

DIAGTOOL REPORT



Round Robin (GT cotier) : Wet tropospheric correction. global. J2. Wet rad vs Wet gpd vs Wet ecmwf.

Table of Contents

1	General description	3
2	Processing	3
2.1	sla formula	3
2.1.1	Wet_rad product ' sla	3
2.1.2	Wet_gpd product ' sla	3
2.1.3	Wet_ecmwf product ' sla	3
2.2	Binning	4
2.3	Filtering	4
3	Spatial coherence analysis	5
3.1	Wet	5
3.1.1	Wet 's count	5
3.1.2	Wet 's std	10
3.1.3	Wet 's mean	15
3.2	sla	20
3.2.1	sla 's count	20
3.2.2	sla 's std	25
3.2.3	sla 's mean	30
4	Histograms	35
4.1	Wet	35
4.2	sla	38
5	Along-track analysis	41
5.1	Wet	41
5.1.1	Wet 's count	41
5.1.2	Wet 's std	42
5.1.3	Wet 's mean	43
5.2	sla	44
5.2.1	sla 's count	44
5.2.2	sla 's std	45
5.2.3	sla 's mean	46

Table des figures

1	Spatial coherence analysis of the count of the Wet_rad version of Wet variable	5
2	Spatial coherence analysis of the count of the Wet_gpd version of Wet variable	6
3	Spatial coherence analysis of the count of the Wet_ecmwf version of Wet variable	7
4	Spatial coherence analysis of the Difference in Wet 's count between Wet_gpd and Wet_rad	8
5	Spatial coherence analysis of the Difference in Wet 's count between Wet_ecmwf and Wet_rad	8
6	Spatial coherence analysis of the Difference in Wet 's count between Wet_ecmwf and Wet_gpd	9
7	Spatial coherence analysis of the std of the Wet_rad version of Wet variable	10
8	Spatial coherence analysis of the std of the Wet_gpd version of Wet variable	11

9	Spatial coherence analysis of the std of the Wet_ecmwf version of Wet variable	12
10	Spatial coherence analysis of the Difference in Wet 's std between Wet_gpd and Wet_rad	13
11	Spatial coherence analysis of the Difference in Wet 's std between Wet_ecmwf and Wet_rad	13
12	Spatial coherence analysis of the Difference in Wet 's std between Wet_ecmwf and Wet_gpd	14
13	Spatial coherence analysis of the mean of the Wet_rad version of Wet variable	15
14	Spatial coherence analysis of the mean of the Wet_gpd version of Wet variable	16
15	Spatial coherence analysis of the mean of the Wet_ecmwf version of Wet variable	17
16	Spatial coherence analysis of the Difference in Wet 's mean between Wet_gpd and Wet_rad	18
17	Spatial coherence analysis of the Difference in Wet 's mean between Wet_ecmwf and Wet_rad	18
18	Spatial coherence analysis of the Difference in Wet 's mean between Wet_ecmwf and Wet_gpd	19
19	Spatial coherence analysis of the count of the Wet_rad version of sla variable	20
20	Spatial coherence analysis of the count of the Wet_gpd version of sla variable	21
21	Spatial coherence analysis of the count of the Wet_ecmwf version of sla variable	22
22	Spatial coherence analysis of the Difference in sla 's count between Wet_gpd and Wet_rad	23
23	Spatial coherence analysis of the Difference in sla 's count between Wet_ecmwf and Wet_rad	23
24	Spatial coherence analysis of the Difference in sla 's count between Wet_ecmwf and Wet_gpd	24
25	Spatial coherence analysis of the std of the Wet_rad version of sla variable	25
26	Spatial coherence analysis of the std of the Wet_gpd version of sla variable	26
27	Spatial coherence analysis of the std of the Wet_ecmwf version of sla variable	27
28	Spatial coherence analysis of the Difference in sla 's std between Wet_gpd and Wet_rad	28
29	Spatial coherence analysis of the Difference in sla 's std between Wet_ecmwf and Wet_rad	28
30	Spatial coherence analysis of the Difference in sla 's std between Wet_ecmwf and Wet_gpd	29
31	Spatial coherence analysis of the mean of the Wet_rad version of sla variable	30
32	Spatial coherence analysis of the mean of the Wet_gpd version of sla variable	31
33	Spatial coherence analysis of the mean of the Wet_ecmwf version of sla variable	32
34	Spatial coherence analysis of the Difference in sla 's mean between Wet_gpd and Wet_rad	33
35	Spatial coherence analysis of the Difference in sla 's mean between Wet_ecmwf and Wet_rad	33
36	Spatial coherence analysis of the Difference in sla 's mean between Wet_ecmwf and Wet_gpd	34
37	Histogram of each of Wet version	35
38	Histograms of difference of each Wet version and reference one	36
39	Histograms of the standard deviation of each Wet version	37
40	Histogram of each of sla version	38
41	Histograms of difference of each sla version and reference one	39
42	Histograms of the standard deviation of each sla version	40
43	Along-track analysis of Wet 's count	41
44	Along-track analysis of Wet 's std	42
45	Along-track analysis of Wet 's mean	43
46	Along-track analysis of sla 's count	44
47	Along-track analysis of sla 's std	45
48	Along-track analysis of sla 's mean	46

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 Wet tropospheric correction used to calculate the sea level anomaly. Each version has been compared with a reference version. In this case the Wet_rad 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 global
- Mission : J2
- Git last tag : 0.9 Ajouter les rapports ssb
- Git changeset number : ddb8b8d-2022-04-25

2 Processing

2.1 sla formula

2.1.1 Wet_rad product ' sla

sla = ORBIT.ALT.PO_E_GDR -
RANGE.ALT -
MEAN_SEA_SURFACE.MODEL.CNESCLS15 -
SEA_STATE_BIAS.ALT.NON_PARAMETRIC -
IONOSPHERIC_CORRECTION.MODEL.GIM -
WET_TROPOSPHERIC_CORRECTION.RAD -
DRY_TROPOSPHERIC_CORRECTION.MODEL.ECMWF_GAUSS -
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_MPL2017

2.1.2 Wet_gpd product ' sla

sla = ORBIT.ALT.PO_E_GDR -
RANGE.ALT -
MEAN_SEA_SURFACE.MODEL.CNESCLS15 -
SEA_STATE_BIAS.ALT.NON_PARAMETRIC -
IONOSPHERIC_CORRECTION.MODEL.GIM -
WET_TROPOSPHERIC_CORRECTION.GPD_PLUS -
DRY_TROPOSPHERIC_CORRECTION.MODEL.ECMWF_GAUSS -
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_MPL2017

2.1.3 Wet_ecmwf product ' sla

sla = ORBIT.ALT.PO_E_GDR -
RANGE.ALT -
MEAN_SEA_SURFACE.MODEL.CNESCLS15 -
SEA_STATE_BIAS.ALT.NON_PARAMETRIC -
IONOSPHERIC_CORRECTION.MODEL.GIM -
WET_TROPOSPHERIC_CORRECTION.MODEL.ECMWF_GAUSS -
DRY_TROPOSPHERIC_CORRECTION.MODEL.ECMWF_GAUSS -
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_MPL2017

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 3 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 Wet

3.1.1 Wet's count

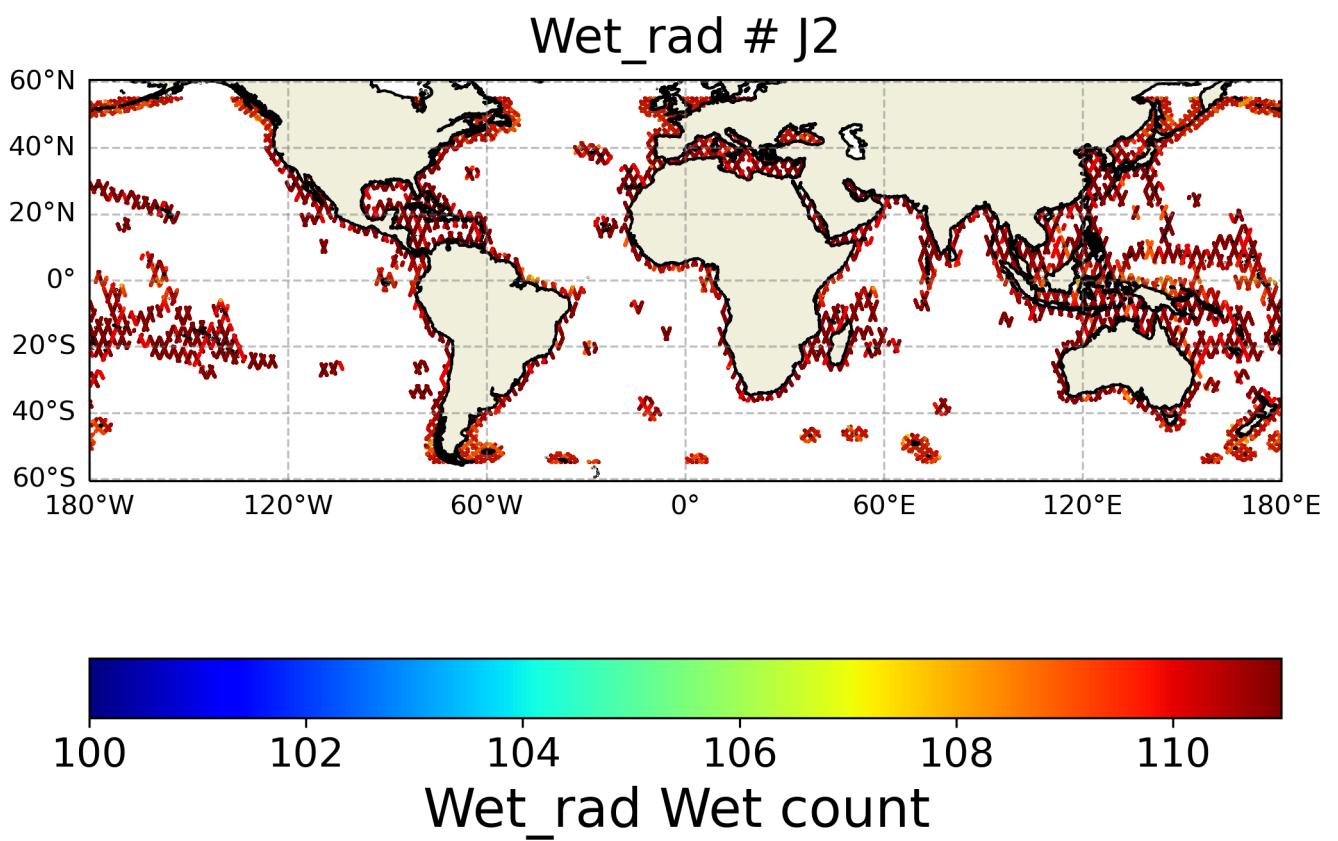


FIGURE 1 – Spatial coherence analysis of the count of the Wet_rad version of Wet variable

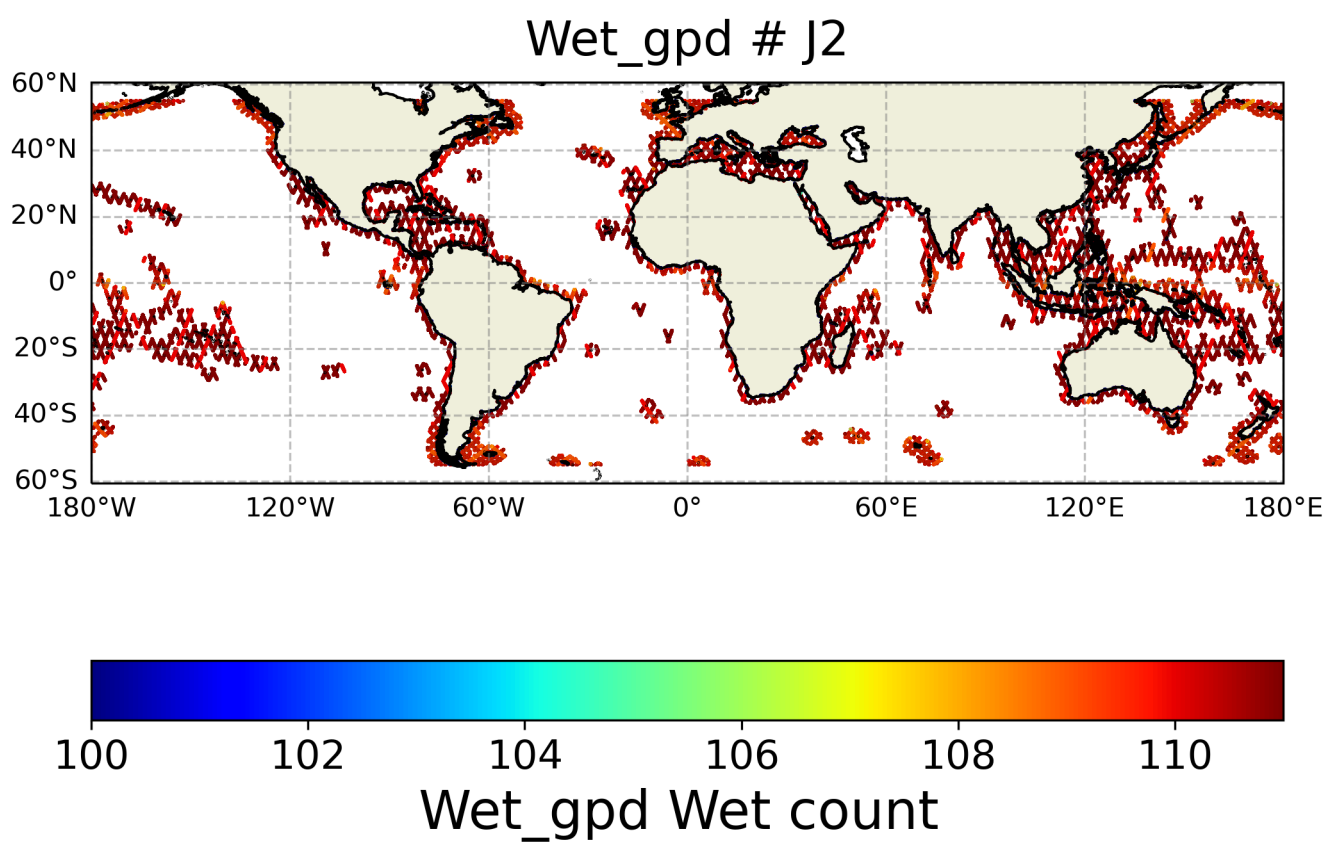


FIGURE 2 – Spatial coherence analysis of the count of the Wet_gpd version of Wet variable

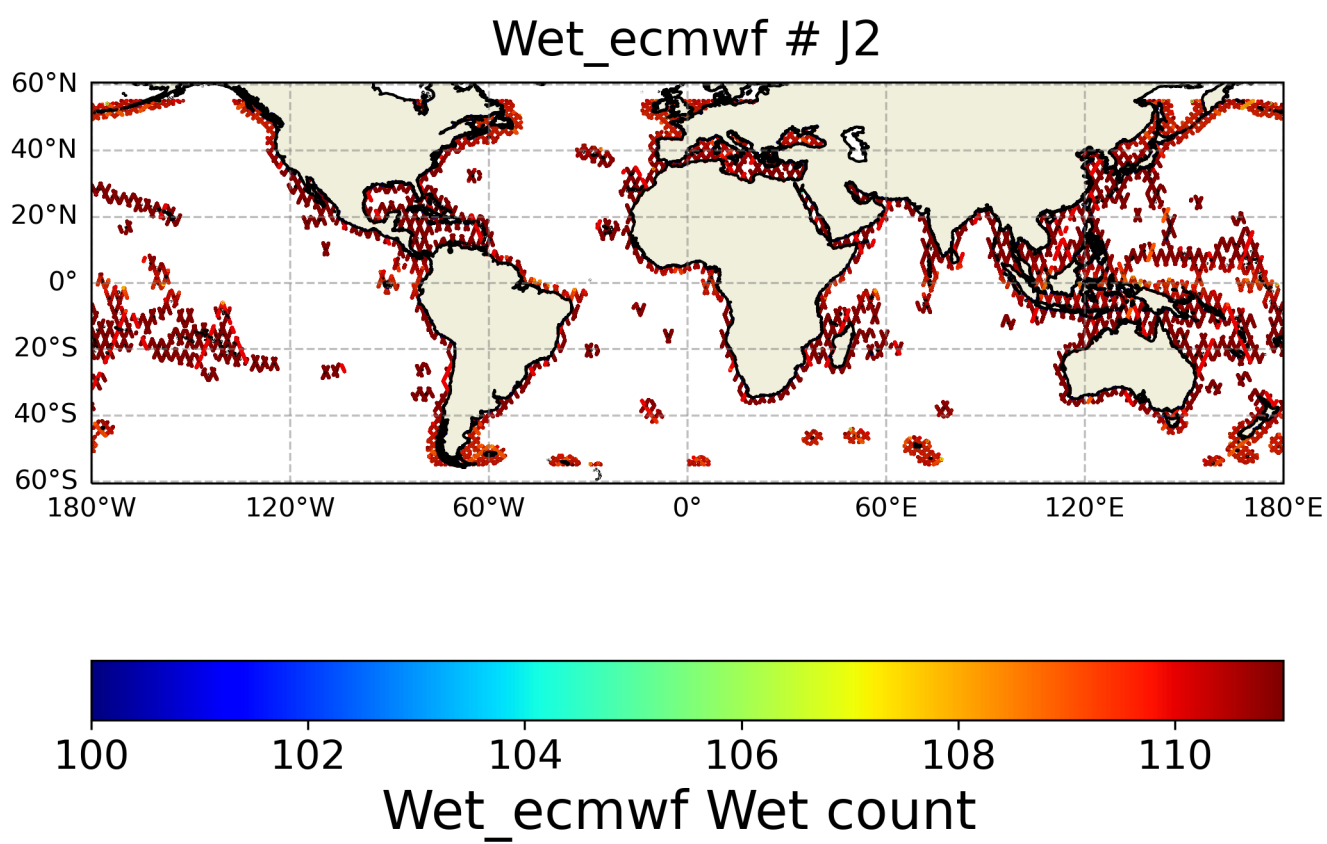


FIGURE 3 – Spatial coherence analysis of the count of the Wet_ecmwf version of Wet variable

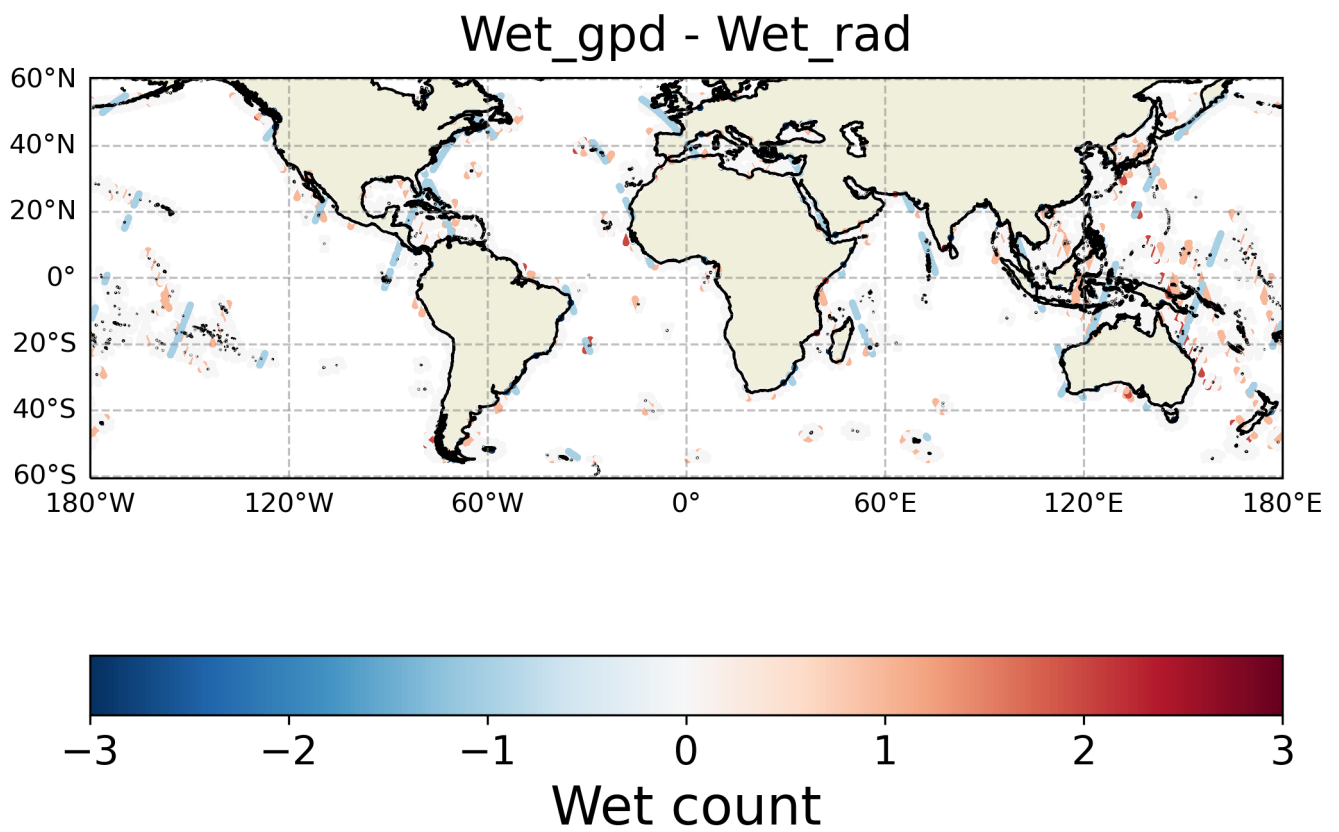


FIGURE 4 – Spatial coherence analysis of the Difference in Wet 's count between Wet_gpd and Wet_rad

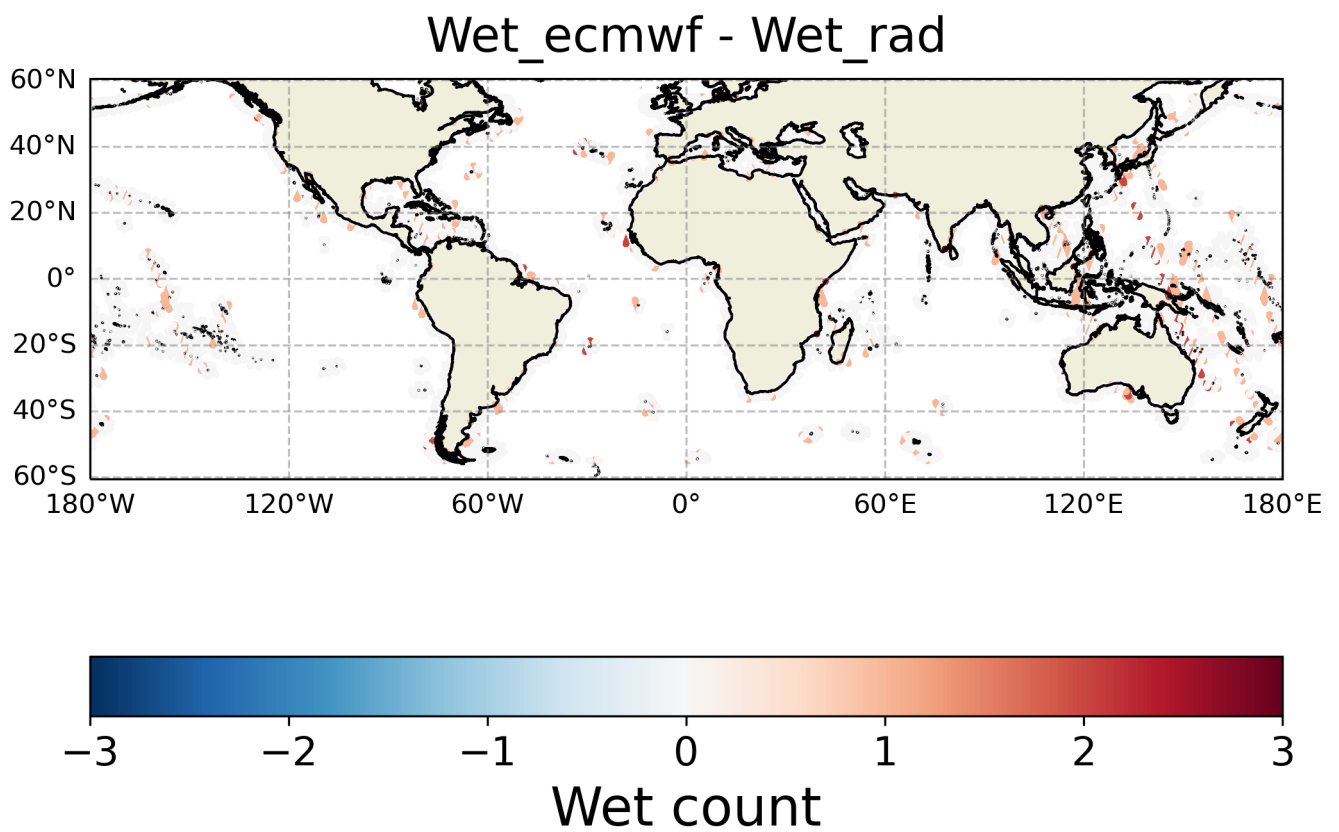


FIGURE 5 – Spatial coherence analysis of the Difference in Wet 's count between Wet_ecmwf and Wet_rad

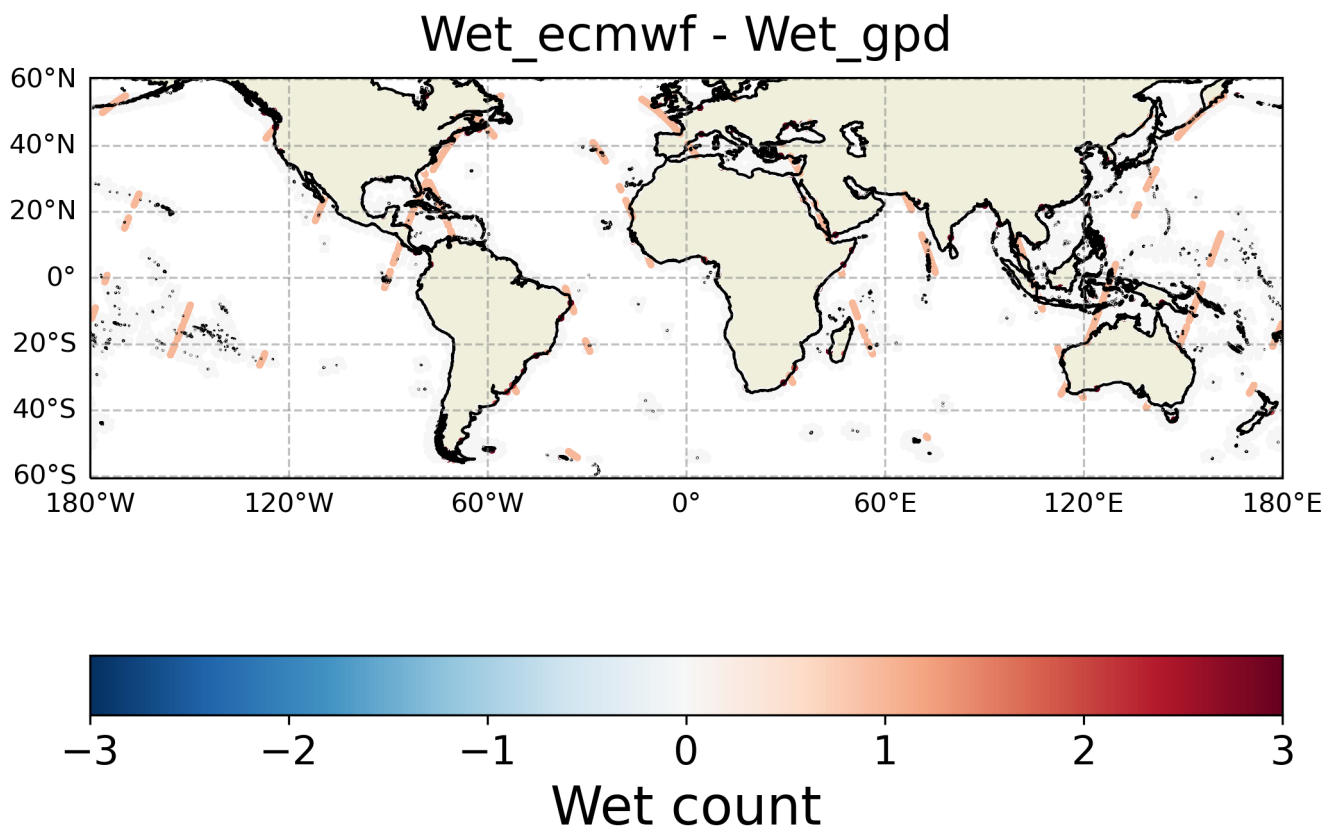


FIGURE 6 – Spatial coherence analysis of the Difference in Wet 's count between Wet_ecmwf and Wet_gpd

3.1.2 Wet 's std

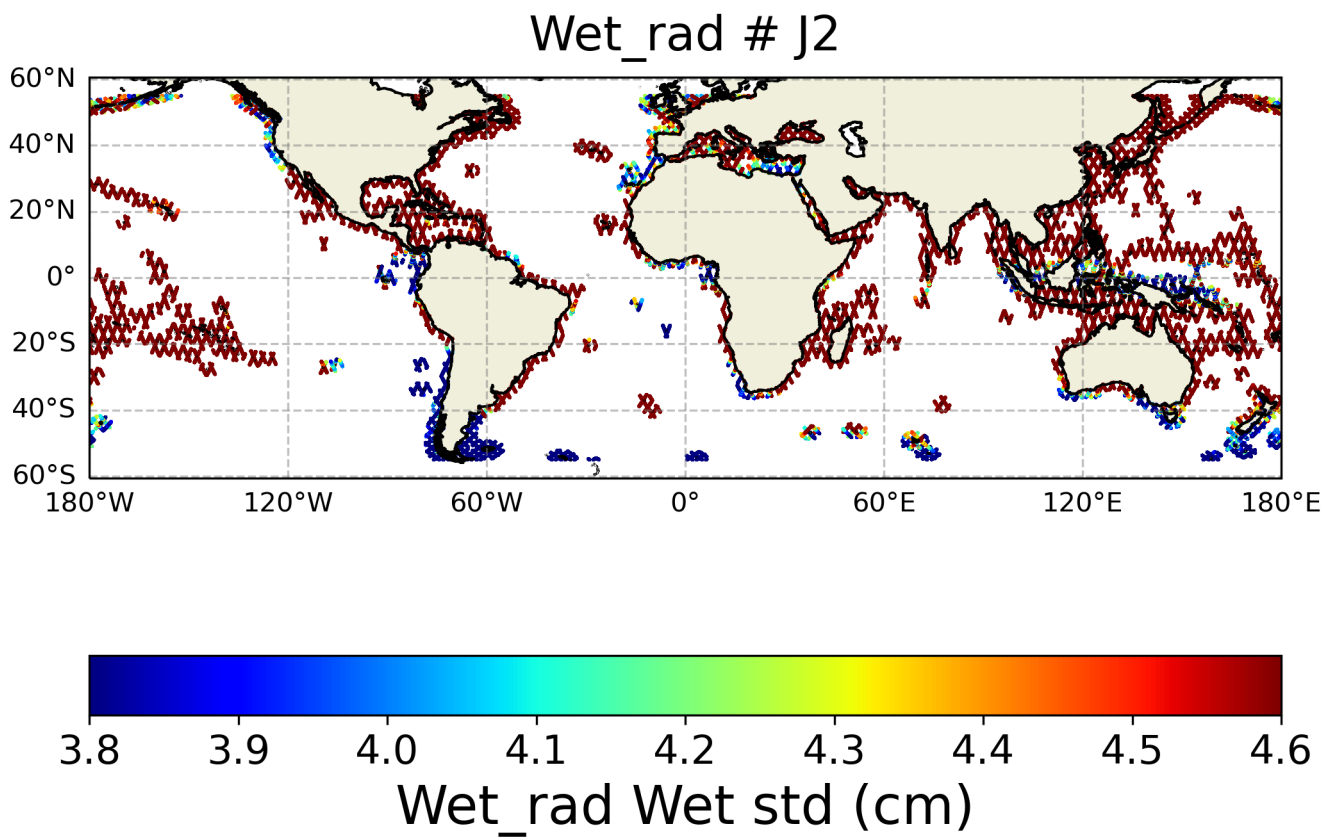


FIGURE 7 – Spatial coherence analysis of the std of the Wet_rad version of Wet variable

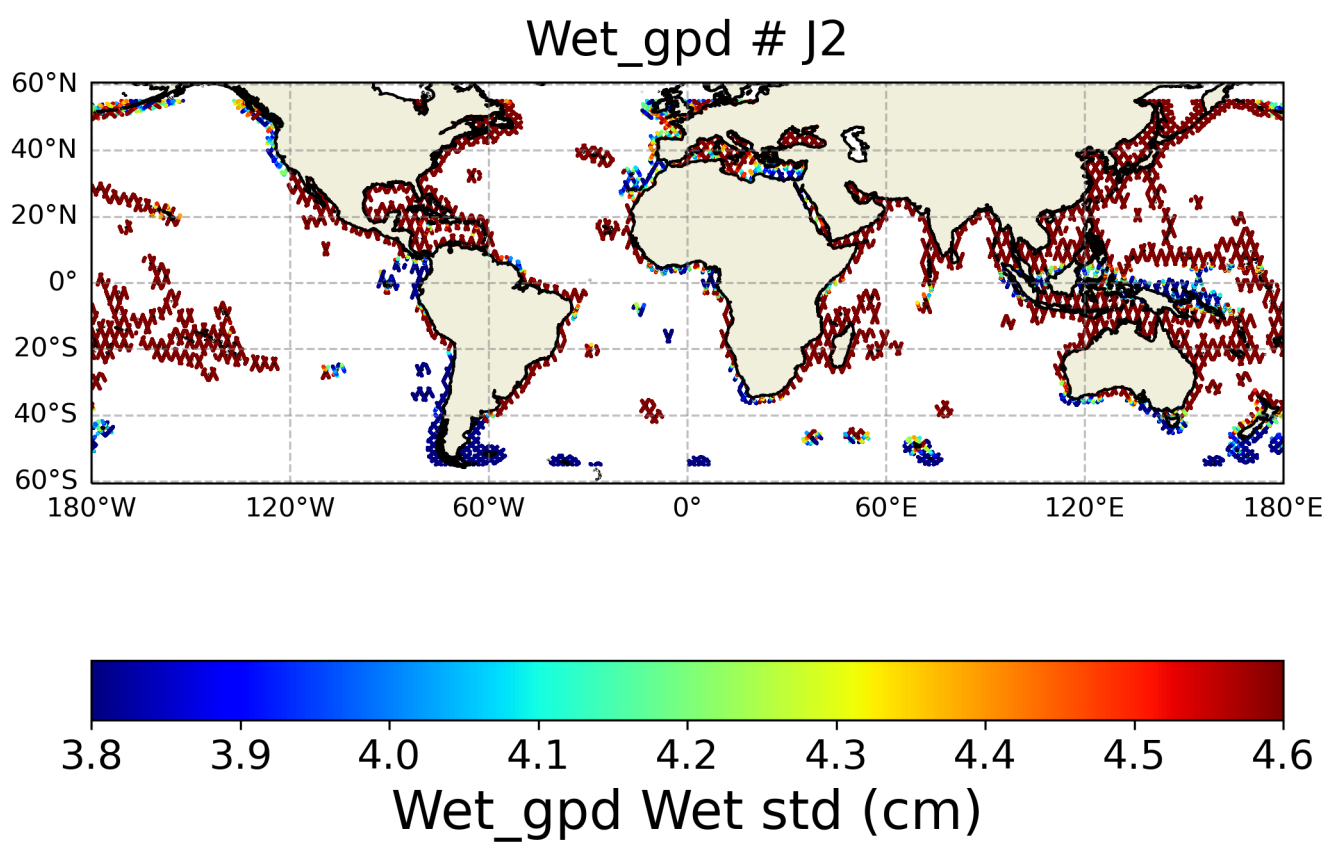


FIGURE 8 – Spatial coherence analysis of the std of the Wet_gpd version of Wet variable

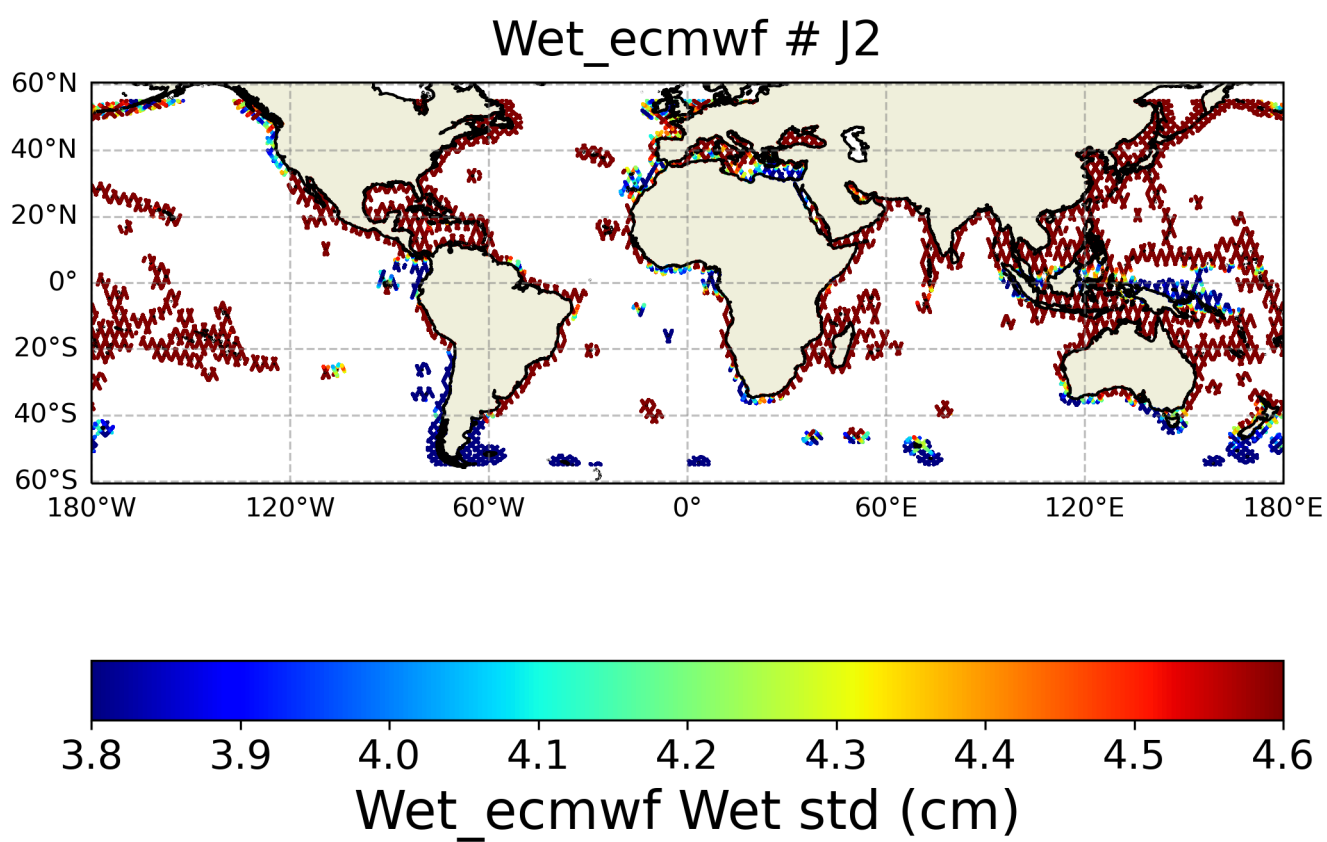


FIGURE 9 – Spatial coherence analysis of the std of the Wet_ecmwf version of Wet variable

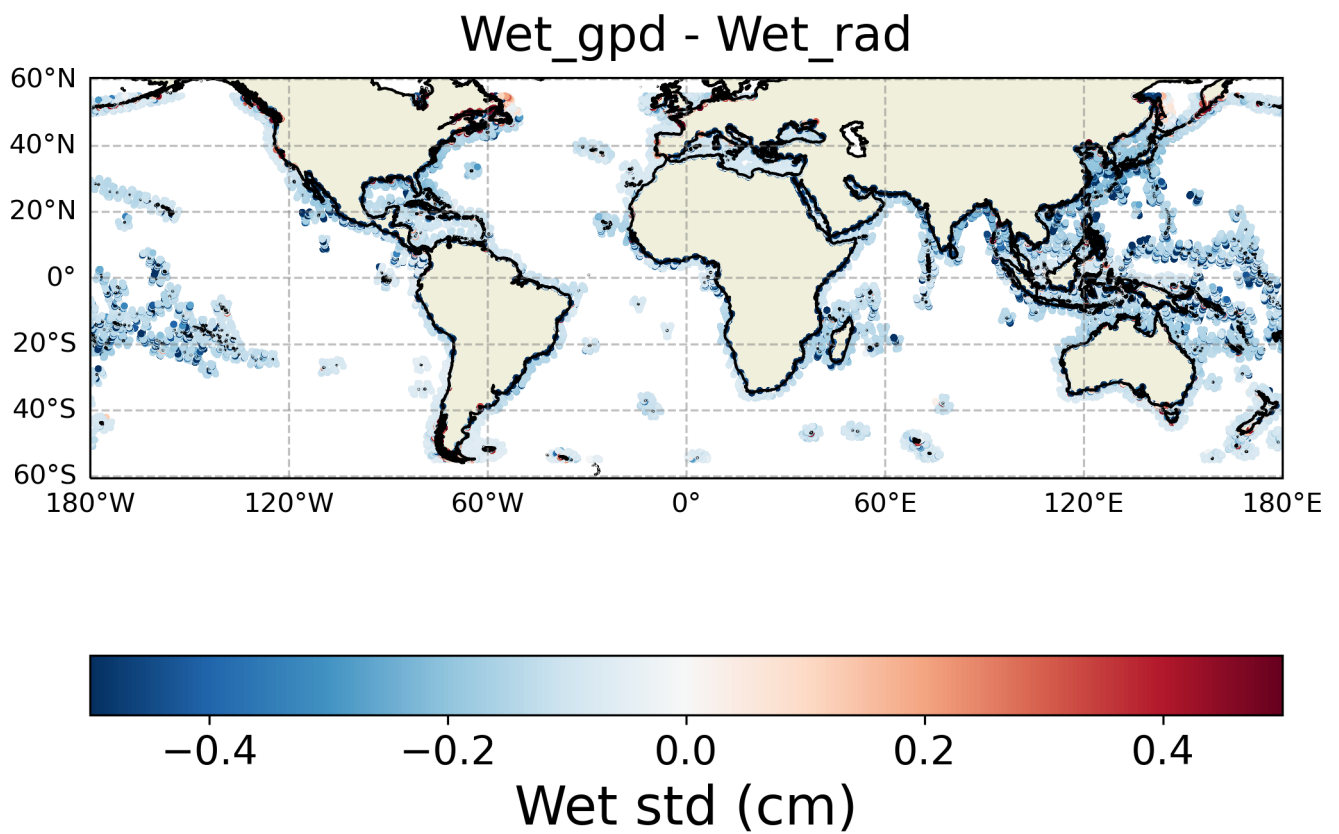


FIGURE 10 – Spatial coherence analysis of the Difference in Wet 's std between Wet_gpd and Wet_rad

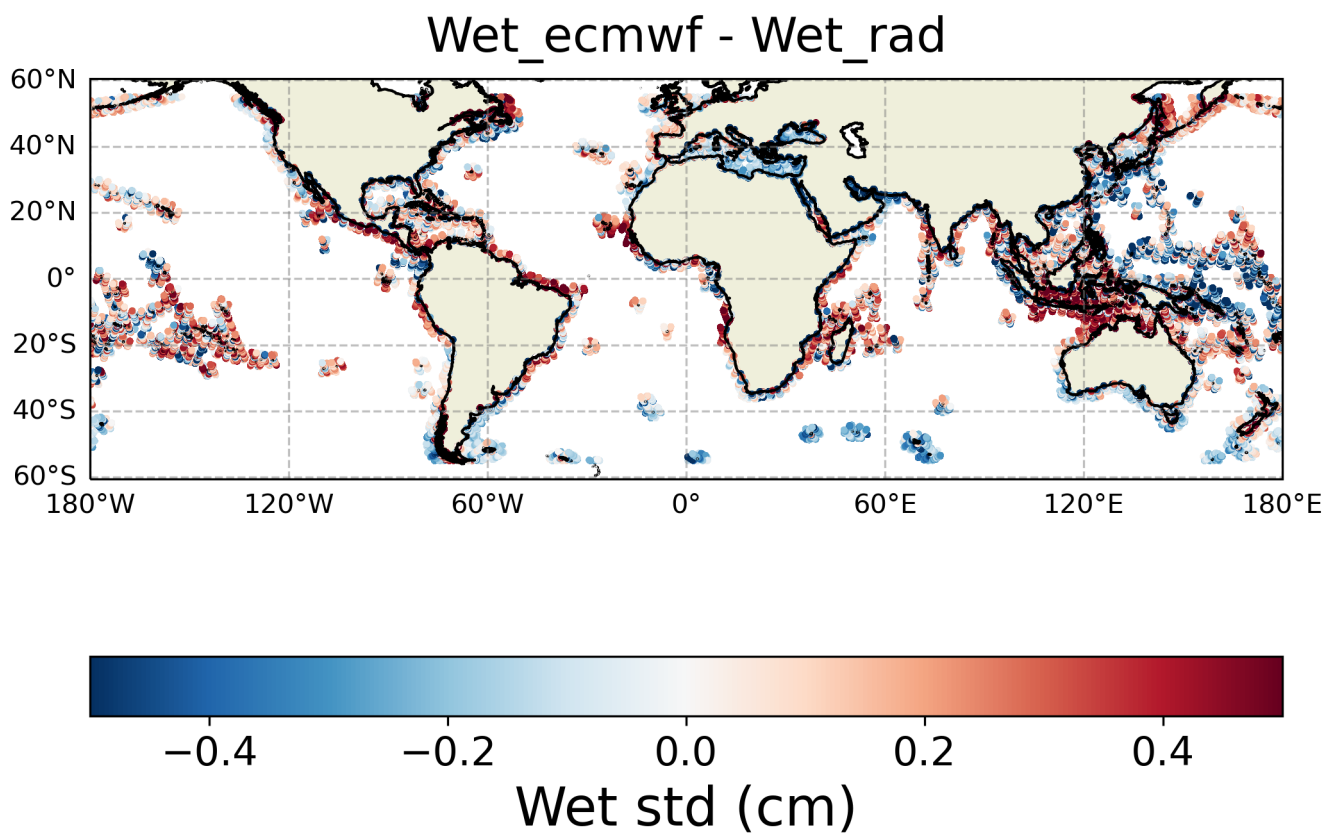


FIGURE 11 – Spatial coherence analysis of the Difference in Wet 's std between Wet_ecmwf and Wet_rad

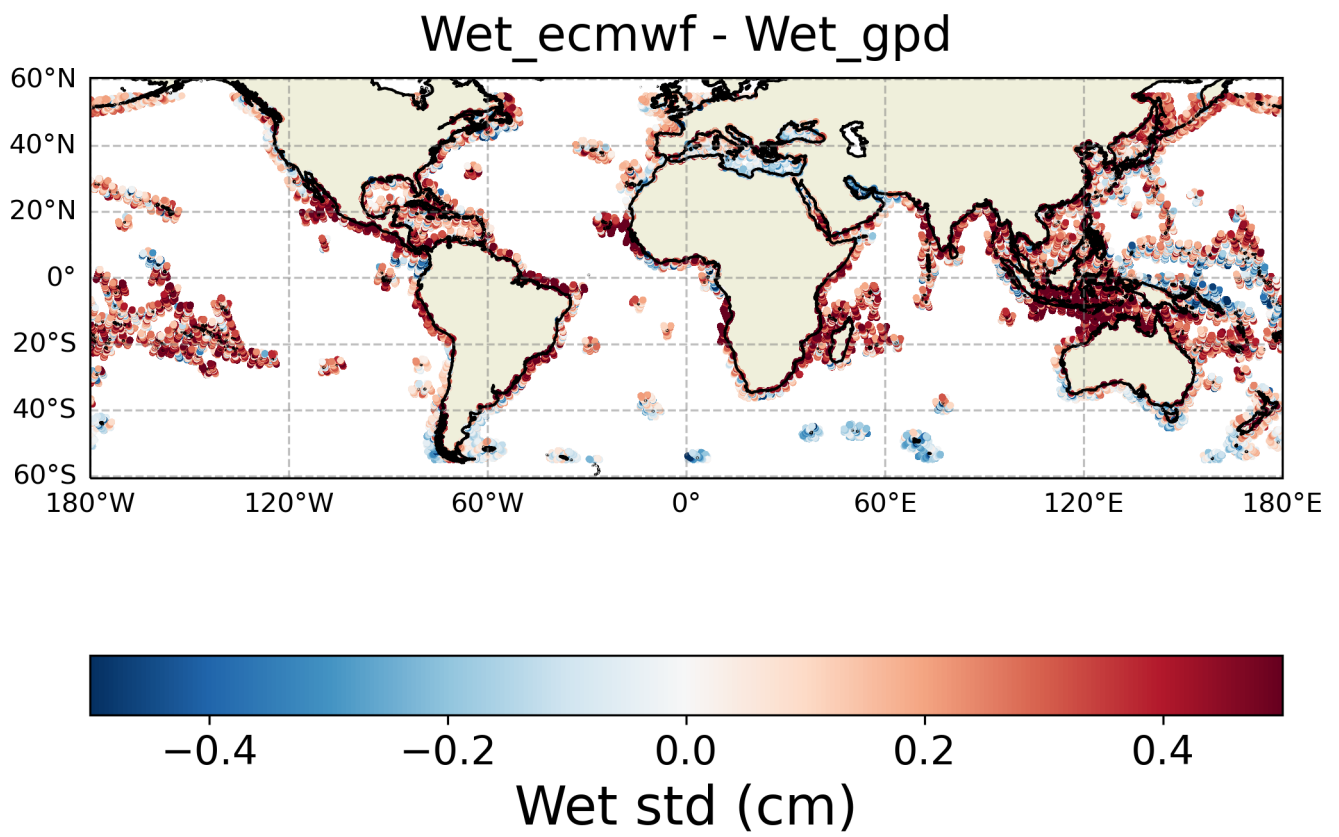


FIGURE 12 – Spatial coherence analysis of the Difference in Wet 's std between Wet_ecmwf and Wet_gpd

3.1.3 Wet 's mean

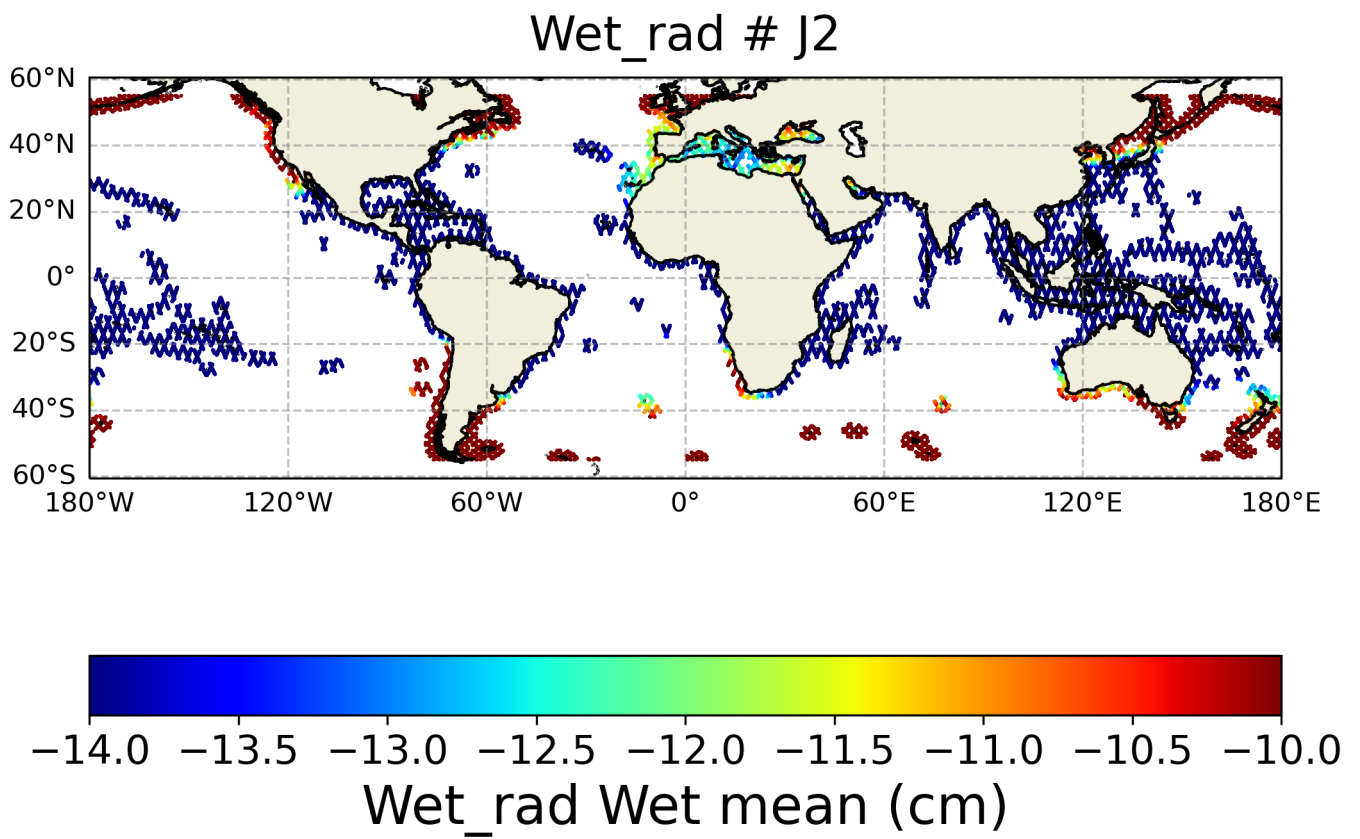


FIGURE 13 – Spatial coherence analysis of the mean of the Wet_rad version of Wet variable

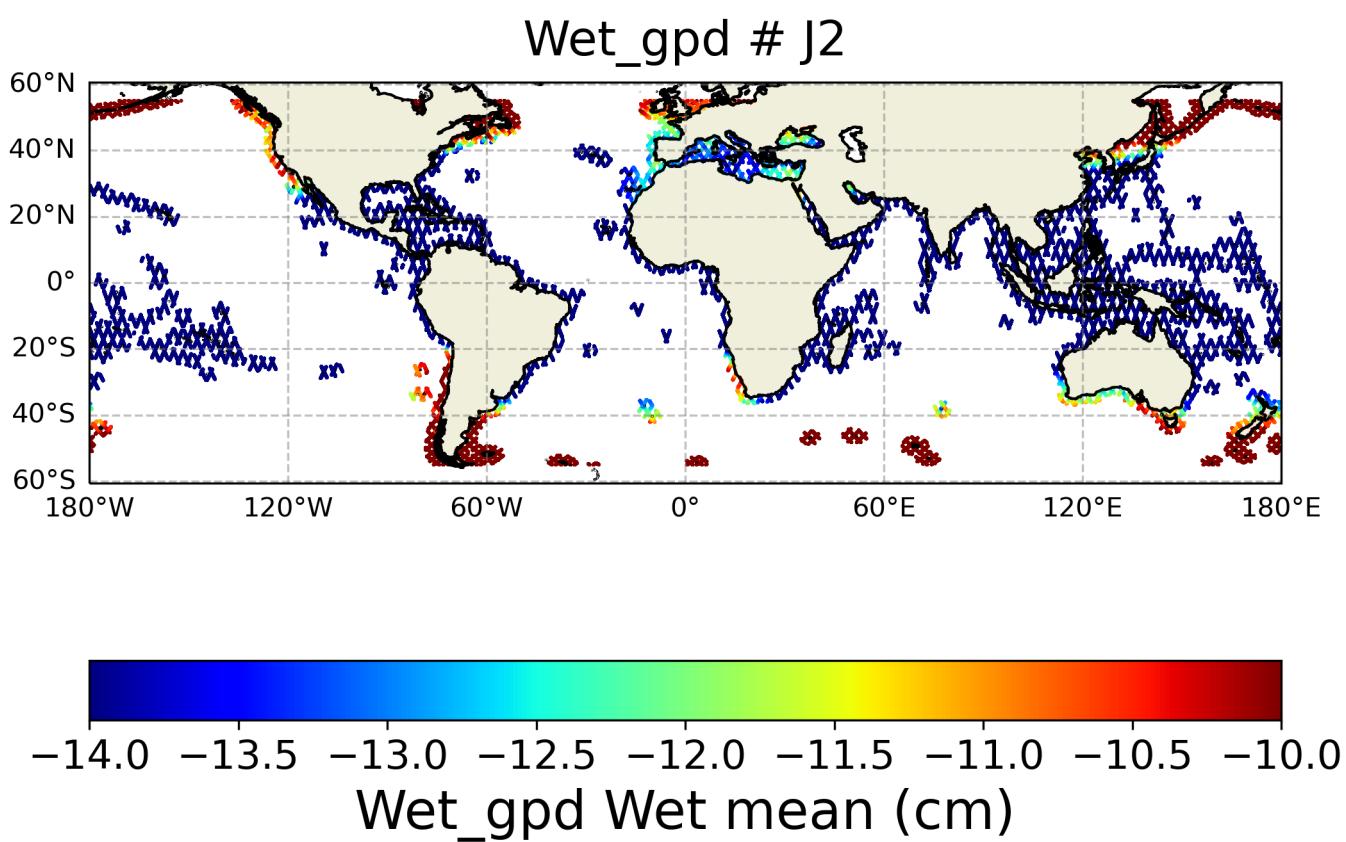


FIGURE 14 – Spatial coherence analysis of the mean of the Wet_gpd version of Wet variable

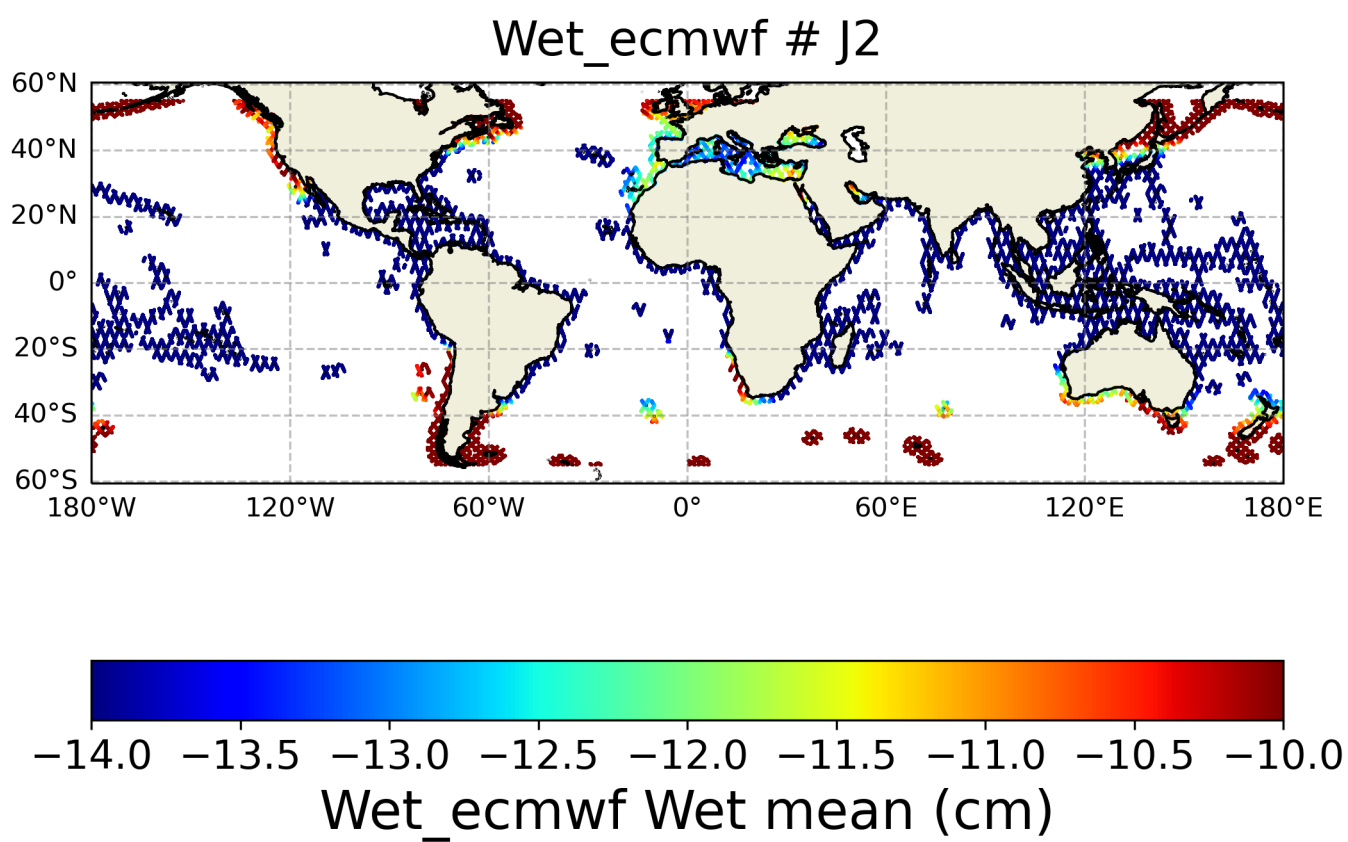


FIGURE 15 – Spatial coherence analysis of the mean of the Wet_ecmwf version of Wet variable

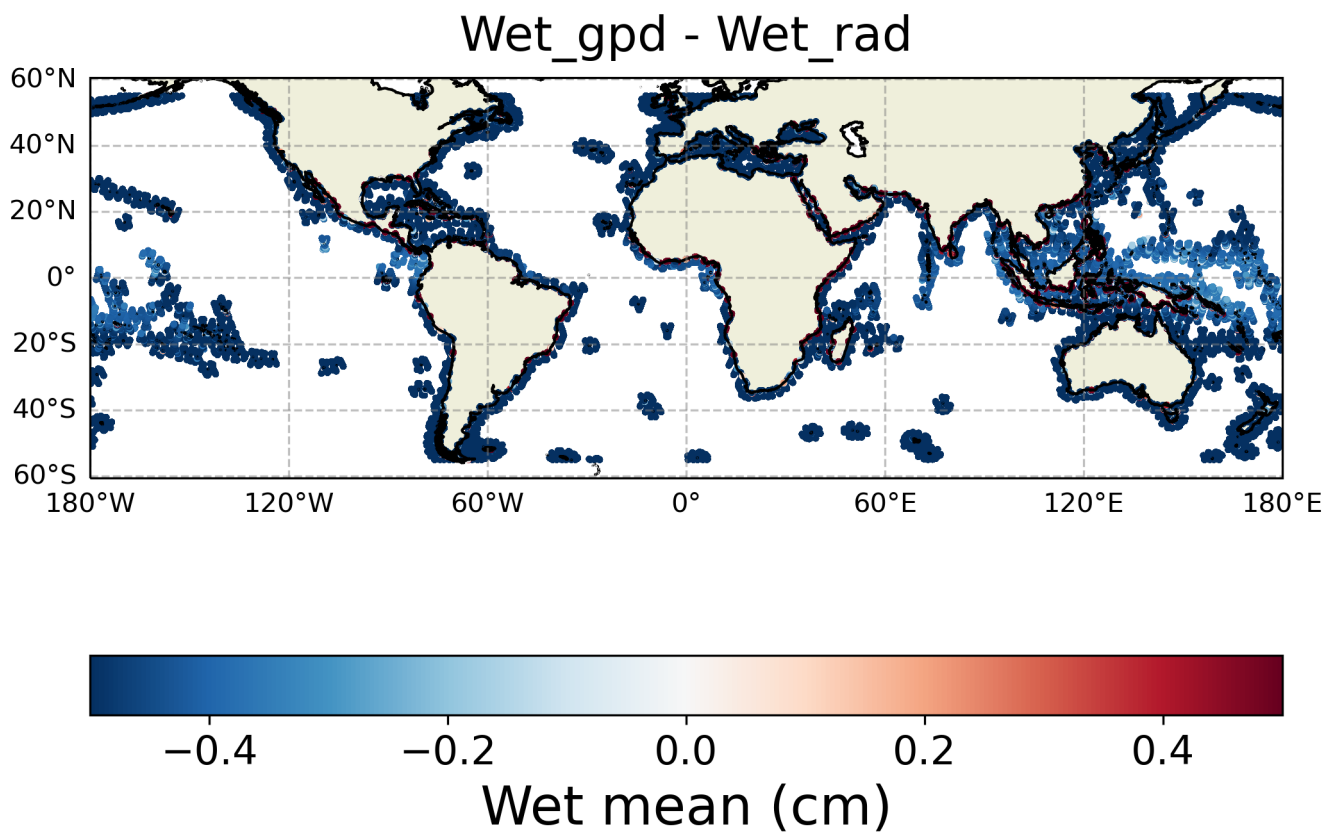


FIGURE 16 – Spatial coherence analysis of the Difference in Wet 's mean between Wet_gpd and Wet_rad

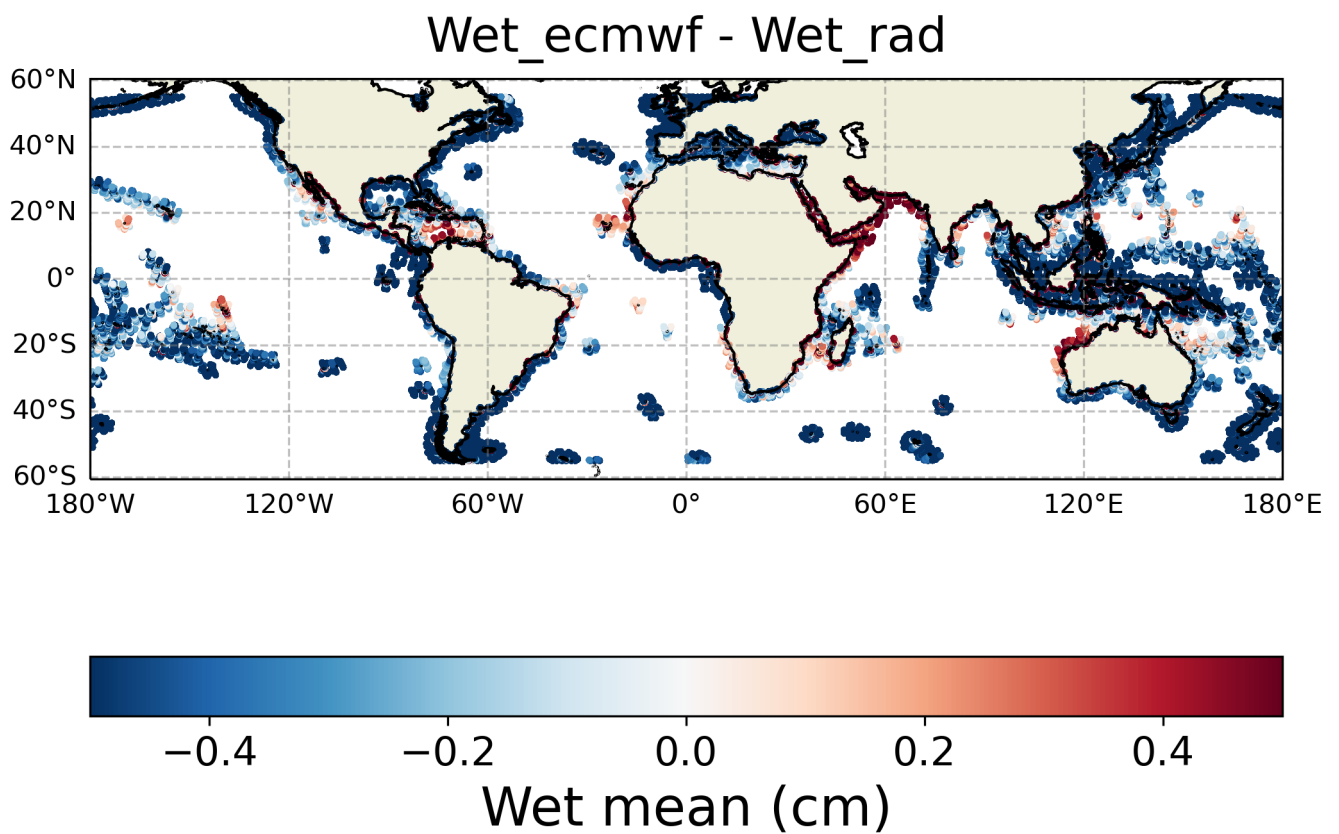


FIGURE 17 – Spatial coherence analysis of the Difference in Wet 's mean between Wet_ecmwf and Wet_rad

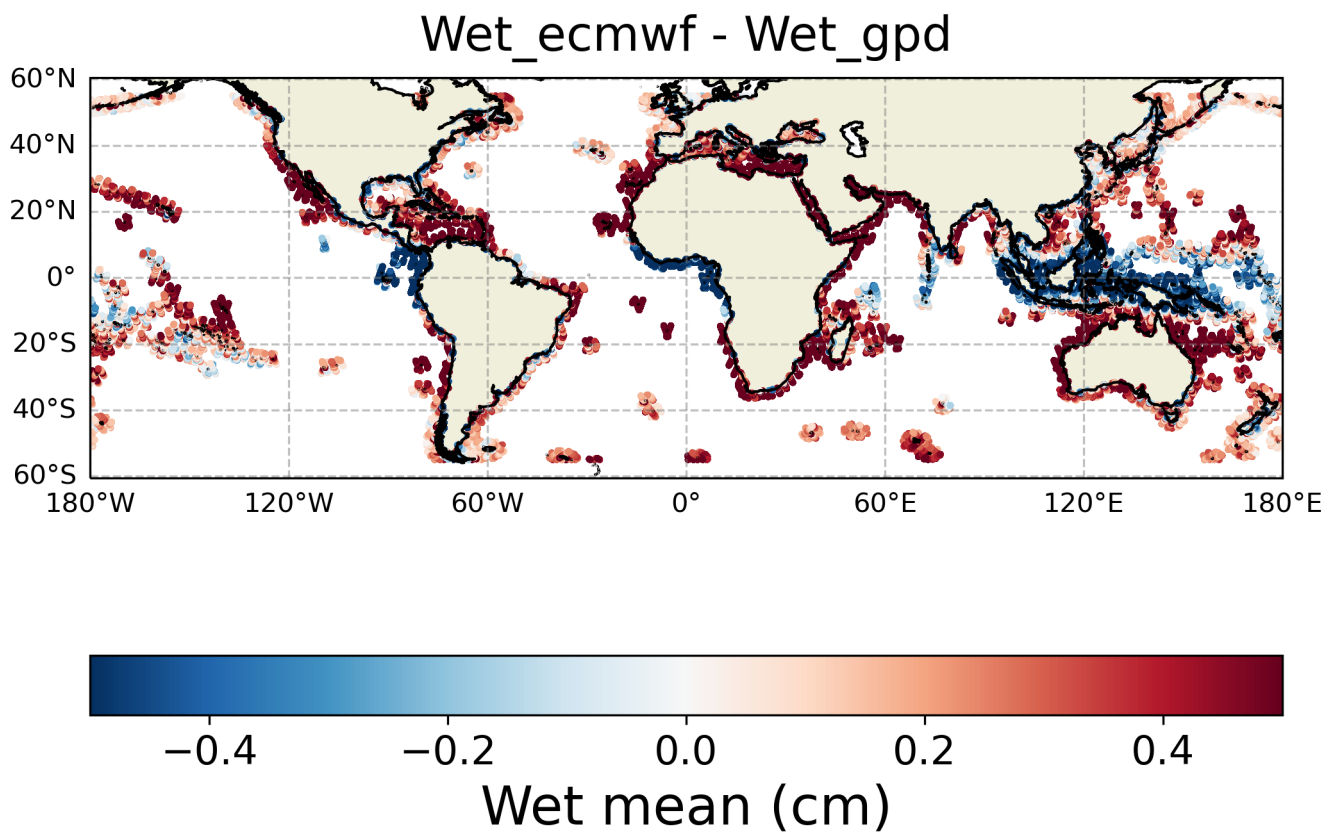


FIGURE 18 – Spatial coherence analysis of the Difference in Wet 's mean between Wet_ecmwf and Wet_gpd

3.2 sla

3.2.1 sla's count

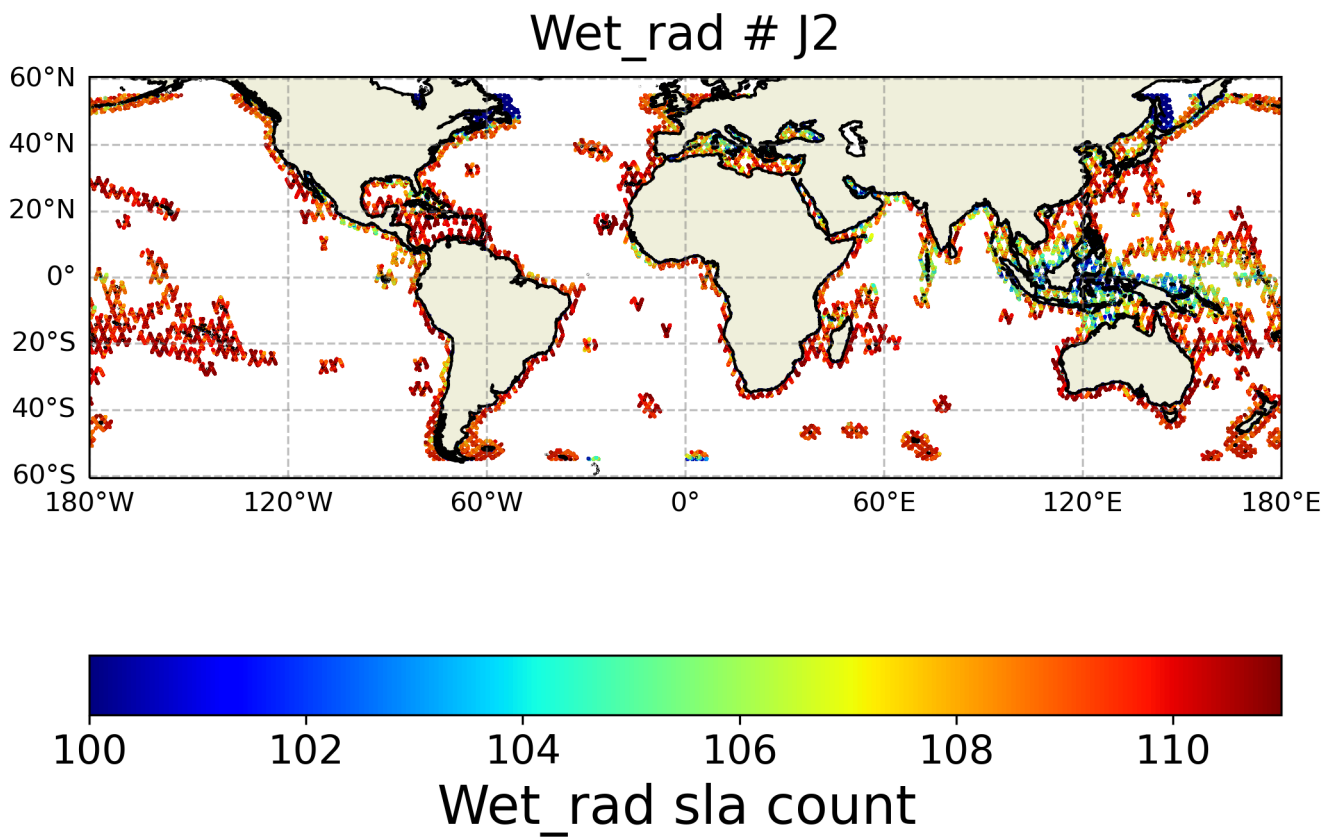


FIGURE 19 – Spatial coherence analysis of the count of the Wet_rad version of sla variable

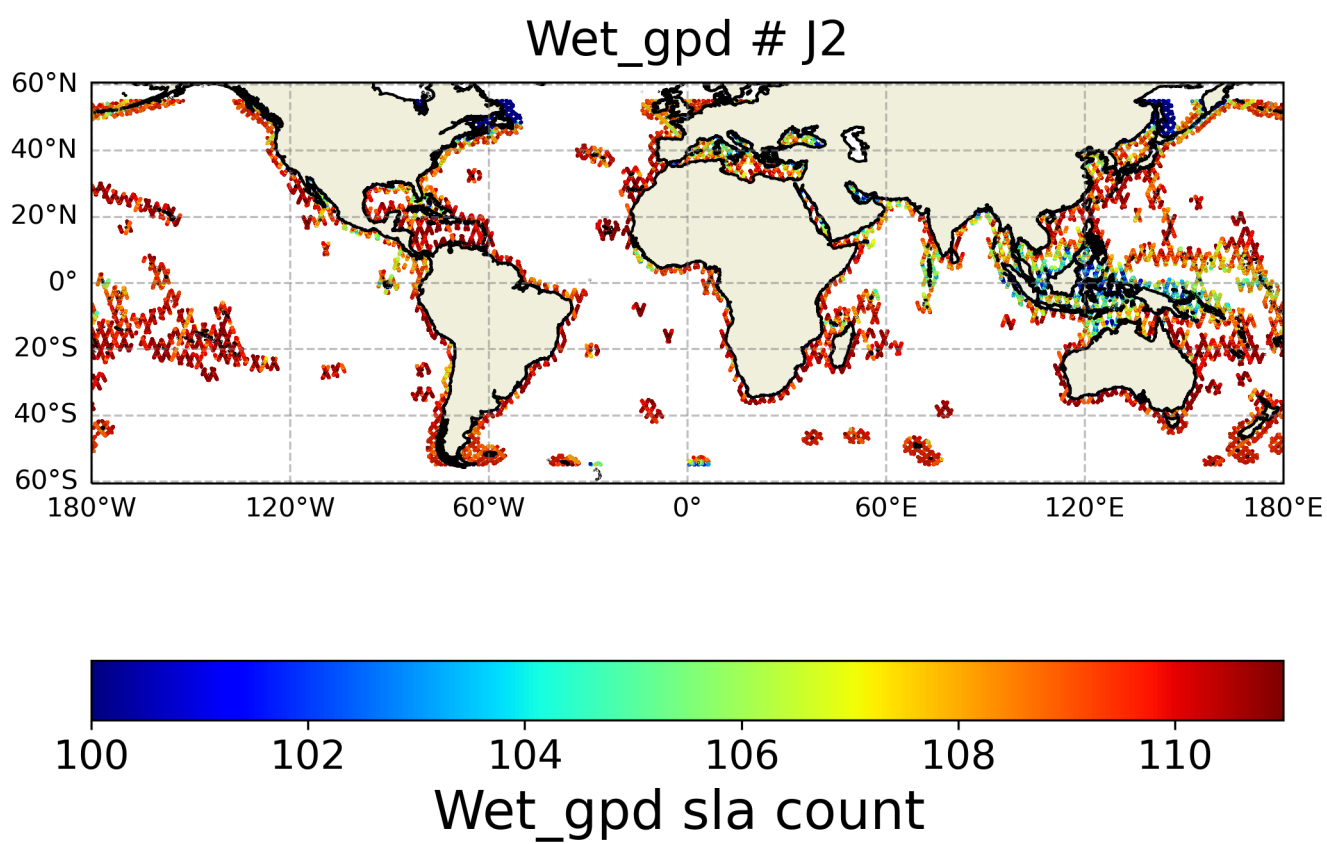


FIGURE 20 – Spatial coherence analysis of the count of the Wet_gpd version of sla variable

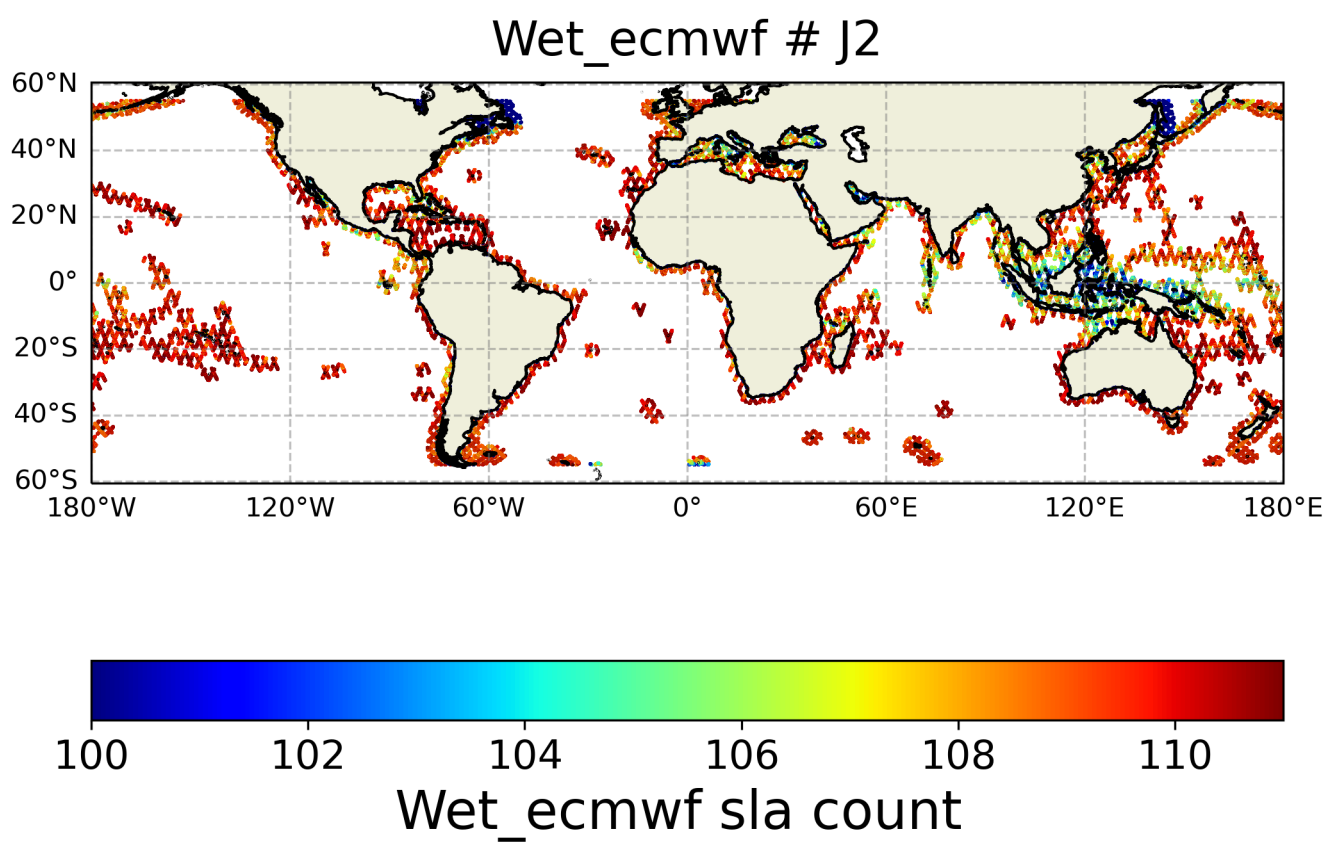


FIGURE 21 – Spatial coherence analysis of the count of the Wet_ecmwf version of sla variable

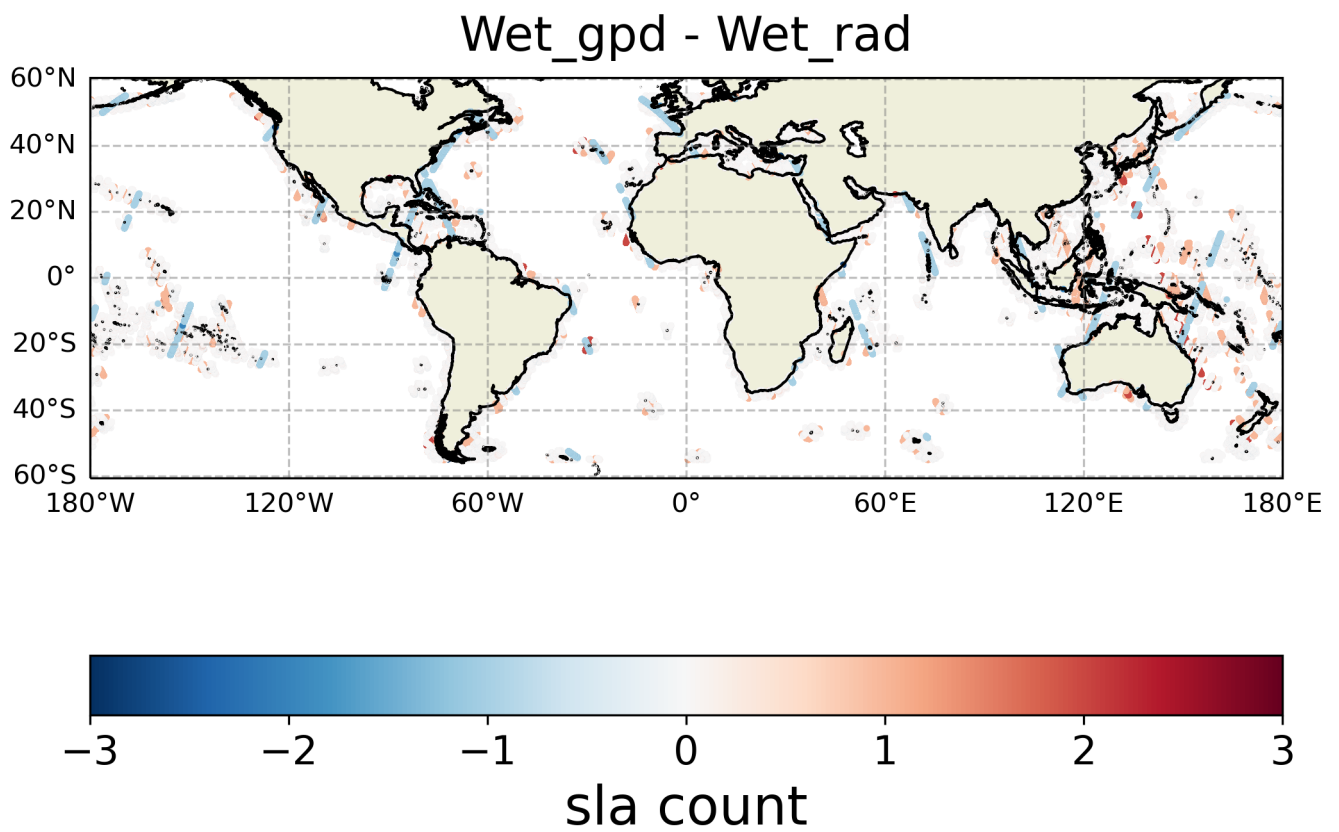


FIGURE 22 – Spatial coherence analysis of the Difference in sla 's count between Wet_gpd and Wet_rad

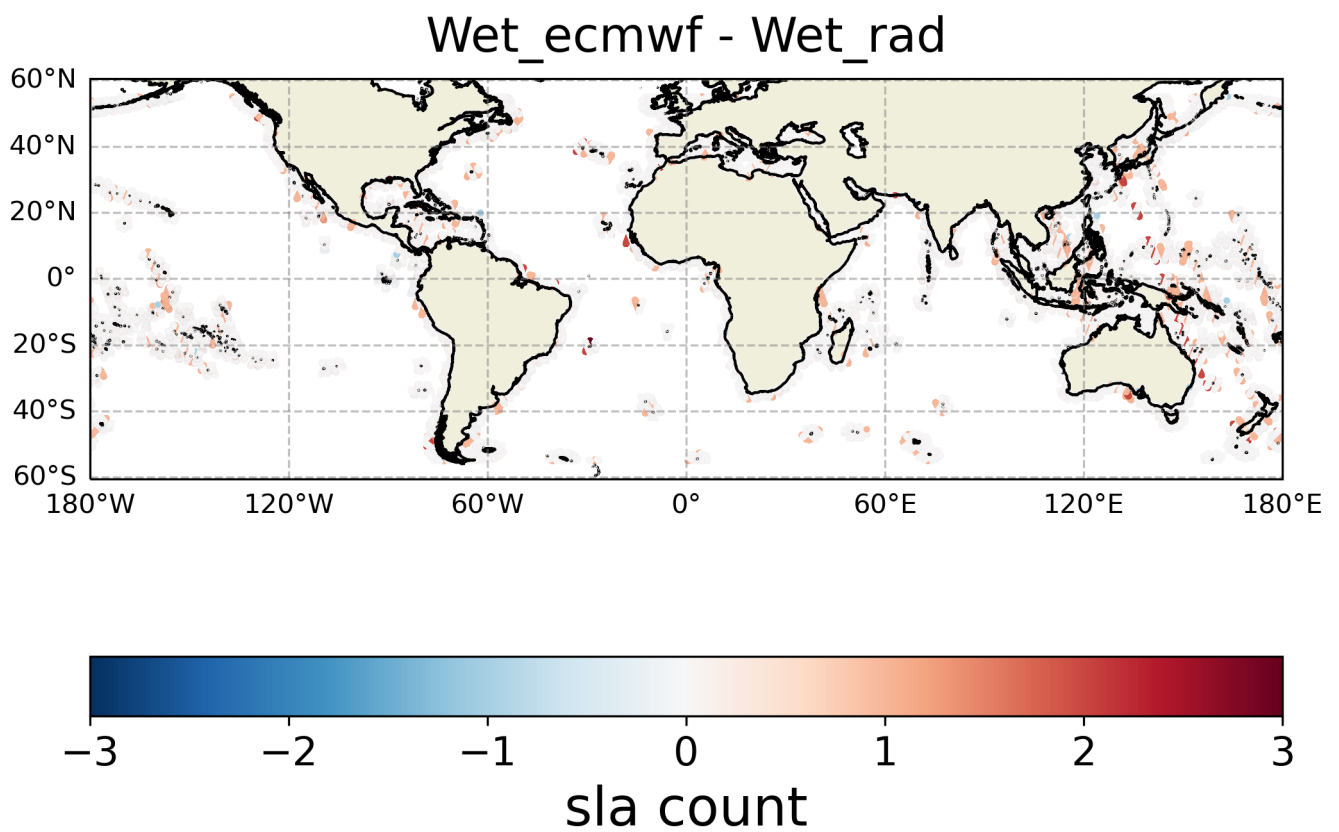


FIGURE 23 – Spatial coherence analysis of the Difference in sla 's count between Wet_ecmwf and Wet_rad

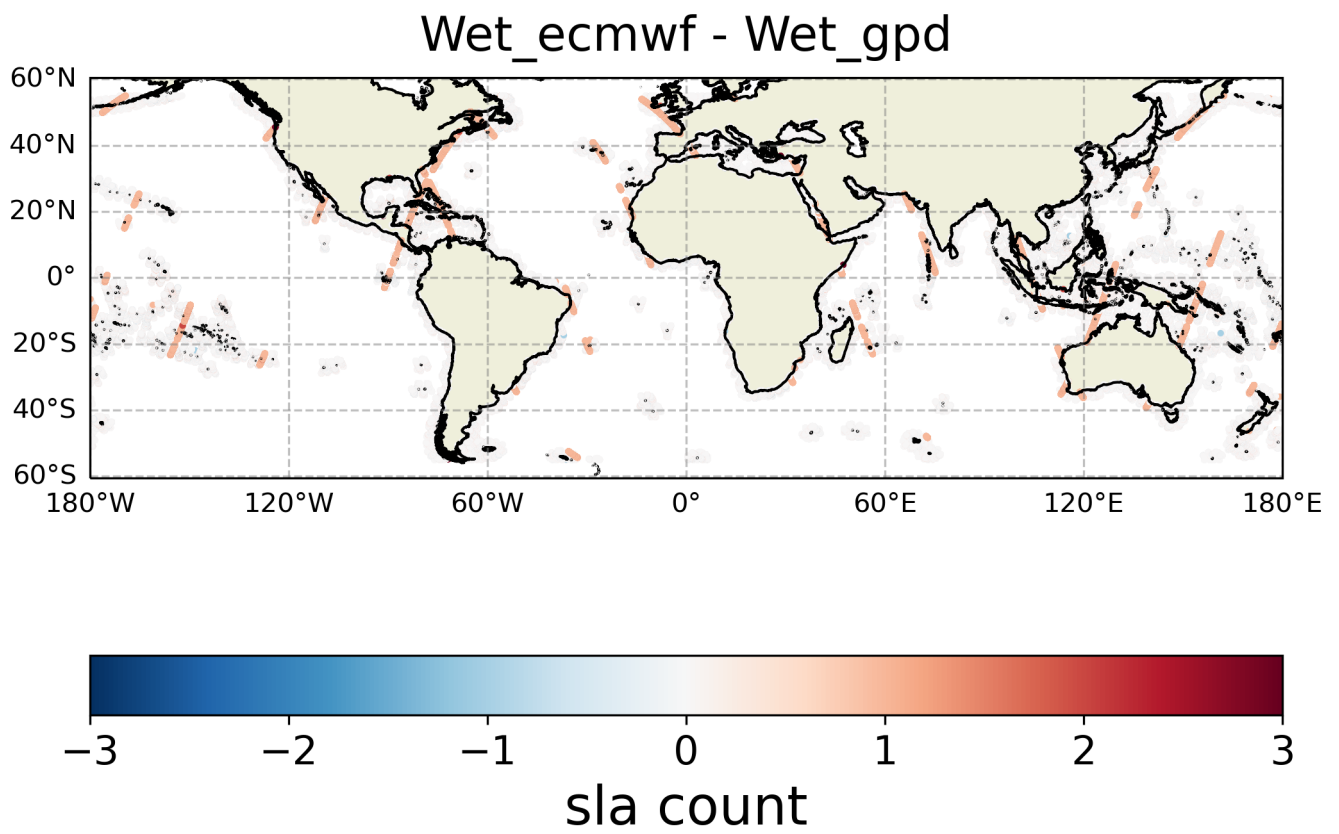


FIGURE 24 – Spatial coherence analysis of the Difference in sla 's count between Wet_ecmwf and Wet_gpd

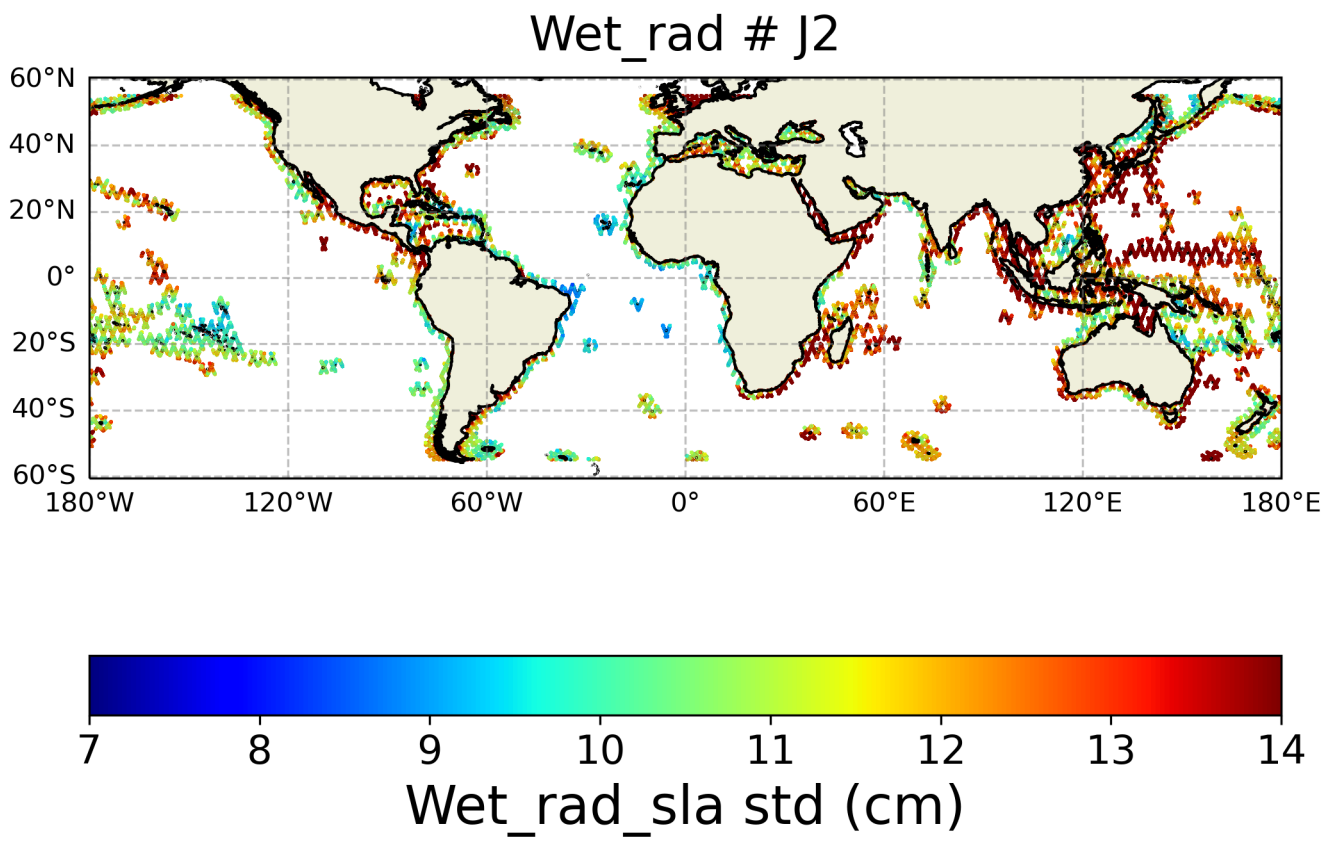


FIGURE 25 – Spatial coherence analysis of the std of the Wet_rad version of sla variable

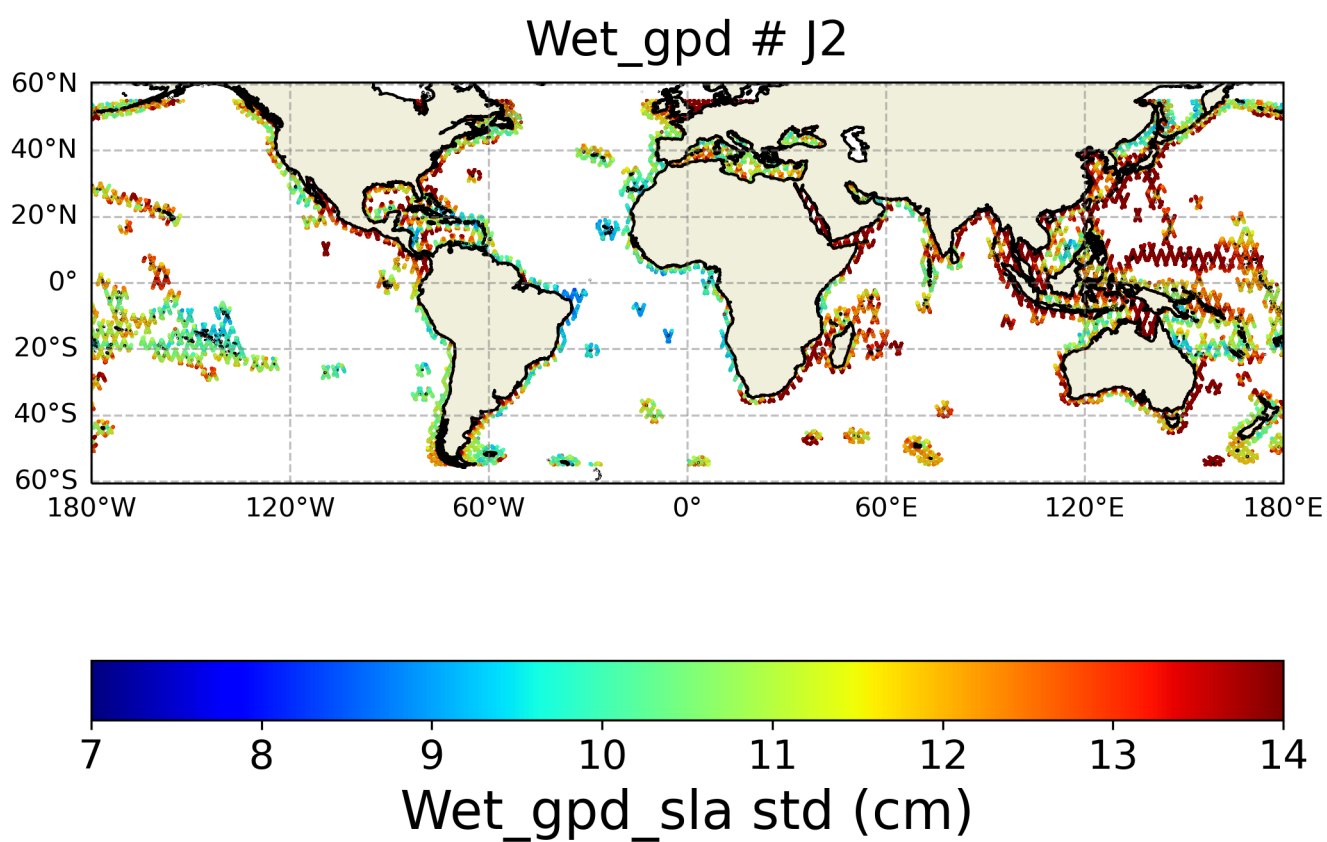


FIGURE 26 – Spatial coherence analysis of the std of the Wet_gpd version of sla variable

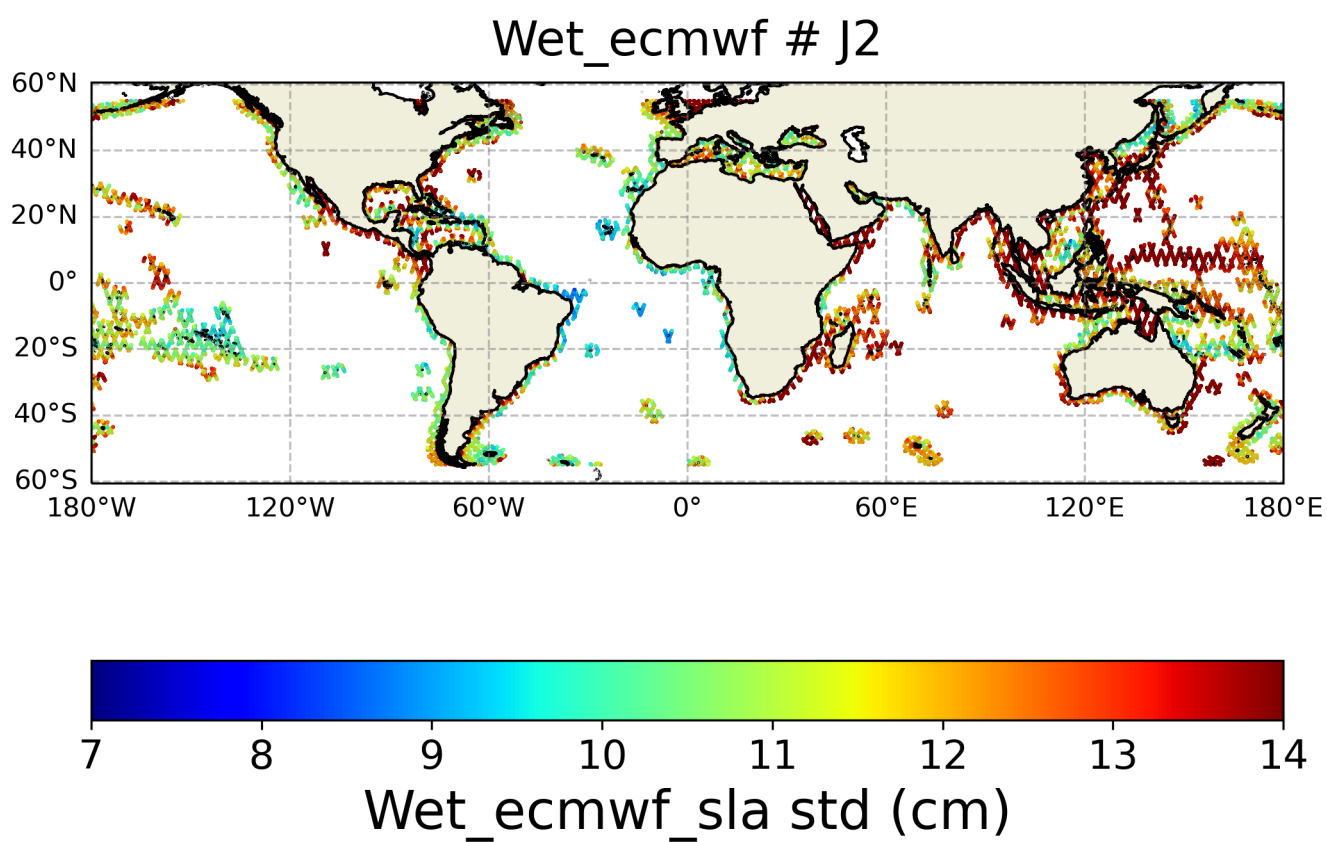


FIGURE 27 – Spatial coherence analysis of the std of the Wet_ecmwf version of sla variable

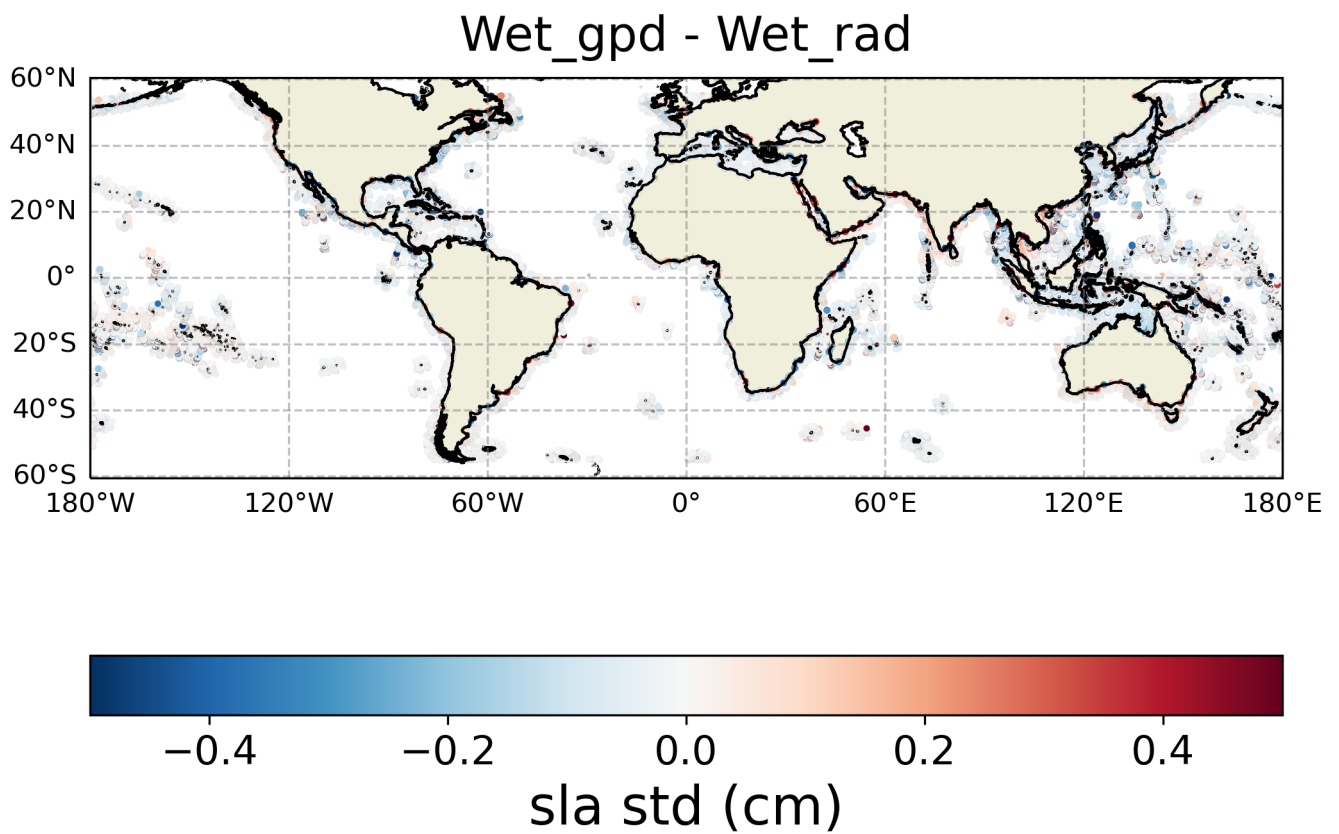


FIGURE 28 – Spatial coherence analysis of the Difference in sla 's std between Wet_gpd and Wet_rad

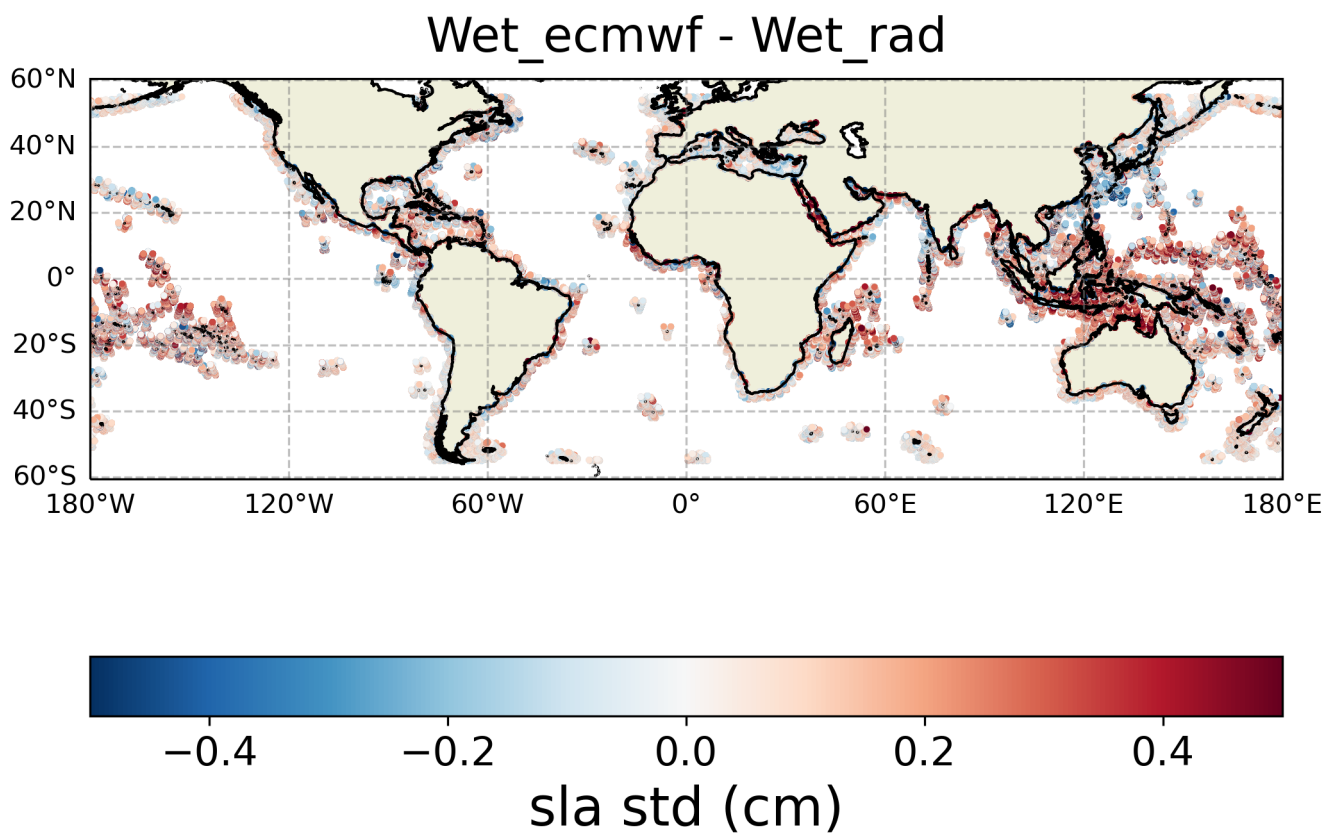


FIGURE 29 – Spatial coherence analysis of the Difference in sla 's std between Wet_ecmwf and Wet_rad

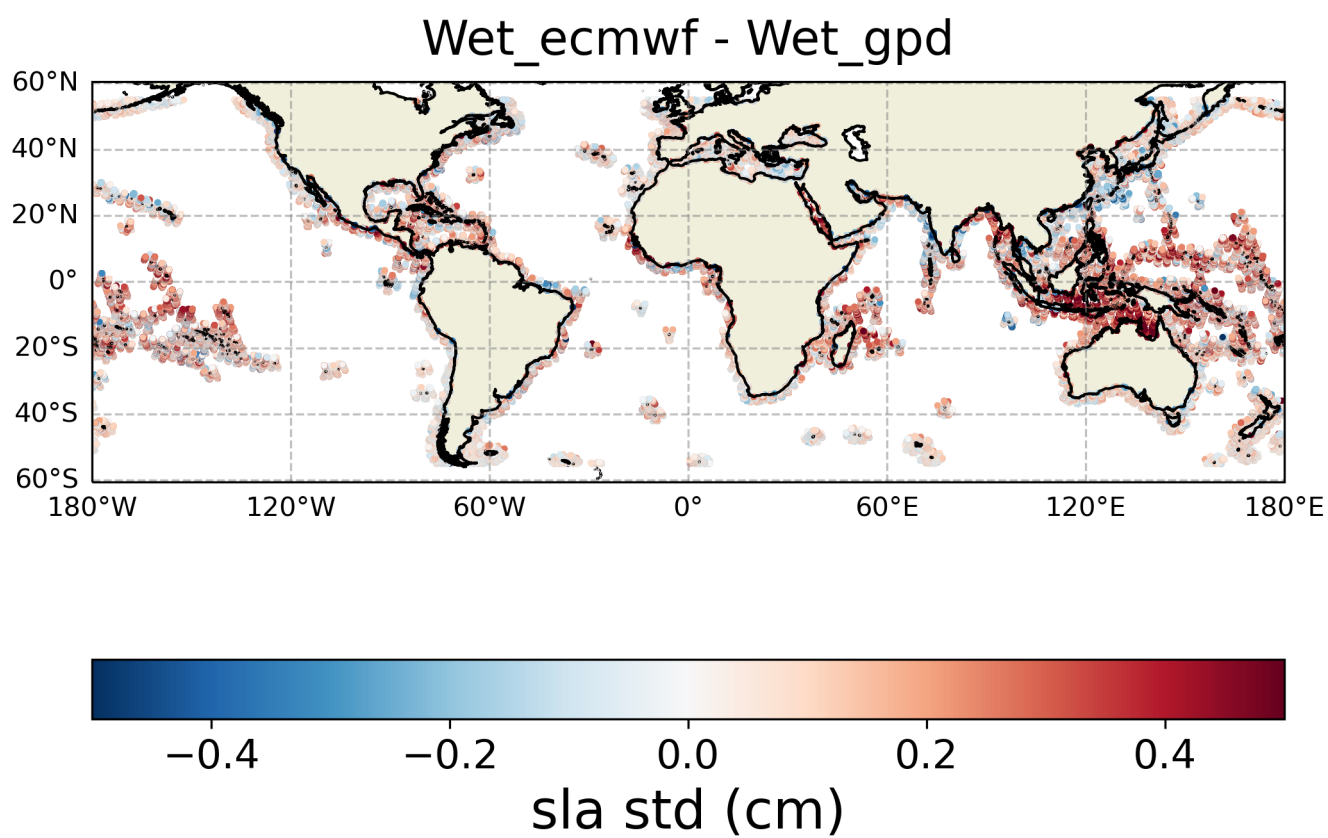


FIGURE 30 – Spatial coherence analysis of the Difference in sla 's std between Wet_ecmwf and Wet_gpd

3.2.3 sla's mean

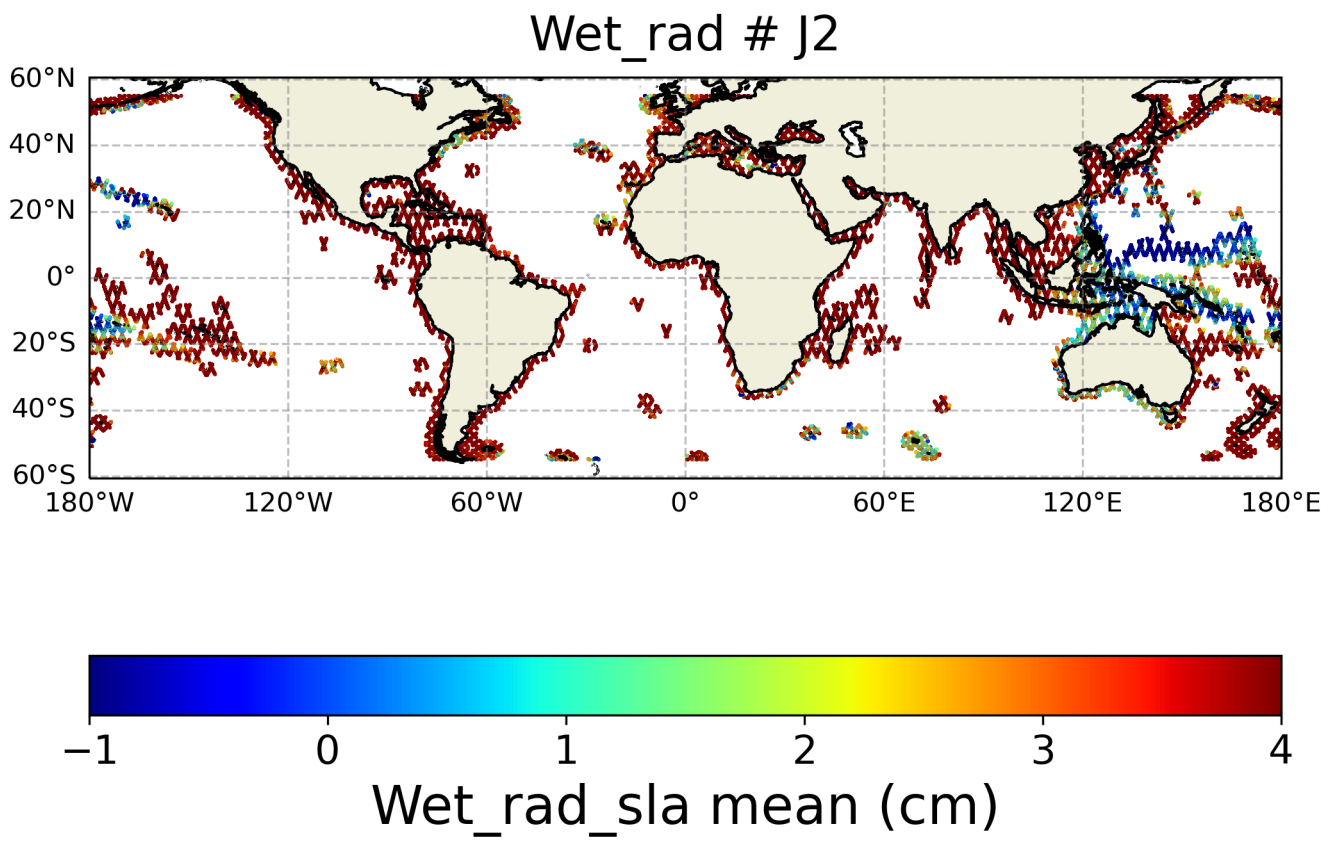


FIGURE 31 – Spatial coherence analysis of the mean of the Wet_rad version of sla variable

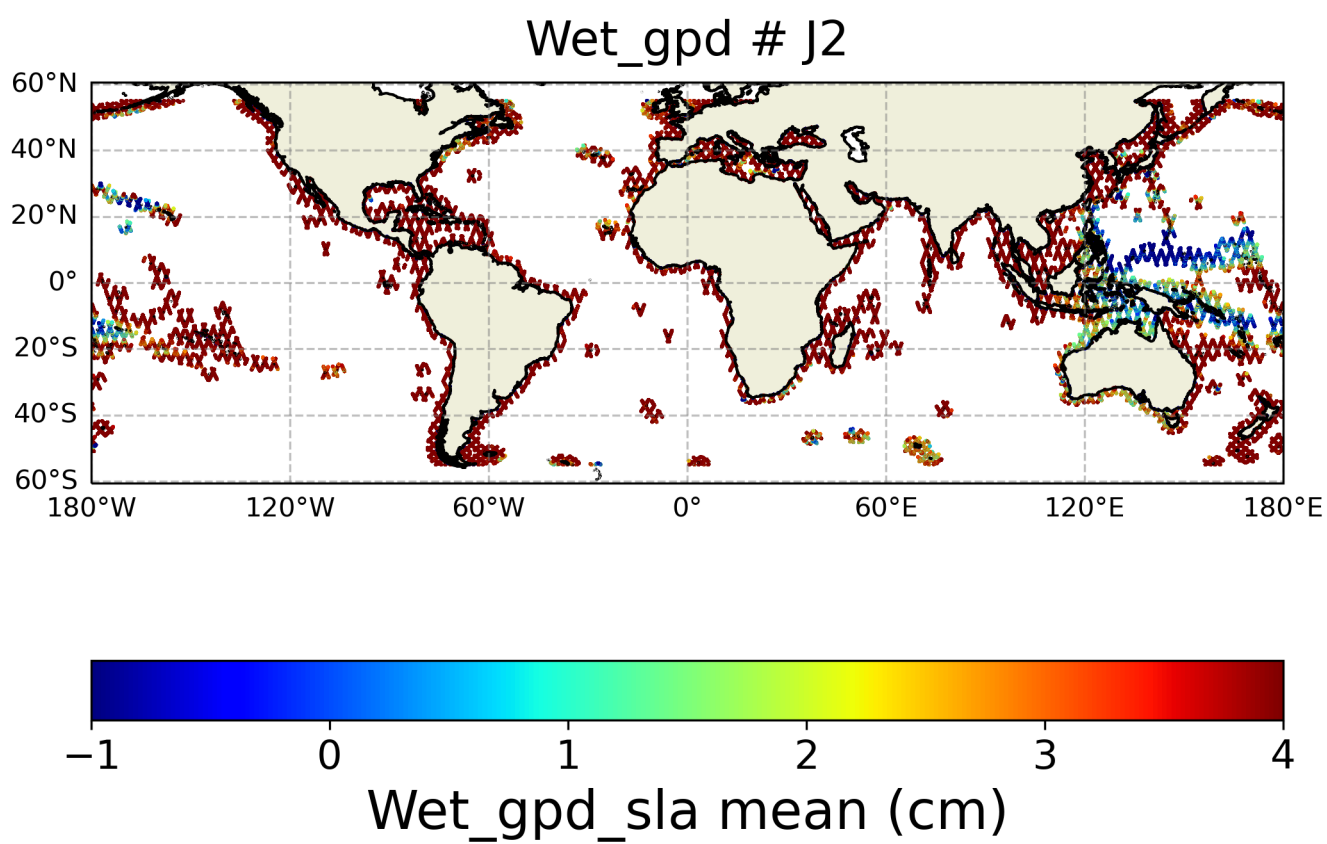


FIGURE 32 – Spatial coherence analysis of the mean of the Wet_gpd version of sla variable

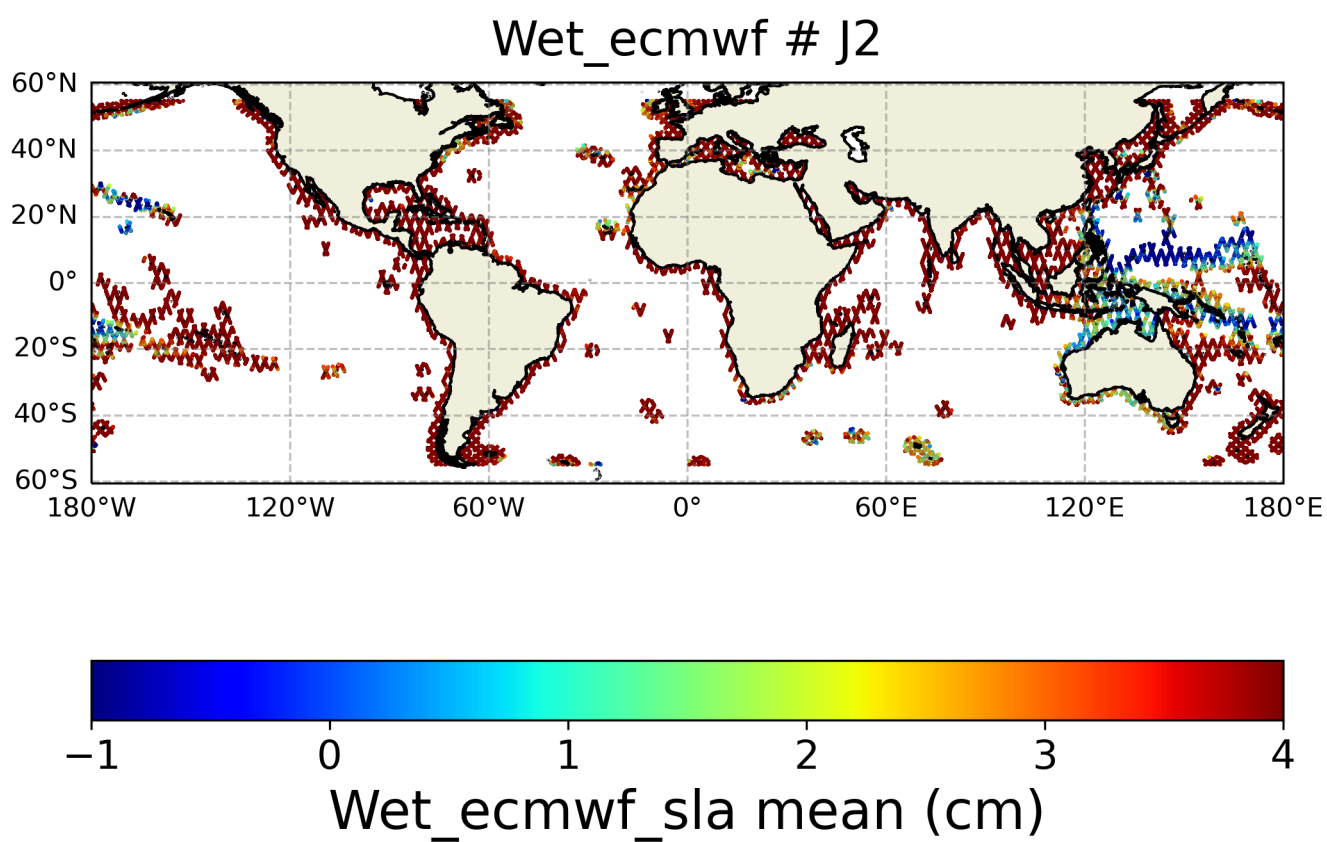


FIGURE 33 – Spatial coherence analysis of the mean of the Wet_ecmwf version of sla variable

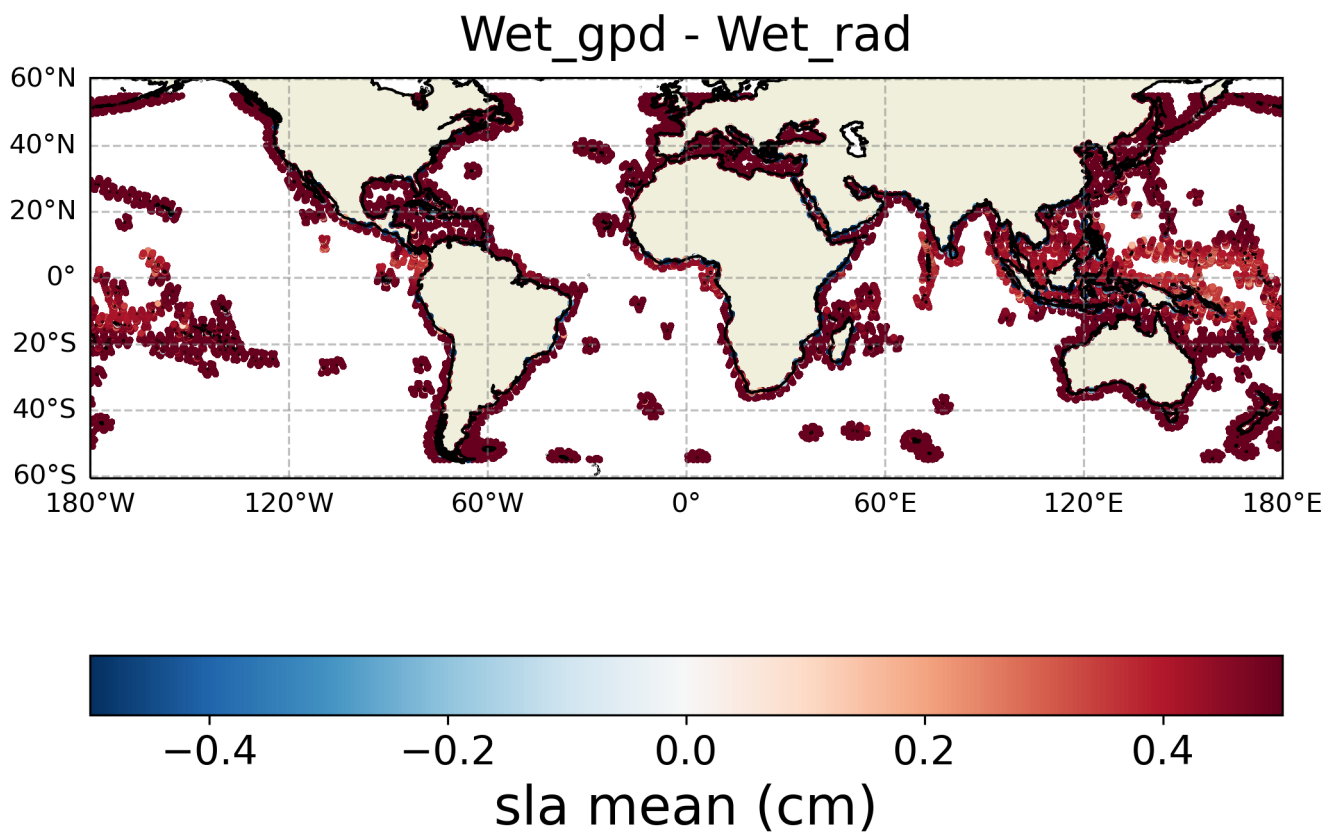


FIGURE 34 – Spatial coherence analysis of the Difference in sla 's mean between Wet_gpd and Wet_rad

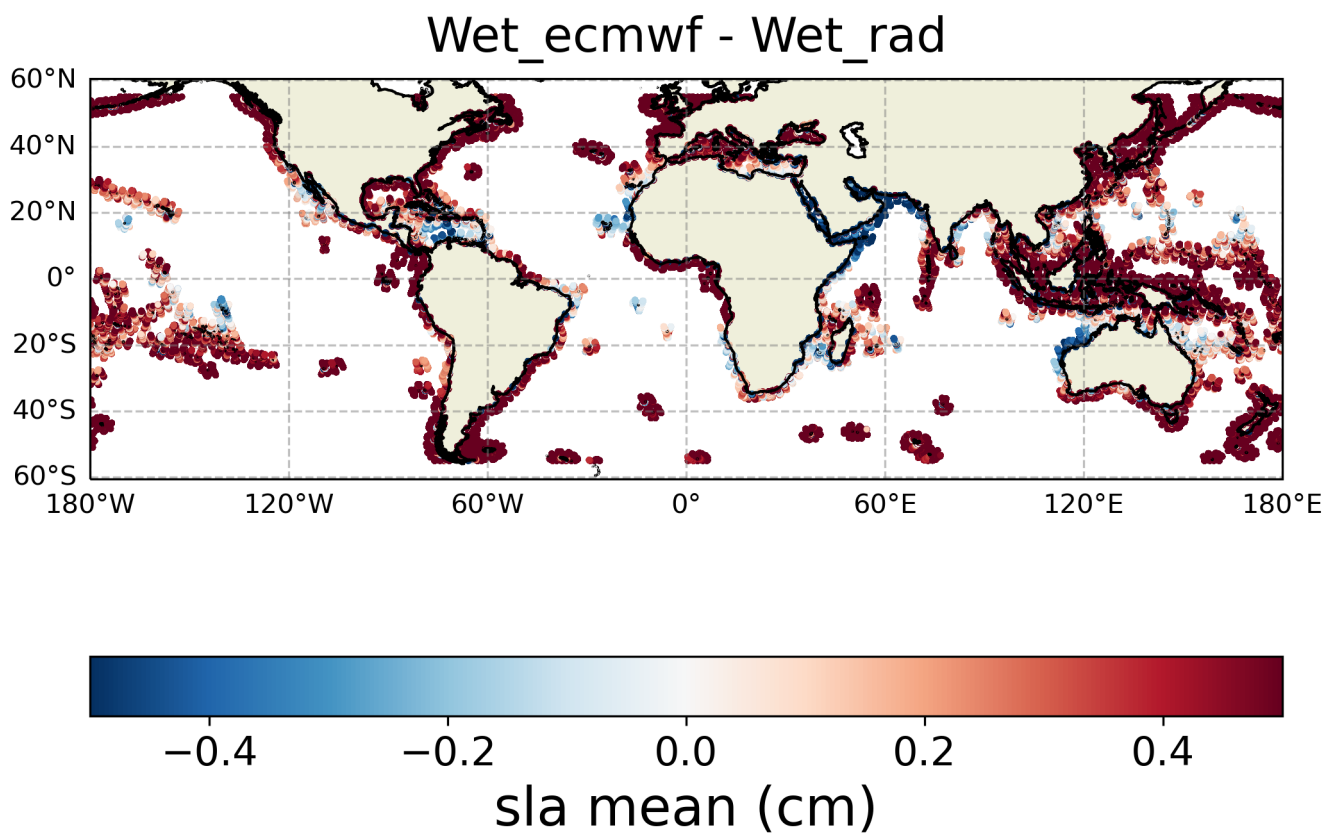


FIGURE 35 – Spatial coherence analysis of the Difference in sla 's mean between Wet_ecmwf and Wet_rad

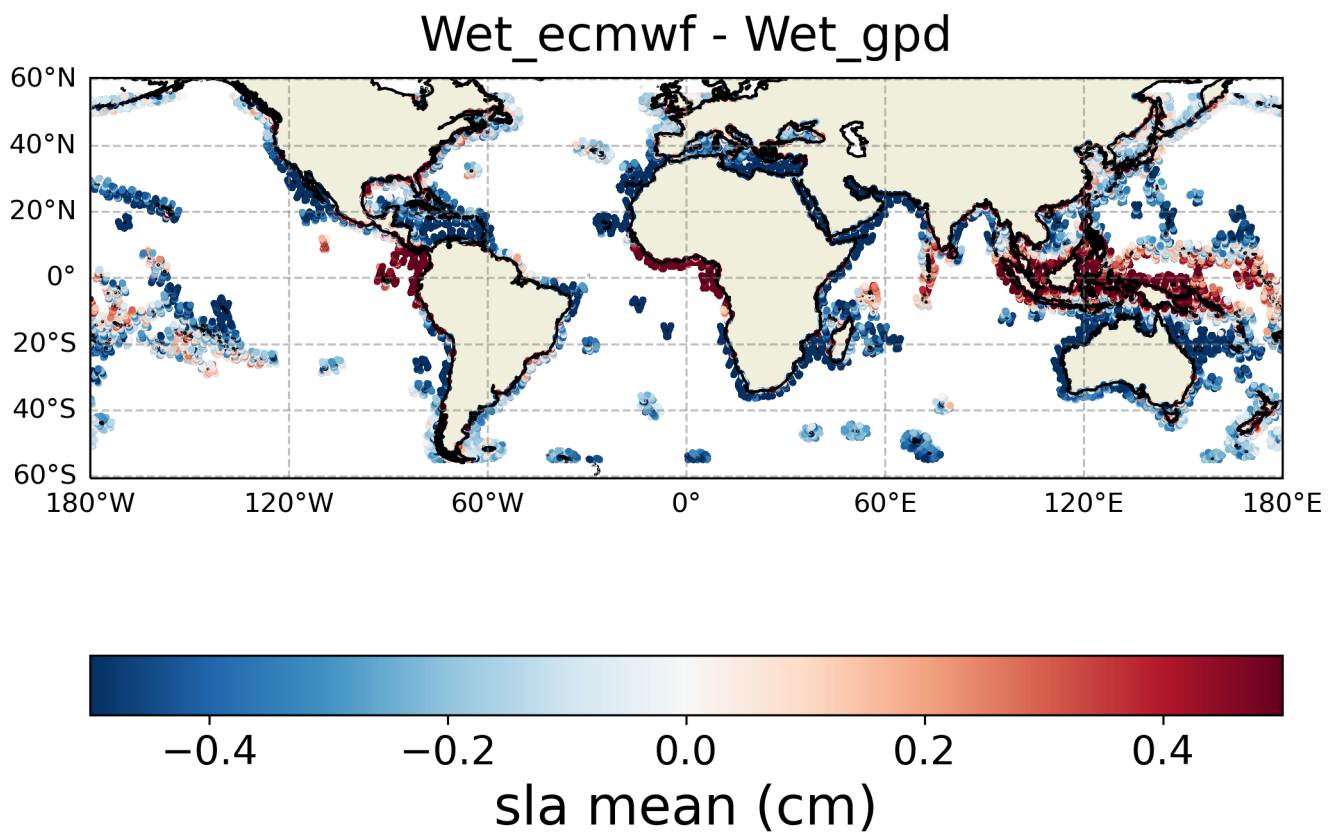


FIGURE 36 – Spatial coherence analysis of the Difference in sla 's mean between Wet_ecmwf and Wet_gpd

4 Histograms

4.1 Wet

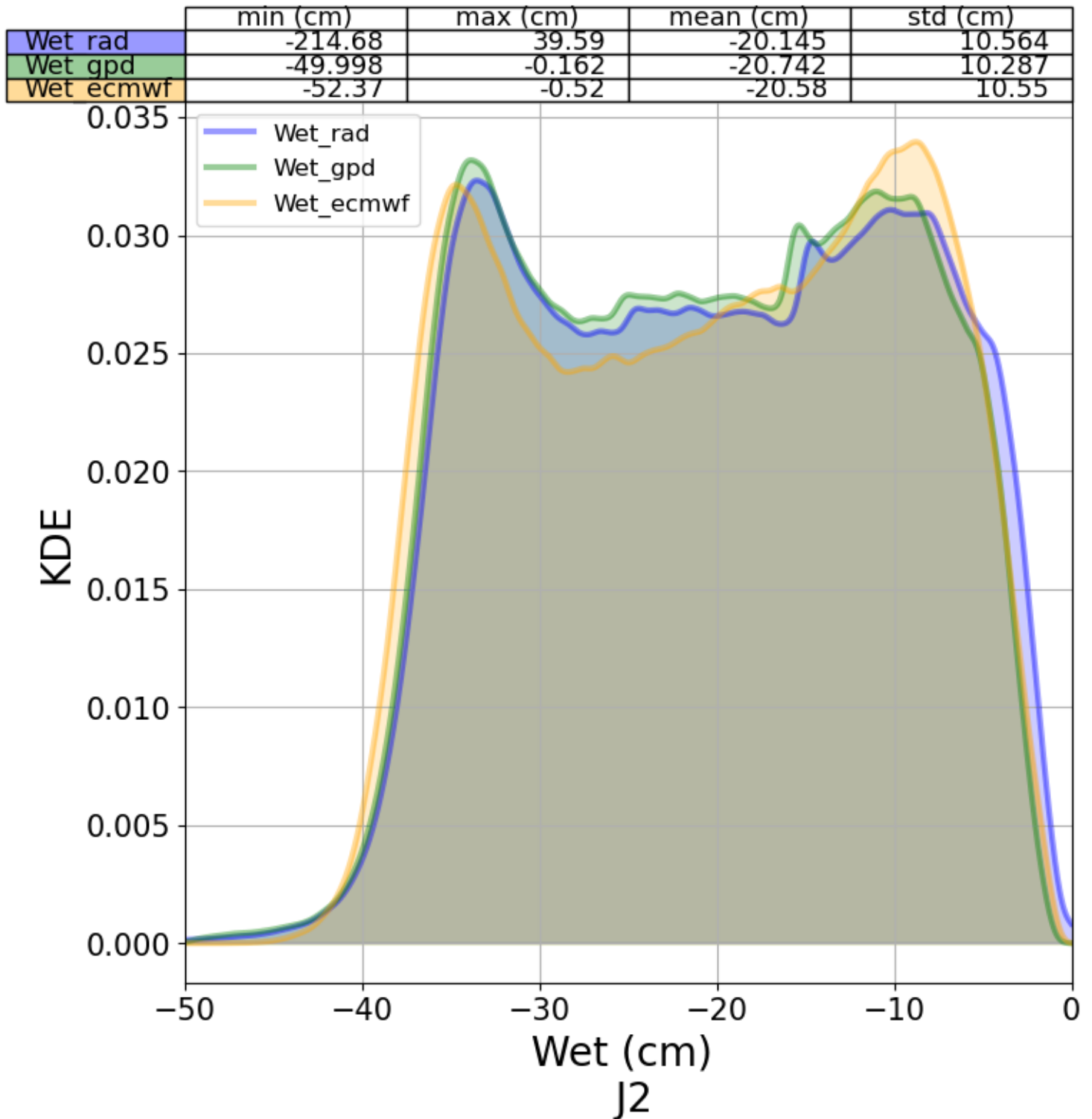


FIGURE 37 – Histogram of each of Wet version

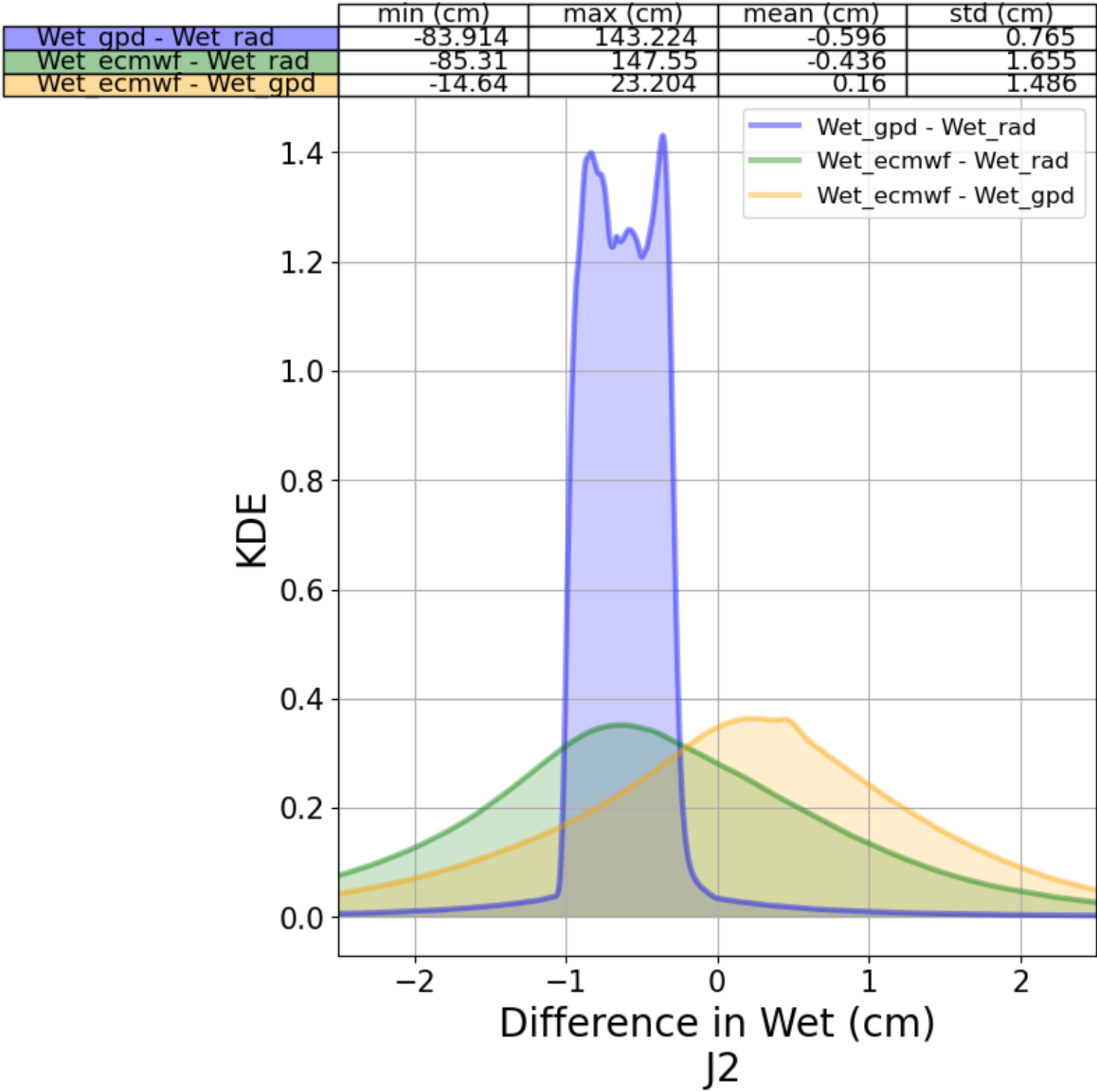


FIGURE 38 – Histograms of difference of each Wet version and reference one

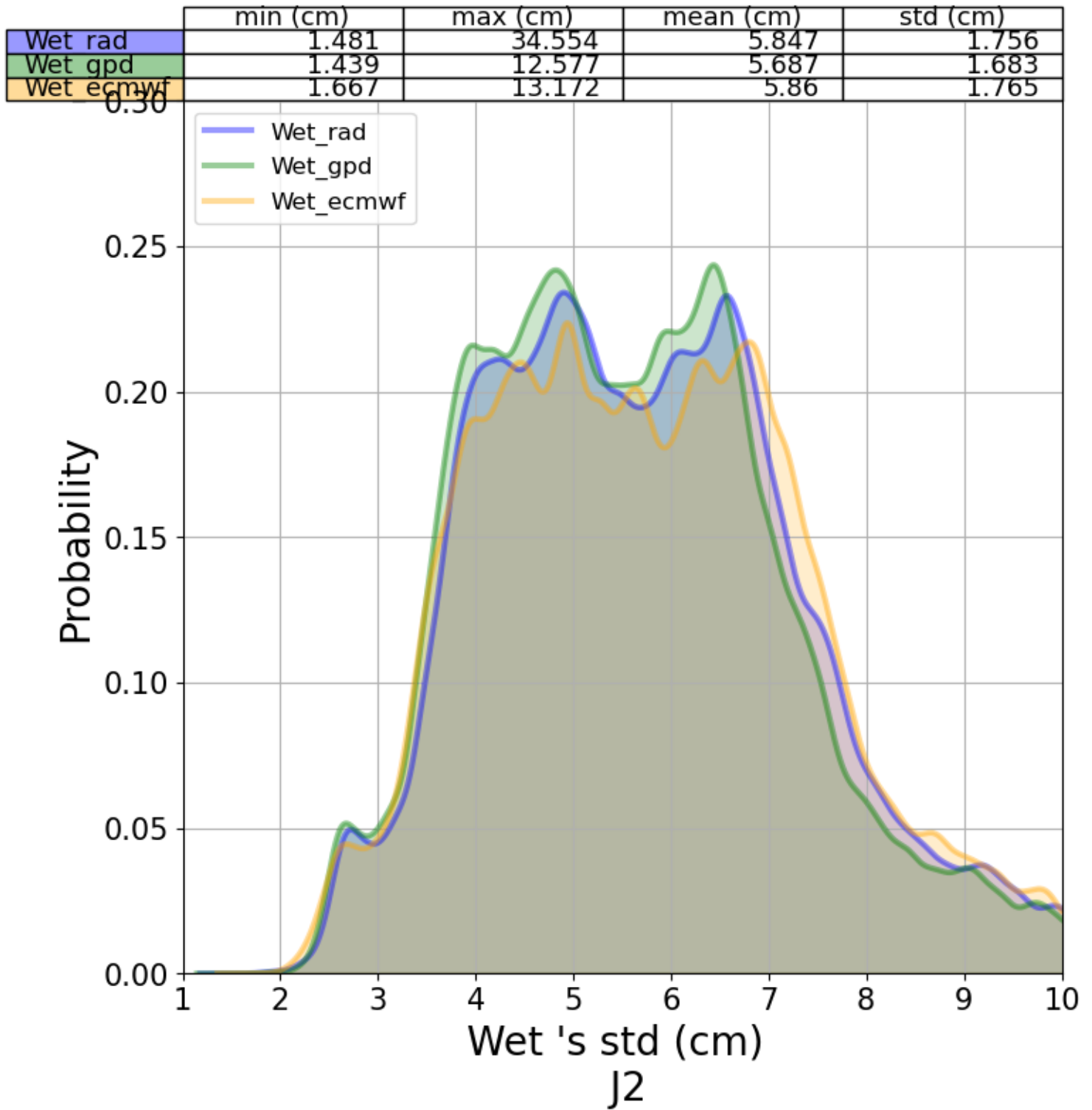


FIGURE 39 – Histograms of the standard deviation of each Wet version

4.2 sla

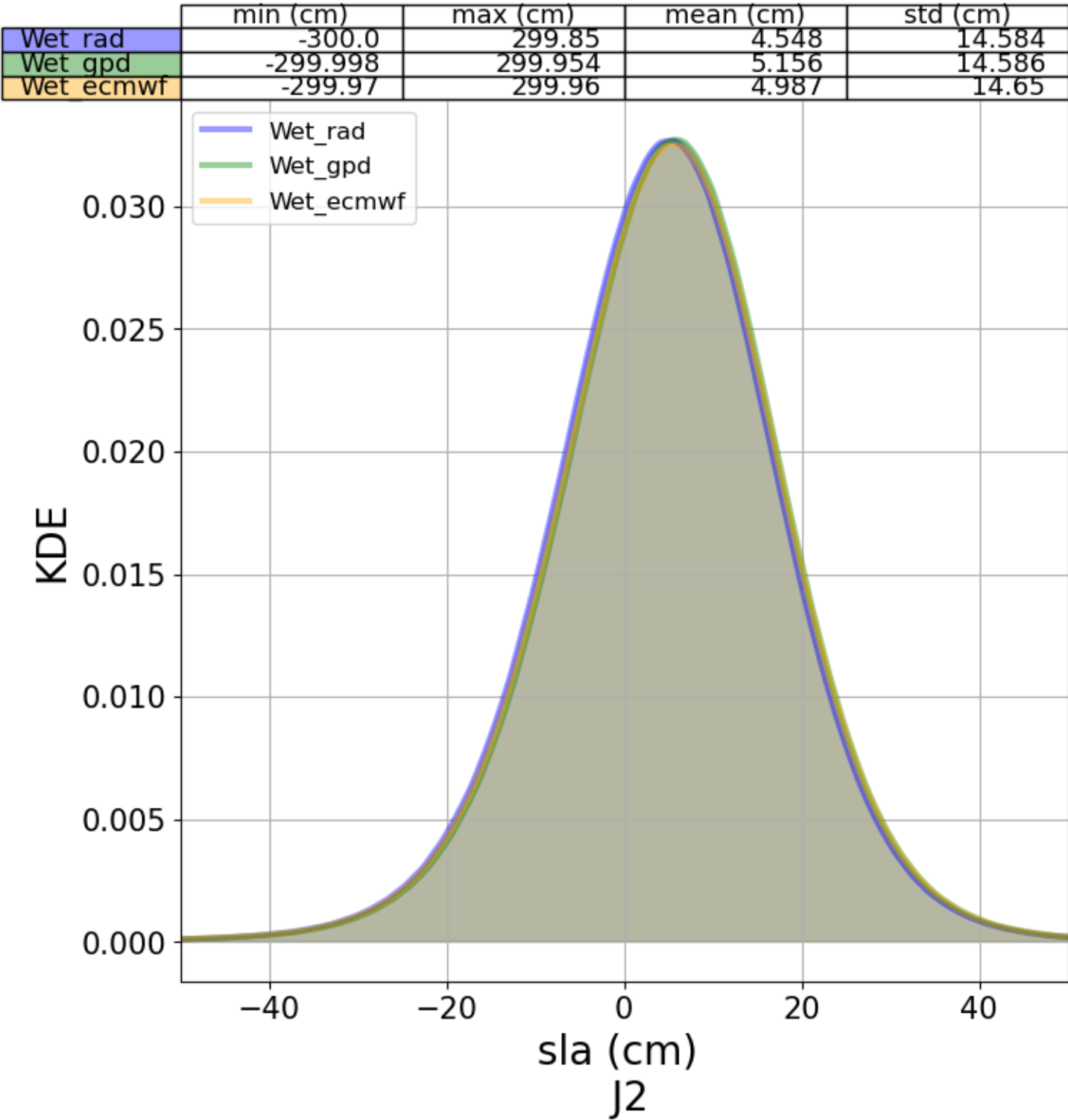


FIGURE 40 – Histogram of each of sla version

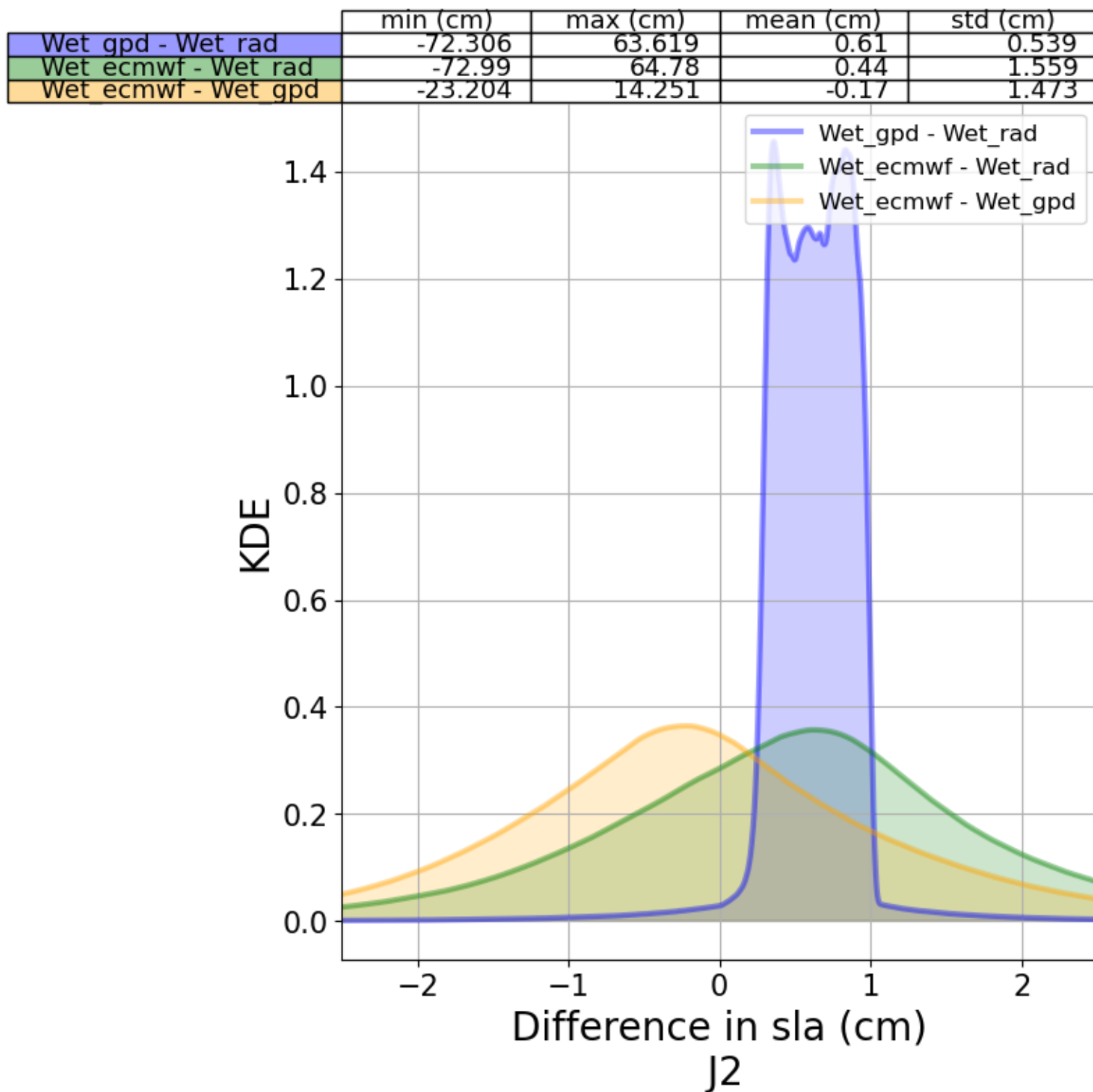


FIGURE 41 – Histograms of difference of each sla version and reference one

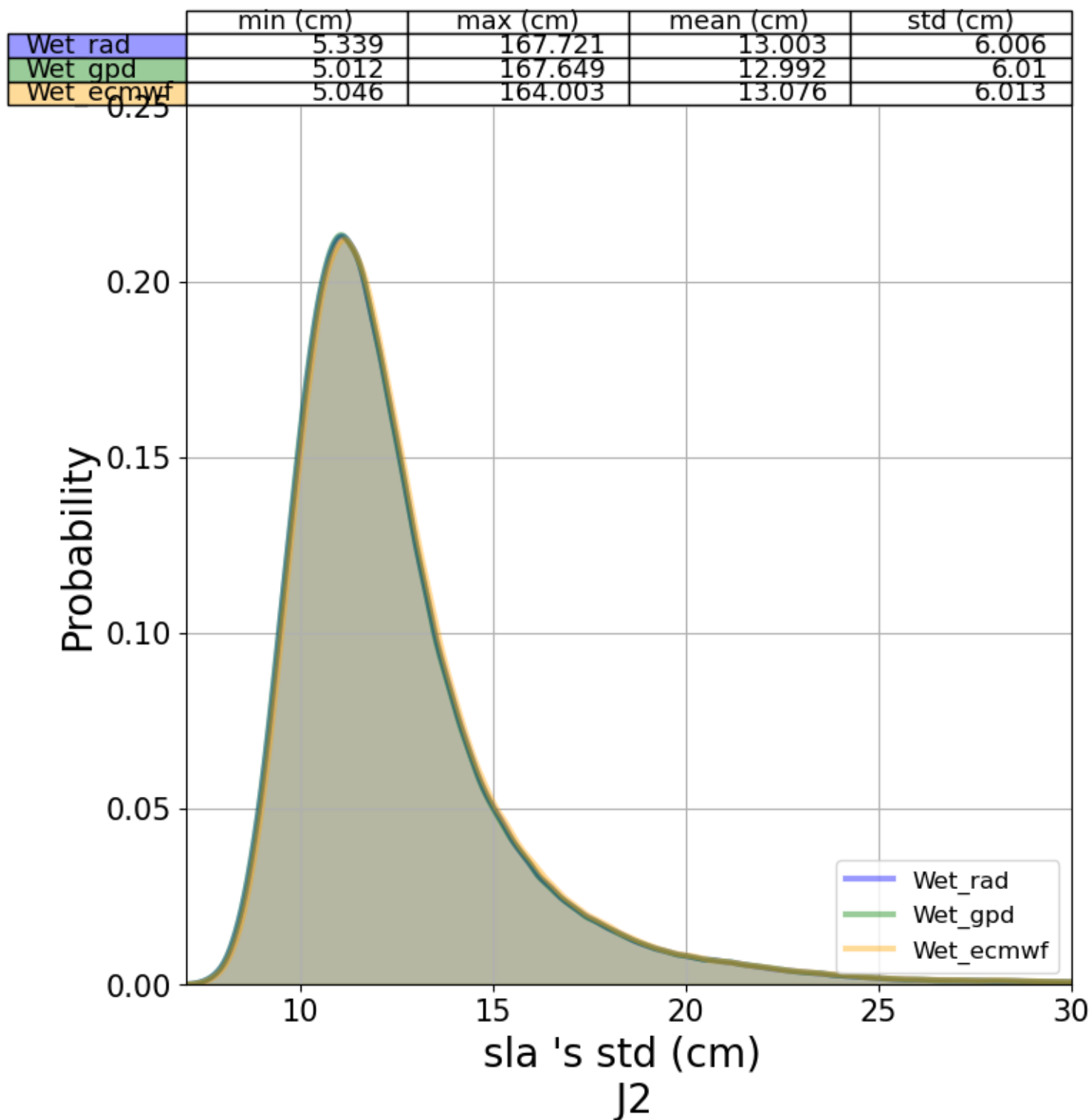


FIGURE 42 – Histograms of the standard deviation of each sla version

5 Along-track analysis

5.1 Wet

5.1.1 Wet 's count

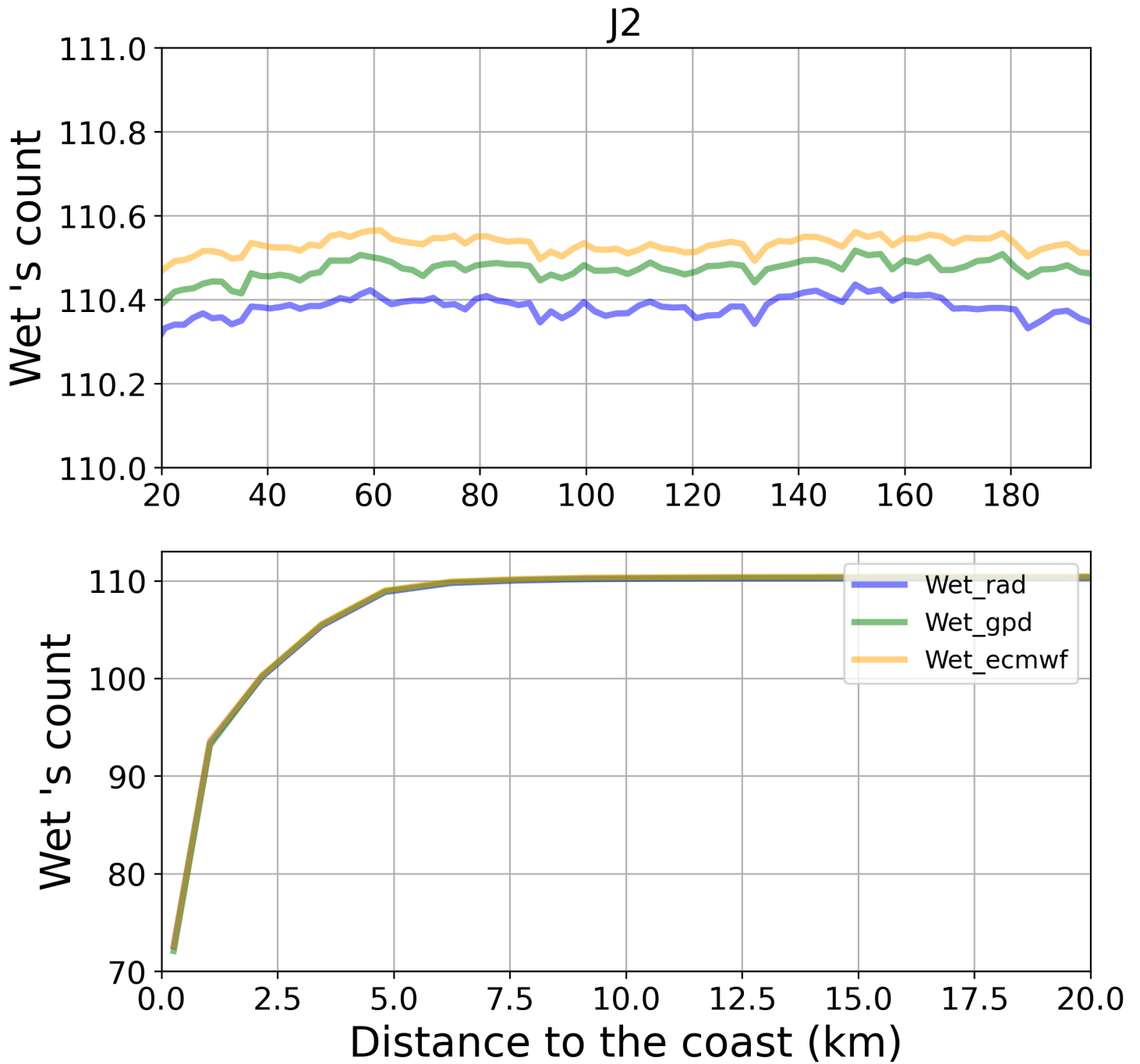


FIGURE 43 – Along-track analysis of Wet 's count

J2

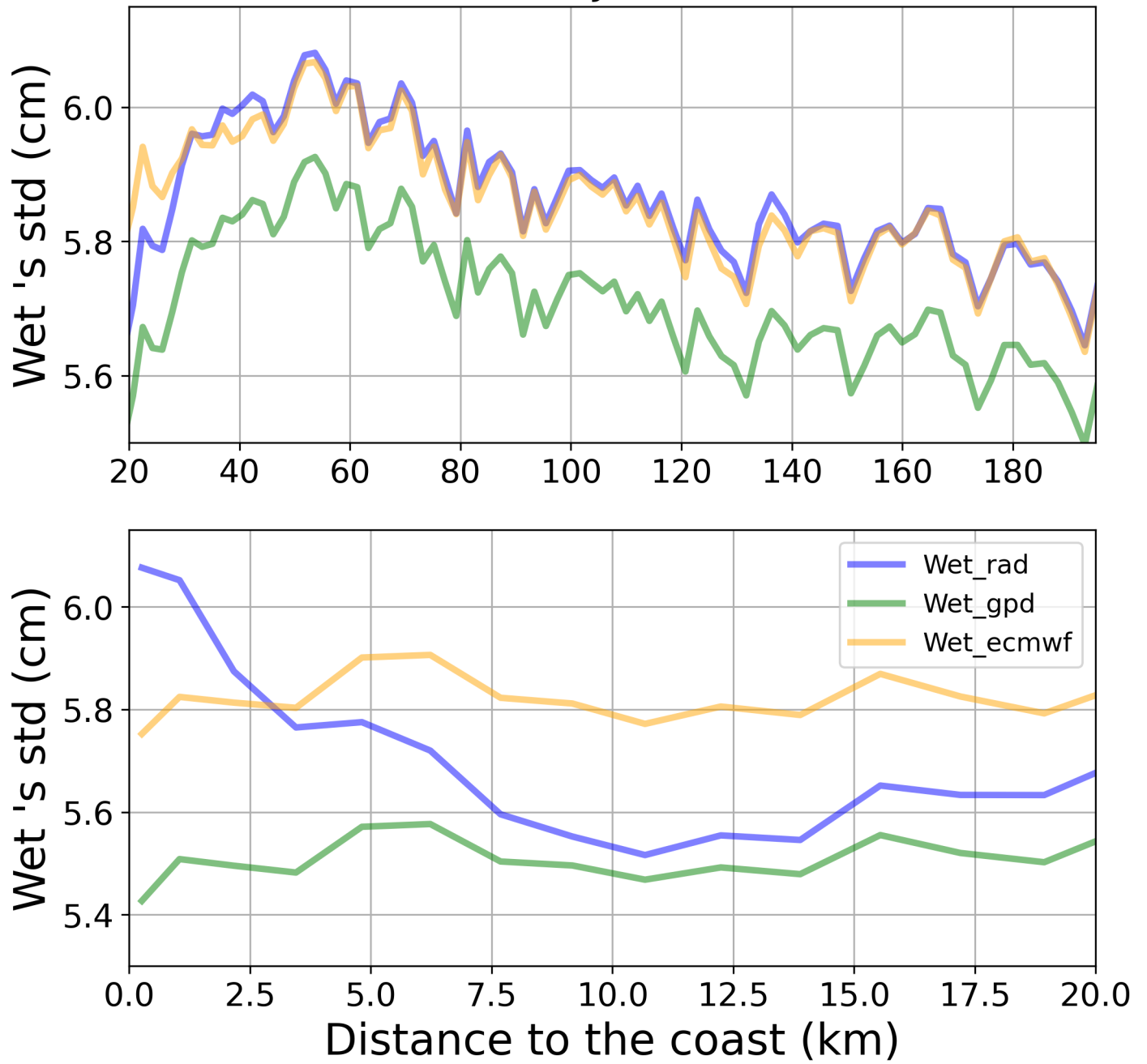


FIGURE 44 – Along-track analysis of Wet 's std

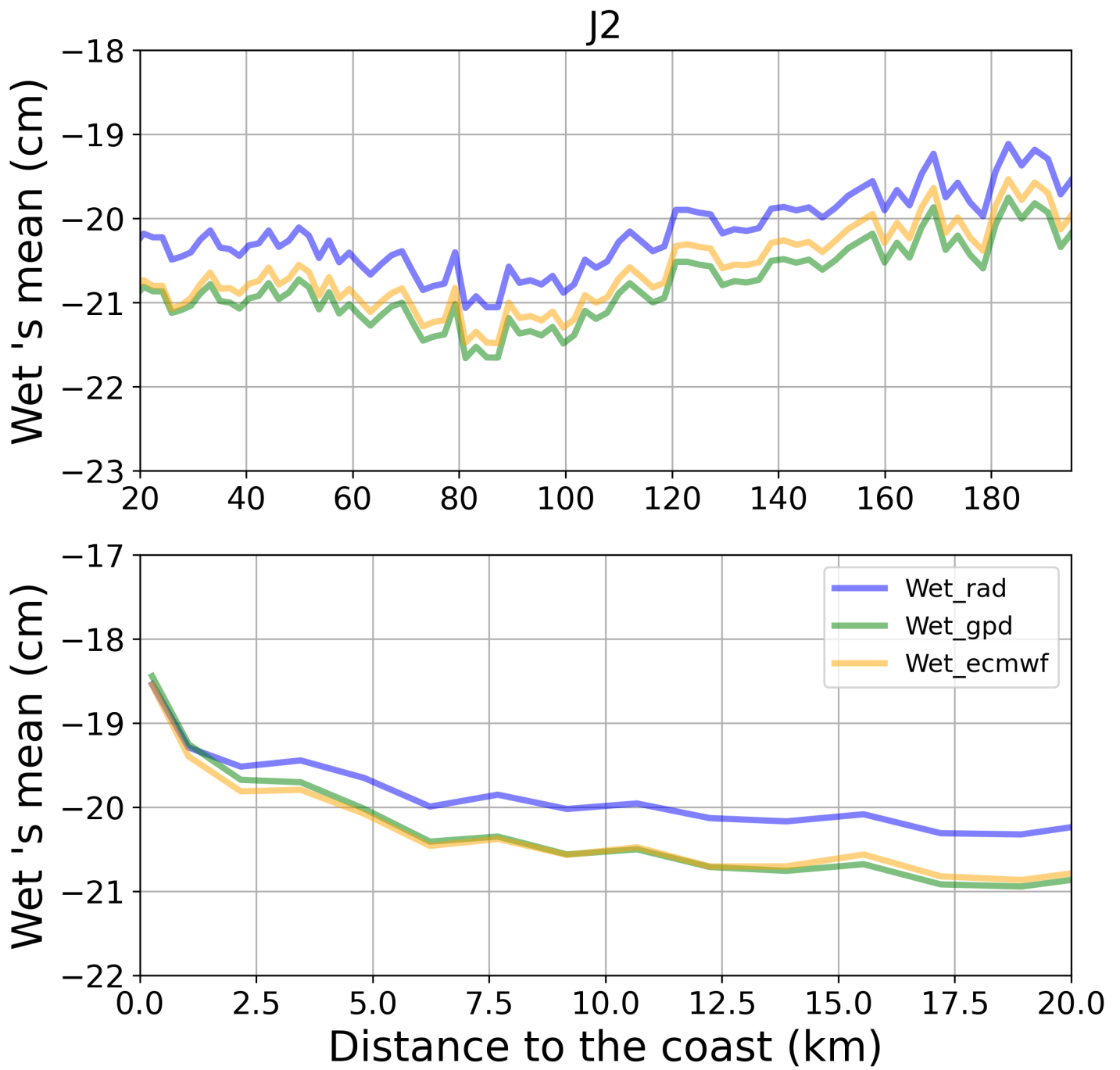


FIGURE 45 – Along-track analysis of Wet 's mean

5.2 sla

5.2.1 sla's count

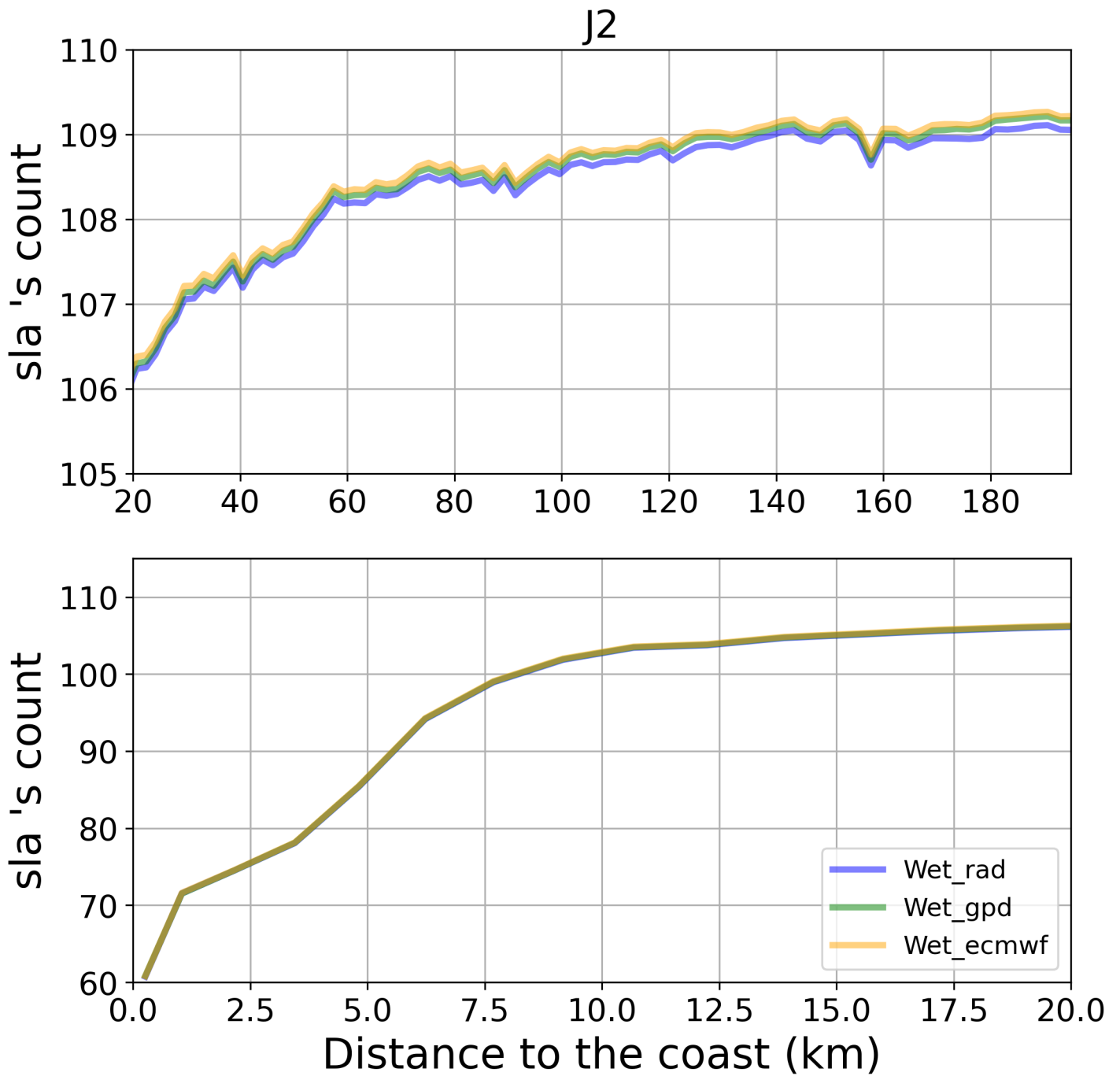


FIGURE 46 – Along-track analysis of sla's count

J2

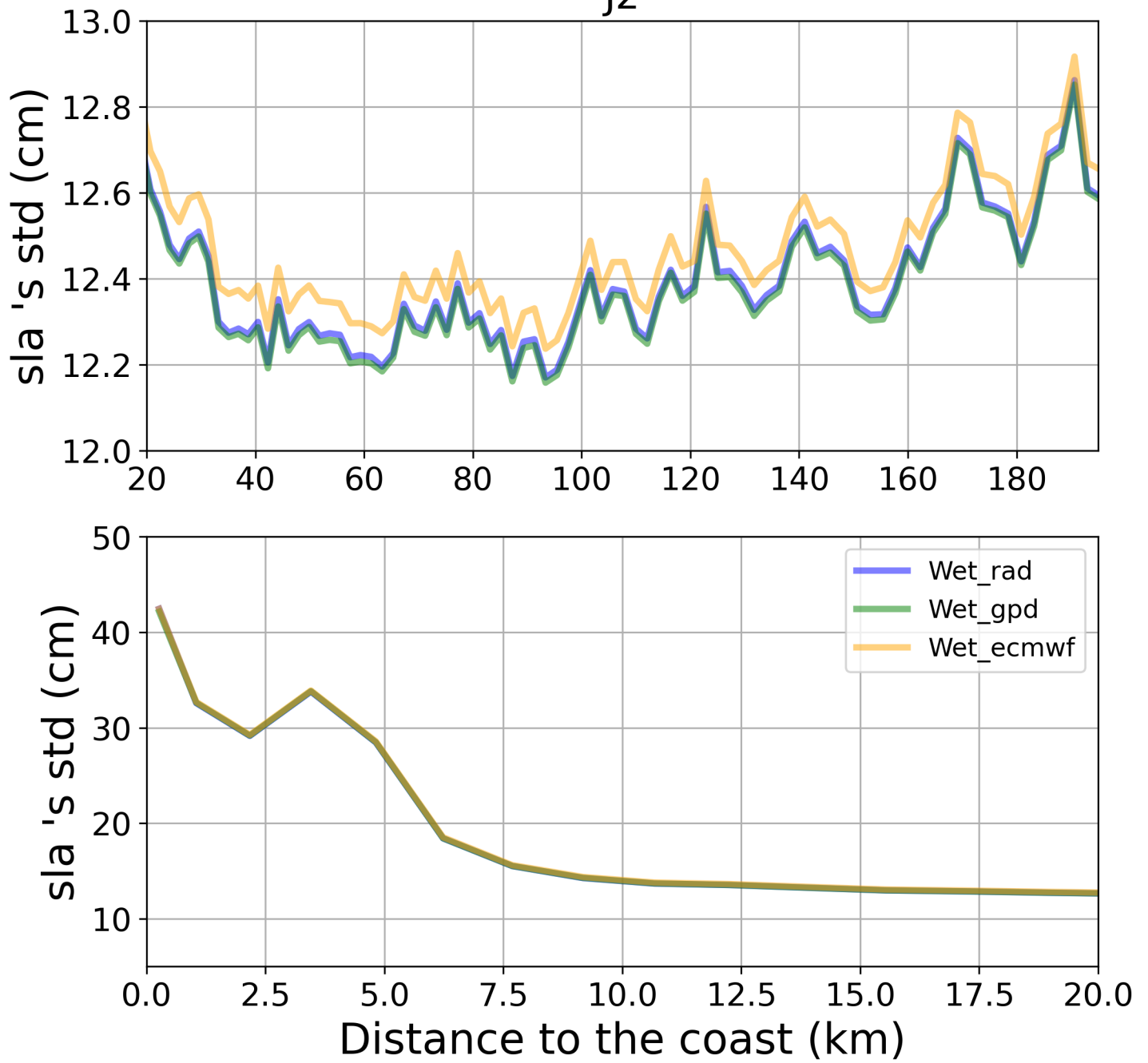


FIGURE 47 – Along-track analysis of sla 's std

J2

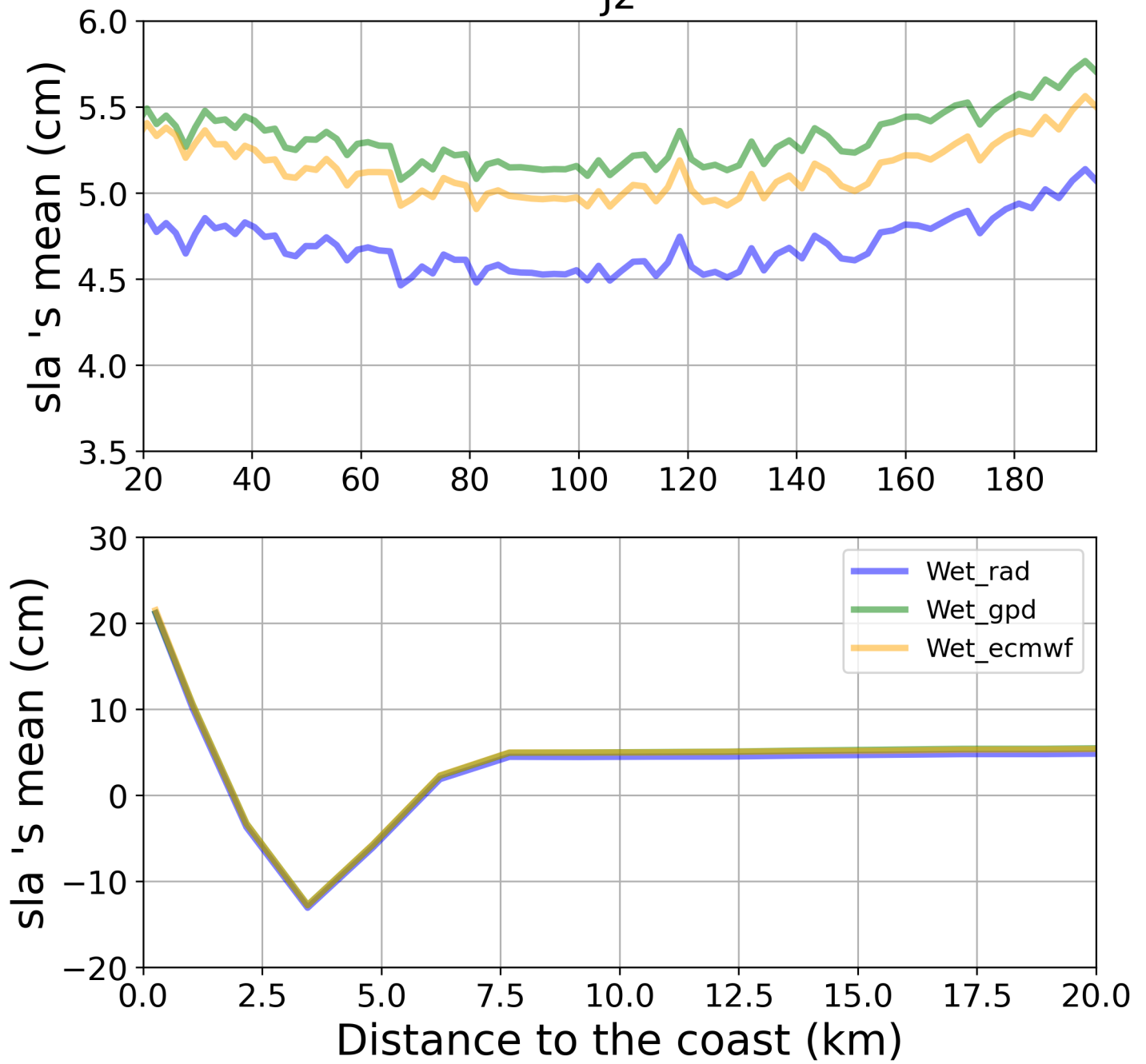


FIGURE 48 – Along-track analysis of sla 's mean