

DIAGTOOL REPORT



**Round Robin (GT cotier) : Ionospheric correction.
Medsea. J3. Iono filtered vs Iono gim.**

7 avril 2022

Table of Contents

1	General description	7
2	Processing	8
2.1	sla formula	8
2.1.1	Iono_filtered product ' sla	8
2.1.2	Iono_gim product ' sla	8
2.2	Binning	8
2.3	Filtering	8
3	Spatial coherence analysis	9
3.1	sla	9
3.1.1	sla 's count	9
3.1.2	sla 's std	12
3.1.3	sla 's mean	15
3.2	Iono	18
3.2.1	Iono 's count	18
3.2.2	Iono 's std	21
3.2.3	Iono 's mean	24
4	Histograms	27
4.1	Iono	27
4.2	sla	30
5	Along-track analysis	31
5.1	Iono	31
5.1.1	Iono 's count	31
5.1.2	Iono 's std	32
5.1.3	Iono 's mean	33
5.2	sla	34
5.2.1	sla 's count	34
5.2.2	sla 's std	35
5.2.3	sla 's mean	36
6	Comparison with Insitu Data (Tide Gauge)	37
6.1	Station : SETE	37
6.1.1	correlation visualization in maps view % SETE tide gauge	37
6.1.2	rmsd visualization in maps view % SETE tide gauge	38
6.1.3	std visualization in maps view % SETE tide gauge	39
6.1.4	valid_data_percent visualization in maps view % SETE tide gauge	40
6.1.5	Valid data (%) in function of distance to coast/SETE station	40
6.1.6	Std in function of distance to coast/SETE station	42
6.1.7	Correlation in function of distance to coast/SETE station	43
6.1.8	Taylor Diagram	44
6.1.9	Mean statistics table of products comparison with SETE tide gauge data	44
6.1.10	The most correlated sla altimetry Time series with the tide gauge sla time serie	45

6.2	Station : Mentès	46
6.2.1	correlation visualization in maps view % Mentès tide gauge	47
6.2.2	rmsd visualization in maps view % Mentès tide gauge	48
6.2.3	std visualization in maps view % Mentès tide gauge	49
6.2.4	valid_data_percent visualization in maps view % Mentès tide gauge	50
6.2.5	Valid data (%) in function of distance to coast/Mentès station	50
6.2.6	Std in function of distance to coast/Mentès station	52
6.2.7	Correlation in function of distance to coast/Mentès station	53
6.2.8	Taylor Diagram	54
6.2.9	Mean statistics table of products comparison with Mentès tide gauge data	54
6.2.10	The most correlated sla altimetry Time series with the tide gauge sla time serie	55
6.3	Station : Ibiza	56
6.3.1	correlation visualization in maps view % Ibiza tide gauge	57
6.3.2	rmsd visualization in maps view % Ibiza tide gauge	58
6.3.3	std visualization in maps view % Ibiza tide gauge	59
6.3.4	valid_data_percent visualization in maps view % Ibiza tide gauge	60
6.3.5	Valid data (%) in function of distance to coast/Ibiza station	60
6.3.6	Std in function of distance to coast/Ibiza station	62
6.3.7	Correlation in function of distance to coast/Ibiza station	63
6.3.8	Taylor Diagram	64
6.3.9	Mean statistics table of products comparison with Ibiza tide gauge data	64
6.3.10	The most correlated sla altimetry Time series with the tide gauge sla time serie	65
6.4	Station : LA_FIGUEIRETTE	66
6.4.1	correlation visualization in maps view % LA_FIGUEIRETTE tide gauge	67
6.4.2	rmsd visualization in maps view % LA_FIGUEIRETTE tide gauge	68
6.4.3	std visualization in maps view % LA_FIGUEIRETTE tide gauge	69
6.4.4	valid_data_percent visualization in maps view % LA_FIGUEIRETTE tide gauge	70
6.4.5	Valid data (%) in function of distance to coast/LA_FIGUEIRETTE station	70
6.4.6	Std in function of distance to coast/LA_FIGUEIRETTE station	72
6.4.7	Correlation in function of distance to coast/LA_FIGUEIRETTE station	73
6.4.8	Taylor Diagram	74
6.4.9	Mean statistics table of products comparison with LA_FIGUEIRETTE tide gauge data	74
6.4.10	The most correlated sla altimetry Time series with the tide gauge sla time serie	75
6.5	Station : Ancona	77
6.5.1	correlation visualization in maps view % Ancona tide gauge	78
6.5.2	rmsd visualization in maps view % Ancona tide gauge	79
6.5.3	std visualization in maps view % Ancona tide gauge	80
6.5.4	valid_data_percent visualization in maps view % Ancona tide gauge	81
6.5.5	Valid data (%) in function of distance to coast/Ancona station	81
6.5.6	Std in function of distance to coast/Ancona station	83
6.5.7	Correlation in function of distance to coast/Ancona station	84
6.5.8	Taylor Diagram	85
6.5.9	Mean statistics table of products comparison with Ancona tide gauge data	85
6.5.10	The most correlated sla altimetry Time series with the tide gauge sla time serie	86
6.6	Station : Livourne	87

6.6.1	correlation visualization in maps view % Livourne tide gauge	88
6.6.2	rmsd visualization in maps view % Livourne tide gauge	89
6.6.3	std visualization in maps view % Livourne tide gauge	90
6.6.4	valid_data_percent visualization in maps view % Livourne tide gauge	91
6.6.5	Valid data (%) in function of distance to coast/Livourne station	91
6.6.6	Std in function of distance to coast/Livourne station	93
6.6.7	Correlation in function of distance to coast/Livourne station	94
6.6.8	Taylor Diagram	95
6.6.9	Mean statistics table of products comparison with Livourne tide gauge data	95
6.6.10	The most correlated sla altimetry Time series with the tide gauge sla time serie	96
6.7	Station : MONACO_FONTVIEILLE	98
6.7.1	correlation visualization in maps view % MONACO_FONTVIEILLE tide gauge	99
6.7.2	rmsd visualization in maps view % MONACO_FONTVIEILLE tide gauge	100
6.7.3	std visualization in maps view % MONACO_FONTVIEILLE tide gauge	101
6.7.4	valid_data_percent visualization in maps view % MONACO_FONTVIEILLE tide gauge	102
6.7.5	Valid data (%) in function of distance to coast/MONACO_FONTVIEILLE station	102
6.7.6	Std in function of distance to coast/MONACO_FONTVIEILLE station	104
6.7.7	Correlation in function of distance to coast/MONACO_FONTVIEILLE station	105
6.7.8	Taylor Diagram	106
6.7.9	Mean statistics table of products comparison with MONACO_FONTVIEILLE tide gauge data	106
6.7.10	The most correlated sla altimetry Time series with the tide gauge sla time serie	107
6.8	Station : Erdemli	108
6.8.1	correlation visualization in maps view % Erdemli tide gauge	109
6.8.2	rmsd visualization in maps view % Erdemli tide gauge	110
6.8.3	std visualization in maps view % Erdemli tide gauge	111
6.8.4	valid_data_percent visualization in maps view % Erdemli tide gauge	112
6.8.5	Valid data (%) in function of distance to coast/Erdemli station	112
6.8.6	Std in function of distance to coast/Erdemli station	114
6.8.7	Correlation in function of distance to coast/Erdemli station	115
6.8.8	Taylor Diagram	116
6.8.9	Mean statistics table of products comparison with Erdemli tide gauge data	116
6.8.10	The most correlated sla altimetry Time series with the tide gauge sla time serie	117
6.9	Station : Almeria	119
6.9.1	correlation visualization in maps view % Almeria tide gauge	120
6.9.2	rmsd visualization in maps view % Almeria tide gauge	121
6.9.3	std visualization in maps view % Almeria tide gauge	122
6.9.4	valid_data_percent visualization in maps view % Almeria tide gauge	123
6.9.5	Valid data (%) in function of distance to coast/Almeria station	123
6.9.6	Std in function of distance to coast/Almeria station	125
6.9.7	Correlation in function of distance to coast/Almeria station	126
6.9.8	Taylor Diagram	127
6.9.9	Mean statistics table of products comparison with Almeria tide gauge data	127
6.9.10	The most correlated sla altimetry Time series with the tide gauge sla time serie	128
6.10	Station : Civitavecchia	129
6.10.1	correlation visualization in maps view % Civitavecchia tide gauge	130

6.10.2	rmsd visualization in maps view % Civitavecchia tide gauge	131
6.10.3	std visualization in maps view % Civitavecchia tide gauge	132
6.10.4	valid_data_percent visualization in maps view % Civitavecchia tide gauge	133
6.10.5	Valid data (%) in function of distance to coast/Civitavecchia station	133
6.10.6	Std in function of distance to coast/Civitavecchia station	135
6.10.7	Correlation in function of distance to coast/Civitavecchia station	136
6.10.8	Taylor Diagram	137
6.10.9	Mean statistics table of products comparison with Civitavecchia tide gauge data	137
6.10.10	The most correlated sla altimetry Time series with the tide gauge sla time serie	138
6.11	Station : FOS-SUR-MER	140
6.11.1	correlation visualization in maps view % FOS-SUR-MER tide gauge	141
6.11.2	rmsd visualization in maps view % FOS-SUR-MER tide gauge	142
6.11.3	std visualization in maps view % FOS-SUR-MER tide gauge	143
6.11.4	valid_data_percent visualization in maps view % FOS-SUR-MER tide gauge	144
6.11.5	Valid data (%) in function of distance to coast/FOS-SUR-MER station	144
6.11.6	Std in function of distance to coast/FOS-SUR-MER station	146
6.11.7	Correlation in function of distance to coast/FOS-SUR-MER station	147
6.11.8	Taylor Diagram	148
6.11.9	Mean statistics table of products comparison with FOS-SUR-MER tide gauge data	148
6.11.10	The most correlated sla altimetry Time series with the tide gauge sla time serie	149

Table des figures

1	Spatial coherence analysis of the count of the Iono_filtered version of sla variable	9
2	Spatial coherence analysis of the count of the Iono_gim version of sla variable	10
3	Spatial coherence analysis of the Difference in sla 's count between Iono_filtered and Iono_gim	11
4	Spatial coherence analysis of the std of the Iono_filtered version of sla variable	12
5	Spatial coherence analysis of the std of the Iono_gim version of sla variable	13
6	Spatial coherence analysis of the Difference in sla 's std between Iono_filtered and Iono_gim	14
7	Spatial coherence analysis of the mean of the Iono_filtered version of sla variable	15
8	Spatial coherence analysis of the mean of the Iono_gim version of sla variable	16
9	Spatial coherence analysis of the Difference in sla 's mean between Iono_filtered and Iono_gim	17
10	Spatial coherence analysis of the count of the Iono_filtered version of Iono variable	18
11	Spatial coherence analysis of the count of the Iono_gim version of Iono variable	19
12	Spatial coherence analysis of the Difference in Iono 's count between Iono_filtered and Iono_gim	20
13	Spatial coherence analysis of the std of the Iono_filtered version of Iono variable	21
14	Spatial coherence analysis of the std of the Iono_gim version of Iono variable	22
15	Spatial coherence analysis of the Difference in Iono 's std between Iono_filtered and Iono_gim	23
16	Spatial coherence analysis of the mean of the Iono_filtered version of Iono variable	24
17	Spatial coherence analysis of the mean of the Iono_gim version of Iono variable	25
18	Spatial coherence analysis of the Difference in Iono 's mean between Iono_filtered and Iono_gim	26
19	Histogram of each of Iono version	27
20	Histograms of difference of each Iono version and reference one	28
21	Histograms of the standard deviation of each Iono version	29
22	Histograms of the standard deviation of each sla version	30

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

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

113	rmsd visualization in maps view % Almeria tide gauge	121
114	std visualization in maps view % Almeria tide gauge	122
115	valid_data_percent visualization in maps view % Almeria tide gauge	123
116	Valid data (%) in function of distance to coast/Almeria station	124
117	Std in function of the distance to the coast/Almeria station	125
118	Correlation in function of the distance to the coast/Almeria station	126
119	Taylor diagram	127
120	Mean statistics table of the common points in the altimetry products	128
121	The 1st most correlated sla altimetry Time serie with tide gauge sla time serie	129
122	correlation visualization in maps view % Civitavecchia tide gauge	130
123	rmsd visualization in maps view % Civitavecchia tide gauge	131
124	std visualization in maps view % Civitavecchia tide gauge	132
125	valid_data_percent visualization in maps view % Civitavecchia tide gauge	133
126	Valid data (%) in function of distance to coast/Civitavecchia station	134
127	Std in function of the distance to the coast/Civitavecchia station	135
128	Correlation in function of the distance to the coast/Civitavecchia station	136
129	Taylor diagram	137
130	Mean statistics table of the common points in the altimetry products	138
131	The 1st most correlated sla altimetry Time serie with tide gauge sla time serie	139
132	The 2nd most correlated sla altimetry Time serie with tide gauge sla time serie	140
133	correlation visualization in maps view % FOS-SUR-MER tide gauge	141
134	rmsd visualization in maps view % FOS-SUR-MER tide gauge	142
135	std visualization in maps view % FOS-SUR-MER tide gauge	143
136	valid_data_percent visualization in maps view % FOS-SUR-MER tide gauge	144
137	Valid data (%) in function of distance to coast/FOS-SUR-MER station	145
138	Std in function of the distance to the coast/FOS-SUR-MER station	146
139	Correlation in function of the distance to the coast/FOS-SUR-MER station	147
140	Taylor diagram	148
141	Mean statistics table of the common points in the altimetry products	149
142	The 1st most correlated sla altimetry Time serie with tide gauge sla time serie	150

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 Ionospheric correction used to calculate the sea level anomaly. Each version has been compared with a reference version. In this case the Iono_gim 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 : 0.5 Mettre à jour les rapports de la wet, range et tide apres application de binning X-track
- Git changeset number : 8fa7971-2022-04-07

2 Processing

2.1 sla formula

2.1.1 Iono_filtered product ' sla

$$\text{sla} = \text{ORBIT.ALT.CNES_POE_F} - \text{RANGE.ALT} - \text{MEAN_SEA_SURFACE.MODEL.CNESCLS15} - \text{SEA_STATE_BIAS.ALT}$$
$$- \text{IONOSPHERIC_CORRECTION.ALT.FILTR} - \text{WET_TROPOSPHERIC_CORRECTION.RAD} - \text{DRY_TROPOSPHERIC_CORRECTION.M}$$
$$- \text{DYNAMICAL_ATMOSPHERIC_CORRECTION.MODEL.MOG2D_HR} - \text{OCEAN_TIDE_HEIGHT.MODEL.FES14B} - \text{SO-}$$
$$\text{LID_EARTH_TIDE_HEIGHT.MODEL.CARTWRIGHT_TAYLER_71} - \text{POLE_TIDE_HEIGHT.MODEL.DESAI_2015}$$

2.1.2 Iono_gim product ' sla

$$\text{sla} = \text{ORBIT.ALT.CNES_POE_F} - \text{RANGE.ALT} - \text{MEAN_SEA_SURFACE.MODEL.CNESCLS15} - \text{SEA_STATE_BIAS.ALT}$$
$$- \text{IONOSPHERIC_CORRECTION.MODEL.GIM} - \text{WET_TROPOSPHERIC_CORRECTION.RAD} - \text{DRY_TROPOSPHERIC_CORRECTION.M}$$
$$- \text{DYNAMICAL_ATMOSPHERIC_CORRECTION.MODEL.MOG2D_HR} - \text{OCEAN_TIDE_HEIGHT.MODEL.FES14B} - \text{SO-}$$
$$\text{LID_EARTH_TIDE_HEIGHT.MODEL.CARTWRIGHT_TAYLER_71} - \text{POLE_TIDE_HEIGHT.MODEL.DESAI_2015}$$

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 its 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 filtered 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 sla

3.1.1 sla's count

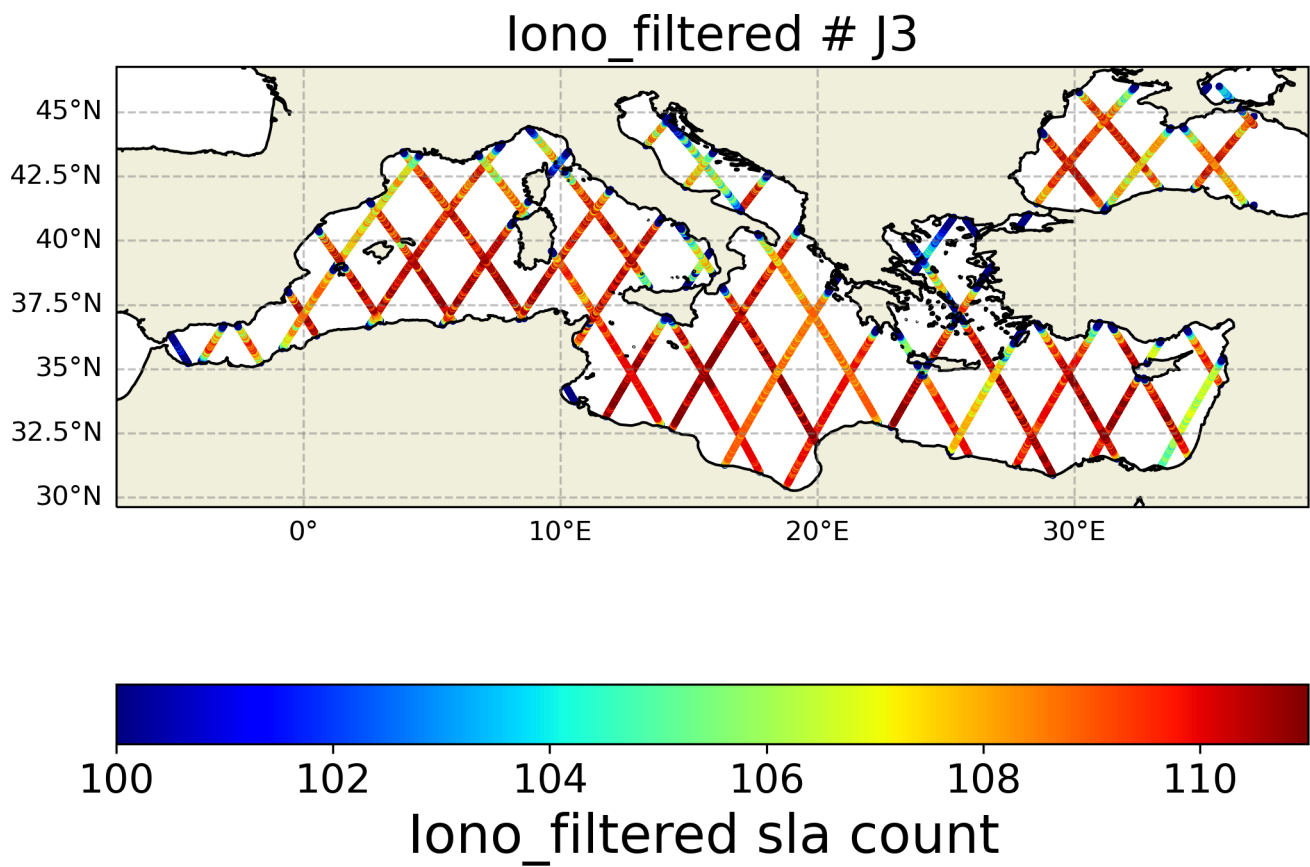


FIGURE 1 – Spatial coherence analysis of the count of the Iono_filtered version of sla variable

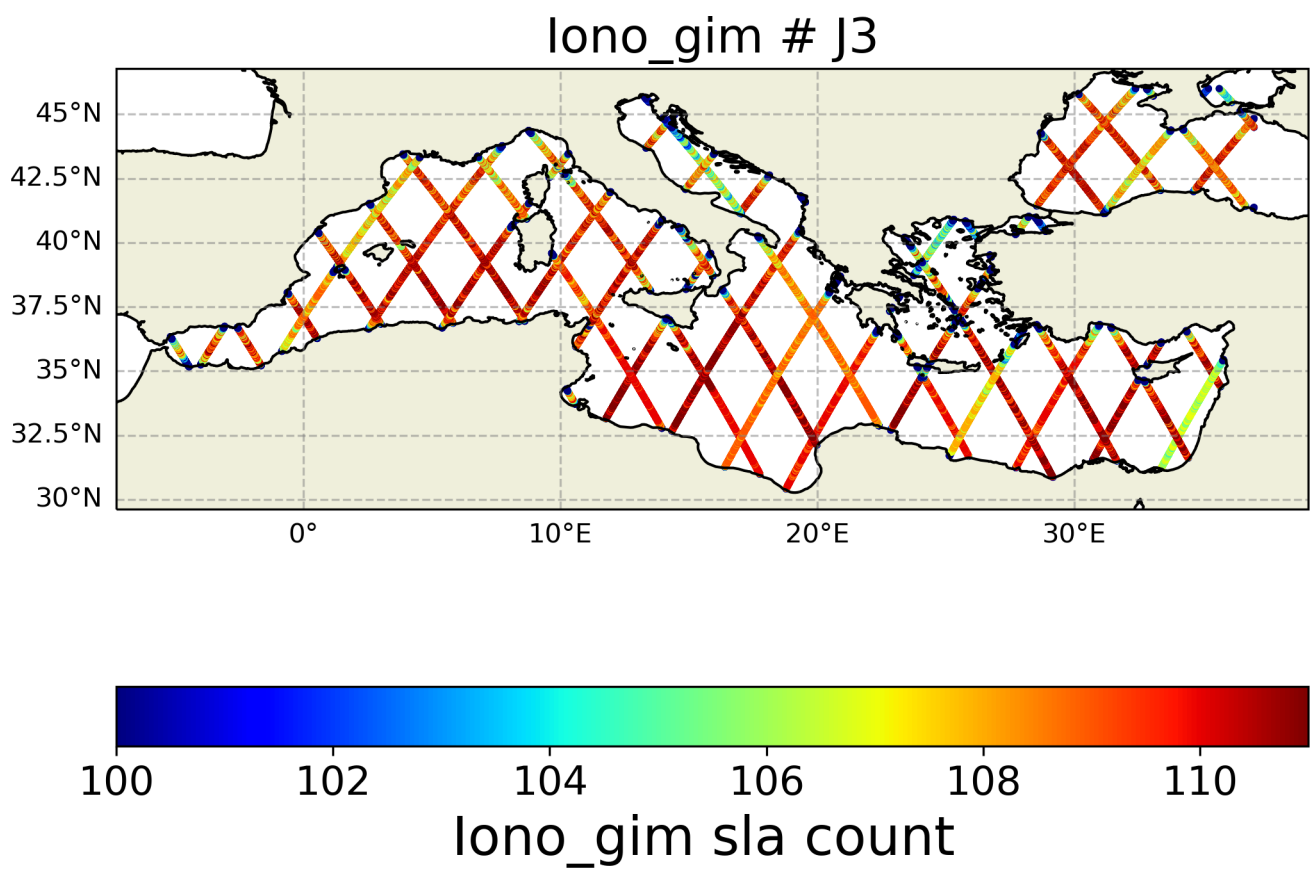


FIGURE 2 – Spatial coherence analysis of the count of the Iono_gim version of sla variable

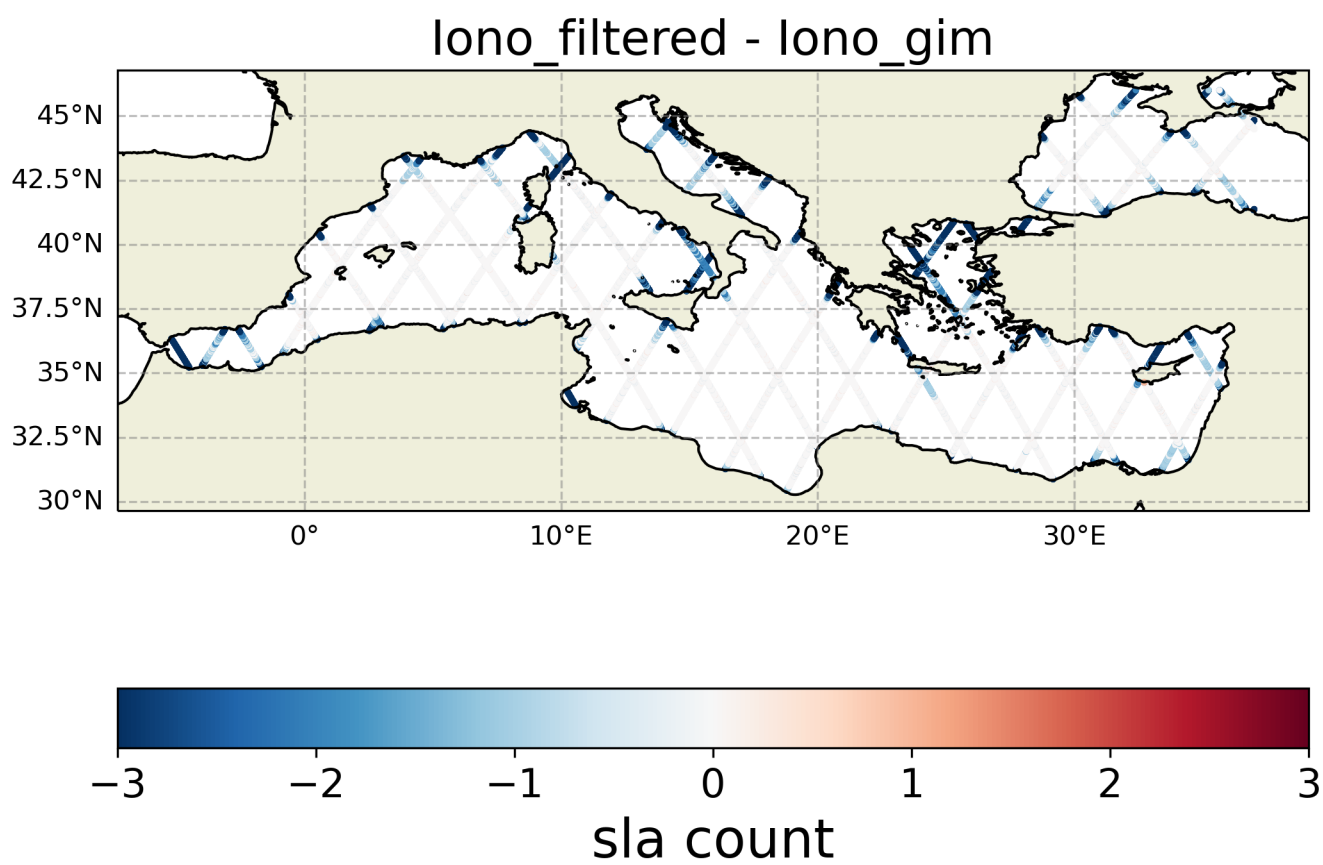


FIGURE 3 – Spatial coherence analysis of the Difference in sla 's count between Iono_filtered and Iono_gim

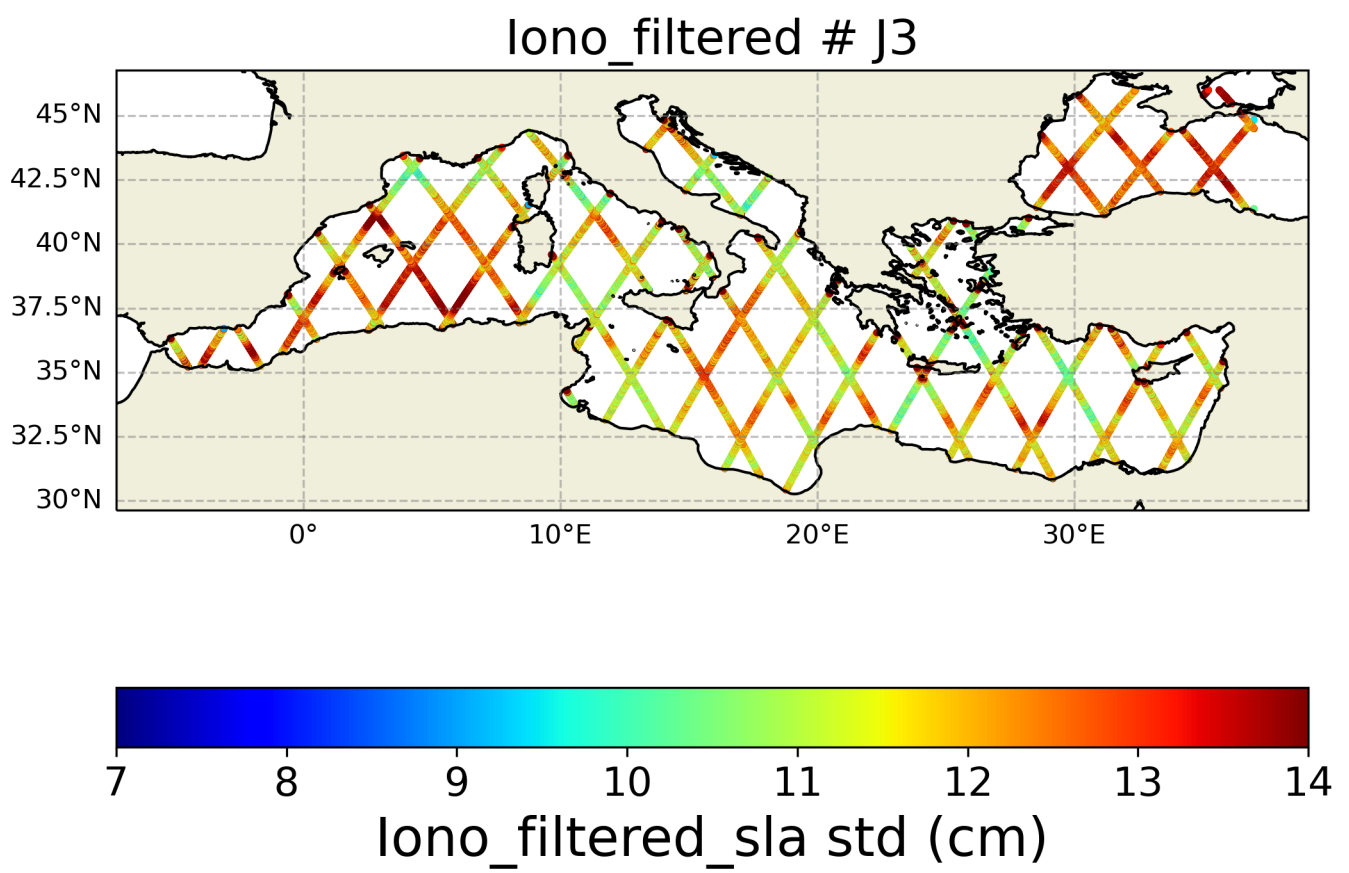


FIGURE 4 – Spatial coherence analysis of the std of the lono_filtered version of sla variable

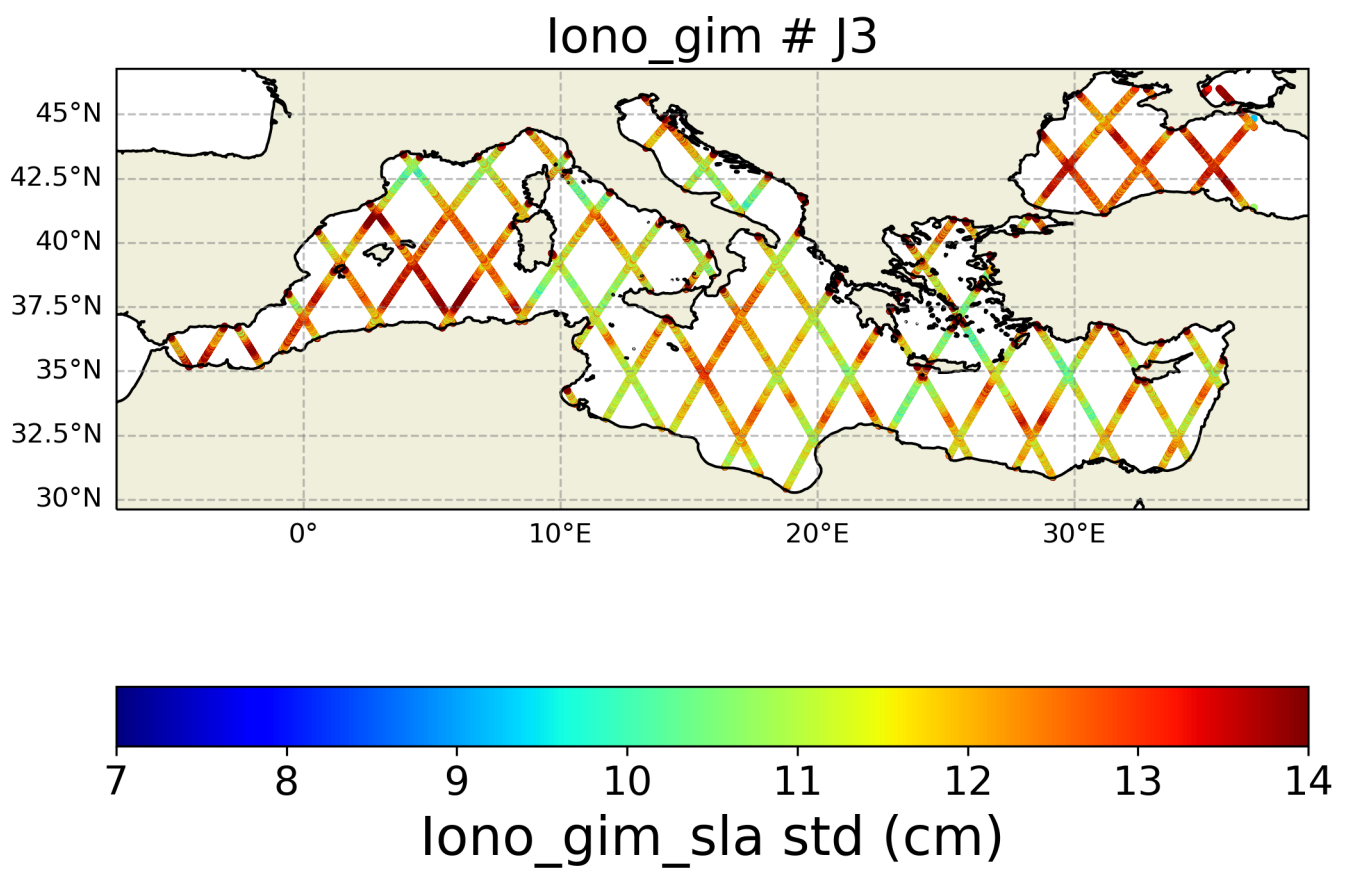


FIGURE 5 – Spatial coherence analysis of the std of the Iono_gim version of sla variable

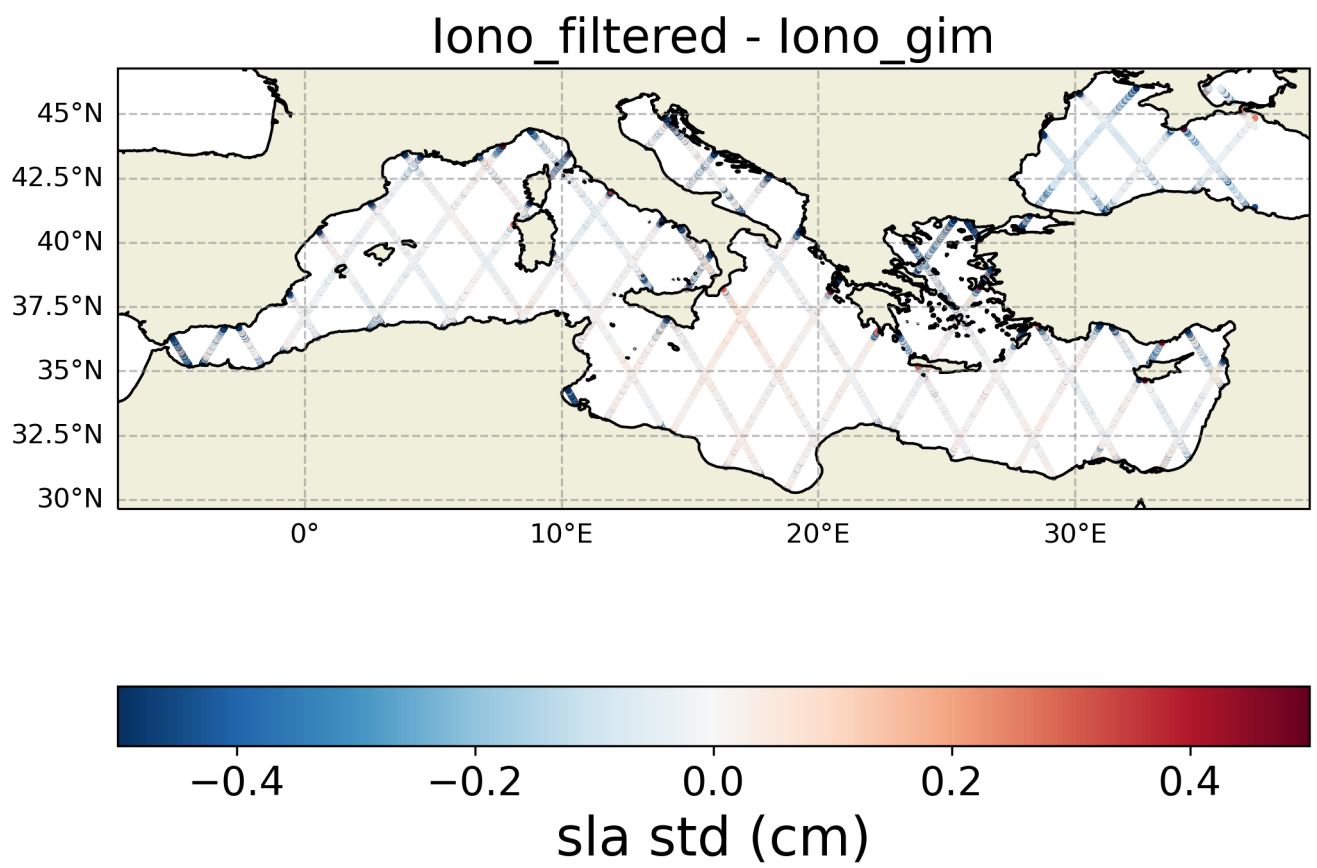


FIGURE 6 – Spatial coherence analysis of the Difference in sla 's std between Iono_filtered and Iono_gim

3.1.3 sla's mean

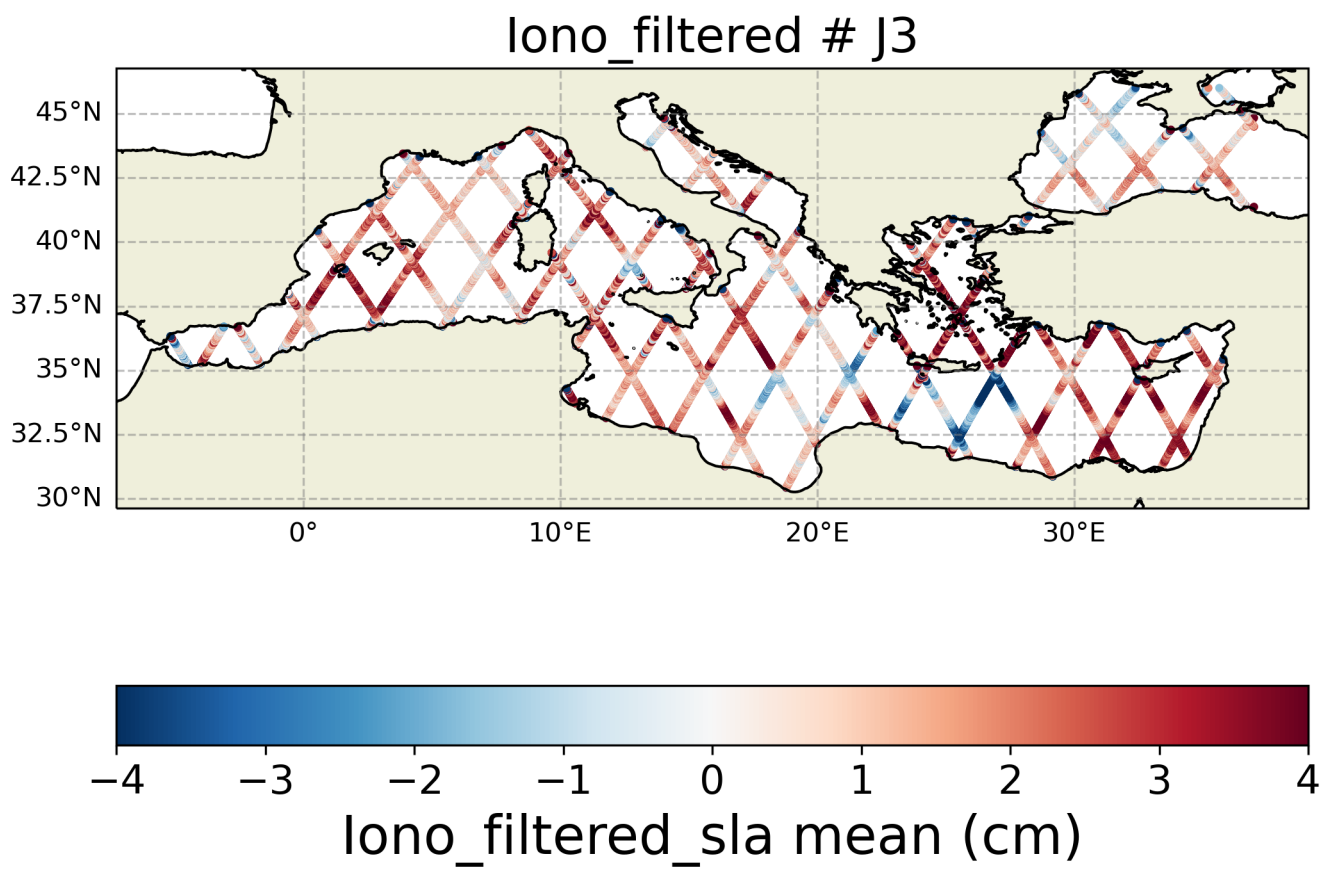


FIGURE 7 – Spatial coherence analysis of the mean of the lono_filtered version of sla variable

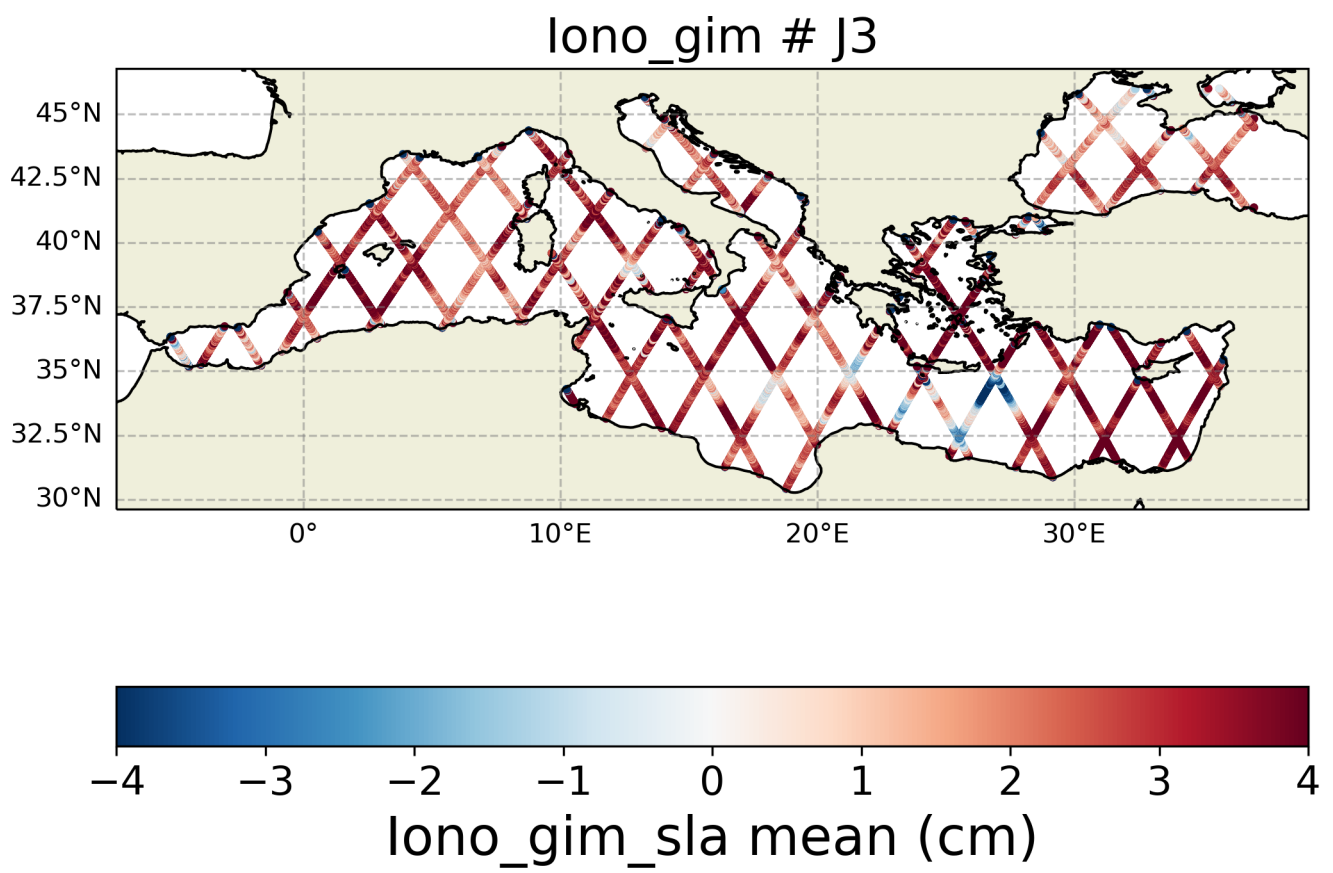


FIGURE 8 – Spatial coherence analysis of the mean of the Iono_gim version of sla variable

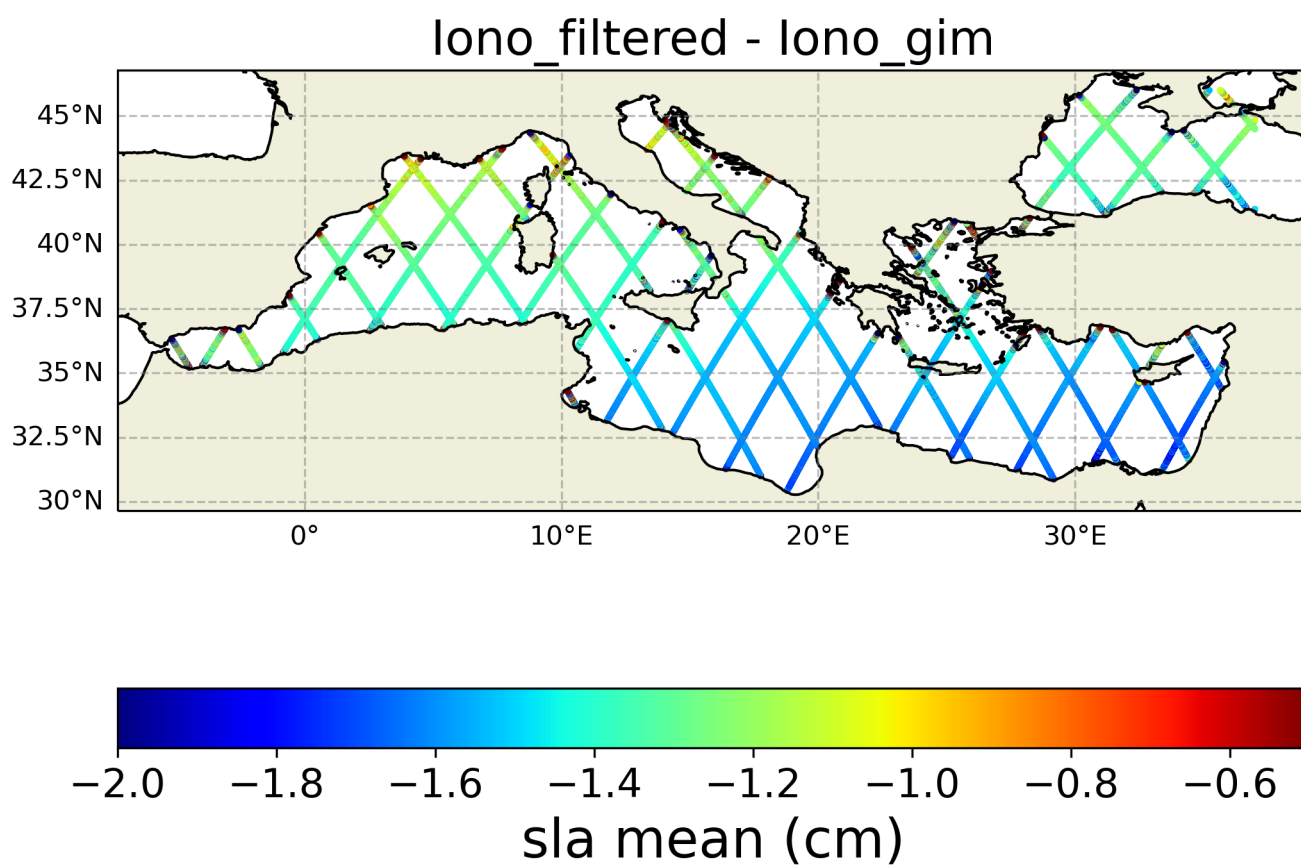


FIGURE 9 – Spatial coherence analysis of the Difference in sla 's mean between Iono_filtered and Iono_gim

3.2 Iono

3.2.1 Iono's count

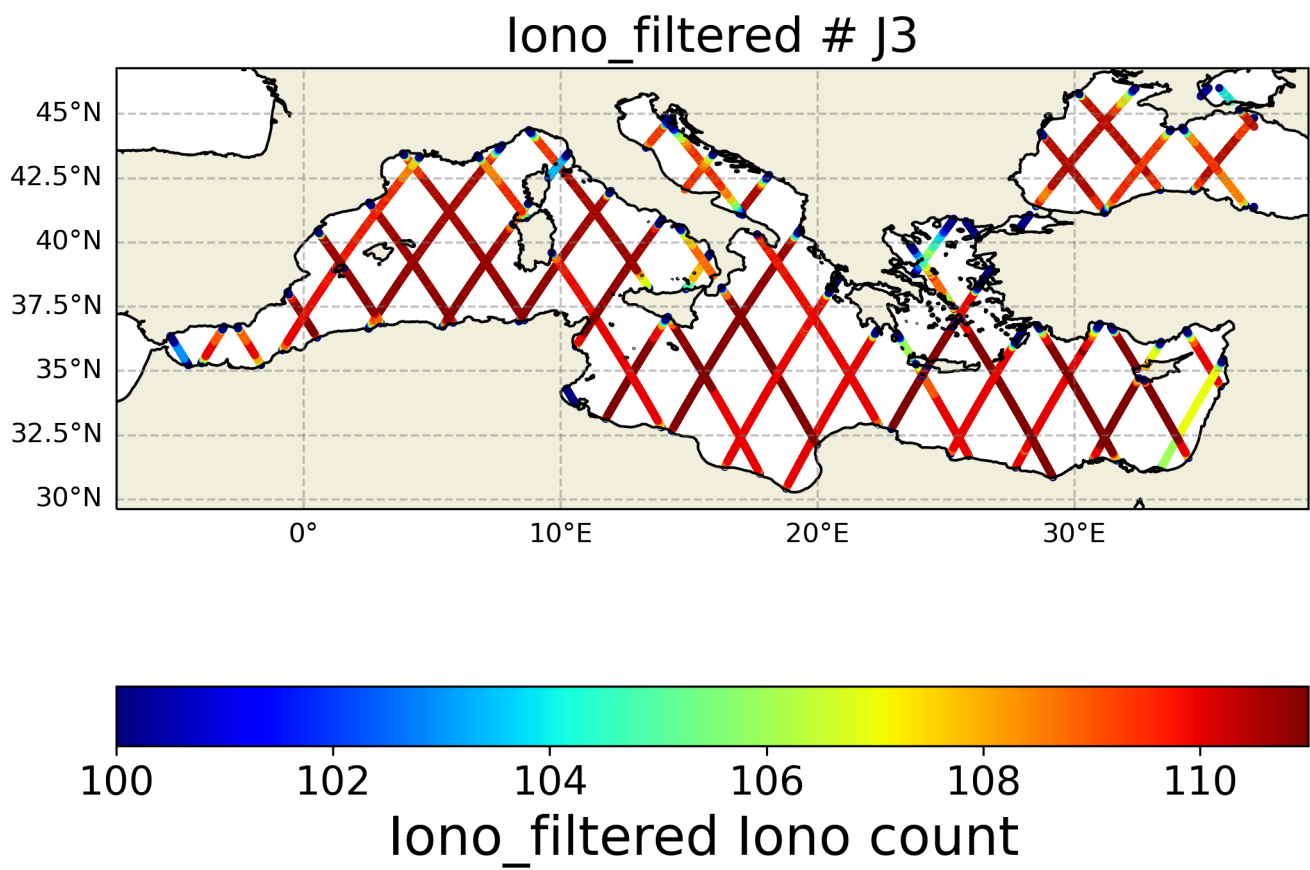


FIGURE 10 – Spatial coherence analysis of the count of the Iono_filtered version of Iono variable

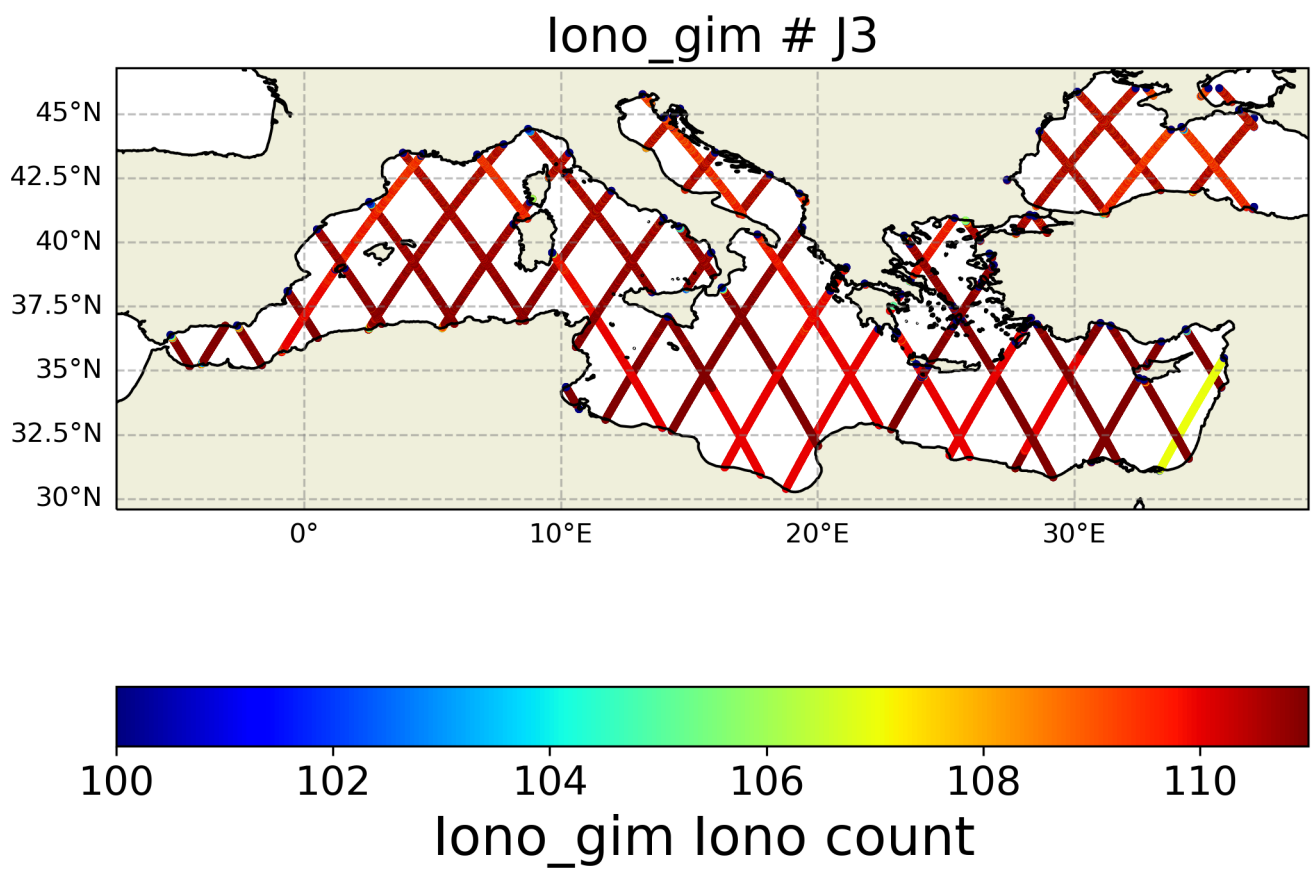


FIGURE 11 – Spatial coherence analysis of the count of the Iono_gim version of Iono variable

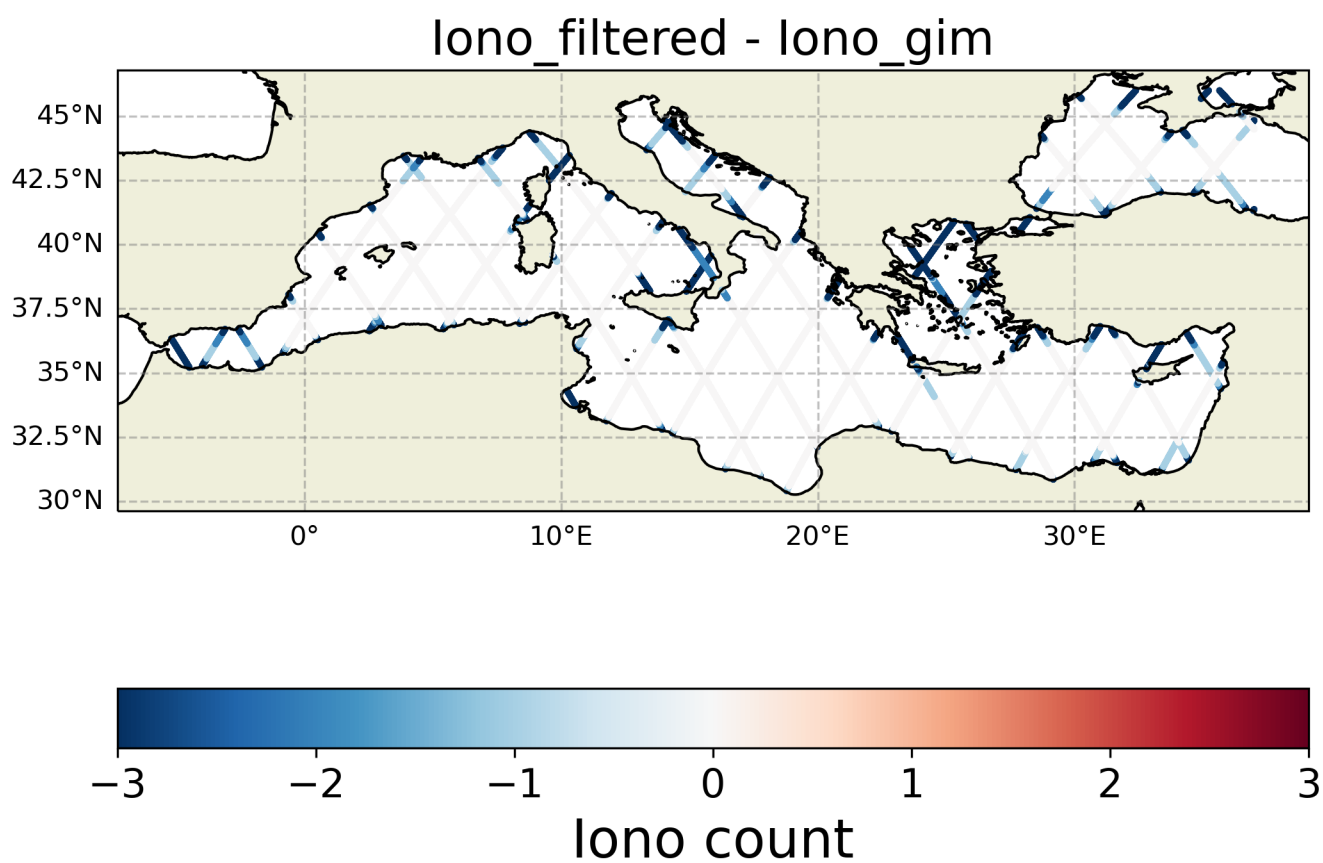


FIGURE 12 – Spatial coherence analysis of the Difference in Iono 's count between Iono_filtered and Iono_gim

3.2.2 Iono's std

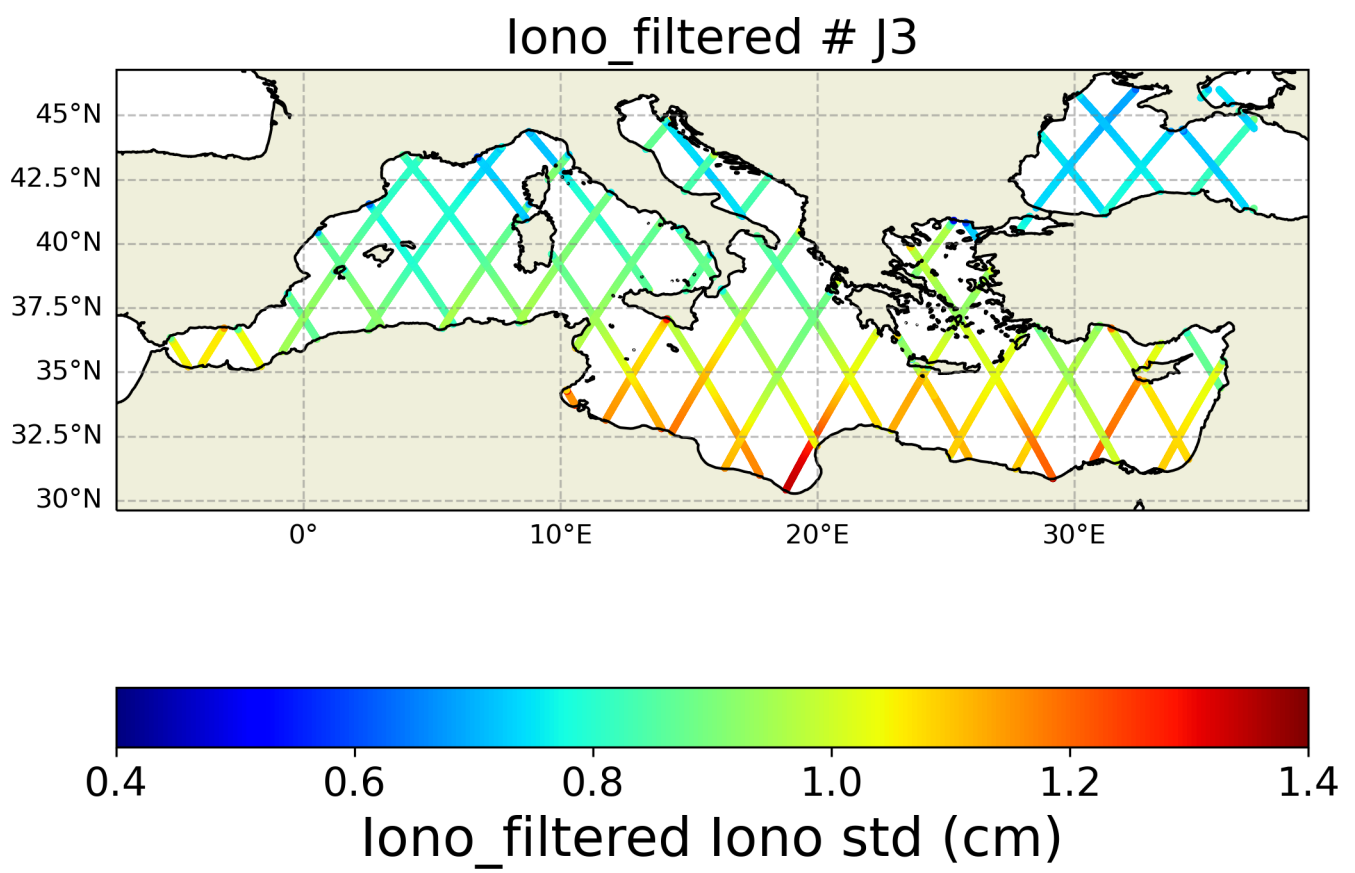


FIGURE 13 – Spatial coherence analysis of the std of the Iono_filtered version of Iono variable

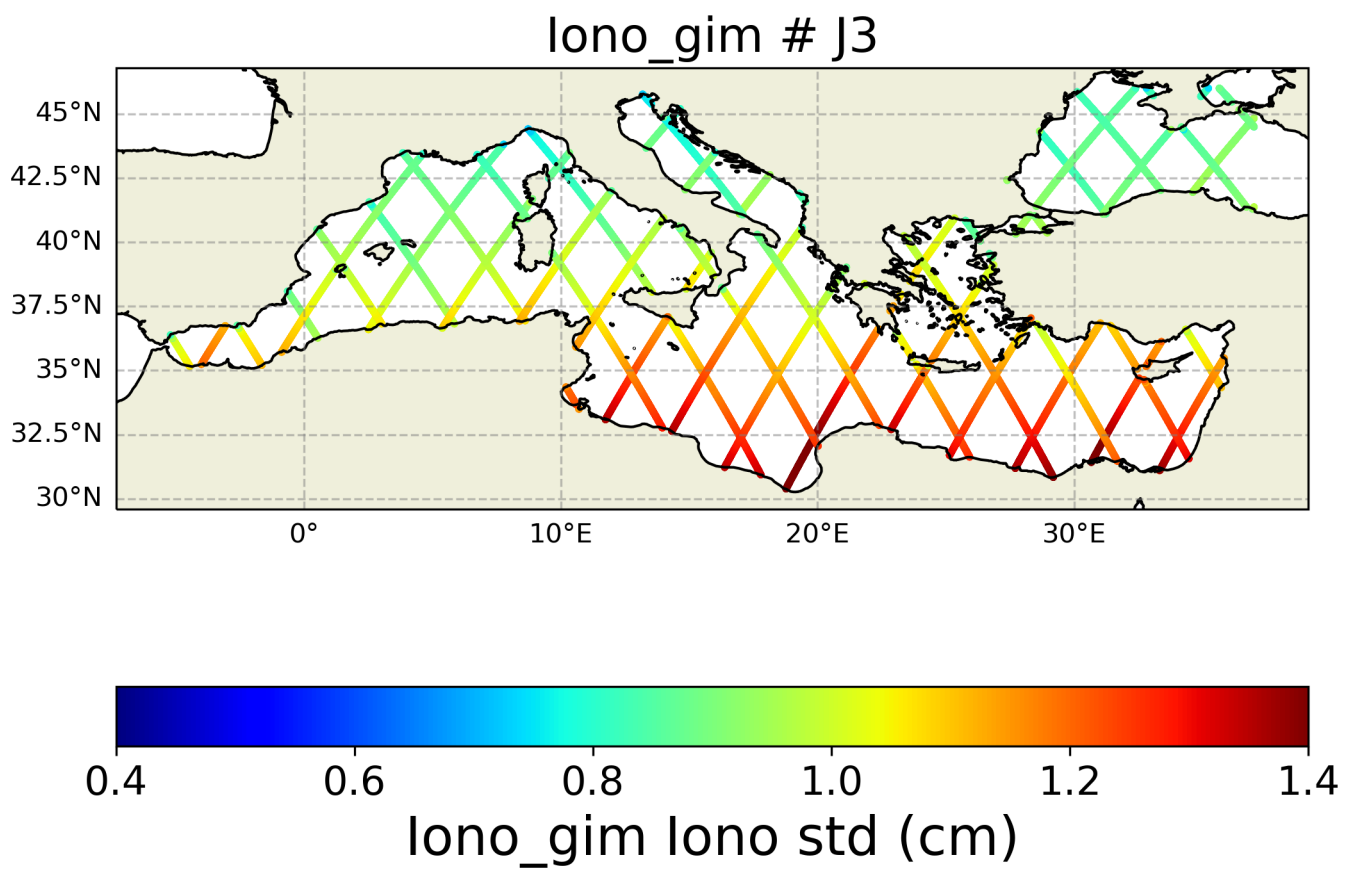


FIGURE 14 – Spatial coherence analysis of the std of the Iono_gim version of Iono variable

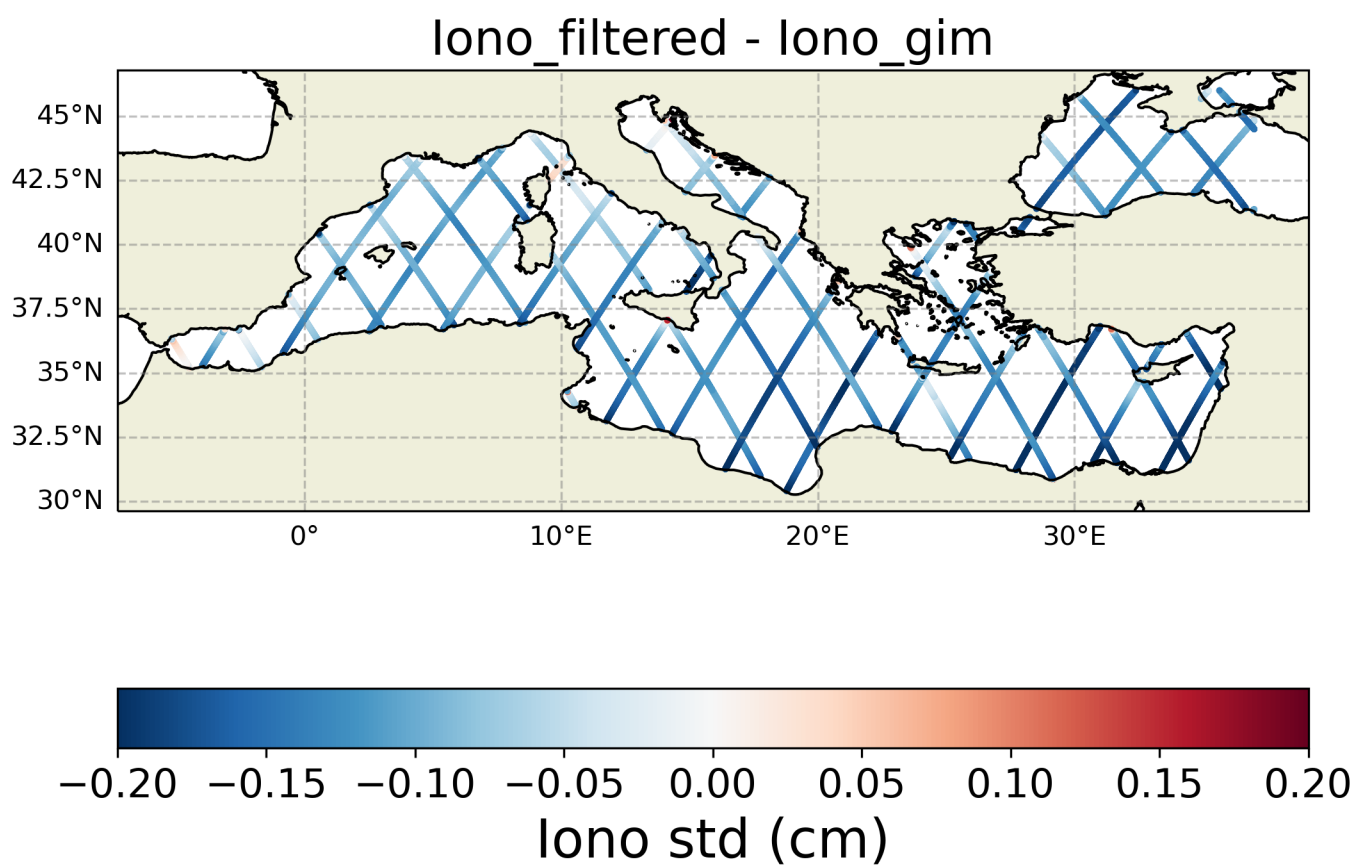


FIGURE 15 – Spatial coherence analysis of the Difference in Iono 's std between Iono_filtered and Iono_gim

3.2.3 Iono's mean

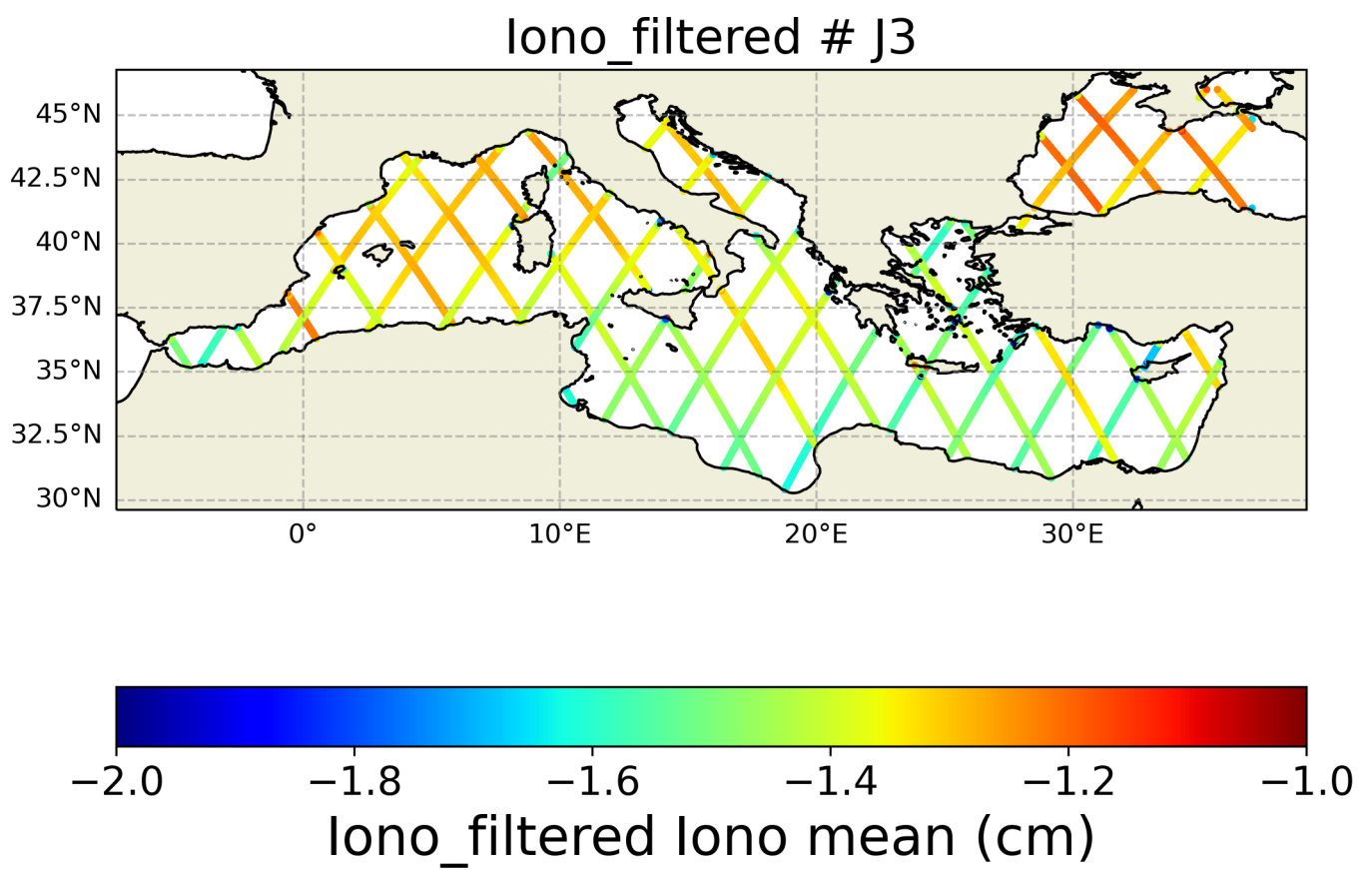


FIGURE 16 – Spatial coherence analysis of the mean of the Iono_filtered version of Iono variable

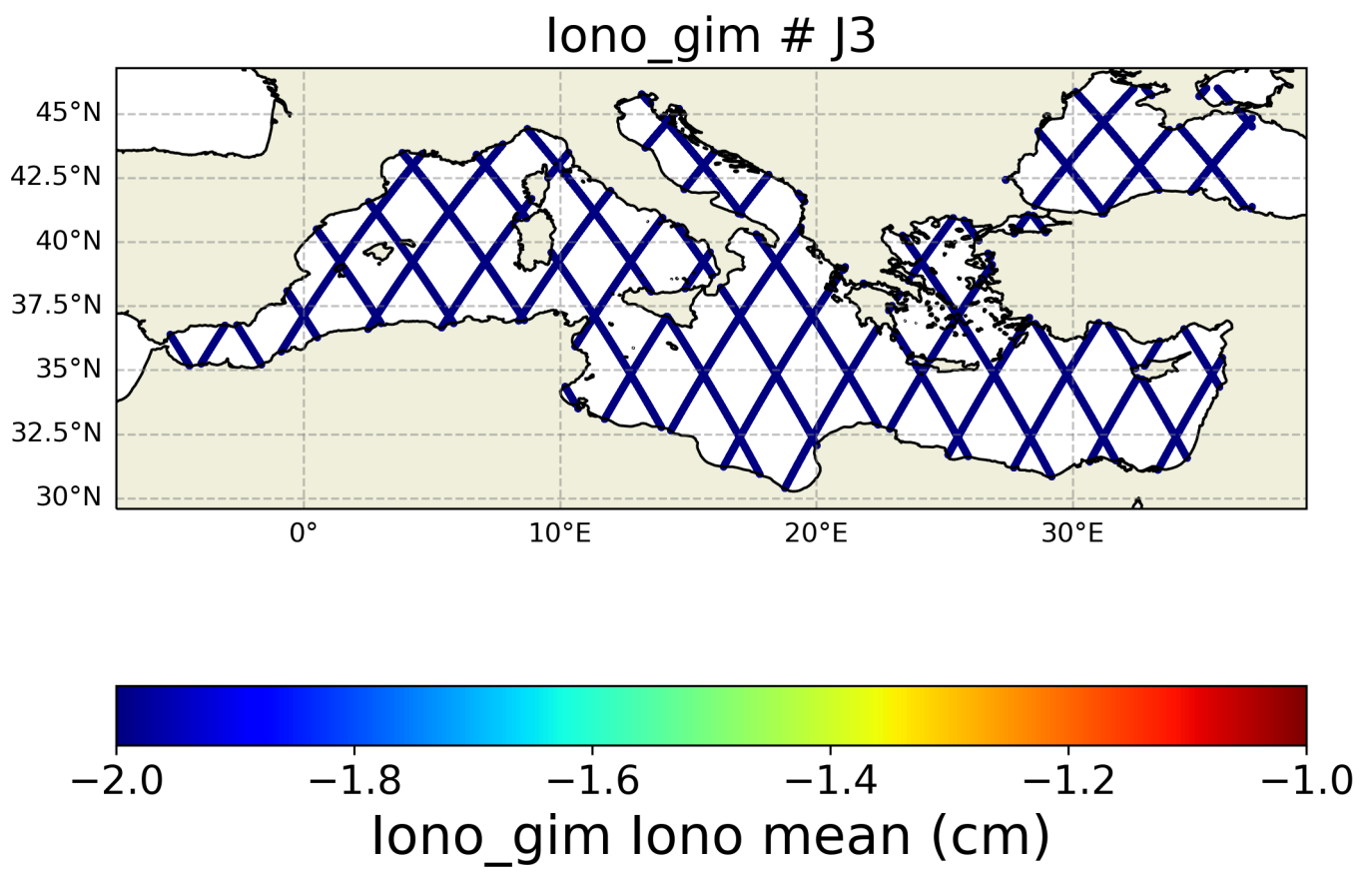


FIGURE 17 – Spatial coherence analysis of the mean of the Iono_gim version of Iono variable

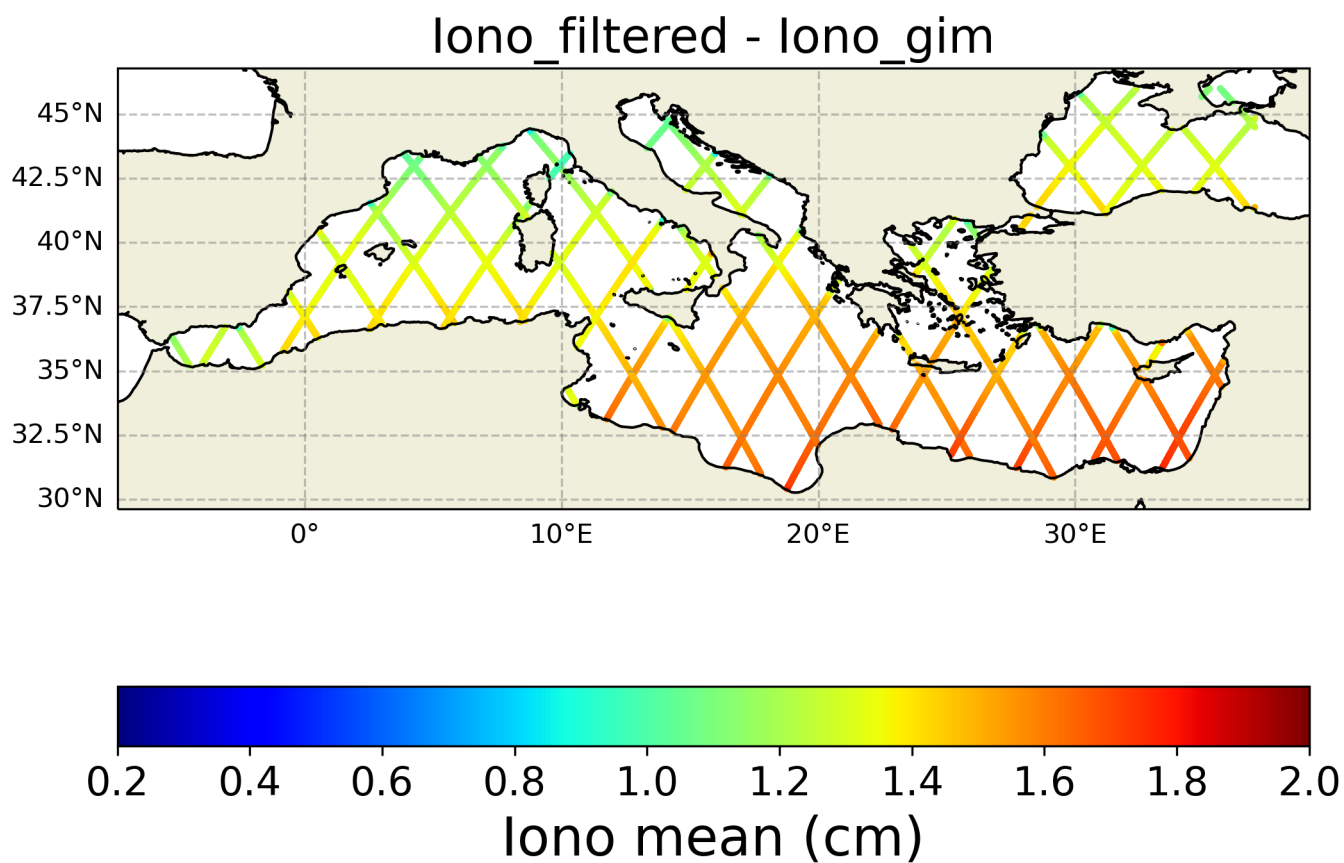


FIGURE 18 – Spatial coherence analysis of the Difference in Iono 's mean between Iono_filtered and Iono_gim

4 Histograms

4.1 Iono

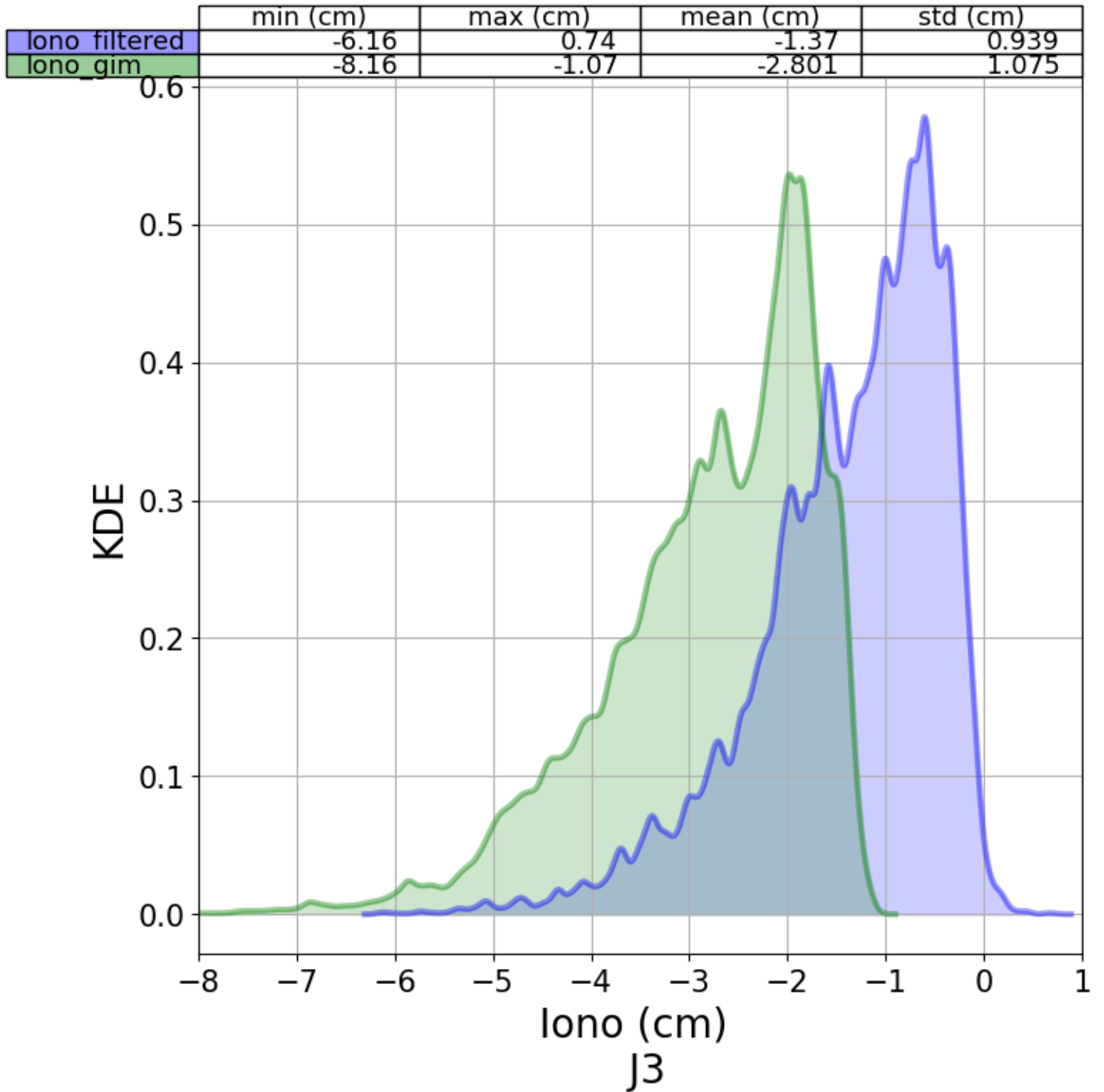


FIGURE 19 – Histogram of each of Iono version

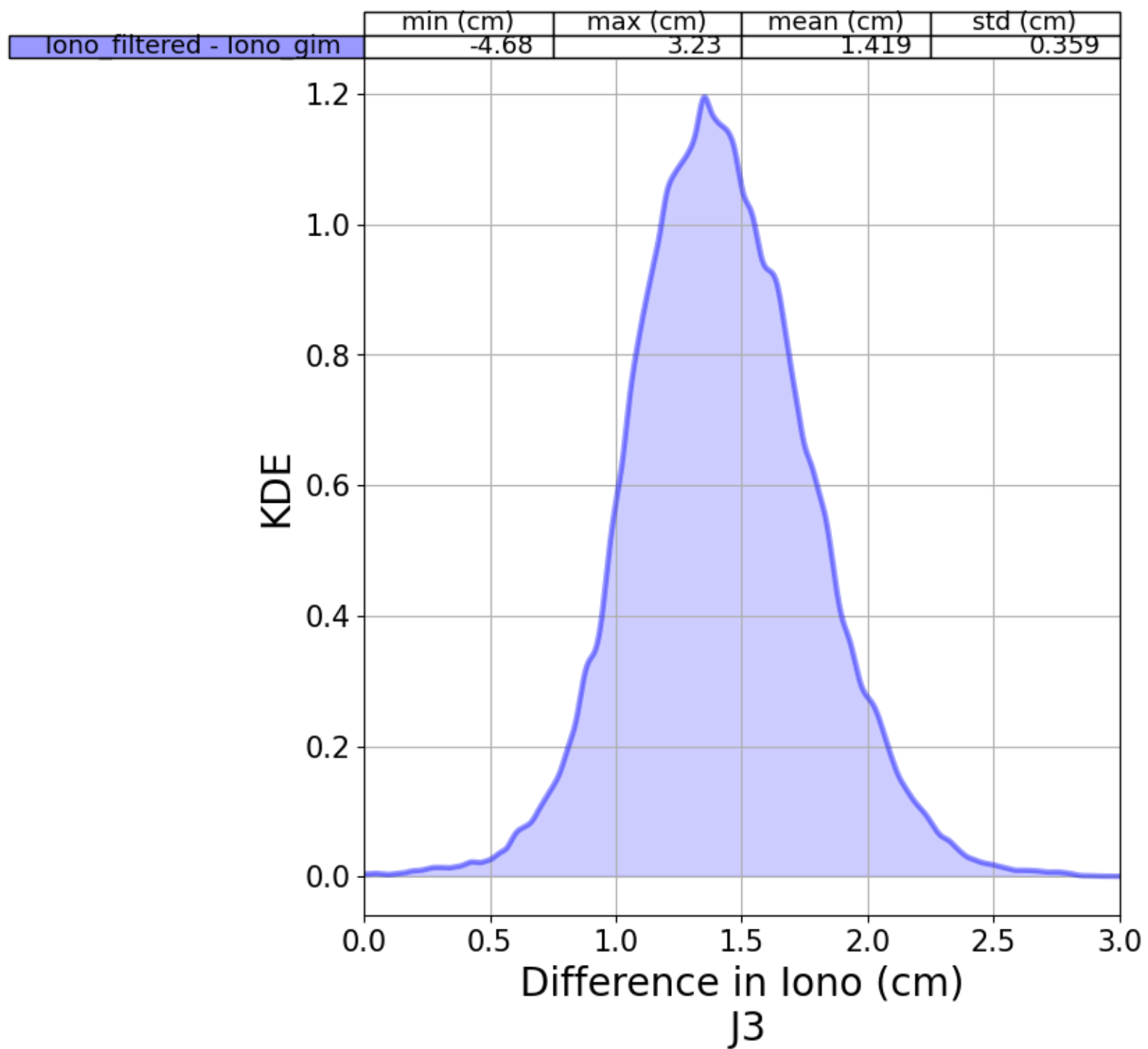


FIGURE 20 – Histograms of difference of each Iono version and reference one

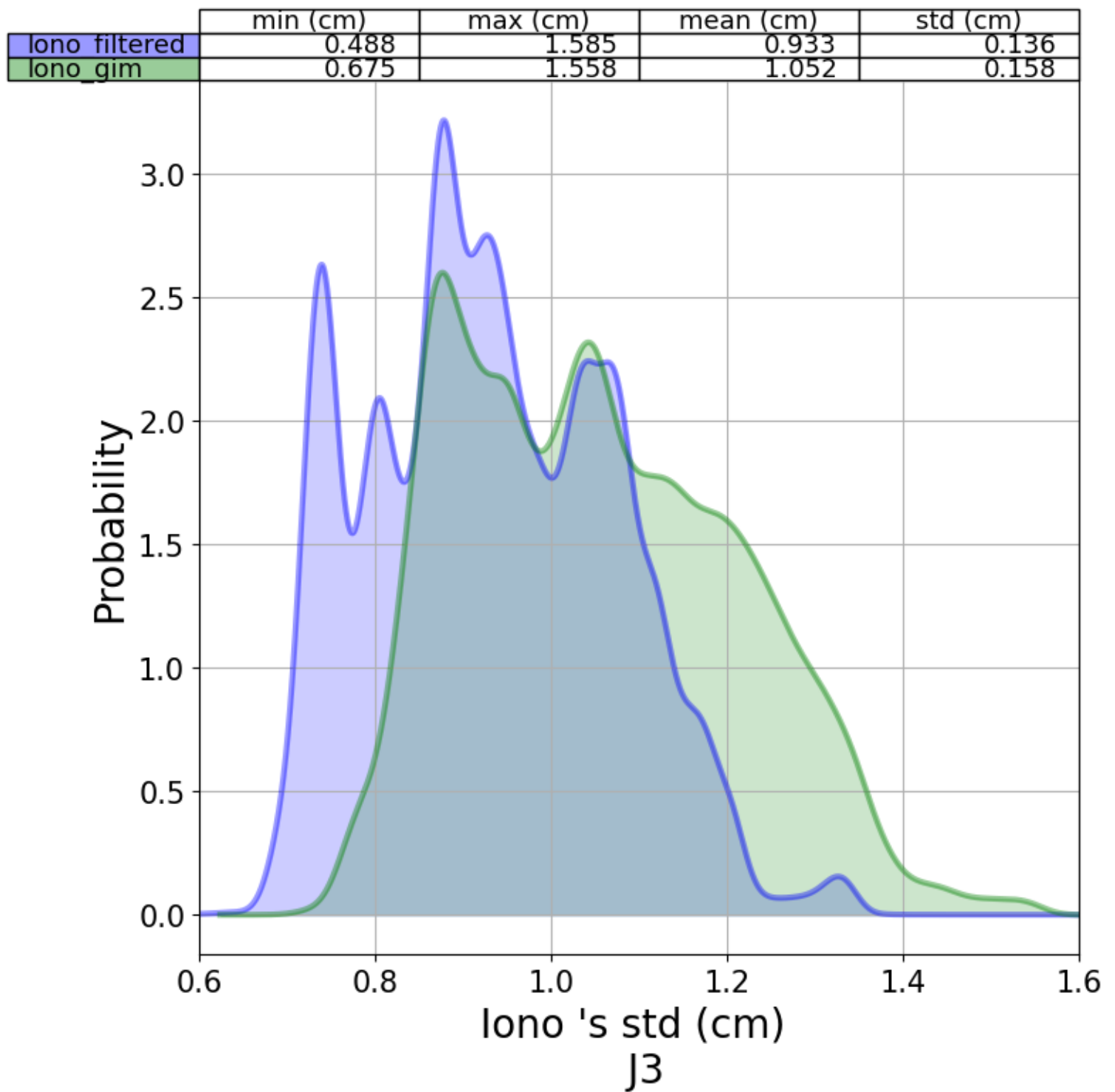


FIGURE 21 – Histograms of the standard deviation of each Iono version

4.2 sla

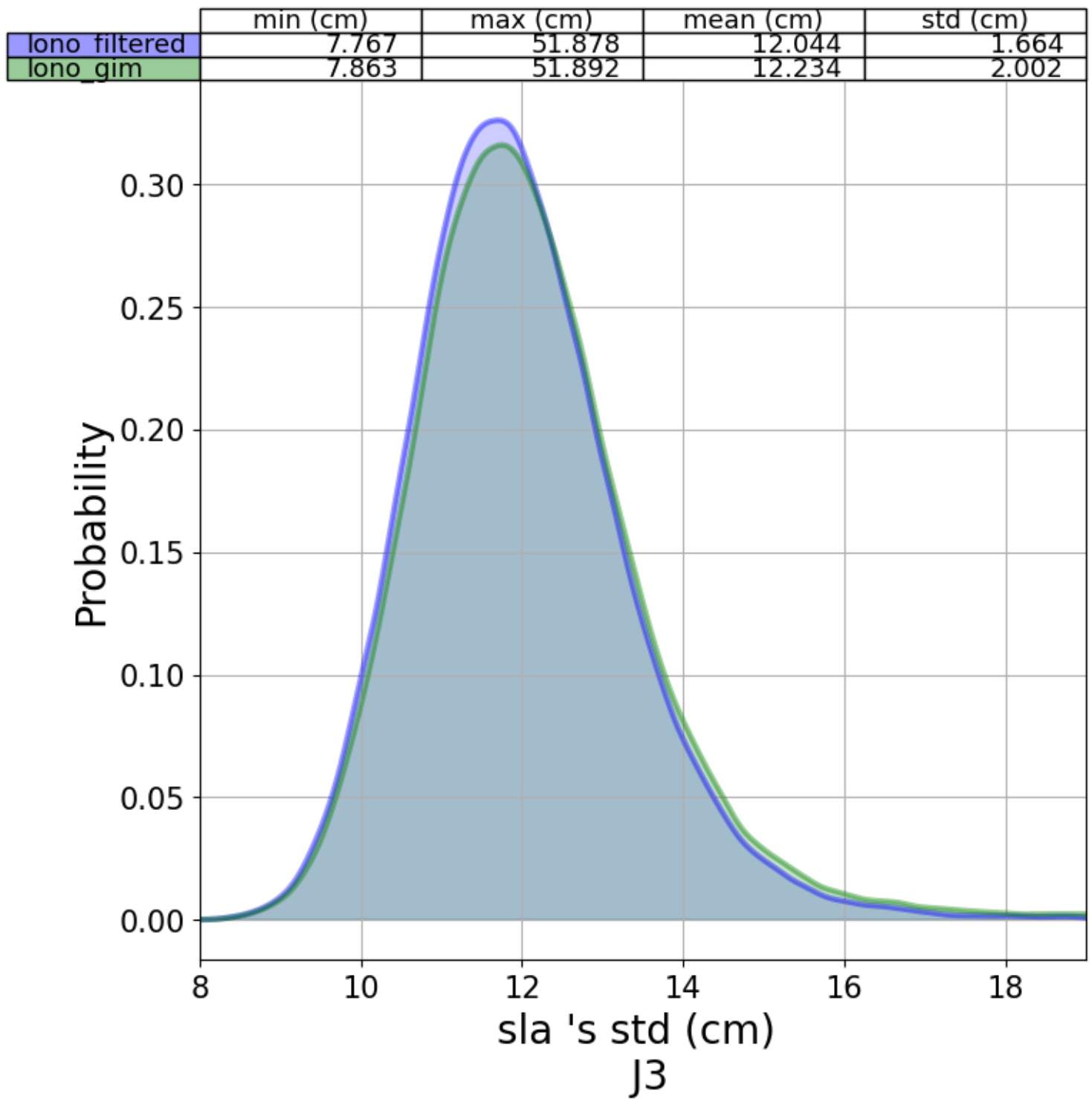


FIGURE 22 – Histograms of the standard deviation of each sla version

5 Along-track analysis

5.1 Iono

5.1.1 Iono's count

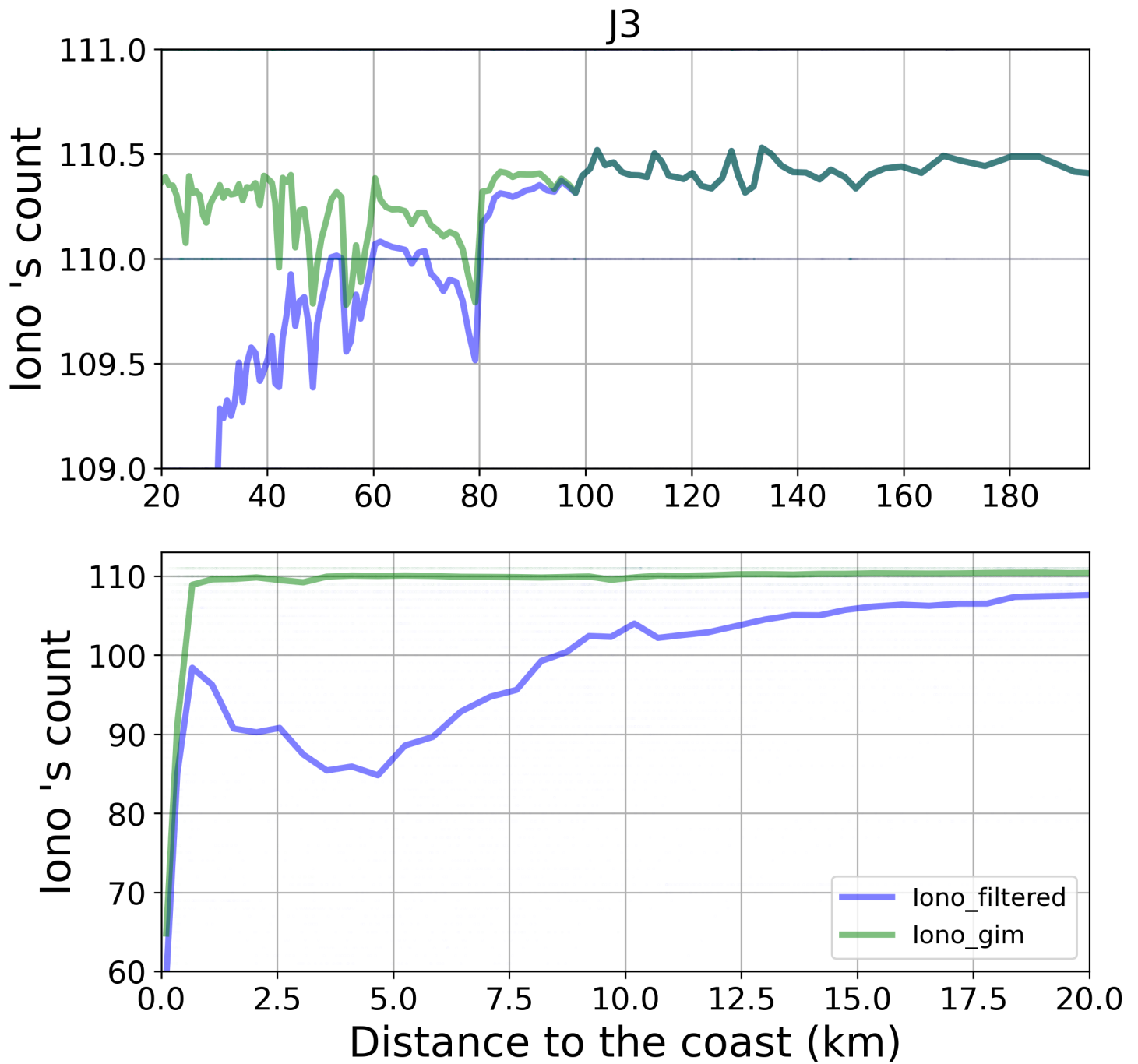


FIGURE 23 – Along-track analysis of Iono's count

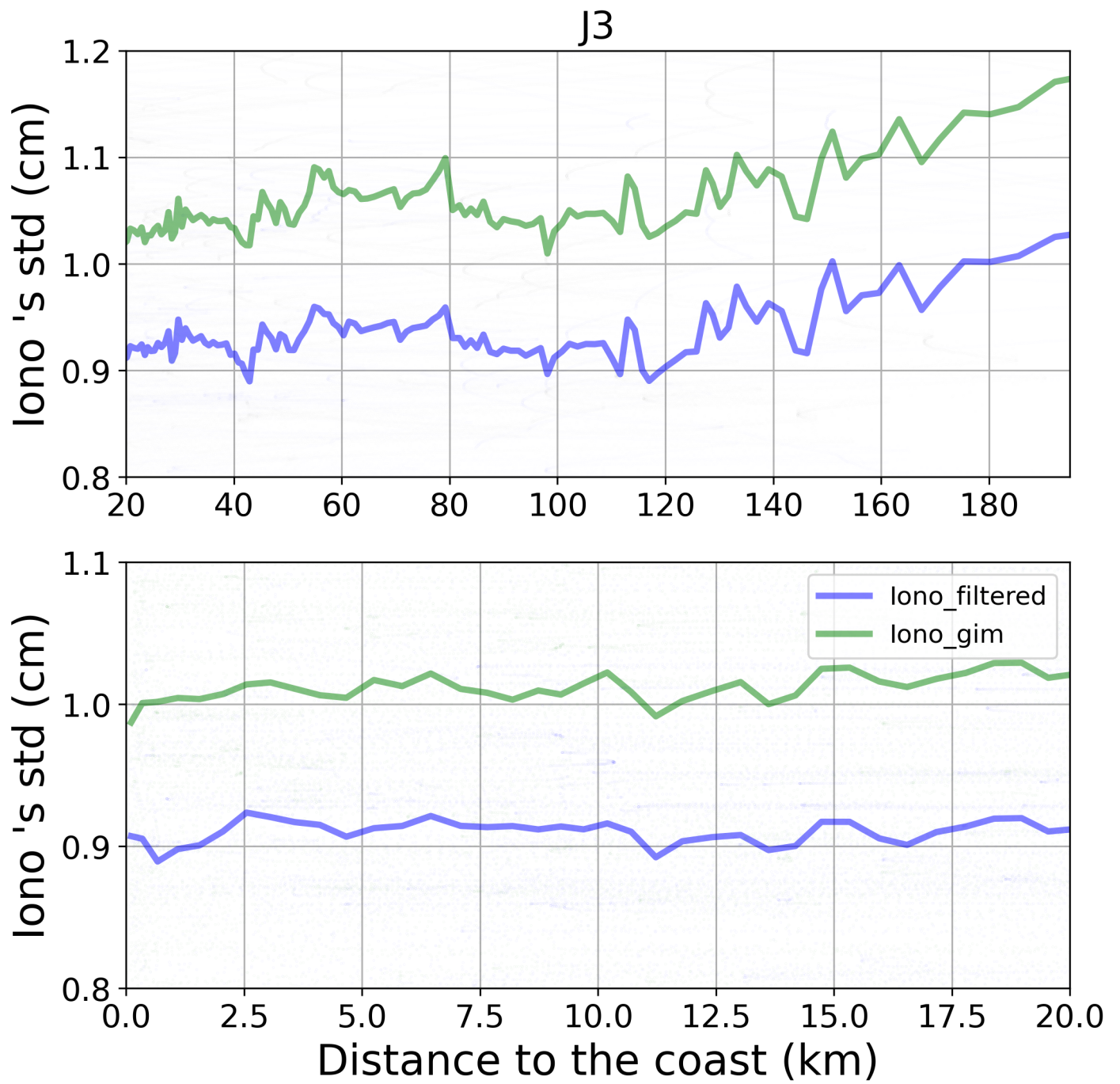


FIGURE 24 – Along-track analysis of Iono's std

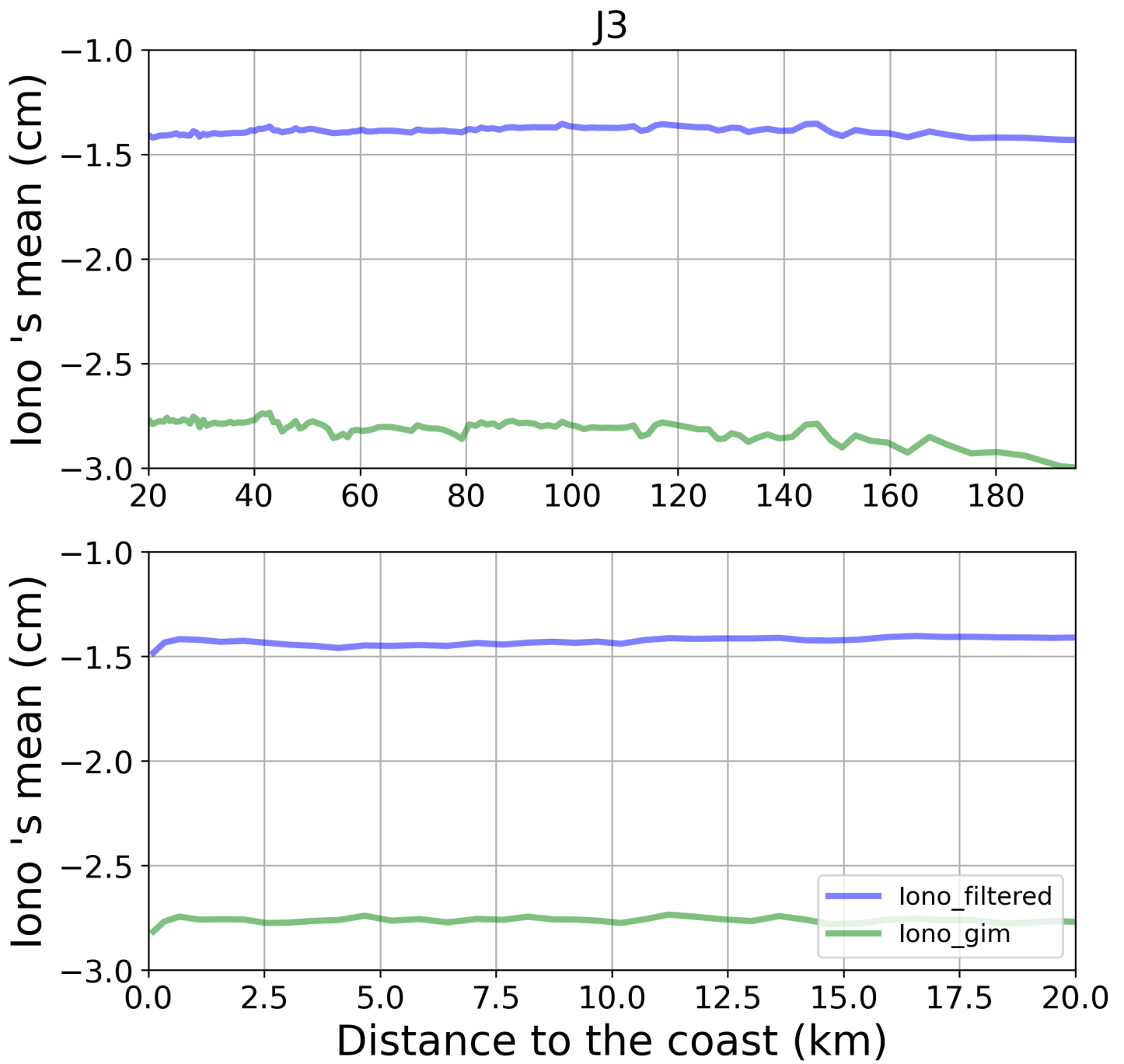


FIGURE 25 – Along-track analysis of Iono's mean

5.2 sla

5.2.1 sla 's count

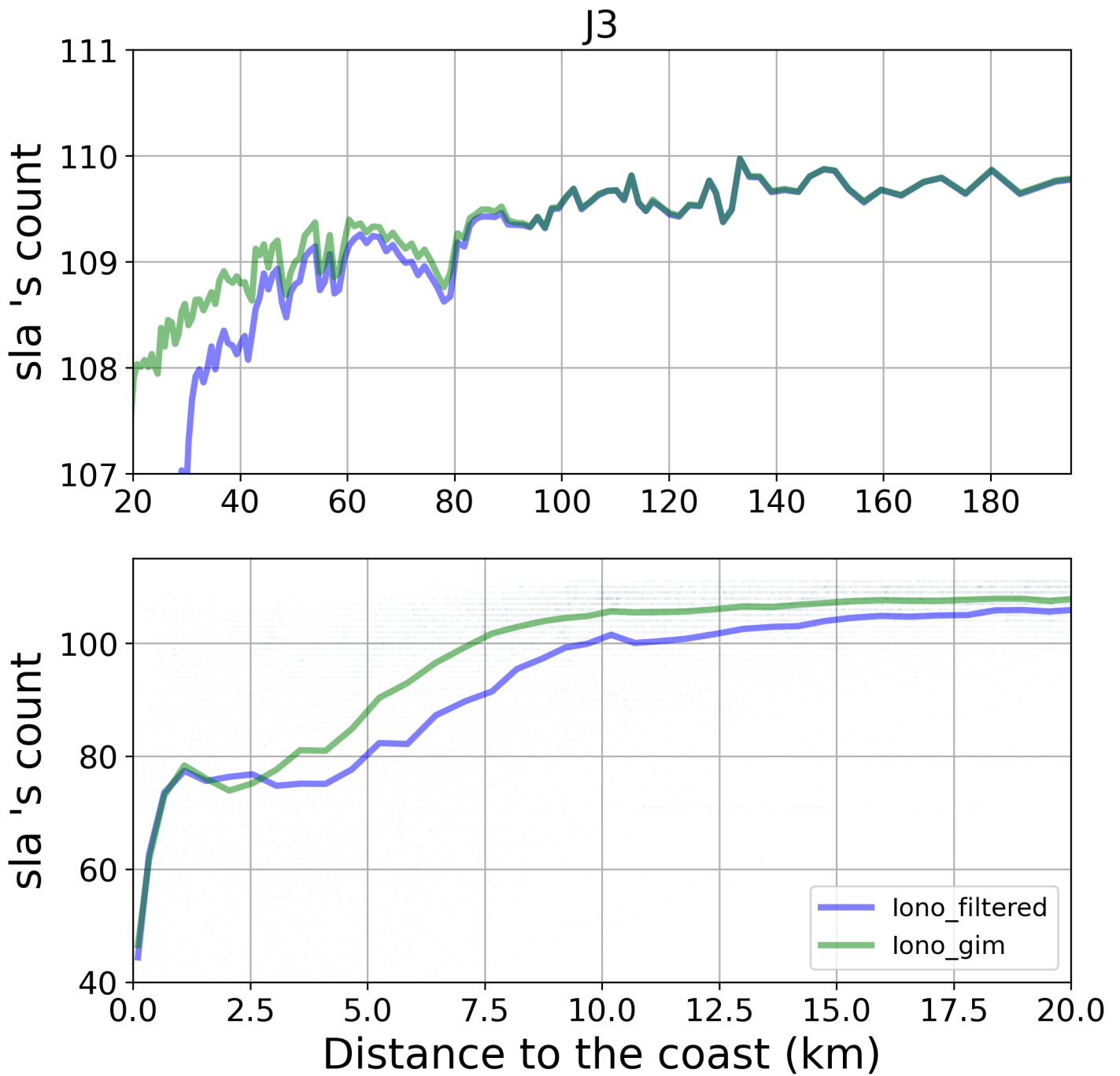


FIGURE 26 – Along-track analysis of sla 's count

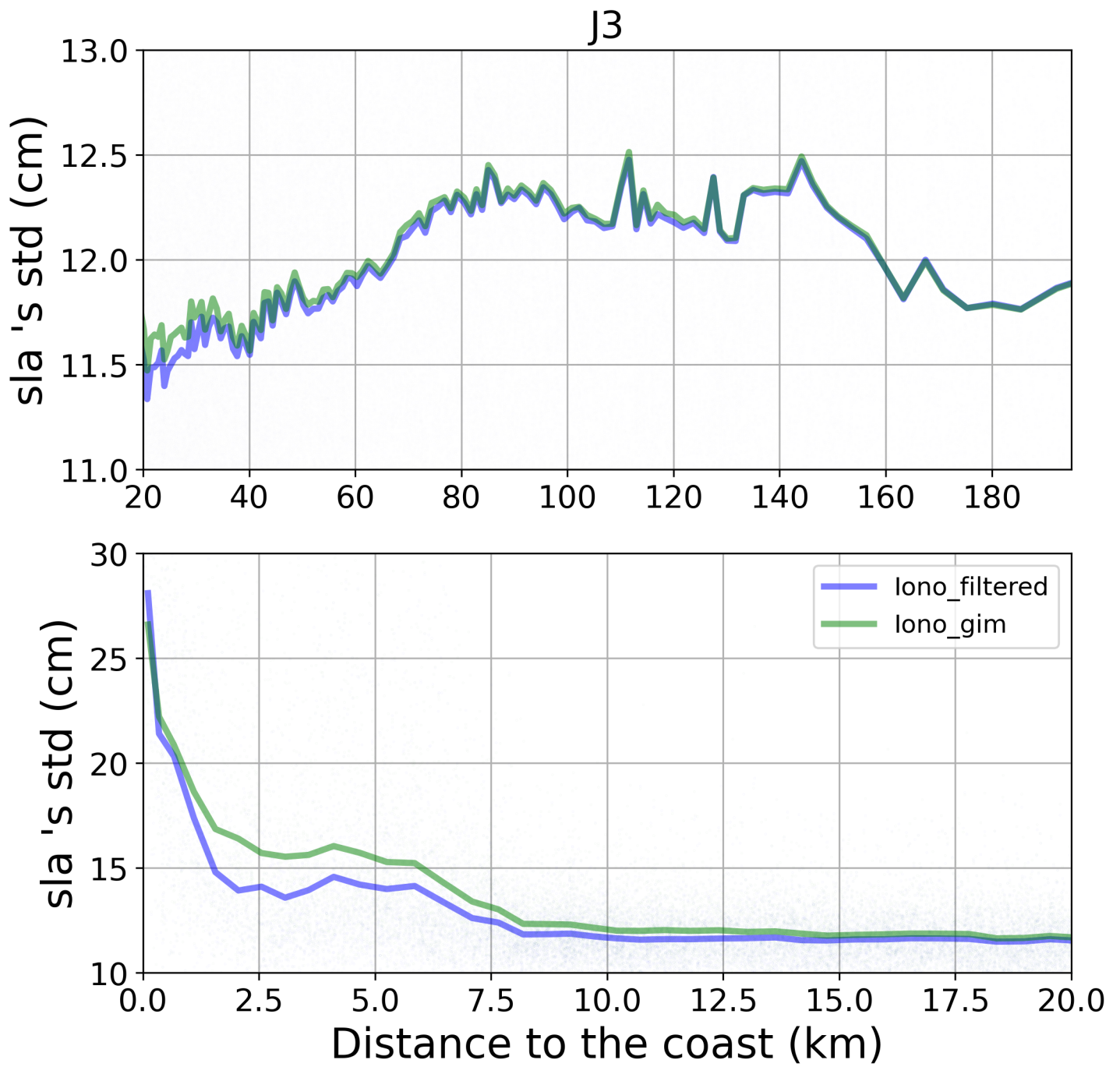


FIGURE 27 – Along-track analysis of sla 's std

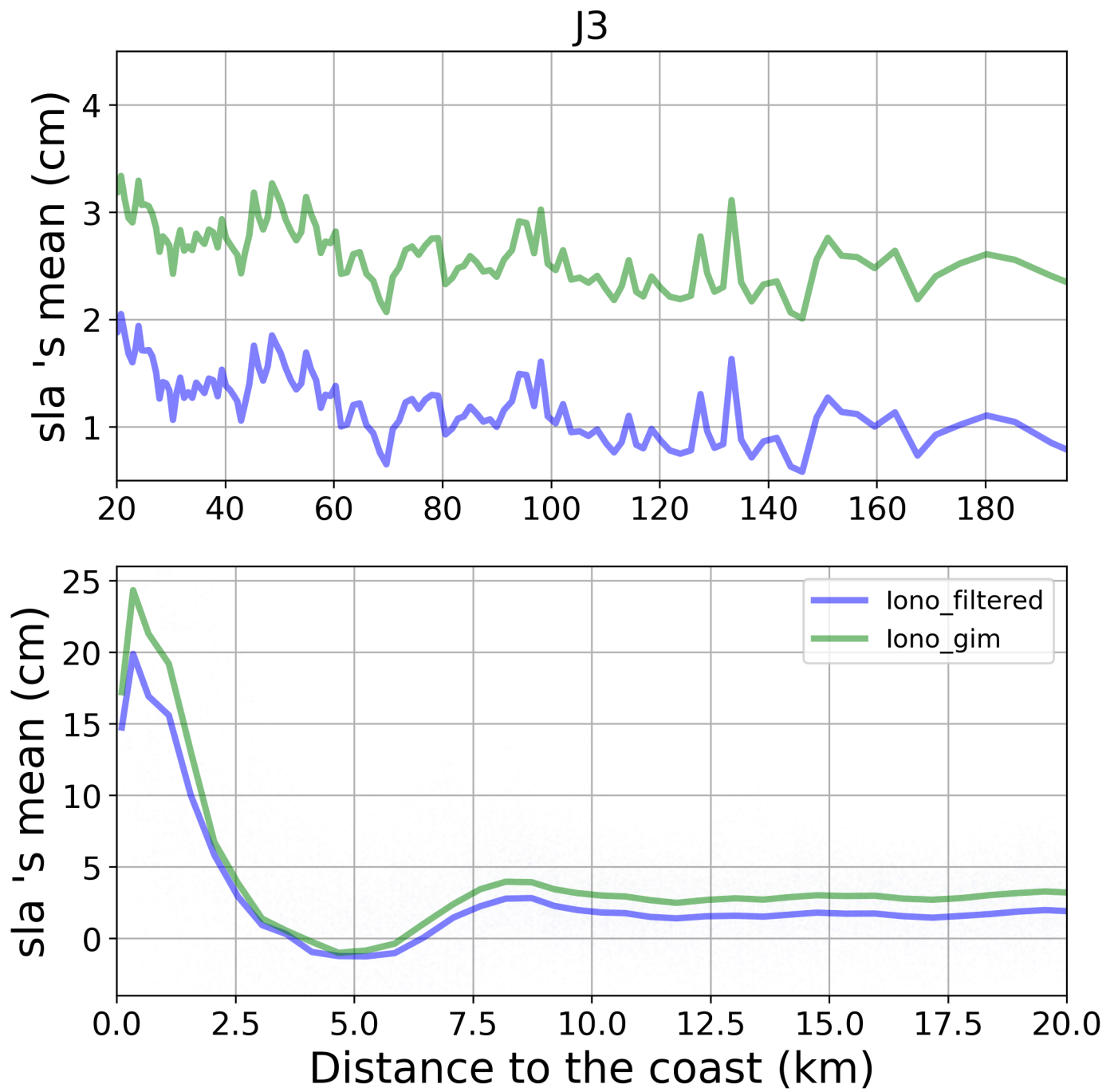


FIGURE 28 – Along-track analysis of sla 's mean

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 Altimerty data with respect to SETE Tide gauge data

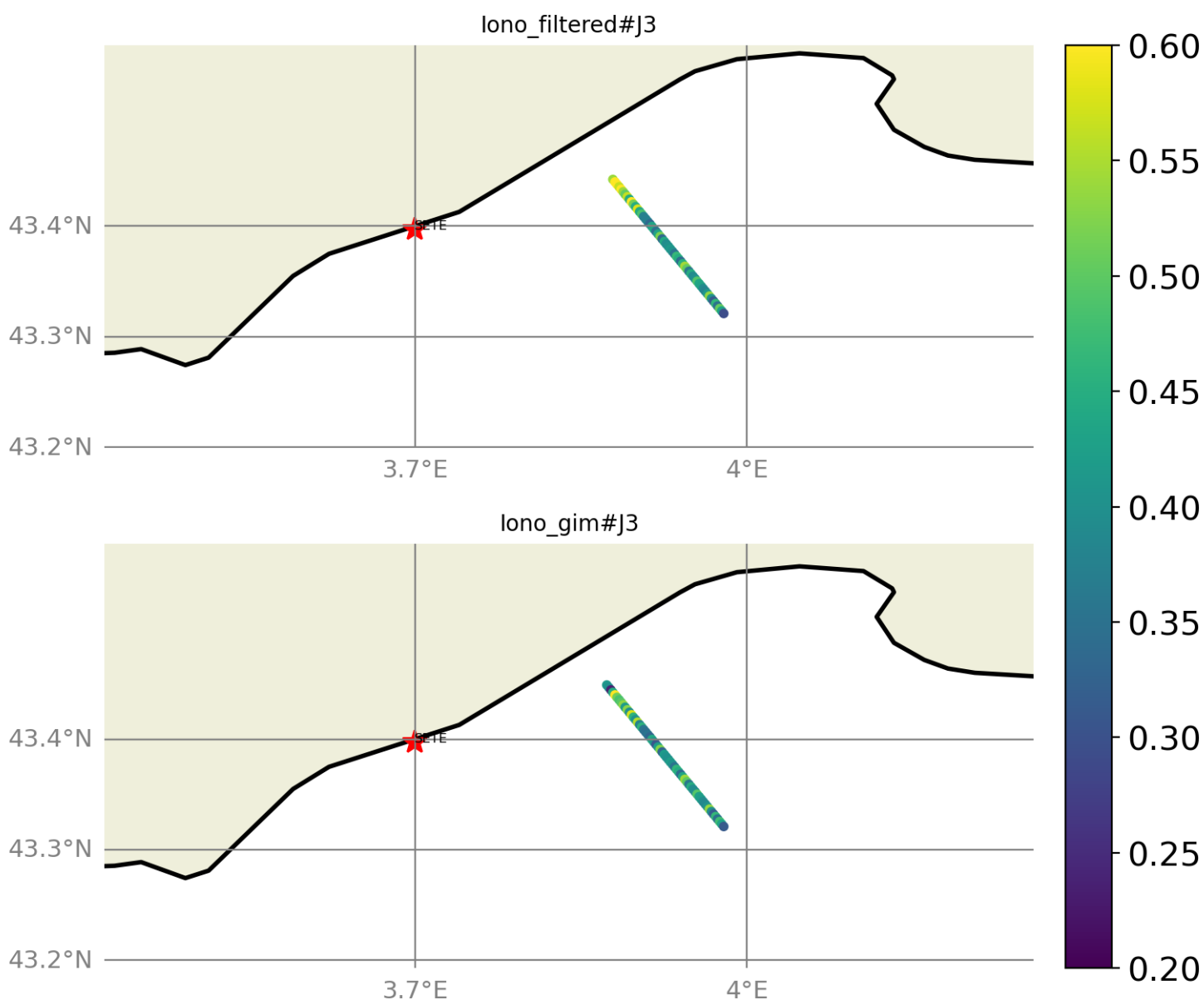


FIGURE 29 – correlation visualization in maps view % SETE tide gauge

6.1.2 rmsd visualization in maps view % SETE tide gauge

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

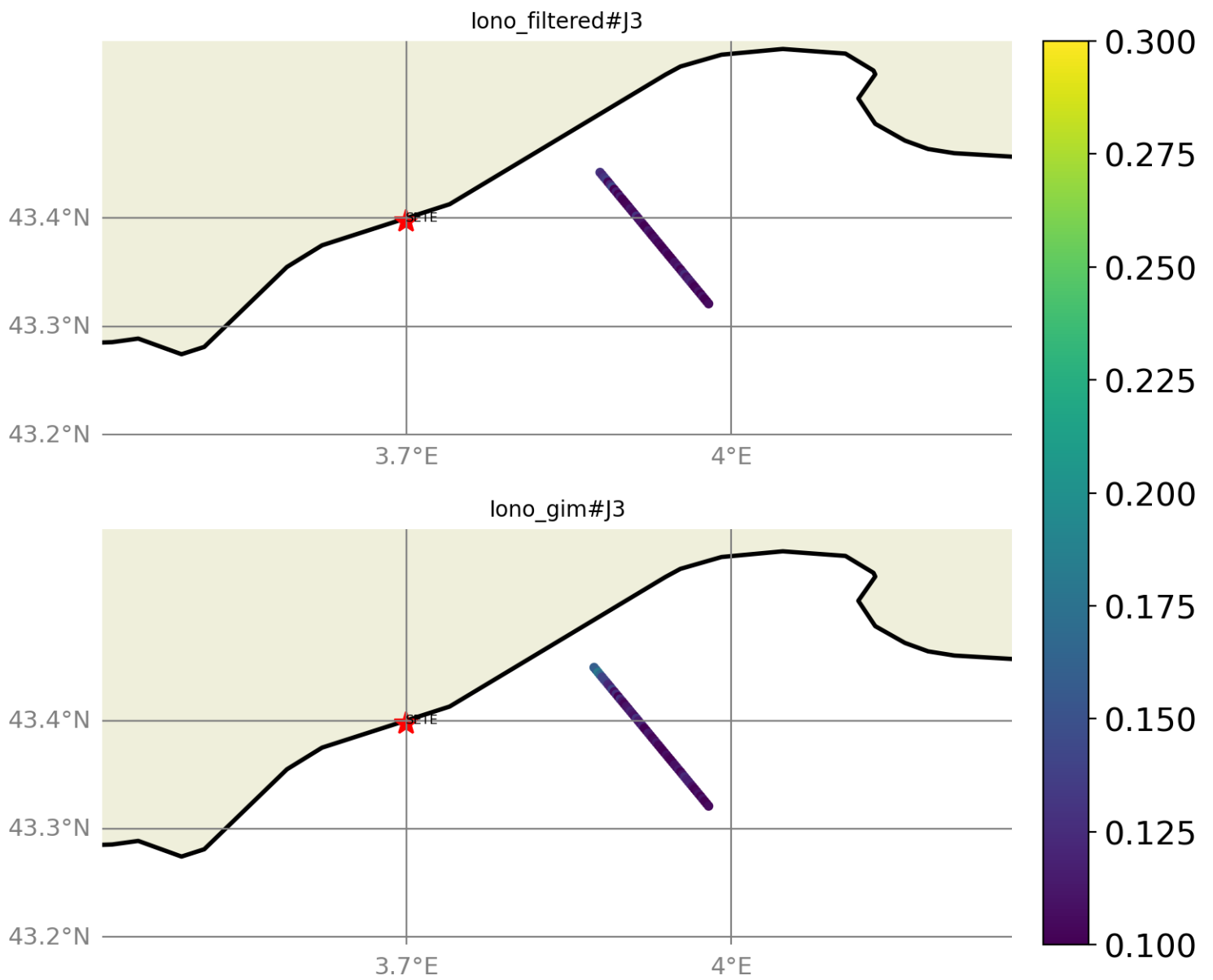


FIGURE 30 – rmsd visualization in maps view % SETE tide gauge

6.1.3 std visualization in maps view % SETE tide gauge

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

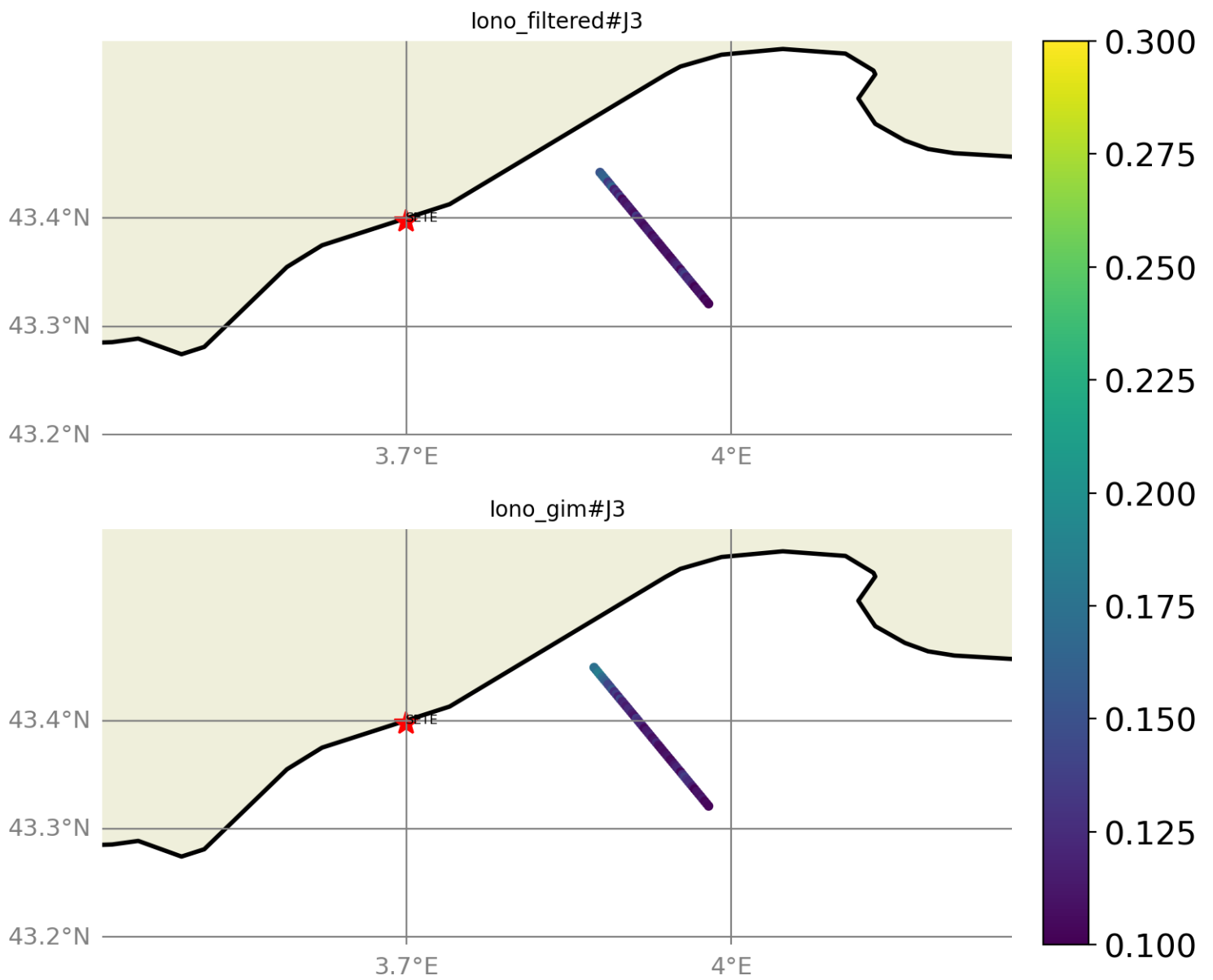


FIGURE 31 – std visualization in maps view % SETE tide gauge

6.1.4 valid_data_percent visualization in maps view % SETE tide gauge

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

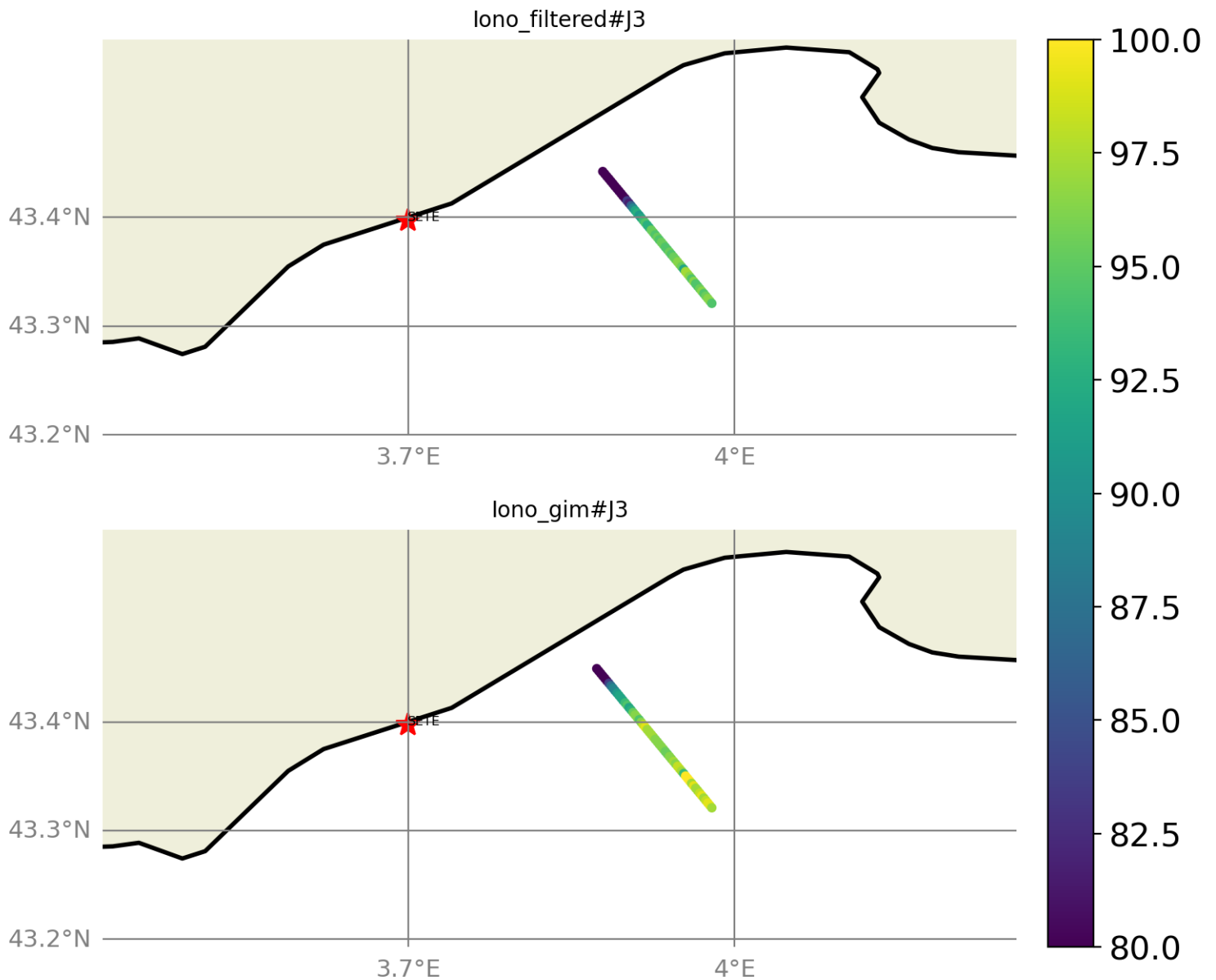


FIGURE 32 – valid_data_percent visualization in maps view % SETE tide gauge

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. $maxNB = 109$ 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 serie.

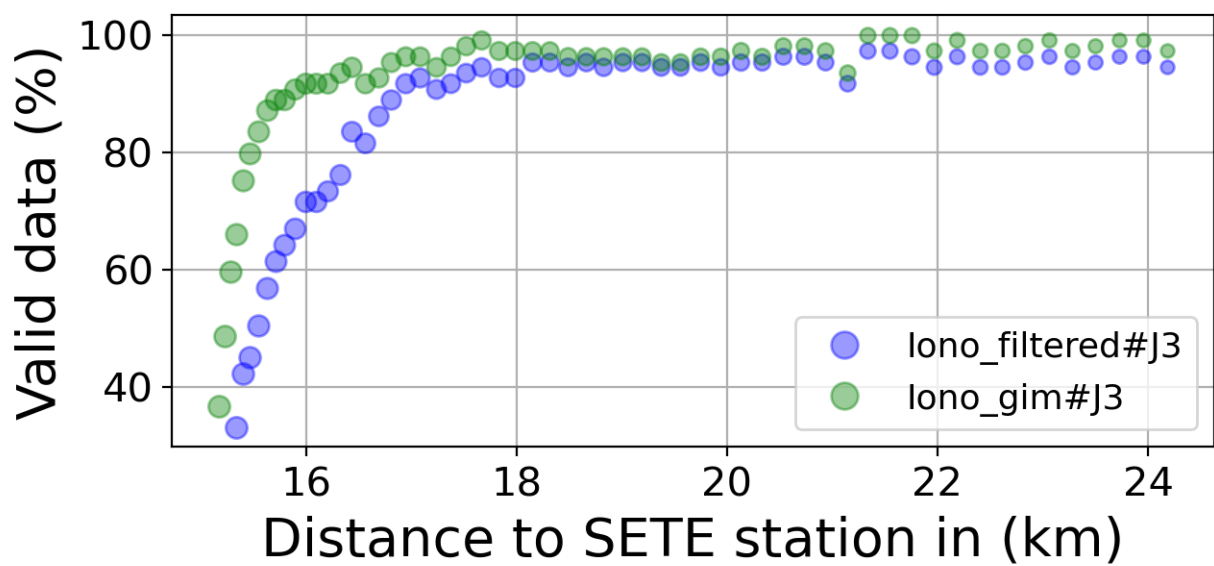
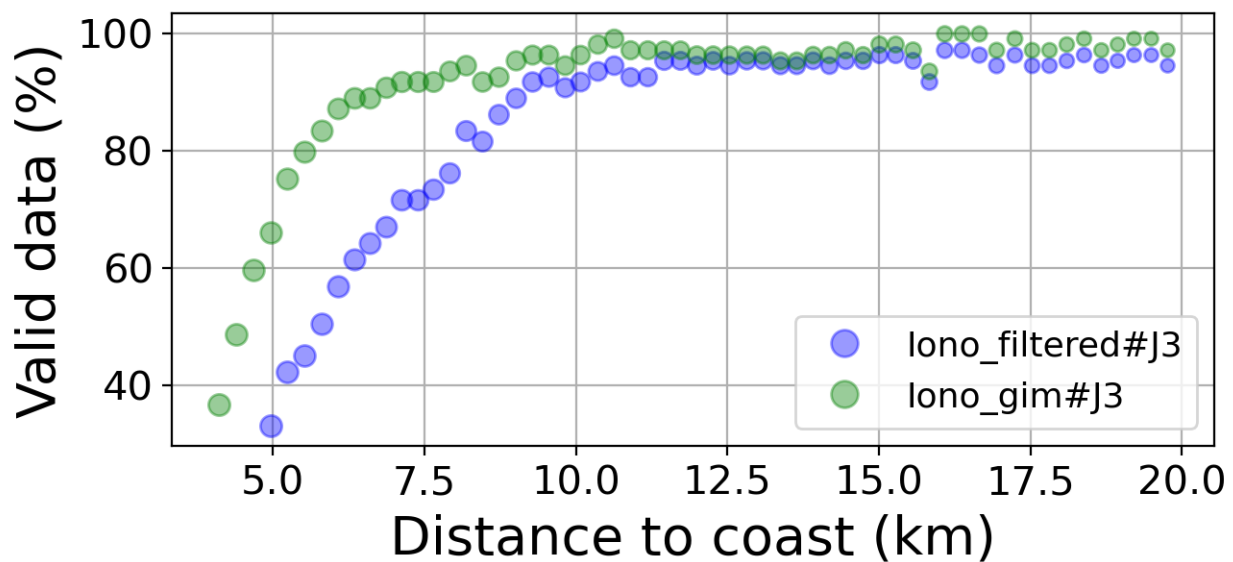


FIGURE 33 – Valid data (%) in function of distance to coast/SETE station

6.1.6 Std in function of distance to coast/SETE station

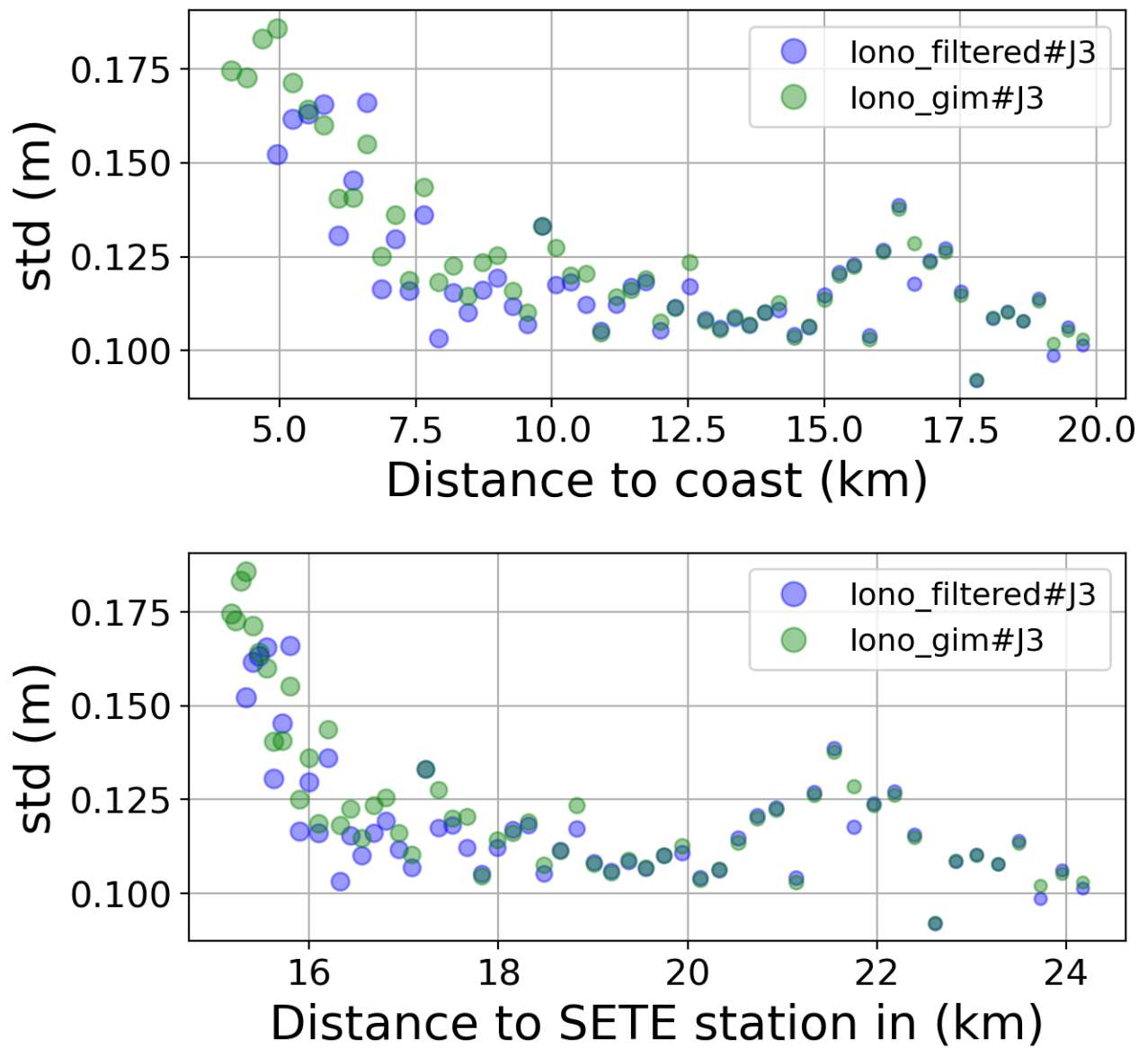


FIGURE 34 – Std in function of the distance to the coast/SETE station

6.1.7 Correlation in function of distance to coast/SETE station

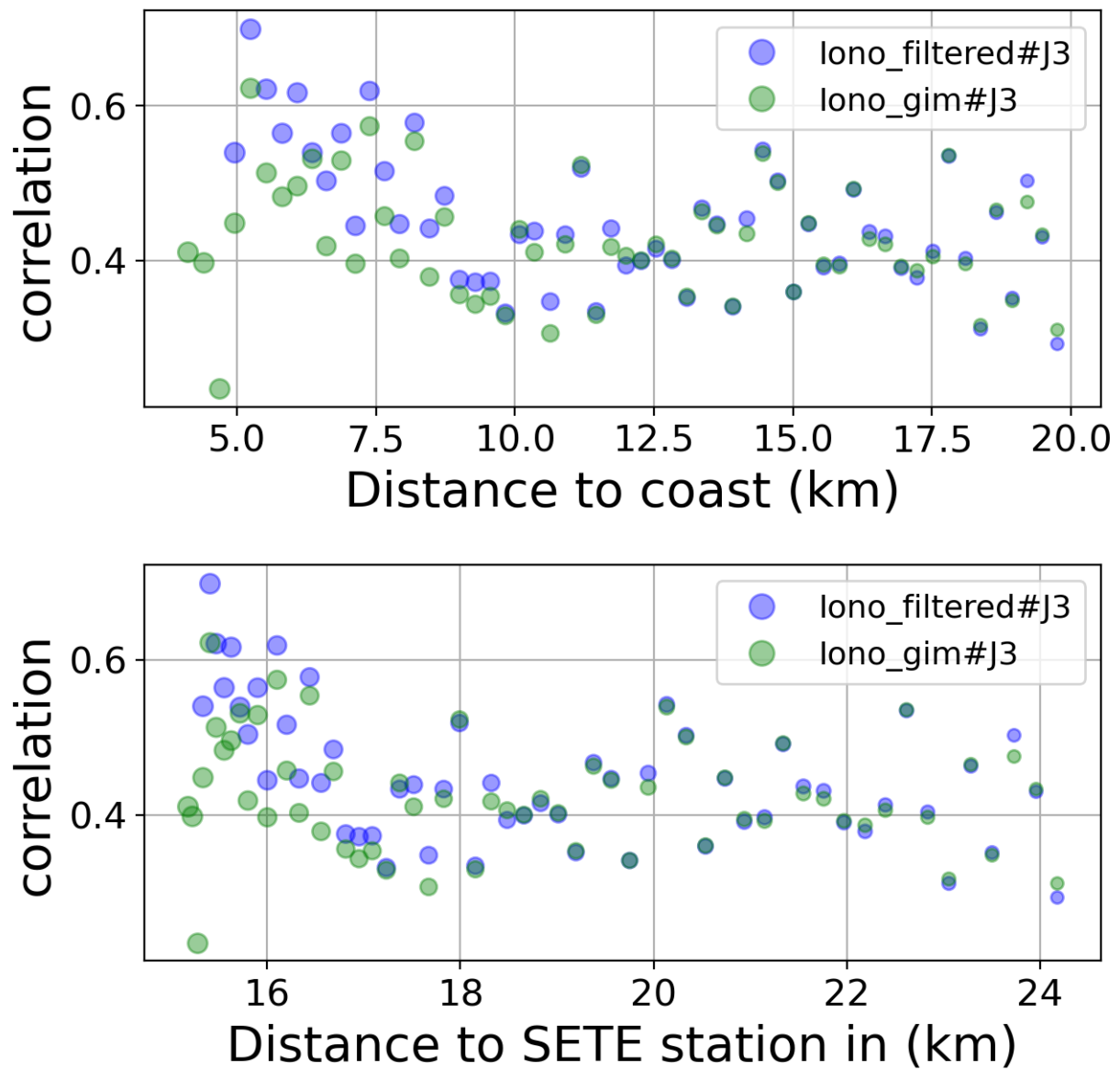


FIGURE 35 – Correlation in function of the distance to the coast/SETE station

6.1.8 Taylor Diagram

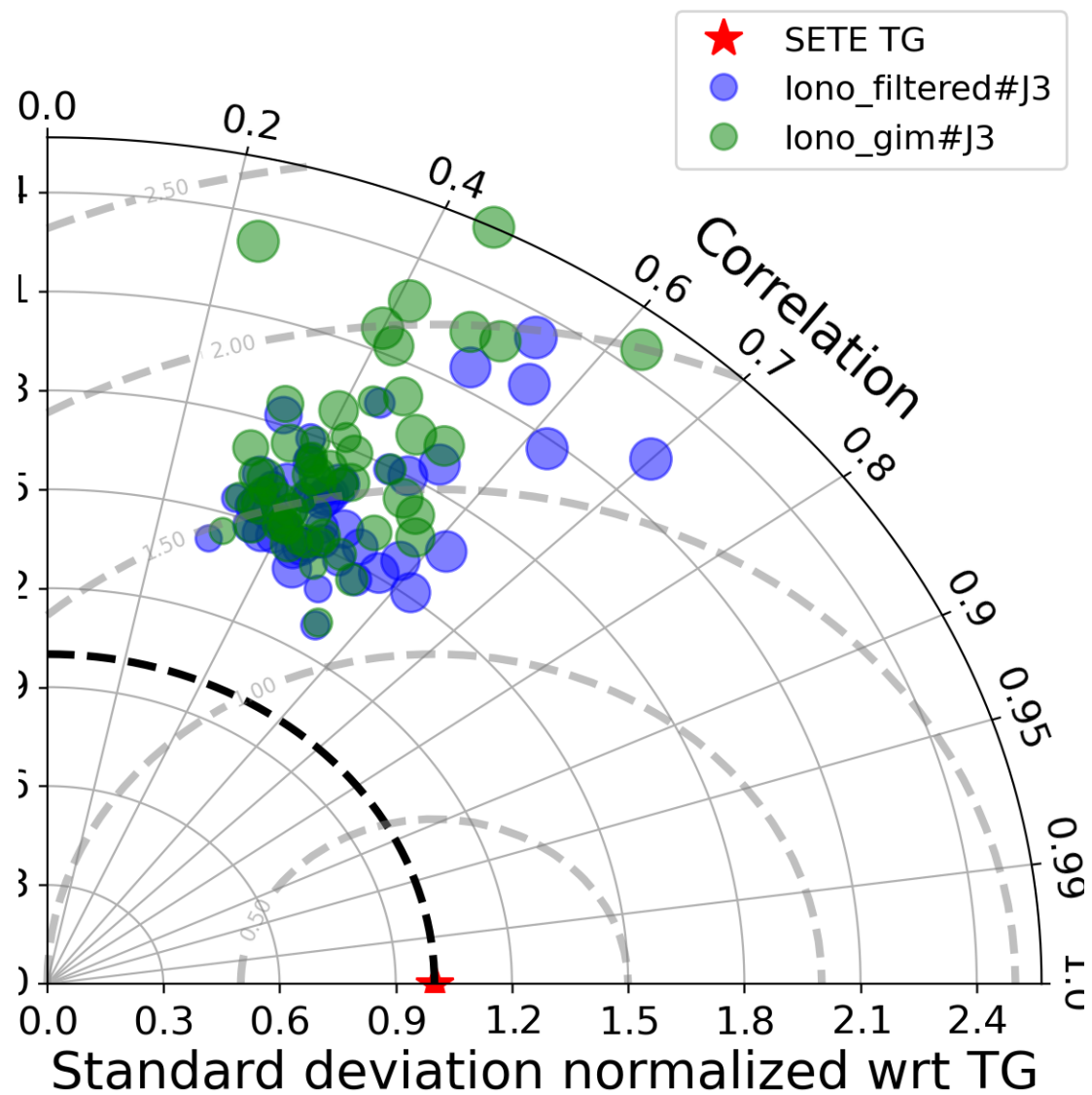


FIGURE 36 – Taylor diagram

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)
lono_filtered#J3	86.339	0.45	0.119	0.108
lono_gim#J3	94.512	0.43	0.122	0.112

FIGURE 37 – 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 109 point.

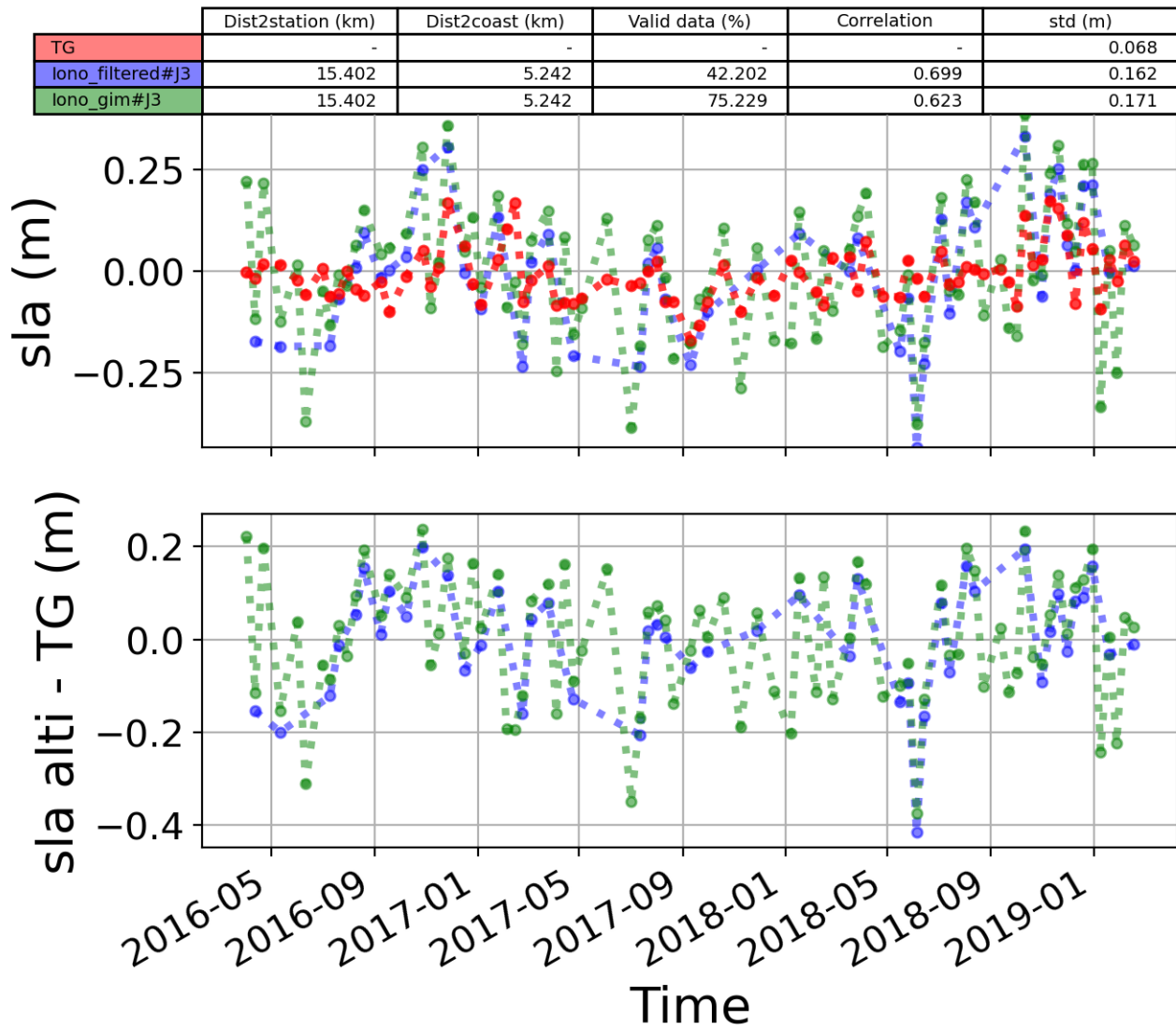


FIGURE 38 – The 1st most correlated sla altimetry Time serie with tide gauge sla time serie

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 % Mentés tide gauge

Correlation Altimetry data with respect to Mentés Tide gauge data

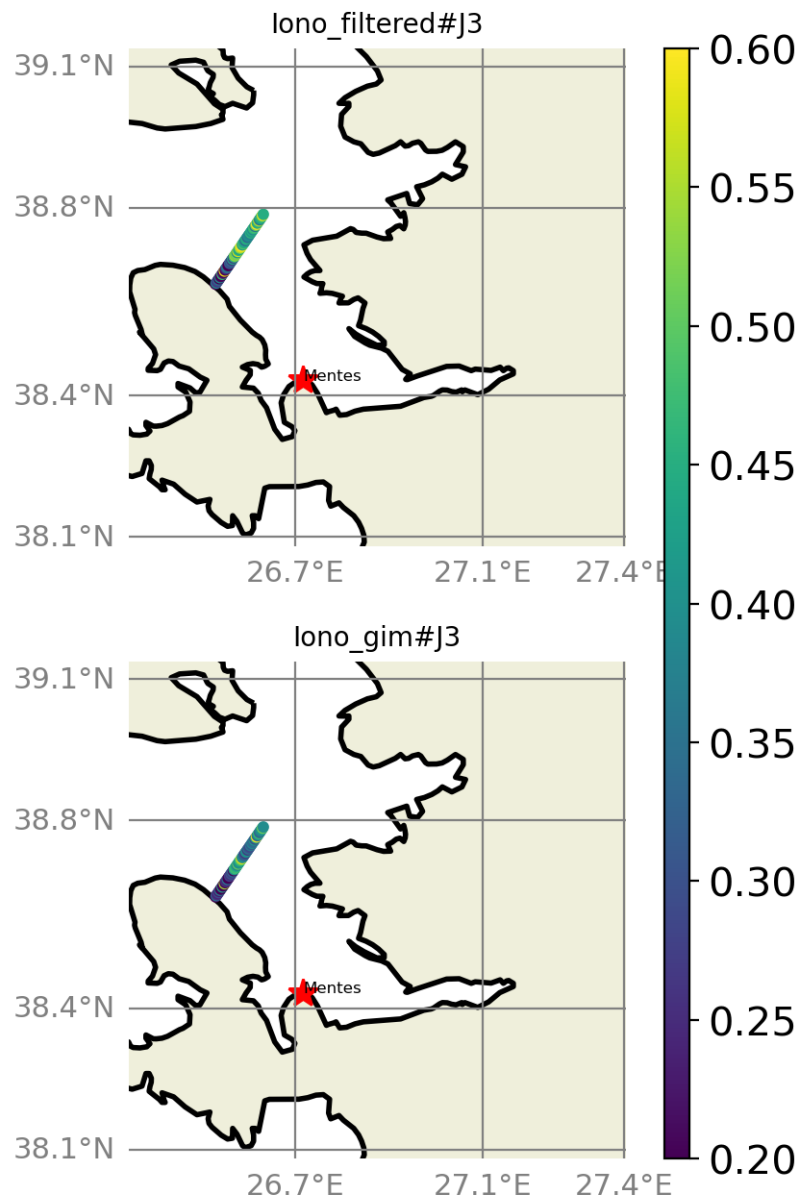


FIGURE 39 – correlation visualization in maps view % Mentés tide gauge

6.2.2 rmsd visualization in maps view % Mentès tide gauge

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

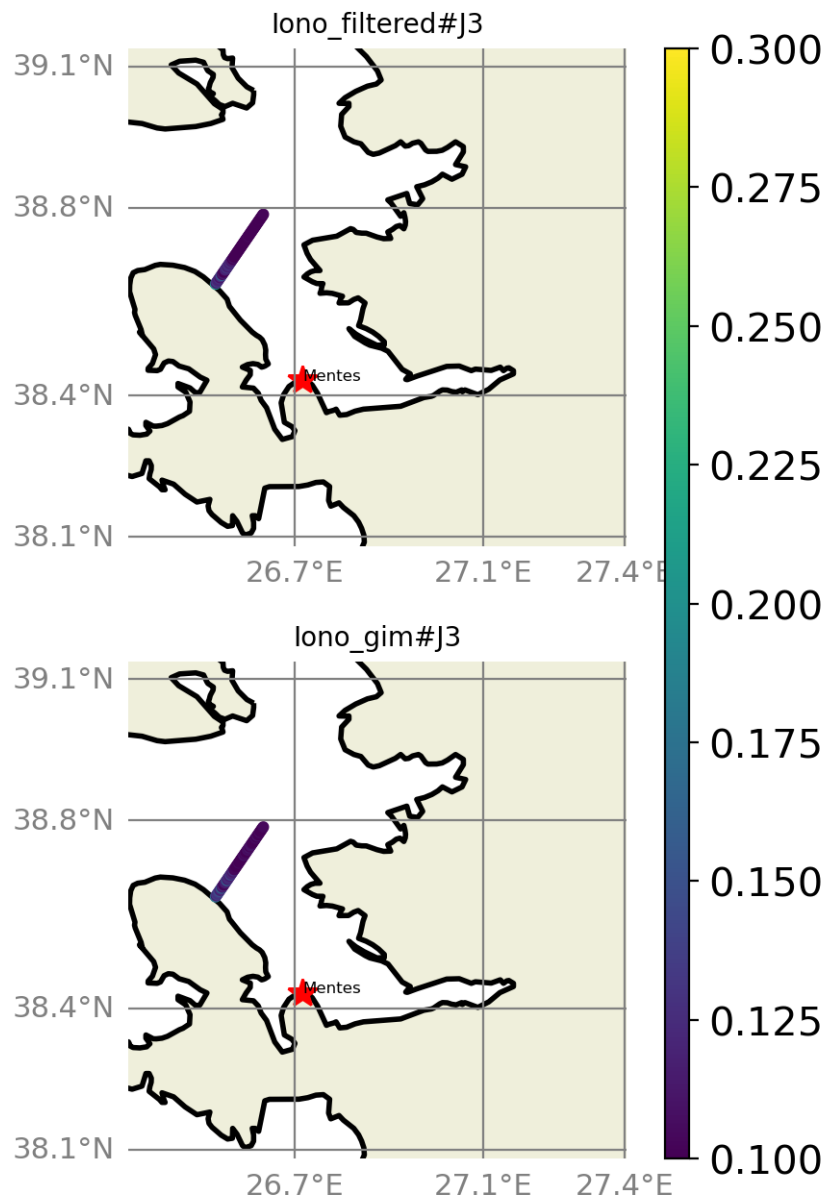


FIGURE 40 – rmsd visualization in maps view % Mentès tide gauge

6.2.3 std visualization in maps view % Mentos tide gauge

Std (m) Altimerty data with respect to Mentos Tide gauge data

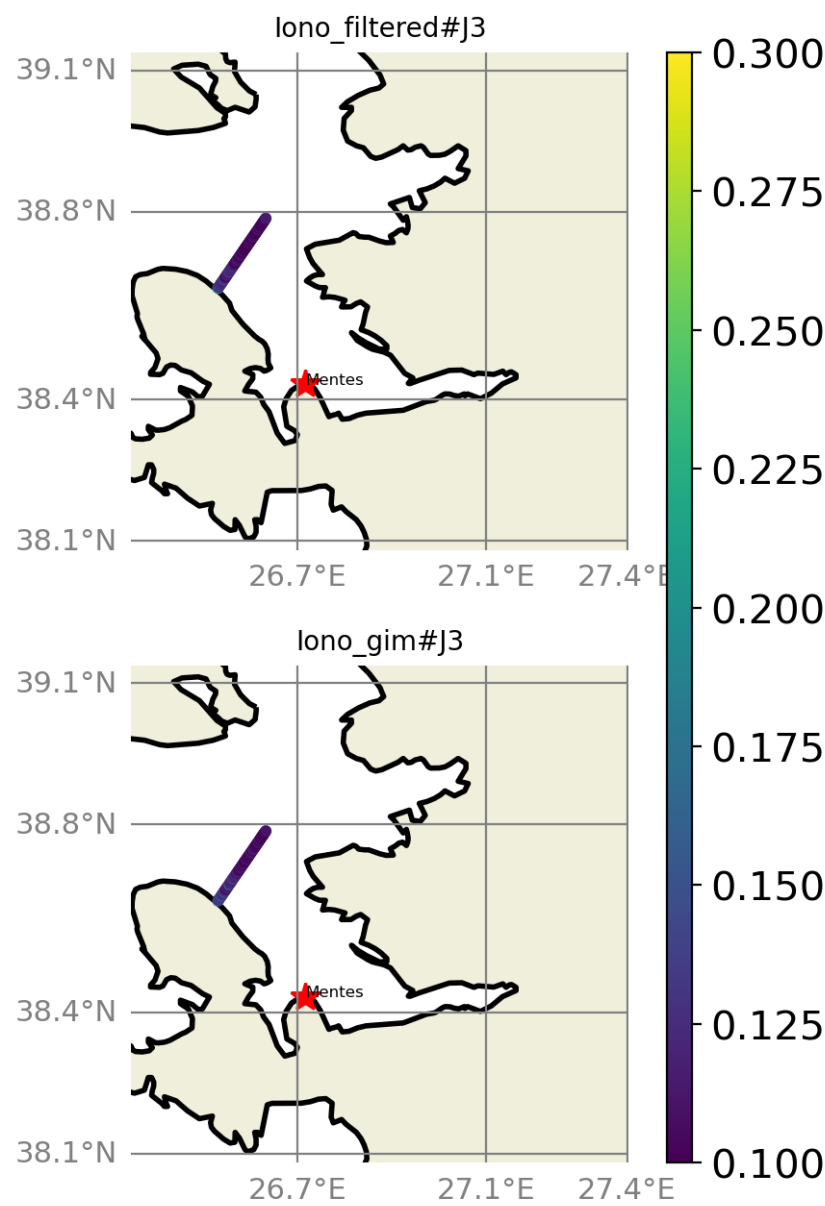


FIGURE 41 – std visualization in maps view % Mentos tide gauge

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

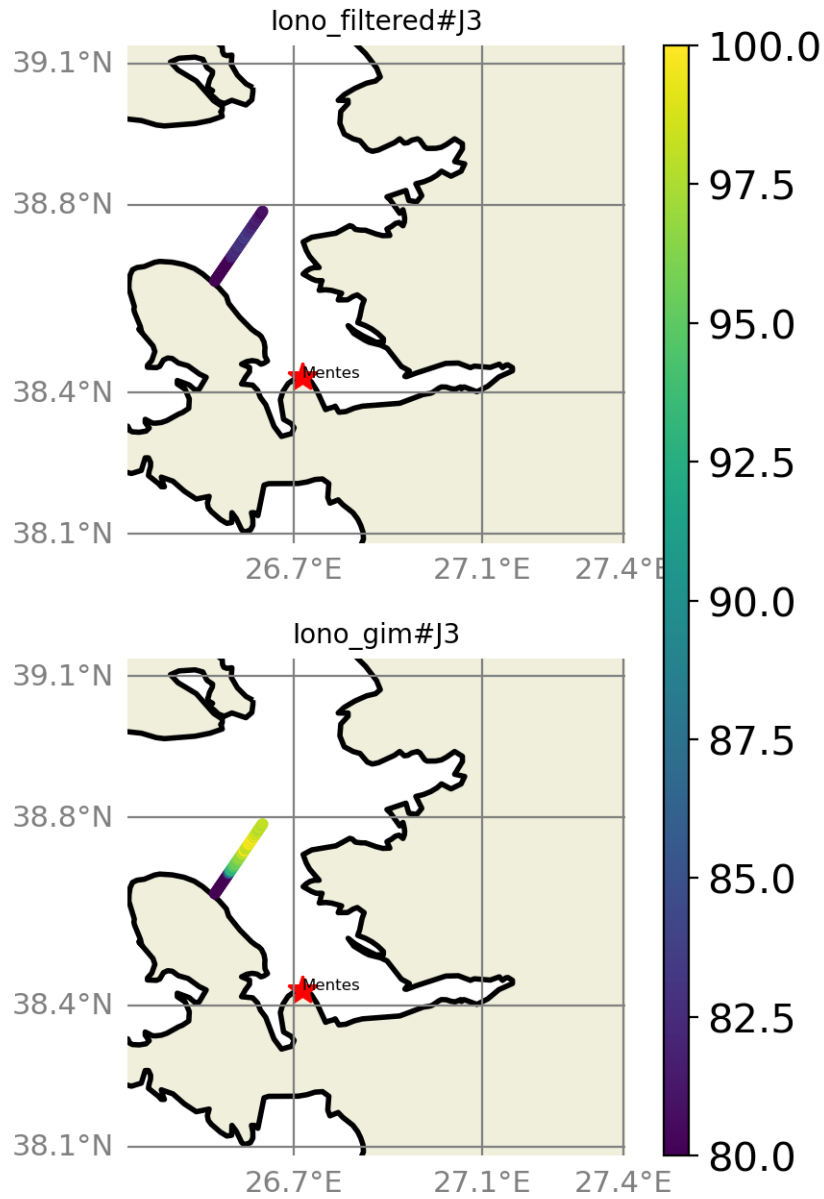


FIGURE 42 – valid_data_percent visualization in maps view % Mentos tide gauge

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. $maxNB = 110$ 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.

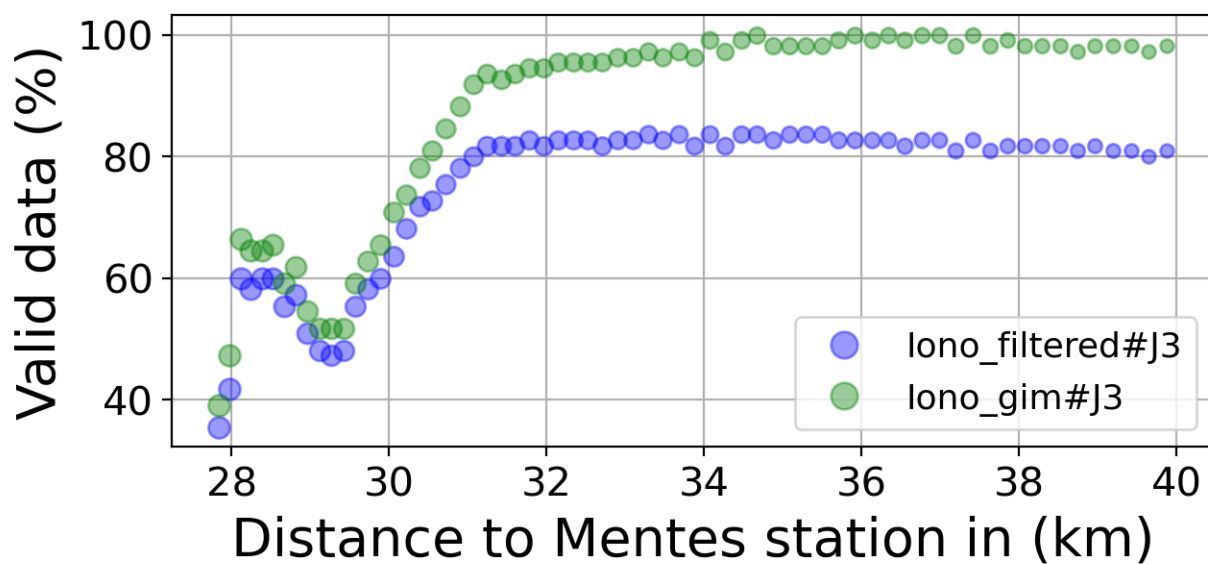
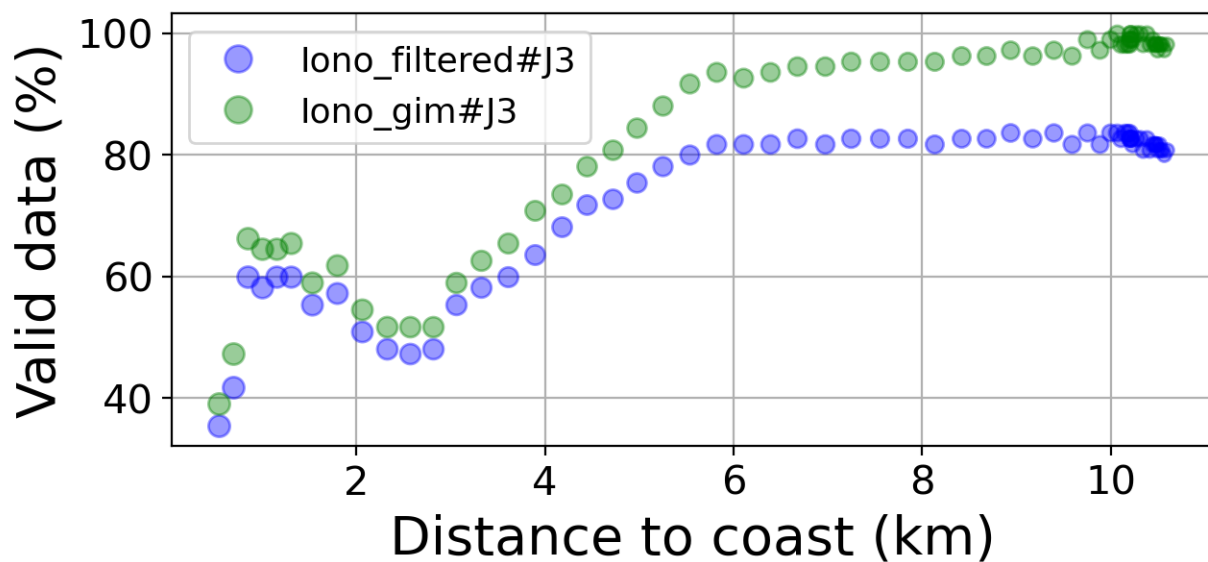


FIGURE 43 – Valid data (%) in function of distance to coast/Mentés station

6.2.6 Std in function of distance to coast/Mentes station

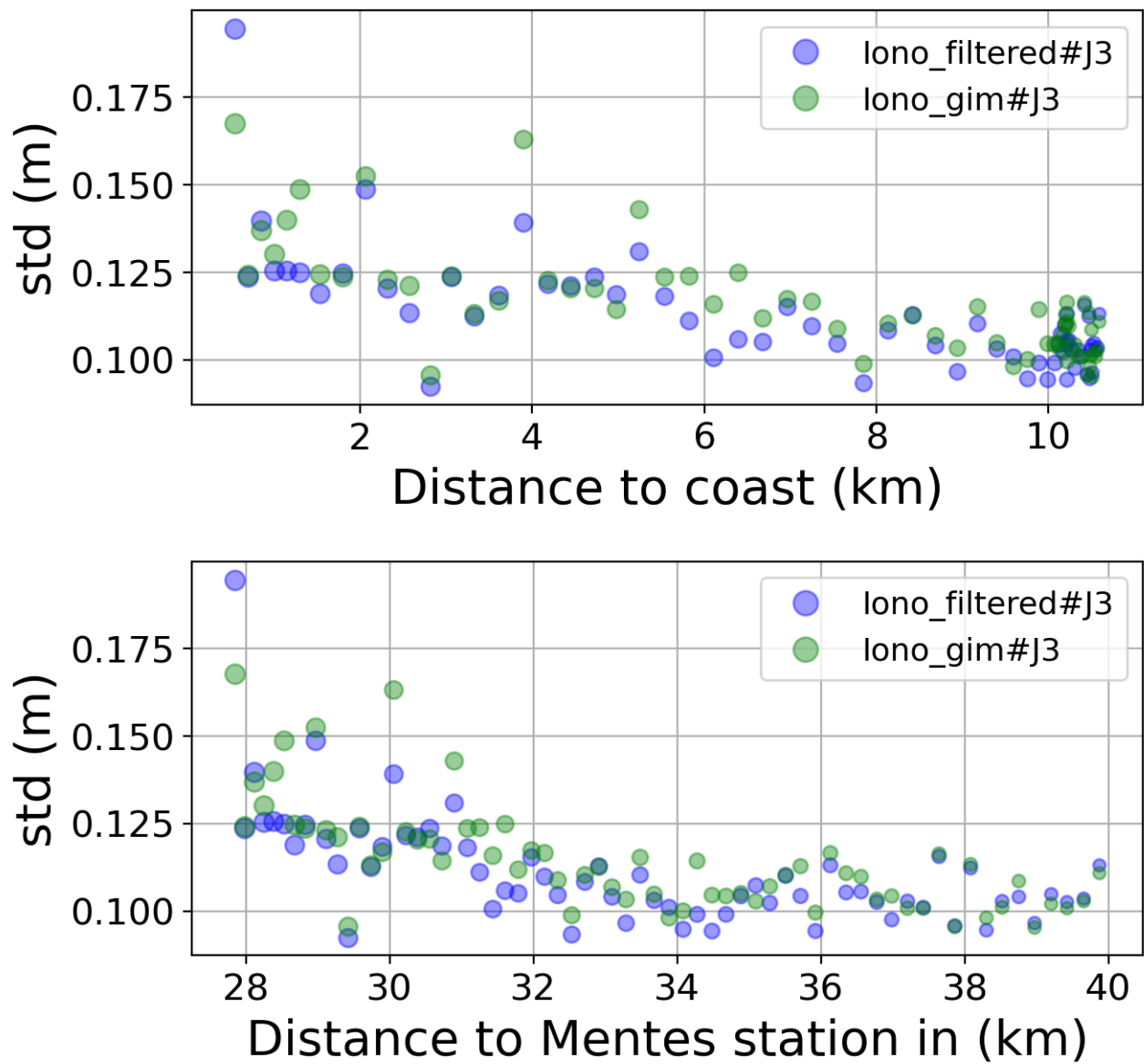


FIGURE 44 – Std in function of the distance to the coast/Mentes station

6.2.7 Correlation in function of distance to coast/Mentes station

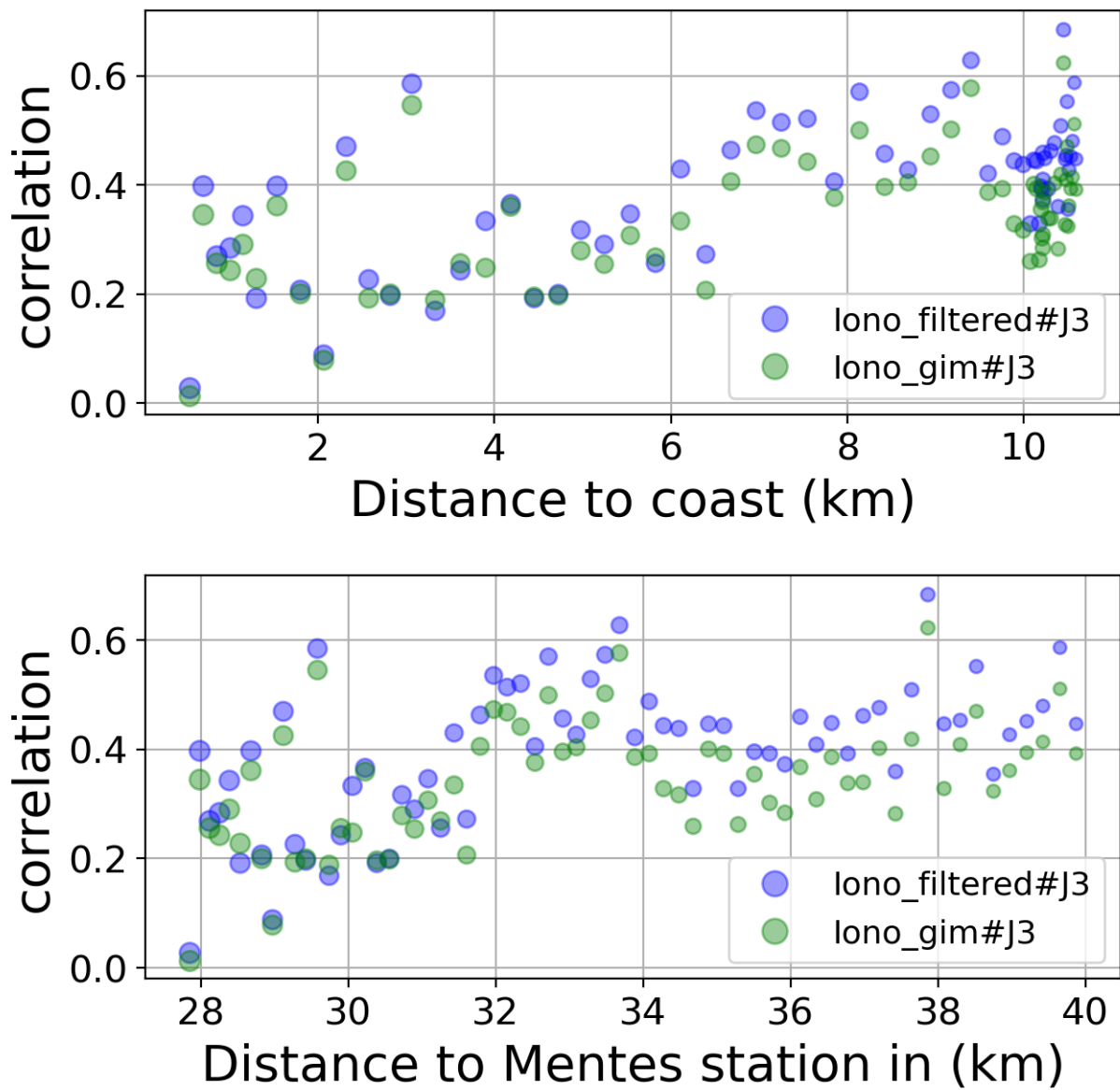


FIGURE 45 – Correlation in function of the distance to the coast/Mentes station

6.2.8 Taylor Diagram

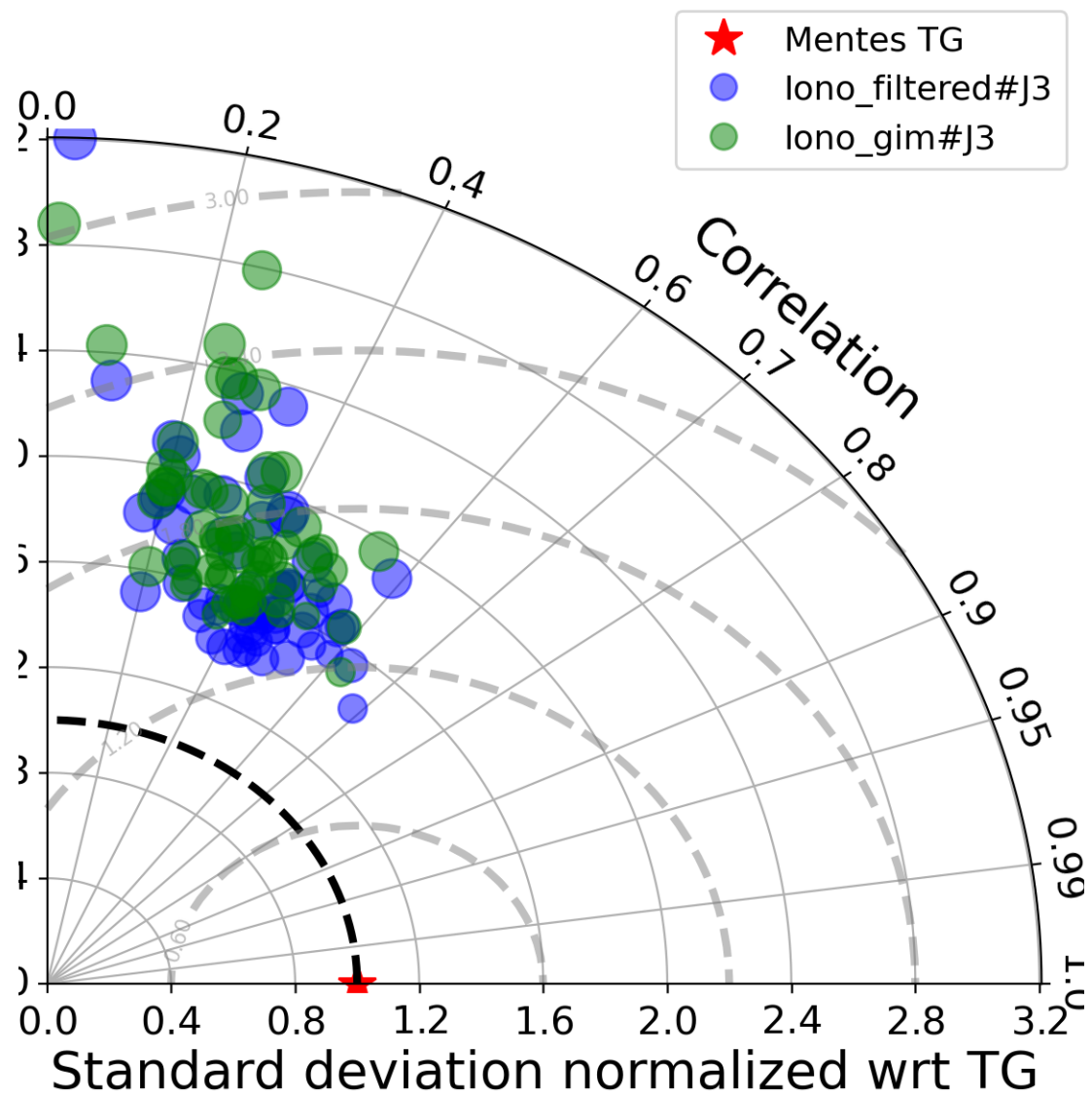


FIGURE 46 – Taylor diagram

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)
lono_filtered#J3	74.545	0.395	0.112	0.105
lono_gim#J3	86.573	0.343	0.115	0.111

FIGURE 47 – 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 110 point.

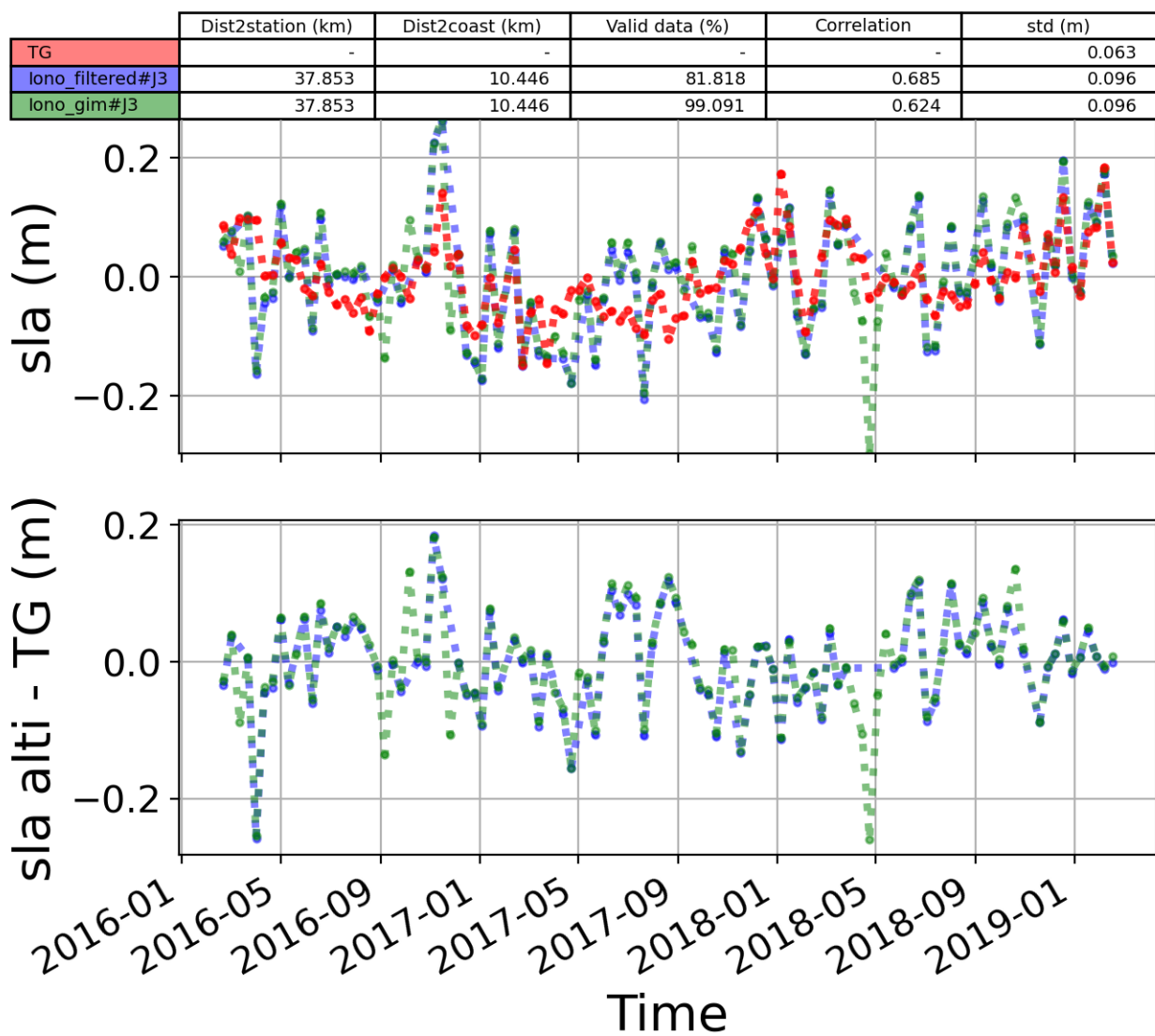


FIGURE 48 – The 1st most correlated sla altimetry Time serie with tide gauge sla time serie

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 Radius of 40 Km
 - Maximum distance to the coast : 20 Km
 - Latitude limits : [38.6, 39.05] °

6.3.1 correlation visualization in maps view % Ibiza tide gauge

Correlation Altimerty data with respect to Ibiza Tide gauge data

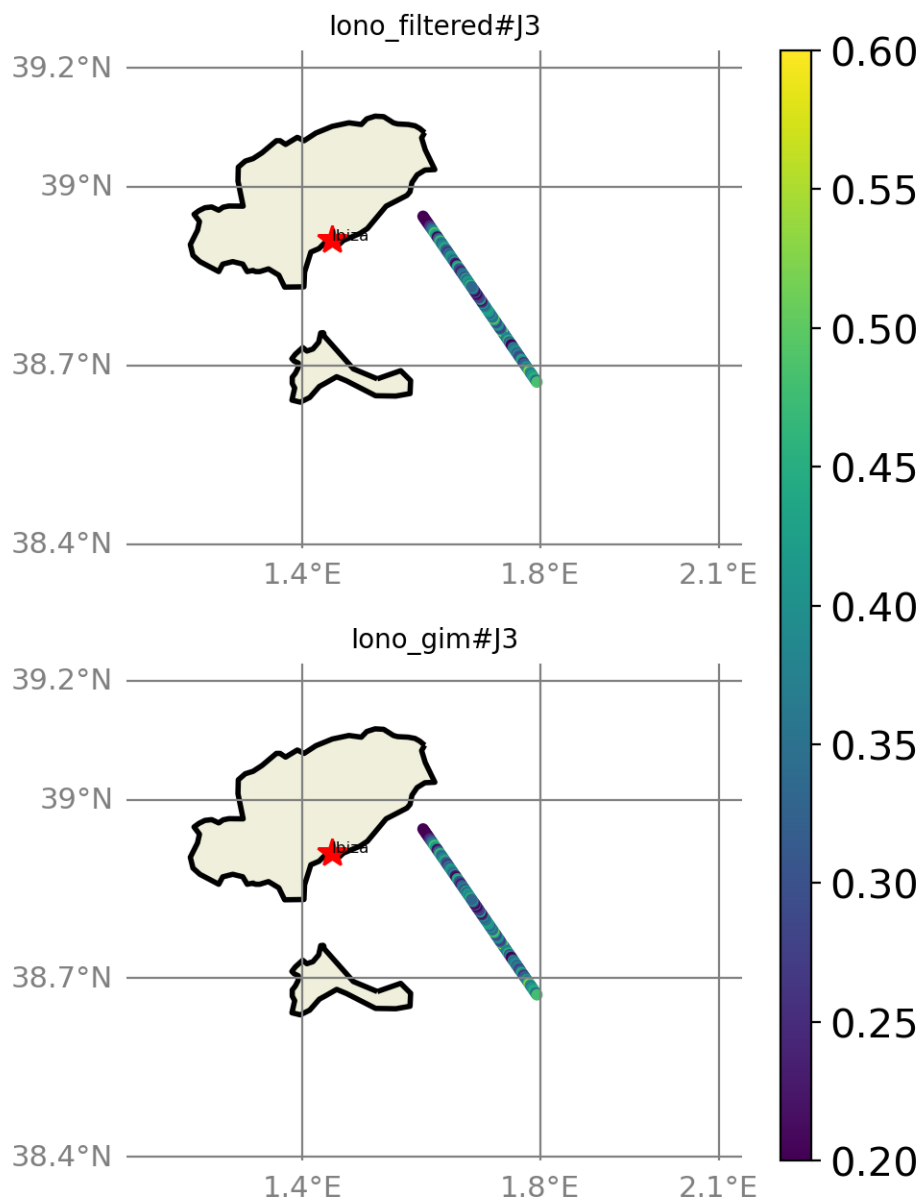


FIGURE 49 – correlation visualization in maps view % Ibiza tide gauge

6.3.2 rmsd visualization in maps view % Ibiza tide gauge

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

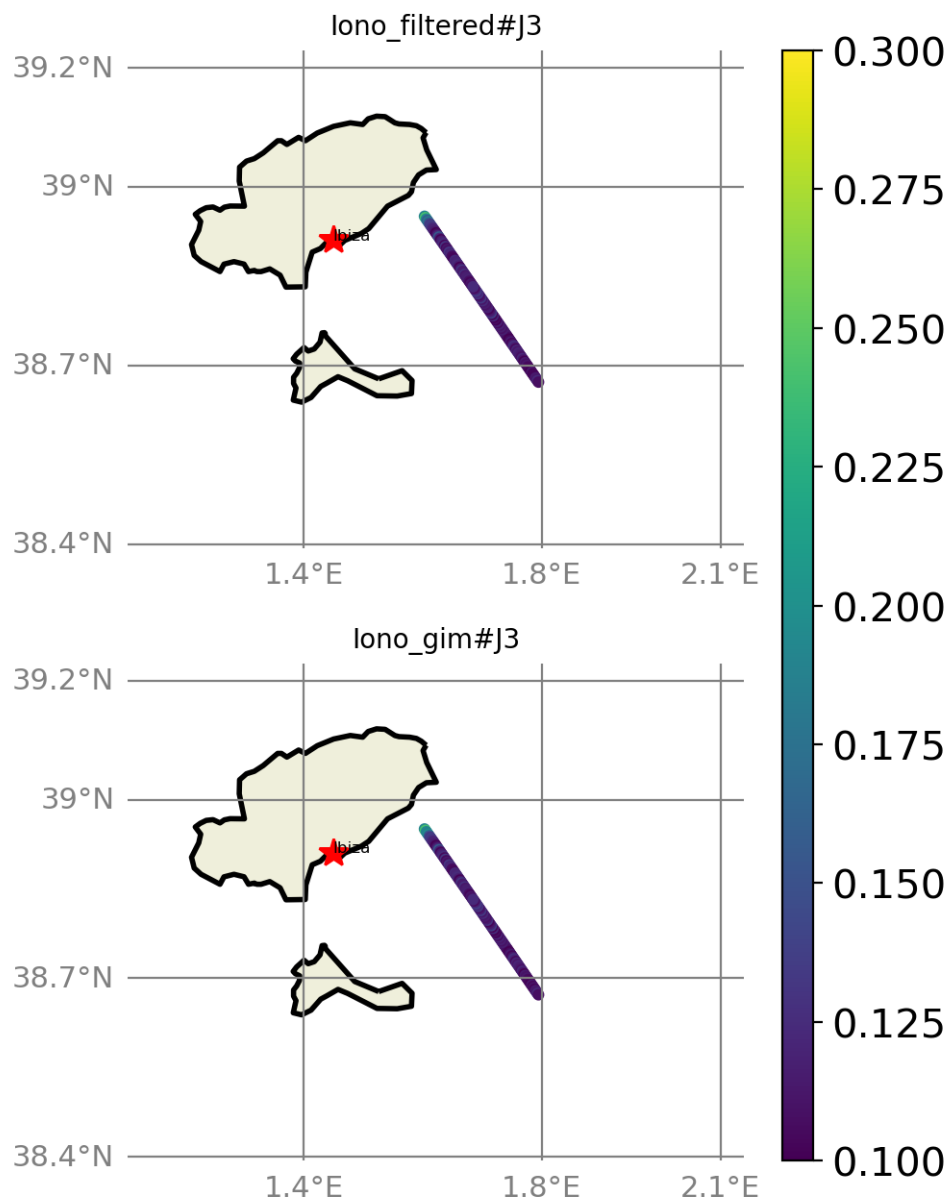


FIGURE 50 – rmsd visualization in maps view % Ibiza tide gauge

6.3.3 std visualization in maps view % Ibiza tide gauge

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

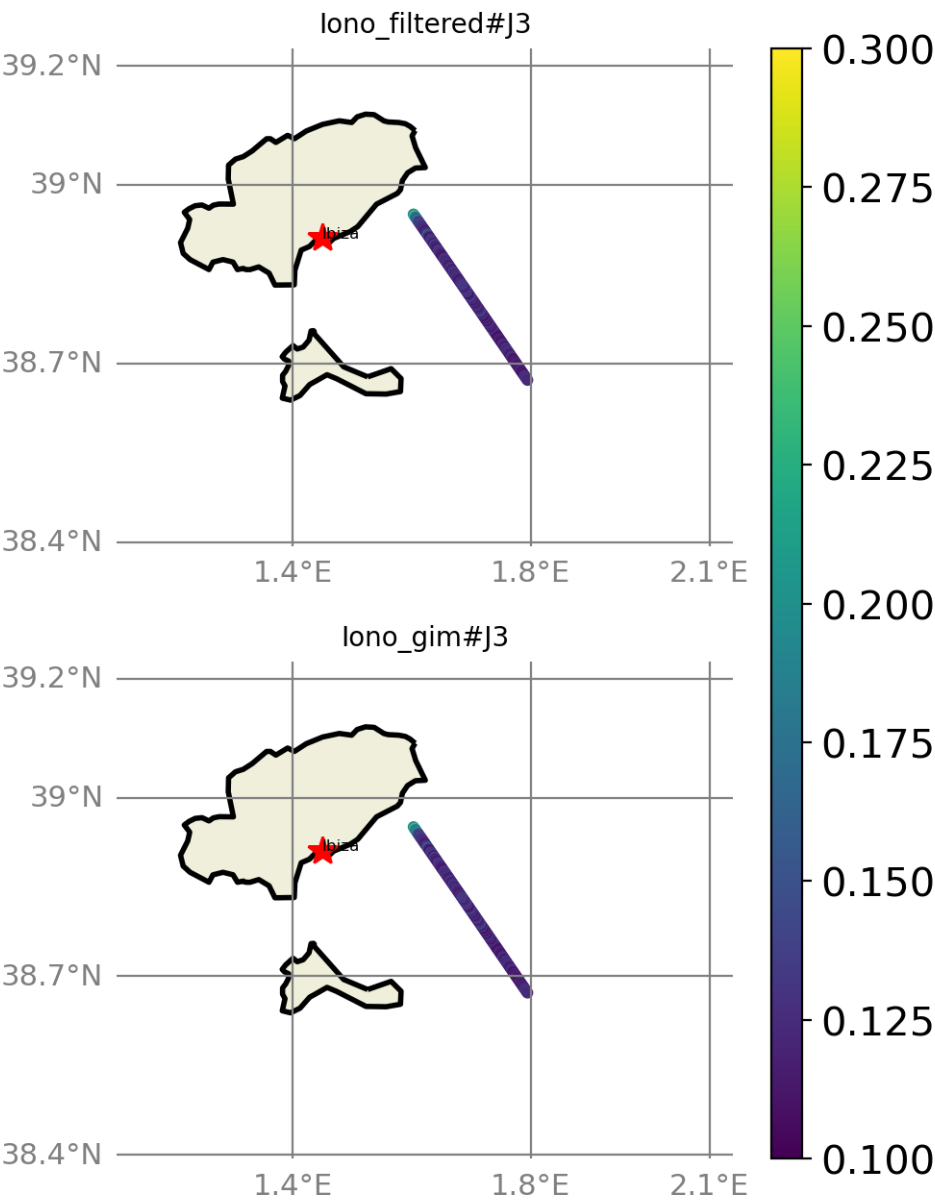


FIGURE 51 – std visualization in maps view % Ibiza tide gauge

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

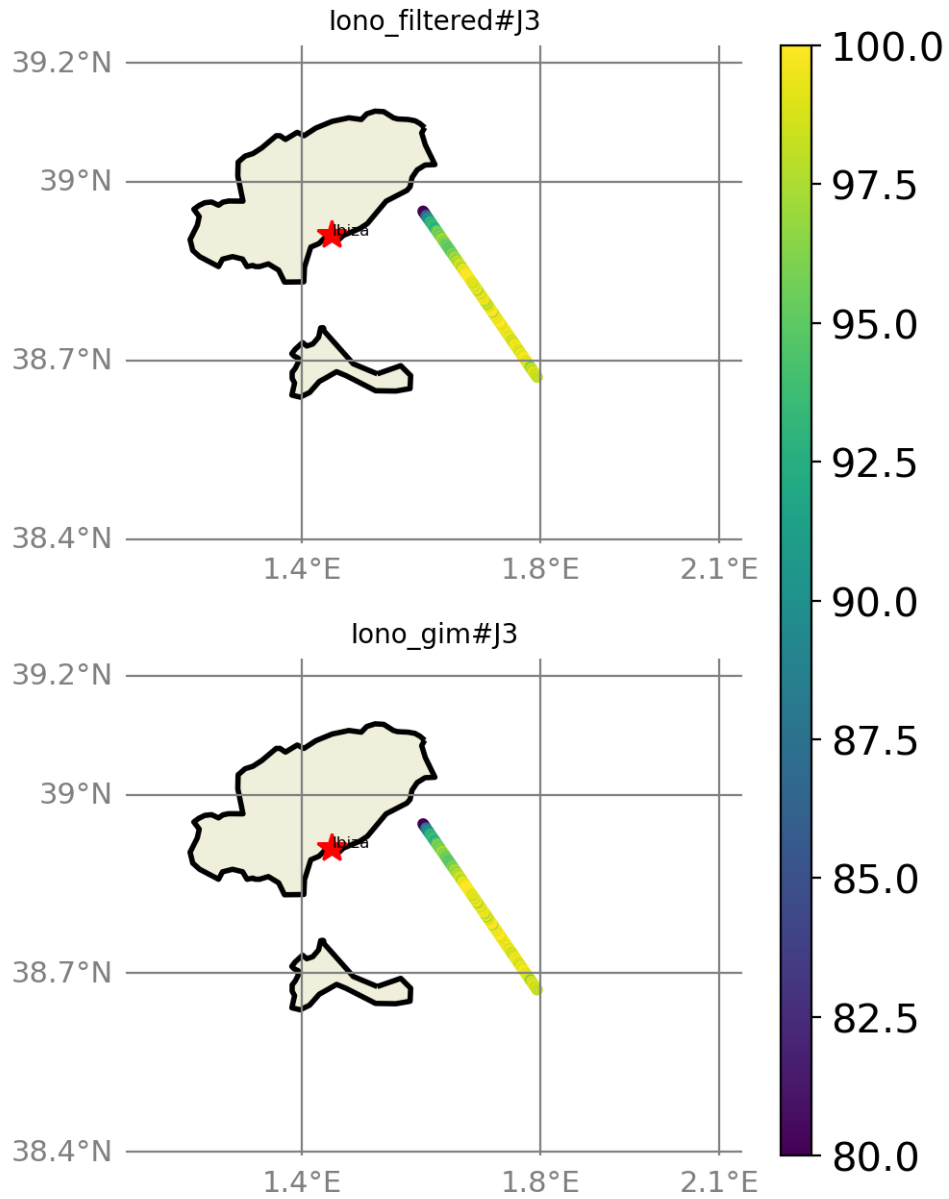


FIGURE 52 – valid_data_percent visualization in maps view % Ibiza tide gauge

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. $maxNB = 110$ 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.

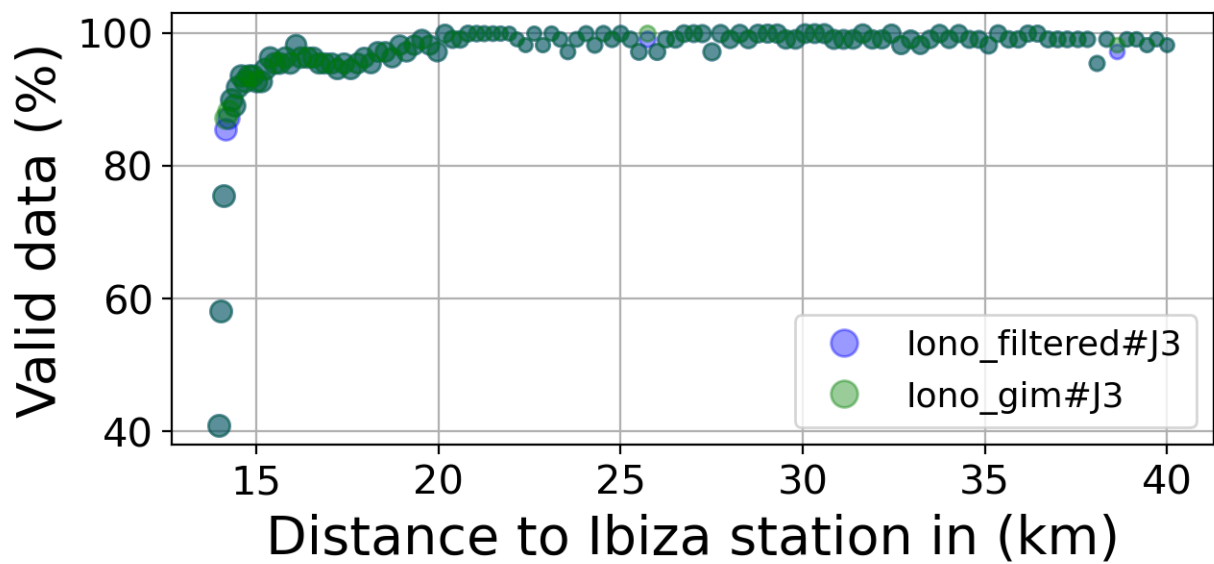
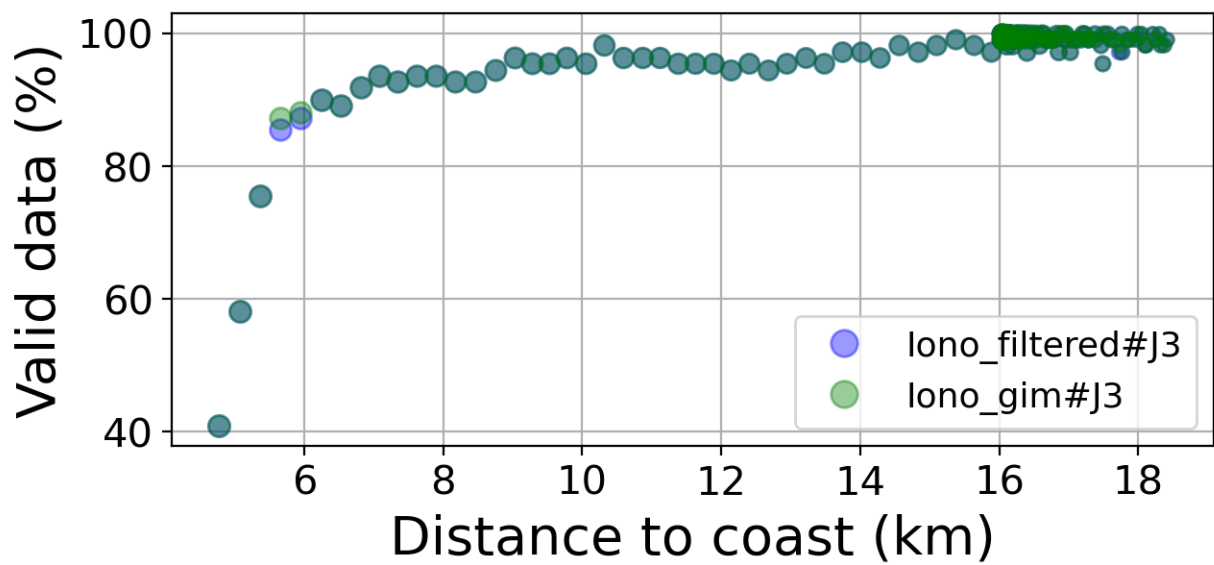


FIGURE 53 – Valid data (%) in function of distance to coast/Ibiza station

6.3.6 Std in function of distance to coast/Ibiza station

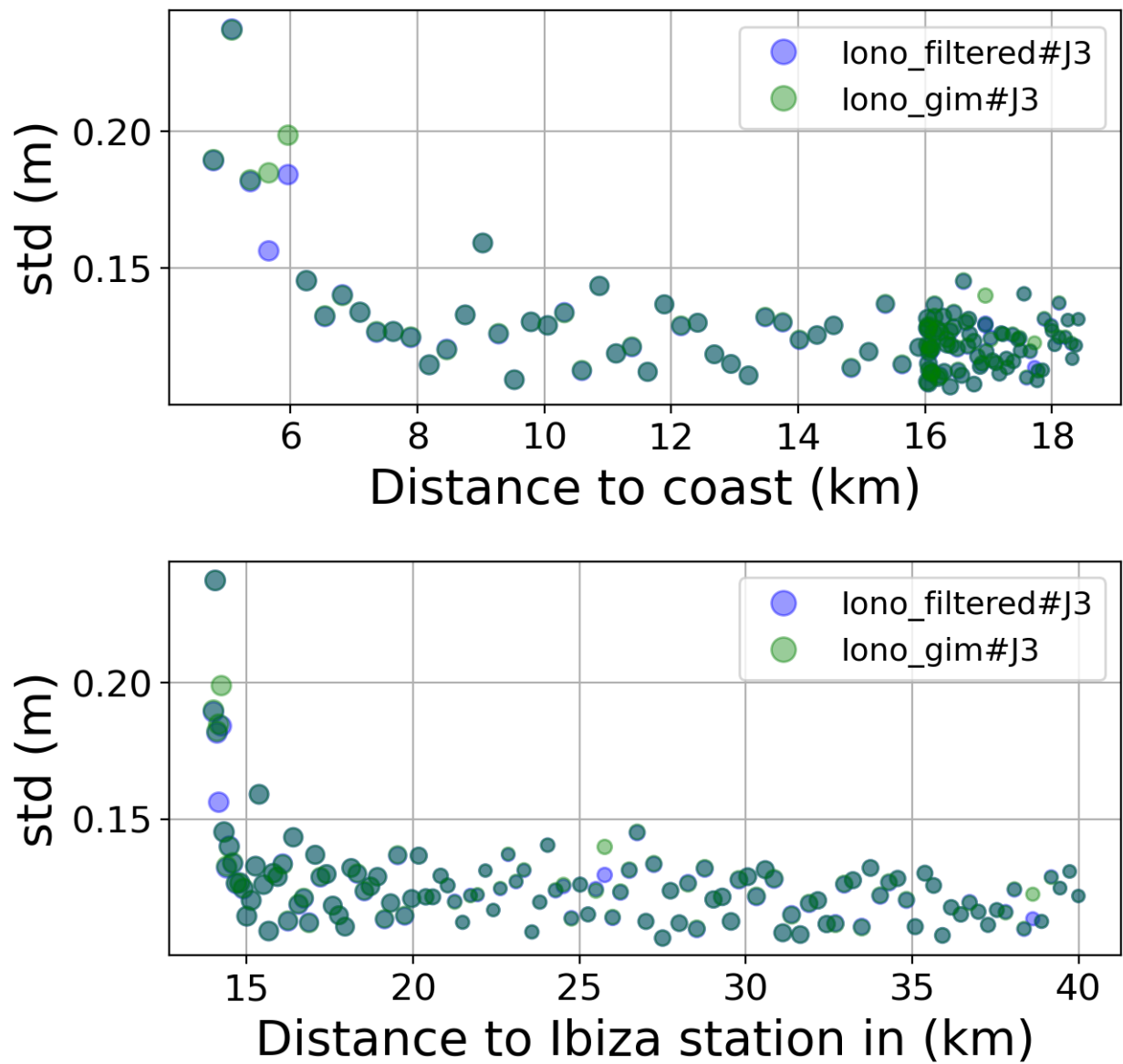


FIGURE 54 – Std in function of the distance to the coast/Ibiza station

6.3.7 Correlation in function of distance to coast/Ibiza station

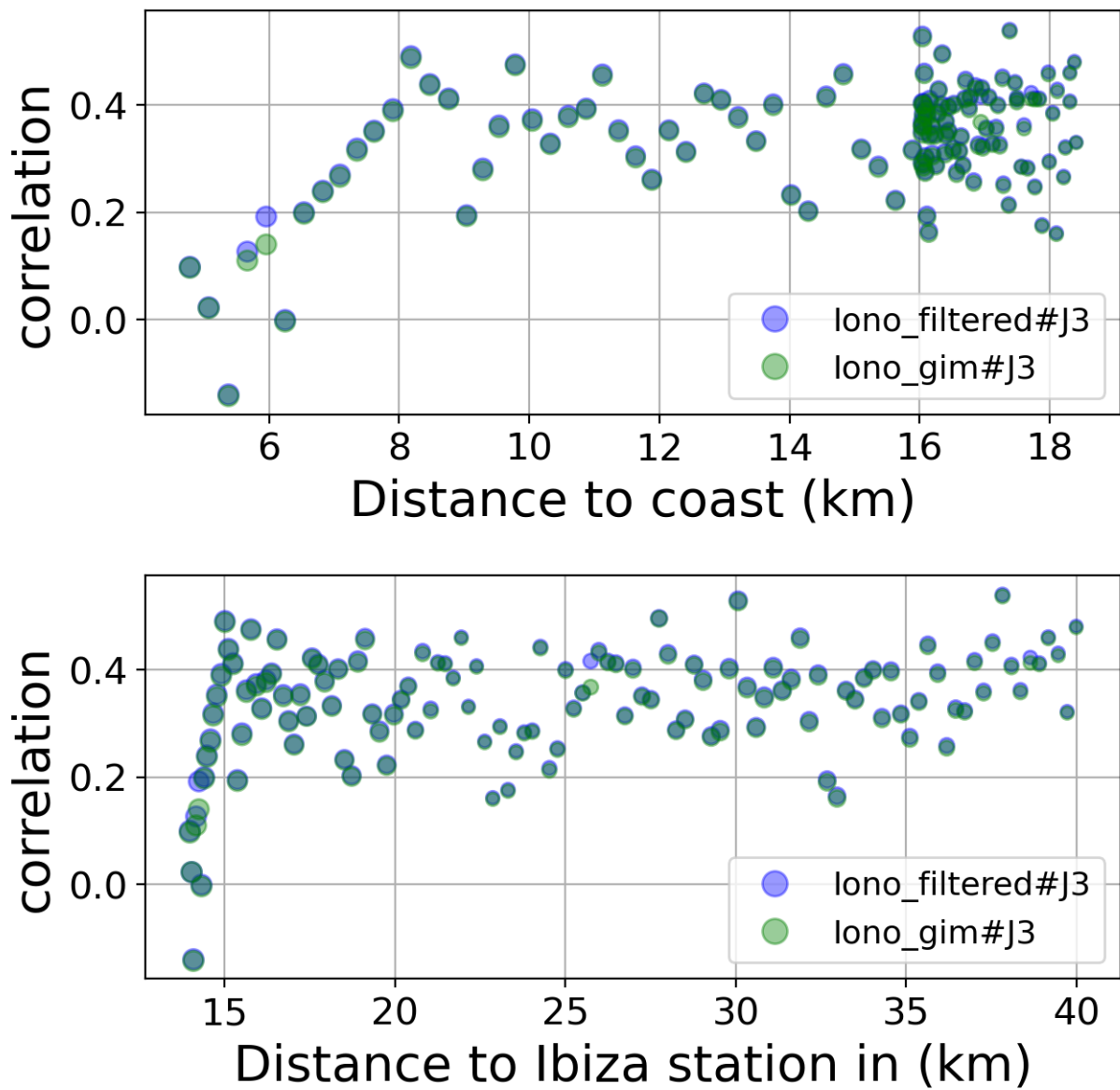


FIGURE 55 – Correlation in function of the distance to the coast/Ibiza station

6.3.8 Taylor Diagram

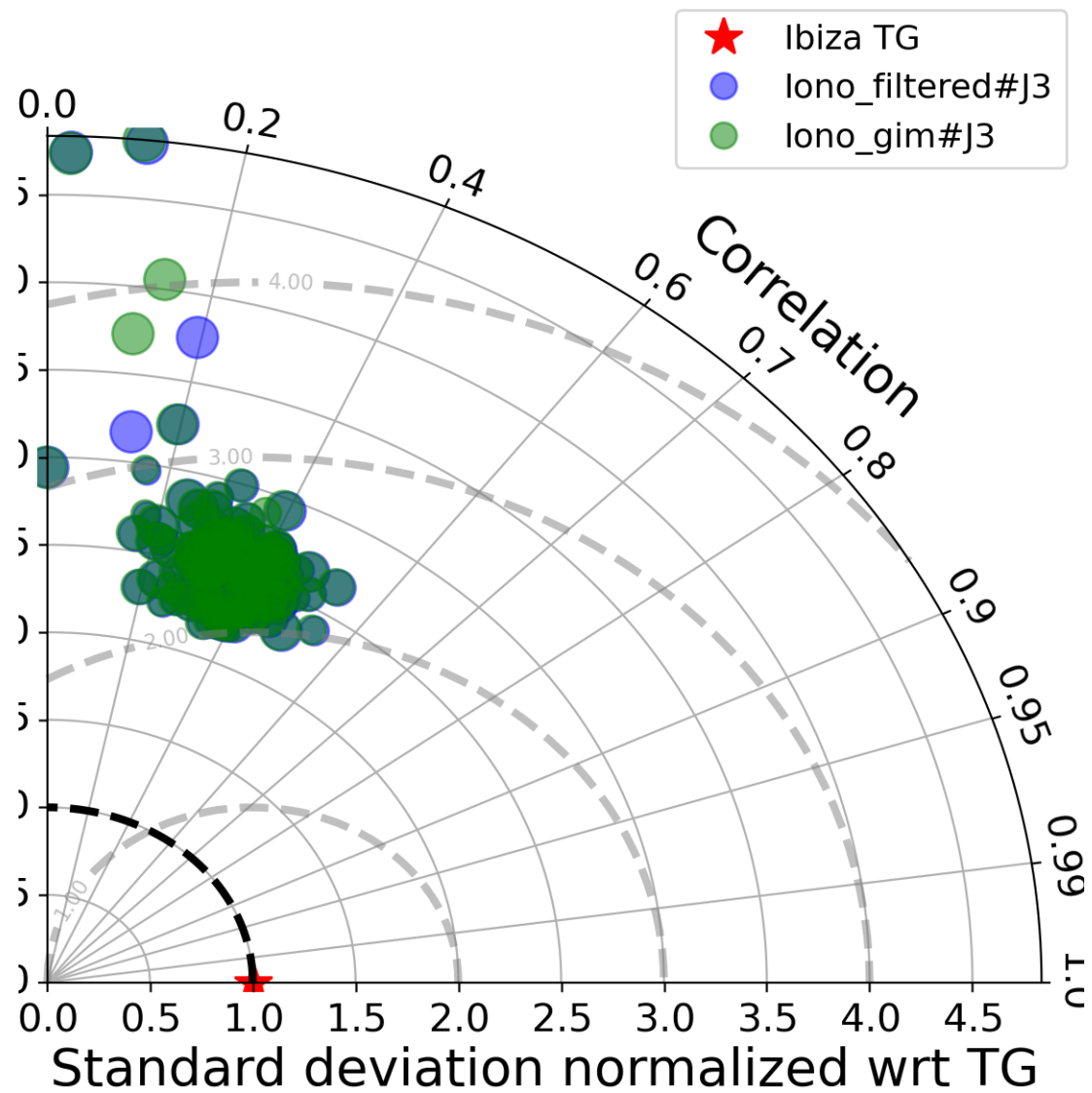


FIGURE 56 – Taylor diagram

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)
lono_filtered#J3	96.784	0.341	0.126	0.119
lono_gim#J3	96.822	0.336	0.127	0.119

FIGURE 57 – 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 110 point.

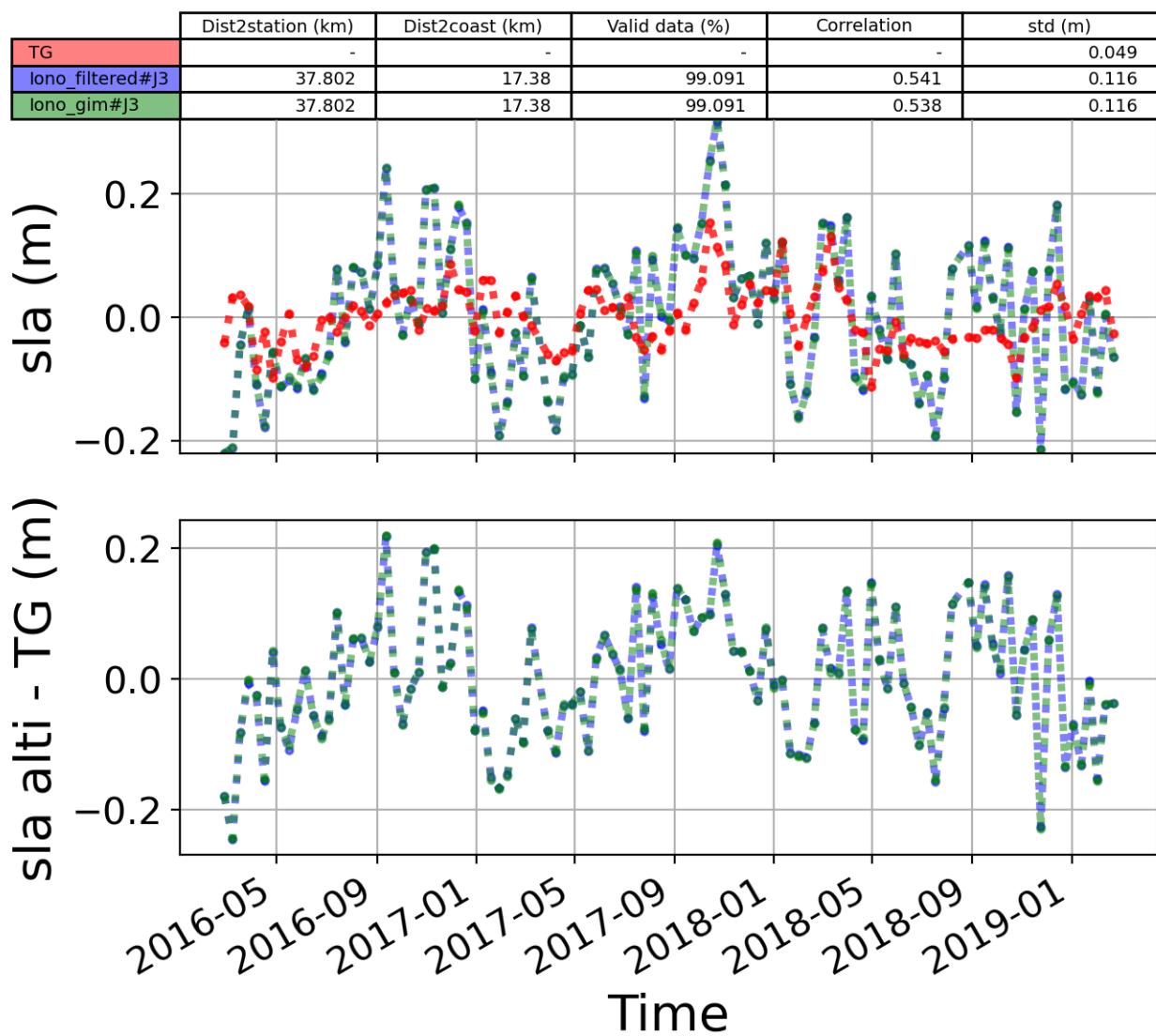


FIGURE 58 – The 1st most correlated sla altimetry Time serie with tide gauge sla time serie

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 Radius of 40 Km
 - Maximum distance to the coast : 20 Km

6.4.1 correlation visualization in maps view % LA_FIGUEIRETTE tide gauge

Correlation Altimerty data with respect to LA_FIGUEIRETTE Tide gauge data

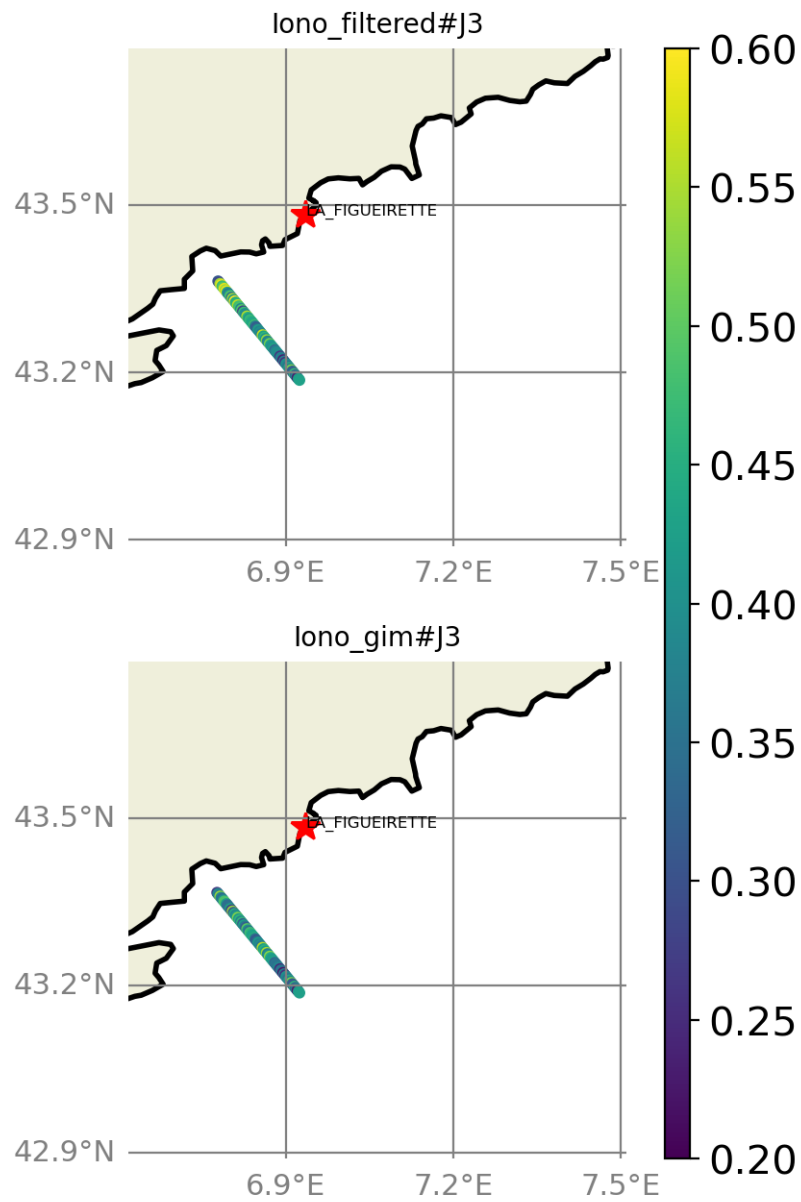


FIGURE 59 – correlation visualization in maps view % LA_FIGUEIRETTE tide gauge

6.4.2 rmsd visualization in maps view % LA_FIGUEIRETTE tide gauge

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

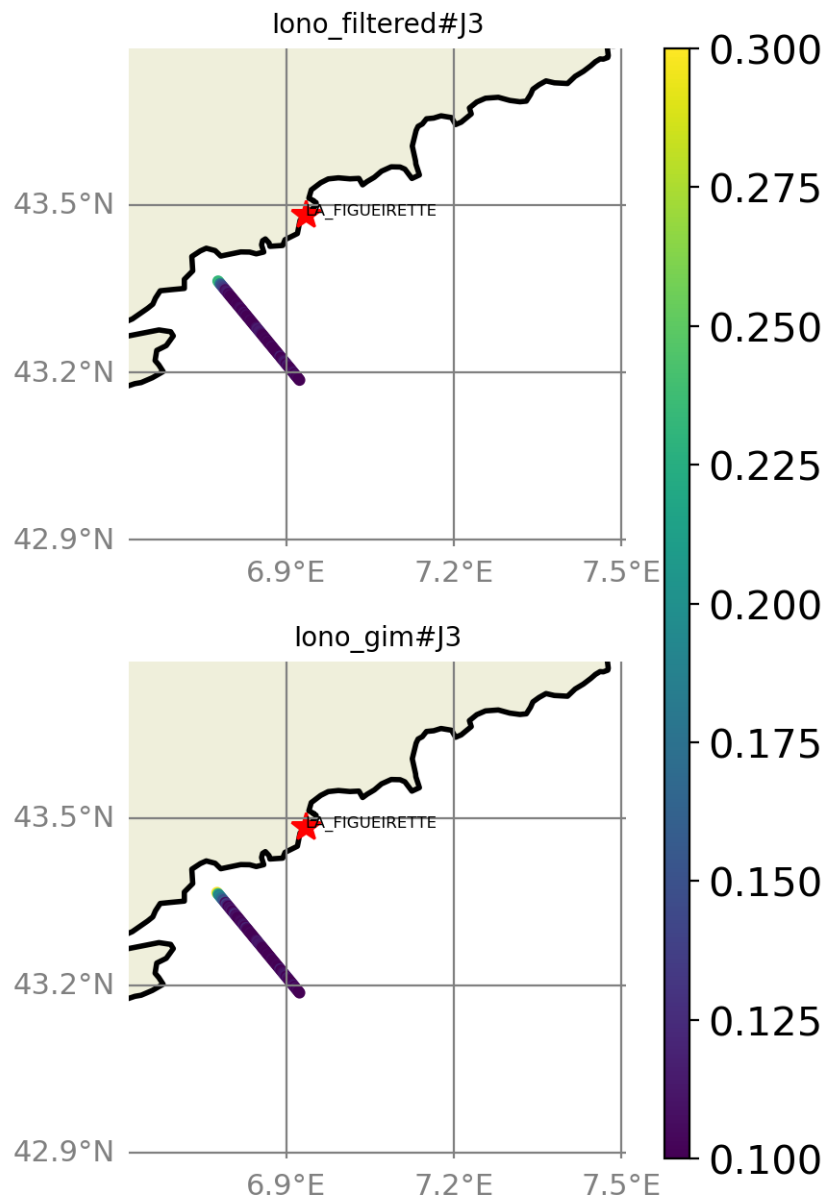


FIGURE 60 – rmsd visualization in maps view % LA_FIGUEIRETTE tide gauge

6.4.3 std visualization in maps view % LA_FIGUEIRETTE tide gauge

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

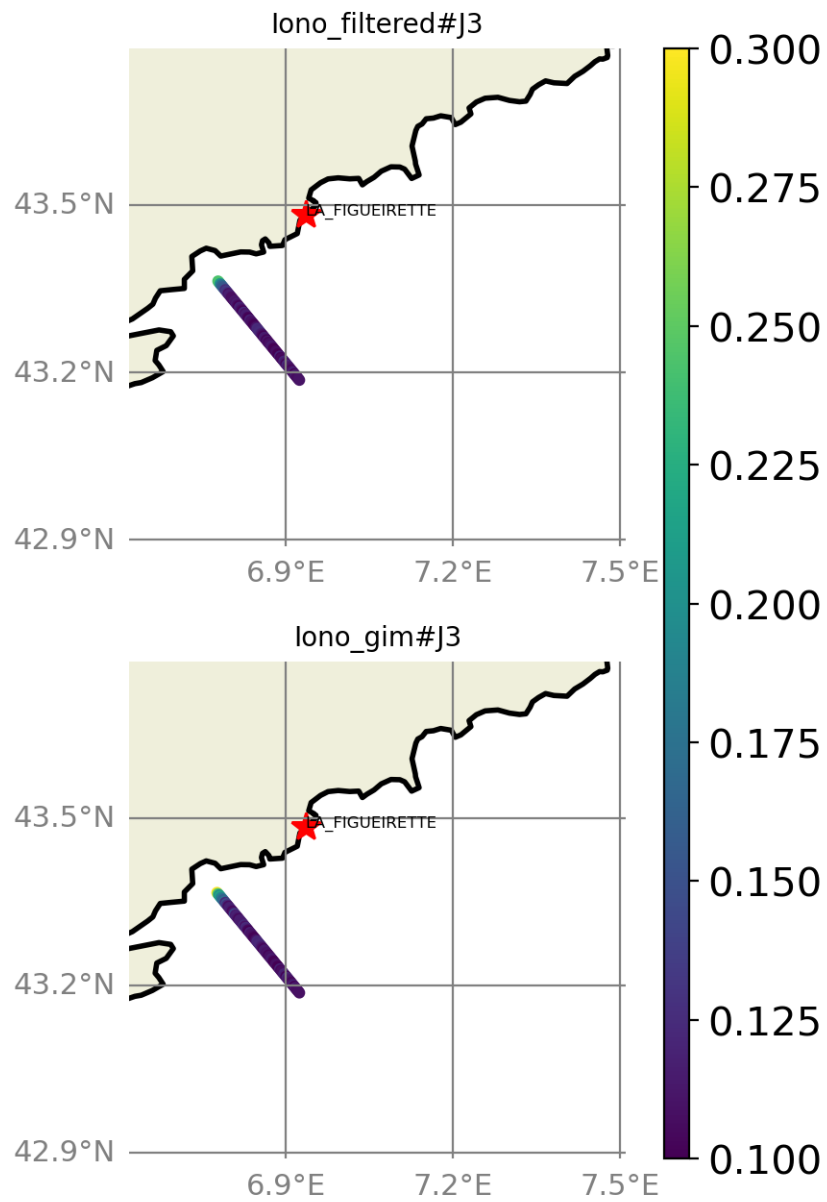


FIGURE 61 – std visualization in maps view % LA_FIGUEIRETTE tide gauge

6.4.4 valid_data_percent visualization in maps view % LA_FIGUEIRETTE tide gauge

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

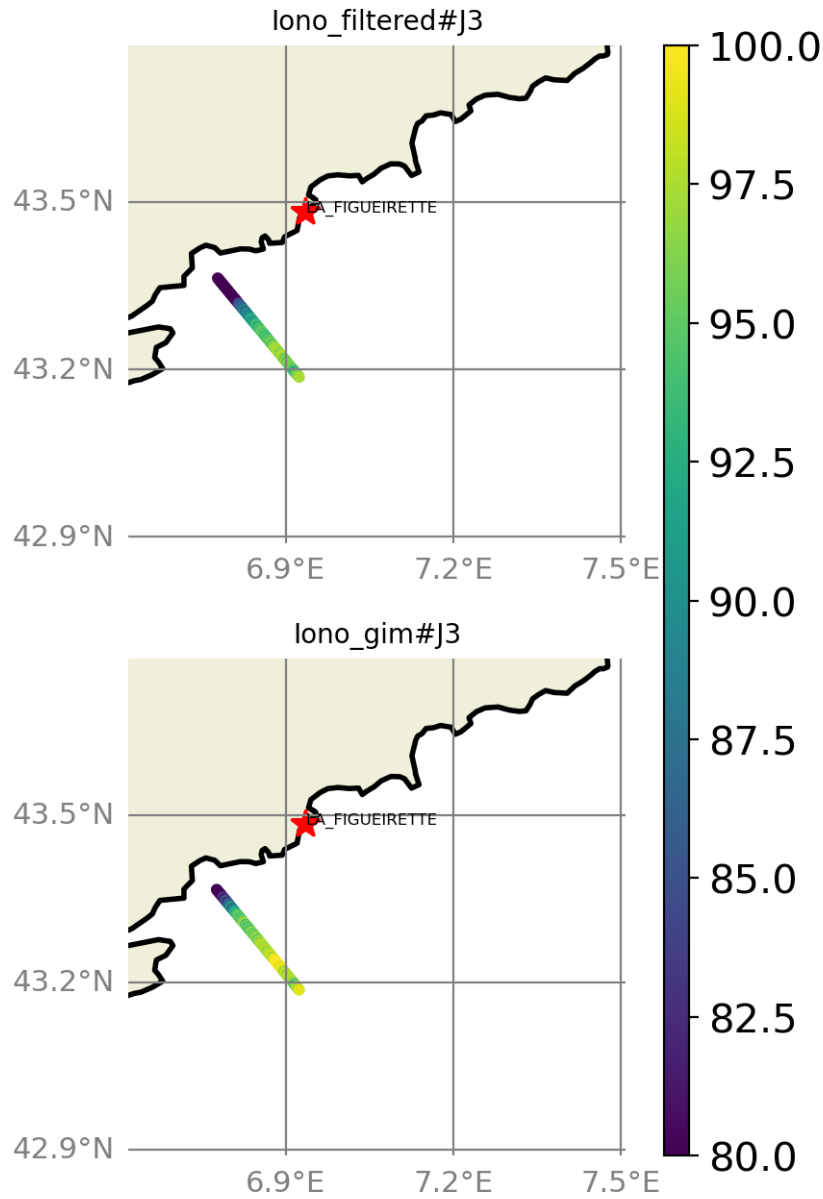


FIGURE 62 – valid_data_percent visualization in maps view % LA_FIGUEIRETTE tide gauge

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 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.

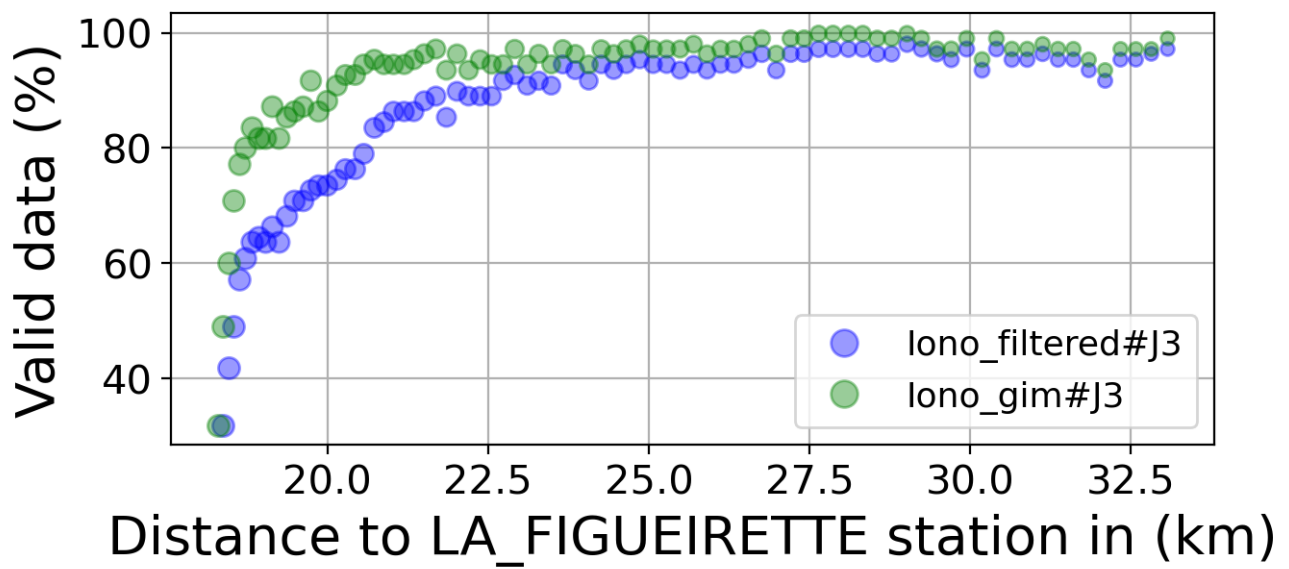
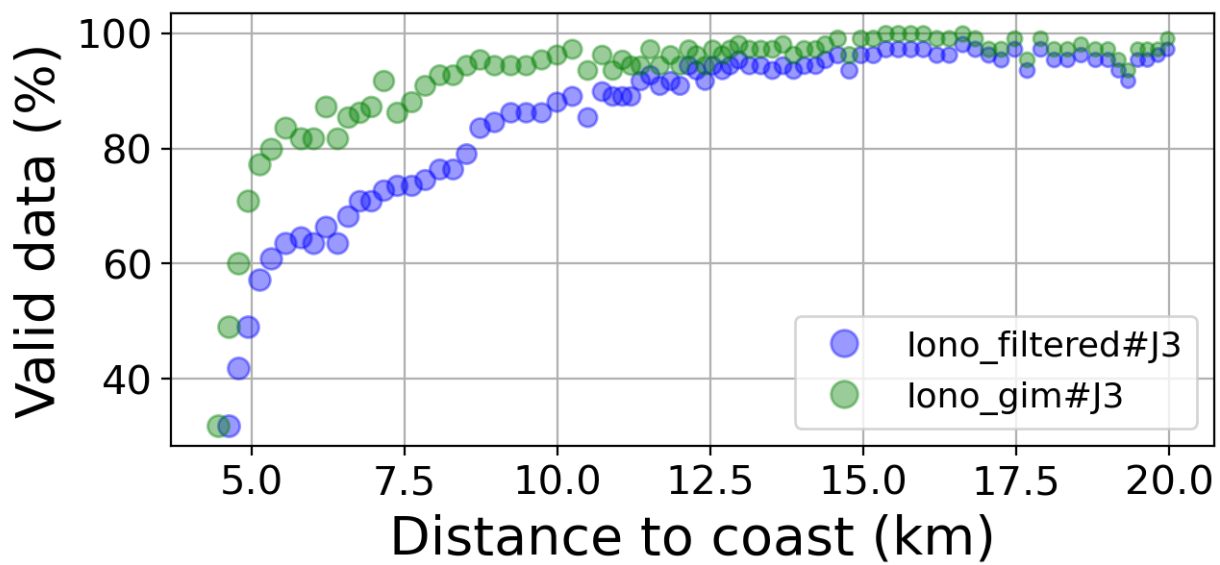


FIGURE 63 – Valid data (%) in function of distance to coast/LA_FIGUEIRETTE station

6.4.6 Std in function of distance to coast/LA_FIGUEIRETTE station

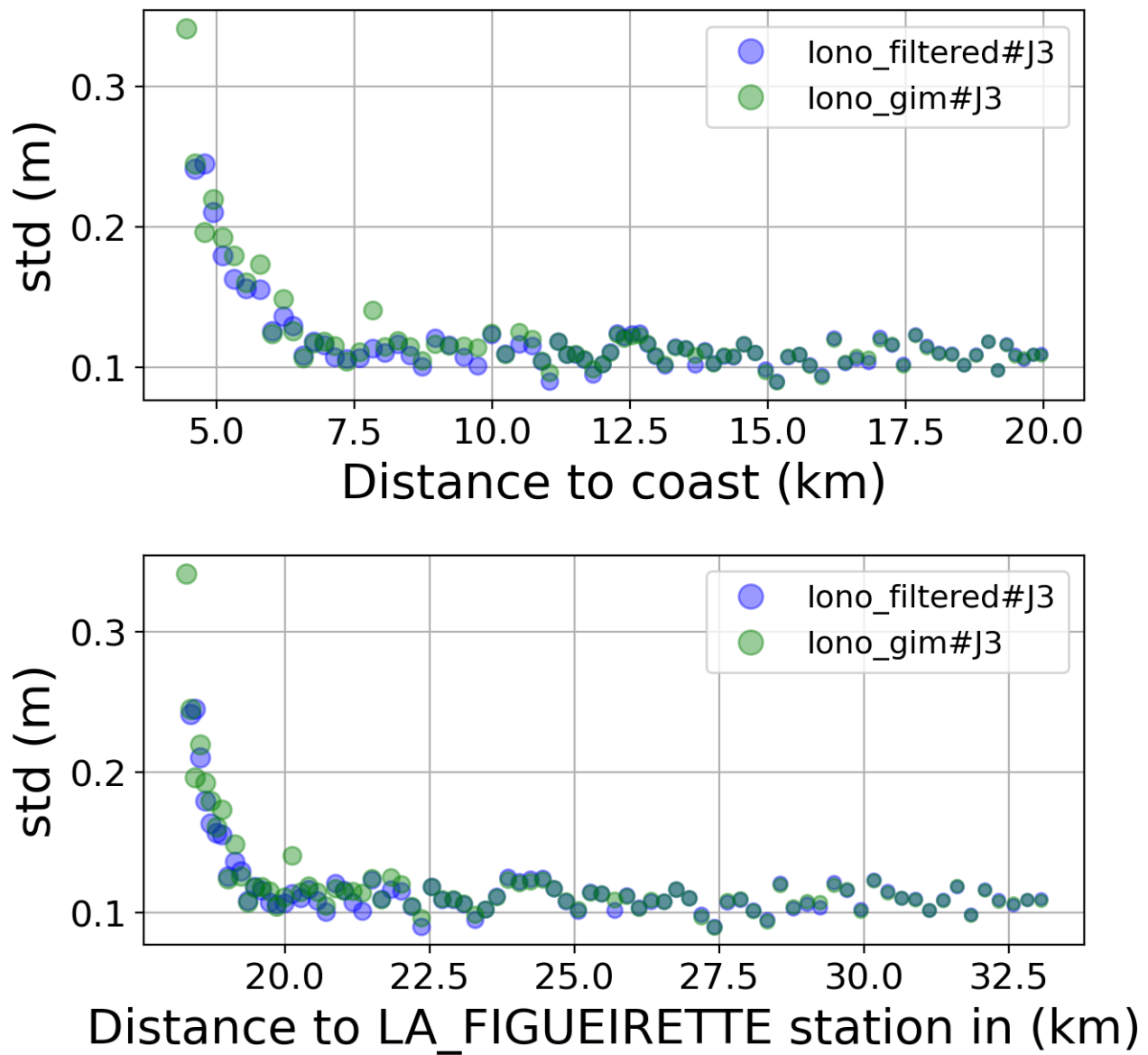


FIGURE 64 – Std in function of the distance to the coast/LA_FIGUEIRETTE station

6.4.7 Correlation in function of distance to coast/LA_FIGUEIRETTE station

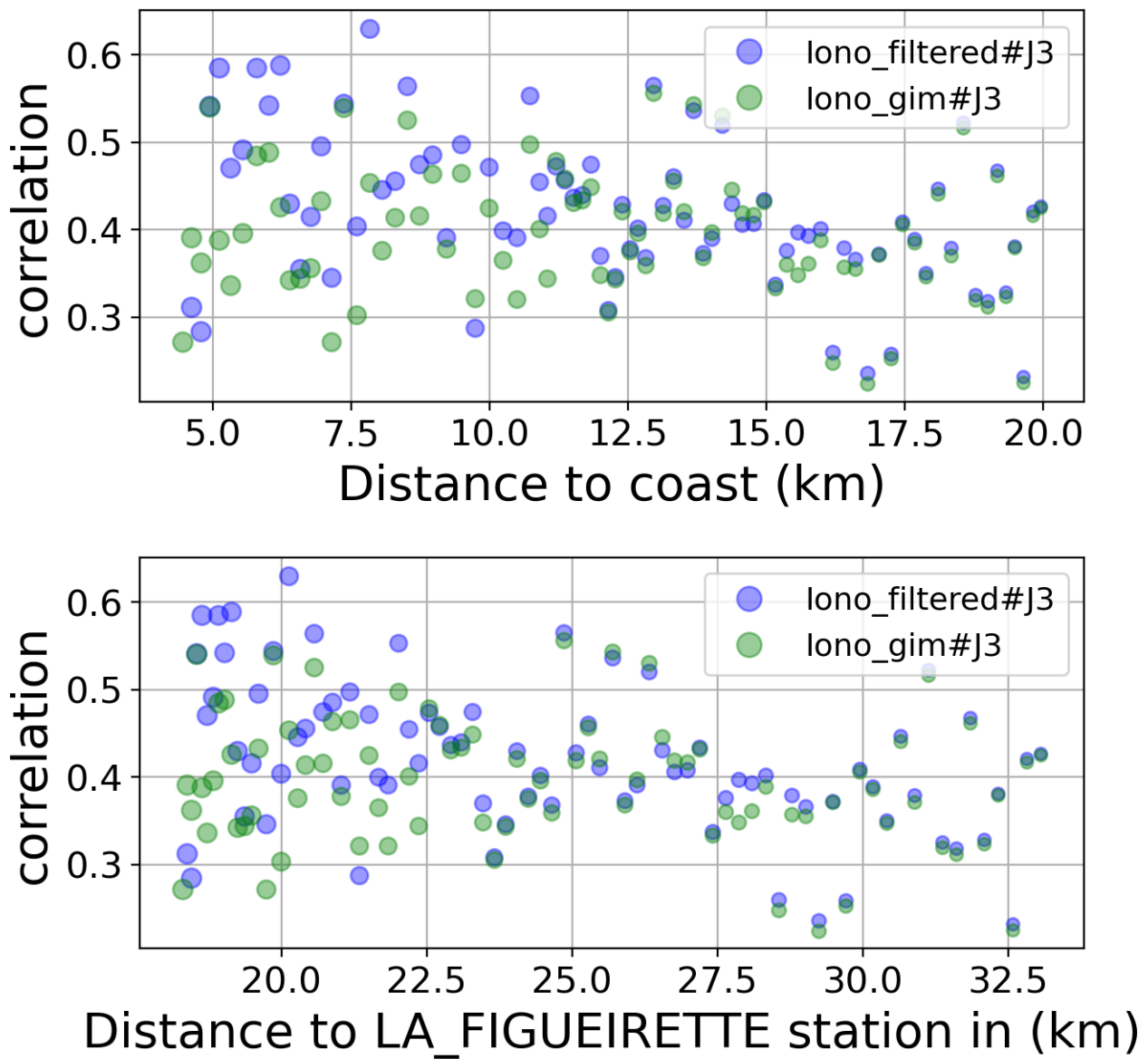


FIGURE 65 – Correlation in function of the distance to the coast/LA_FIGUEIRETTE station

6.4.8 Taylor Diagram

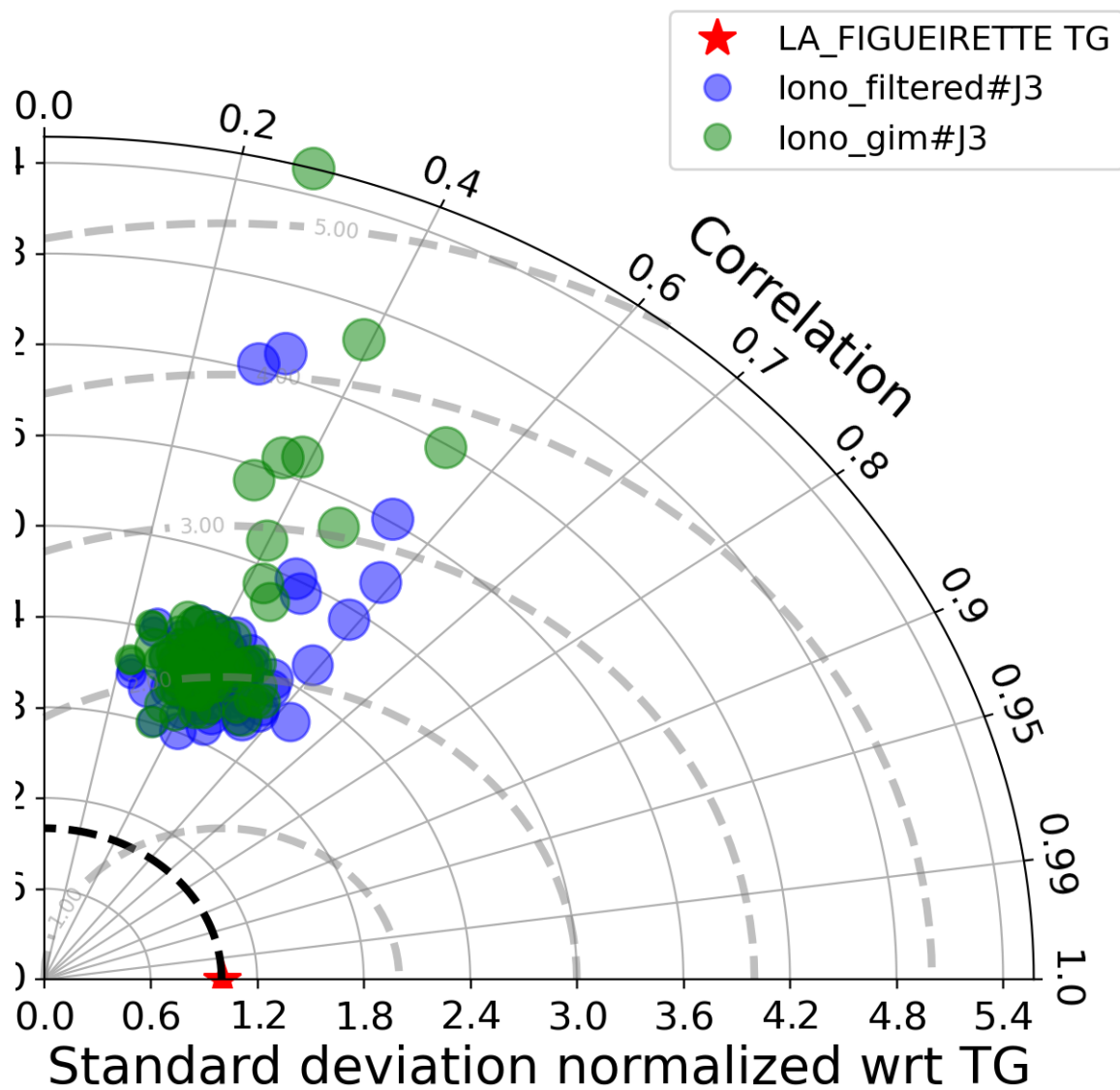


FIGURE 66 – Taylor diagram

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)
lono_filtered#J3	86.33	0.422	0.118	0.107
lono_gim#J3	93.398	0.396	0.12	0.11

FIGURE 67 – 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.

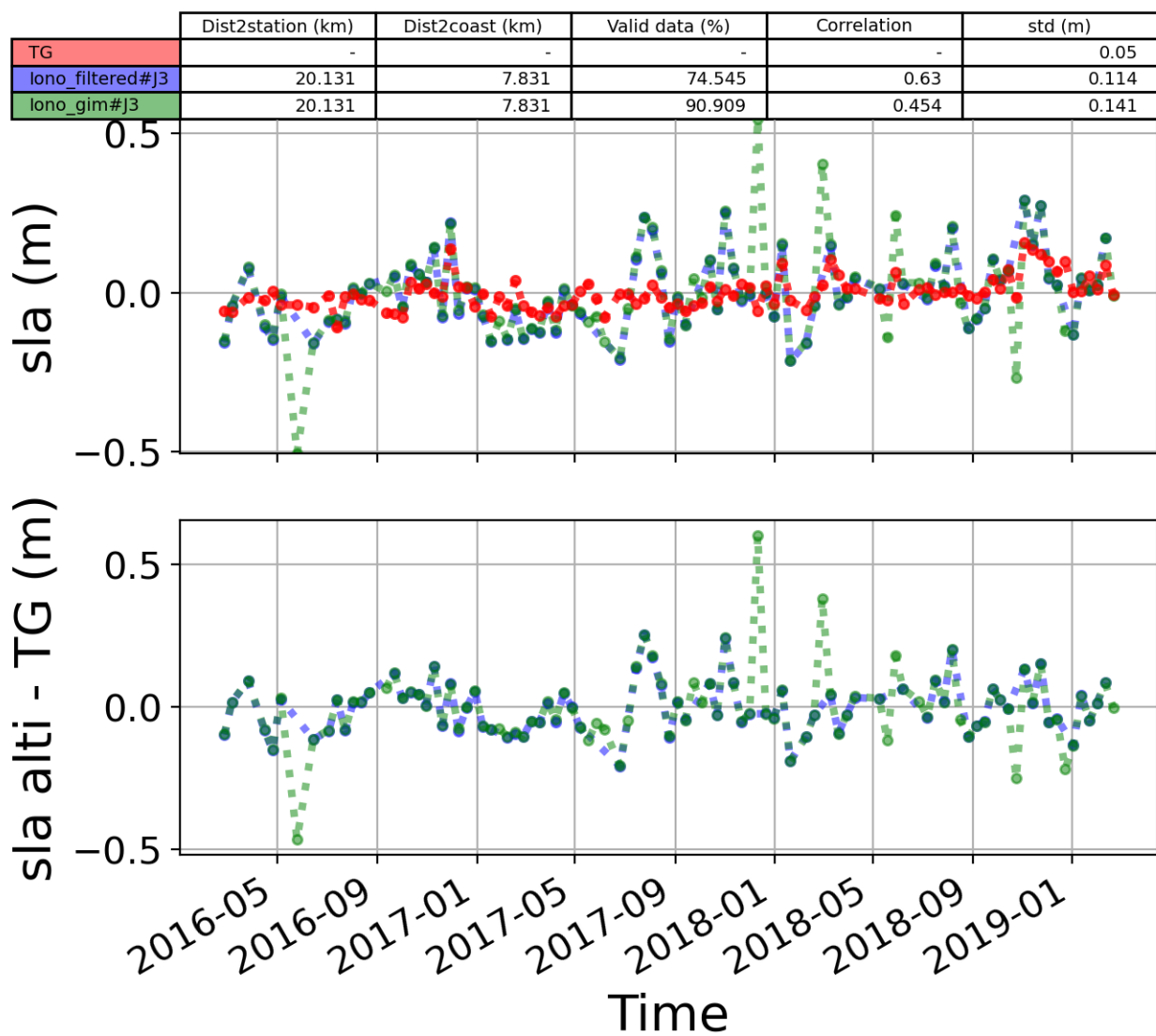


FIGURE 68 – The 1st most correlated sla altimetry Time serie with tide gauge sla time serie

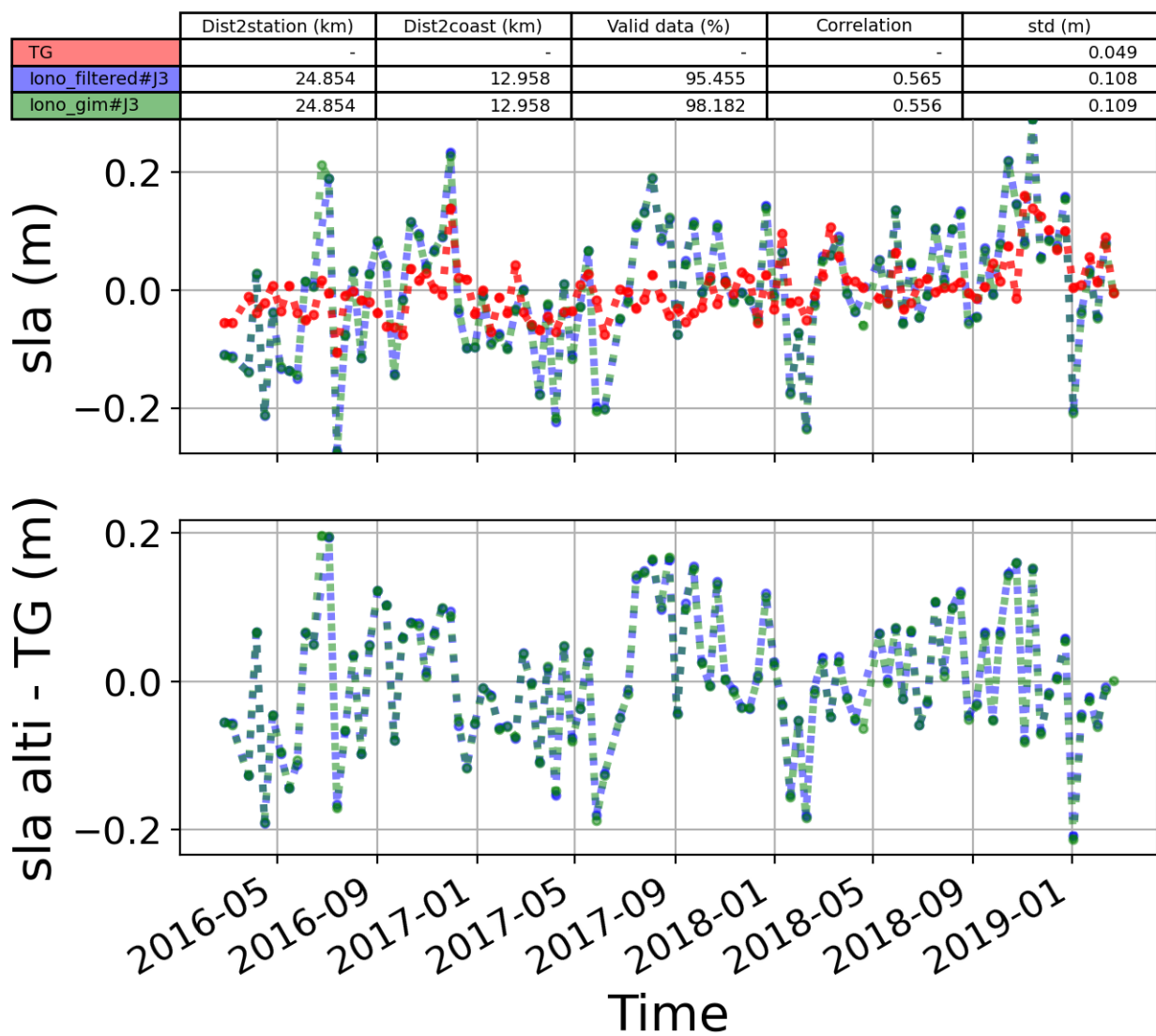


FIGURE 69 – The 2nd most correlated sla altimetry Time serie with tide gauge sla time serie

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 Altimerty data with respect to Ancona Tide gauge data

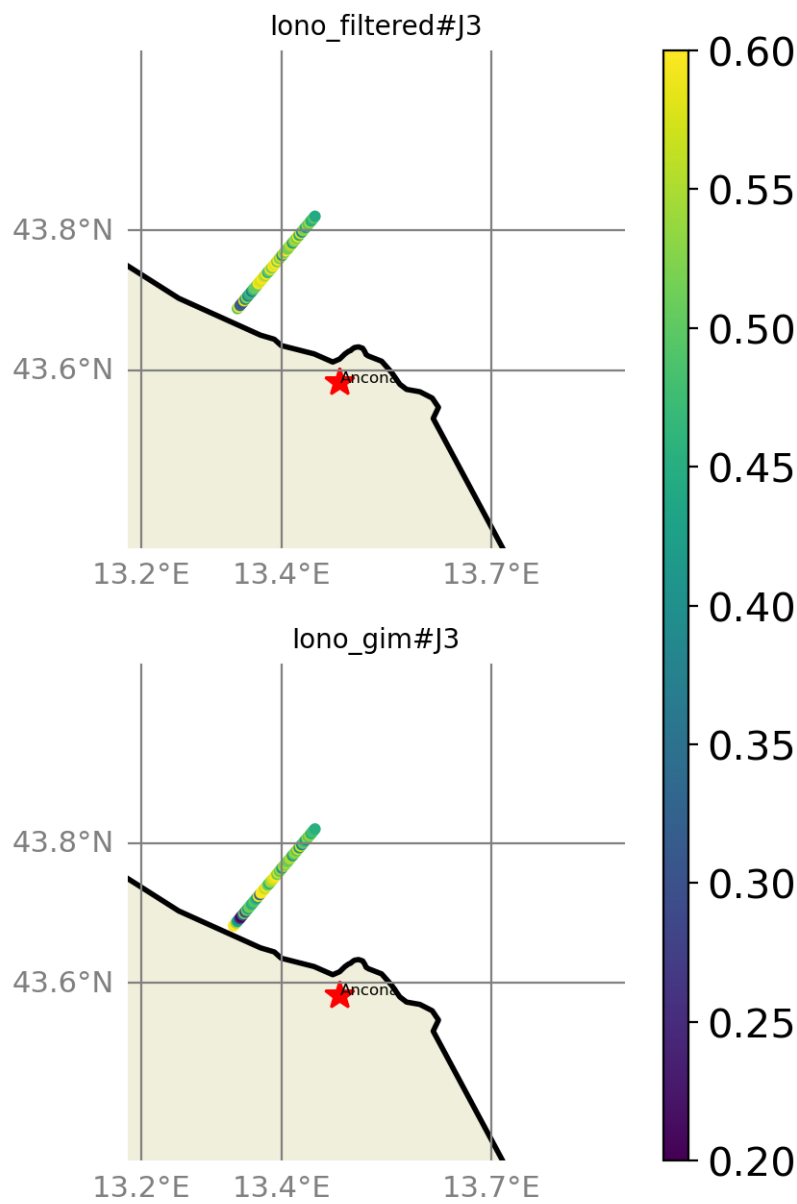


FIGURE 70 – correlation visualization in maps view % Ancona tide gauge

6.5.2 rmsd visualization in maps view % Ancona tide gauge

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

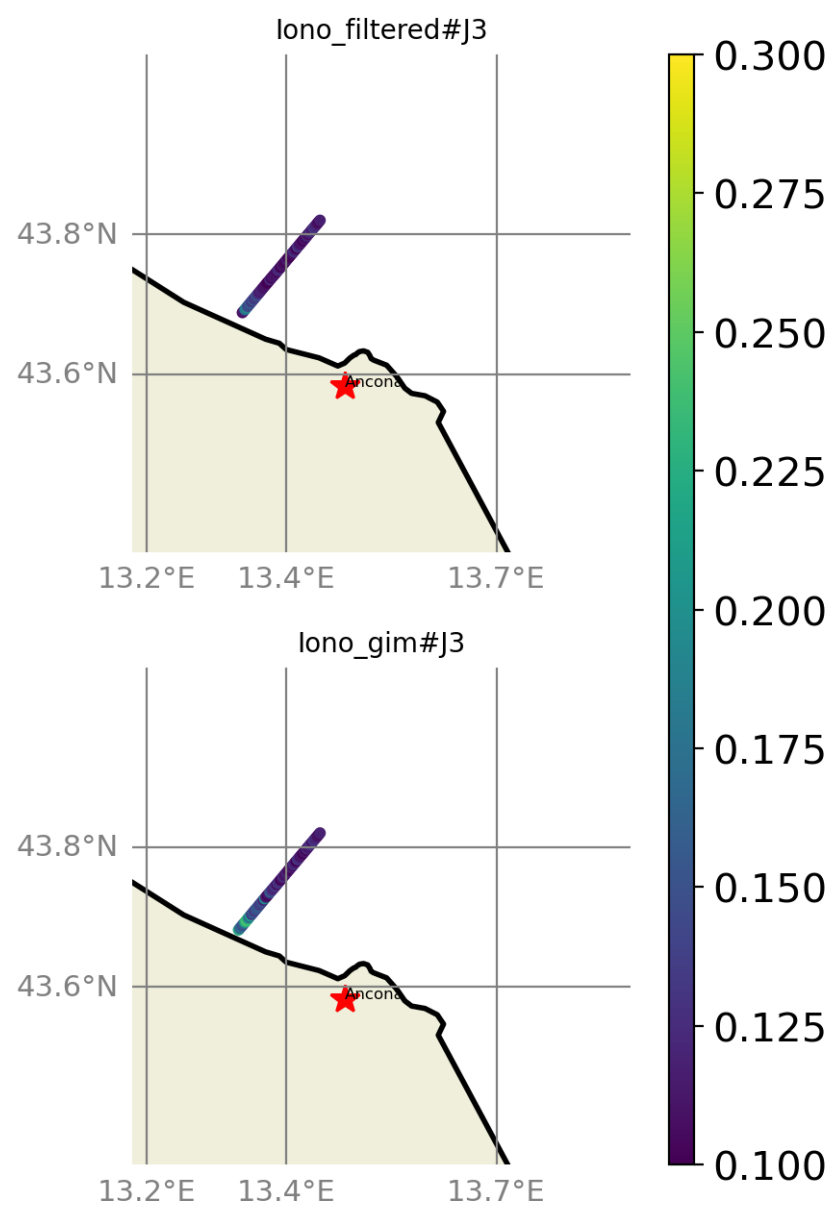


FIGURE 71 – rmsd visualization in maps view % Ancona tide gauge

6.5.3 std visualization in maps view % Ancona tide gauge

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

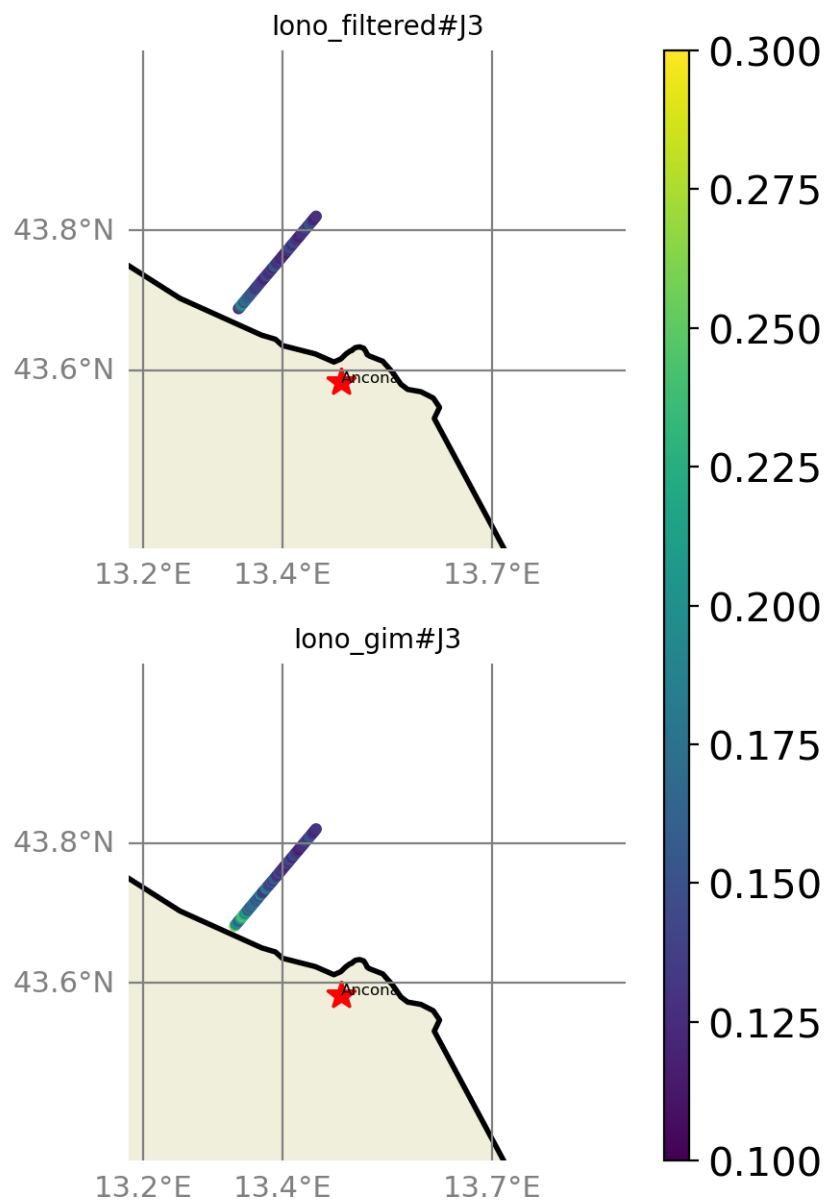


FIGURE 72 – std visualization in maps view % Ancona tide gauge

6.5.4 valid_data_percent visualization in maps view % Ancona tide gauge

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

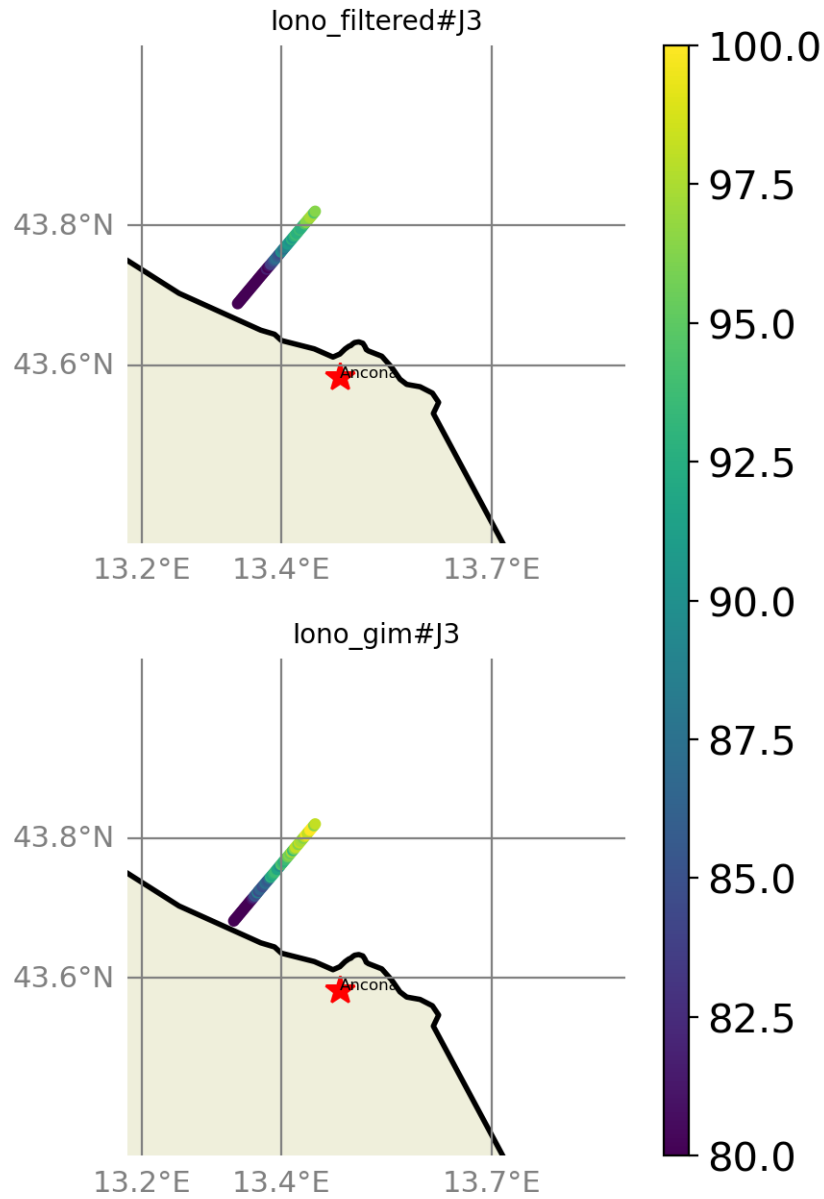


FIGURE 73 – valid_data_percent visualization in maps view % Ancona tide gauge

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.

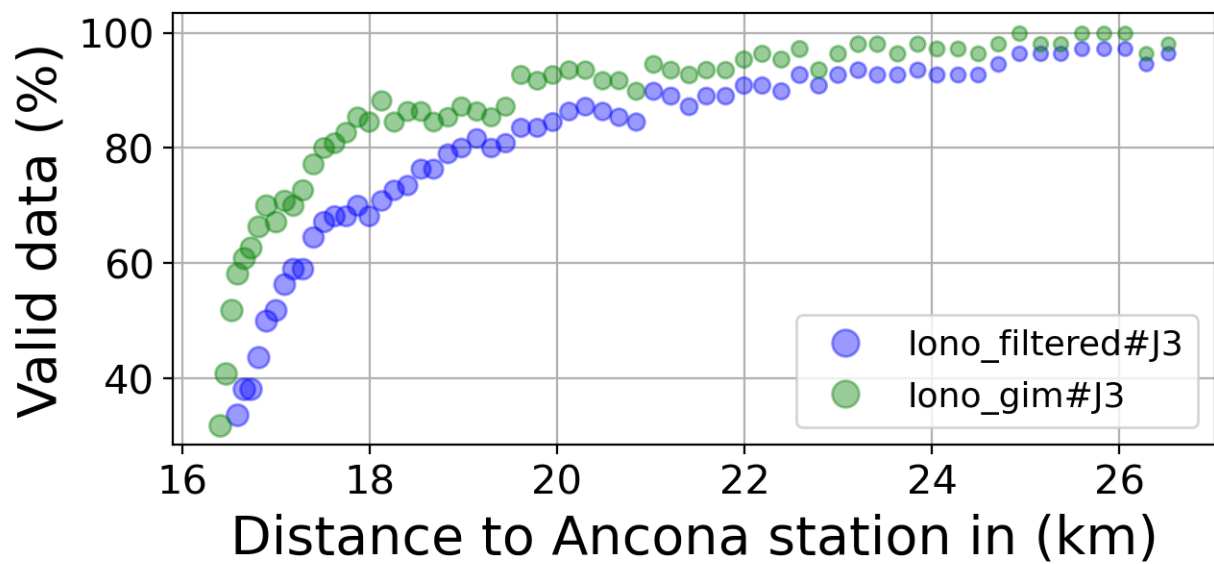
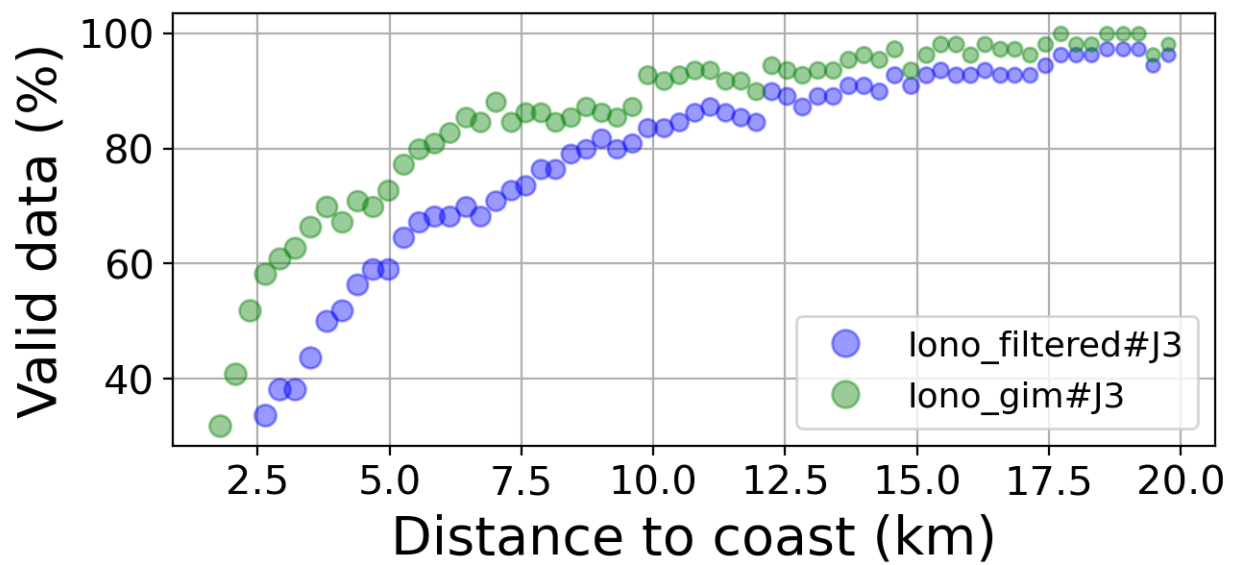


FIGURE 74 – Valid data (%) in function of distance to coast/Ancona station

6.5.6 Std in function of distance to coast/Ancona station

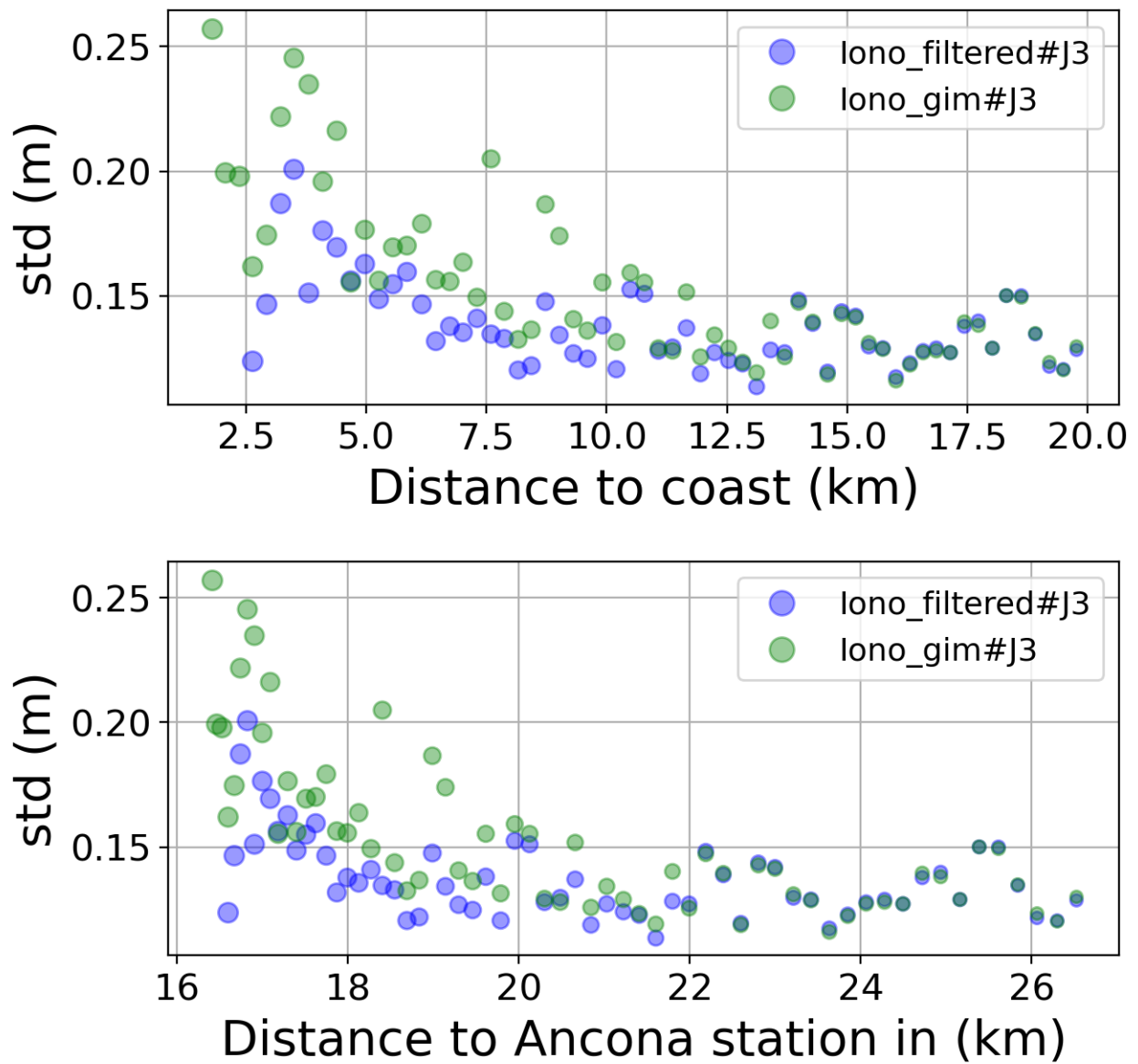


FIGURE 75 – Std in function of the distance to the coast/Ancona station

6.5.7 Correlation in function of distance to coast/Ancona station

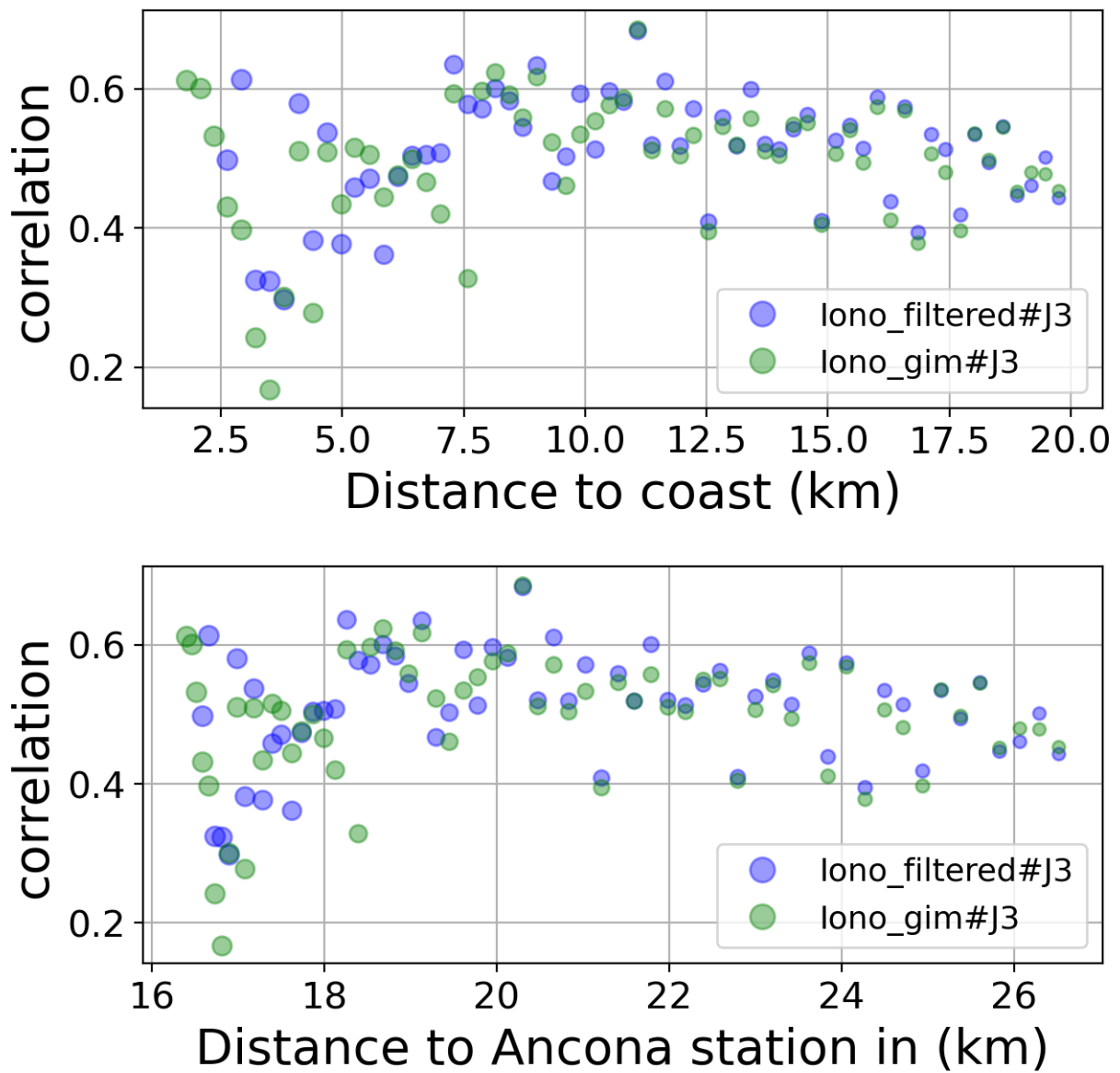


FIGURE 76 – Correlation in function of the distance to the coast/Ancona station

6.5.8 Taylor Diagram

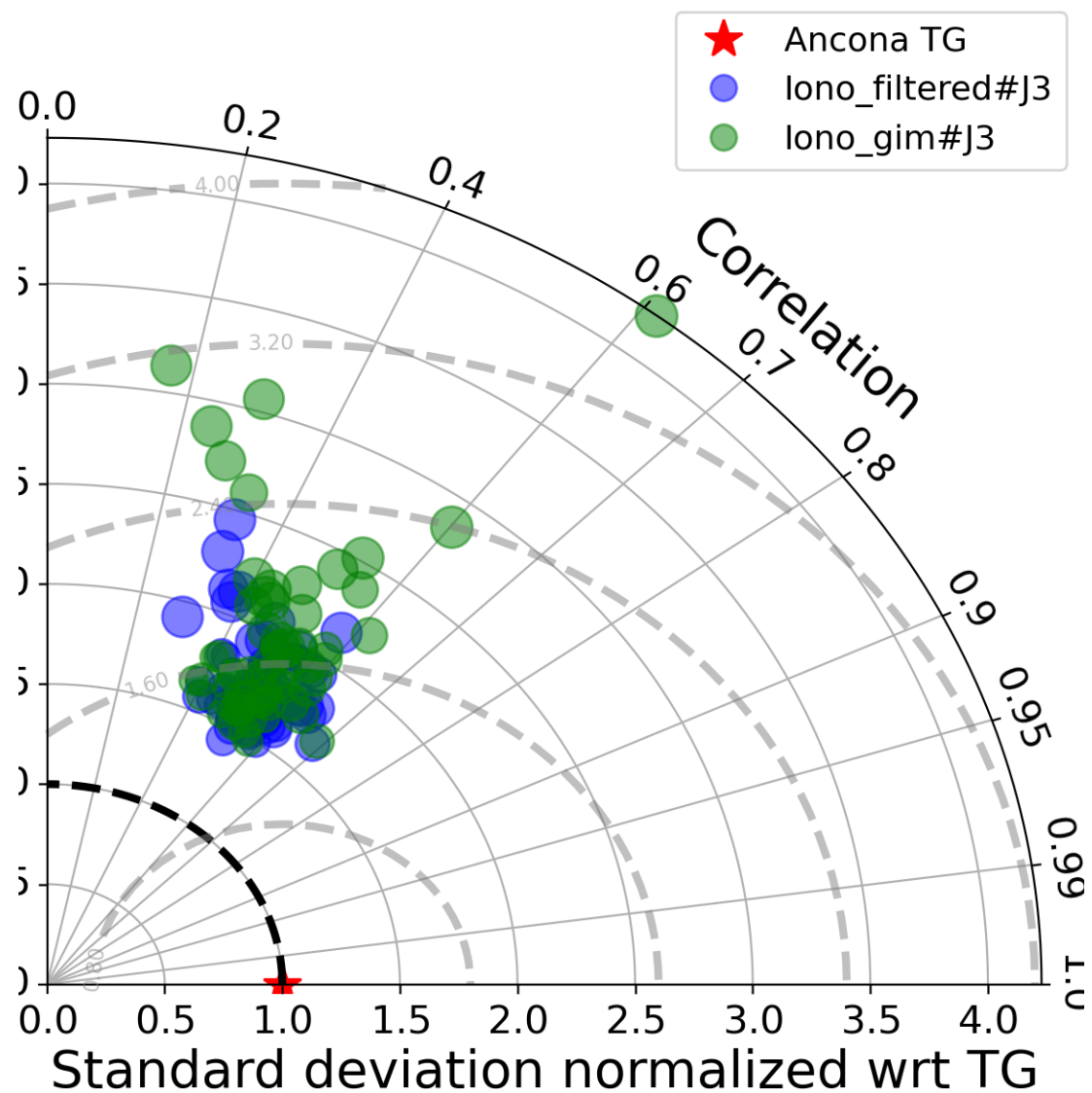


FIGURE 77 – Taylor diagram

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)
lono_filtered#J3	80.0	0.511	0.138	0.119
lono_gim#J3	88.394	0.49	0.151	0.132

FIGURE 78 – 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.

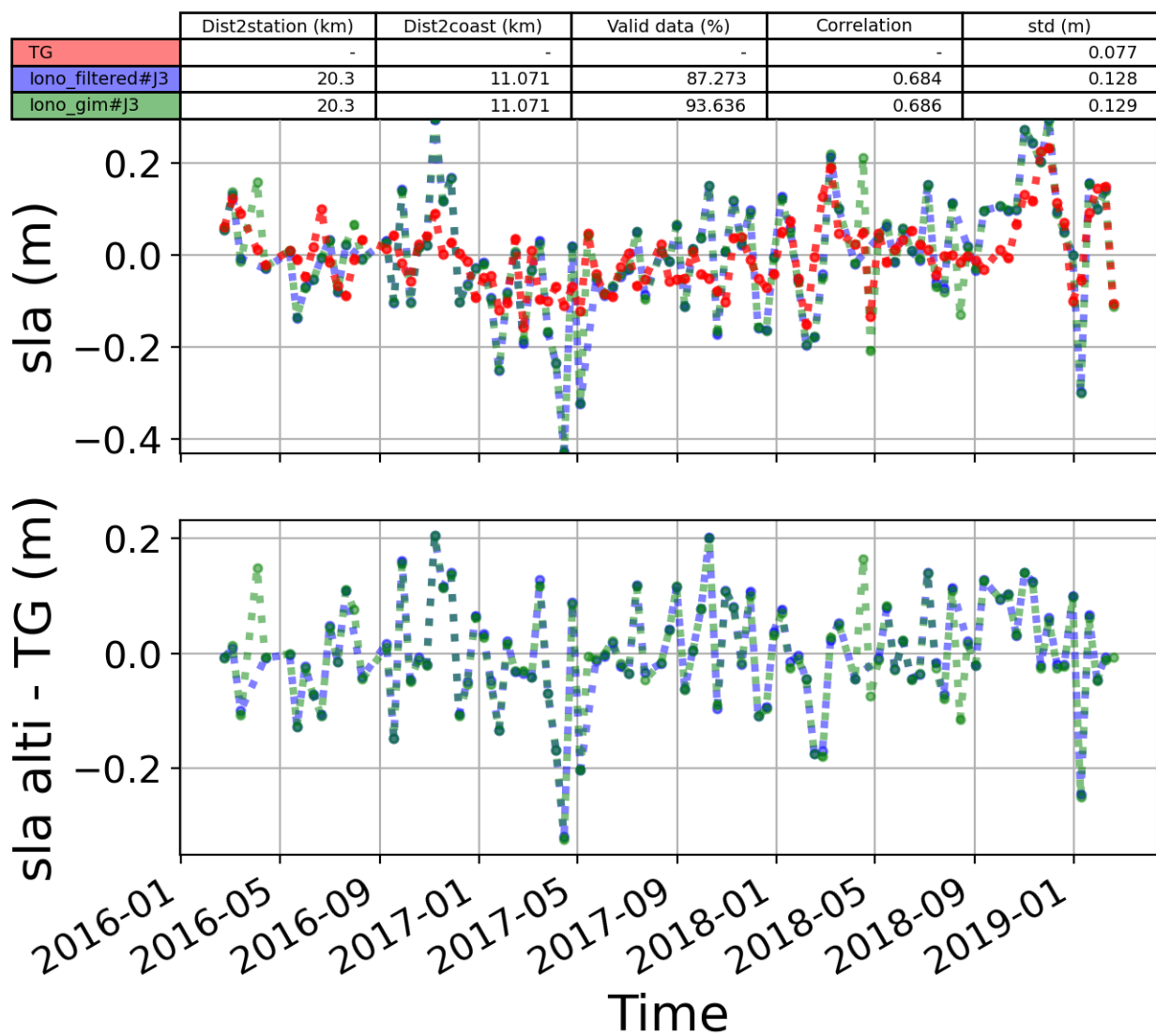


FIGURE 79 – The 1st most correlated sla altimetry Time serie with tide gauge sla time serie

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 Radius of 40 Km
 - Maximum distance to the coast : 20 Km

6.6.1 correlation visualization in maps view % Livourne tide gauge

Correlation Altimerty data with respect to Livourne Tide gauge data

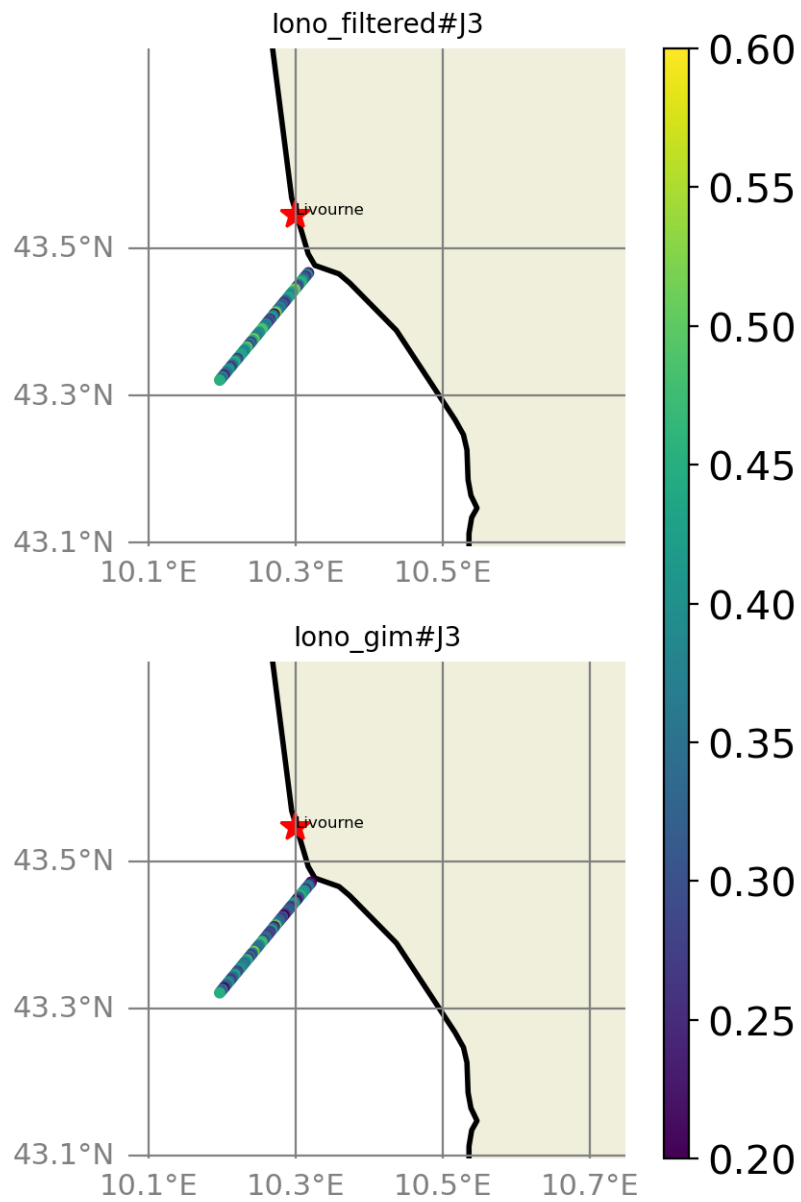


FIGURE 80 – correlation visualization in maps view % Livourne tide gauge

6.6.2 rmsd visualization in maps view % Livourne tide gauge

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

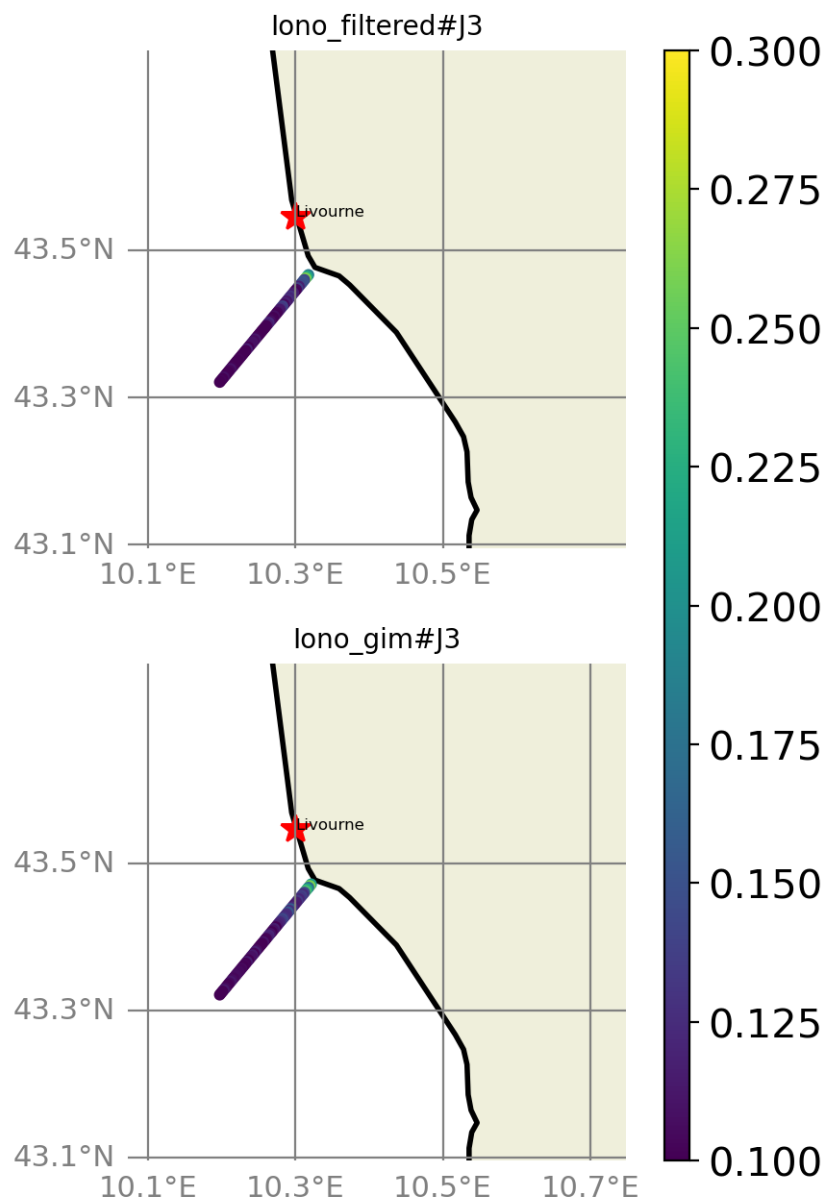


FIGURE 81 – rmsd visualization in maps view % Livourne tide gauge

6.6.3 std visualization in maps view % Livourne tide gauge

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

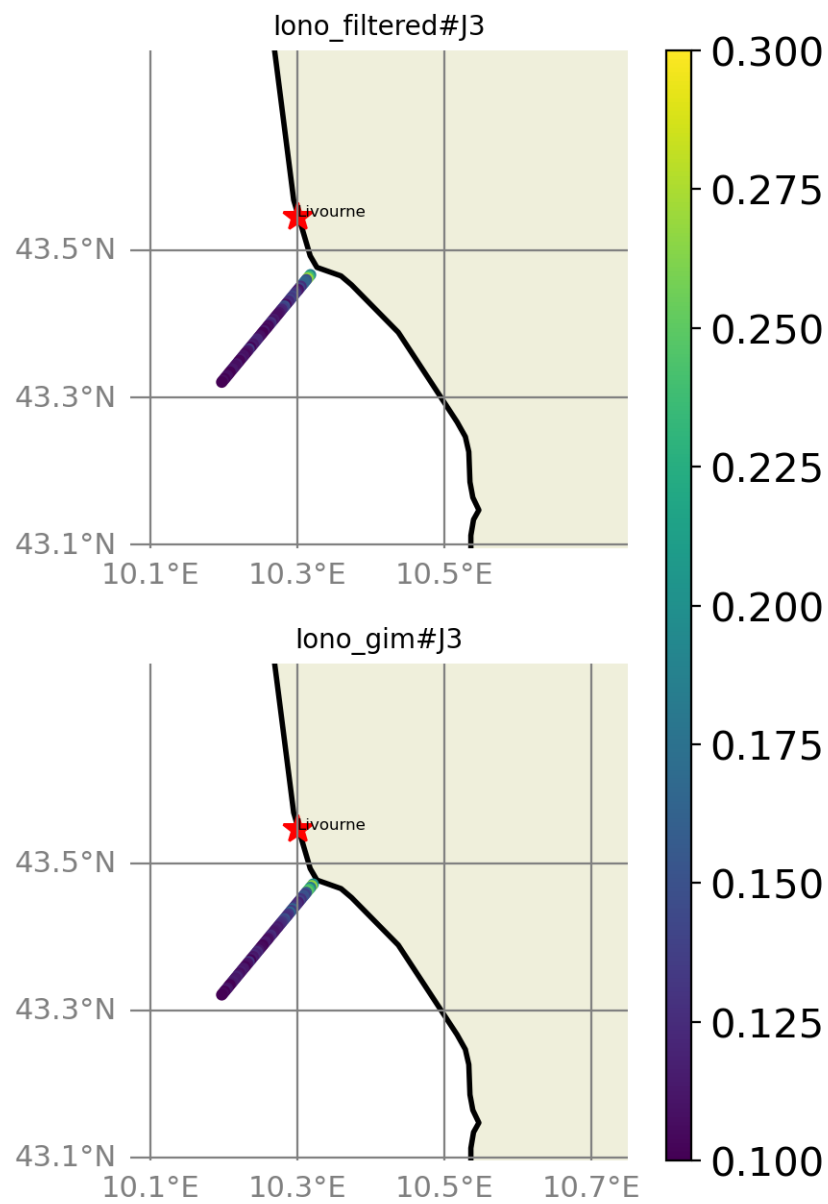


FIGURE 82 – std visualization in maps view % Livourne tide gauge

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

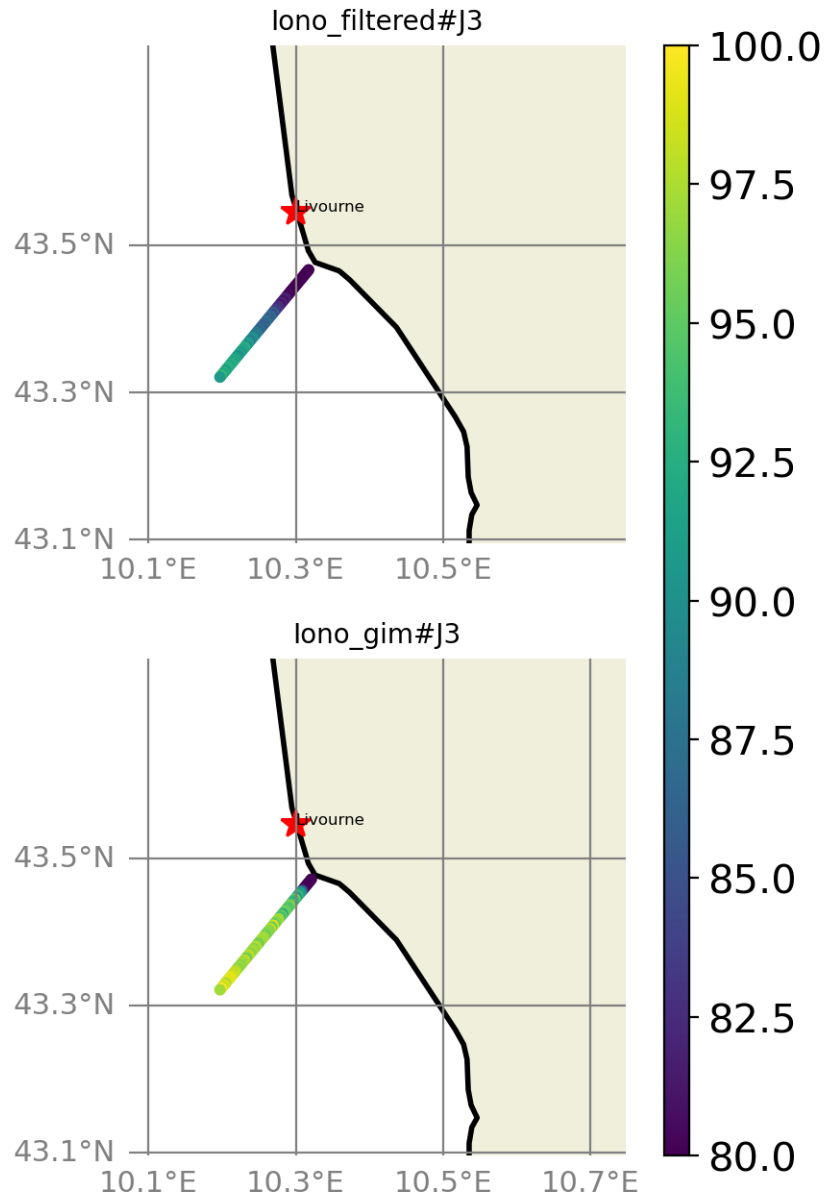


FIGURE 83 – valid_data_percent visualization in maps view % Livourne tide gauge

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. $maxNB = 109$ 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 serie.

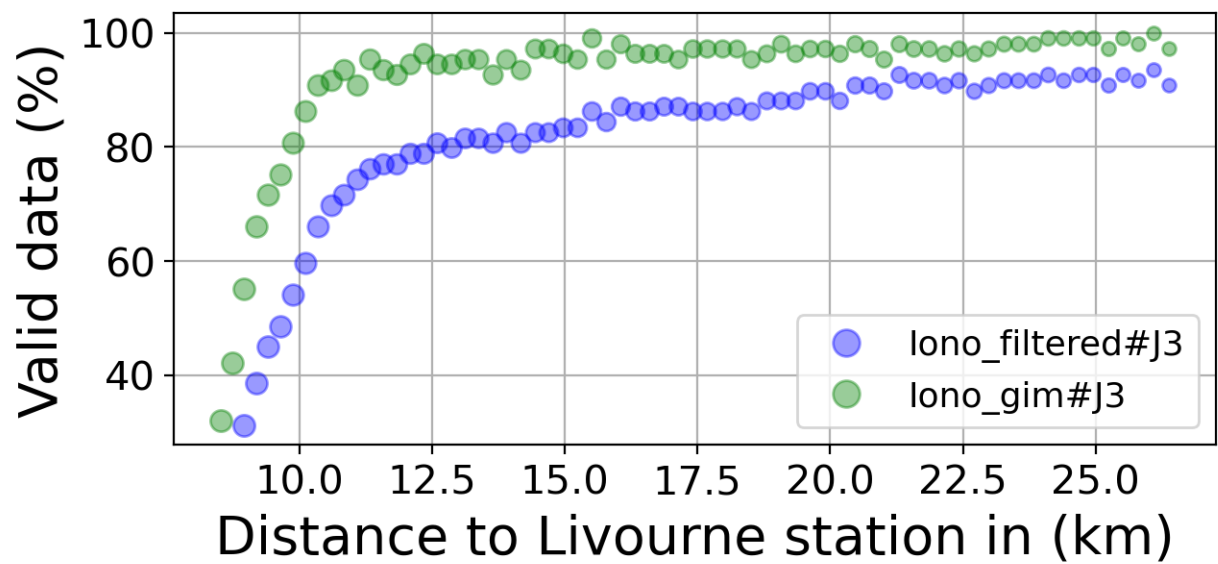
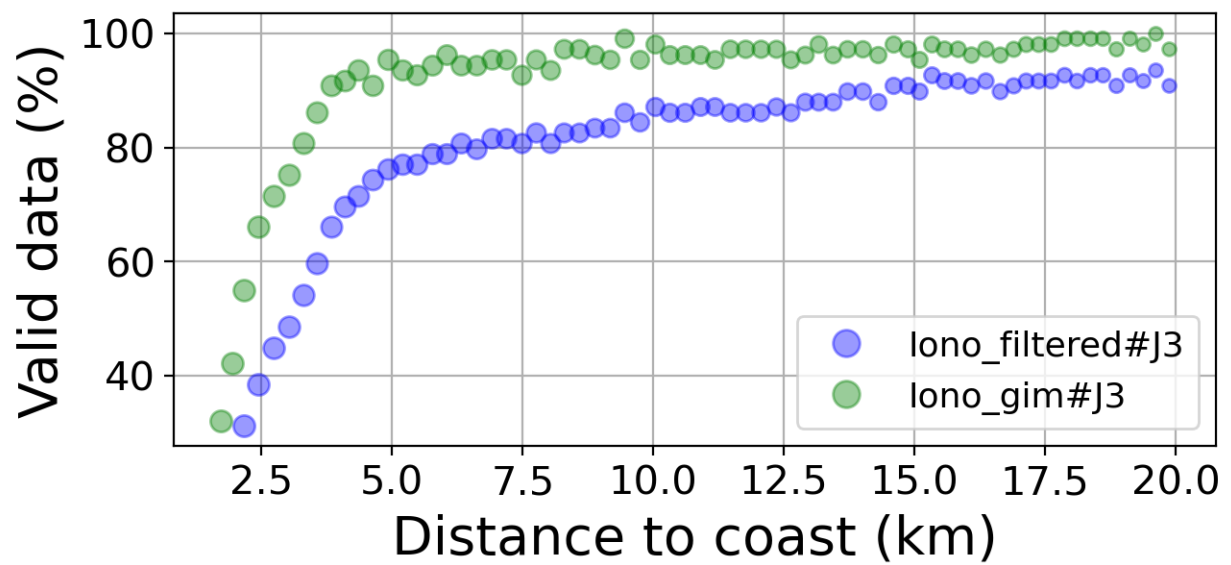


FIGURE 84 – Valid data (%) in function of distance to coast/Livourne station

6.6.6 Std in function of distance to coast/Livourne station

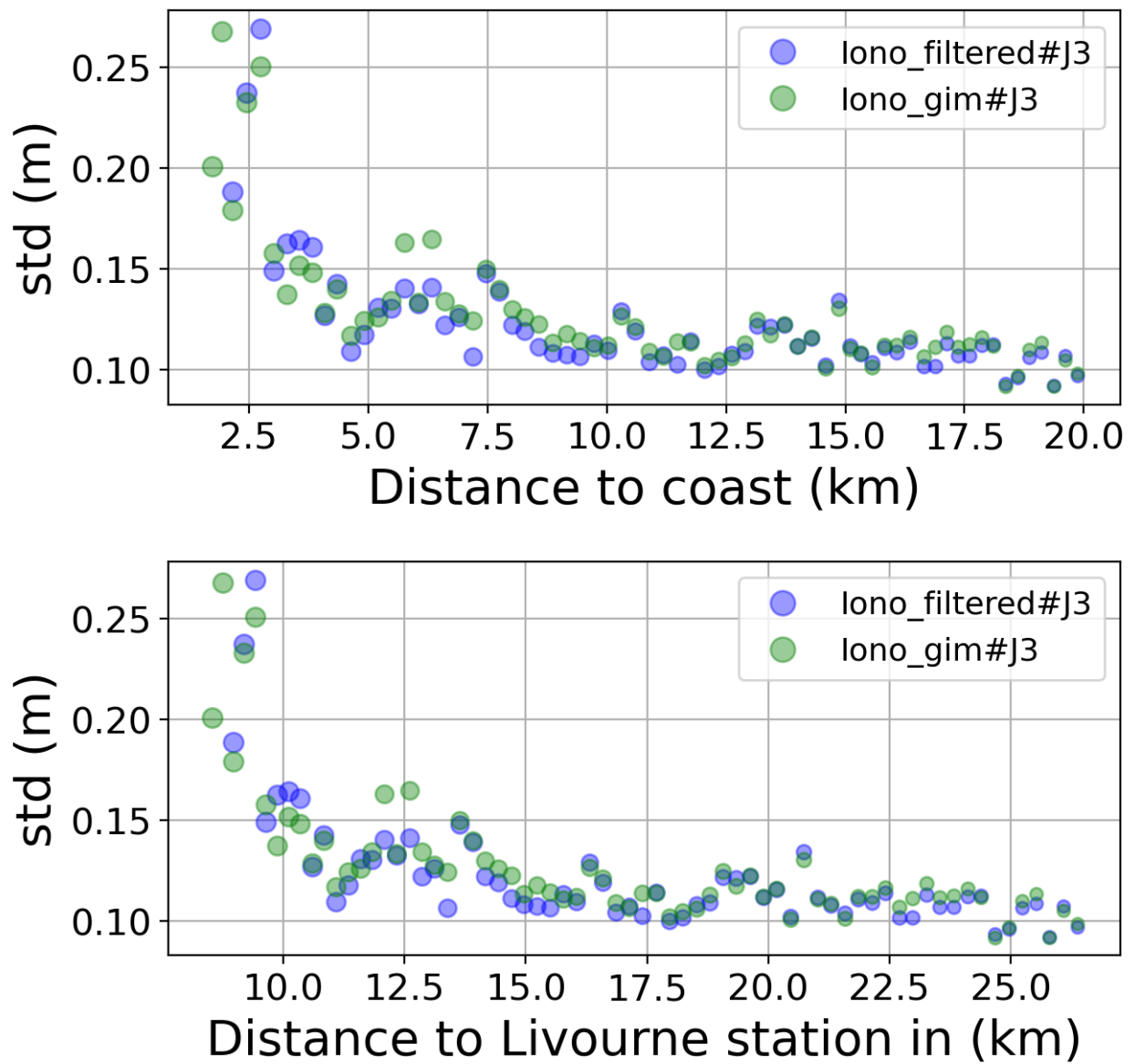


FIGURE 85 – Std in function of the distance to the coast/Livourne station

6.6.7 Correlation in function of distance to coast/Livourne station

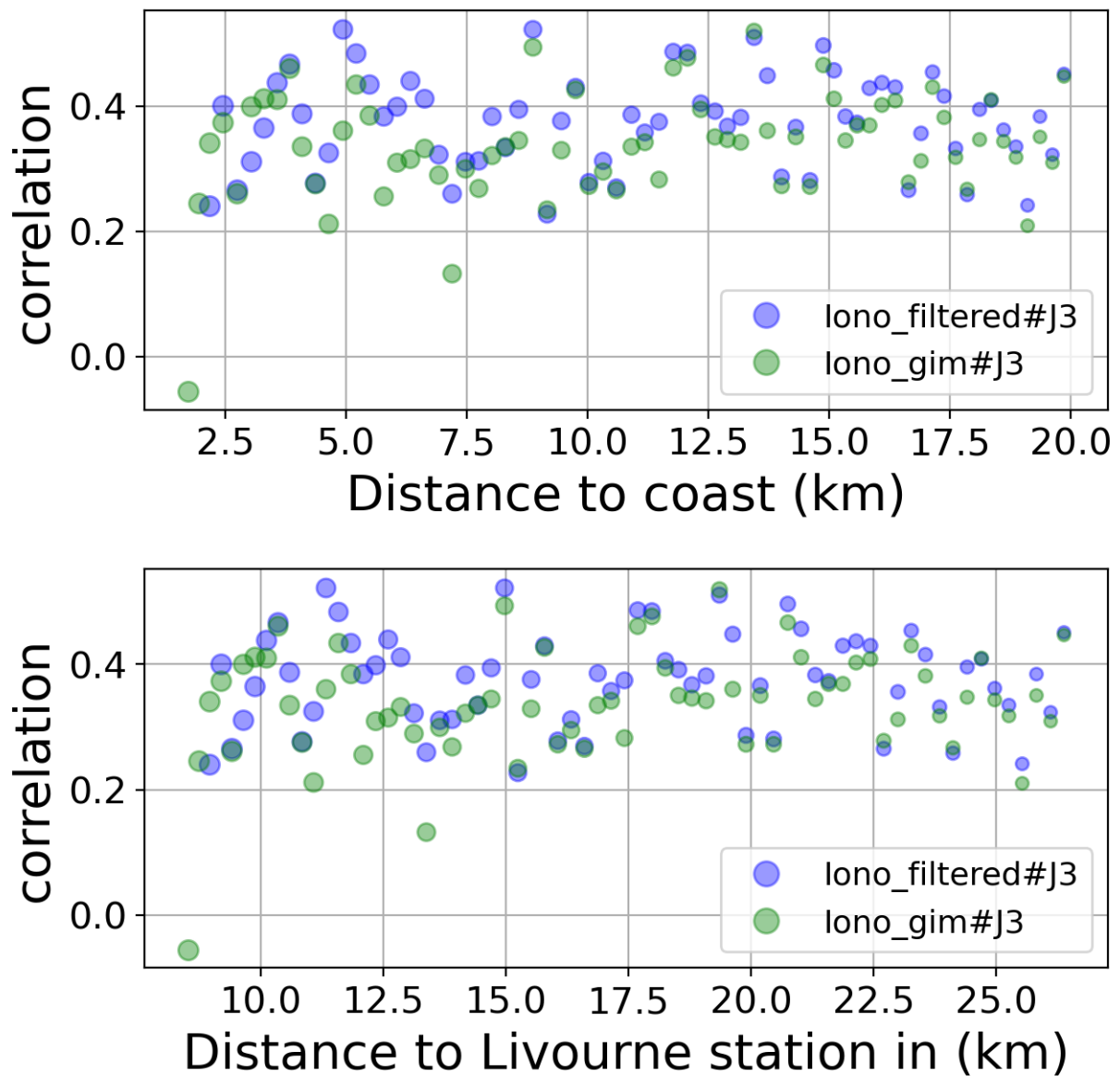


FIGURE 86 – Correlation in function of the distance to the coast/Livourne station

6.6.8 Taylor Diagram

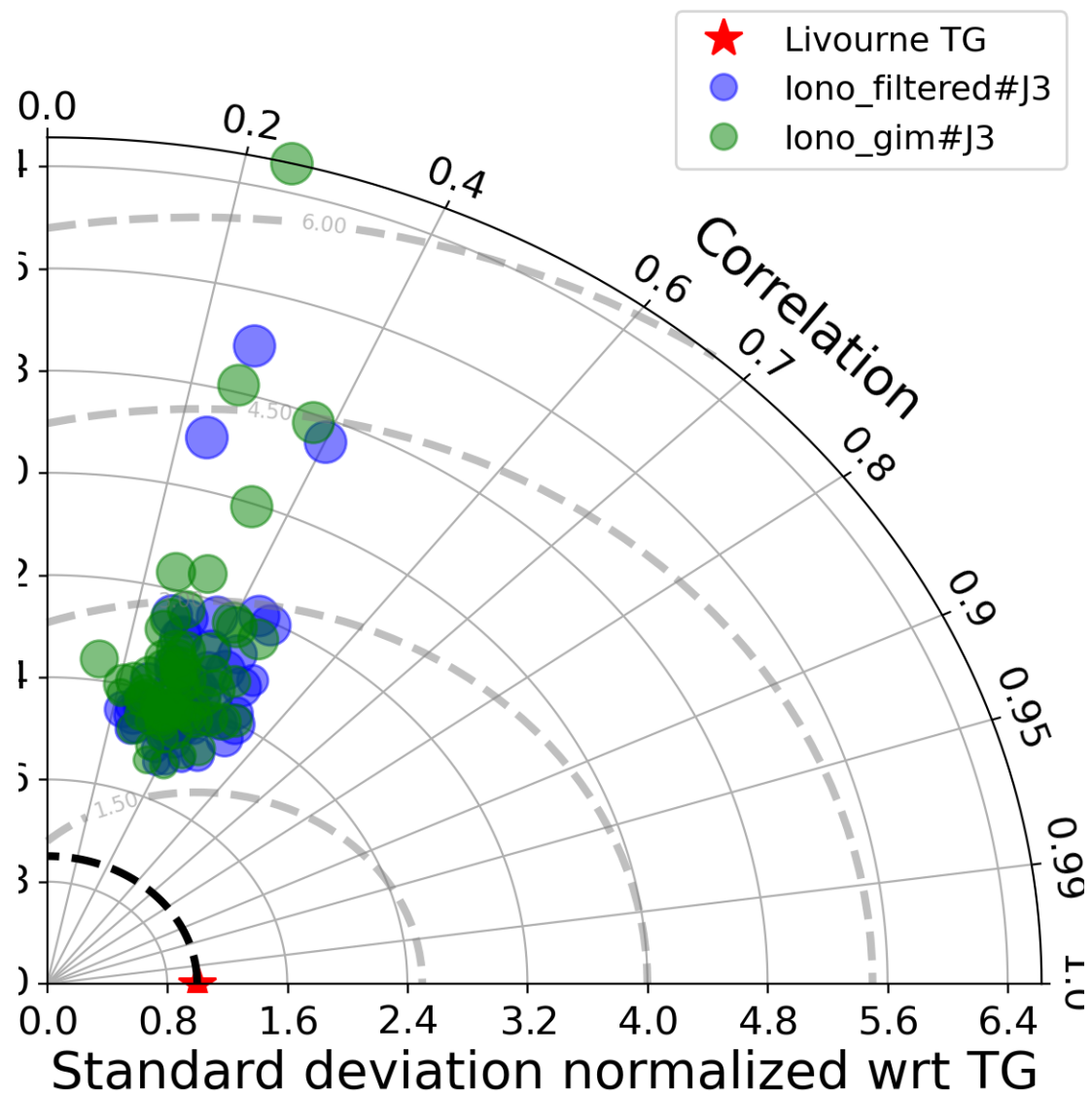


FIGURE 87 – Taylor diagram

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)
lono_filtered#J3	82.291	0.376	0.123	0.114
lono_gim#J3	94.217	0.346	0.124	0.117

FIGURE 88 – 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 109 point.

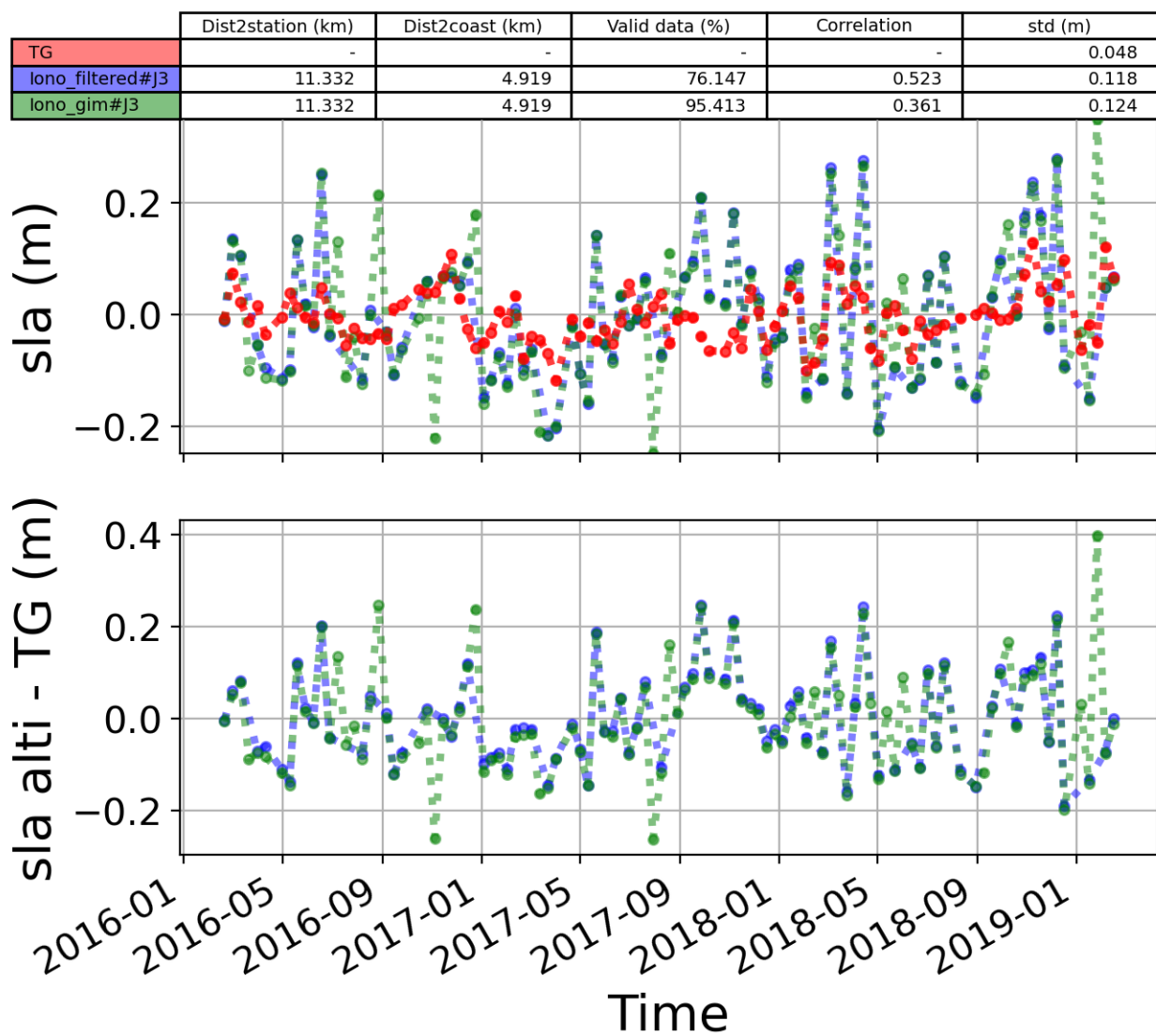


FIGURE 89 – The 1st most correlated sla altimetry Time serie with tide gauge sla time serie

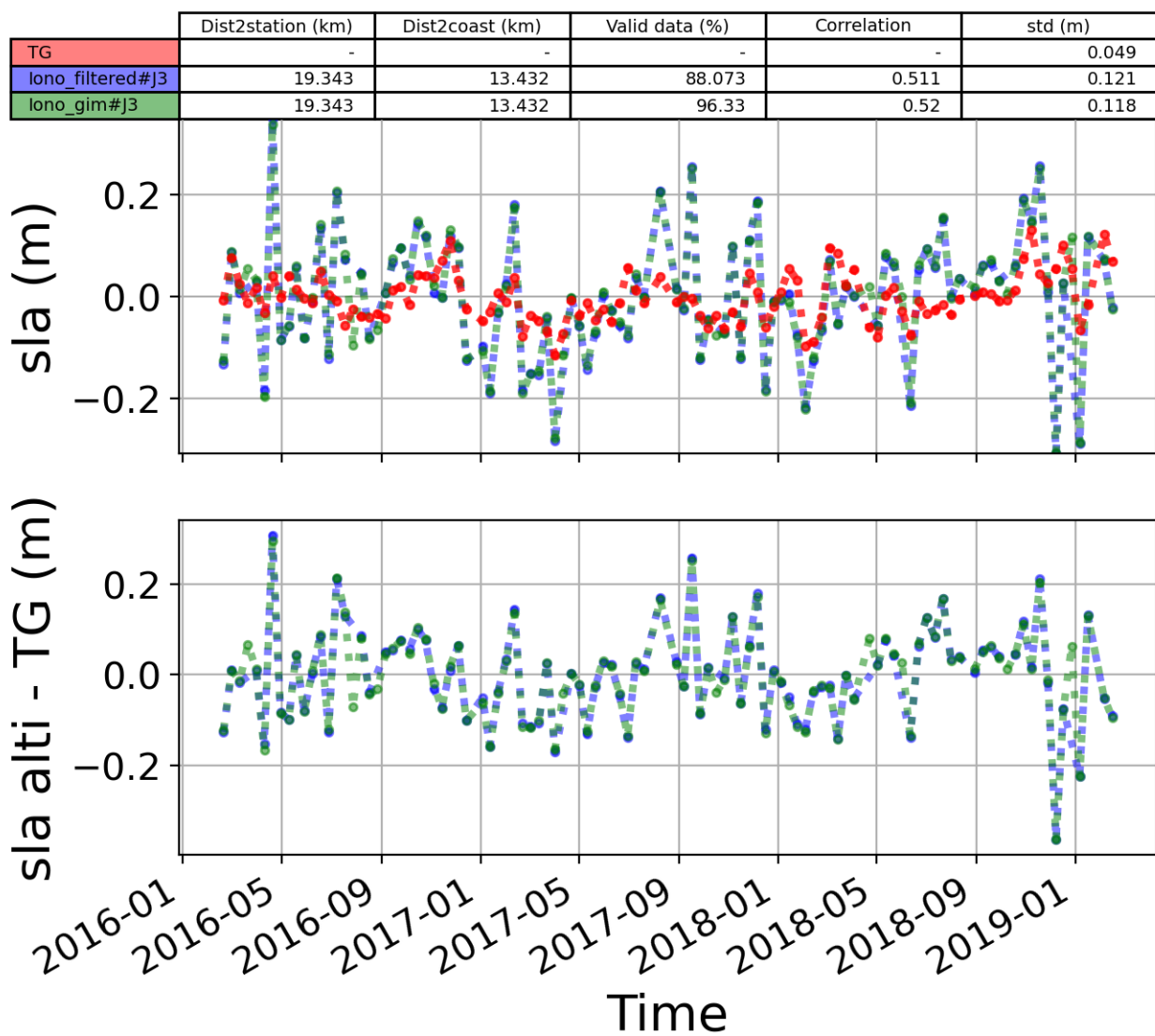


FIGURE 90 – The 2nd most correlated sla altimetry Time serie with tide gauge sla time serie

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 Radius of 40 Km

6.7.1 correlation visualization in maps view % MONACO_FONTVIEILLE tide gauge

Correlation Altimerty data with respect to MONACO_FONTVIEILLE Tide gauge data

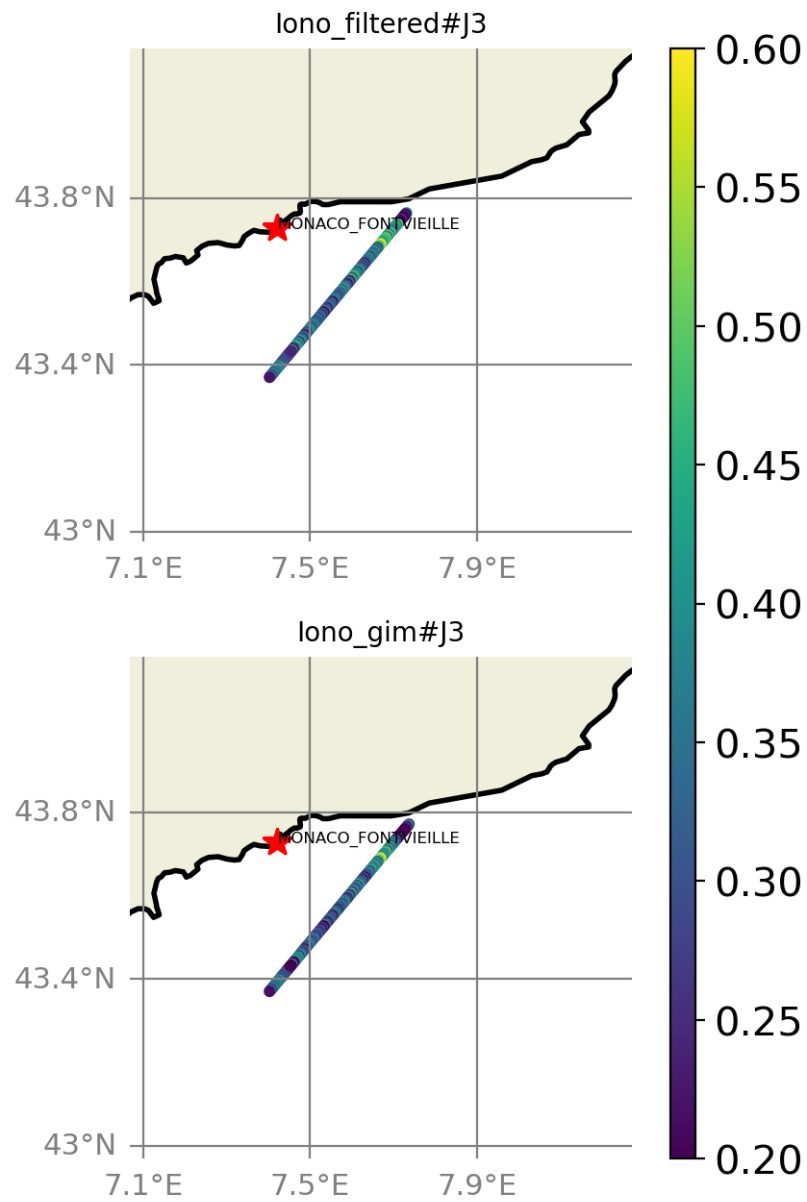


FIGURE 91 – correlation visualization in maps view % MONACO_FONTVIEILLE tide gauge

6.7.2 rmsd visualization in maps view % MONACO_FONTVIEILLE tide gauge

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

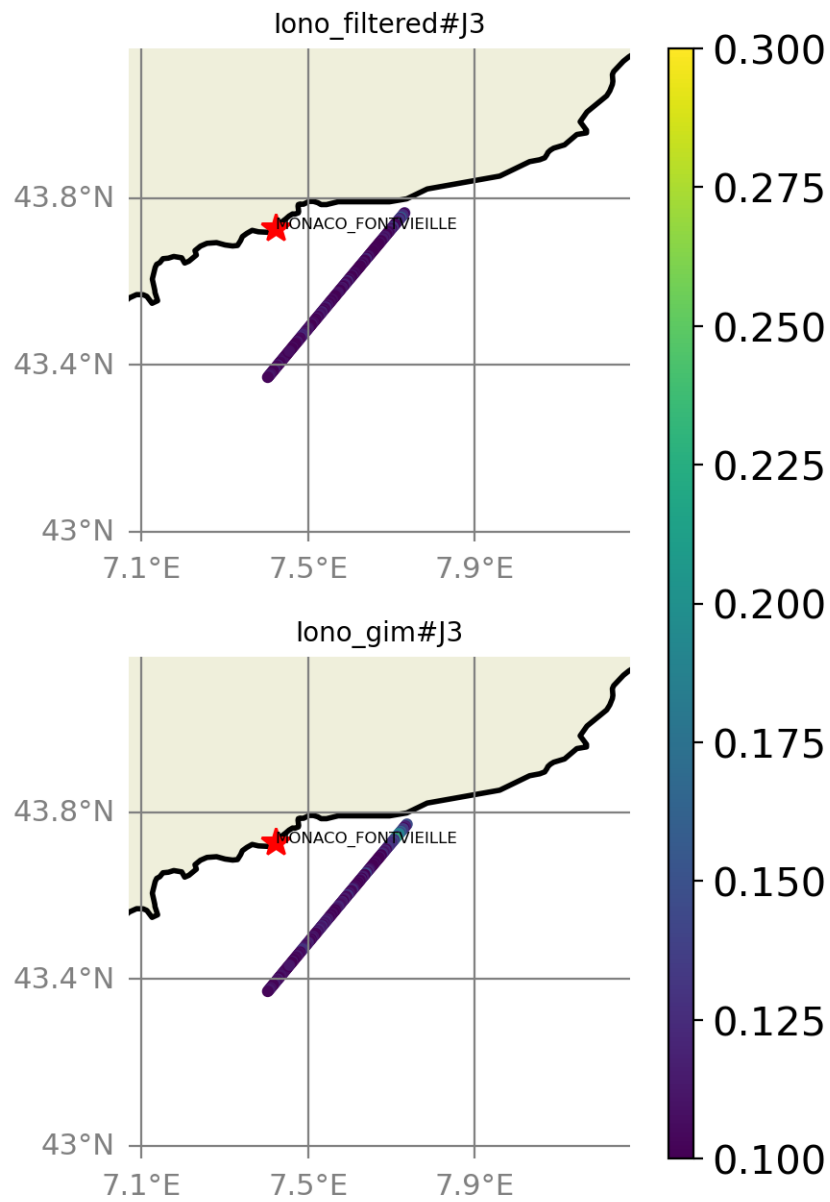


FIGURE 92 – rmsd visualization in maps view % MONACO_FONTVIEILLE tide gauge

6.7.3 std visualization in maps view % MONACO_FONTVIEILLE tide gauge

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

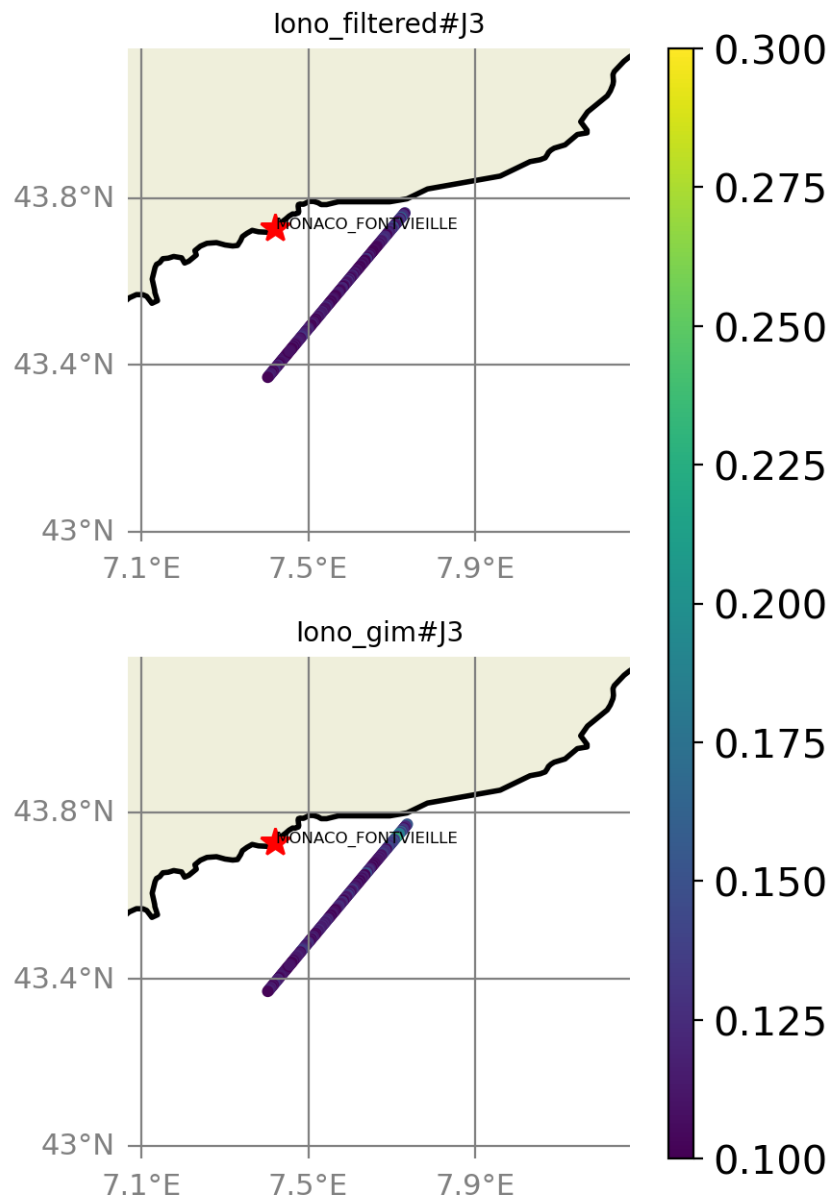


FIGURE 93 – std visualization in maps view % MONACO_FONTVIEILLE tide gauge

6.7.4 valid_data_percent visualization in maps view % MONACO_FONTVIEILLE tide gauge

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

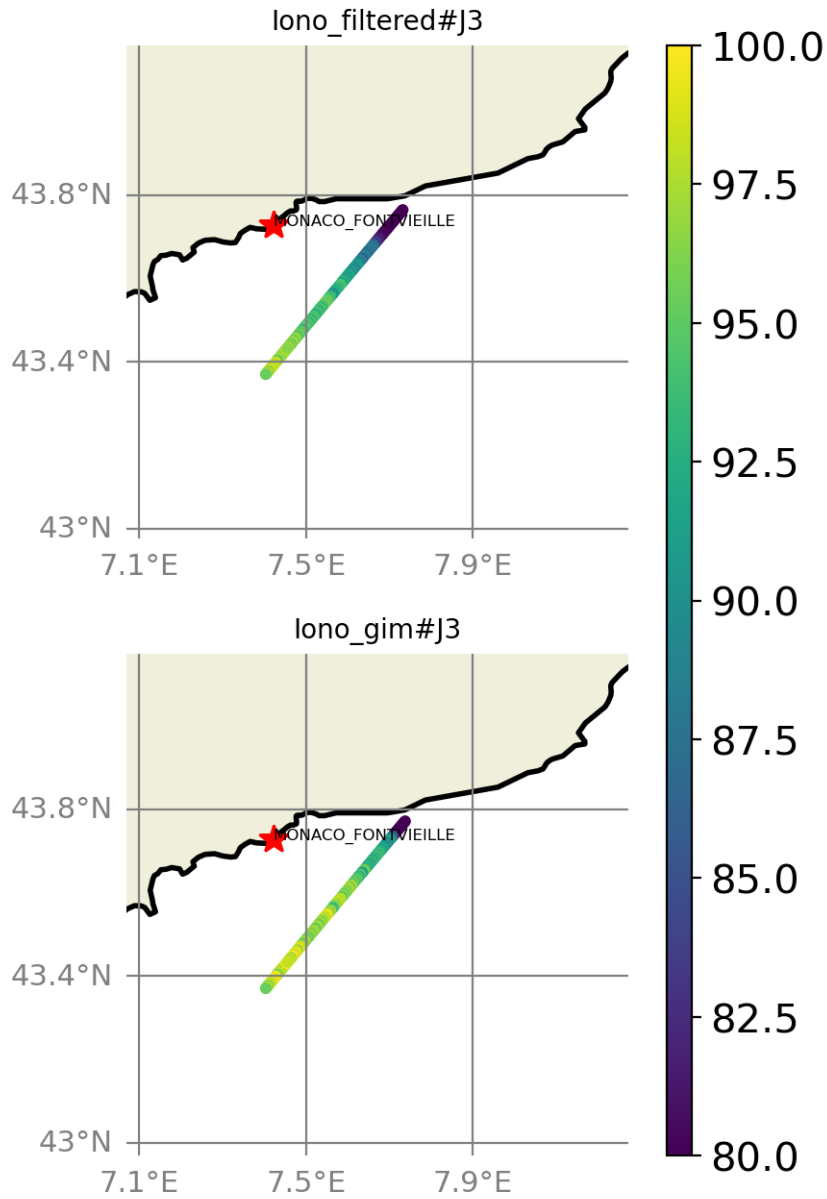


FIGURE 94 – valid_data_percent visualization in maps view % MONACO_FONTVIEILLE tide gauge

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 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.

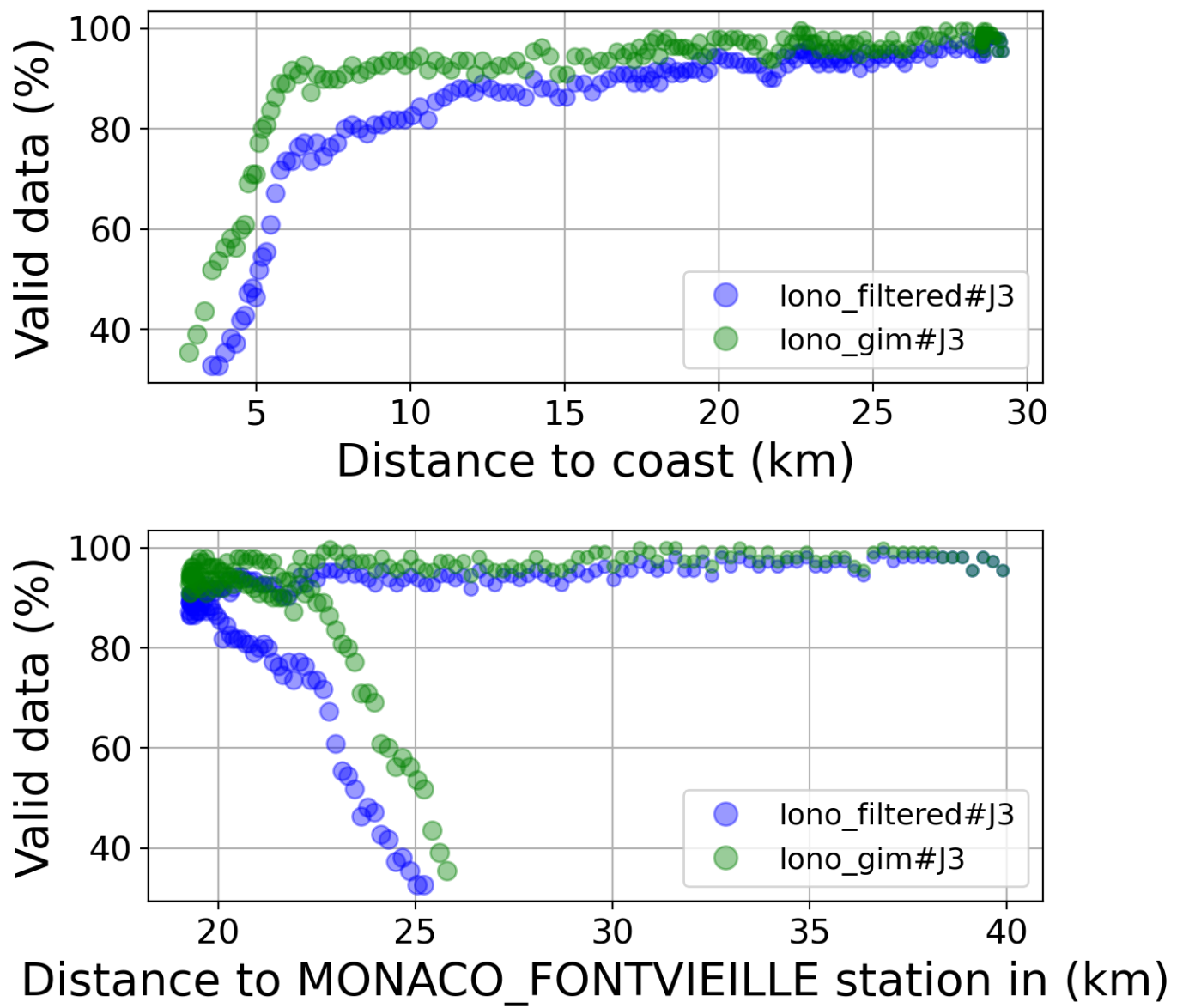


FIGURE 95 – Valid data (%) in function of distance to coast/MONACO_FONTVIEILLE station

6.7.6 Std in function of distance to coast/MONACO_FONTVIEILLE station

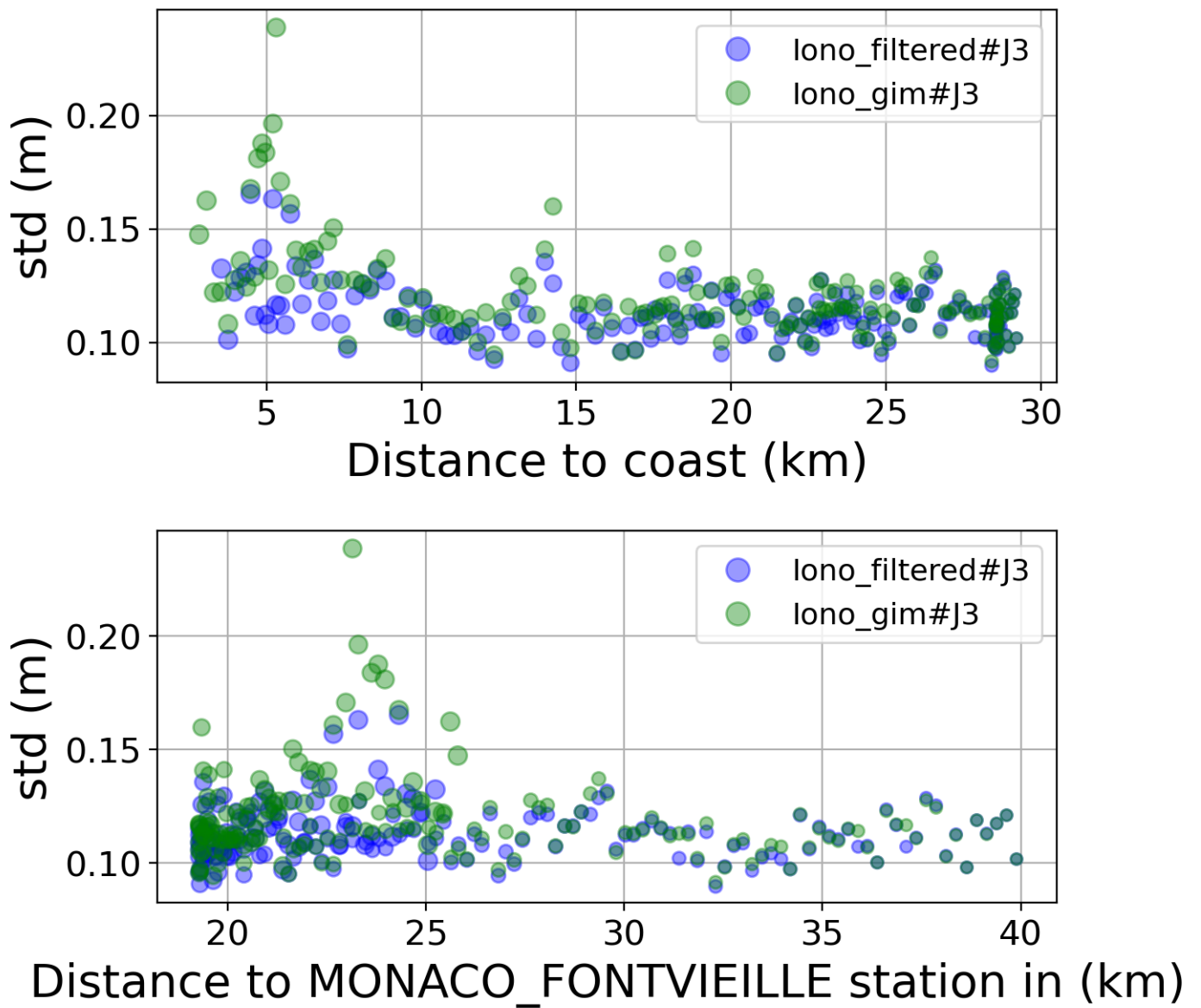


FIGURE 96 – Std in function of the distance to the coast/MONACO_FONTVIEILLE station

6.7.7 Correlation in function of distance to coast/MONACO_FONTVIEILLE station

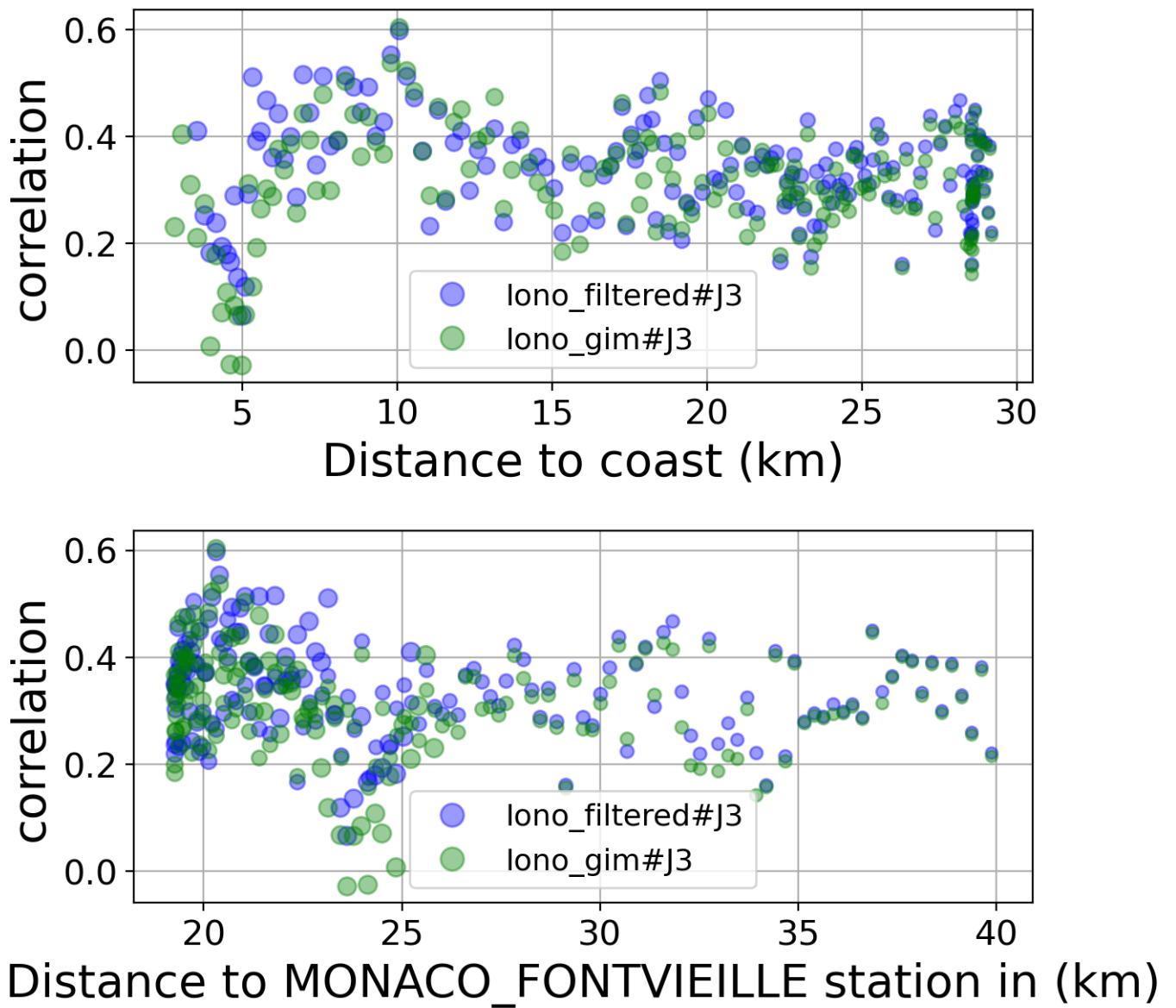


FIGURE 97 – Correlation in function of the distance to the coast/MONACO_FONTVIEILLE station

6.7.8 Taylor Diagram

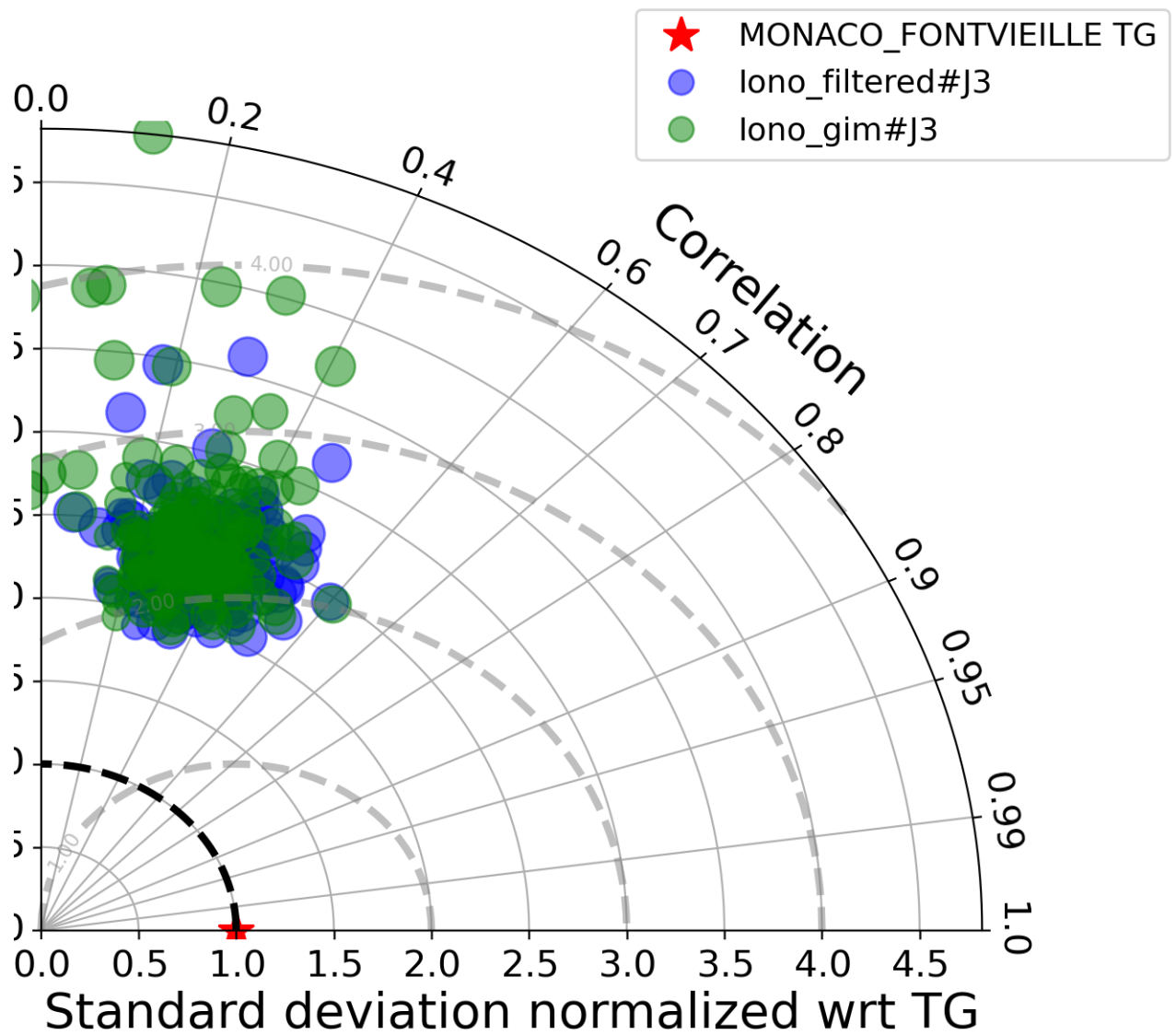


FIGURE 98 – Taylor diagram

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)
lono_filtered#J3	87.555	0.338	0.113	0.107
lono_gim#J3	93.487	0.311	0.119	0.114

FIGURE 99 – 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 110 point.

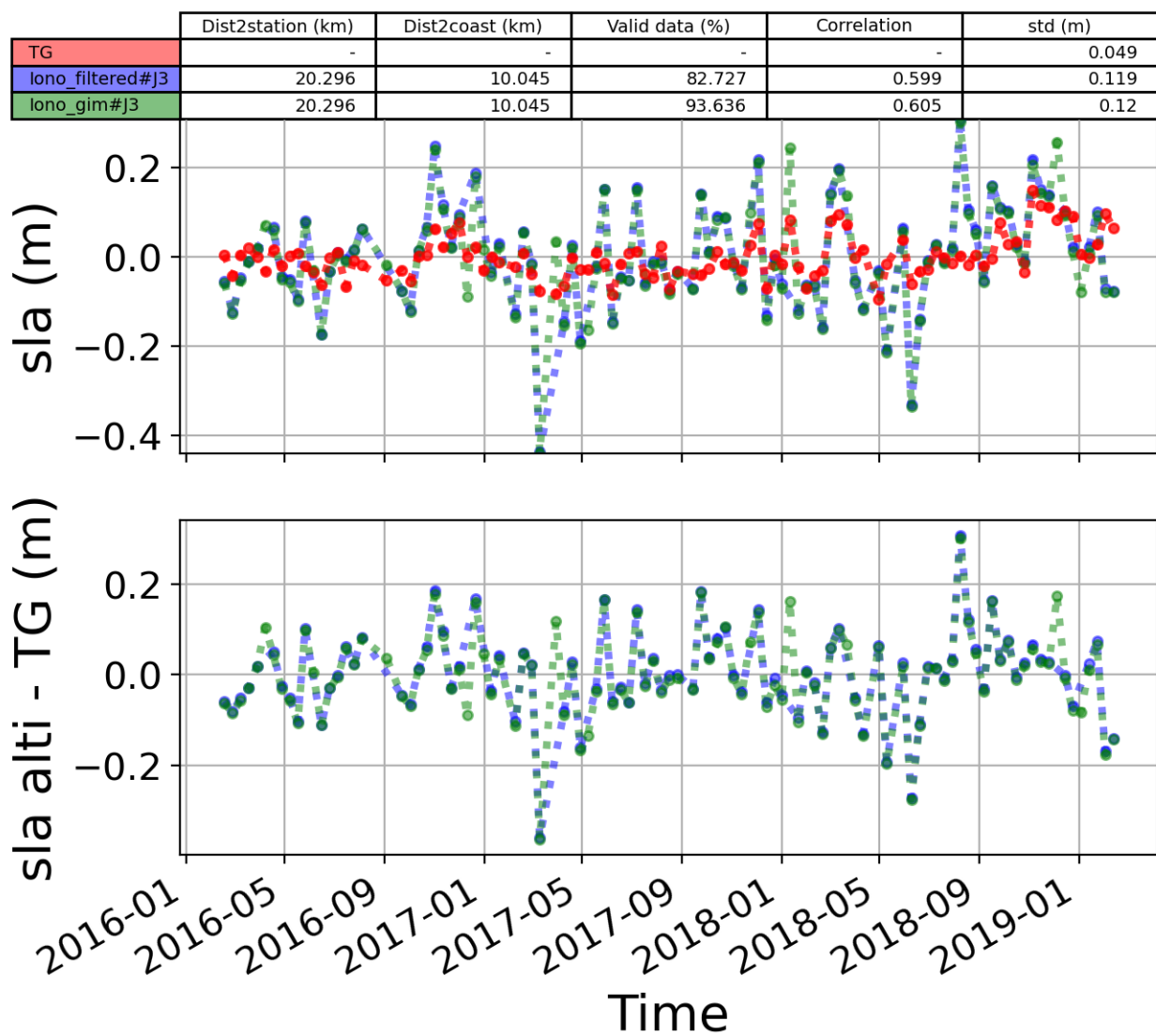


FIGURE 100 – The 1st most correlated sla altimetry Time serie with tide gauge sla time serie

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 Altimerty data with respect to Erdemli Tide gauge data

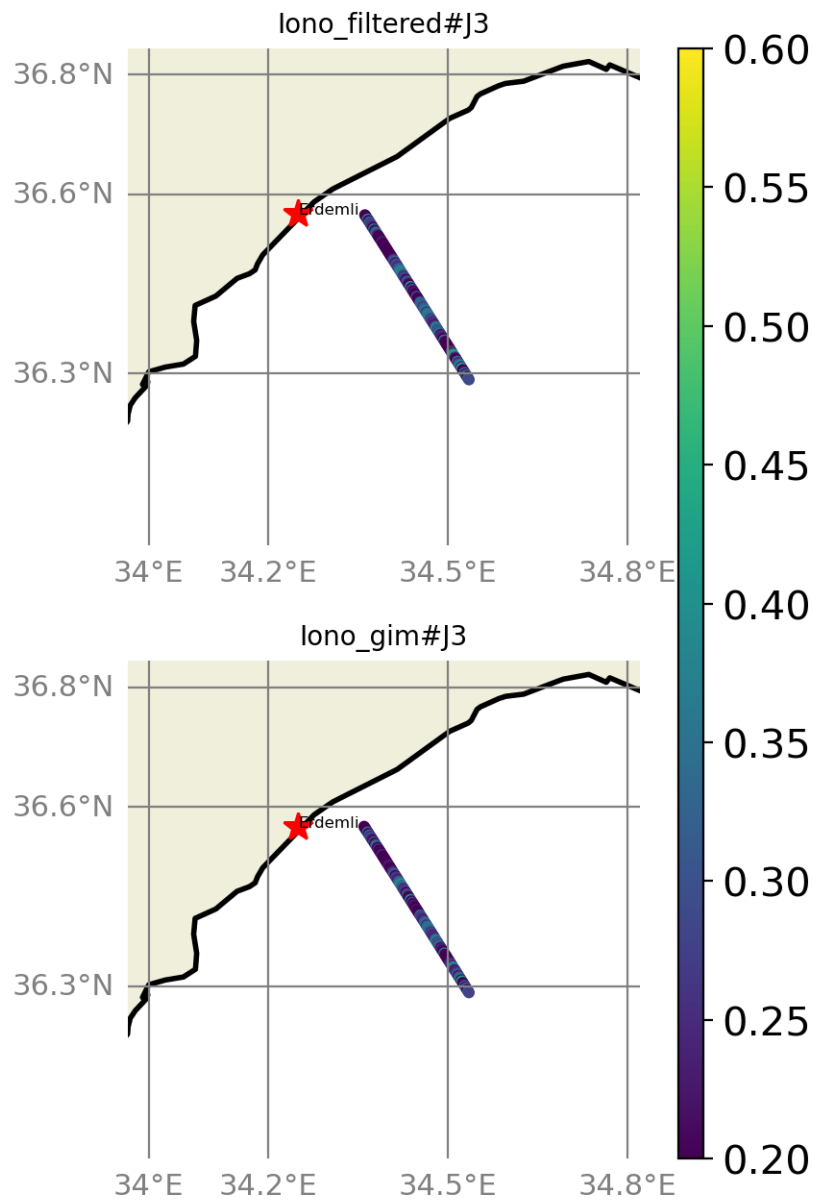


FIGURE 101 – correlation visualization in maps view % Erdemli tide gauge

6.8.2 rmsd visualization in maps view % Erdemli tide gauge

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

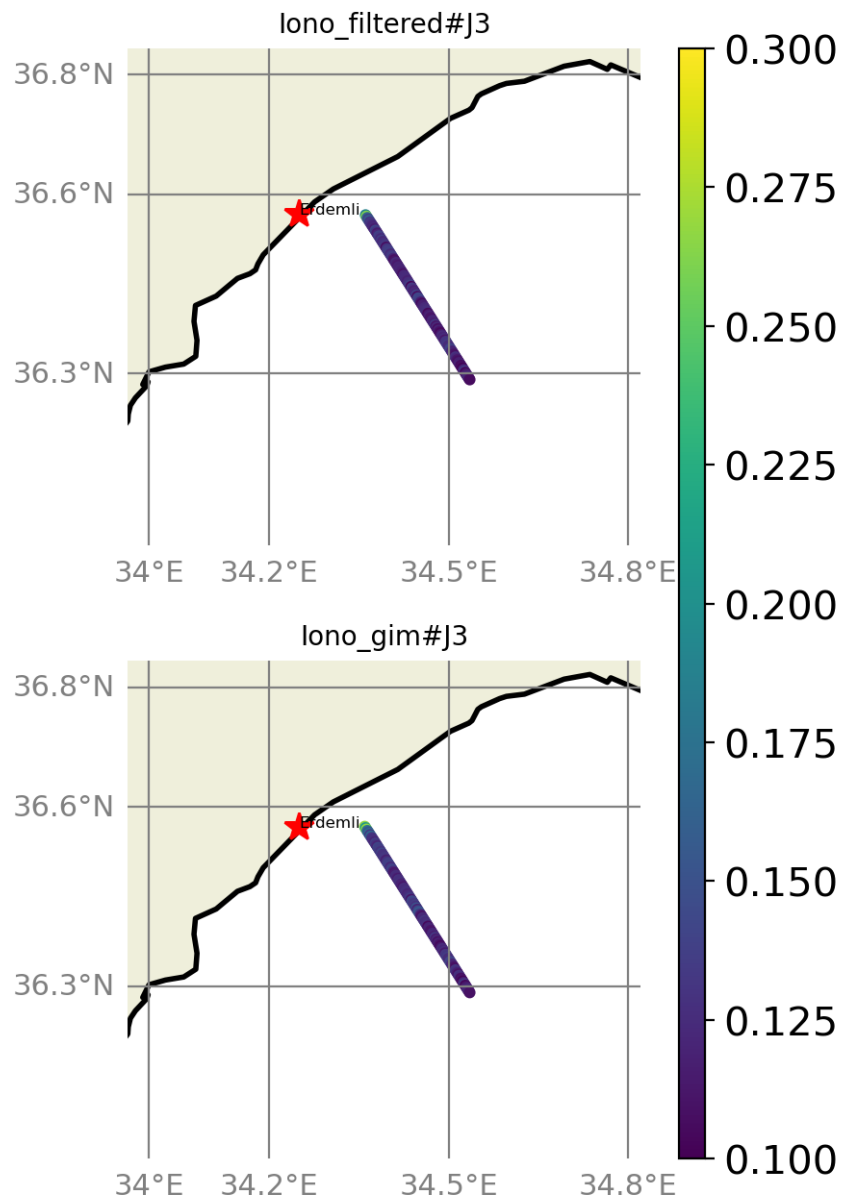


FIGURE 102 – rmsd visualization in maps view % Erdemli tide gauge

6.8.3 std visualization in maps view % Erdemli tide gauge

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

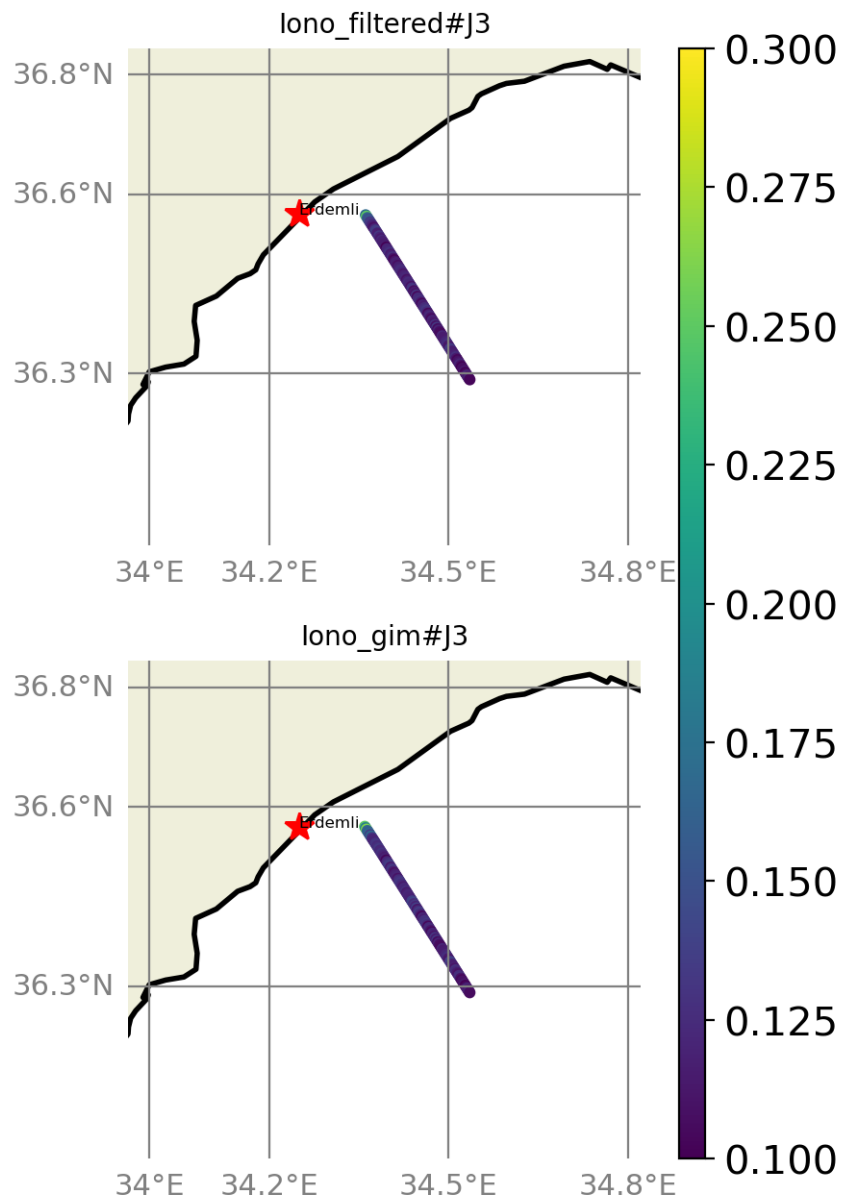


FIGURE 103 – std visualization in maps view % Erdemli tide gauge

6.8.4 valid_data_percent visualization in maps view % Erdemli tide gauge

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

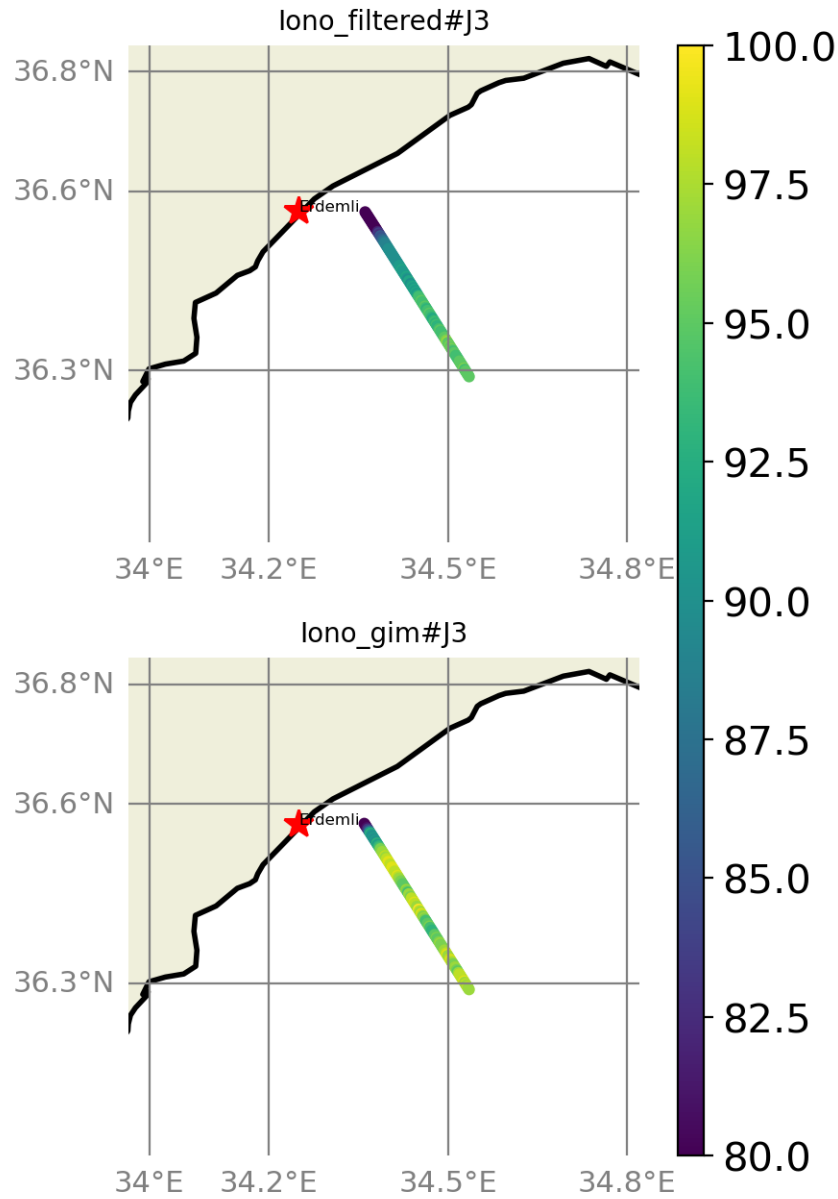


FIGURE 104 – valid_data_percent visualization in maps view % Erdemli tide gauge

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 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. $maxNB = 99$ 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.

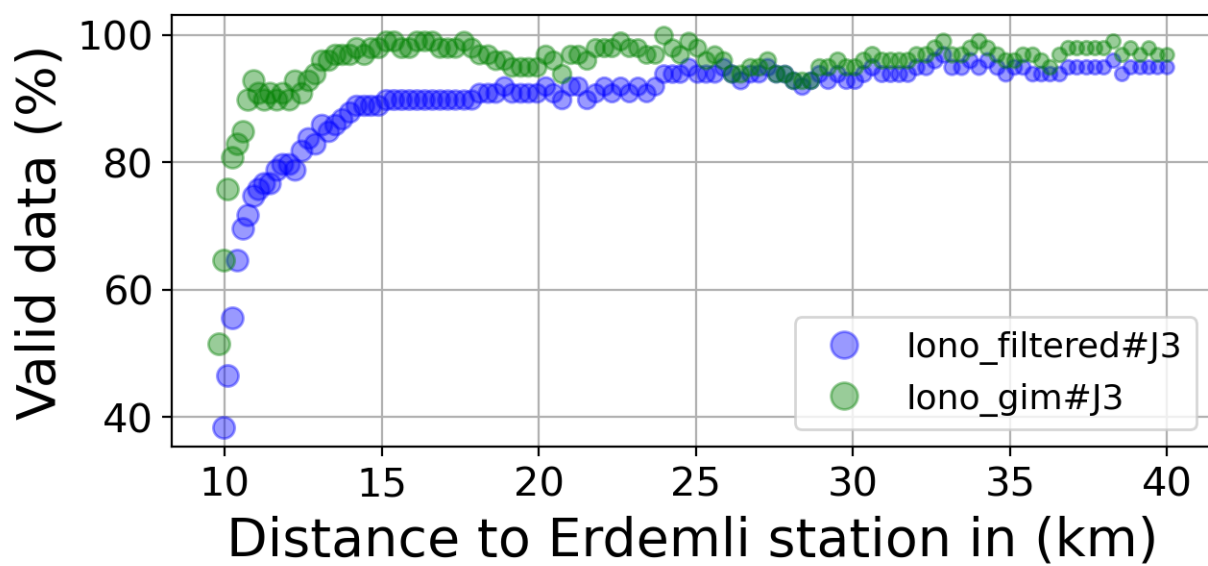
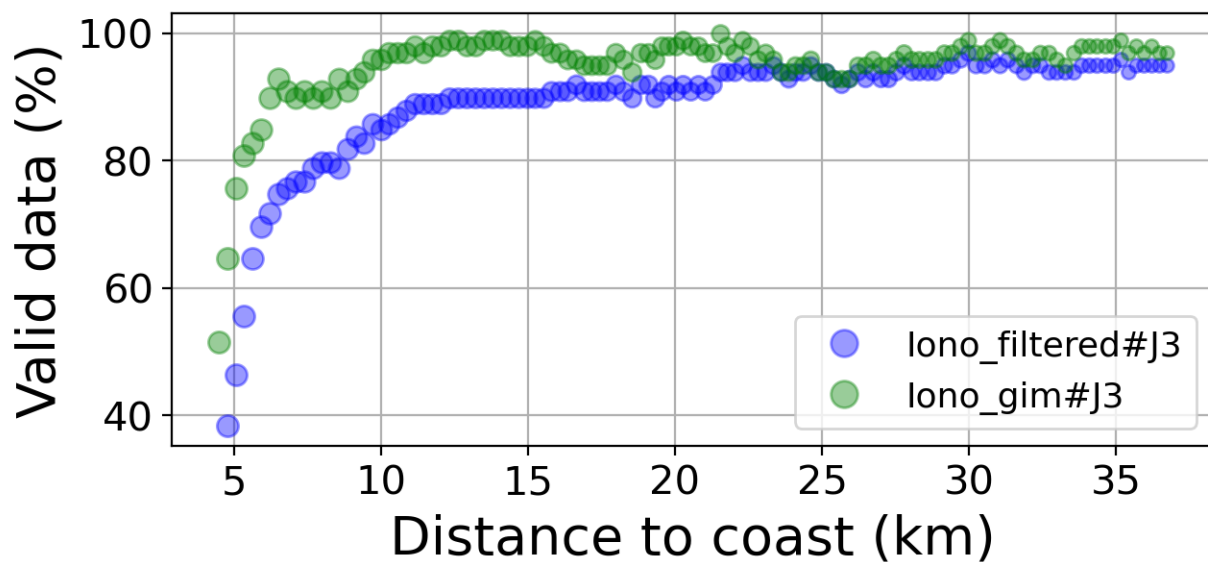


FIGURE 105 – Valid data (%) in function of distance to coast/Erdemli station

6.8.6 Std in function of distance to coast/Erdemli station

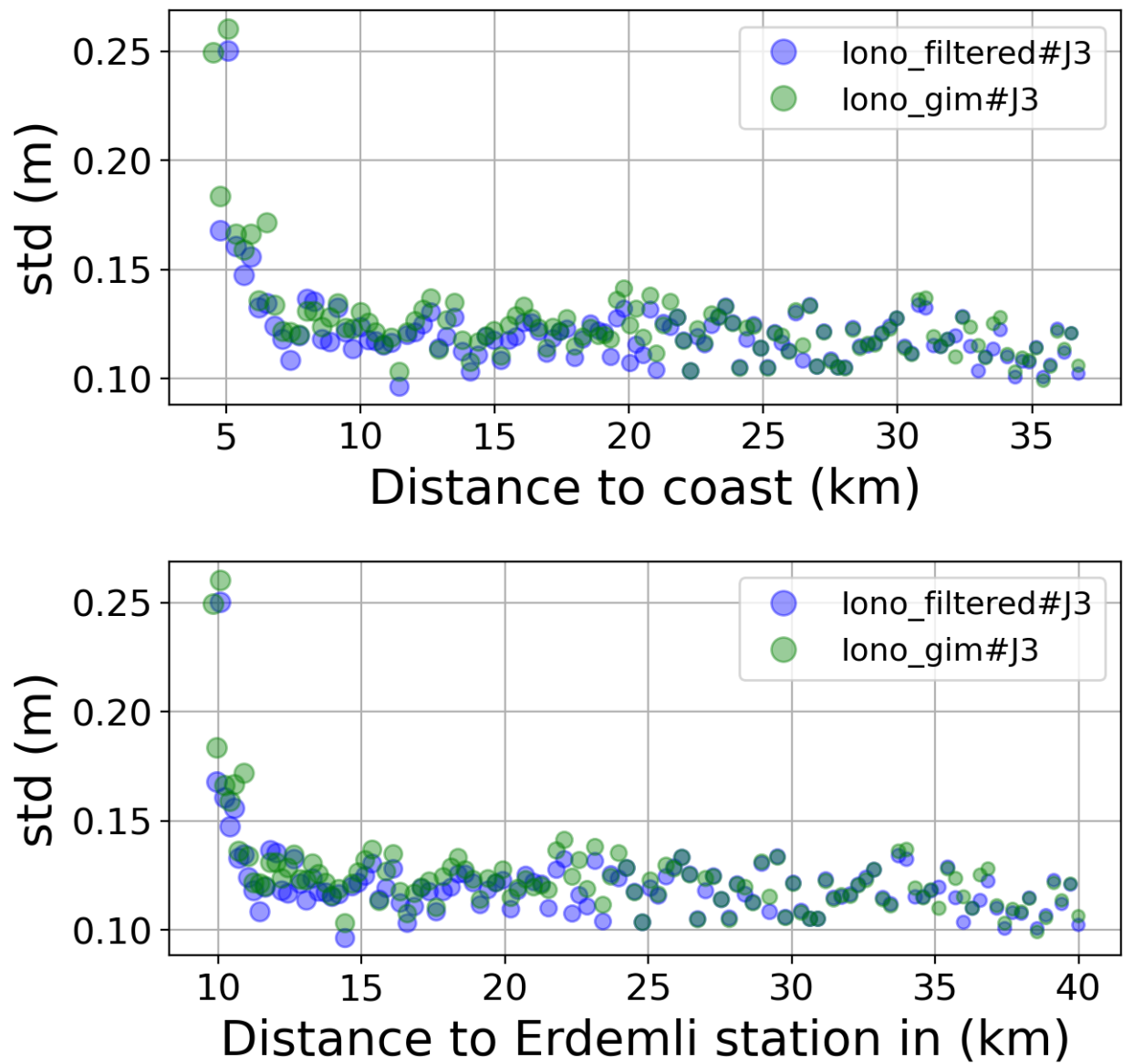


FIGURE 106 – Std in function of the distance to the coast/Erdemli station

6.8.7 Correlation in function of distance to coast/Erdemli station

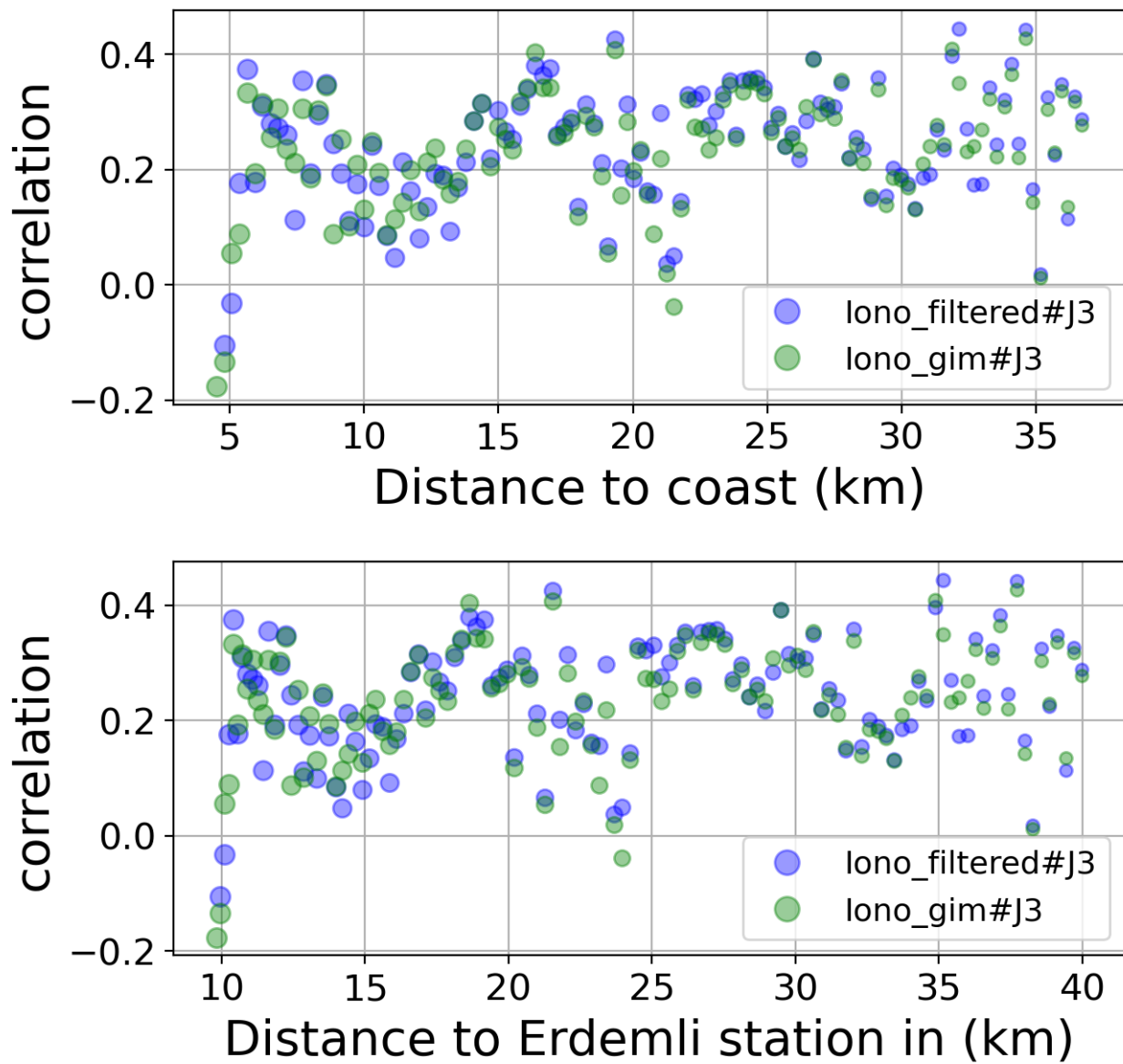


FIGURE 107 – Correlation in function of the distance to the coast/Erdemli station

6.8.8 Taylor Diagram

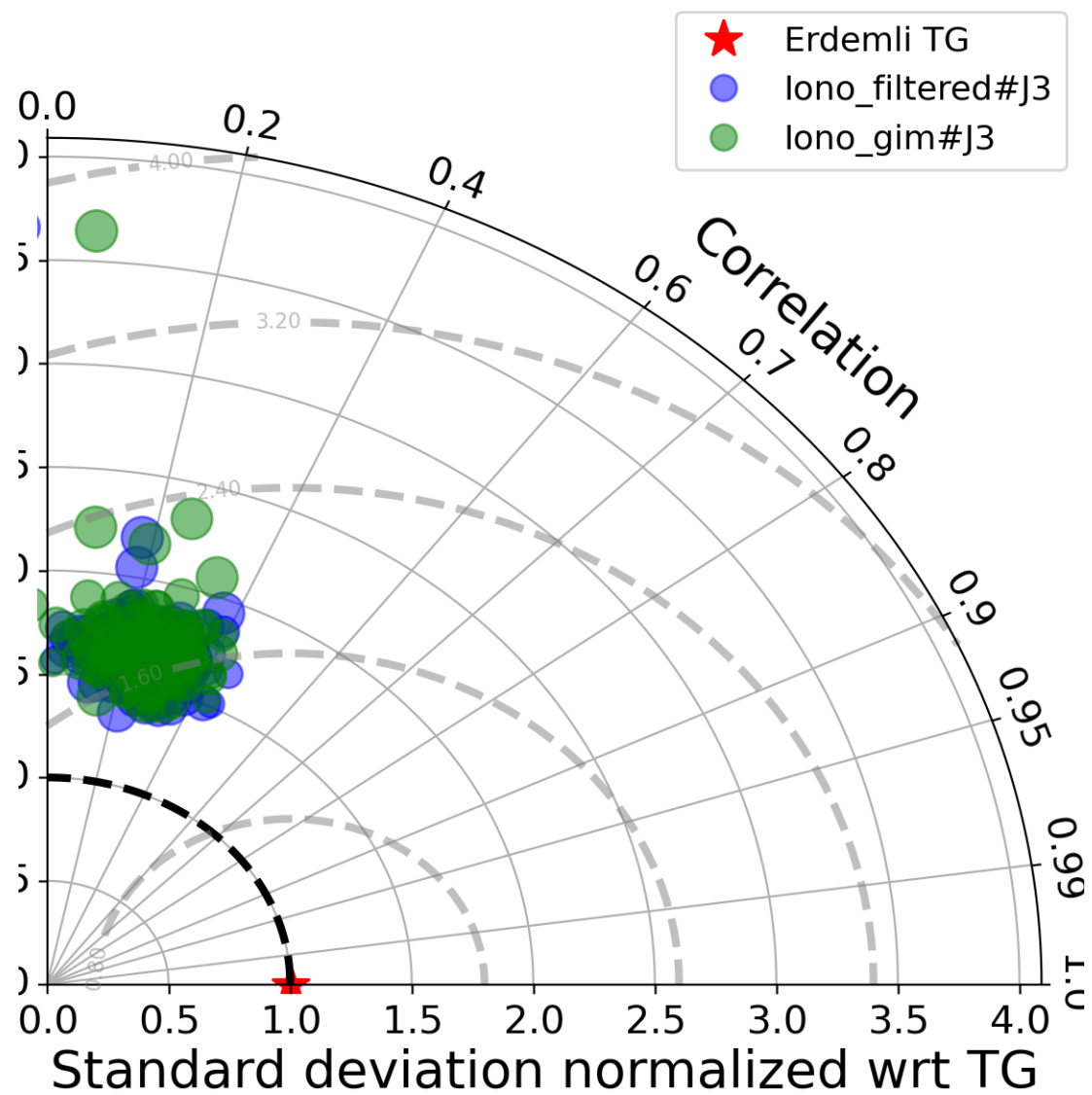


FIGURE 108 – Taylor diagram

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)
lono_filtered#J3	89.505	0.243	0.121	0.125
lono_gim#J3	95.446	0.237	0.124	0.128

FIGURE 109 – 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 99 point.

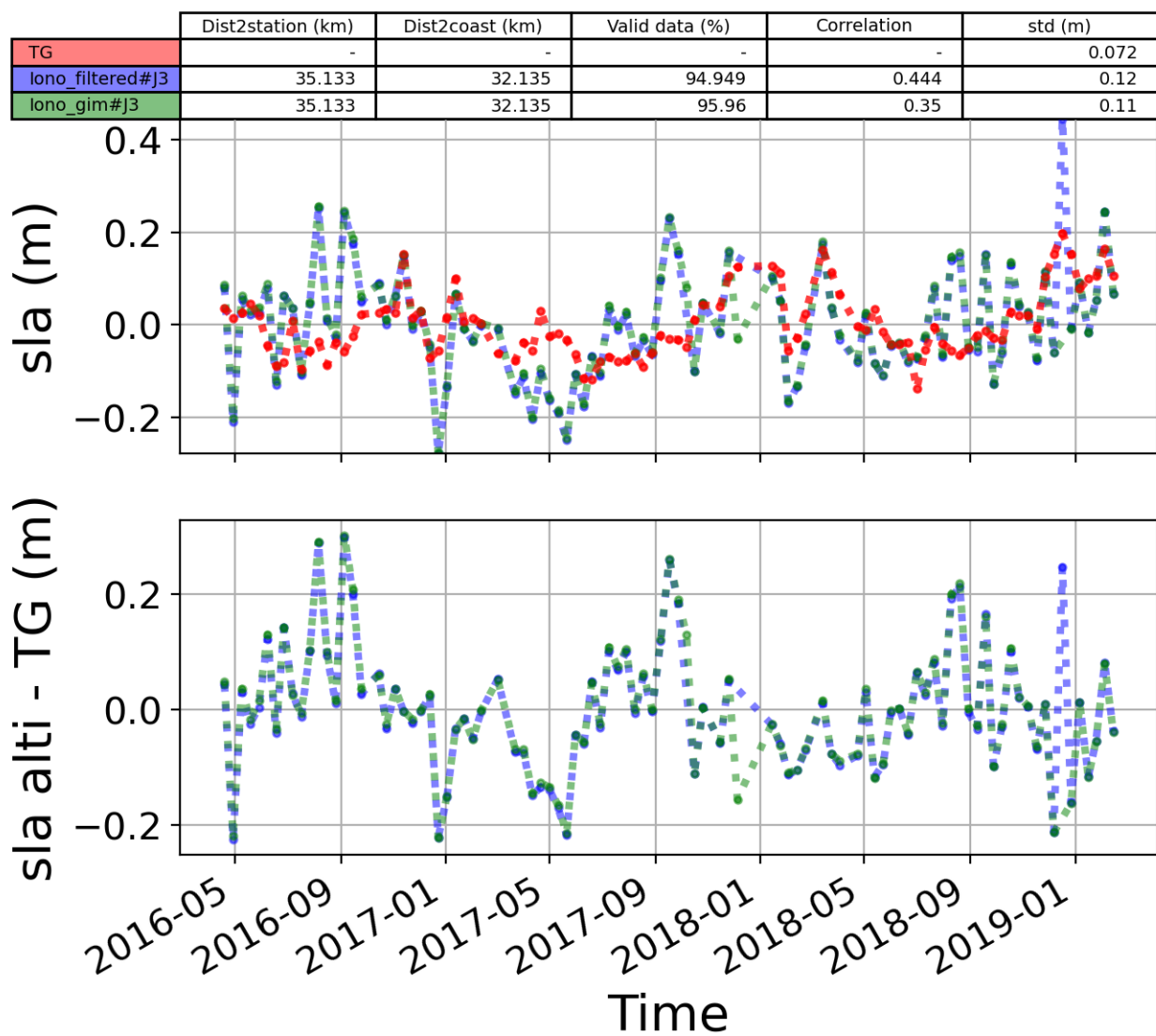


FIGURE 110 – The 1st most correlated sla altimetry Time serie with tide gauge sla time serie

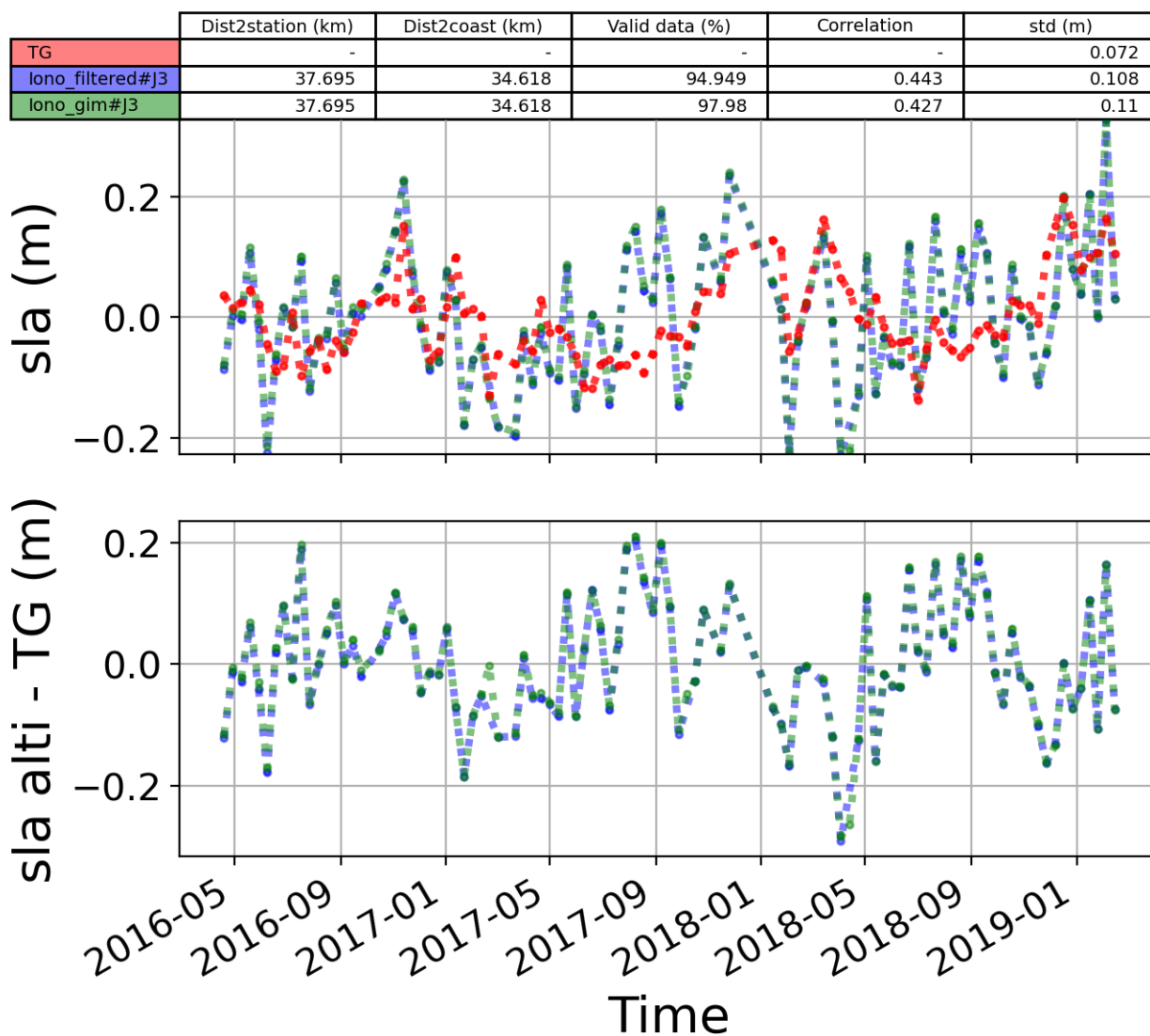


FIGURE 111 – The 2nd most correlated sla altimetry Time serie with tide gauge sla time serie

6.9 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 Altimerty data with respect to Almeria Tide gauge data

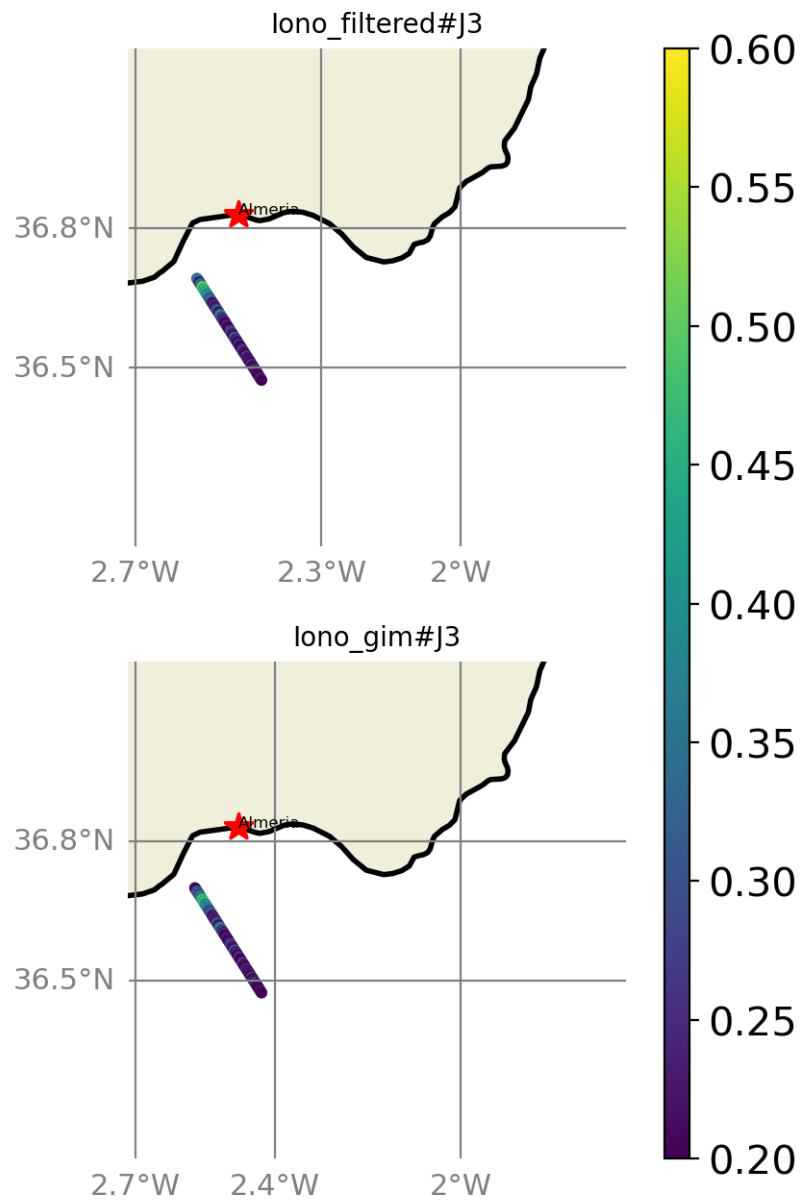


FIGURE 112 – correlation visualization in maps view % Almeria tide gauge

6.9.2 rmsd visualization in maps view % Almeria tide gauge

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

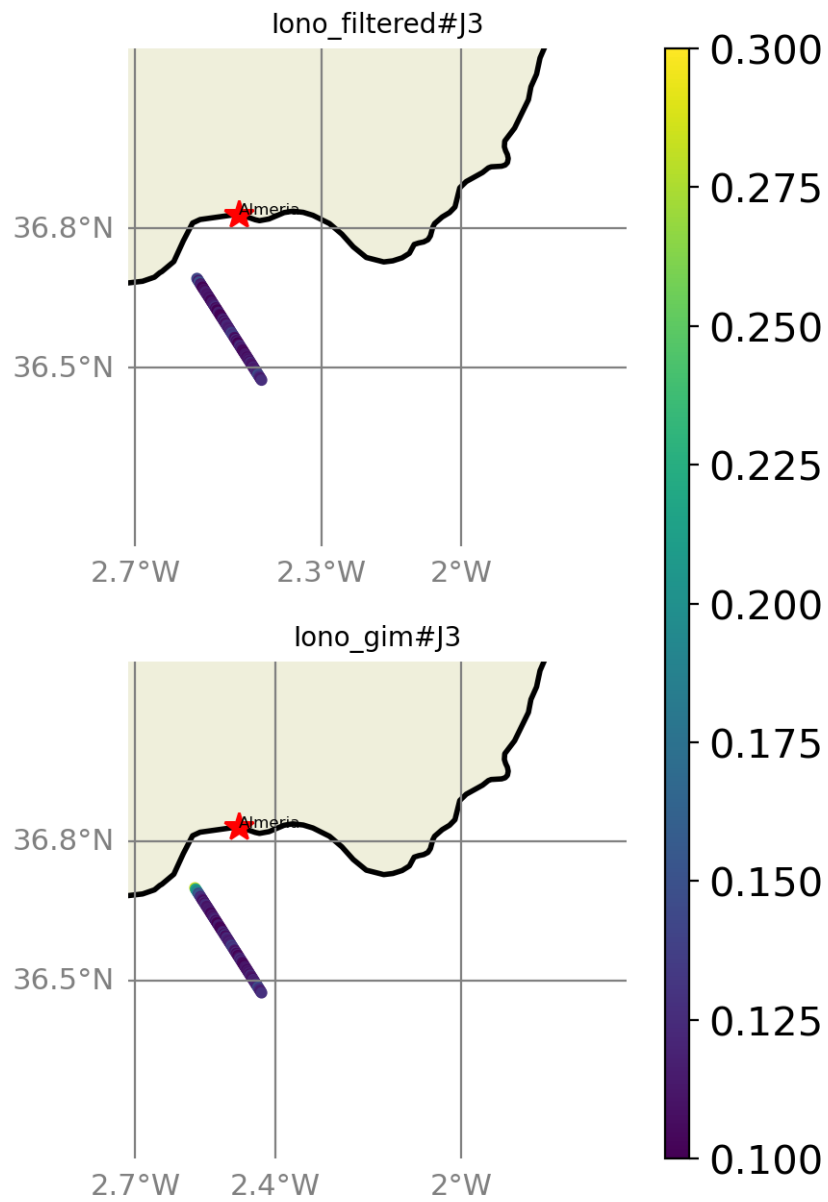


FIGURE 113 – rmsd visualization in maps view % Almeria tide gauge

6.9.3 std visualization in maps view % Almeria tide gauge

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

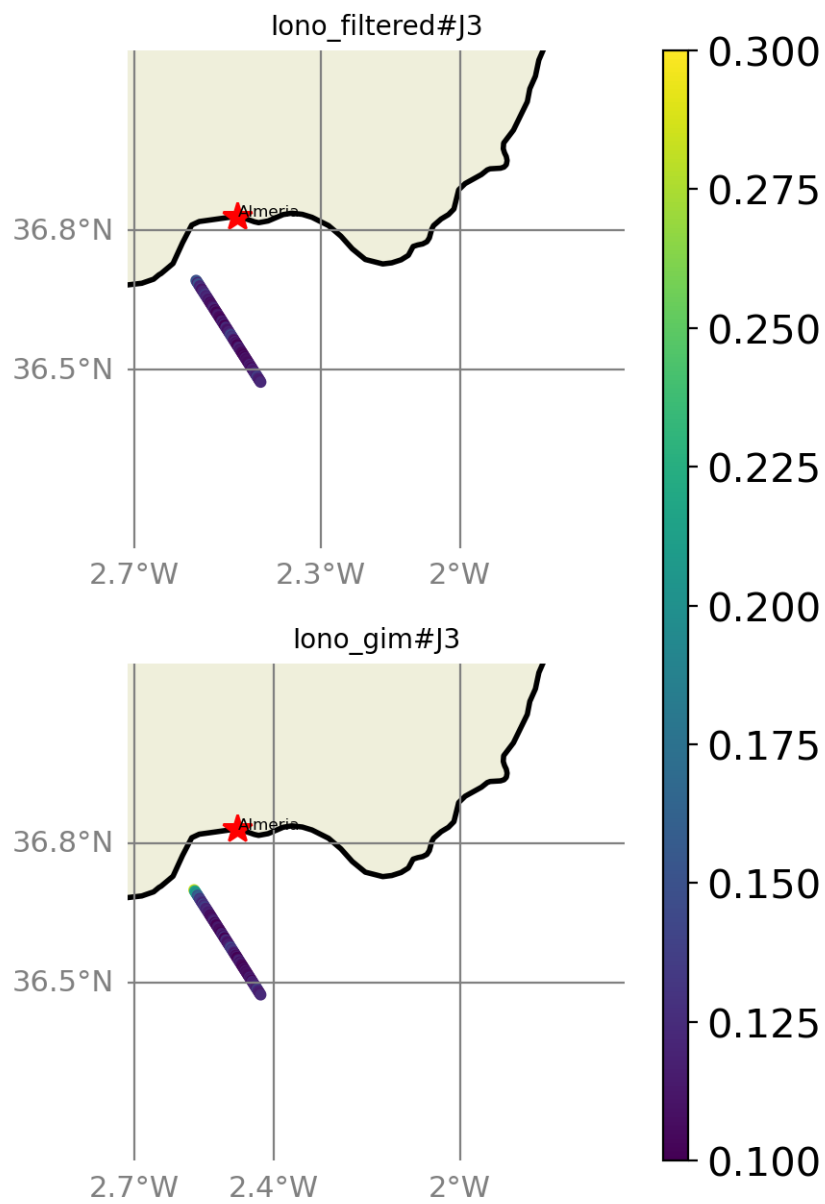


FIGURE 114 – std visualization in maps view % Almeria tide gauge

6.9.4 valid_data_percent visualization in maps view % Almeria tide gauge

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

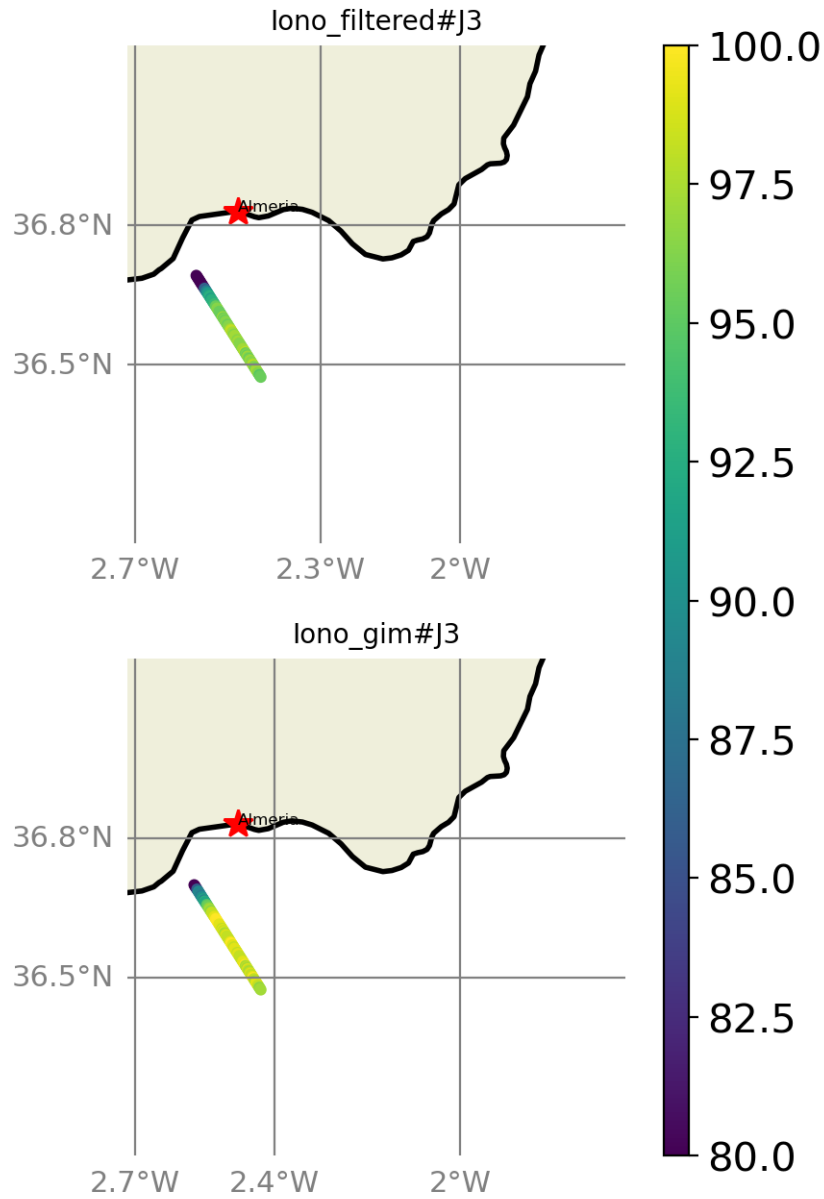


FIGURE 115 – valid_data_percent visualization in maps view % Almeria tide gauge

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 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. $maxNB = 109$ 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 serie.

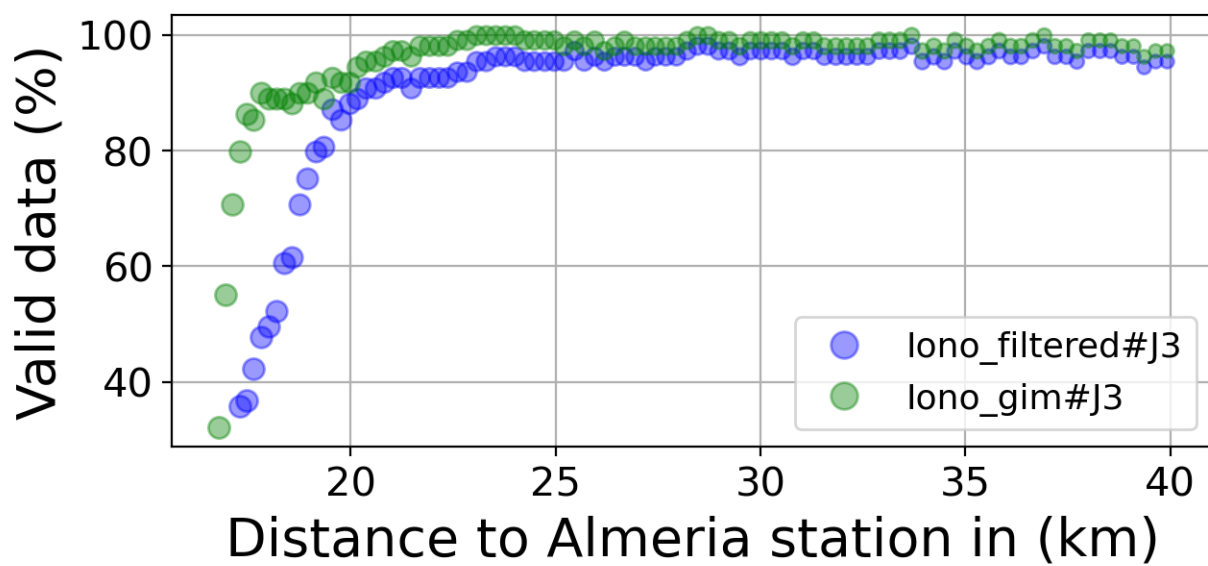
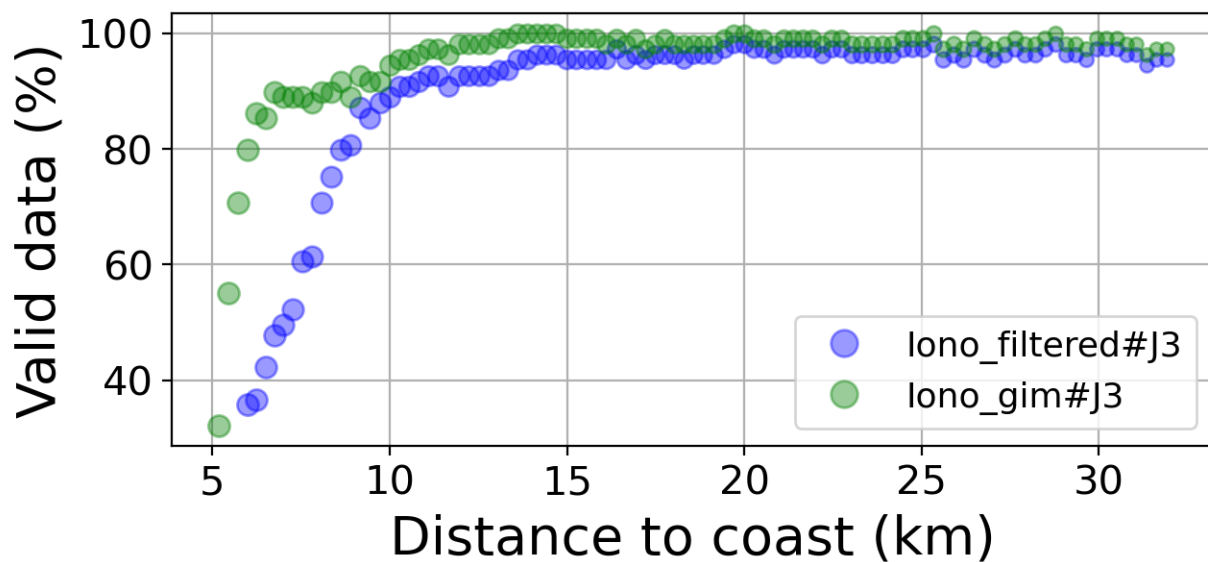


FIGURE 116 – Valid data (%) in function of distance to coast/Almeria station

6.9.6 Std in function of distance to coast/Almeria station

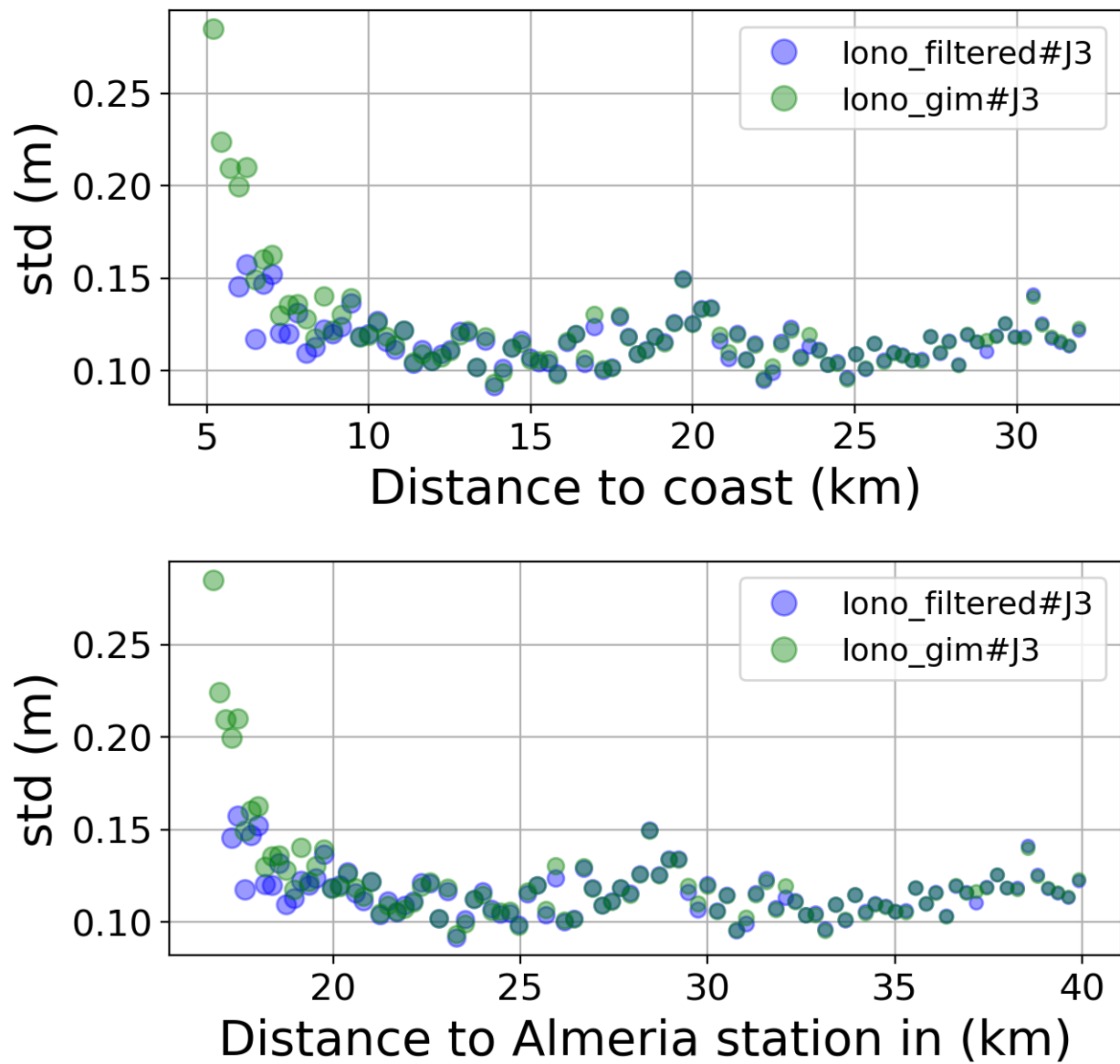


FIGURE 117 – Std in function of the distance to the coast/Almeria station

6.9.7 Correlation in function of distance to coast/Almeria station

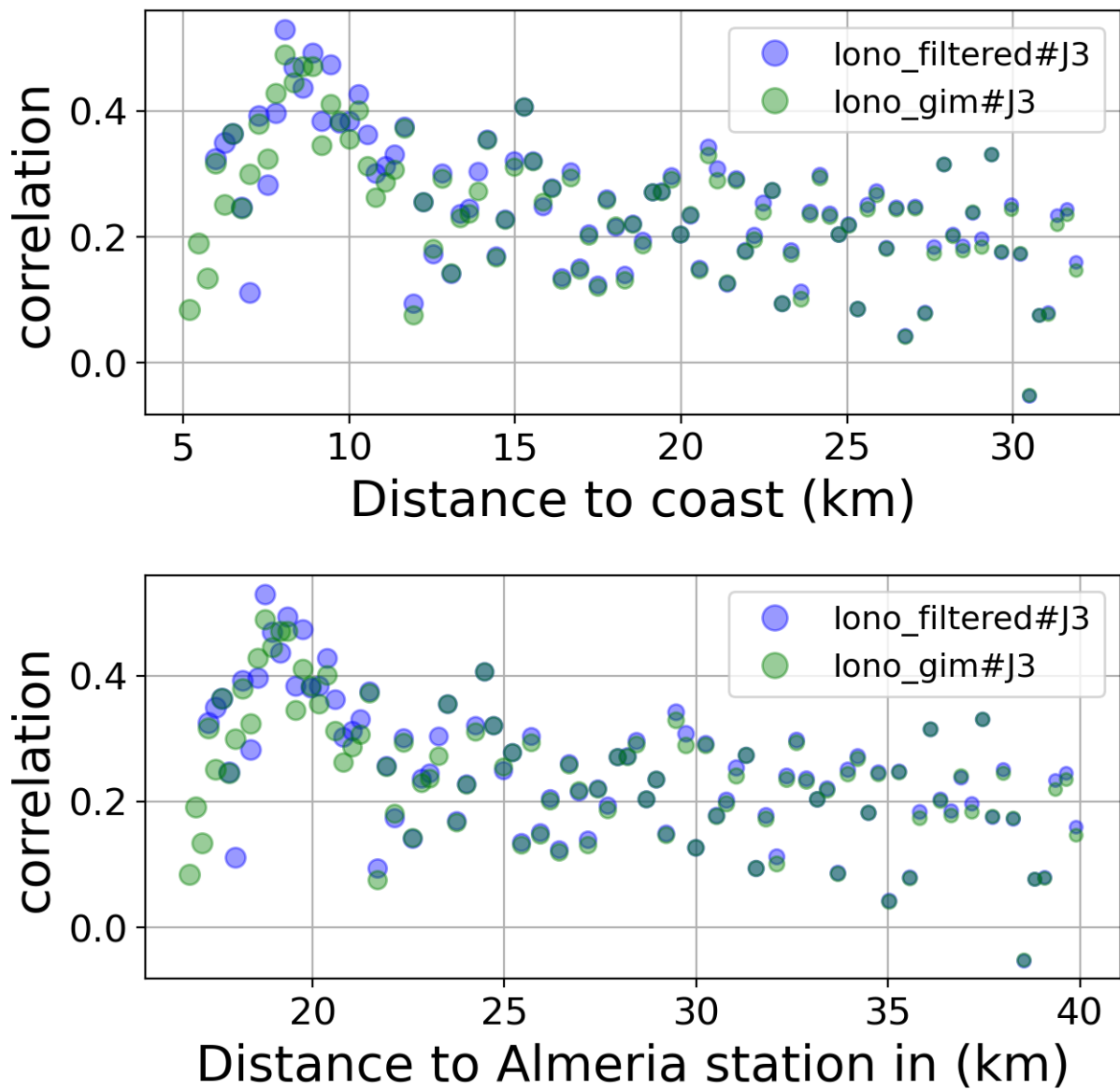


FIGURE 118 – Correlation in function of the distance to the coast/Almeria station

6.9.8 Taylor Diagram

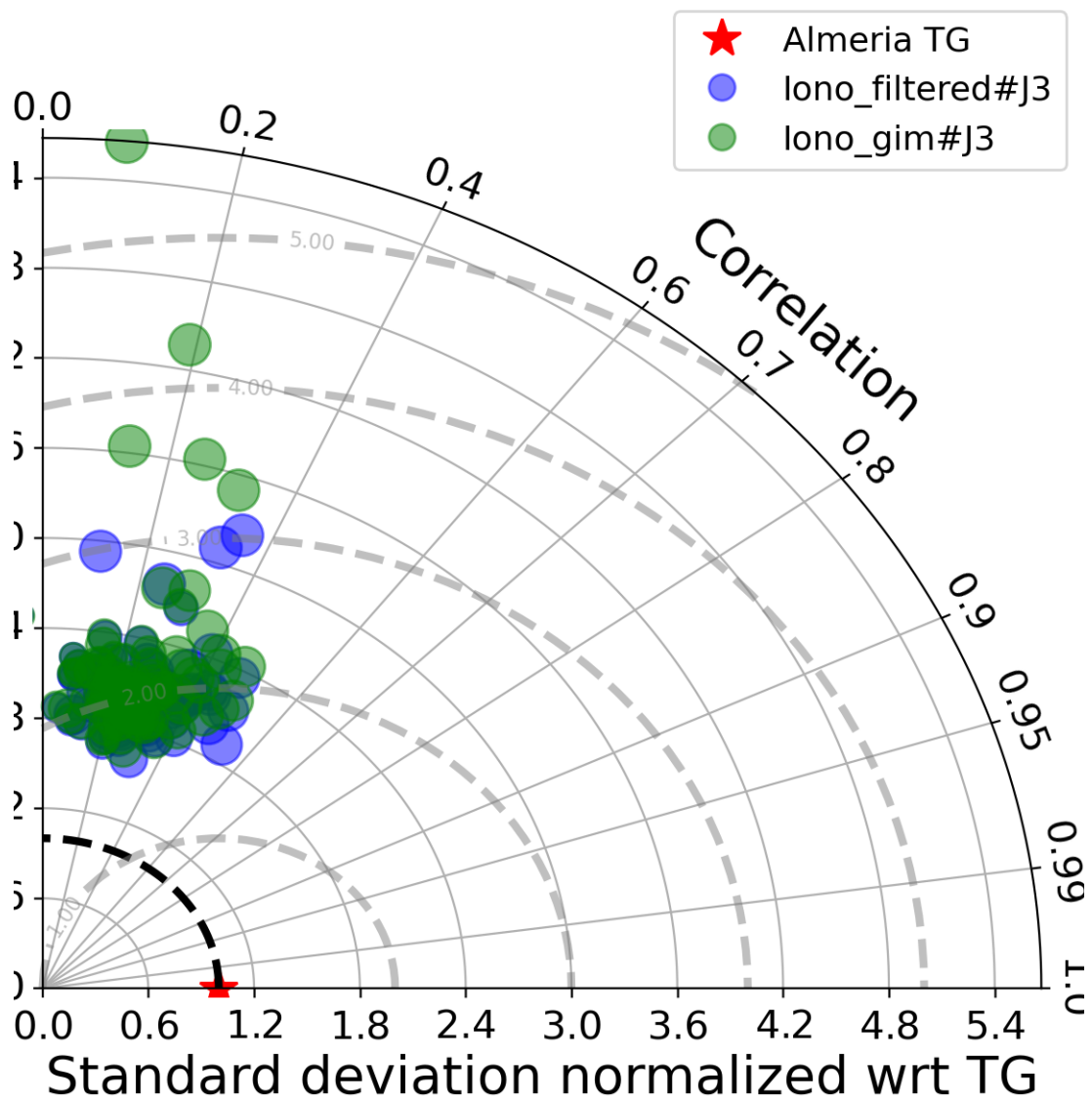


FIGURE 119 – Taylor diagram

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)
lono_filtered#J3	90.591	0.251	0.116	0.116
lono_gim#J3	96.877	0.245	0.119	0.119

FIGURE 120 – 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.

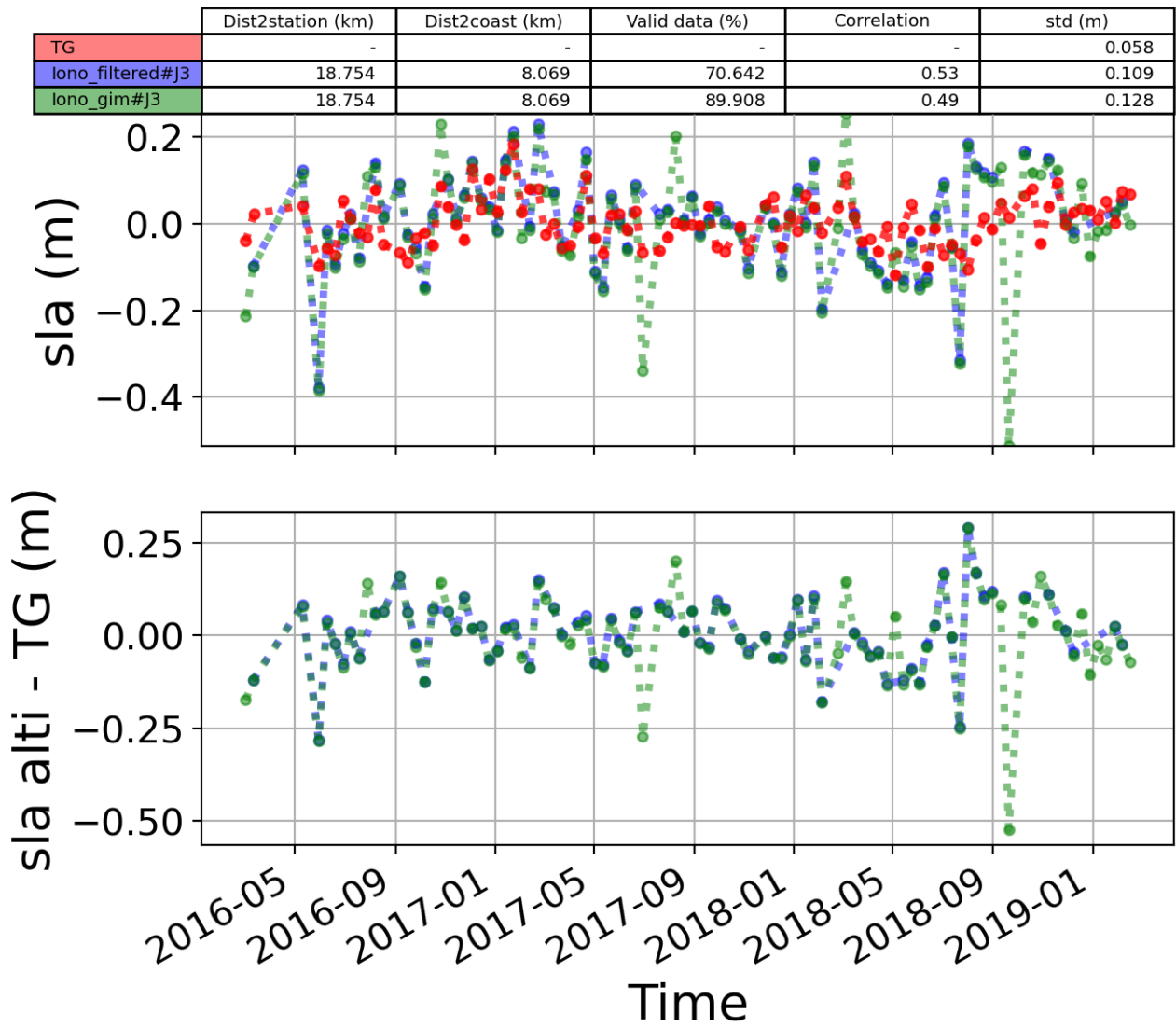


FIGURE 121 – The 1st most correlated sla altimetry Time serie with tide gauge sla time serie

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 Altimerty data with respect to Civitavecchia Tide gauge data

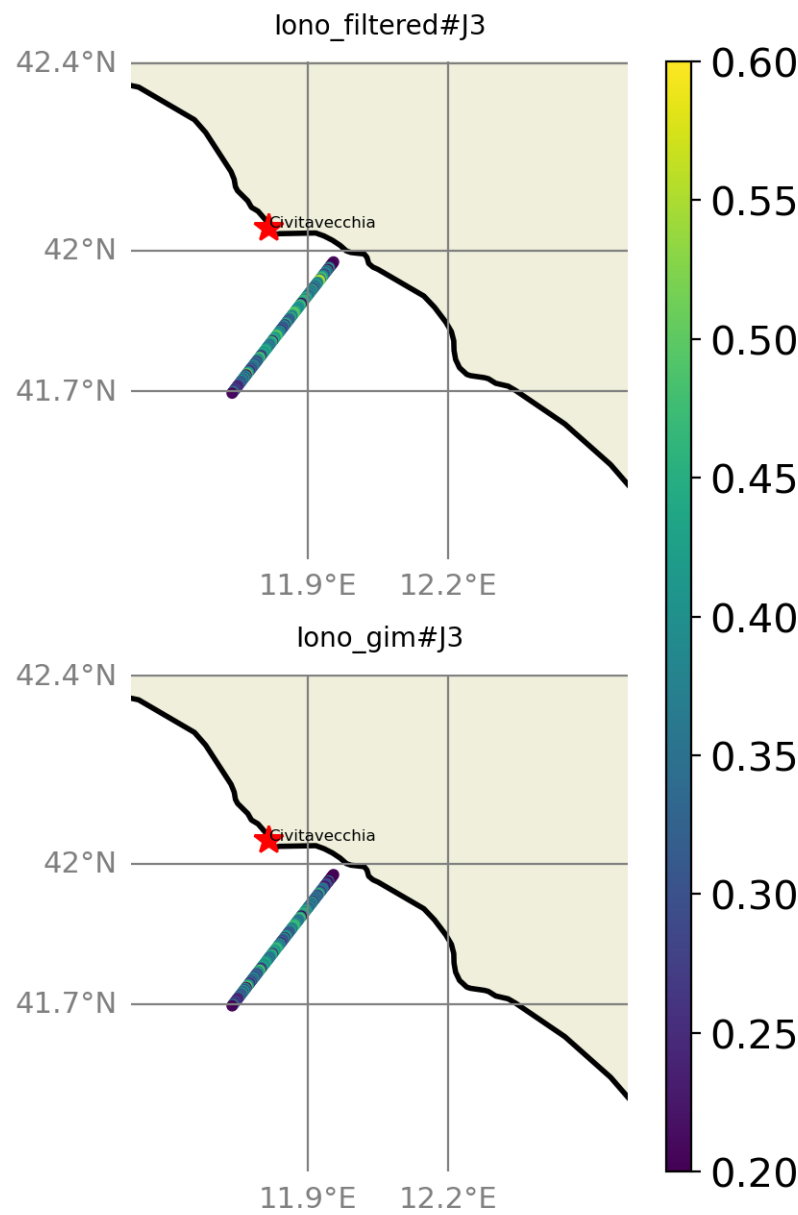


FIGURE 122 – correlation visualization in maps view % Civitavecchia tide gauge

6.10.2 rmsd visualization in maps view % Civitavecchia tide gauge

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

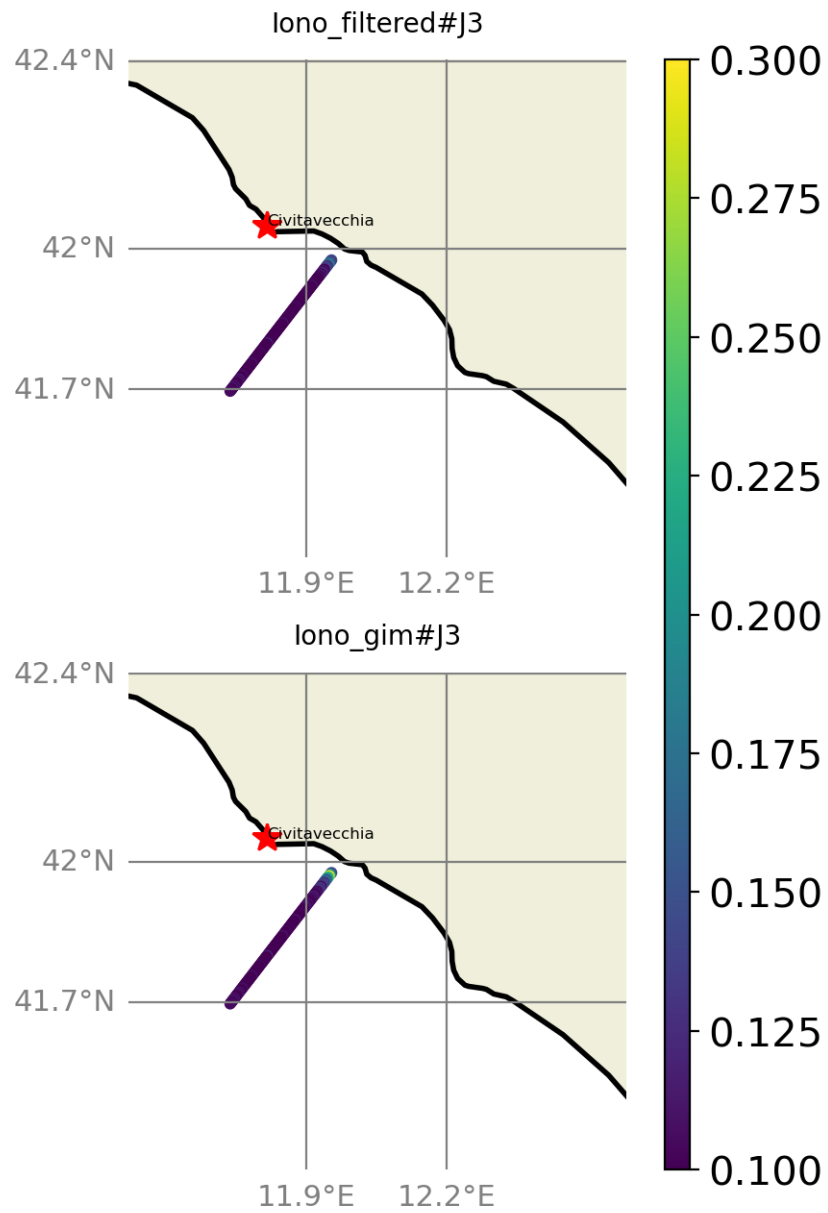


FIGURE 123 – rmsd visualization in maps view % Civitavecchia tide gauge

6.10.3 std visualization in maps view % Civitavecchia tide gauge

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

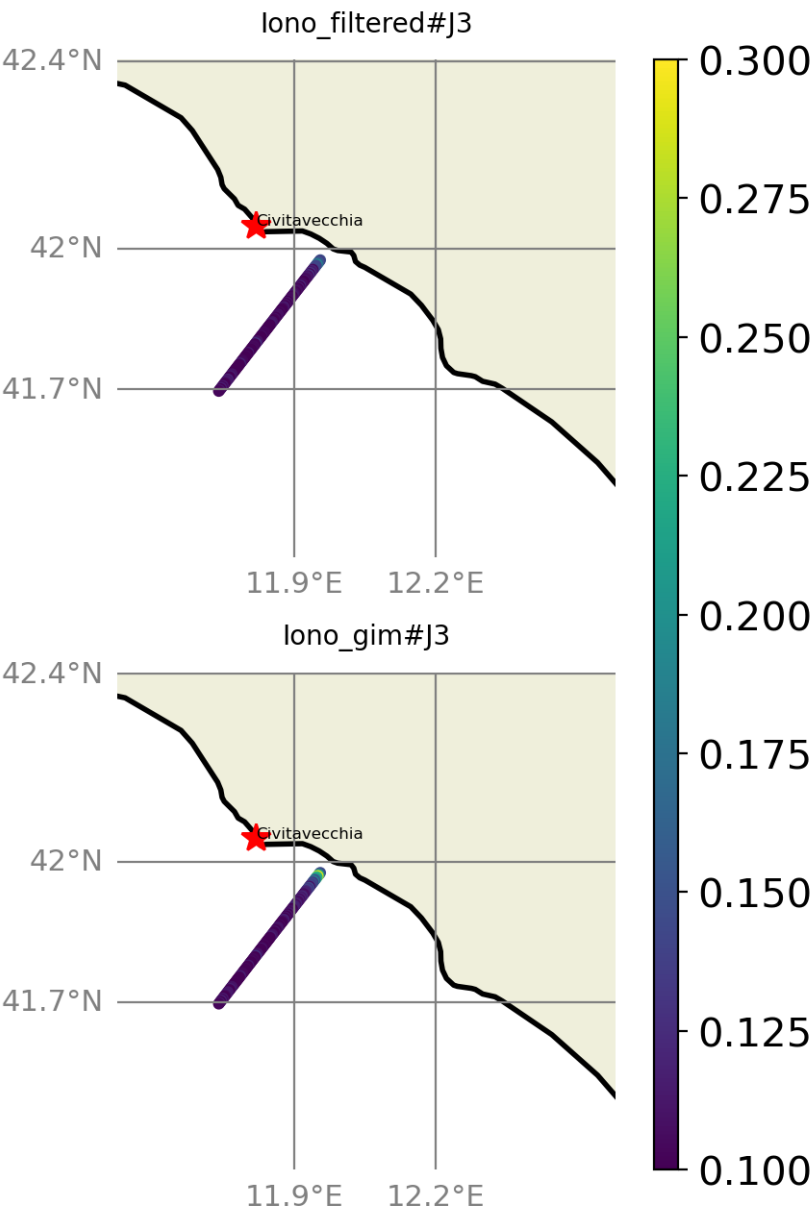


FIGURE 124 – std visualization in maps view % Civitavecchia tide gauge

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

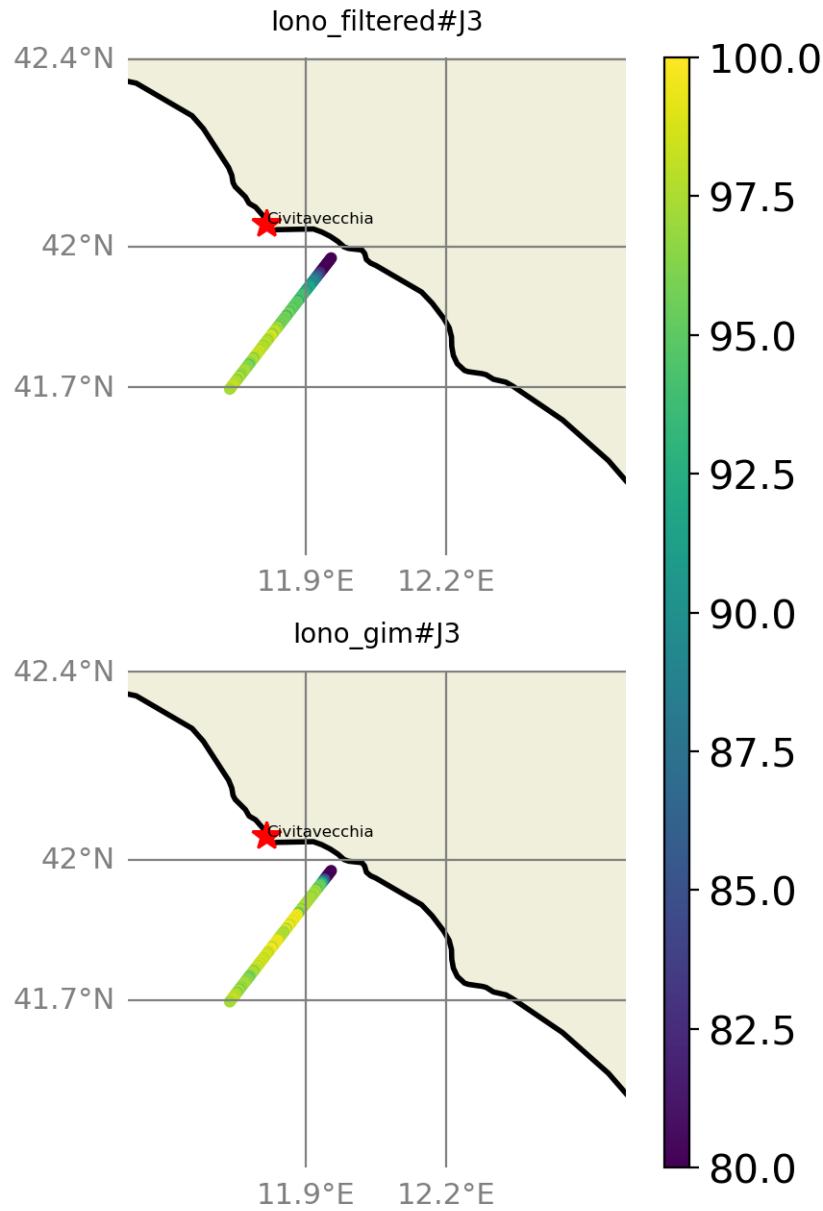


FIGURE 125 – valid_data_percent visualization in maps view % Civitavecchia tide gauge

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 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.

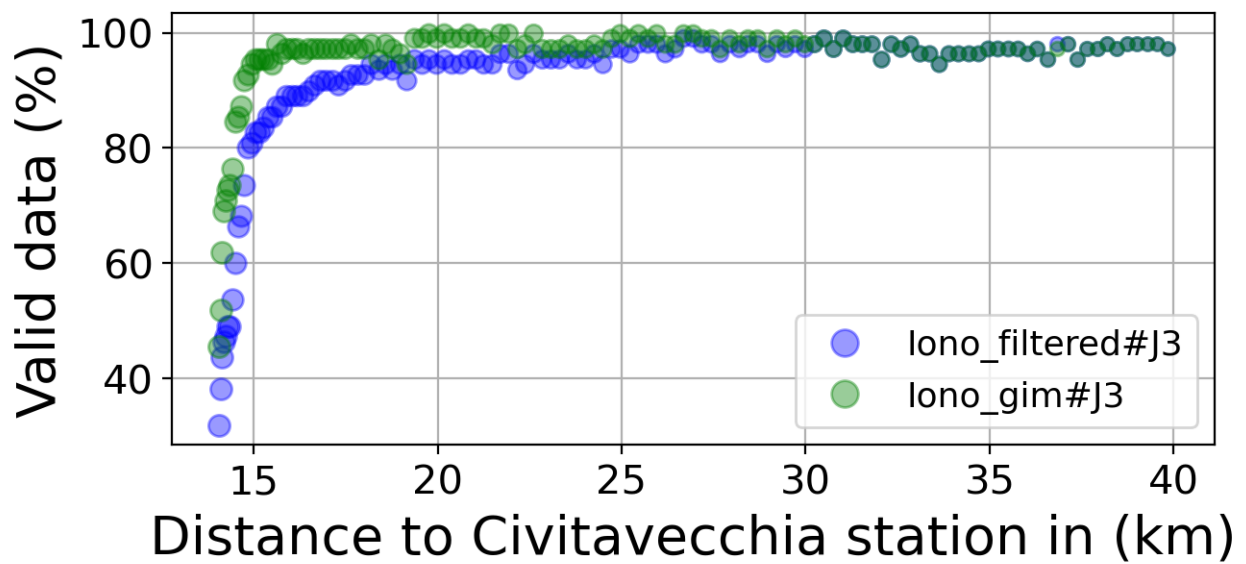
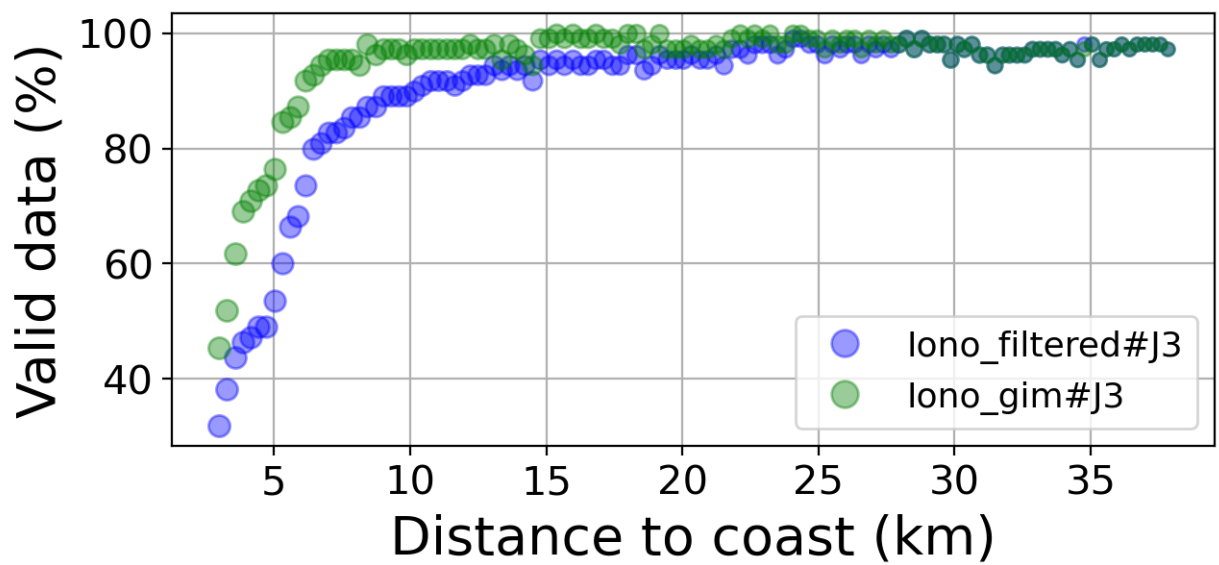


FIGURE 126 – Valid data (%) in function of distance to coast/Civitavecchia station

6.10.6 Std in function of distance to coast/Civitavecchia station

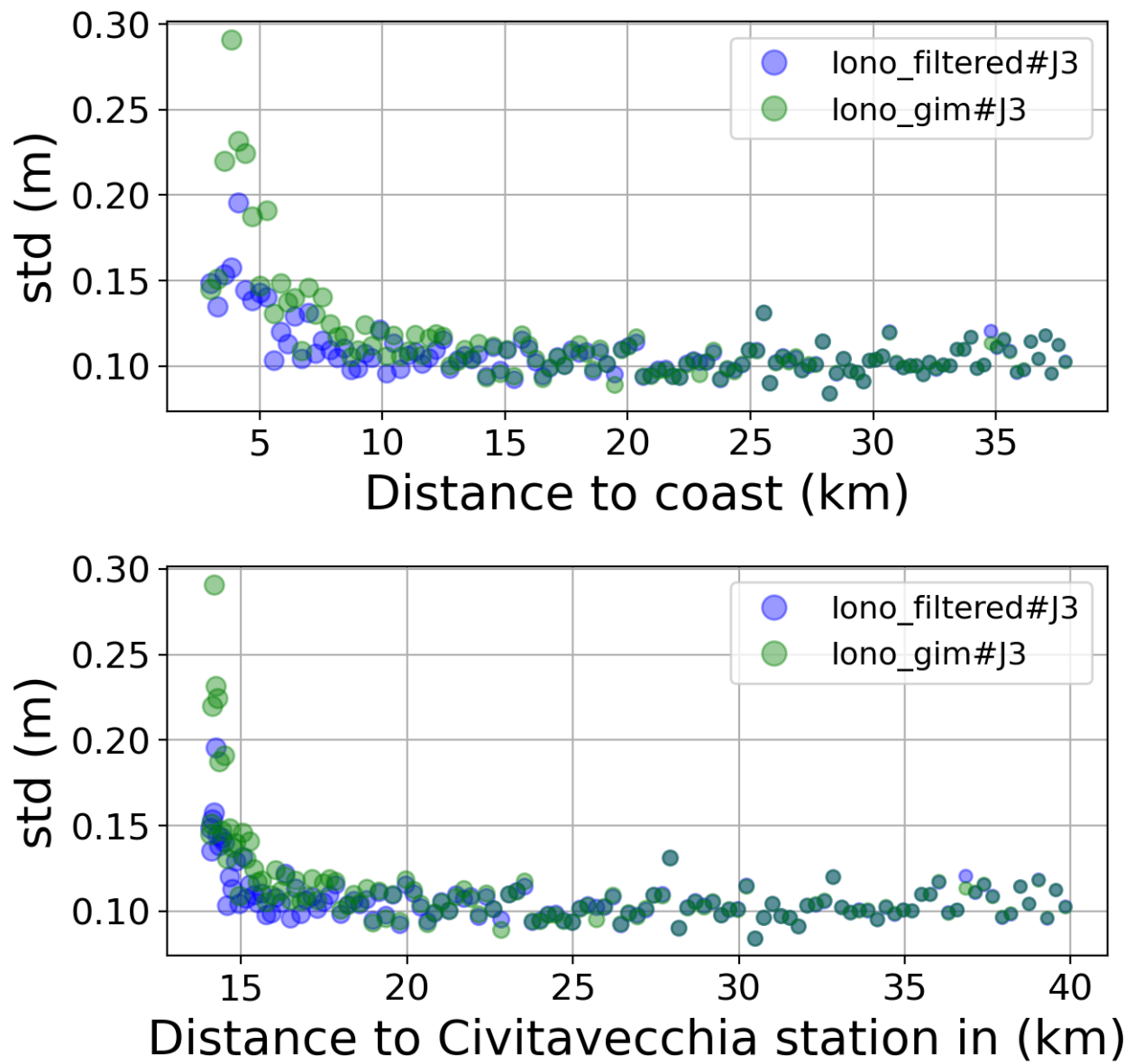


FIGURE 127 – Std in function of the distance to the coast/Civitavecchia station

6.10.7 Correlation in function of distance to coast/Civitavecchia station

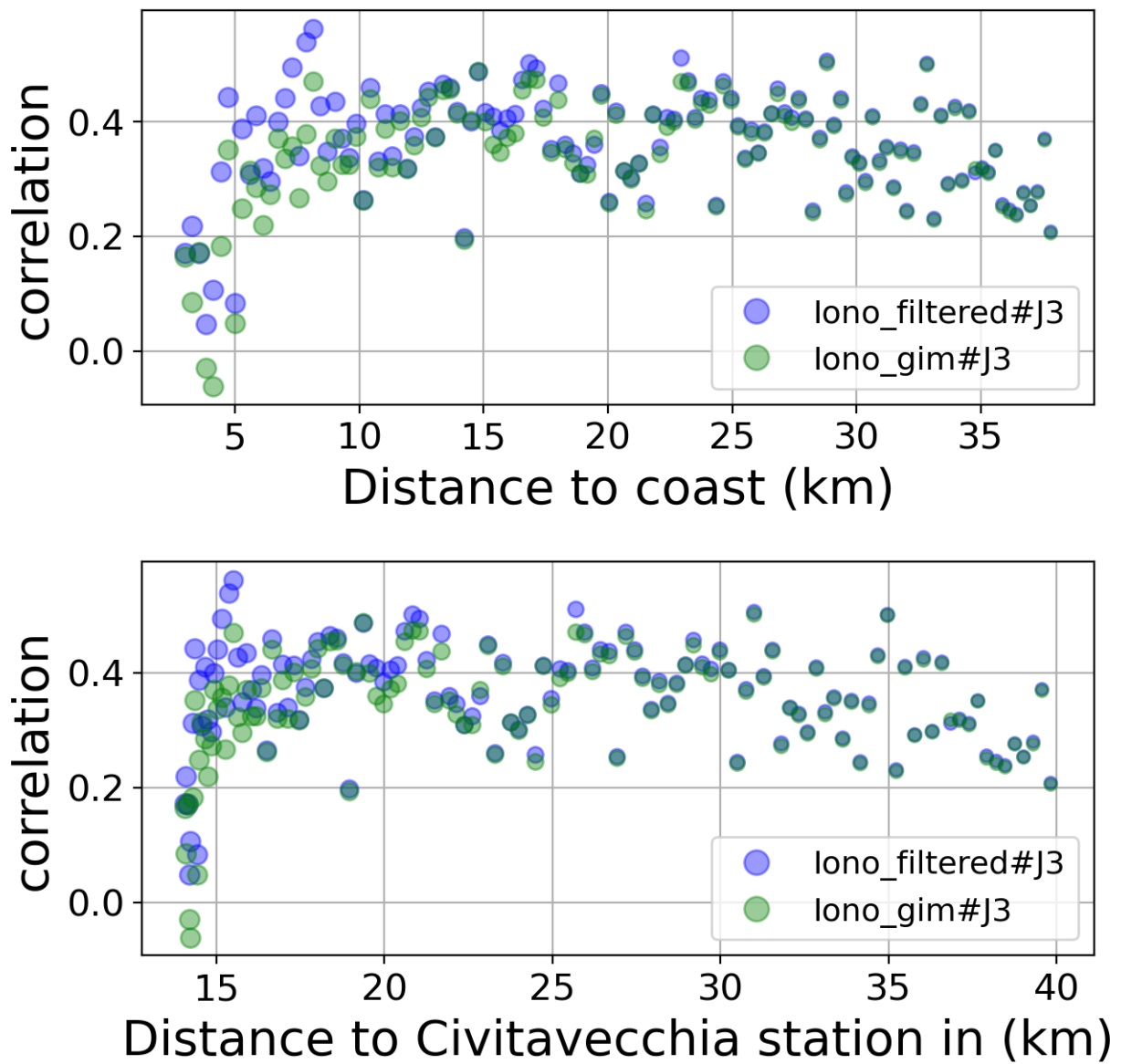


FIGURE 128 – Correlation in function of the distance to the coast/Civitavecchia station

6.10.8 Taylor Diagram

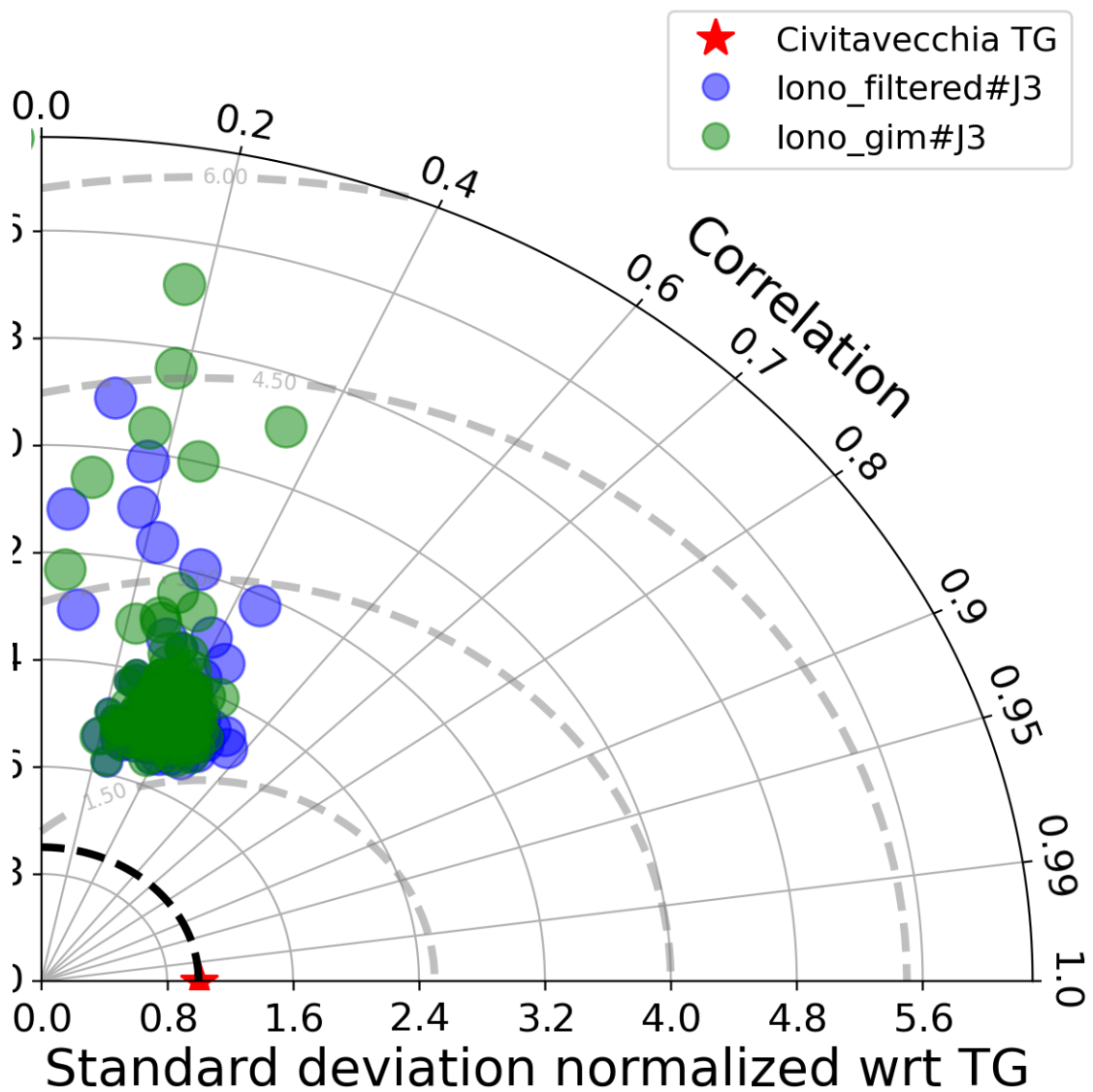


FIGURE 129 – Taylor diagram

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)
lono_filtered#J3	90.762	0.364	0.108	0.101
lono_gim#J3	95.271	0.342	0.114	0.108

FIGURE 130 – 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.

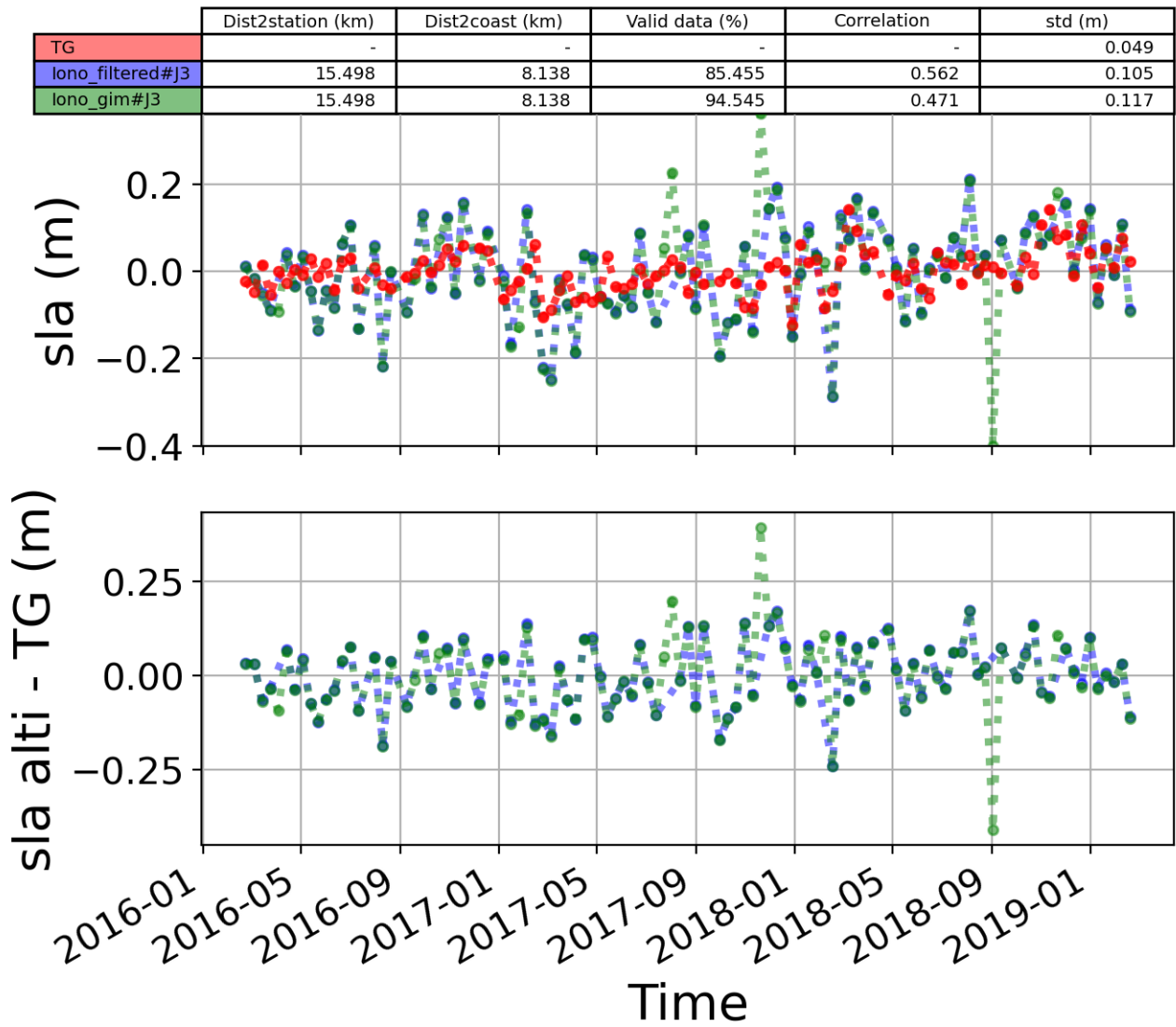


FIGURE 131 – The 1st most correlated sla altimetry Time serie with tide gauge sla time serie

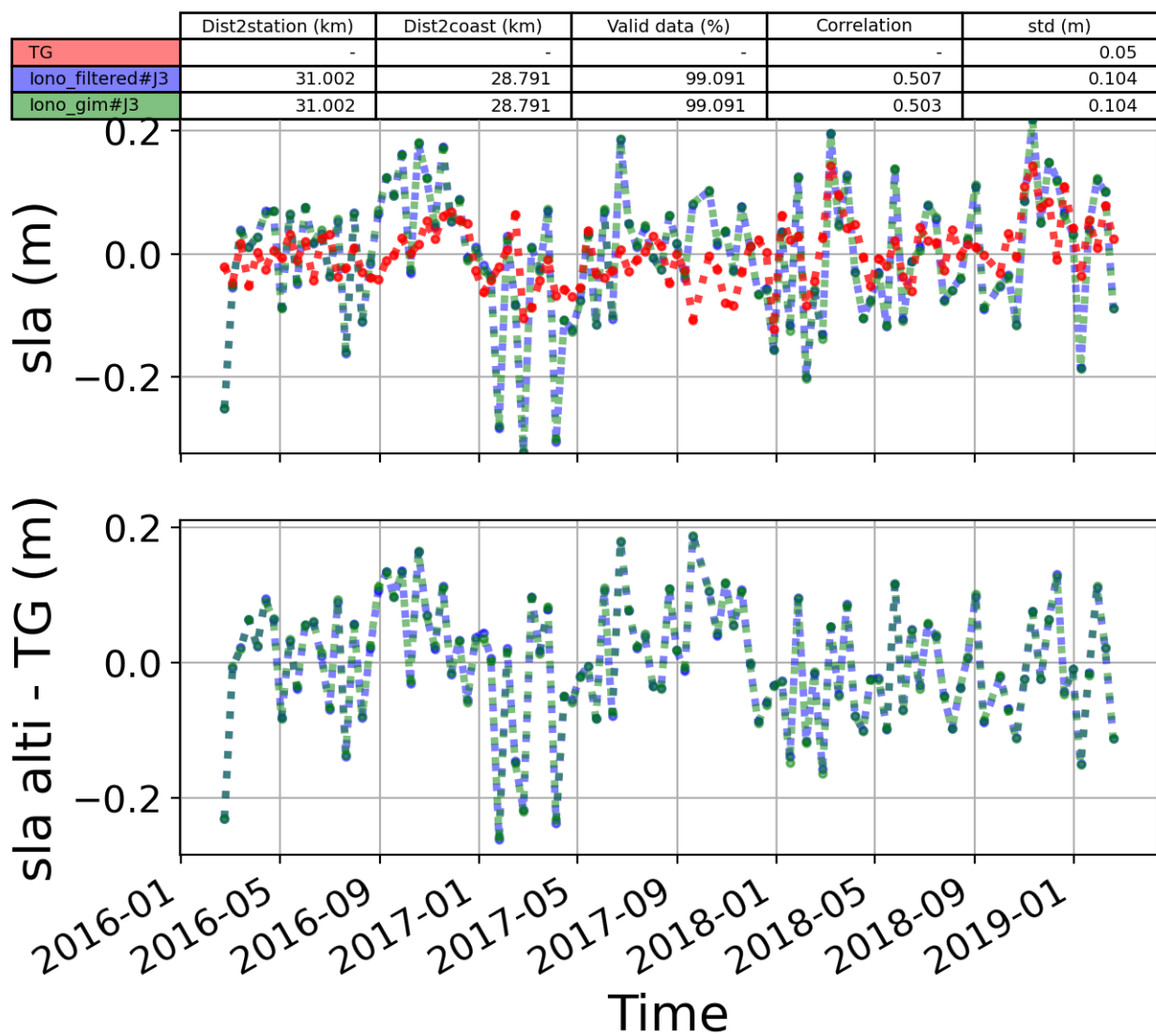


FIGURE 132 – The 2nd most correlated sla altimetry Time serie with tide gauge sla time serie

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 Altimerty data with respect to FOS-SUR-MER Tide gauge data

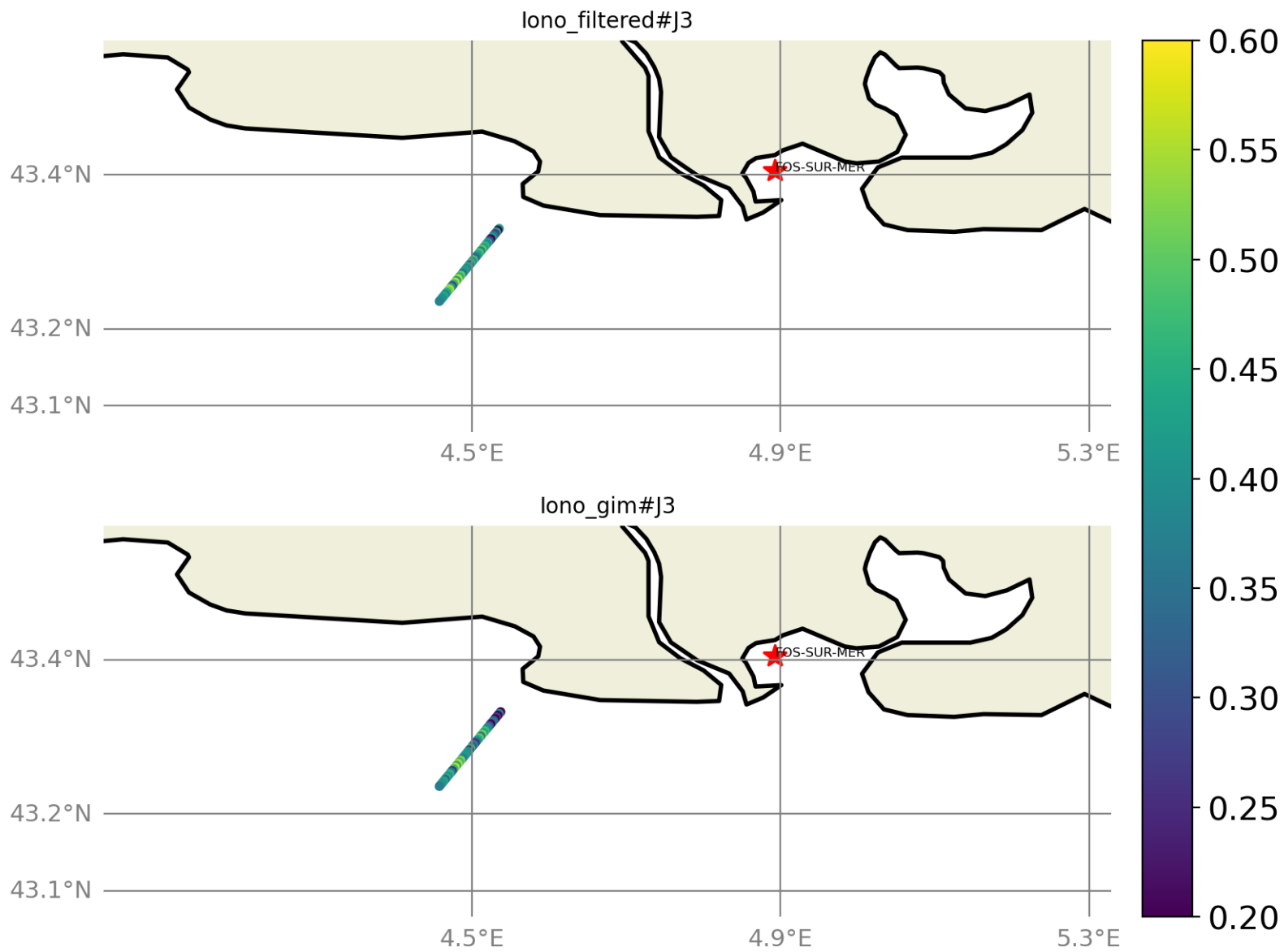


FIGURE 133 – correlation visualization in maps view % FOS-SUR-MER tide gauge

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

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

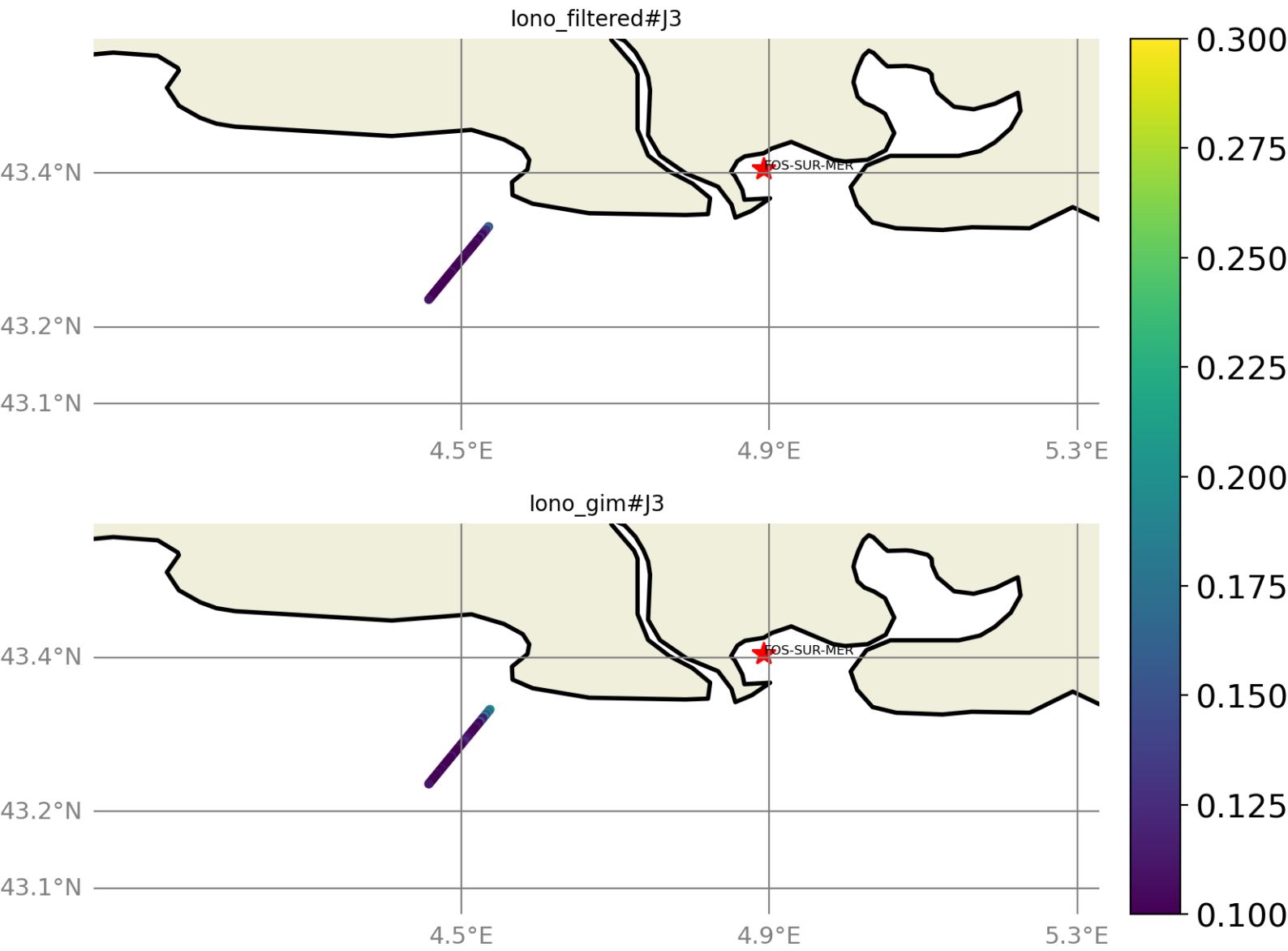


FIGURE 134 – rmsd visualization in maps view % FOS-SUR-MER tide gauge

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

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

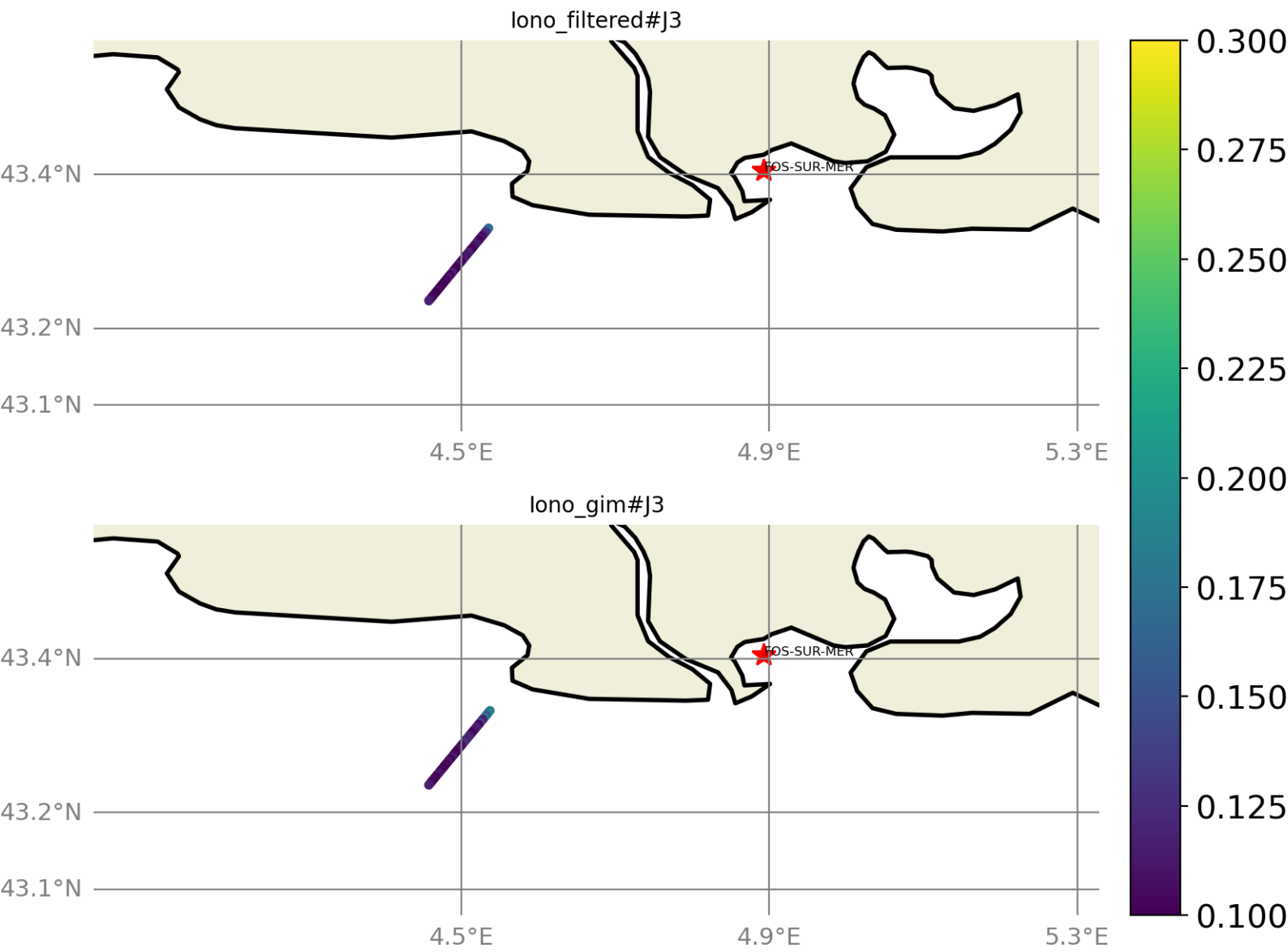


FIGURE 135 – std visualization in maps view % FOS-SUR-MER tide gauge

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

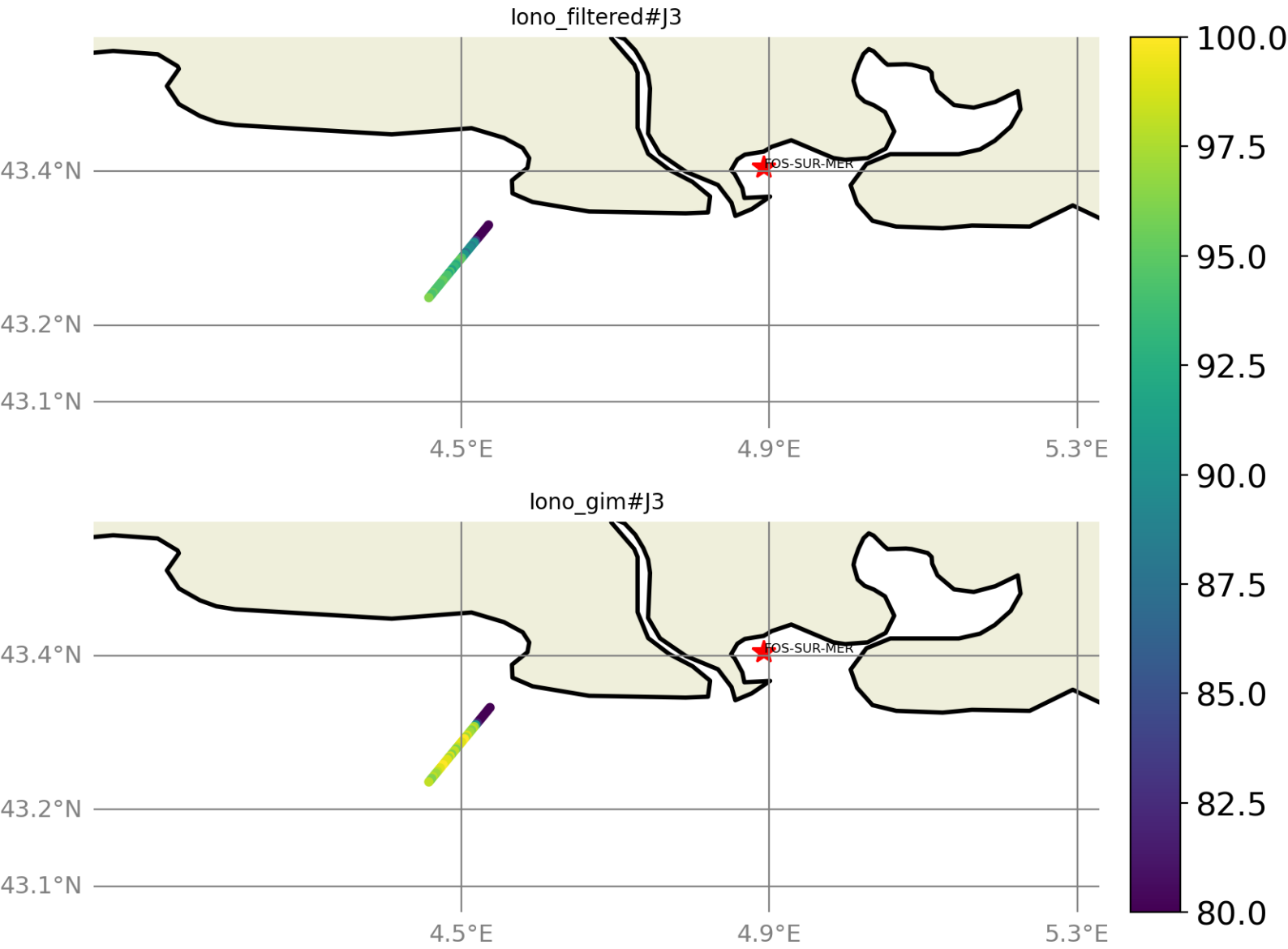


FIGURE 136 – valid_data_percent visualization in maps view % FOS-SUR-MER tide gauge

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.

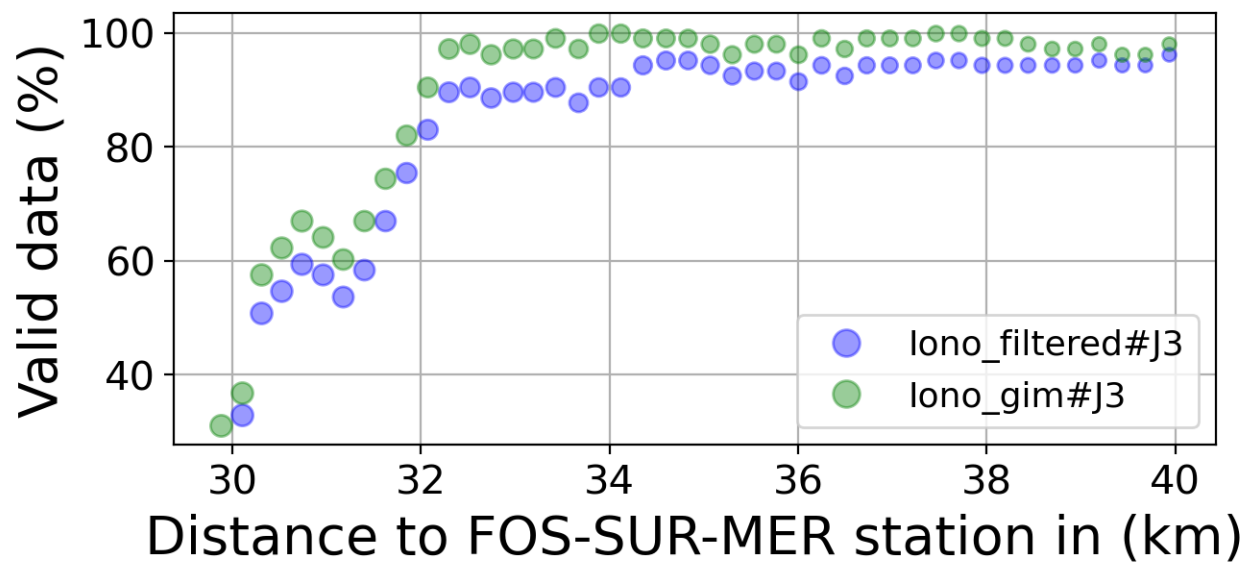
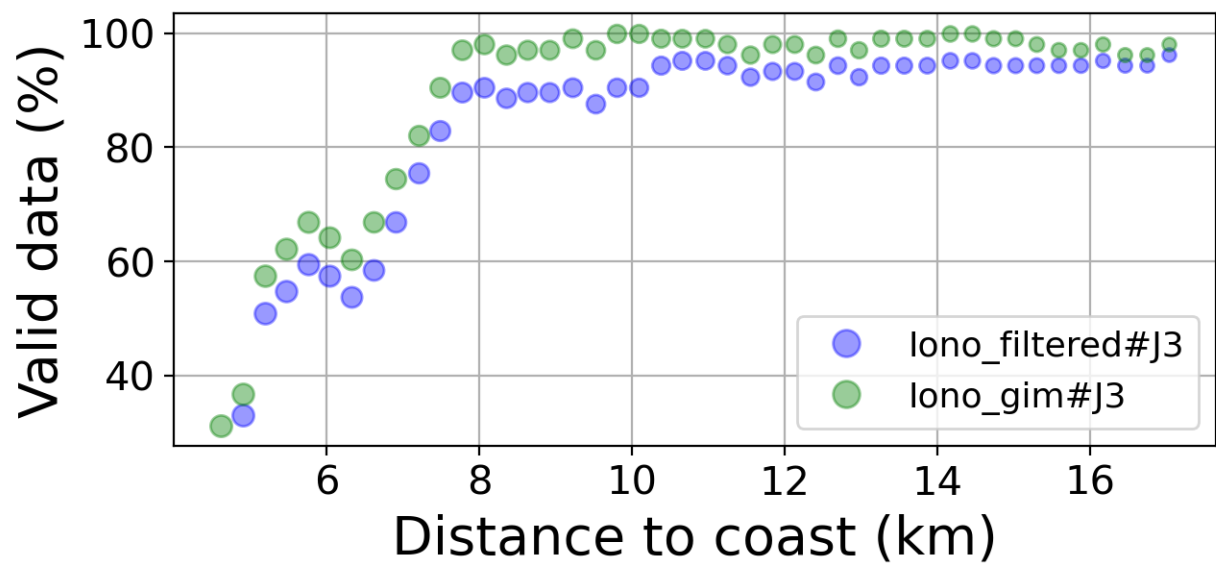


FIGURE 137 – Valid data (%) in function of distance to coast/FOS-SUR-MER station

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

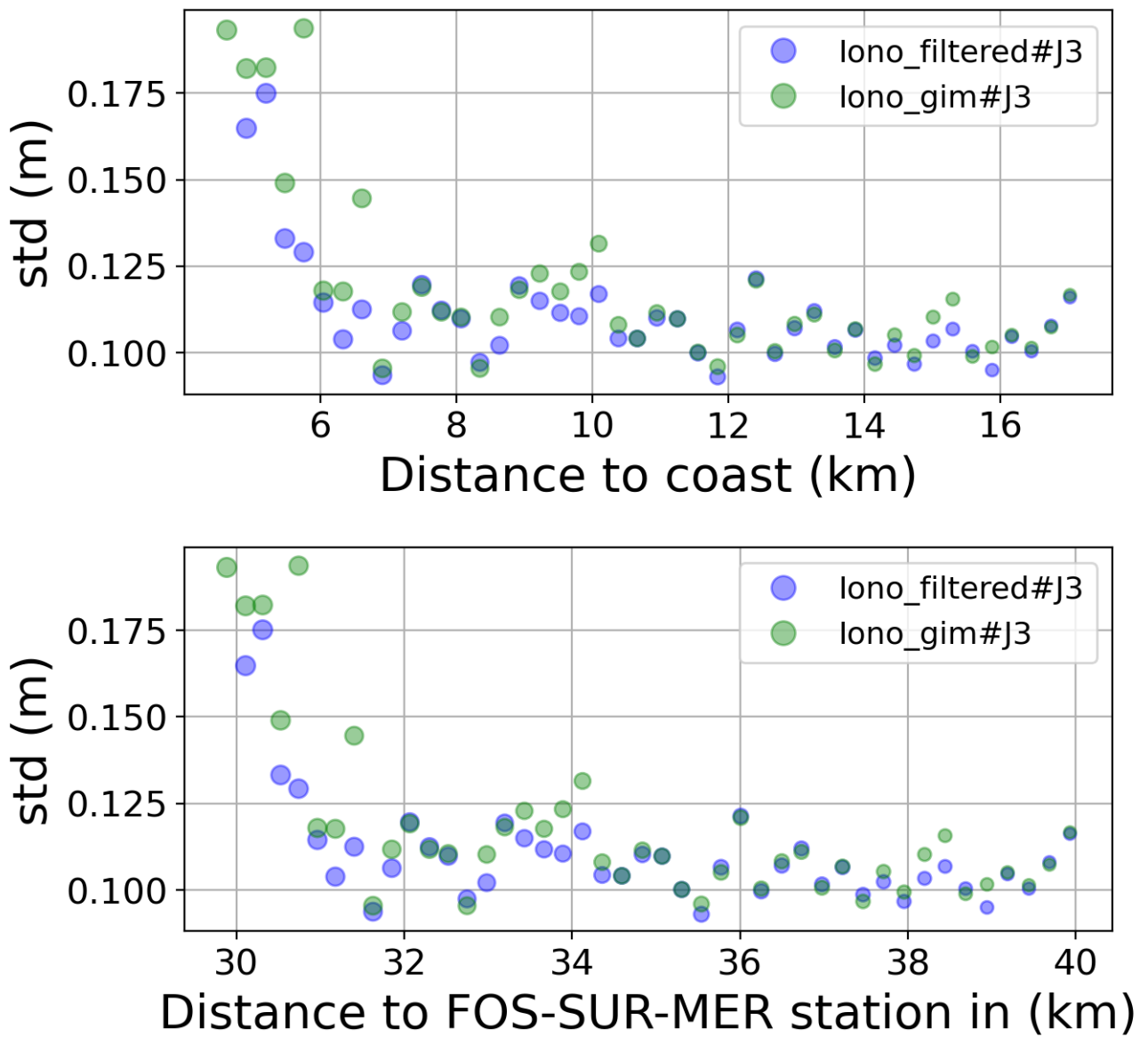


FIGURE 138 – Std in function of the distance to the coast/FOS-SUR-MER station

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

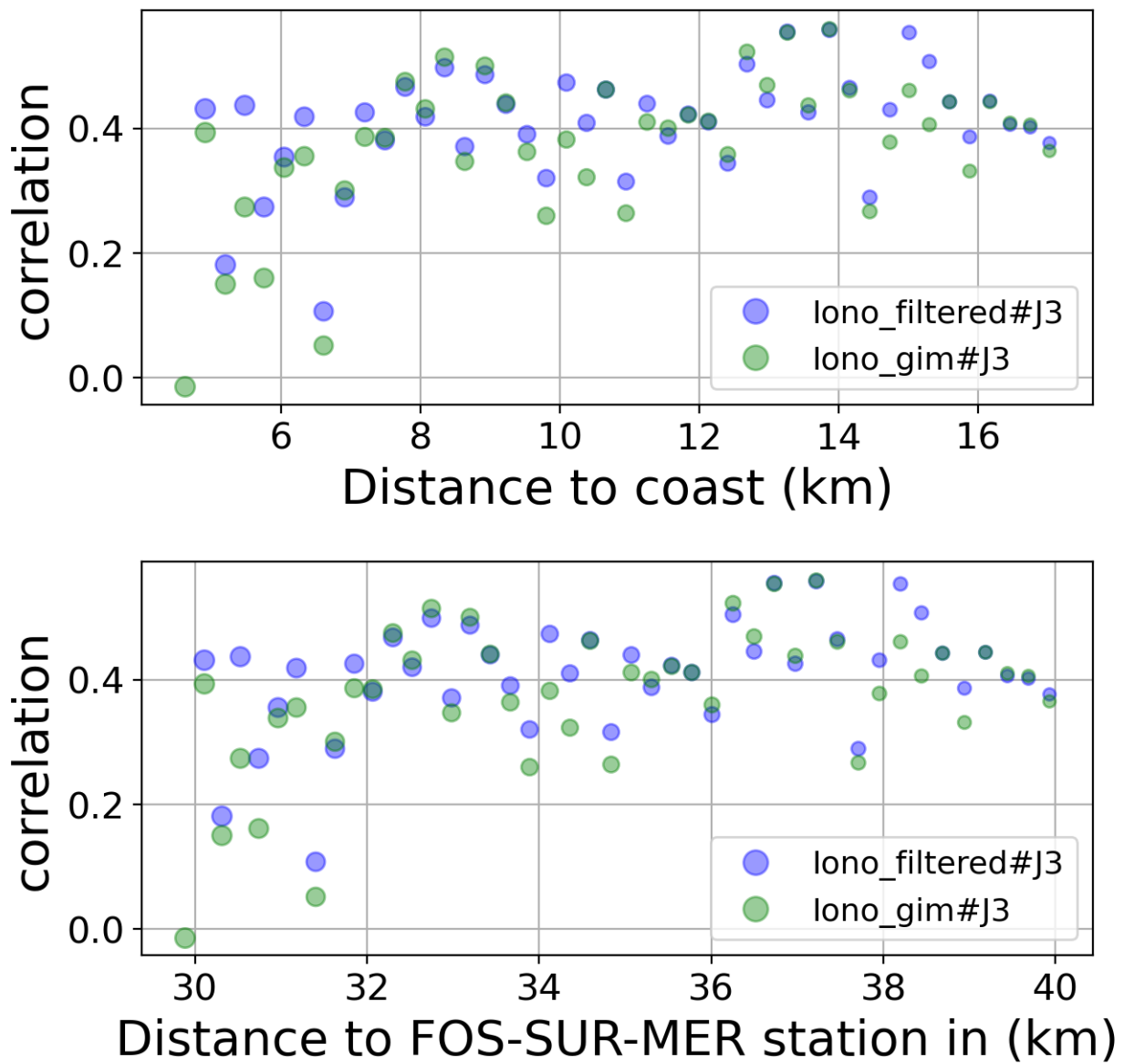


FIGURE 139 – Correlation in function of the distance to the coast/FOS-SUR-MER station

6.11.8 Taylor Diagram

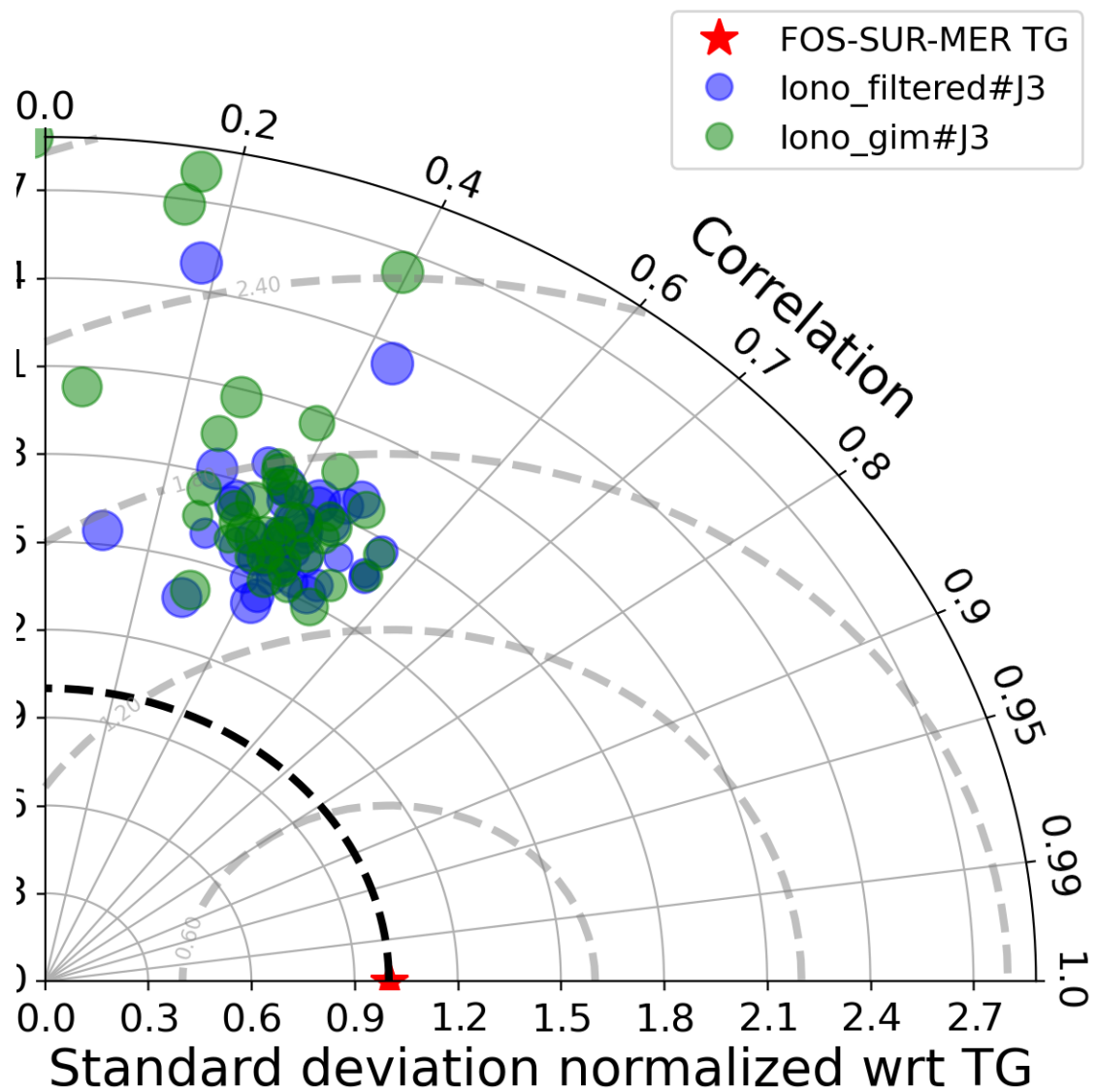


FIGURE 140 – Taylor diagram

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)
lono_filtered#J3	85.191	0.409	0.111	0.103
lono_gim#J3	90.72	0.384	0.116	0.11

FIGURE 141 – 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.

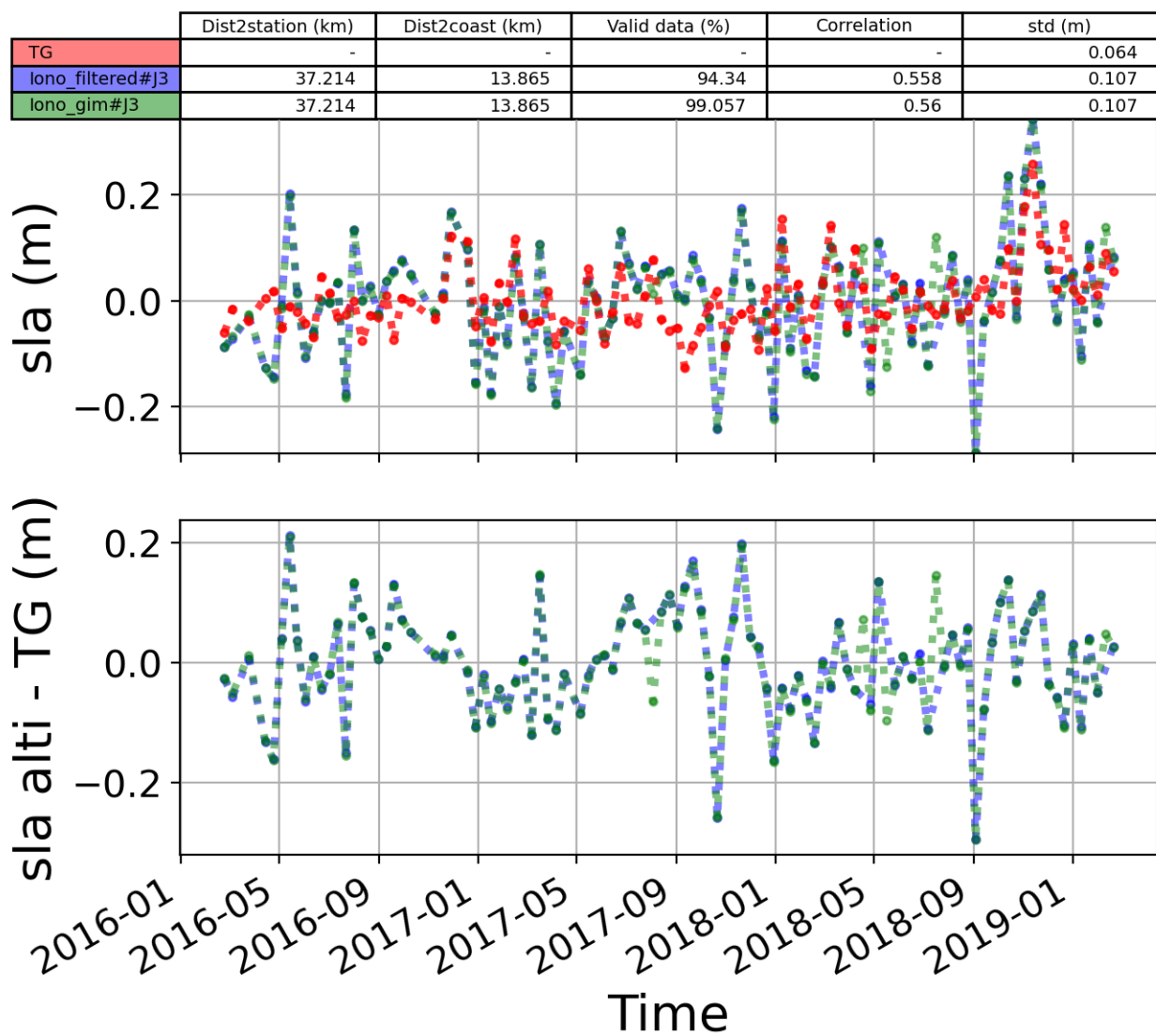


FIGURE 142 – The 1st most correlated sla altimetry Time serie with tide gauge sla time serie