

DIAGTOOL REPORT



Round Robin (GT cotier) : Wet tropospheric correction. global. J3. Wet rad vs Wet gpd vs Wet ecmwf.

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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 : J3
- 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.CNES_POE_F -
RANGE.ALT -
MEAN_SEA_SURFACE.MODEL.CNESCLS15 -
SEA_STATE_BIAS.ALT -
IONOSPHERIC_CORRECTION.MODEL.GIM -
WET_TROPOSPHERIC_CORRECTION.RAD -
DRY_TROPOSPHERIC_CORRECTION.MODEL.ECMWF -
DYNAMICAL_ATMOSPHERIC_CORRECTION.MODEL.MOG2D_HR -
OCEAN_TIDE_HEIGHT.MODEL.FES14B -
SOLID_EARTH_TIDE_HEIGHT.MODEL.CARTWRIGHT_TAYLER_71 -
POLE_TIDE_HEIGHT.MODEL.DESAI_2015

2.1.2 Wet_gpd product ' sla

sla = ORBIT.ALT.CNES_POE_F -
RANGE.ALT -
MEAN_SEA_SURFACE.MODEL.CNESCLS15 -
SEA_STATE_BIAS.ALT -
IONOSPHERIC_CORRECTION.MODEL.GIM -
WET_TROPOSPHERIC_CORRECTION.GPD_PLUS_J3 -
DRY_TROPOSPHERIC_CORRECTION.MODEL.ECMWF -
DYNAMICAL_ATMOSPHERIC_CORRECTION.MODEL.MOG2D_HR -
OCEAN_TIDE_HEIGHT.MODEL.FES14B -
SOLID_EARTH_TIDE_HEIGHT.MODEL.CARTWRIGHT_TAYLER_71 -
POLE_TIDE_HEIGHT.MODEL.DESAI_2015

2.1.3 Wet_ecmwf product ' sla

sla = ORBIT.ALT.CNES_POE_F -
RANGE.ALT -
MEAN_SEA_SURFACE.MODEL.CNESCLS15 -
SEA_STATE_BIAS.ALT -
IONOSPHERIC_CORRECTION.MODEL.GIM -
WET_TROPOSPHERIC_CORRECTION.MODEL.ECMWF -
DRY_TROPOSPHERIC_CORRECTION.MODEL.ECMWF -
DYNAMICAL_ATMOSPHERIC_CORRECTION.MODEL.MOG2D_HR -

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

2.2 Binning

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

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

2.3 Filtering

- The sla has been filtered by a threshold of 3 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 Wet

3.1.1 Wet's count

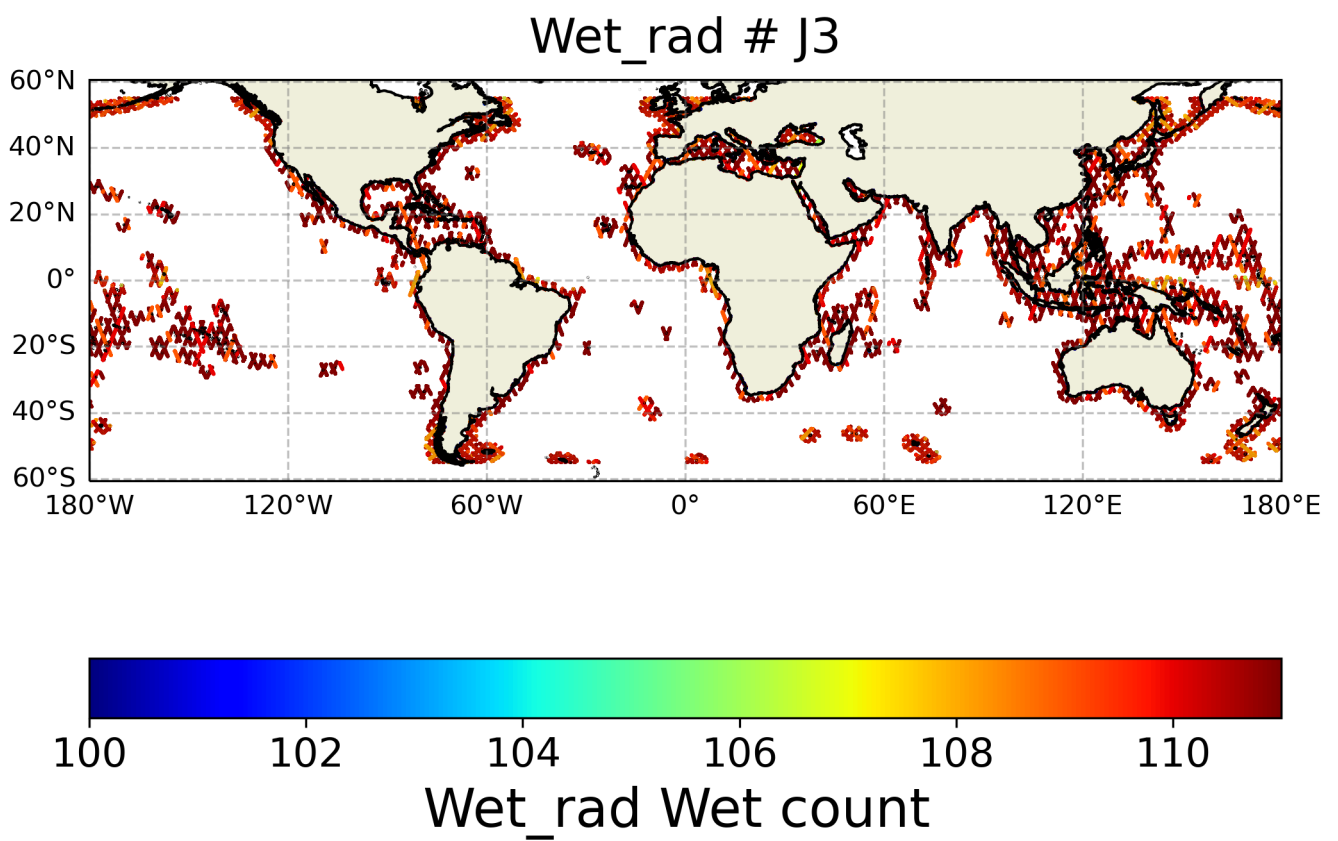


FIGURE 1 – Spatial coherence analysis of the count of the Wet_rad version of Wet variable

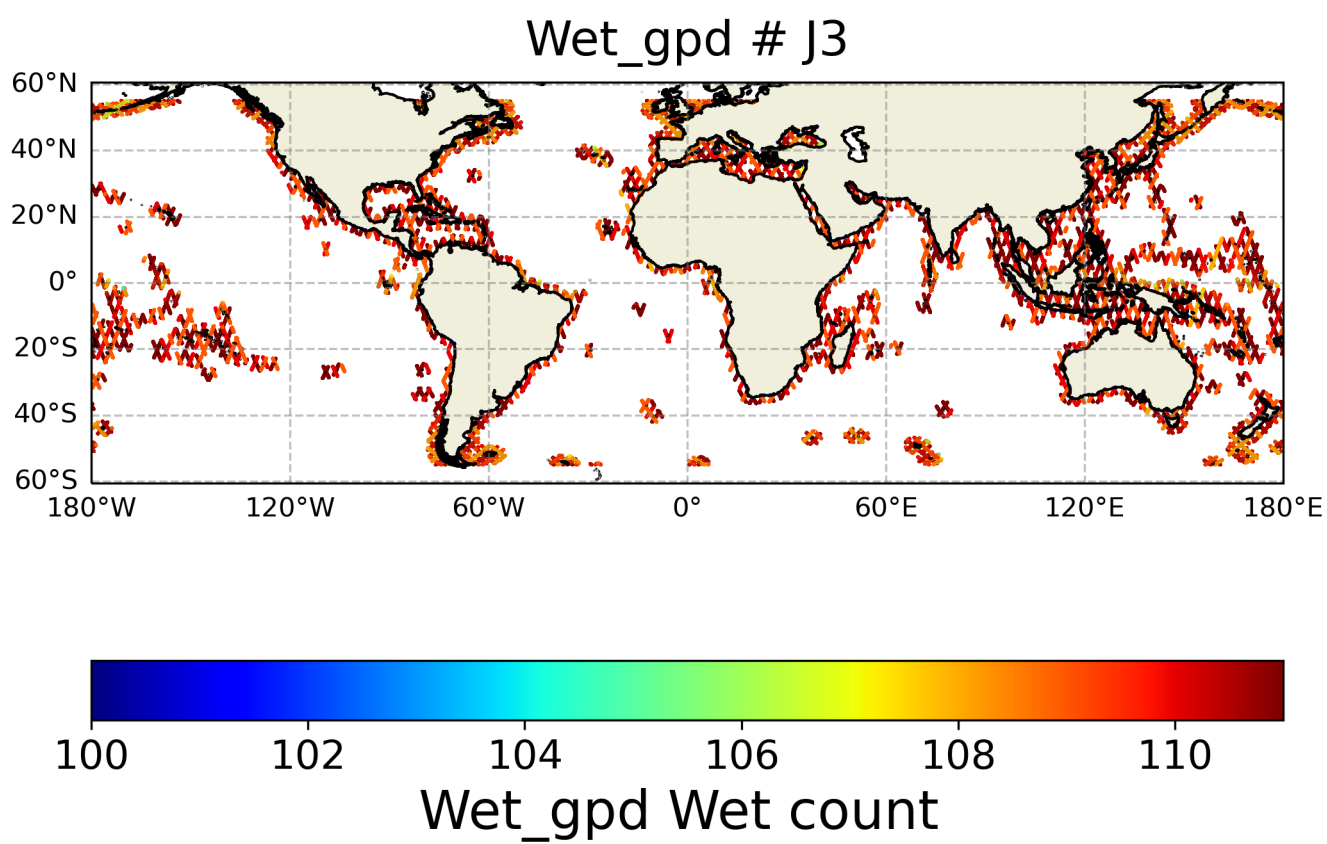


FIGURE 2 – Spatial coherence analysis of the count of the Wet_gpd version of Wet variable

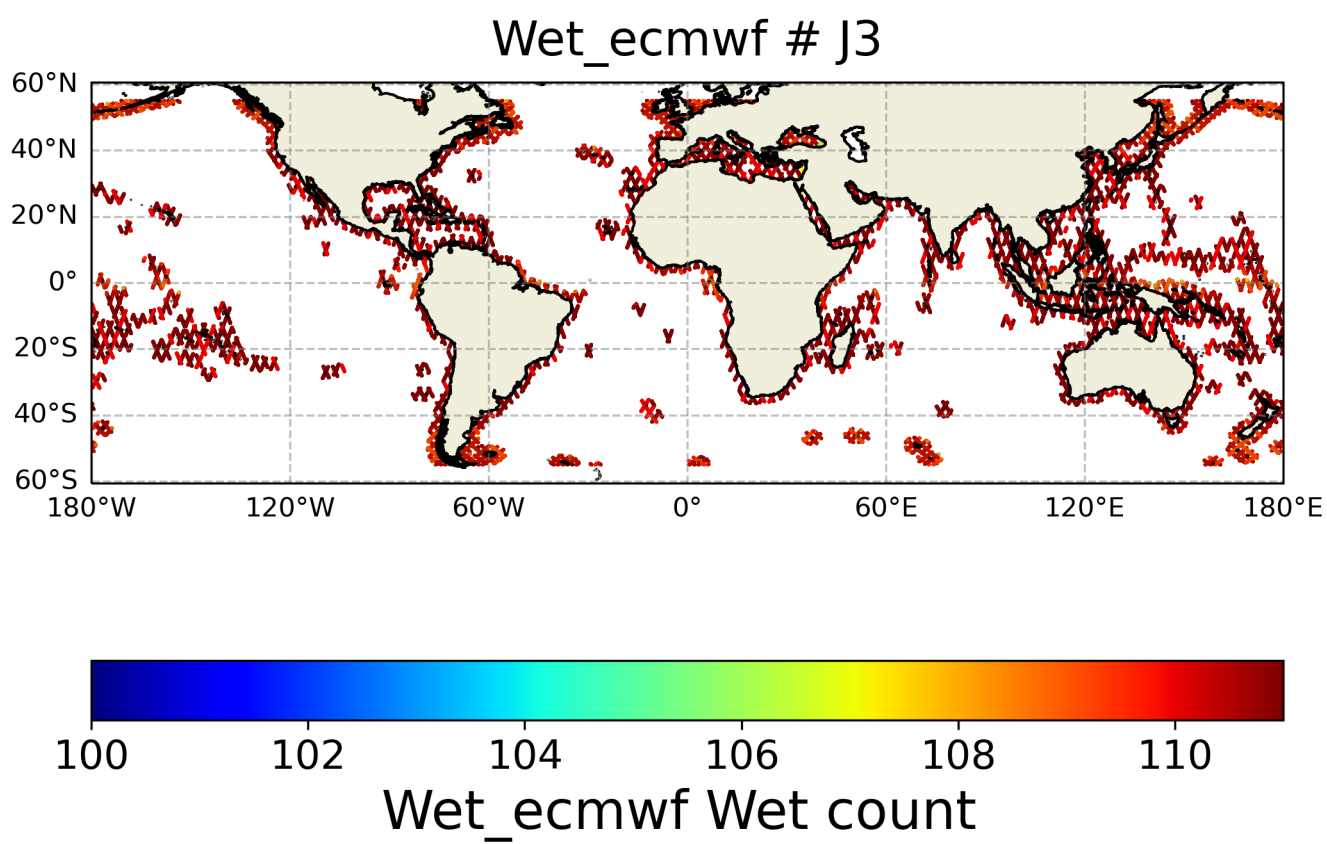


FIGURE 3 – Spatial coherence analysis of the count of the Wet_ecmwf version of Wet variable

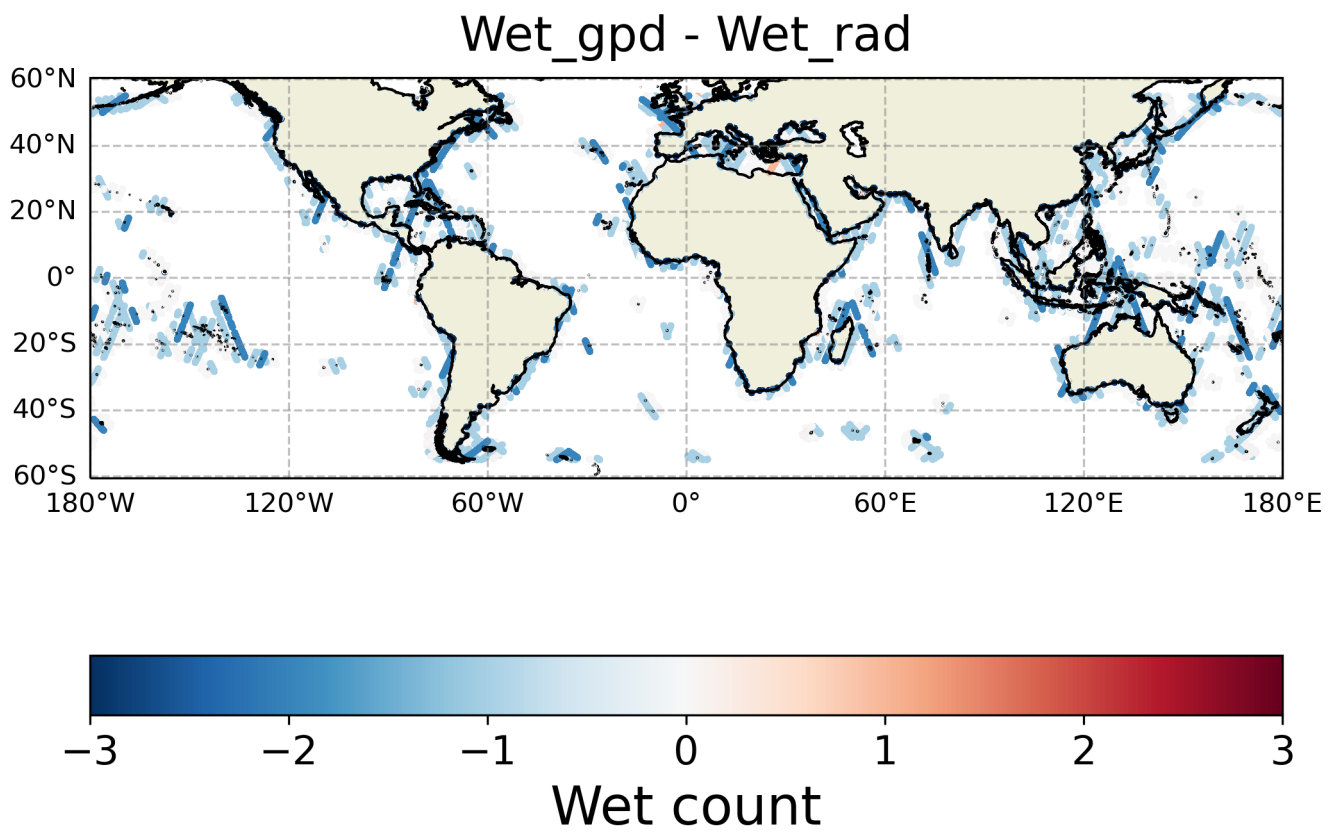


FIGURE 4 – Spatial coherence analysis of the Difference in Wet 's count between Wet_gpd and Wet_rad

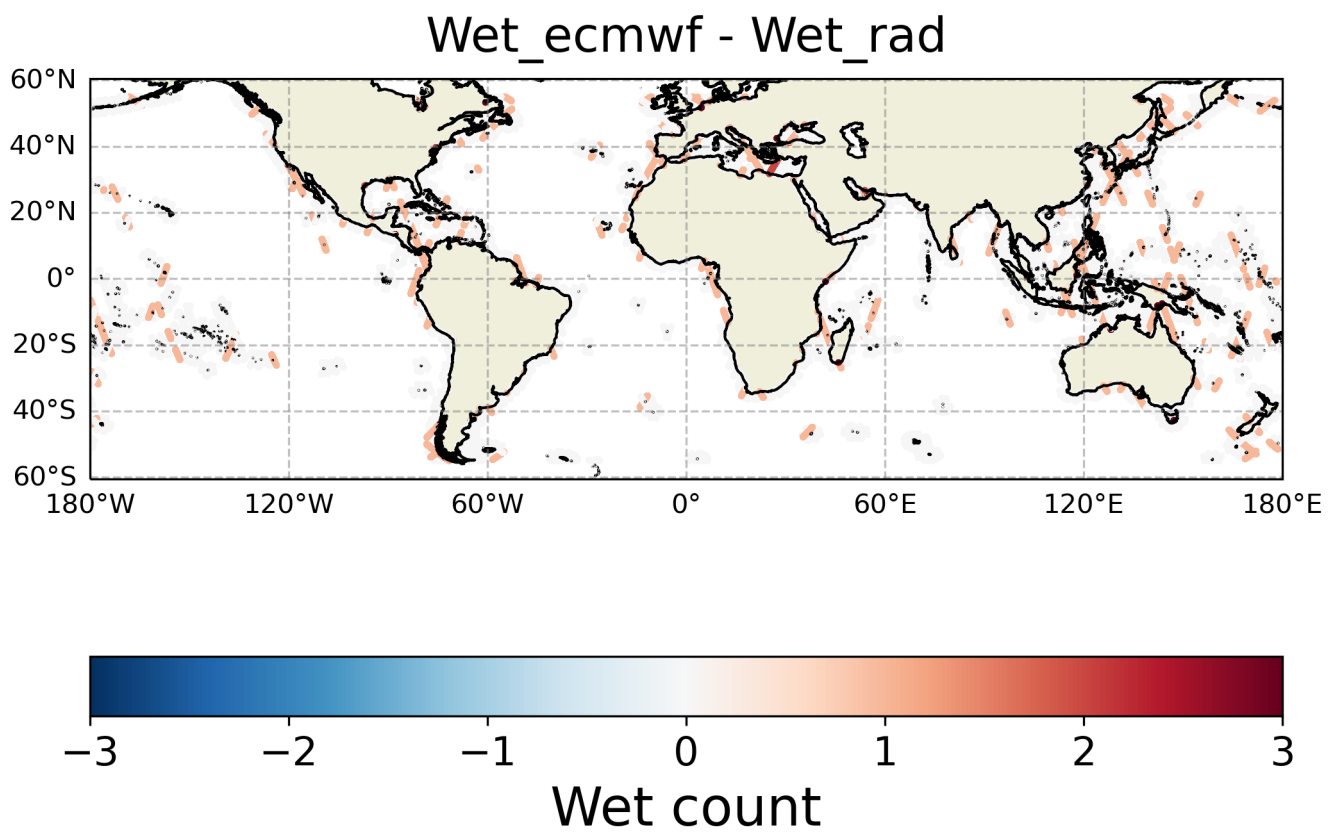


FIGURE 5 – Spatial coherence analysis of the Difference in Wet 's count between Wet_ecmwf and Wet_rad

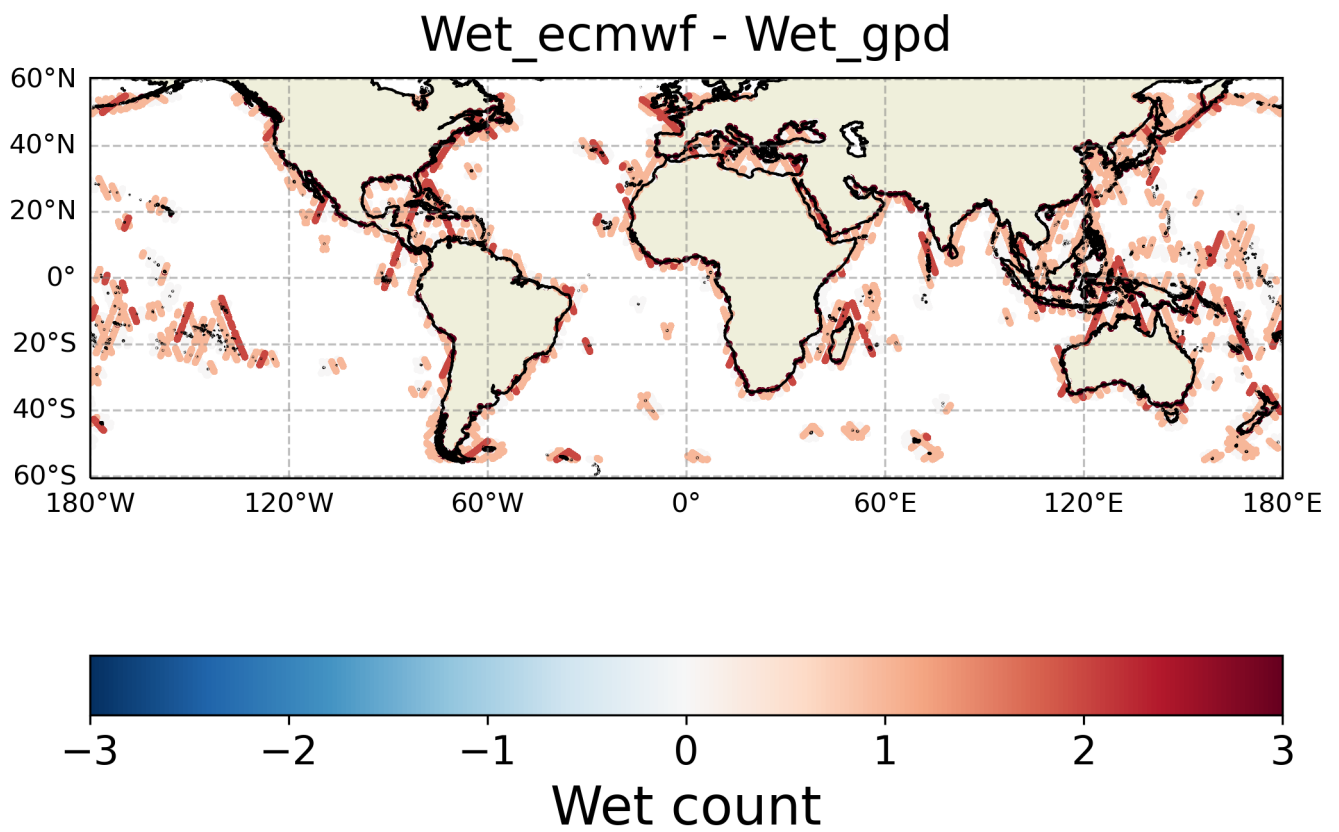


FIGURE 6 – Spatial coherence analysis of the Difference in Wet 's count between Wet_ecmwf and Wet_gpd

3.1.2 Wet 's std

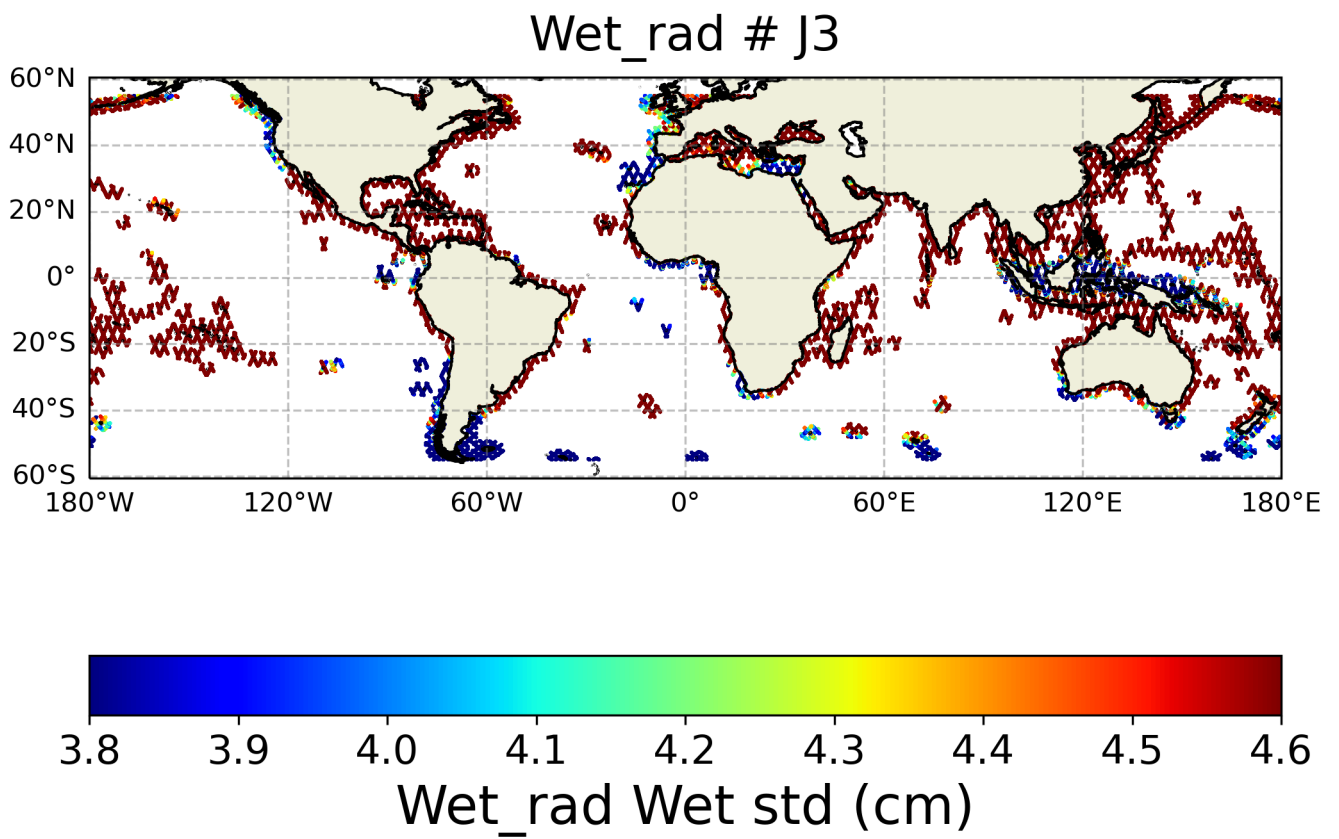


FIGURE 7 – Spatial coherence analysis of the std of the Wet_rad version of Wet variable

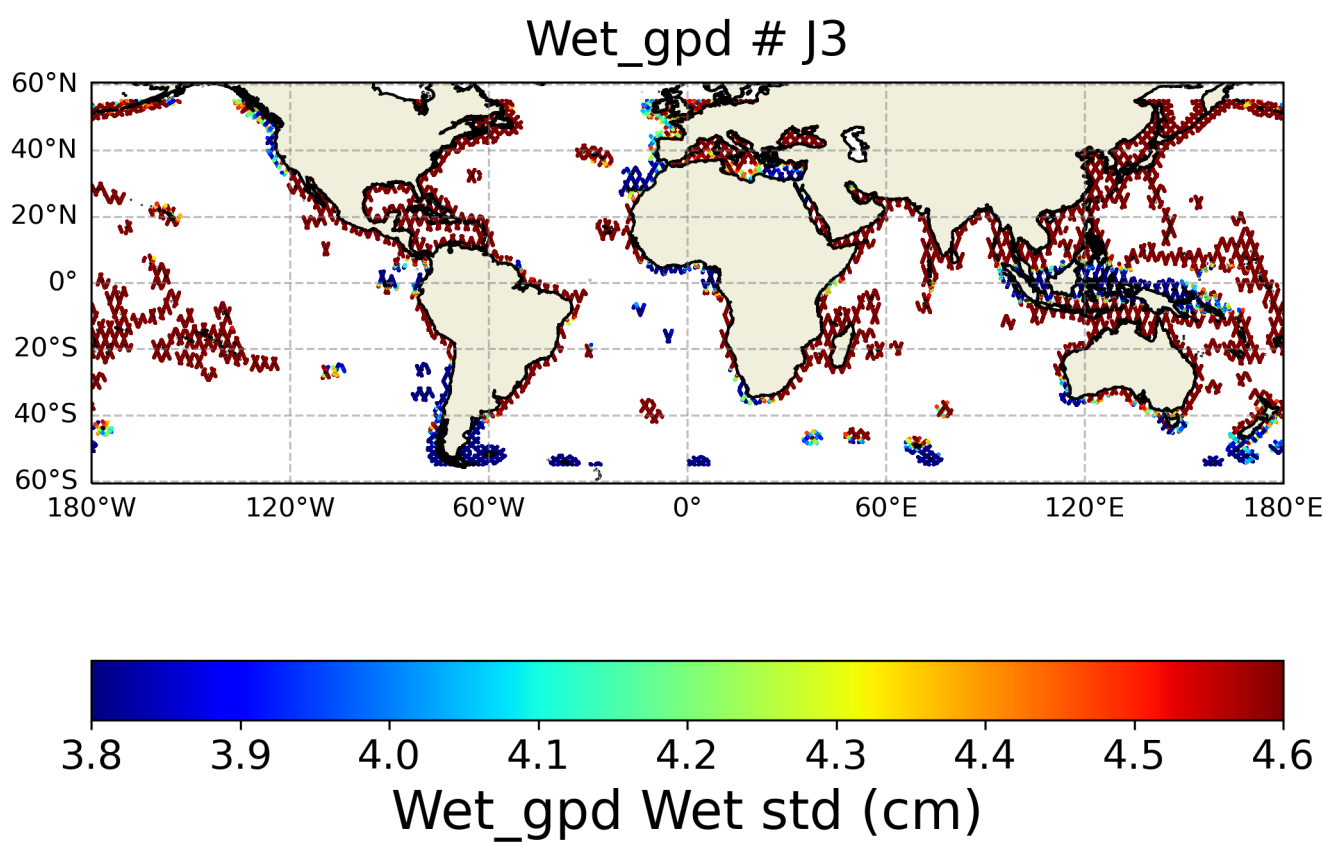


FIGURE 8 – Spatial coherence analysis of the std of the Wet_gpd version of Wet variable

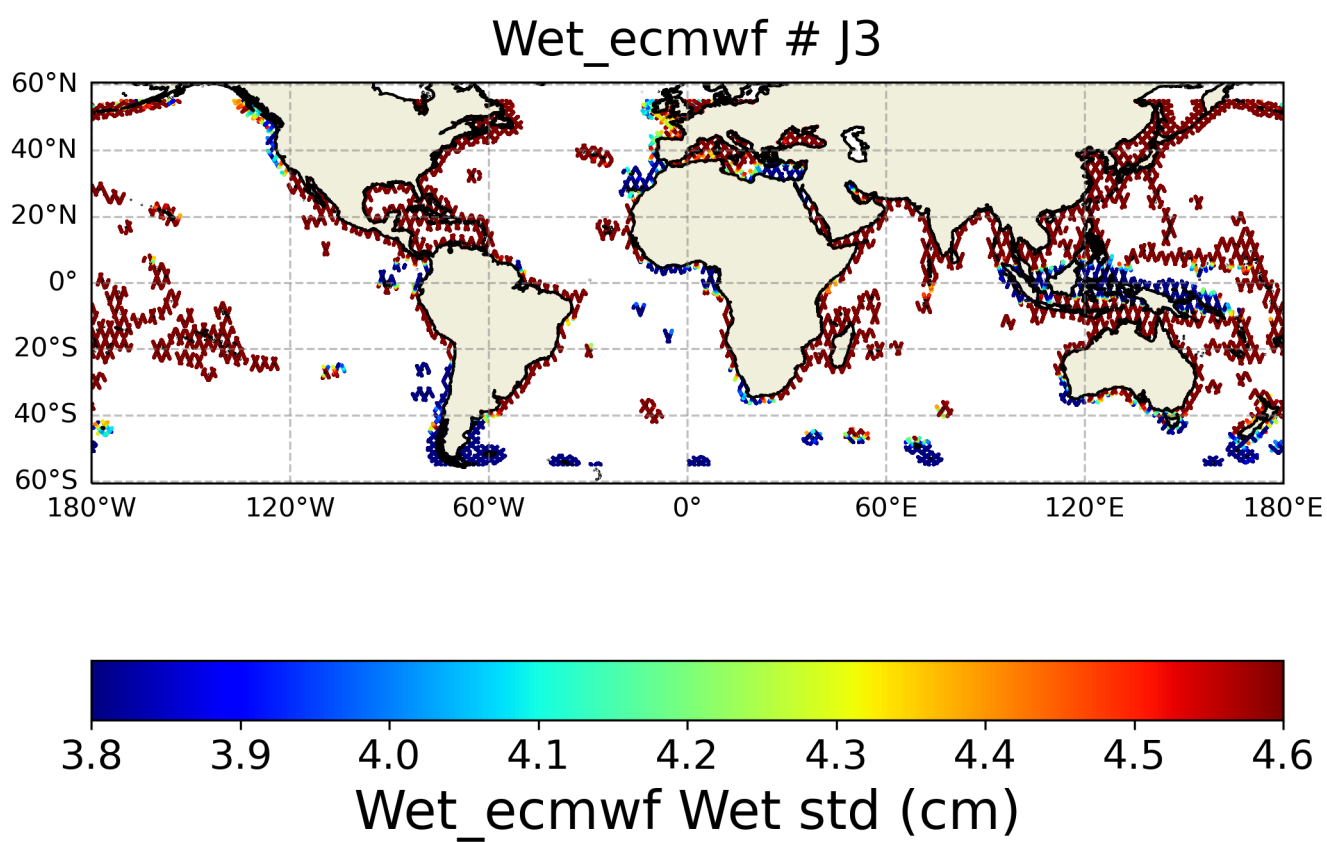


FIGURE 9 – Spatial coherence analysis of the std of the Wet_ecmwf version of Wet variable

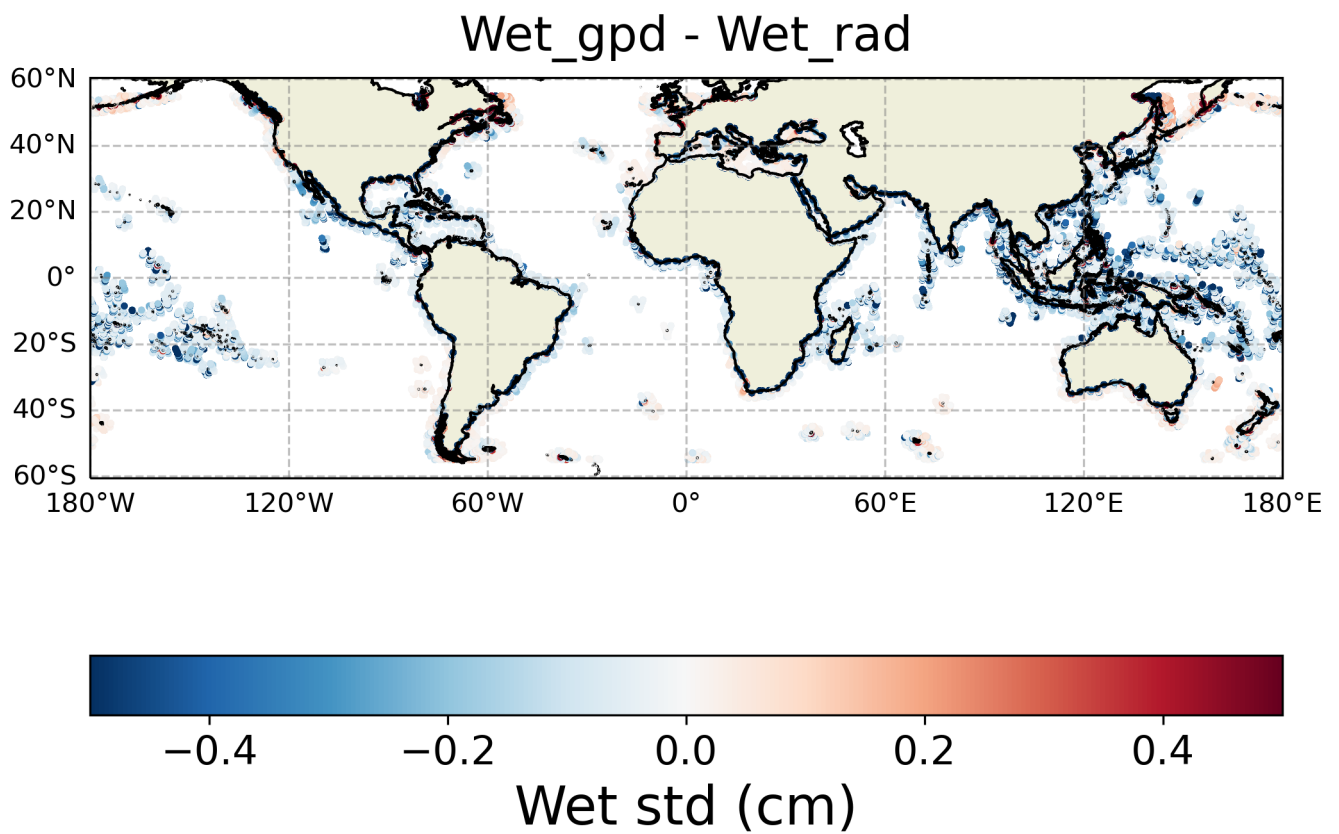


FIGURE 10 – Spatial coherence analysis of the Difference in Wet 's std between Wet_gpd and Wet_rad

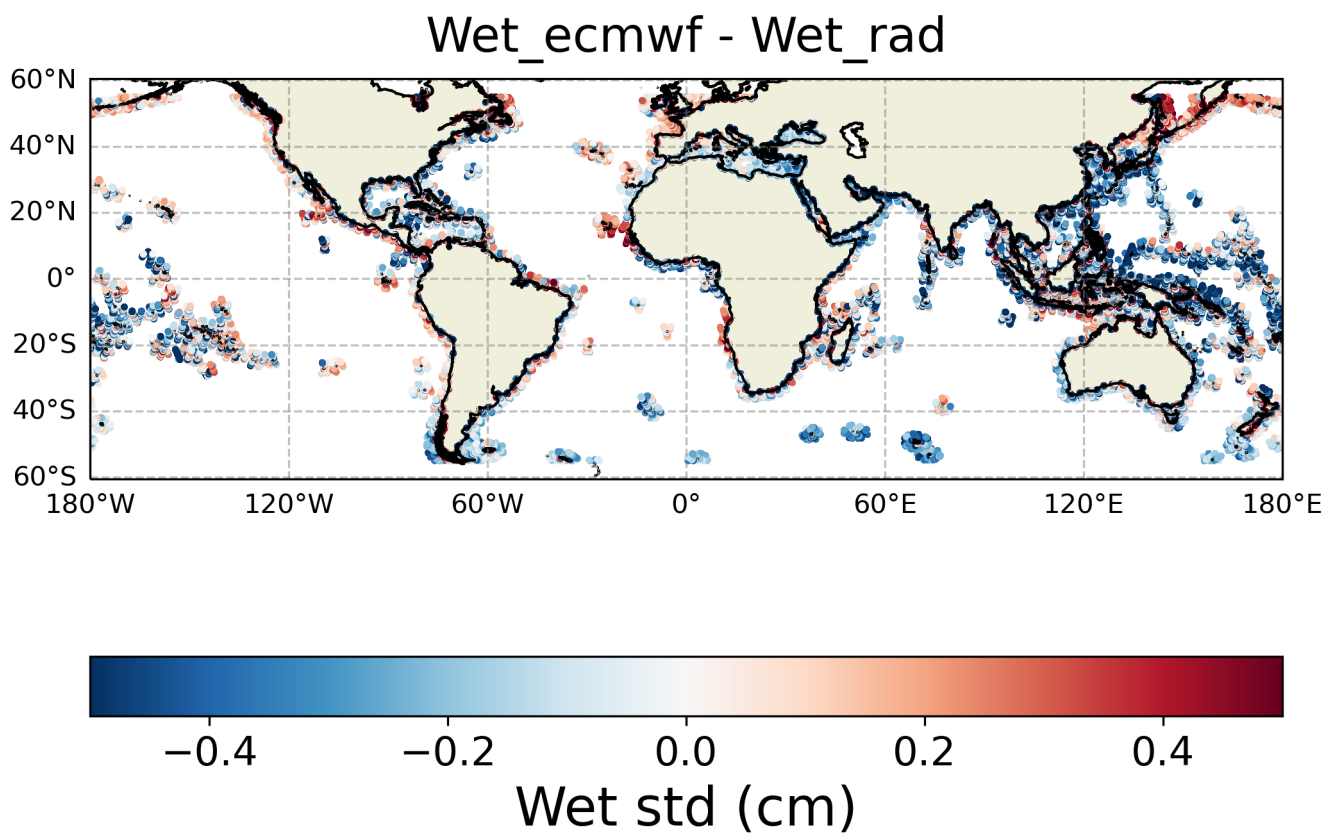


FIGURE 11 – Spatial coherence analysis of the Difference in Wet 's std between Wet_ecmwf and Wet_rad

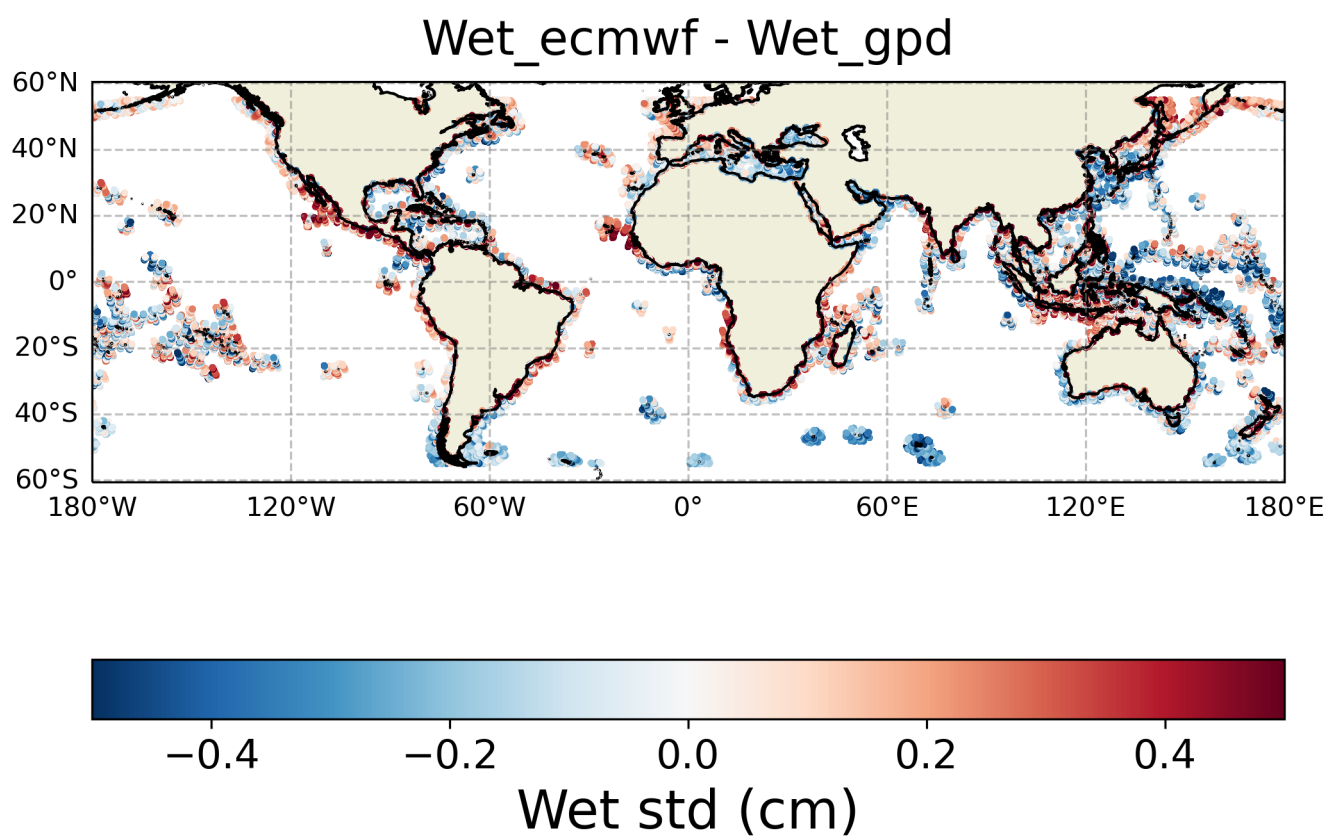


FIGURE 12 – Spatial coherence analysis of the Difference in Wet 's std between Wet_ecmwf and Wet_gpd

3.1.3 Wet 's mean

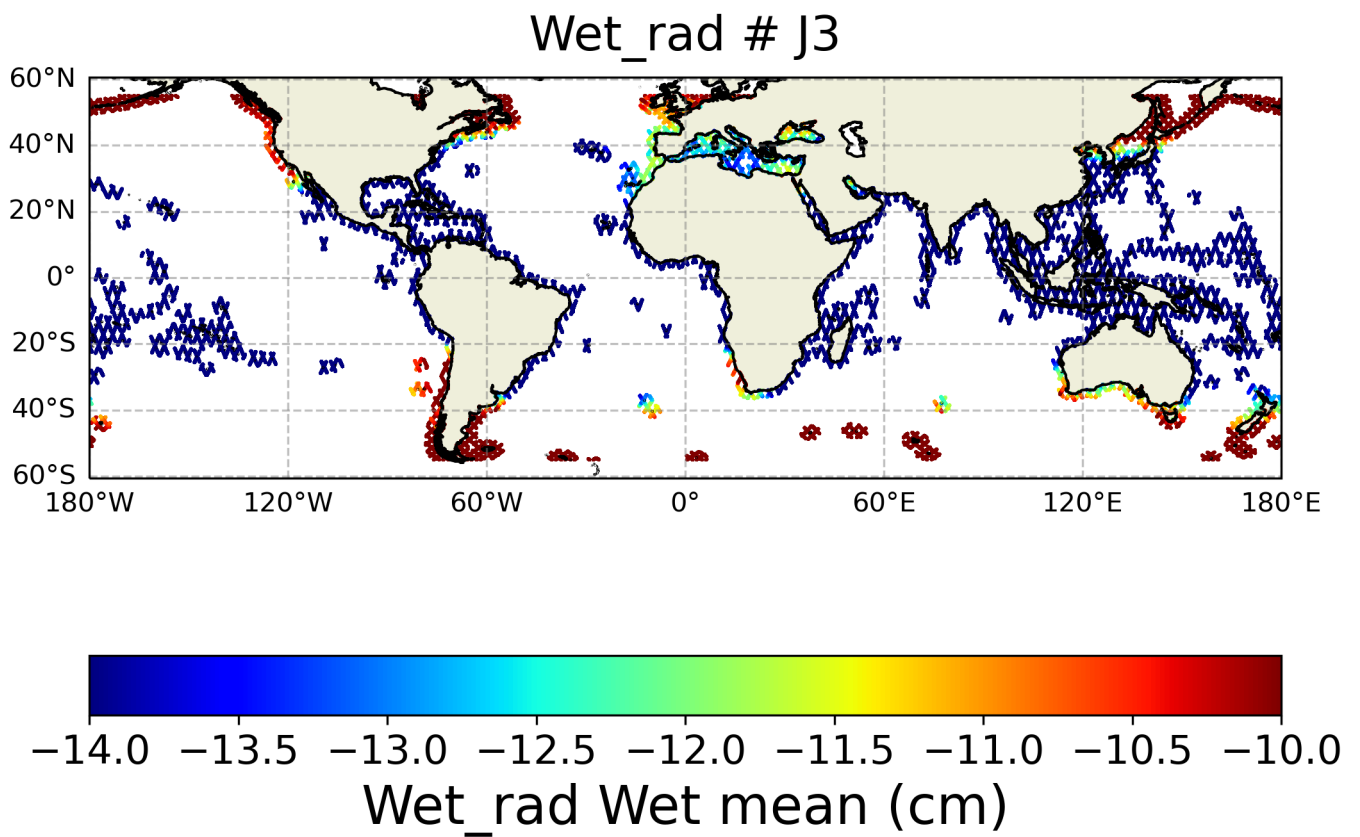


FIGURE 13 – Spatial coherence analysis of the mean of the Wet_rad version of Wet variable

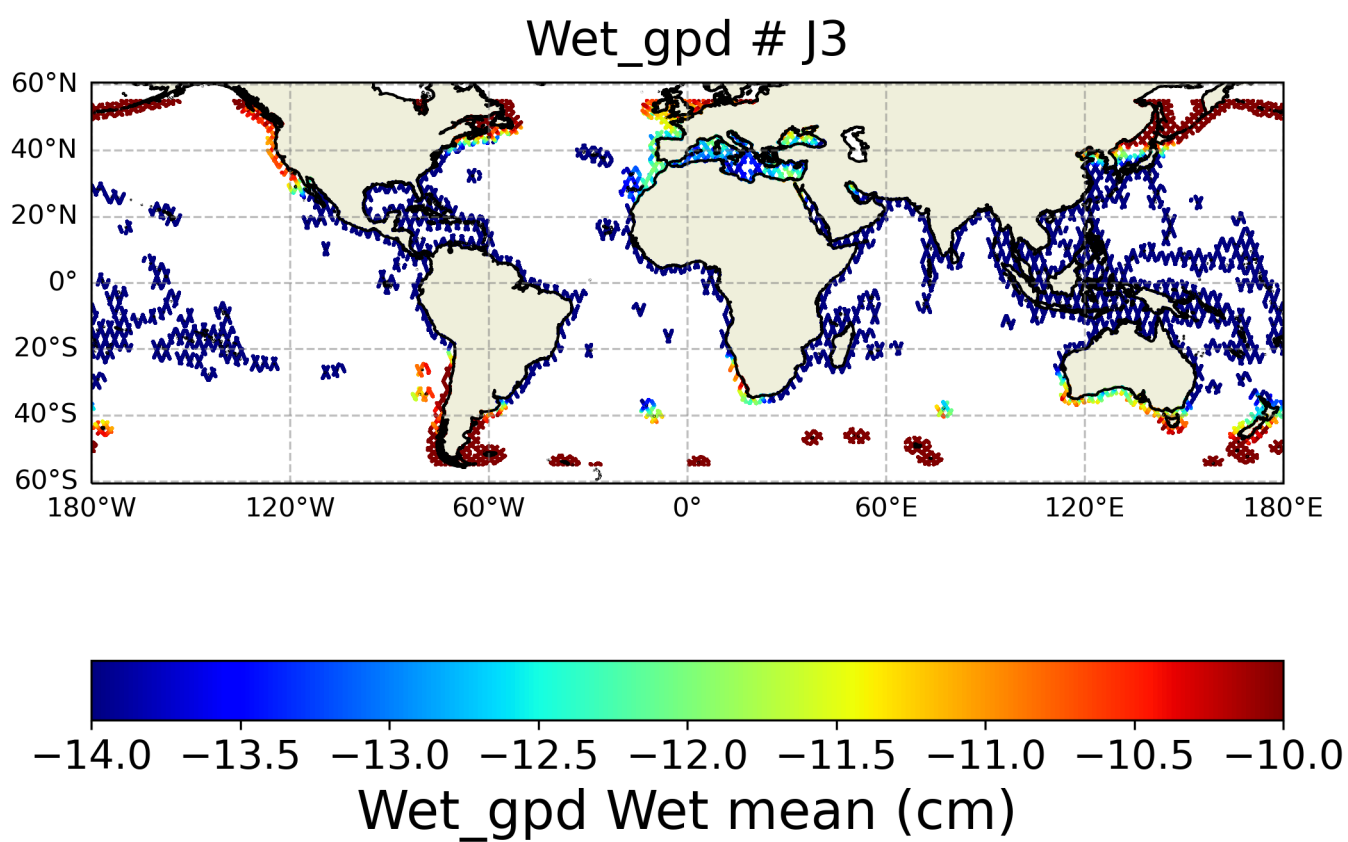


FIGURE 14 – Spatial coherence analysis of the mean of the Wet_gpd version of Wet variable

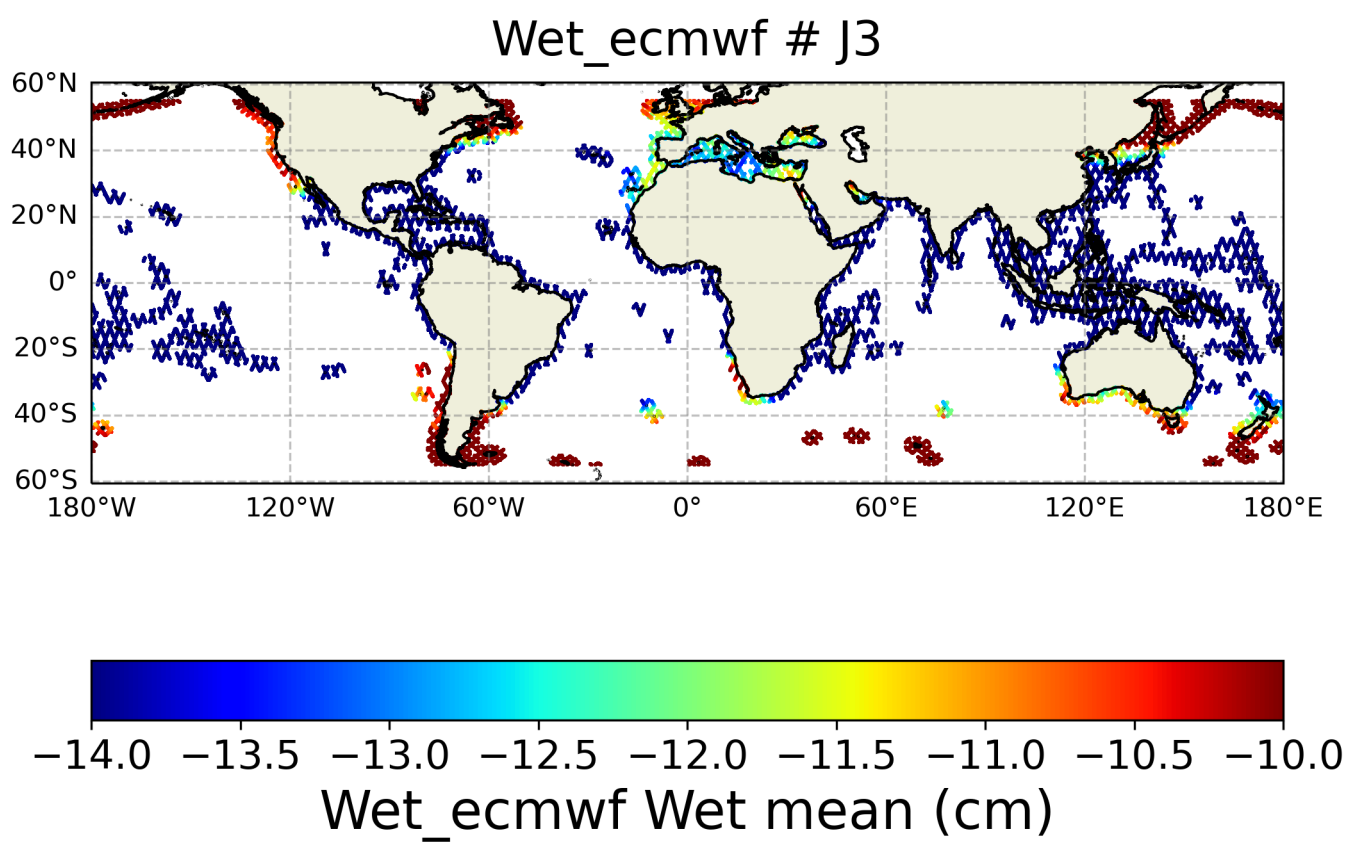


FIGURE 15 – Spatial coherence analysis of the mean of the Wet_ecmwf version of Wet variable

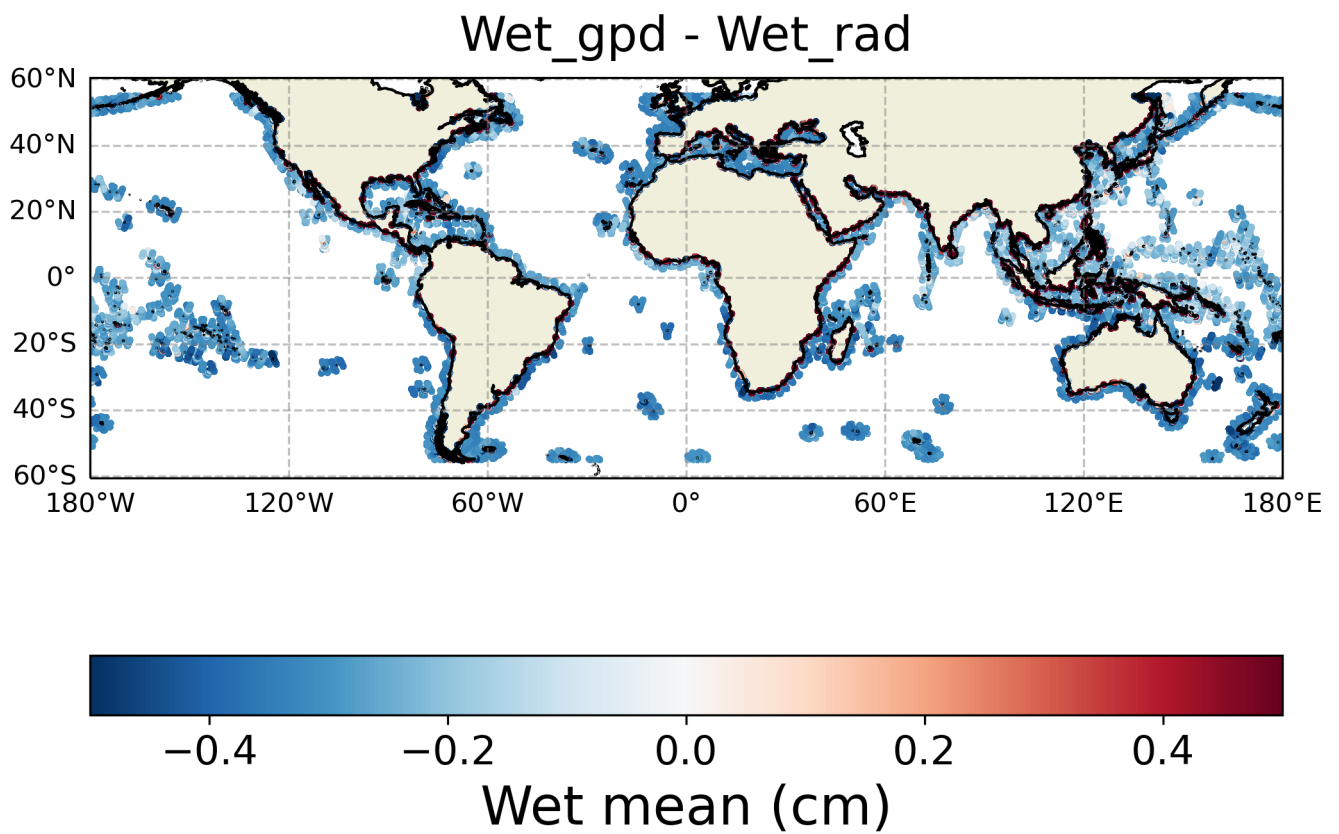


FIGURE 16 – Spatial coherence analysis of the Difference in Wet 's mean between Wet_gpd and Wet_rad

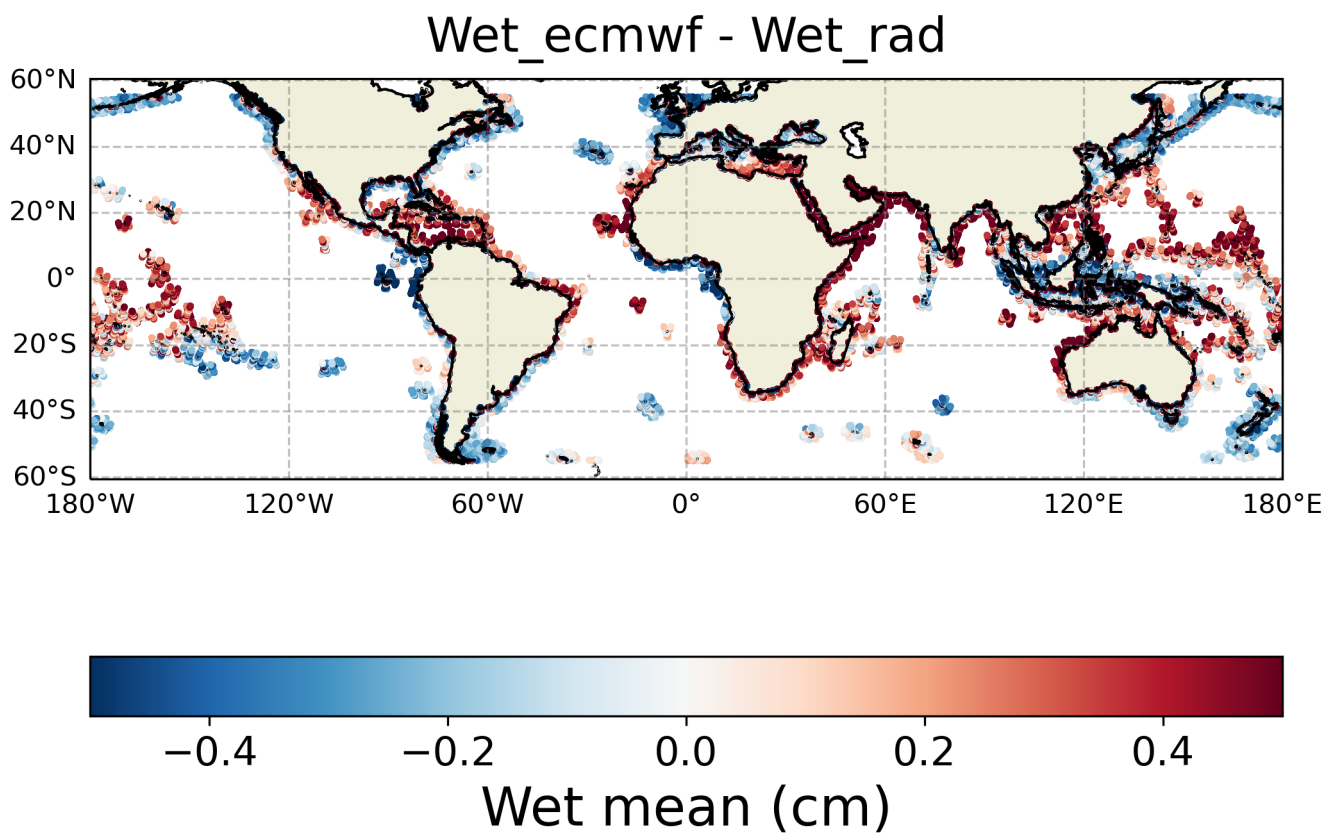


FIGURE 17 – Spatial coherence analysis of the Difference in Wet 's mean between Wet_ecmwf and Wet_rad

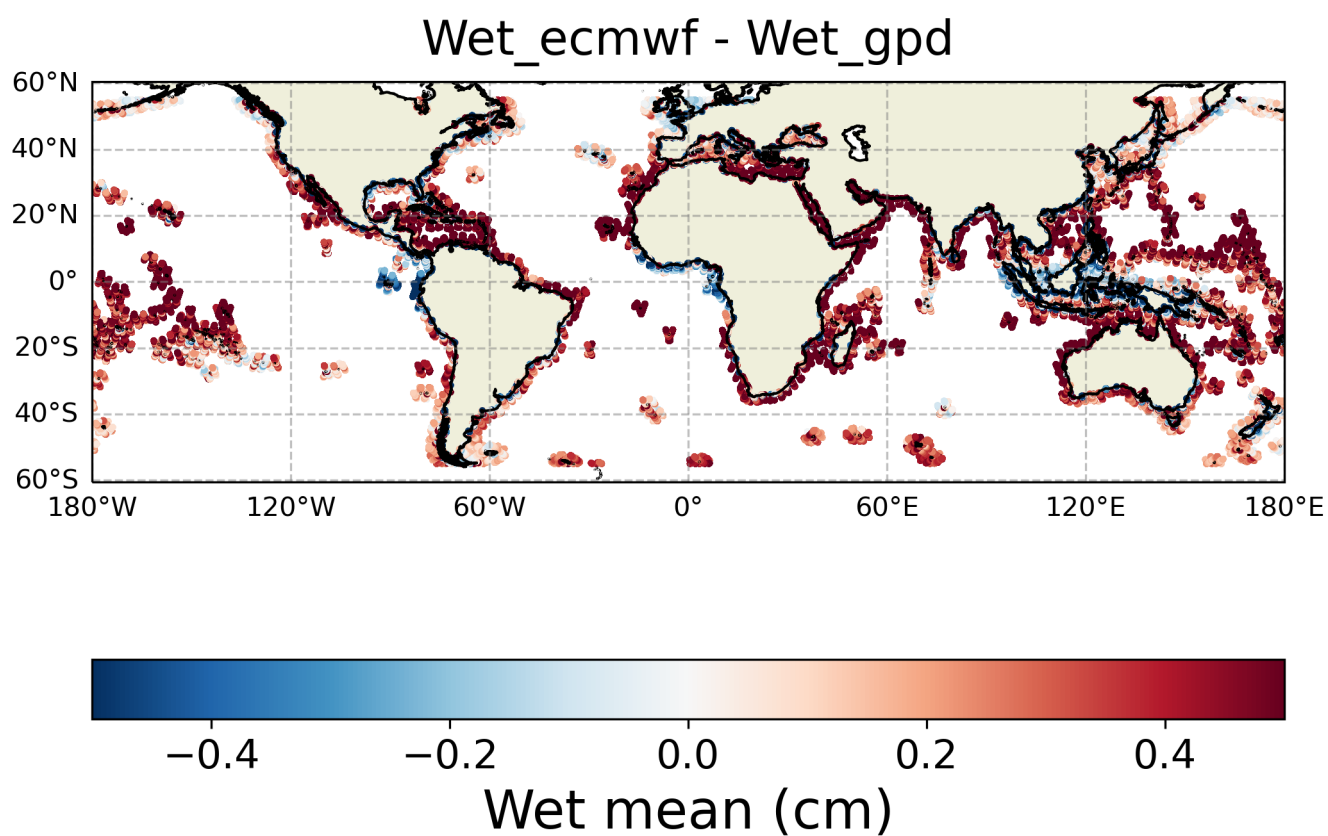


FIGURE 18 – Spatial coherence analysis of the Difference in Wet 's mean between Wet_ecmwf and Wet_gpd

3.2 sla

3.2.1 sla's count

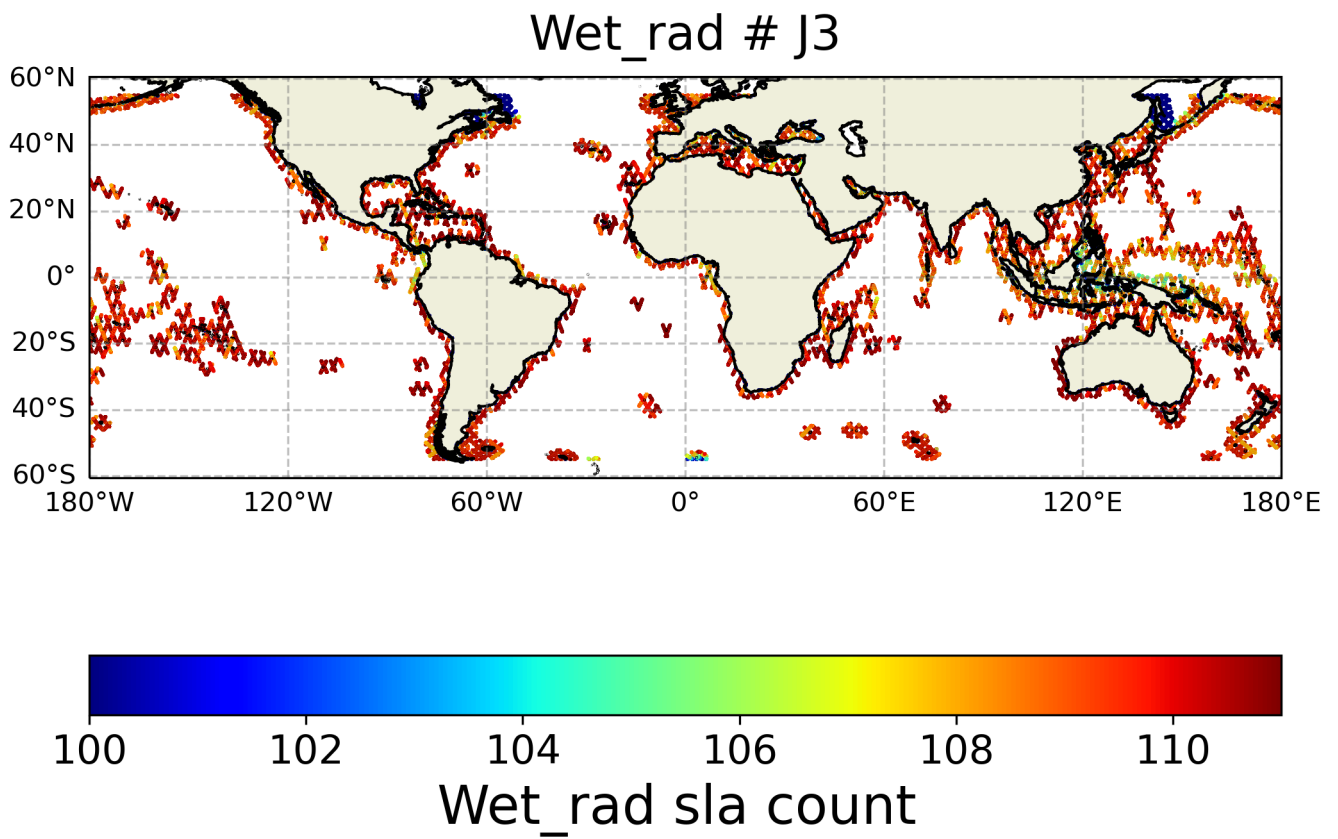


FIGURE 19 – Spatial coherence analysis of the count of the Wet_rad version of sla variable

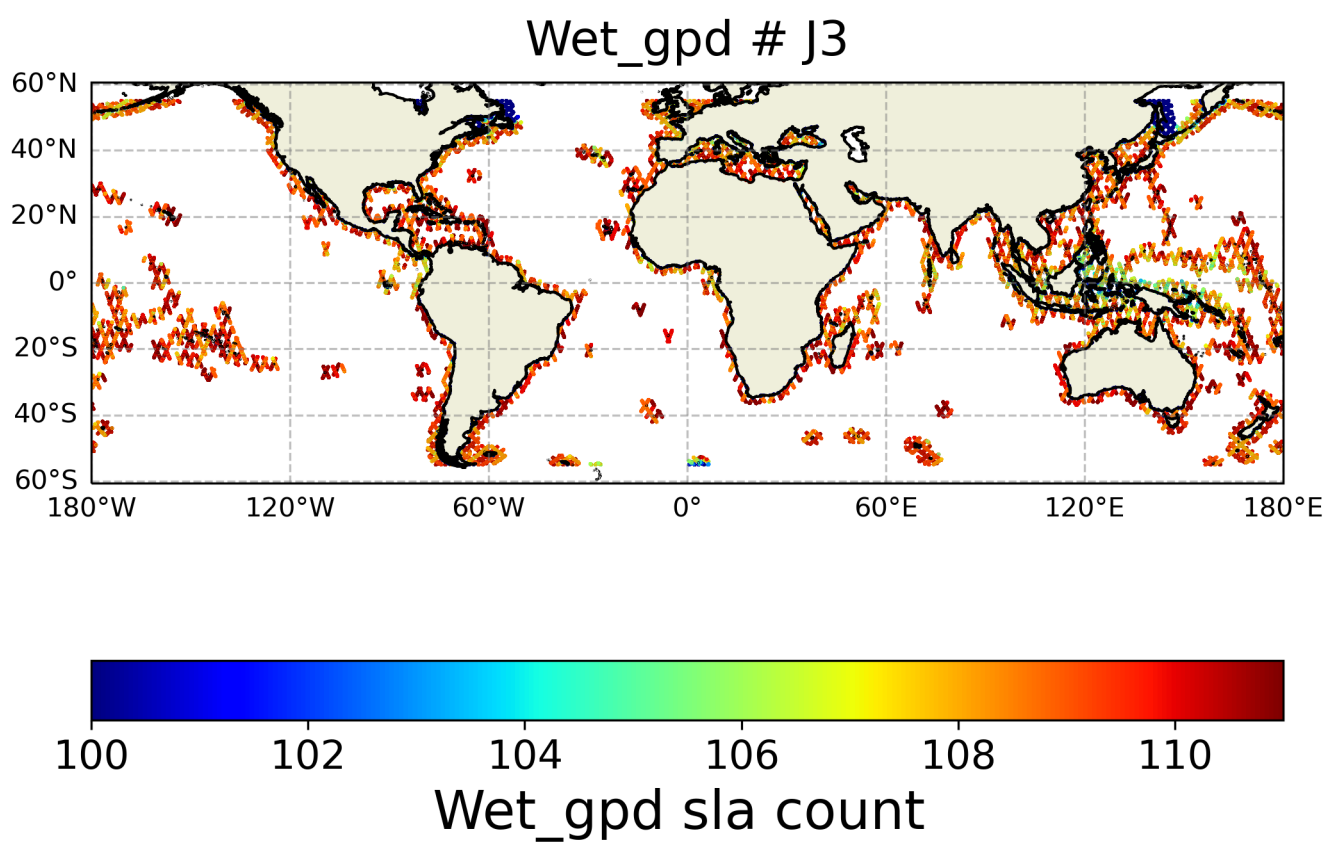


FIGURE 20 – Spatial coherence analysis of the count of the Wet_gpd version of sla variable

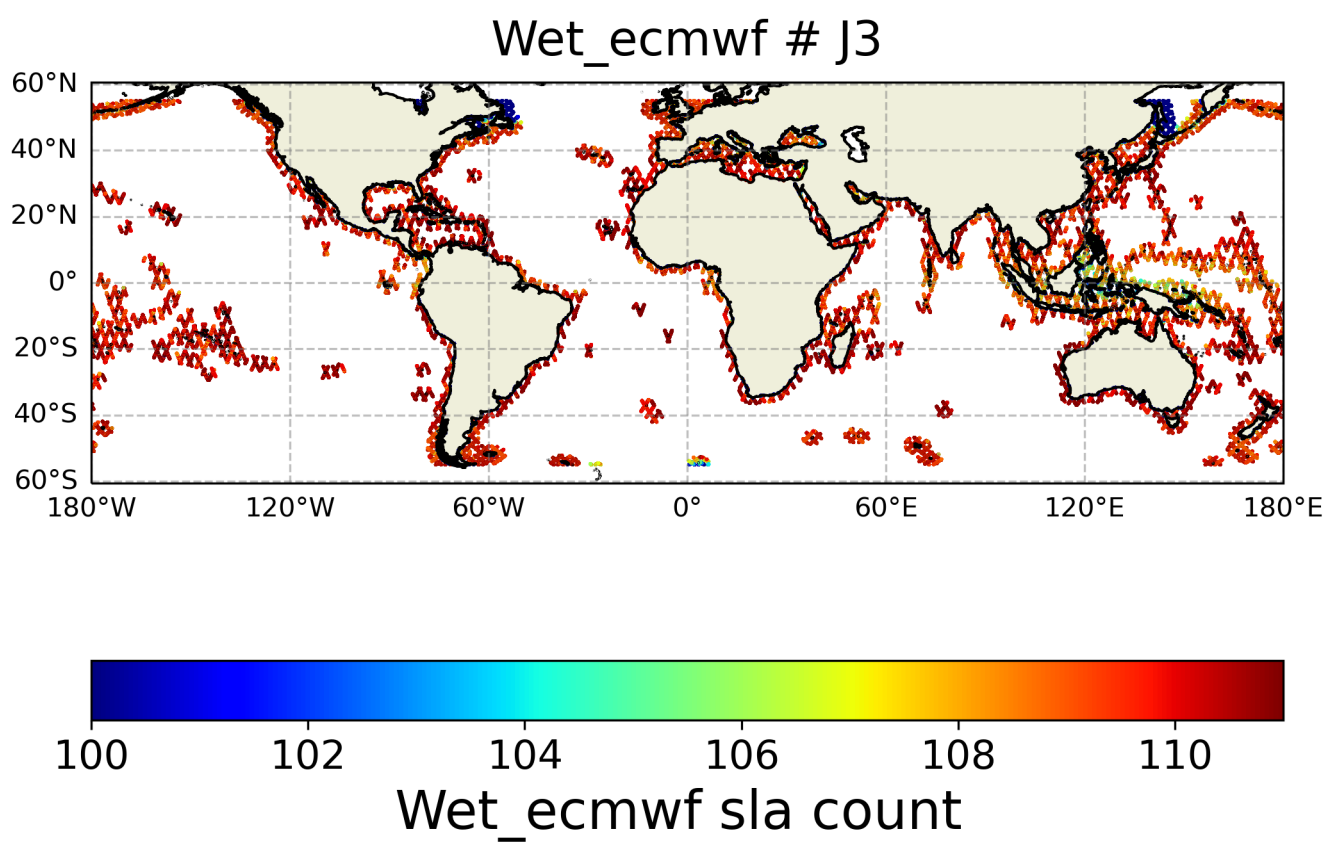


FIGURE 21 – Spatial coherence analysis of the count of the Wet_ecmwf version of sla variable

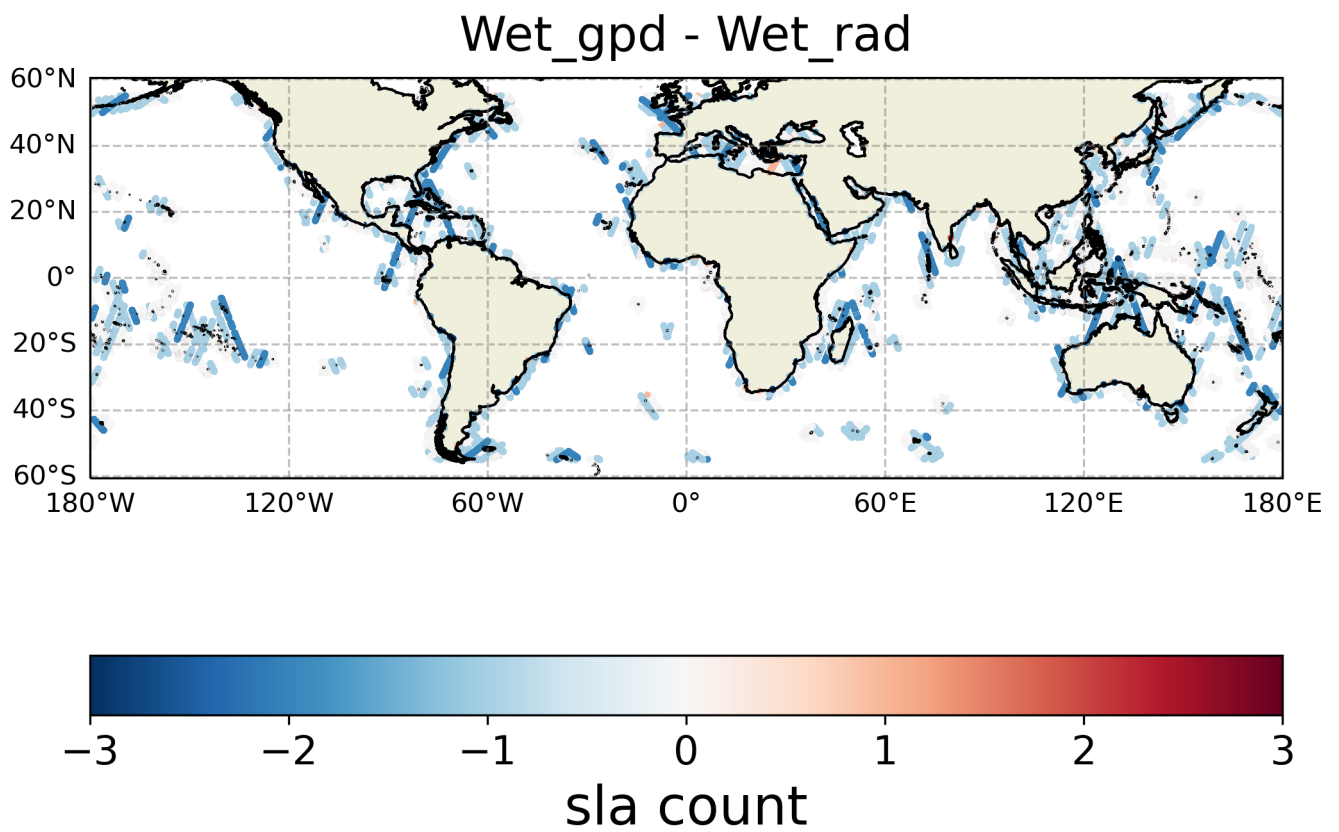


FIGURE 22 – Spatial coherence analysis of the Difference in sla 's count between Wet_gpd and Wet_rad

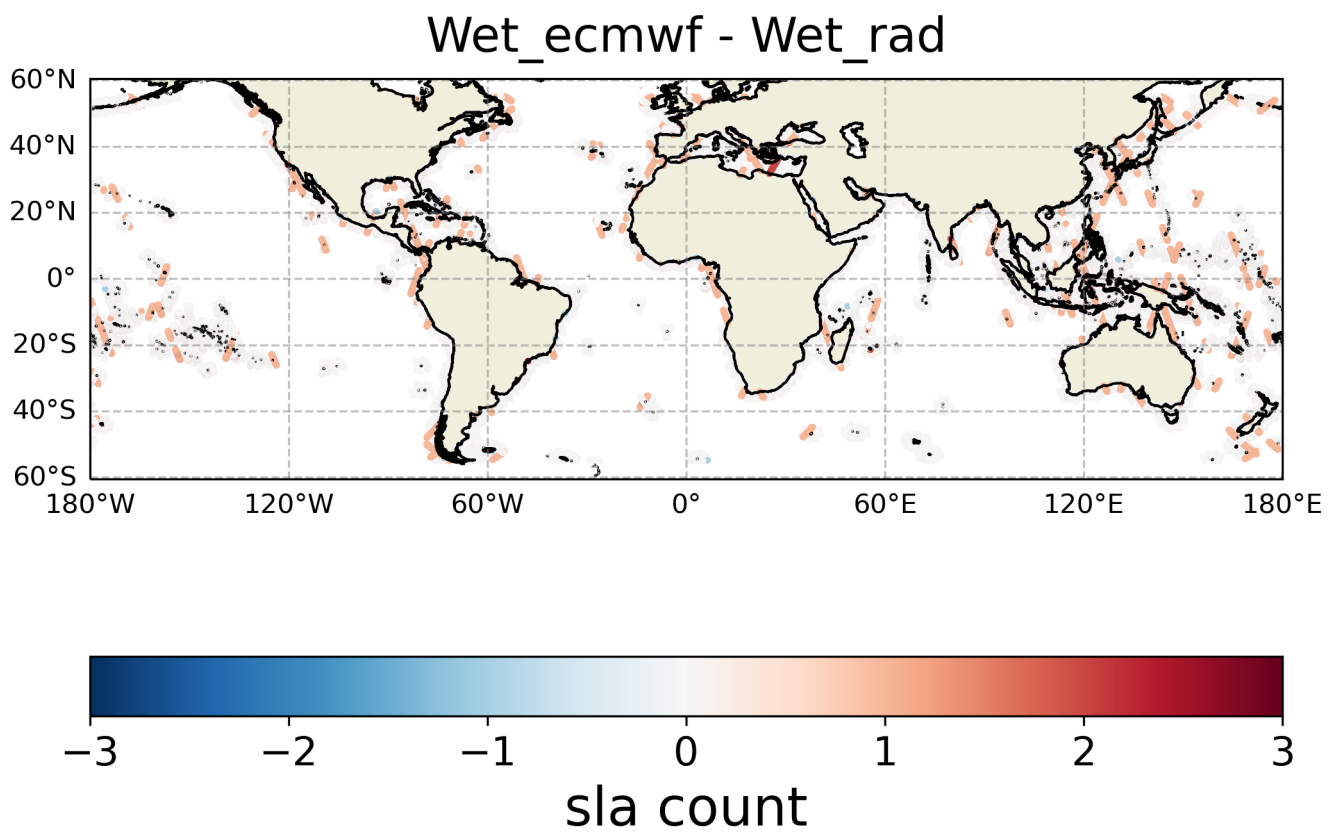


FIGURE 23 – Spatial coherence analysis of the Difference in sla 's count between Wet_ecmwf and Wet_rad

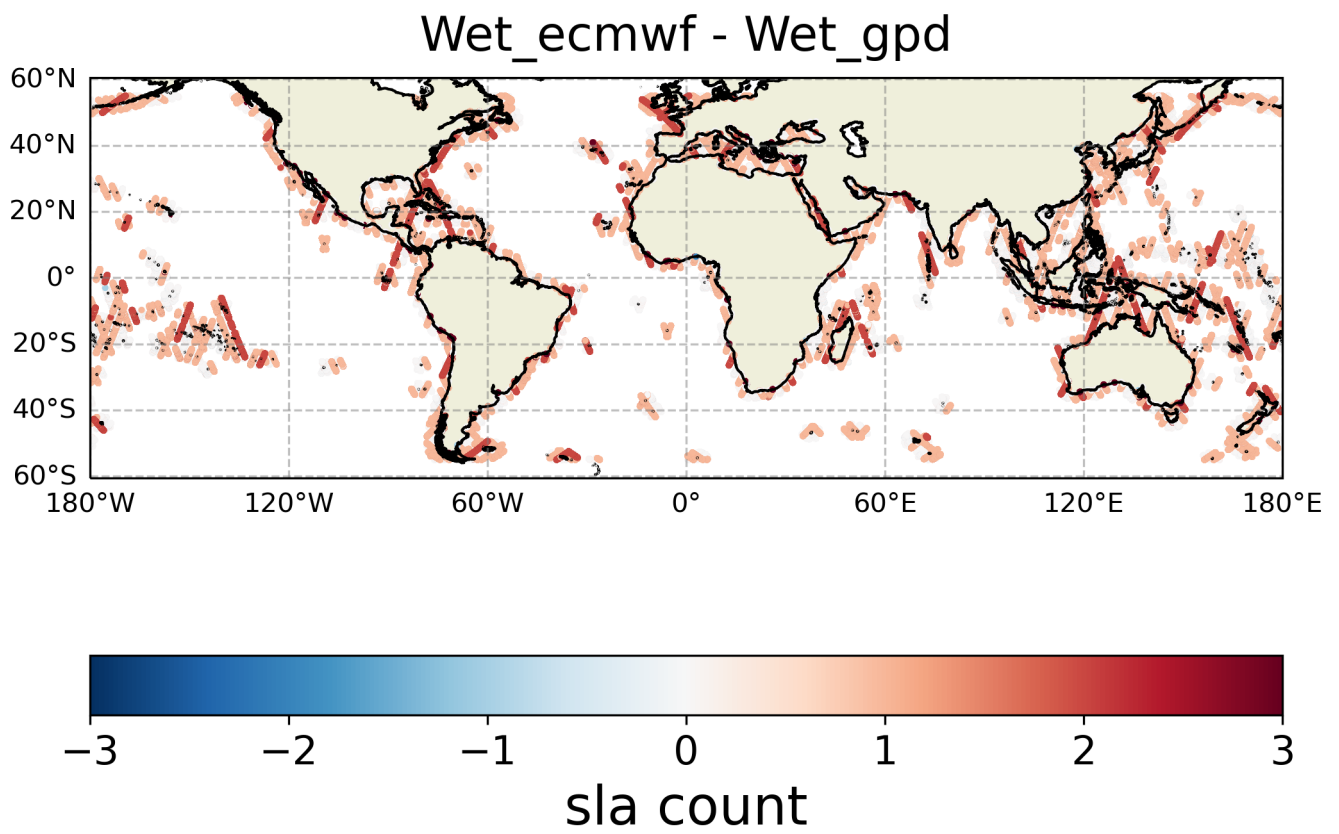


FIGURE 24 – Spatial coherence analysis of the Difference in sla 's count between Wet_ecmwf and Wet_gpd

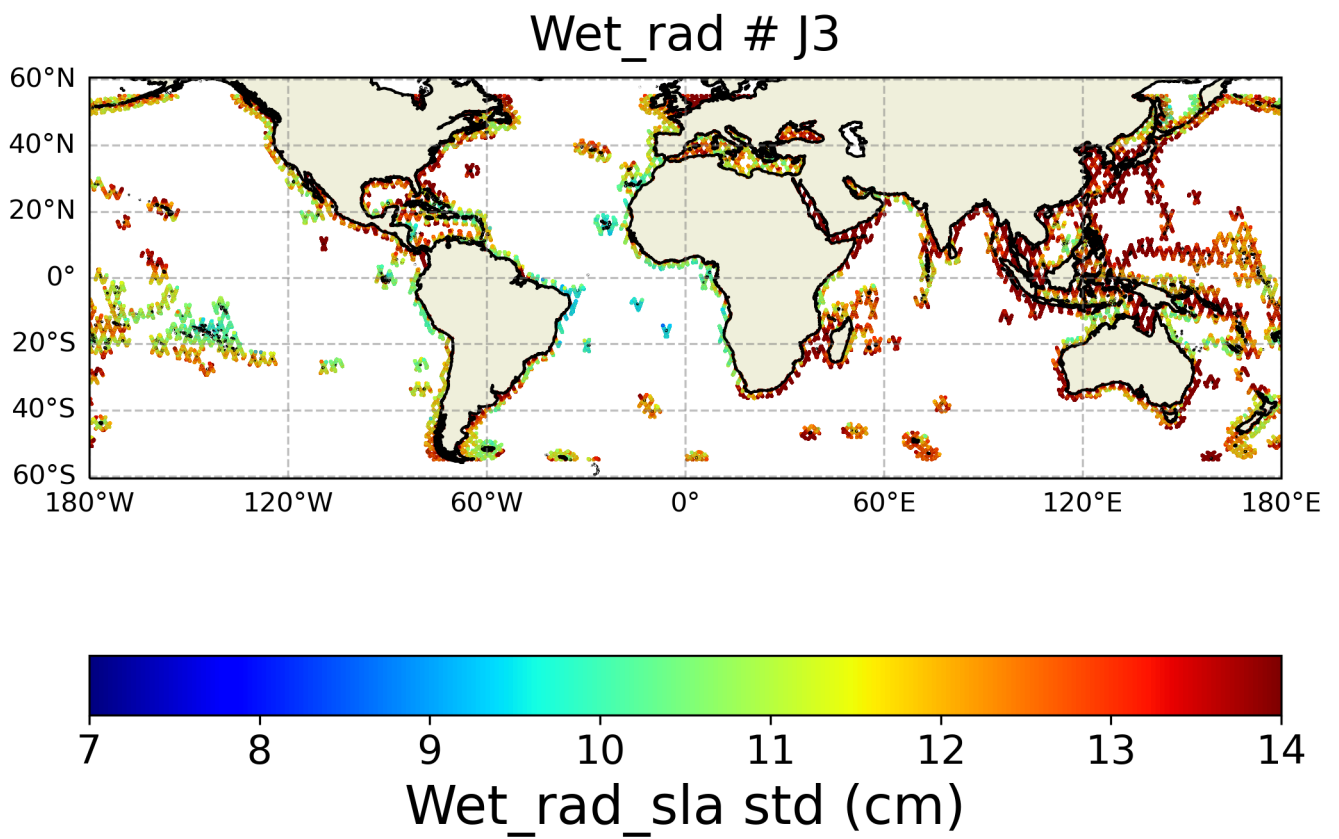


FIGURE 25 – Spatial coherence analysis of the std of the Wet_rad version of sla variable

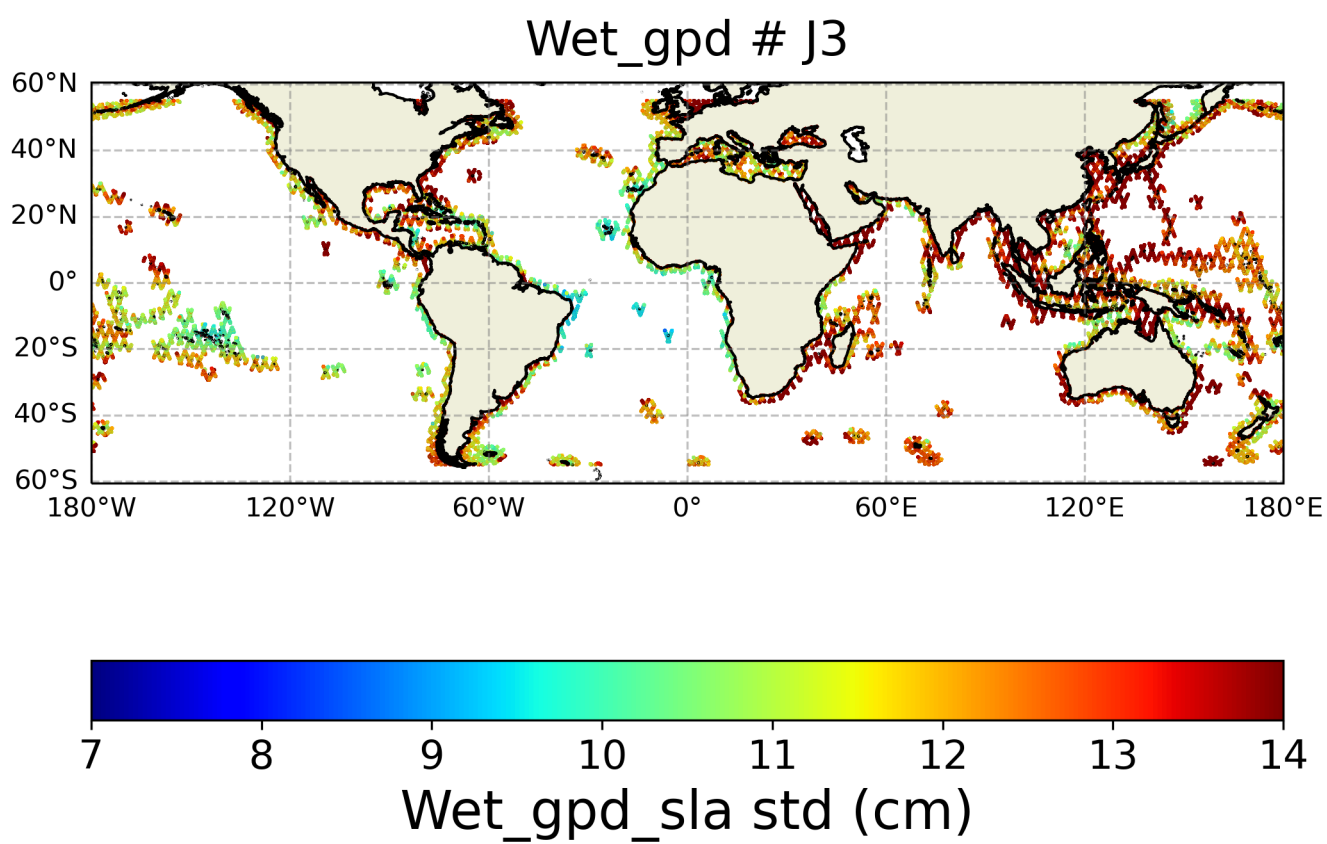


FIGURE 26 – Spatial coherence analysis of the std of the Wet_gpd version of sla variable

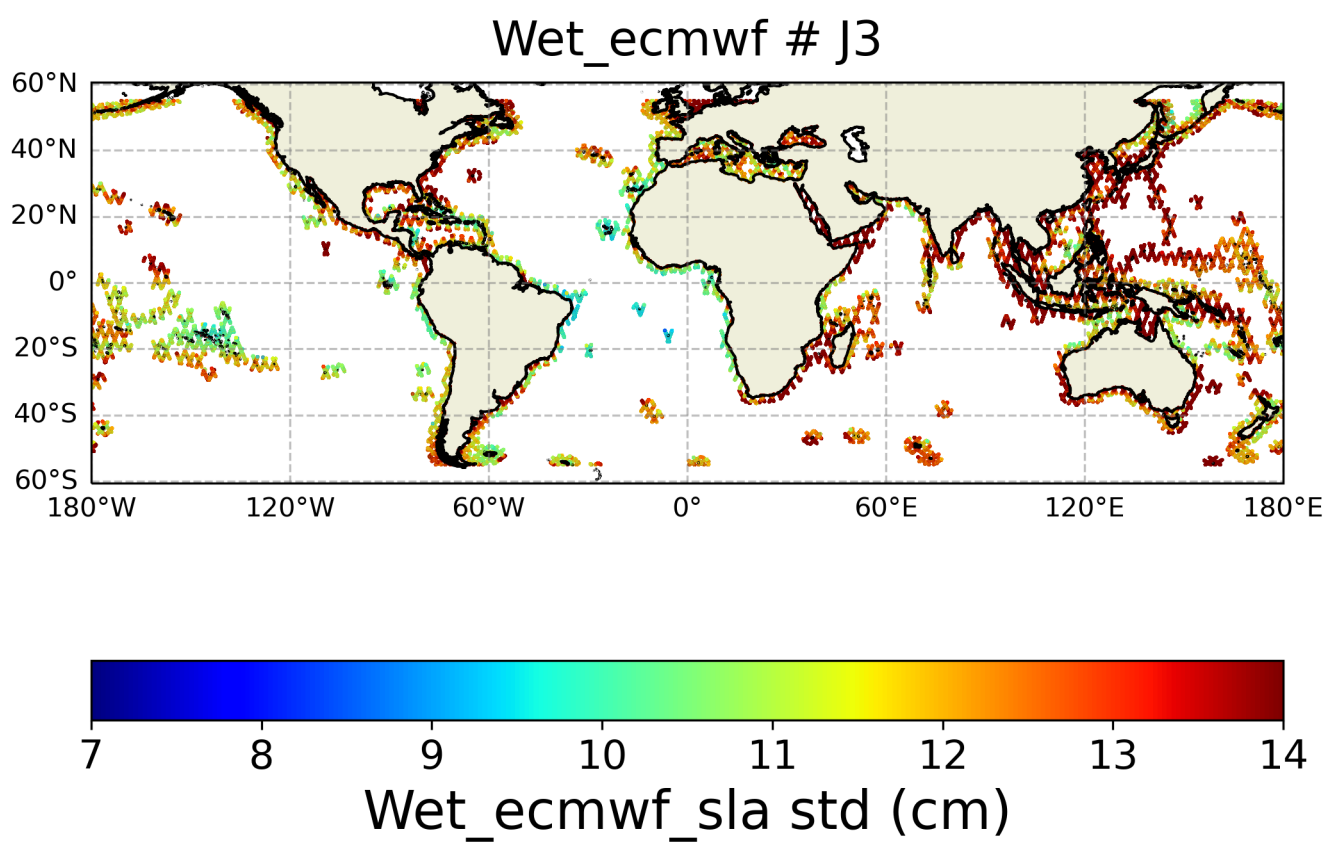


FIGURE 27 – Spatial coherence analysis of the std of the Wet_ecmwf version of sla variable

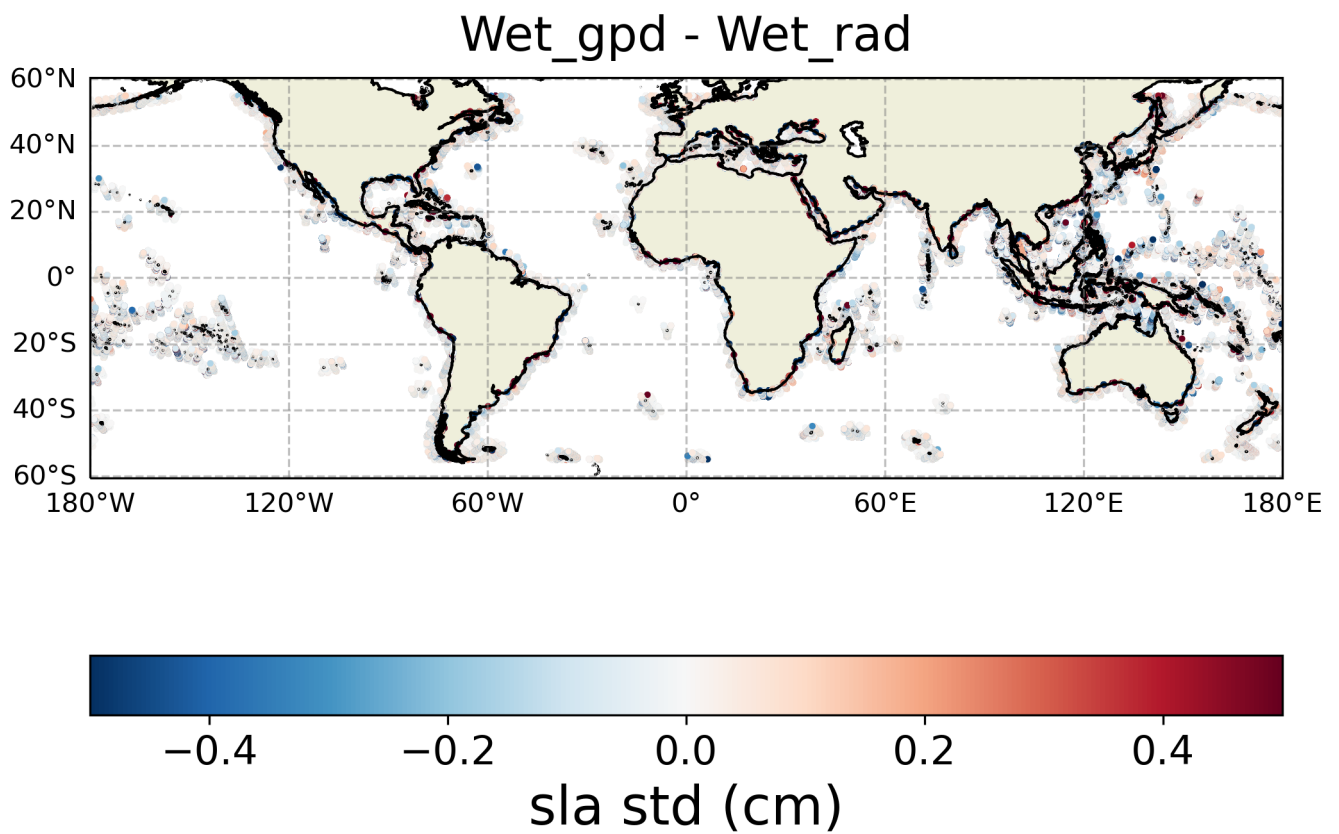


FIGURE 28 – Spatial coherence analysis of the Difference in sla 's std between Wet_gpd and Wet_rad

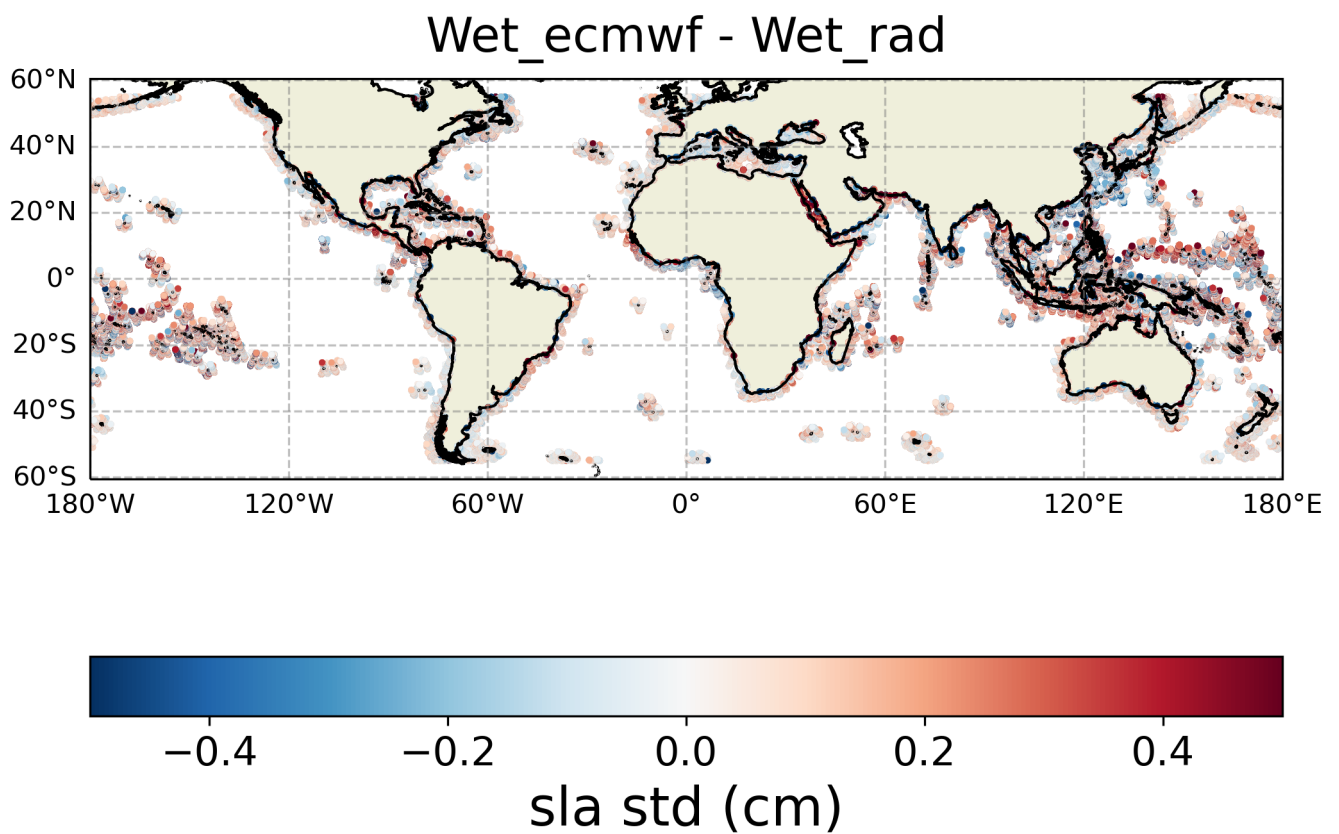


FIGURE 29 – Spatial coherence analysis of the Difference in sla 's std between Wet_ecmwf and Wet_rad

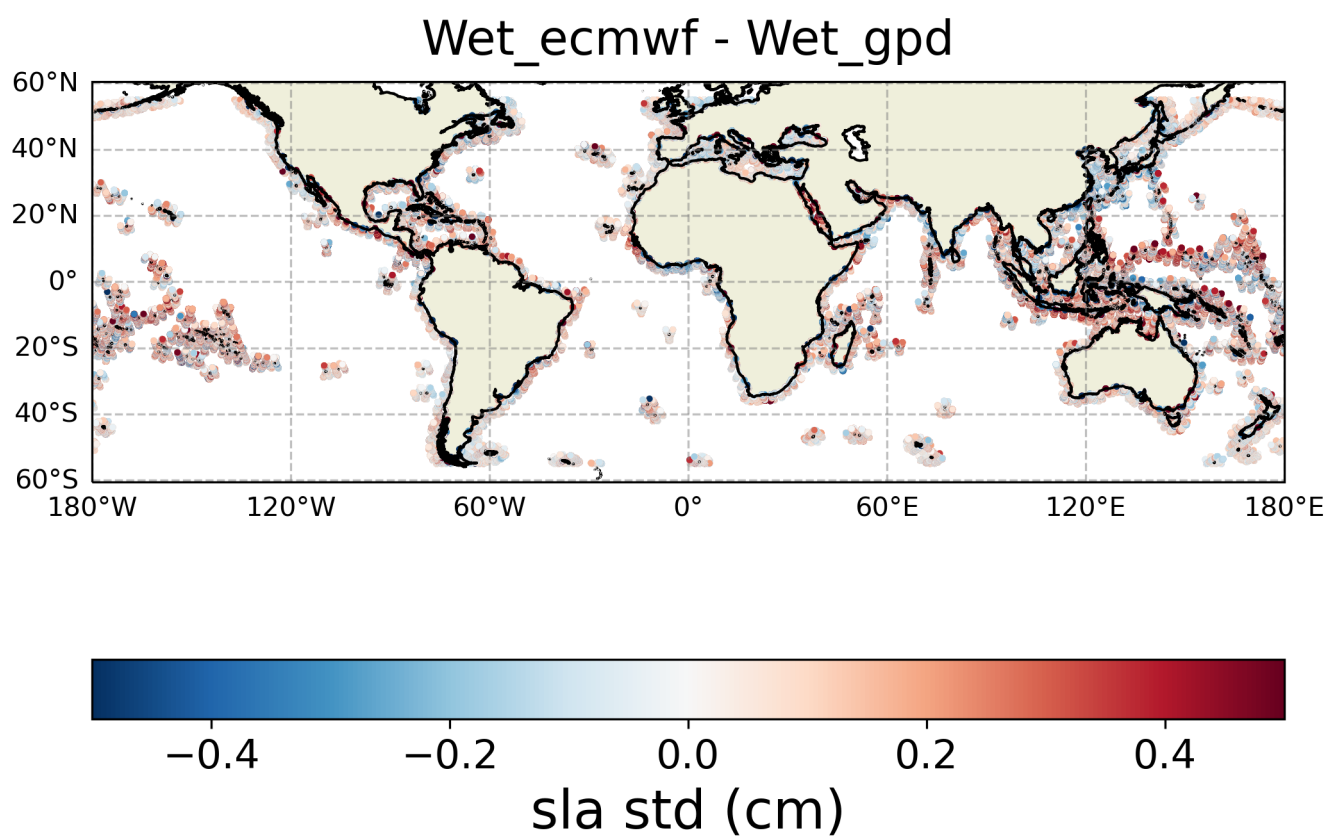


FIGURE 30 – Spatial coherence analysis of the Difference in sla 's std between Wet_ecmwf and Wet_gpd

3.2.3 sla's mean

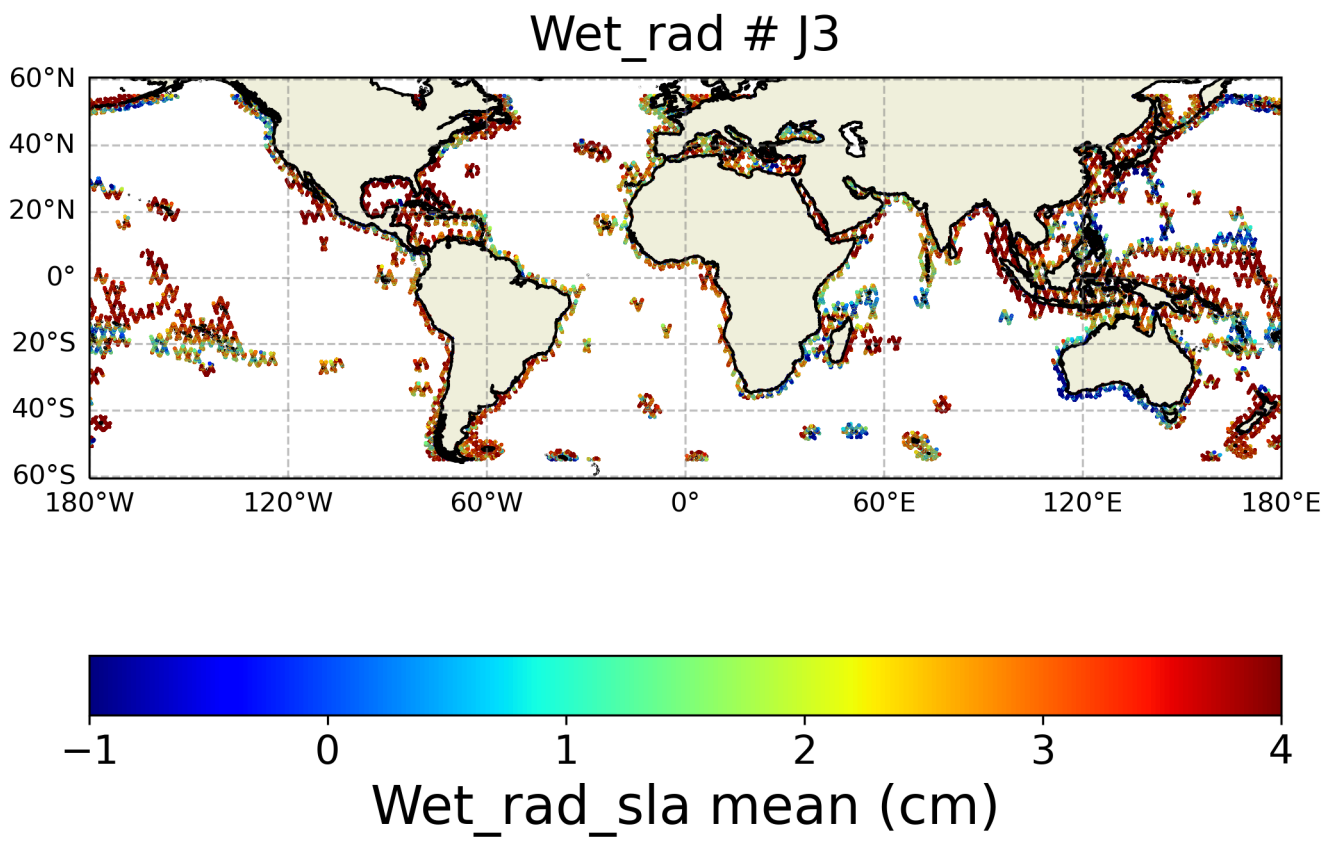


FIGURE 31 – Spatial coherence analysis of the mean of the Wet_rad version of sla variable

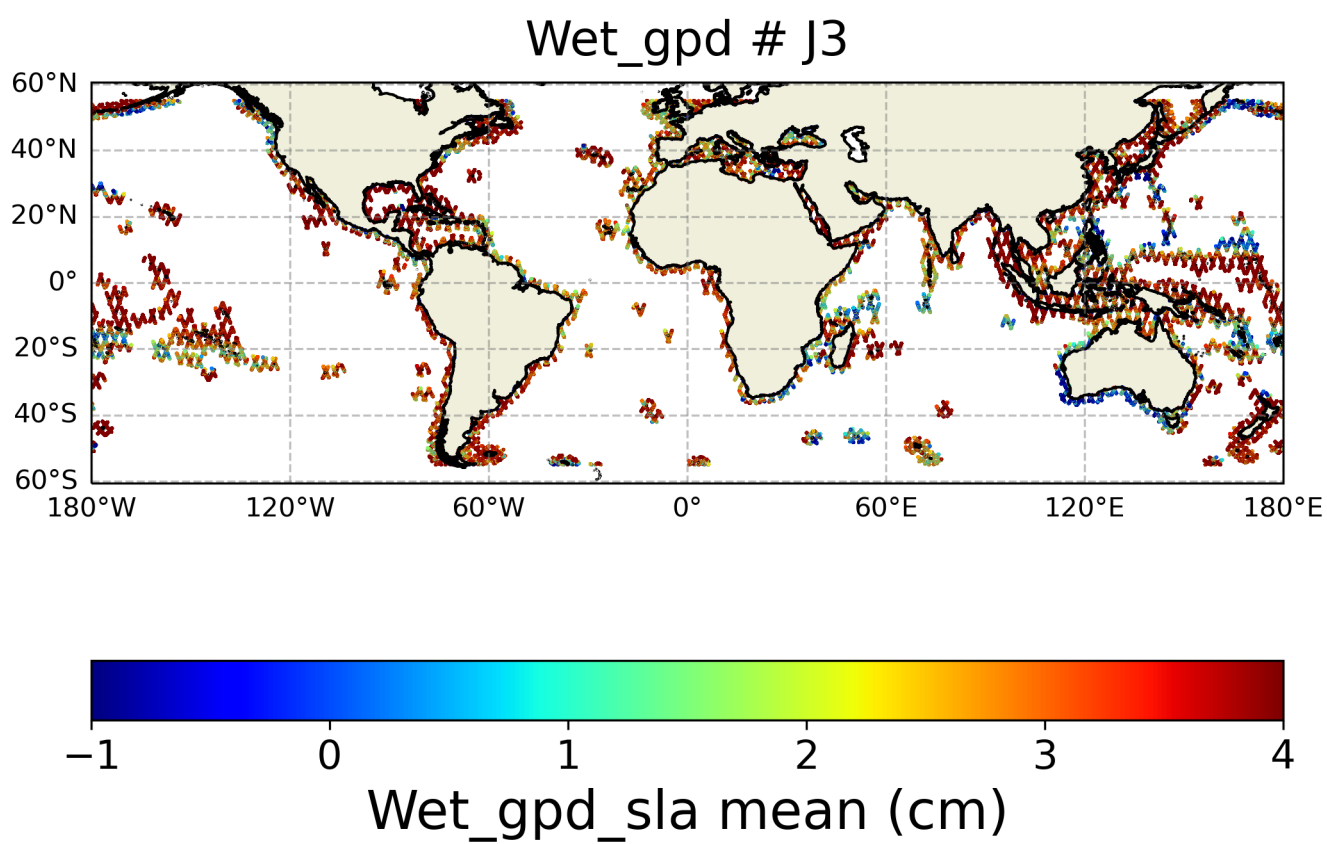


FIGURE 32 – Spatial coherence analysis of the mean of the Wet_gpd version of sla variable

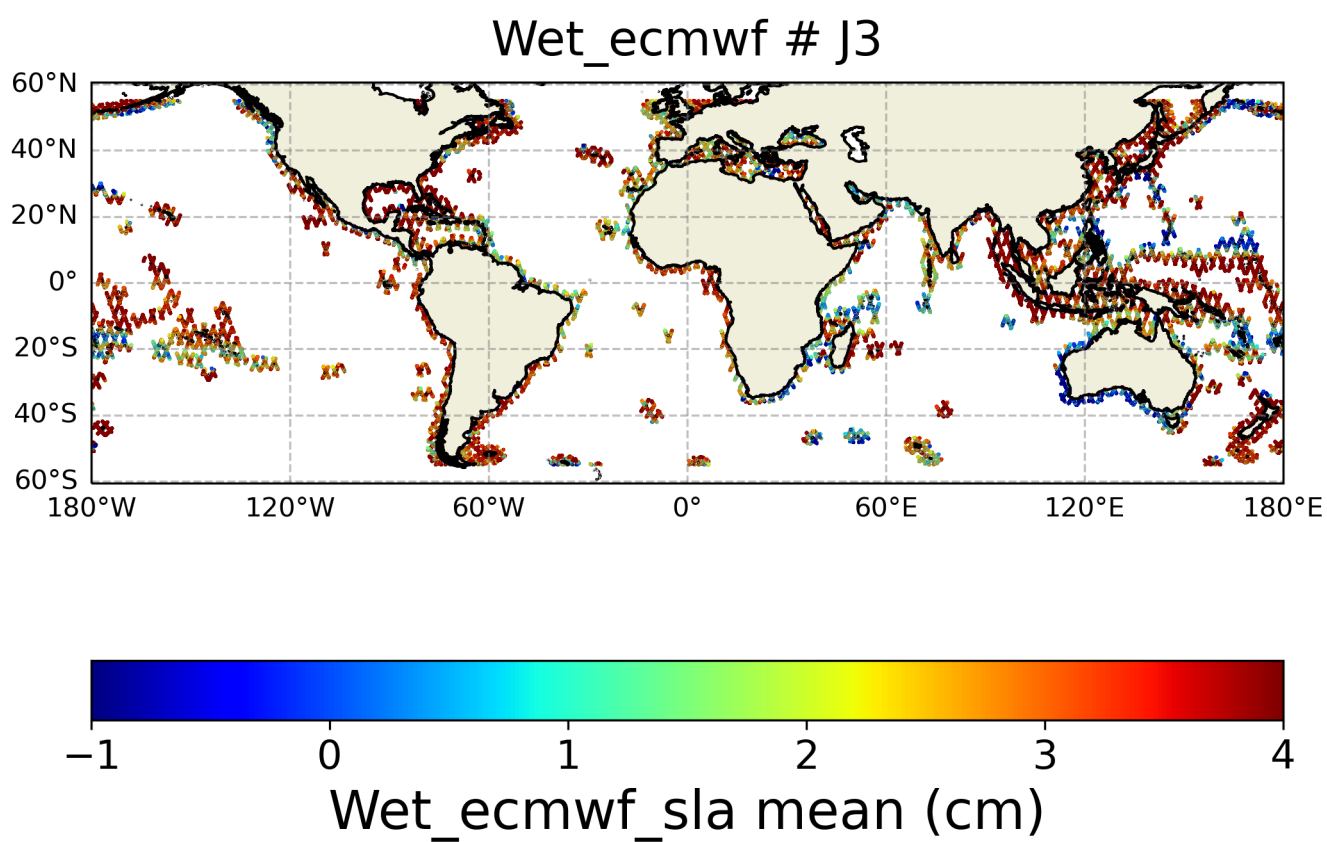


FIGURE 33 – Spatial coherence analysis of the mean of the Wet_ecmwf version of sla variable

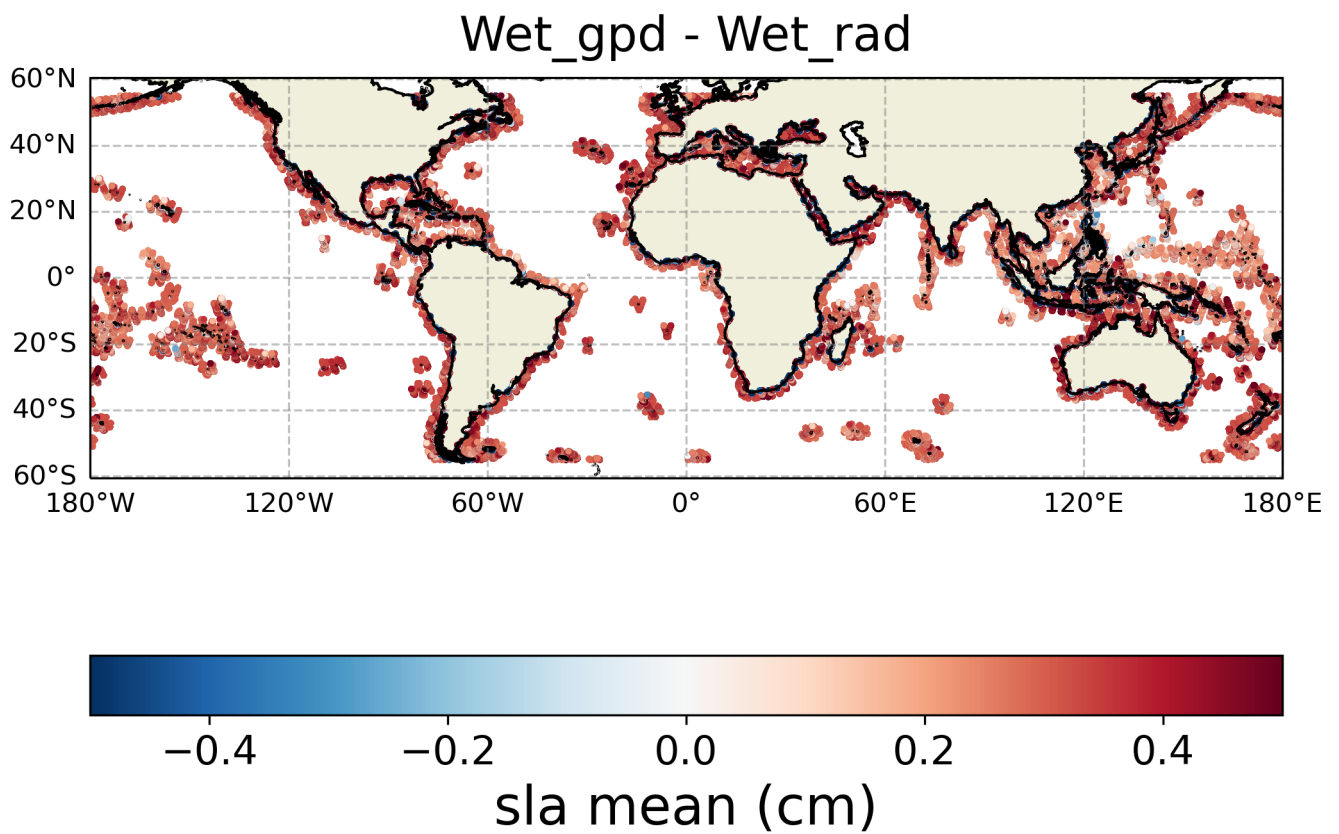


FIGURE 34 – Spatial coherence analysis of the Difference in sla 's mean between Wet_gpd and Wet_rad

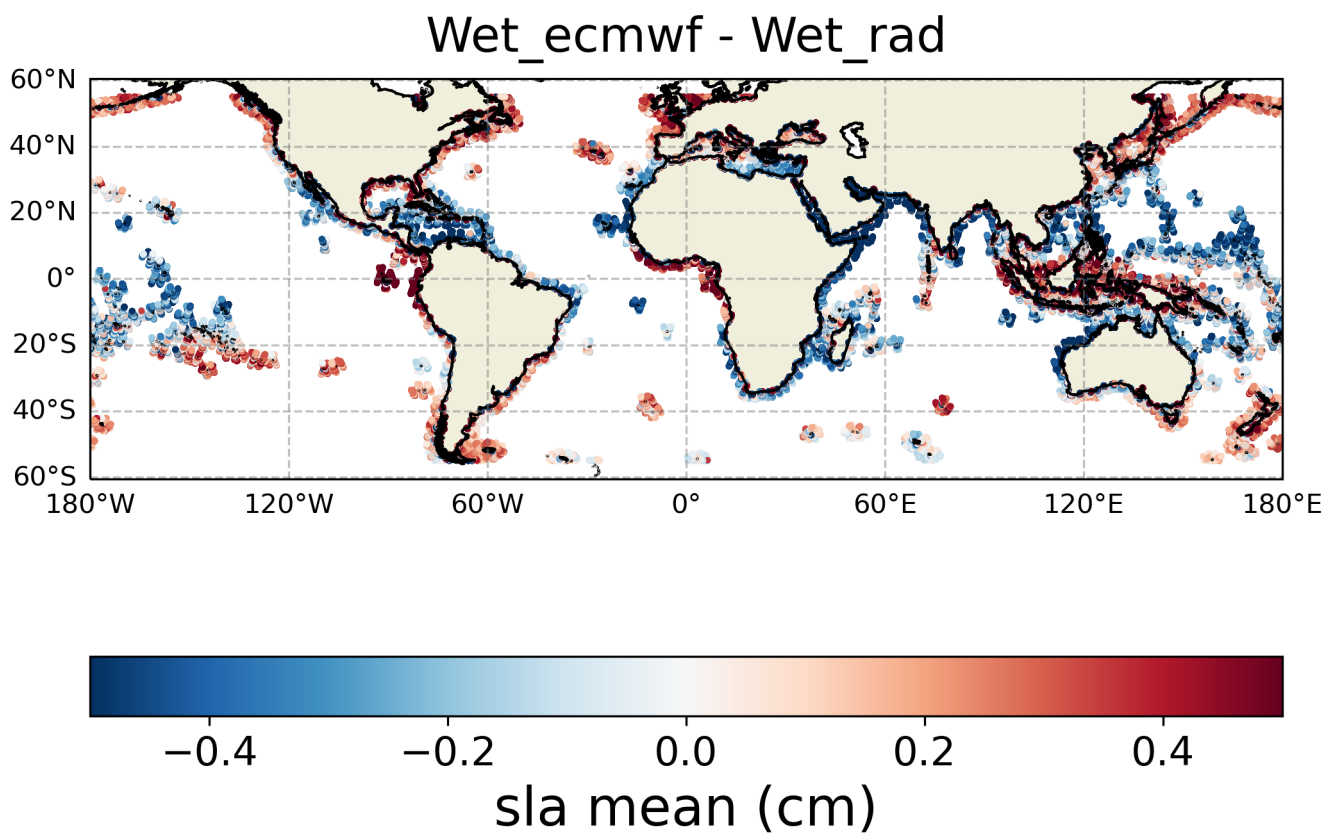


FIGURE 35 – Spatial coherence analysis of the Difference in sla 's mean between Wet_ecmwf and Wet_rad

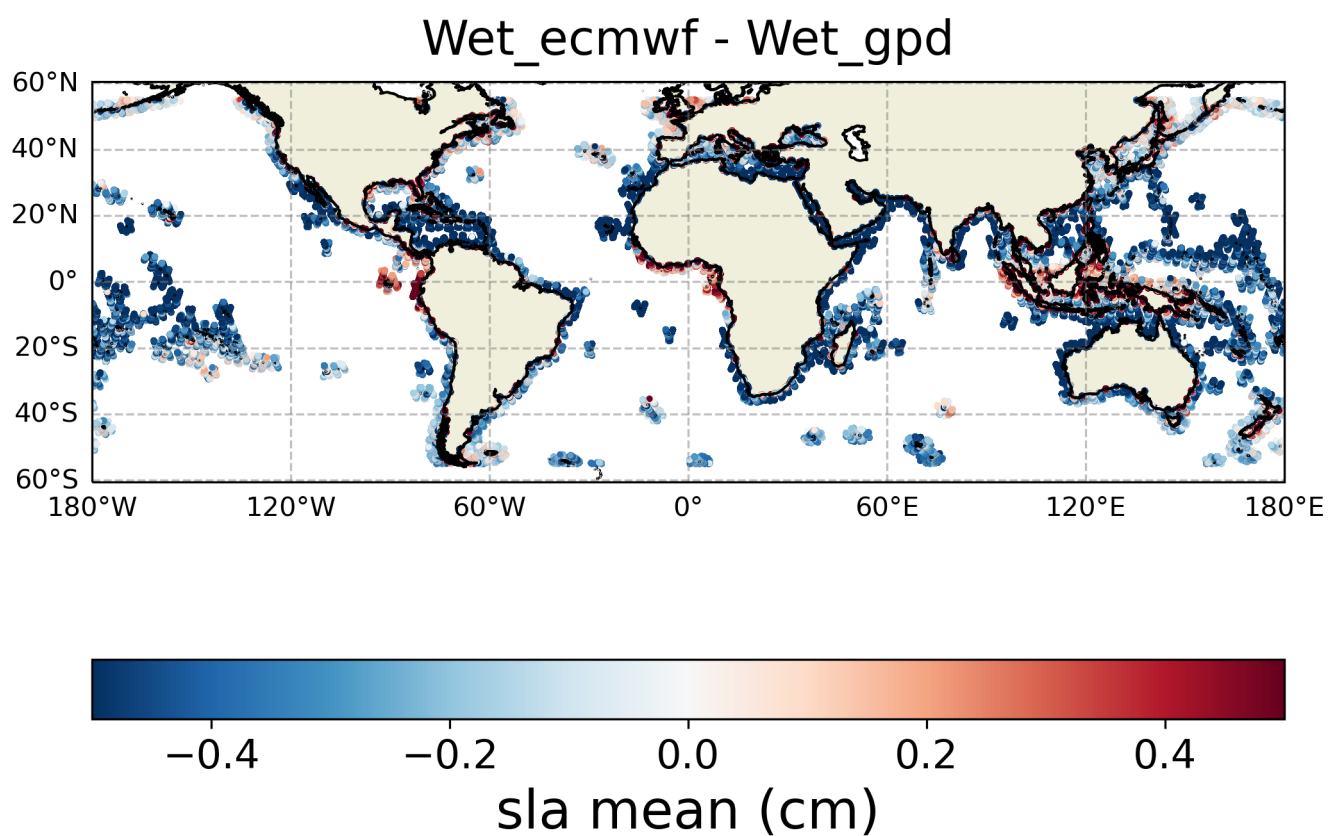


FIGURE 36 – Spatial coherence analysis of the Difference in sla 's mean between Wet_ecmwf and Wet_gpd

4 Histograms

4.1 Wet

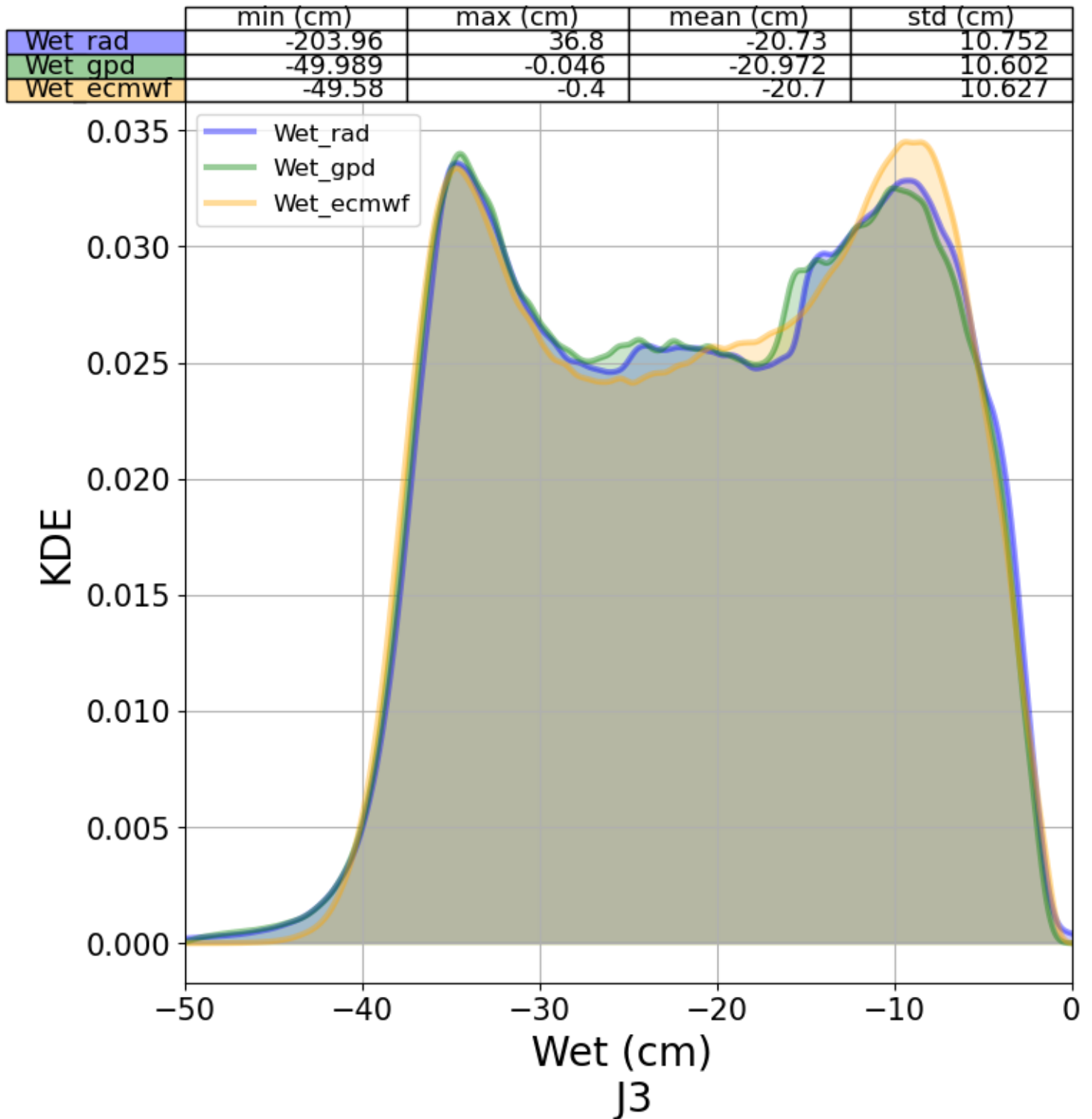


FIGURE 37 – Histogram of each of Wet version

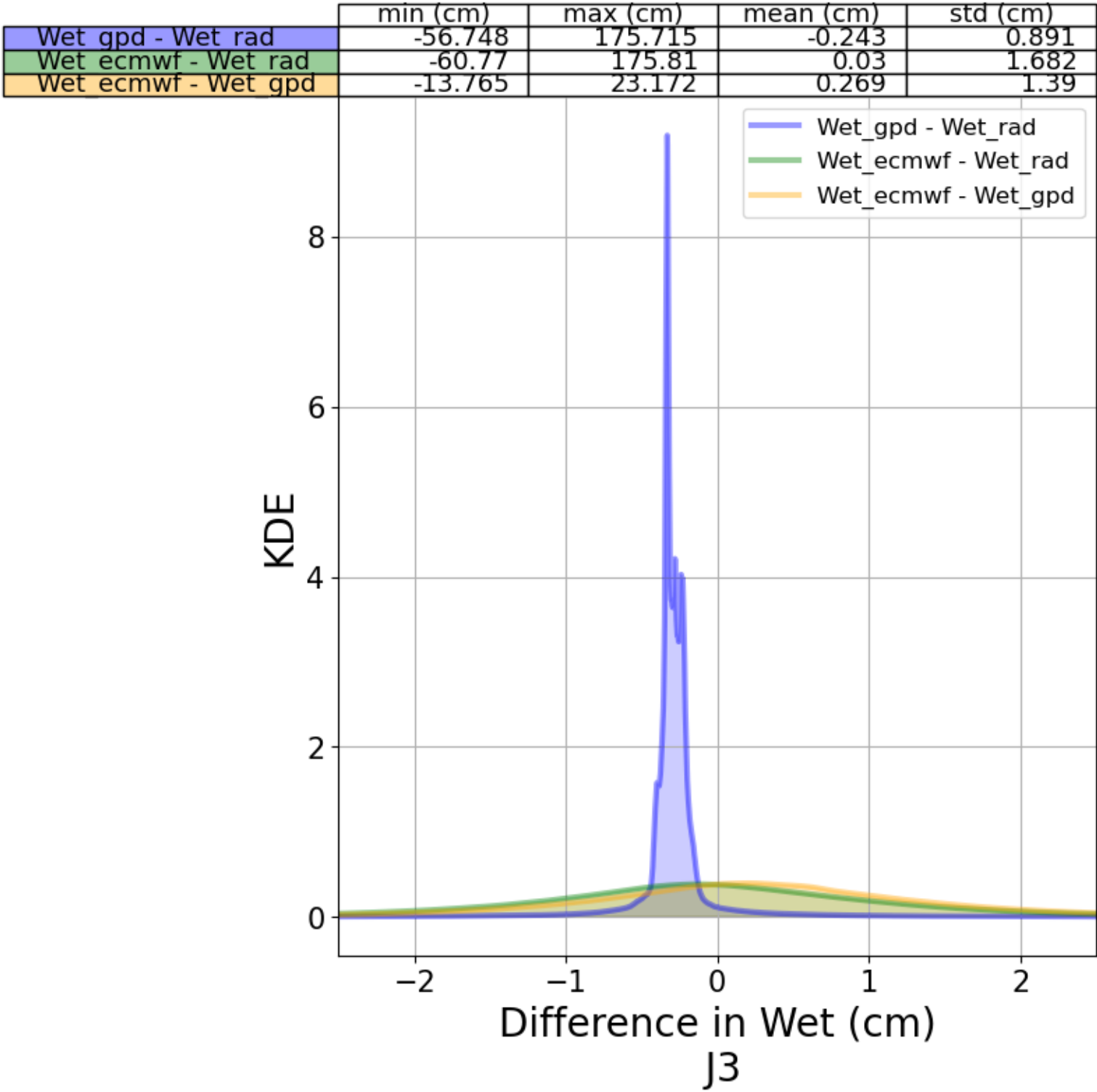


FIGURE 38 – Histograms of difference of each Wet version and reference one

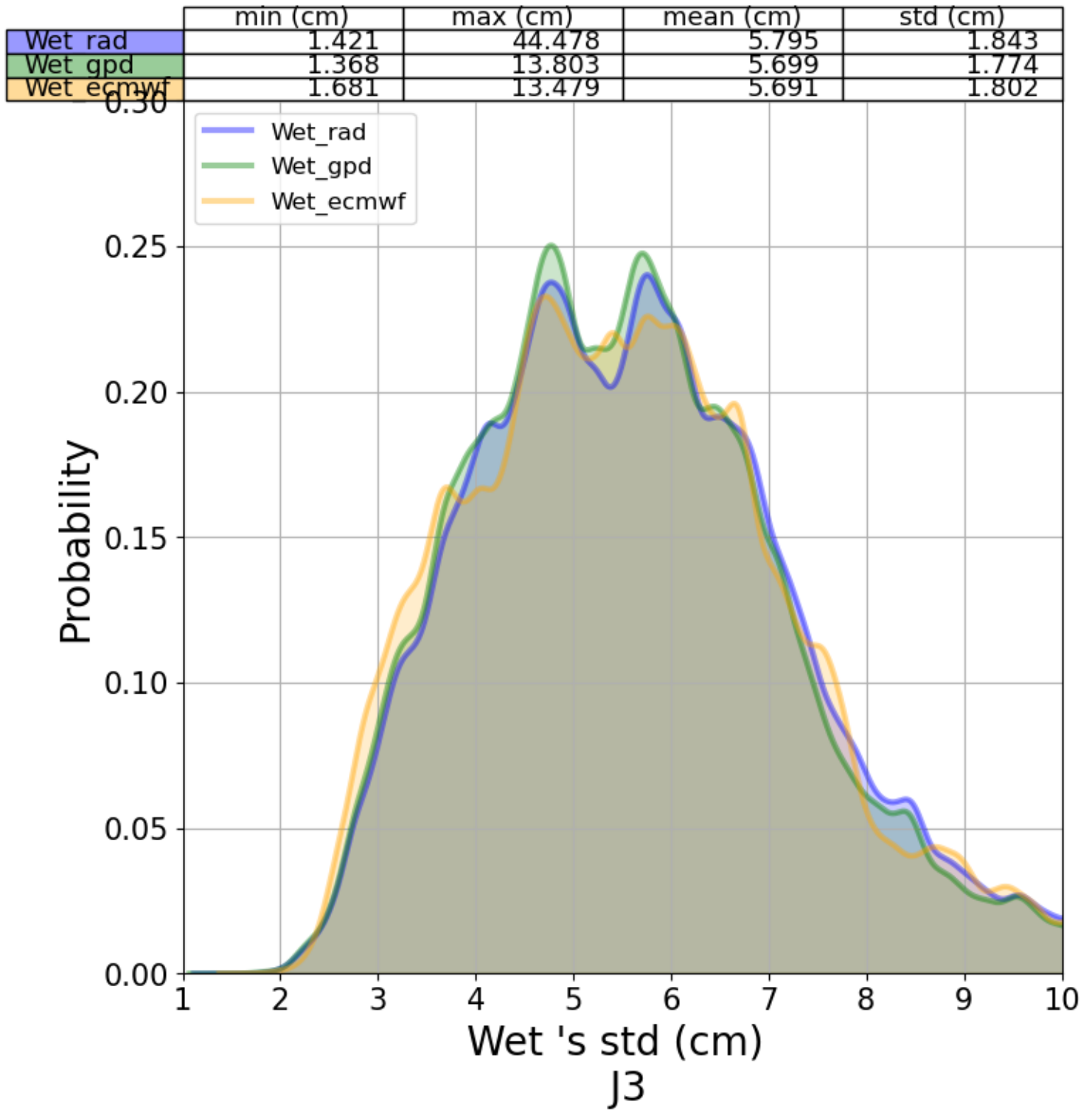


FIGURE 39 – Histograms of the standard deviation of each Wet version

4.2 sla

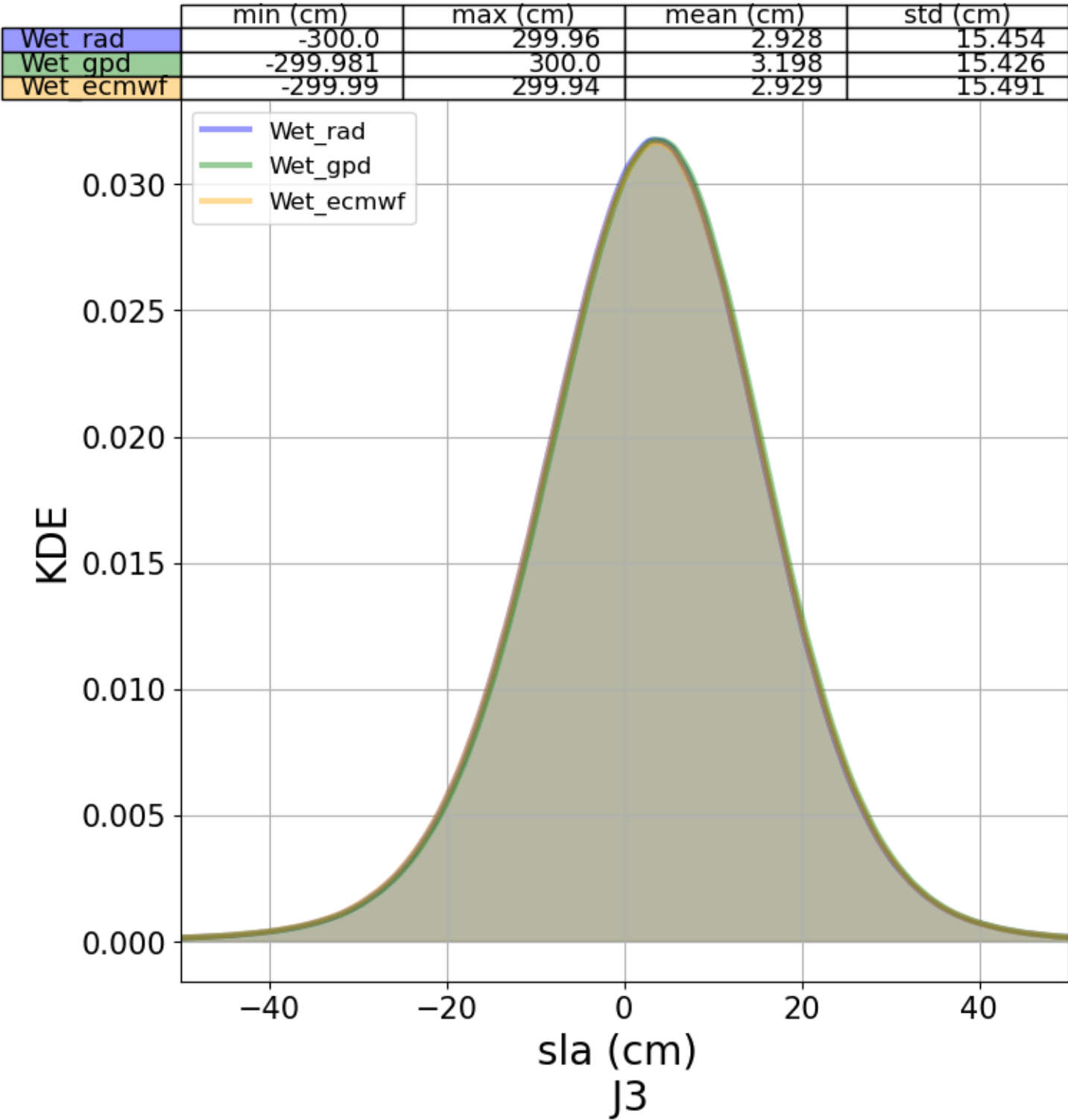


FIGURE 40 – Histogram of each of sla version

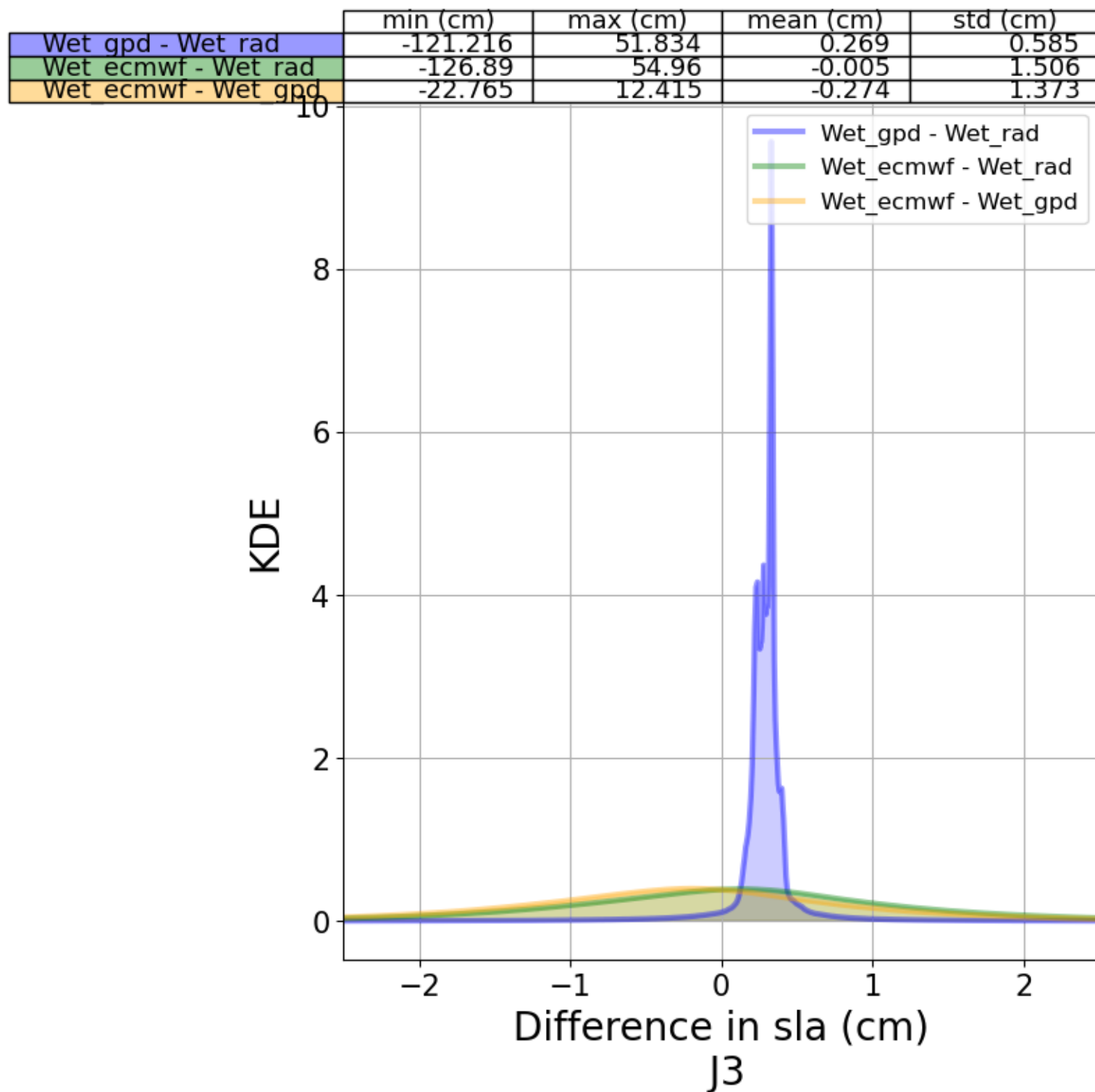


FIGURE 41 – Histograms of difference of each sla version and reference one

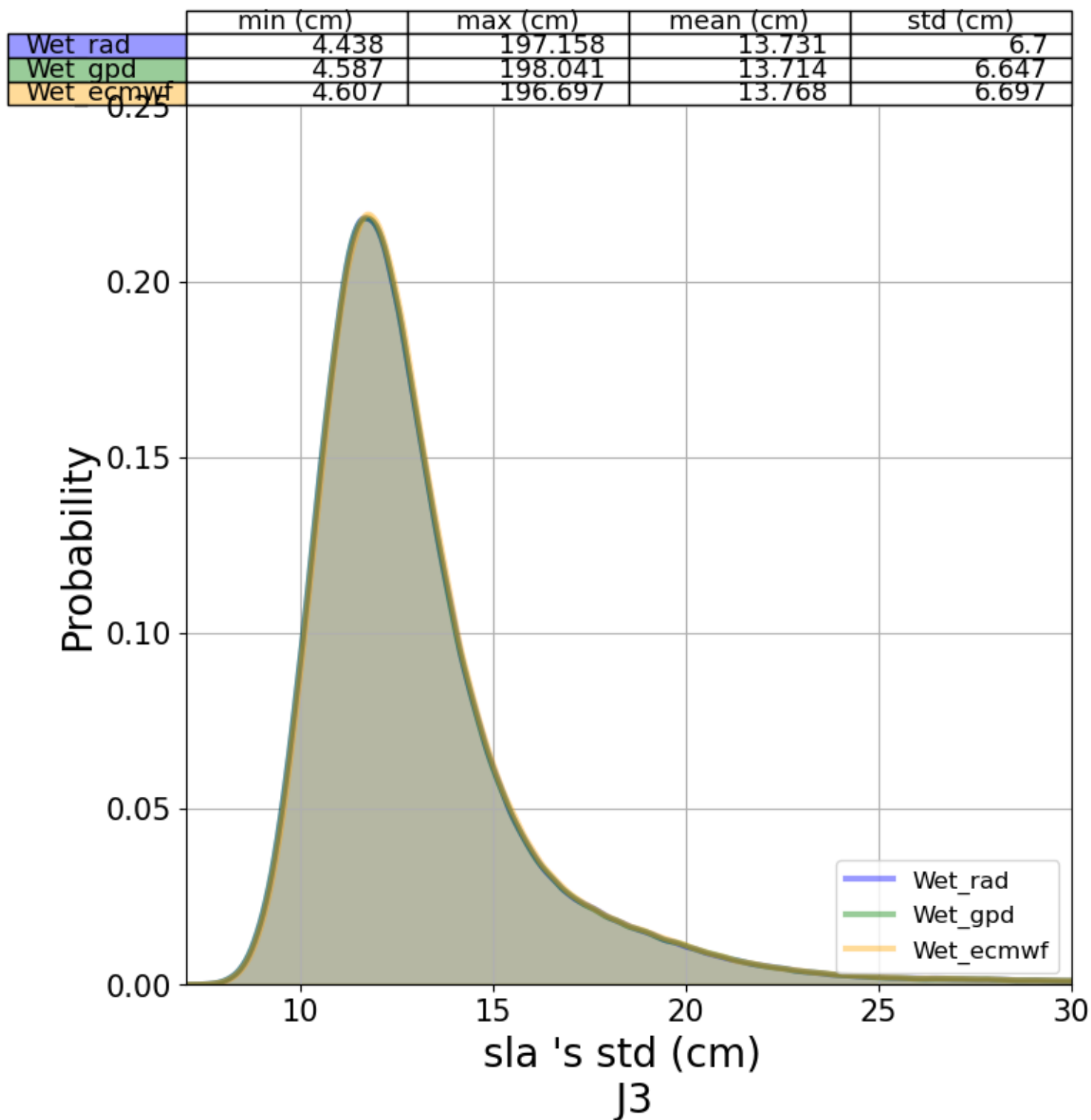


FIGURE 42 – Histograms of the standard deviation of each sla version

5 Along-track analysis

5.1 Wet

5.1.1 Wet 's count

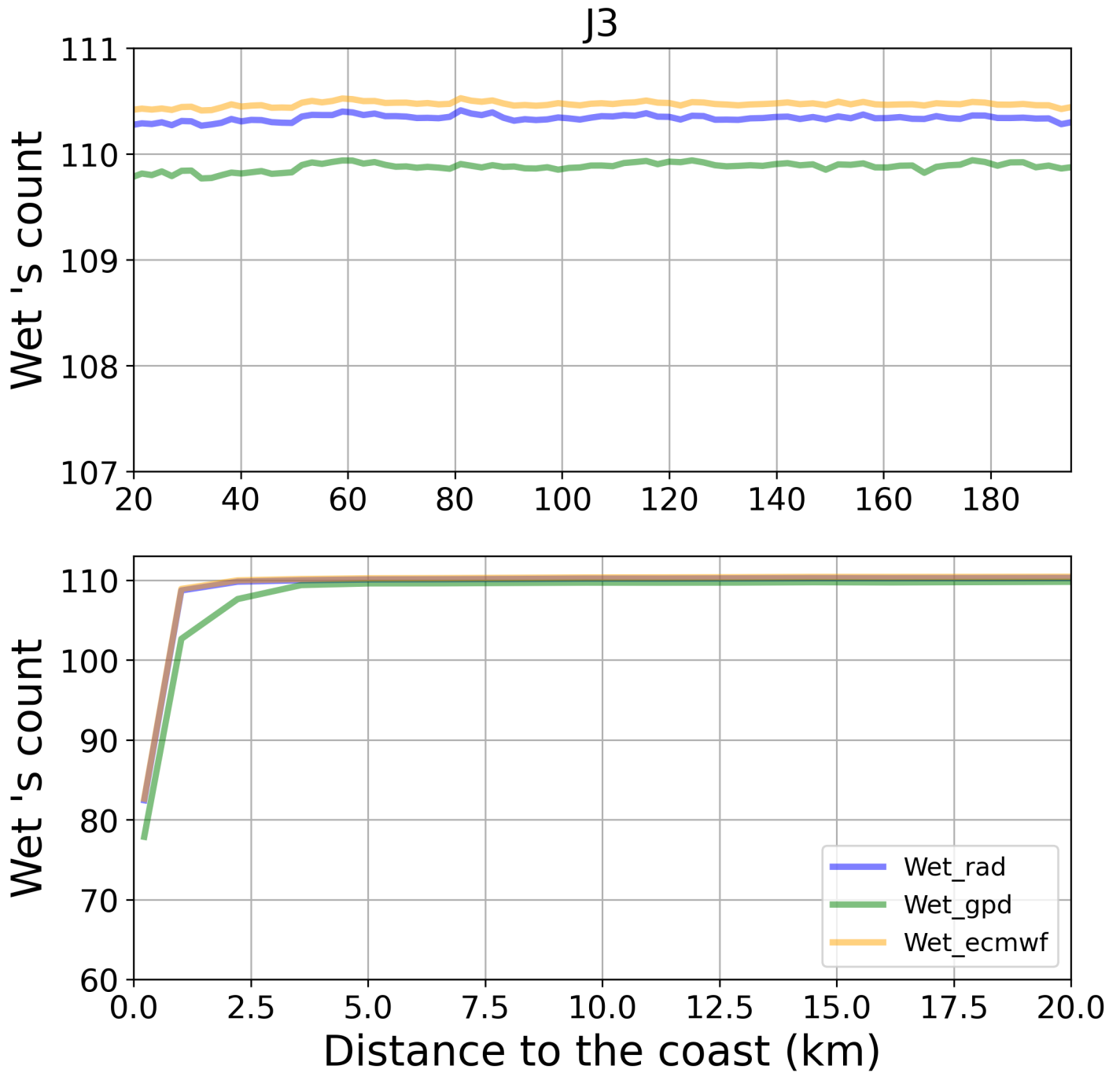


FIGURE 43 – Along-track analysis of Wet 's count

J3

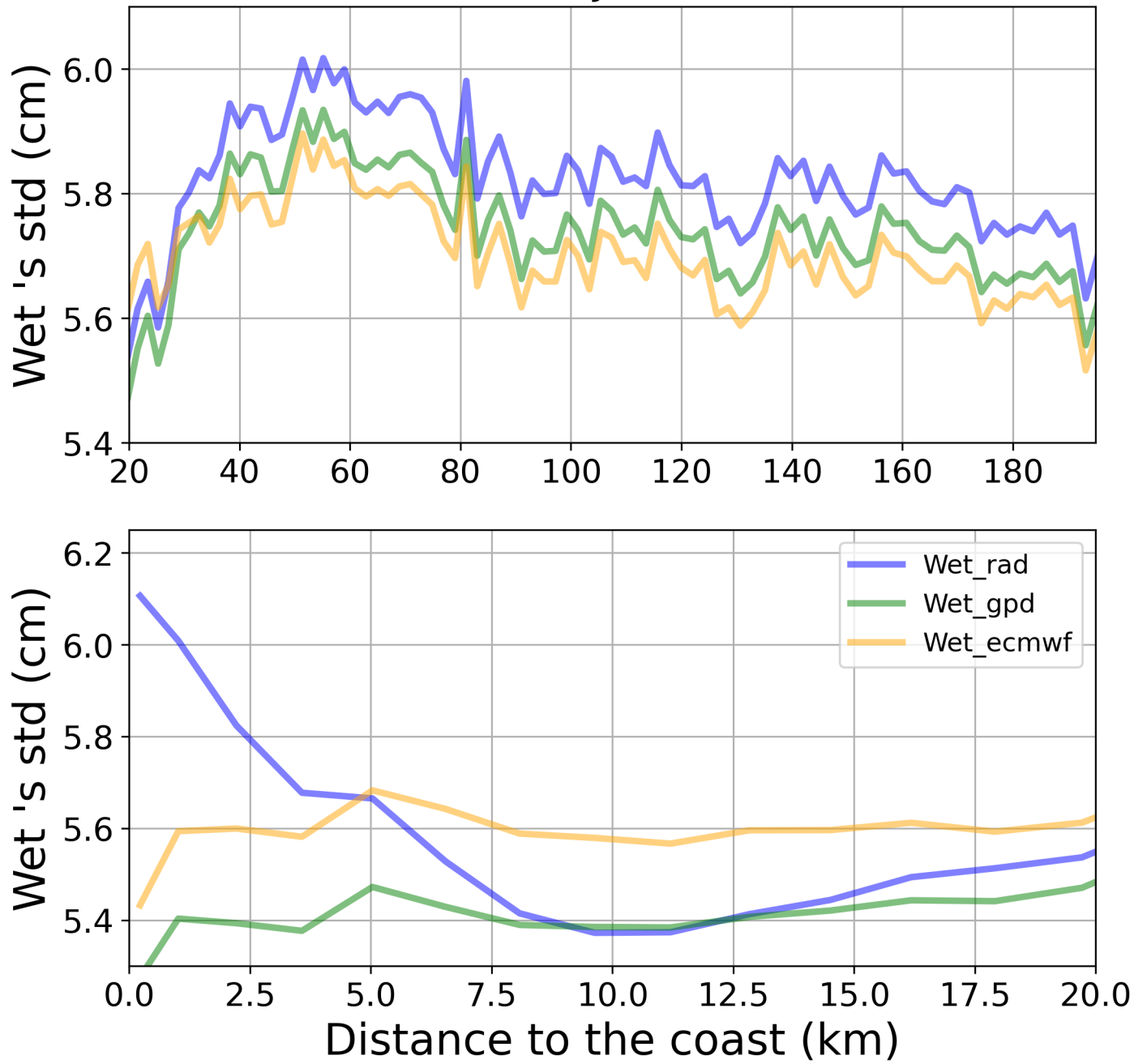


FIGURE 44 – Along-track analysis of Wet 's std

J3

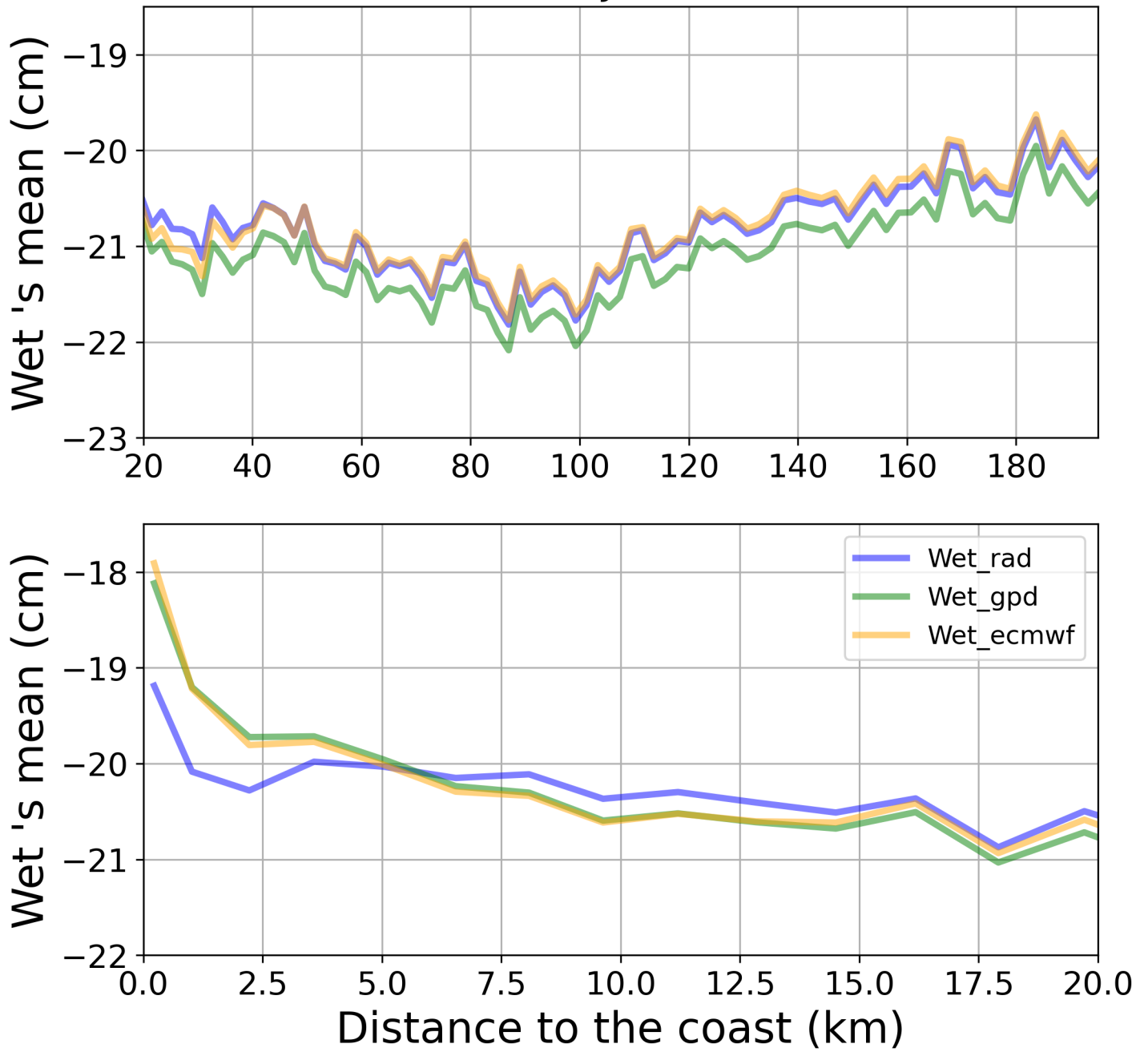


FIGURE 45 – Along-track analysis of Wet 's mean

5.2 sla

5.2.1 sla's count

J3

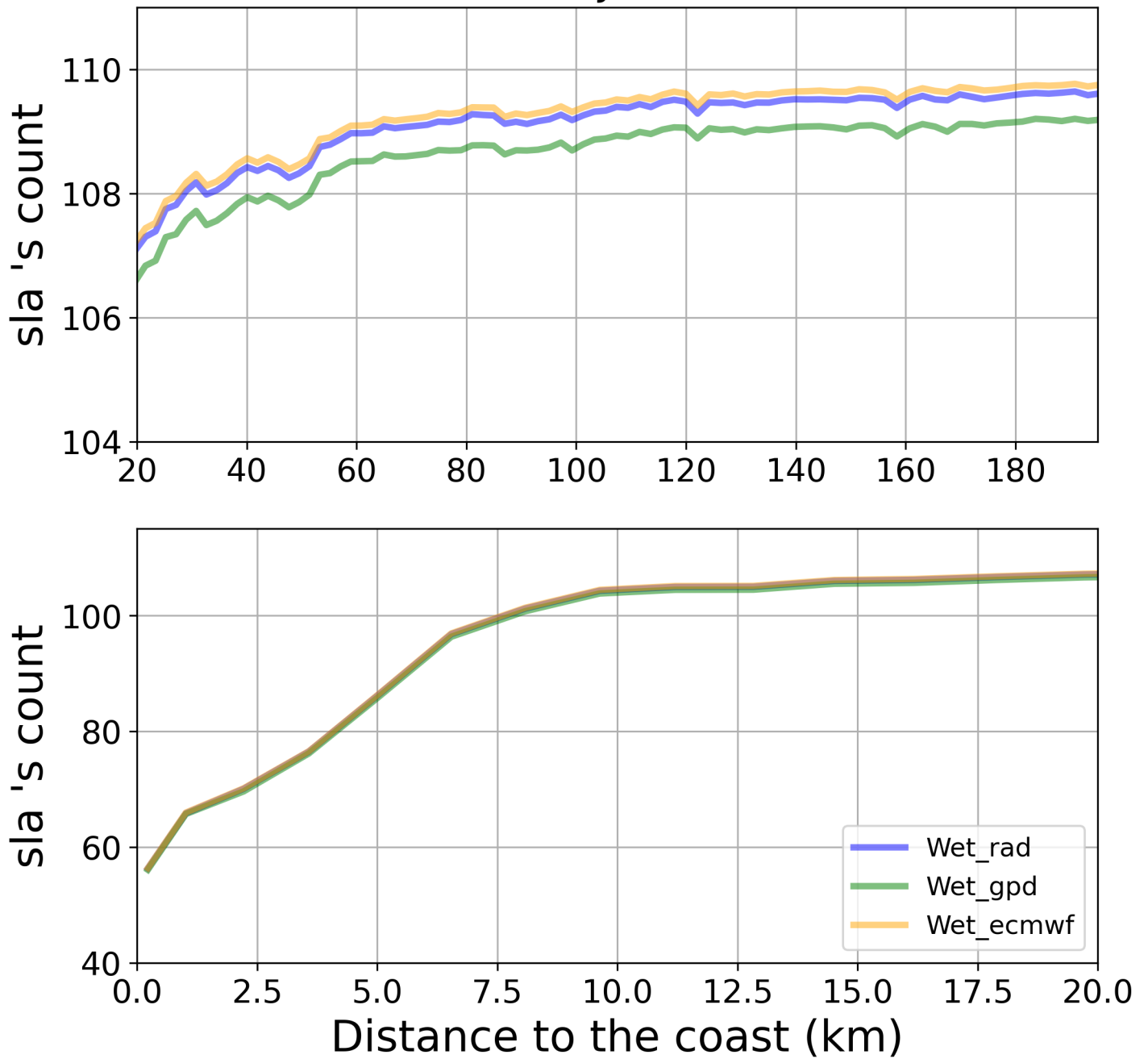


FIGURE 46 – Along-track analysis of sla's count

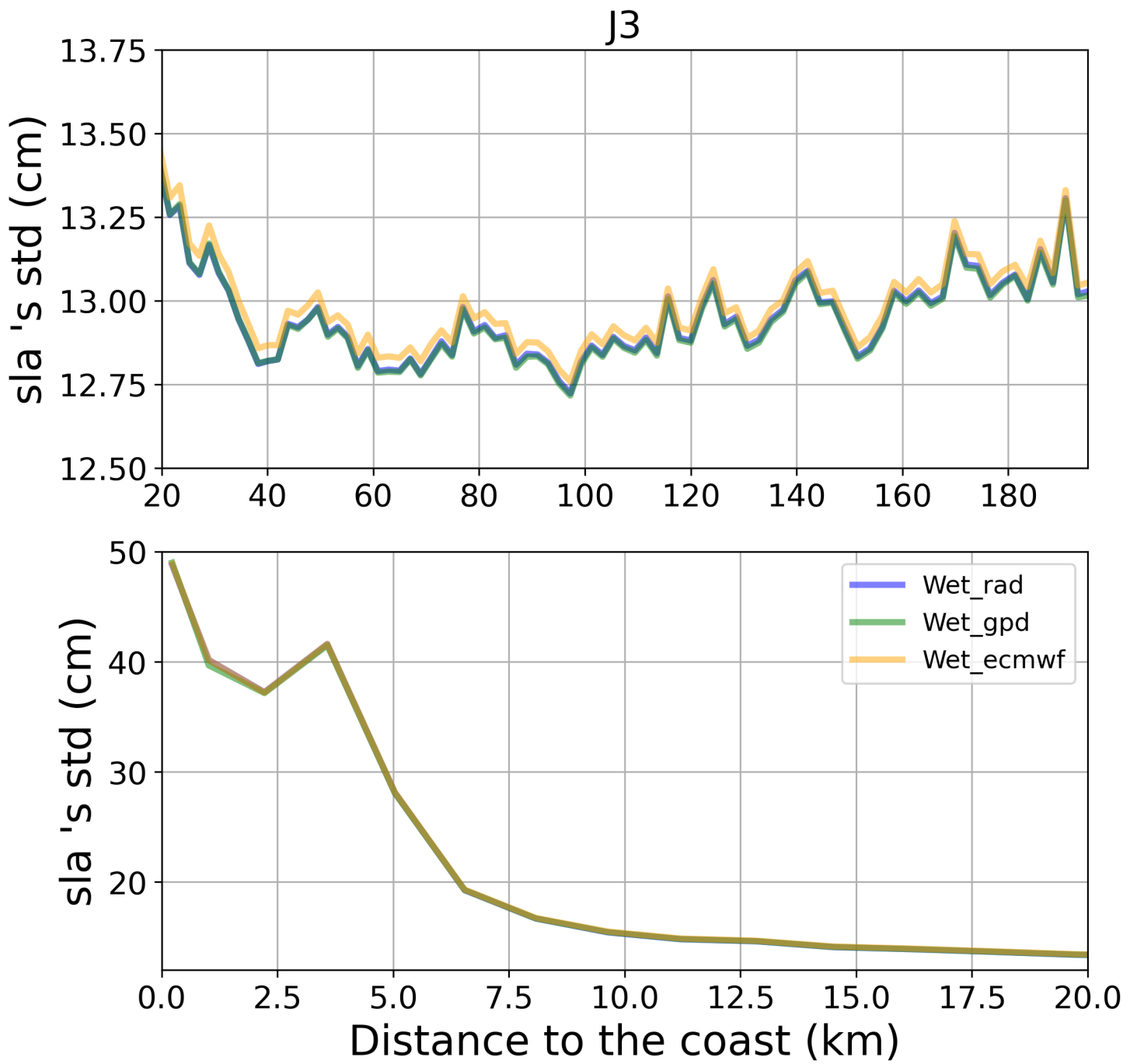


FIGURE 47 – Along-track analysis of sla 's std

J3

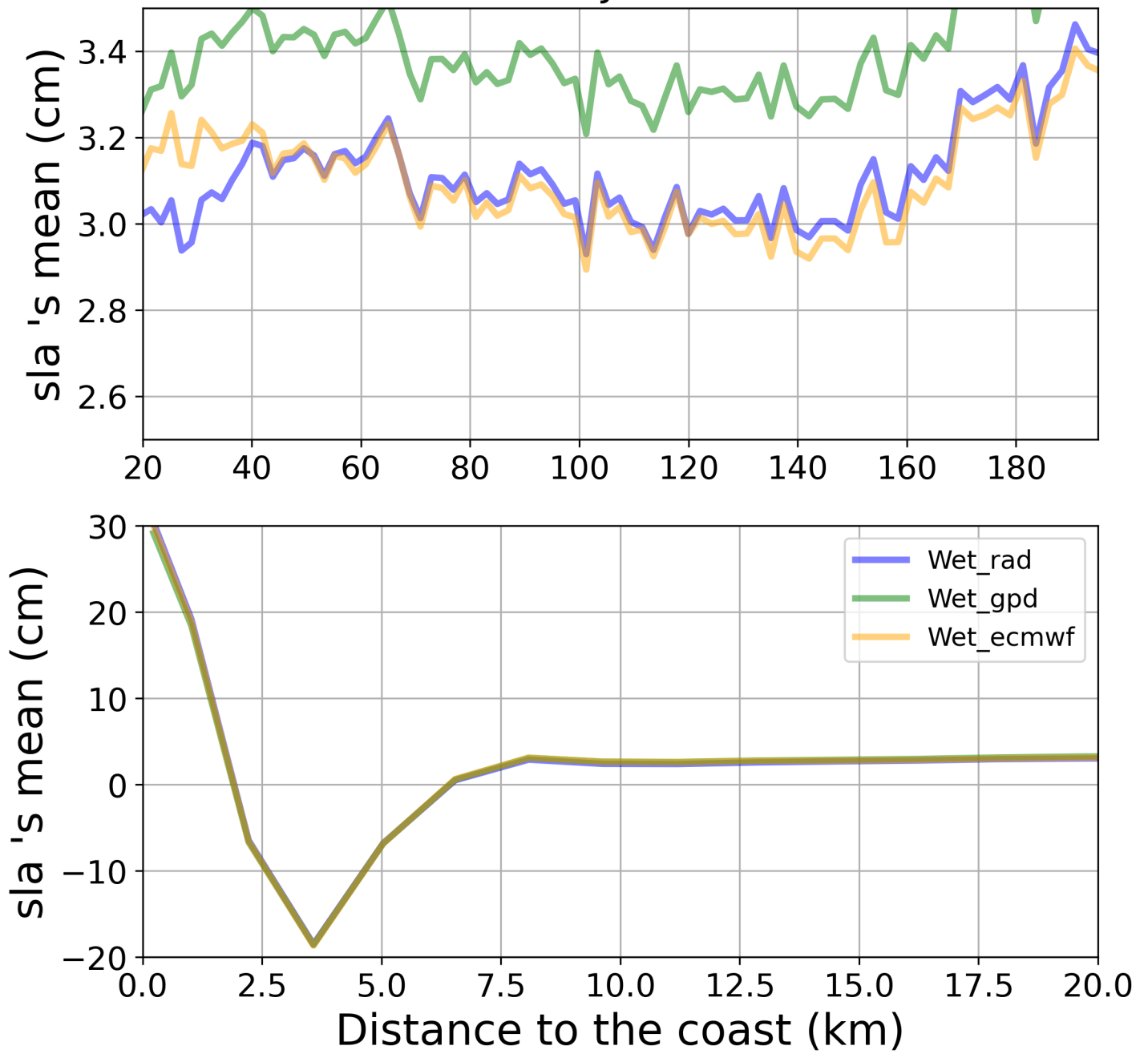


FIGURE 48 – Along-track analysis of sla 's mean