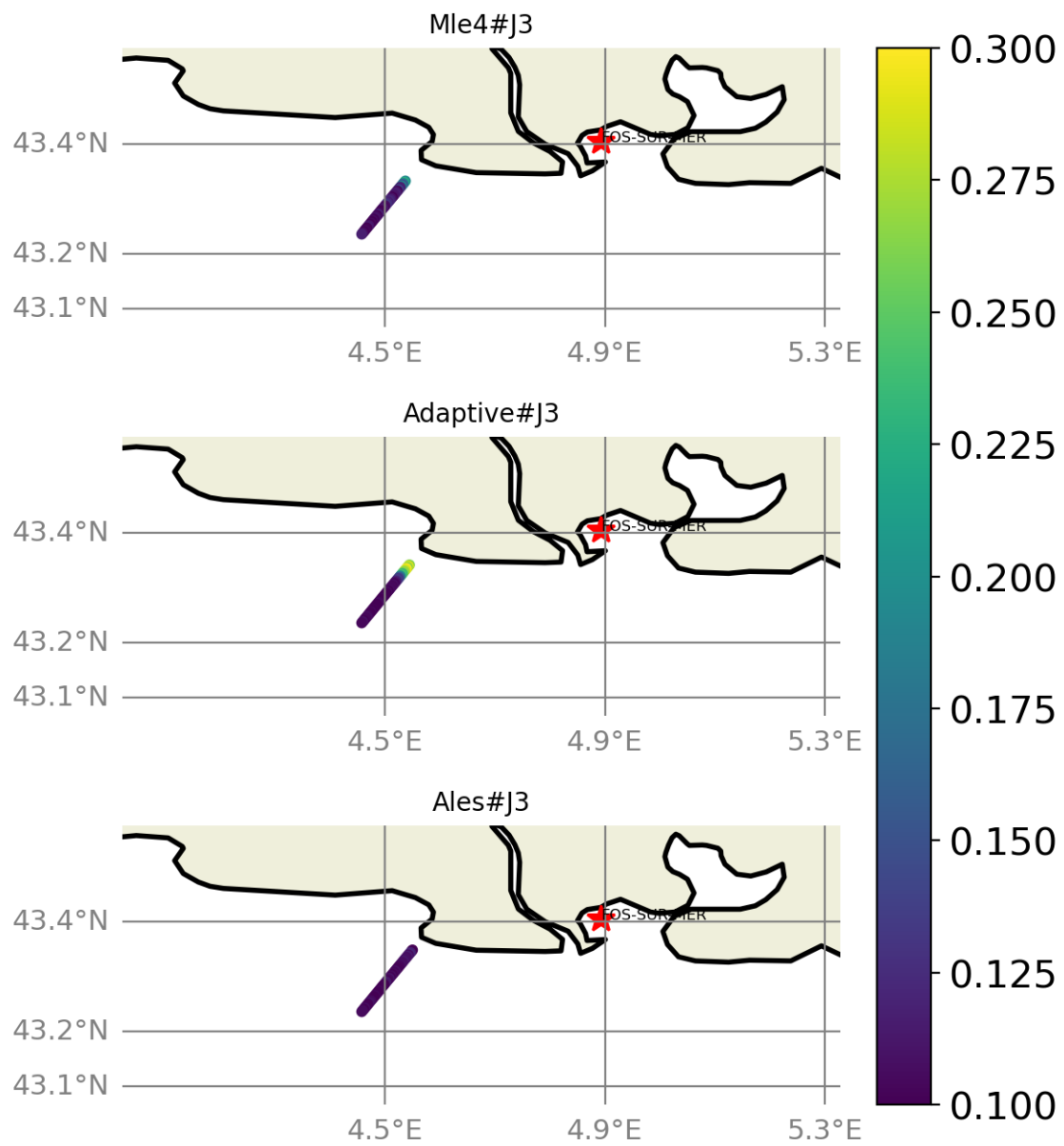


FIGURE 150 – std visualization in maps view % FOS-SUR-MER tide gauge

6.11.4 valid_data_percent visualization in maps view % FOS-SUR-MER tide gauge

Valid_Data_Percent (%) Altimetry data with respect to FOS-SUR-MER Tide gauge data

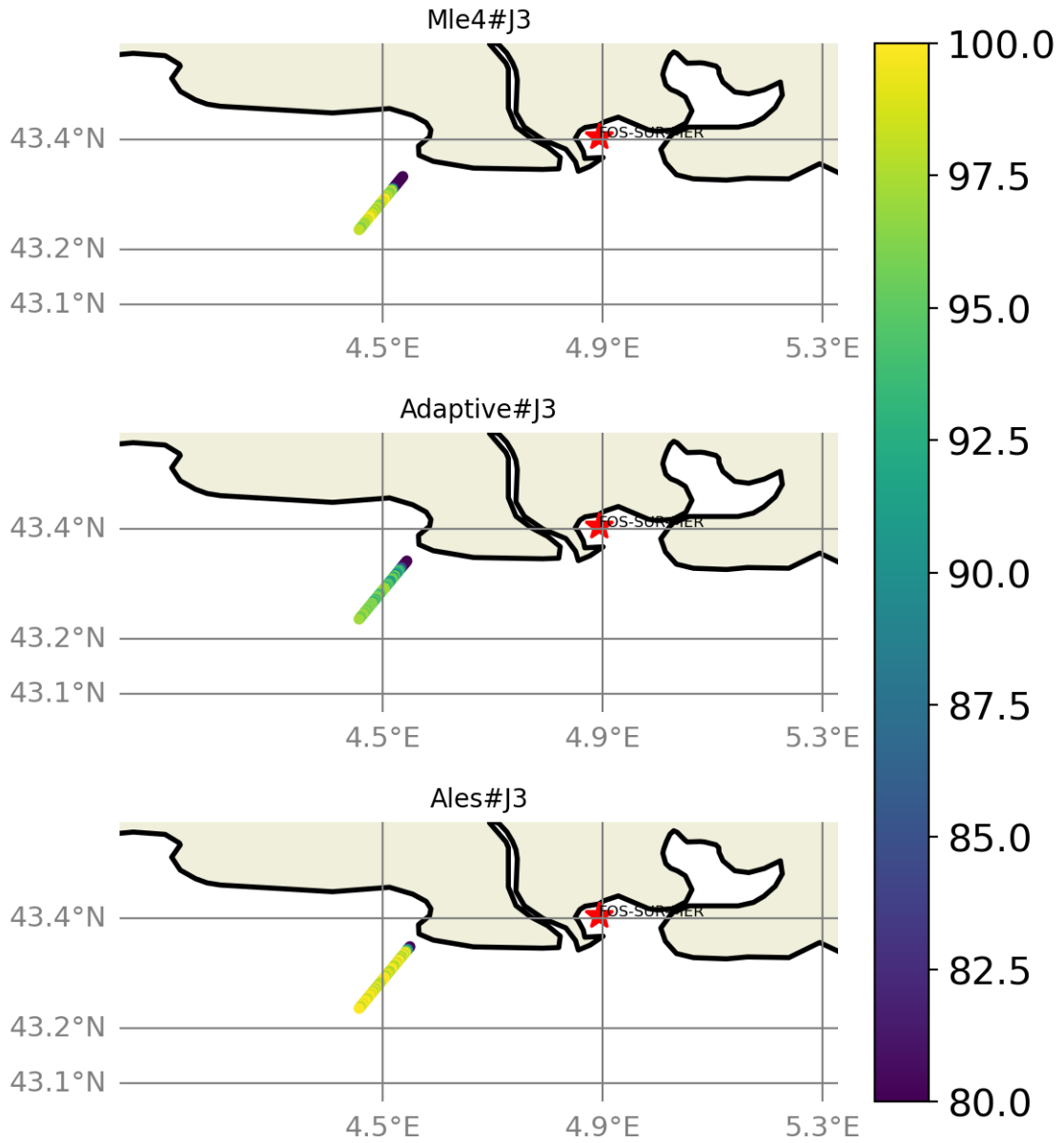


FIGURE 151 – valid_data_percent visualization in maps view % FOS-SUR-MER tide gauge

6.11.5 Valid data (%) in function of distance to coast/FOS-SUR-MER station

The formula to calculate the percentage of valid data in each time series is;

$$pvd_i = \frac{nvd_i}{maxNB}, i = 1, np$$

Where pvd and nvd are the percentage of data and the number of altimetry data in the period covered by the tide gauge sla time serie, respectively in the time serie, i is the index of the time serie, np is the number of the selected altimetry time series. $maxNB = 106$ point is the maximum number of valid altimetry points in the set of all the altimetry sla time series covered by the period of time of the Tide gauge sla time serie.

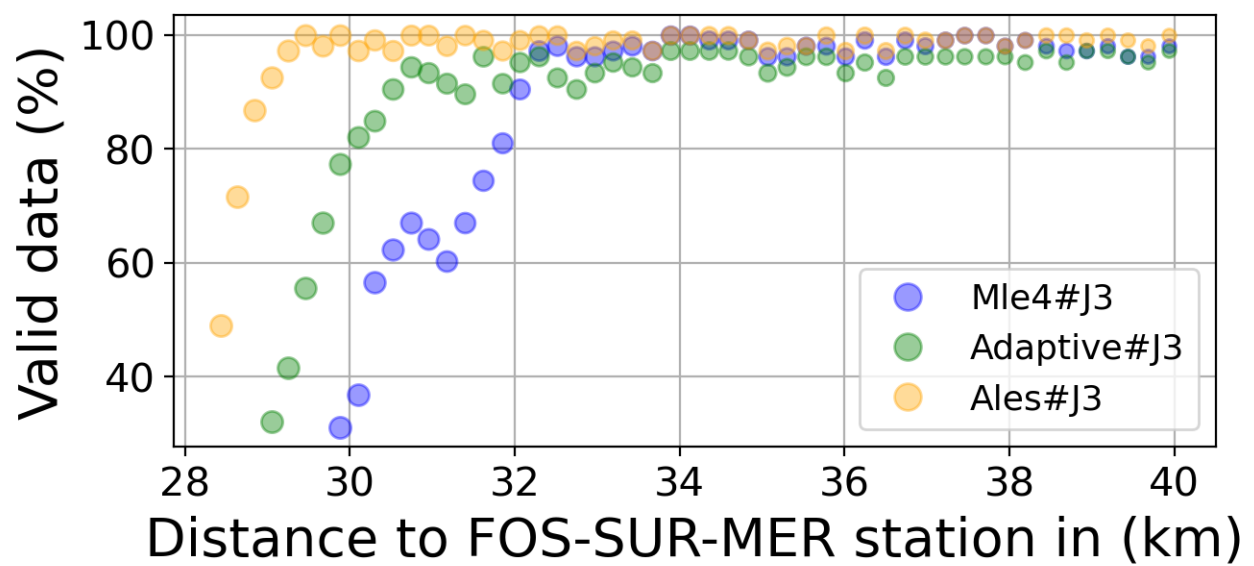
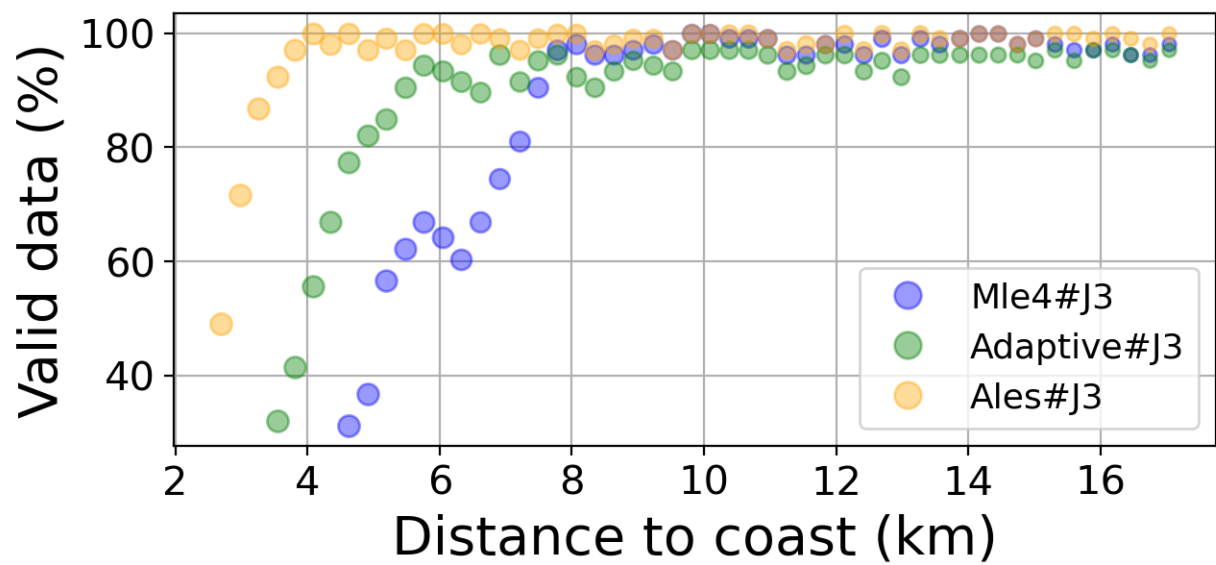


FIGURE 152 – Valid data (%) in function of distance to coast/FOS-SUR-MER station

6.11.6 Std in function of distance to coast/FOS-SUR-MER station

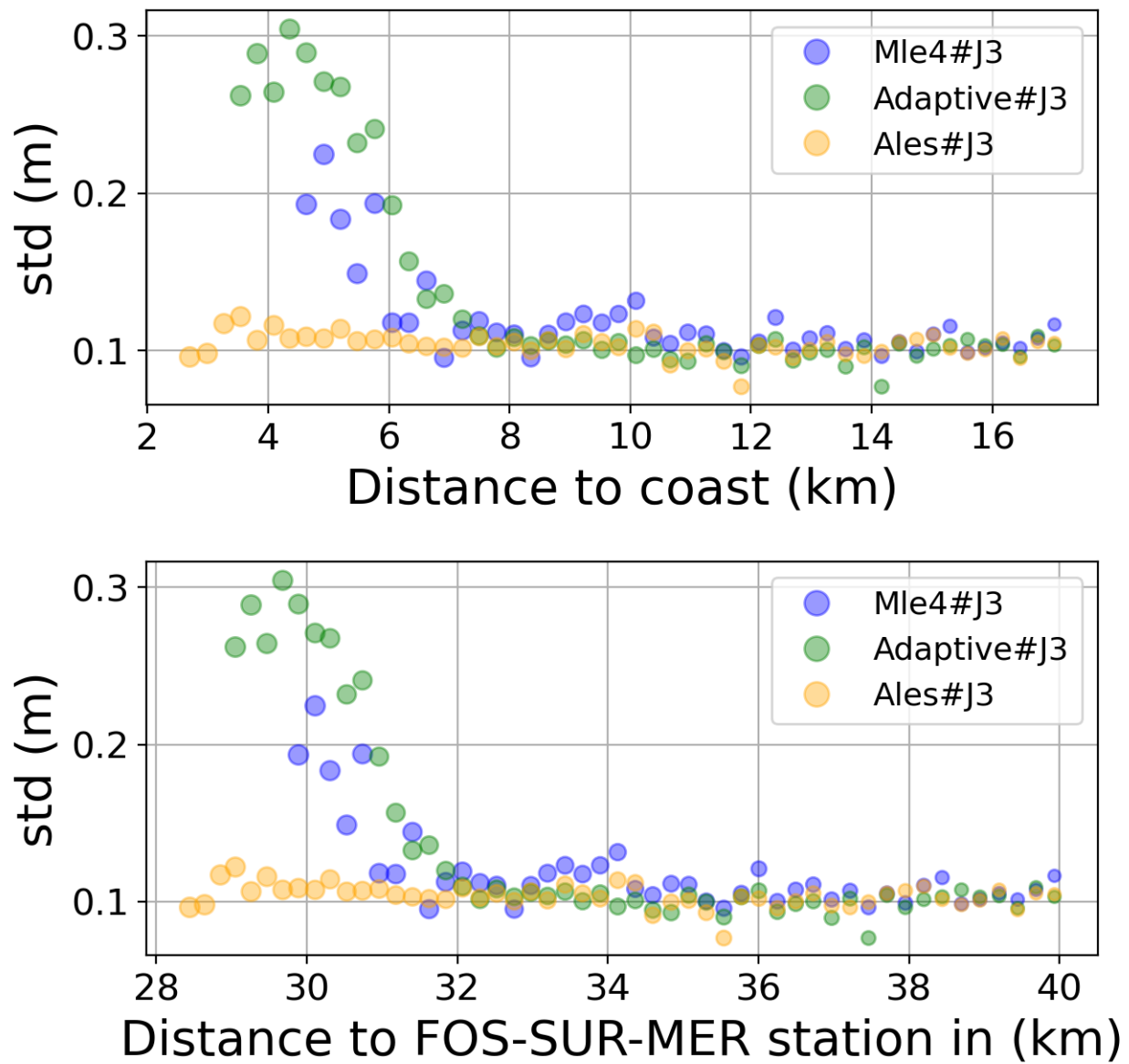


FIGURE 153 – Std in function of the distance to the coast/FOS-SUR-MER station

6.11.7 Correlation in function of distance to coast/FOS-SUR-MER station

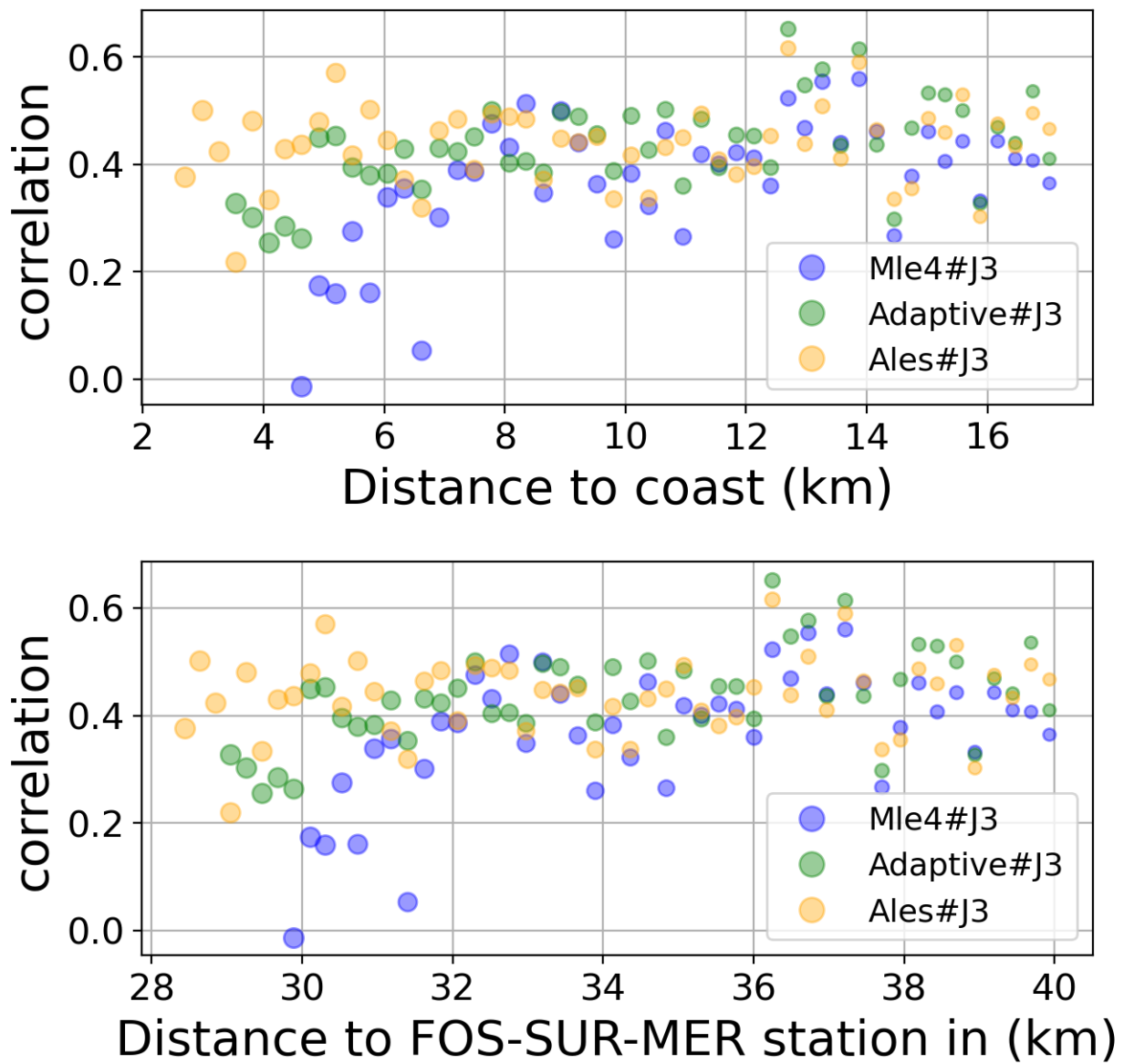


FIGURE 154 – Correlation in function of the distance to the coast/FOS-SUR-MER station

6.11.8 Taylor Diagram

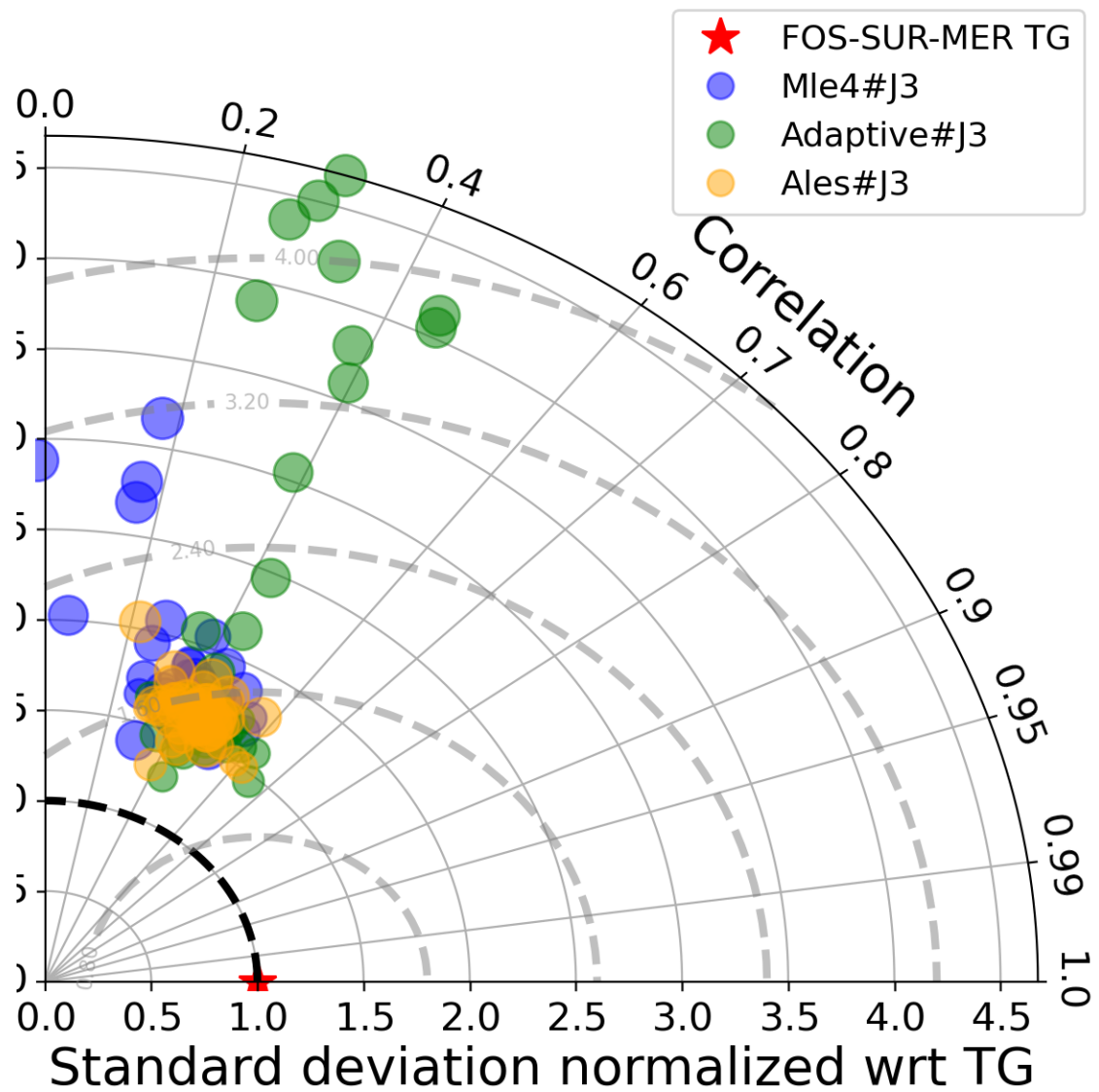


FIGURE 155 – Taylor diagram

6.11.9 Mean statistics table of products comparison with FOS-SUR-MER tide gauge data

The table below contains the mean statistics of the common points between the different products in the selected area.

Product	Valid data (%)	Correlation	std (m)	rmsd (m)
Mle4#J3	89.172	0.37	0.119	0.113
Adaptive#J3	94.018	0.447	0.124	0.113
Ales#J3	98.992	0.444	0.103	0.094

FIGURE 156 – Mean statistics table of the common points in the altimetry products

6.11.10 The most correlated sla altimetry Time series with the tide gauge sla time serie

The maximum number of valid altimetry points in the set of all the altimetry sla time series covered by the period of time of the Tide gauge sla time serie is 106 point.

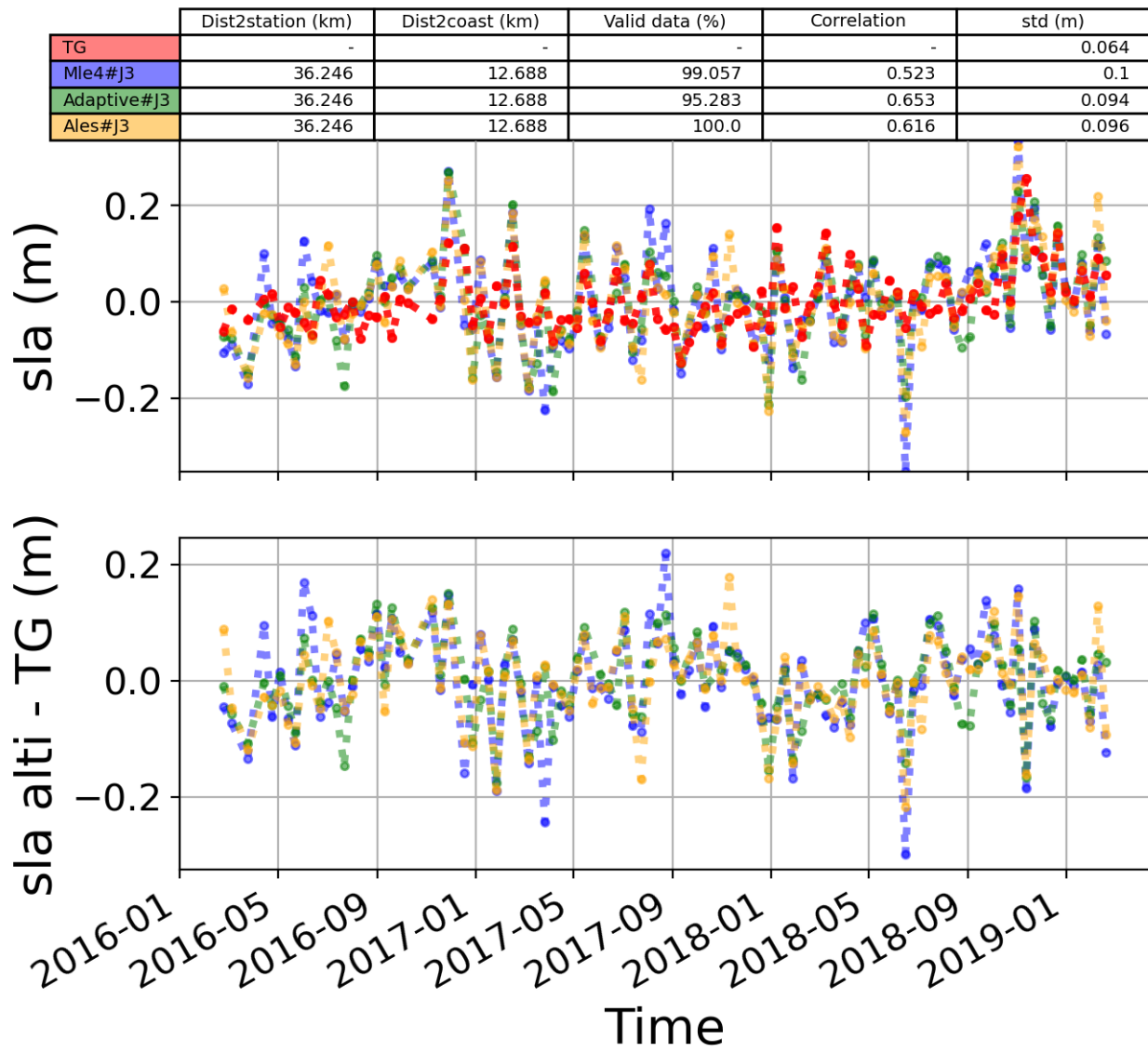


FIGURE 157 – The 1st most correlated sla altimetry Time serie with tide gauge sla time serie

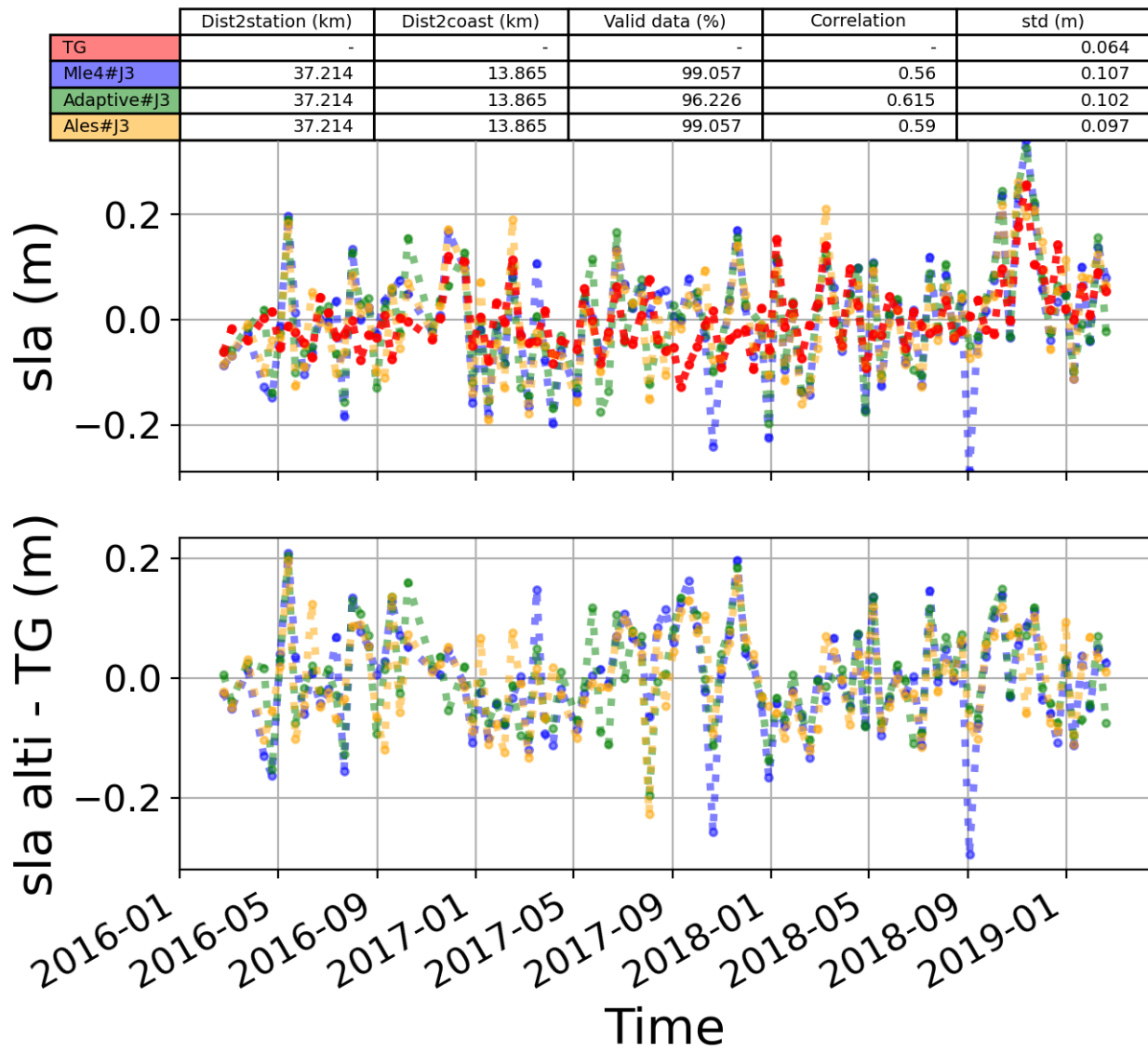


FIGURE 158 – The 2nd most correlated sla altimetry Time serie with tide gauge sla time serie