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Figures S1 to S6.

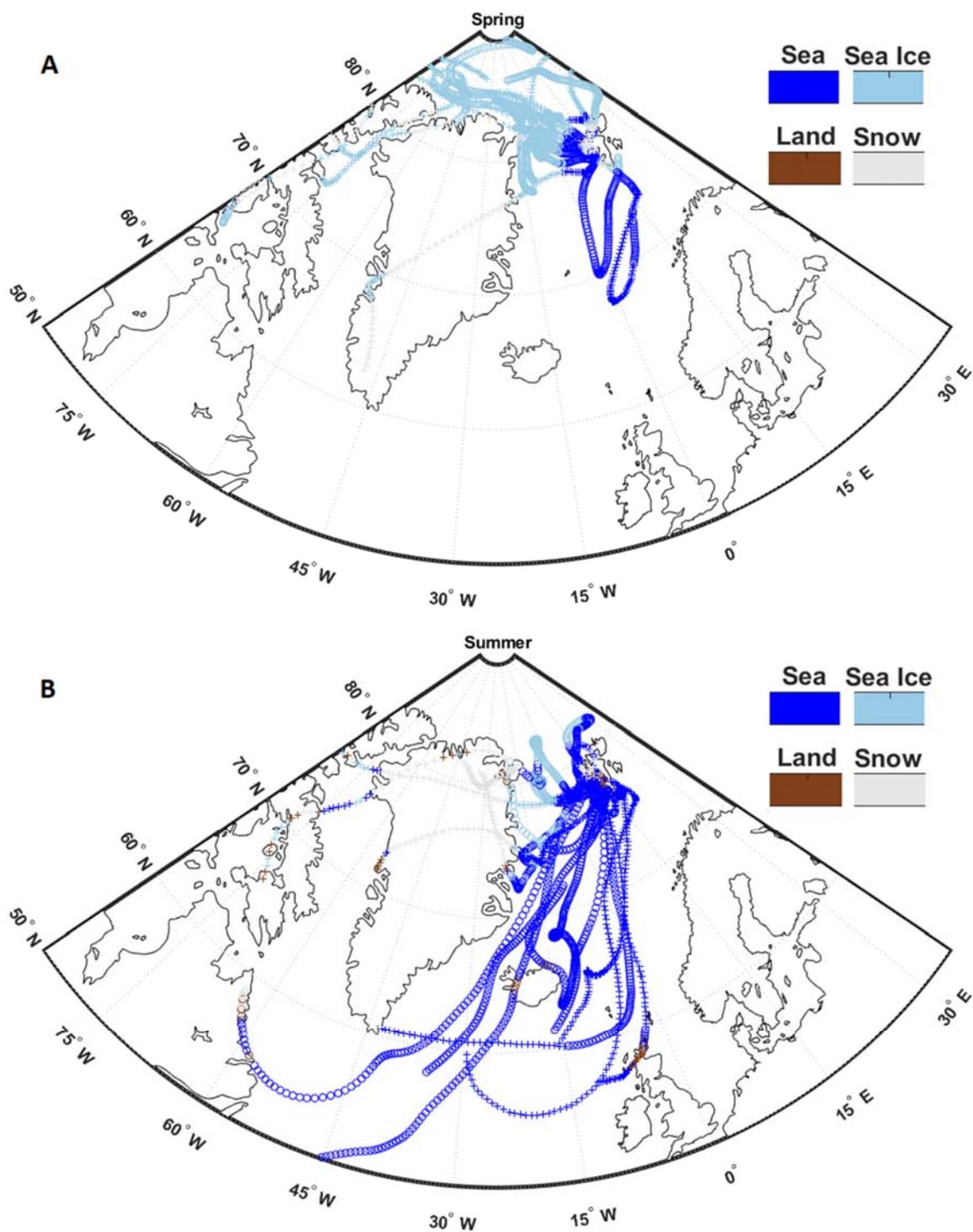


Figure S1: The 120-hours air masses back-trajectories (hourly time step) calculated by the NOAA HYSPLIT model arriving at Ny-Ålesund sampling station at times corresponding to DFPC INPs samples during A) Spring and B) Summer 2018. The color scale represents the conditions of the ground crossed by the back-trajectories. Air masses traveling at high altitude (> 500 m above mean sea level), which have been excluded in CWT calculations, are represented by the symbol “+”.

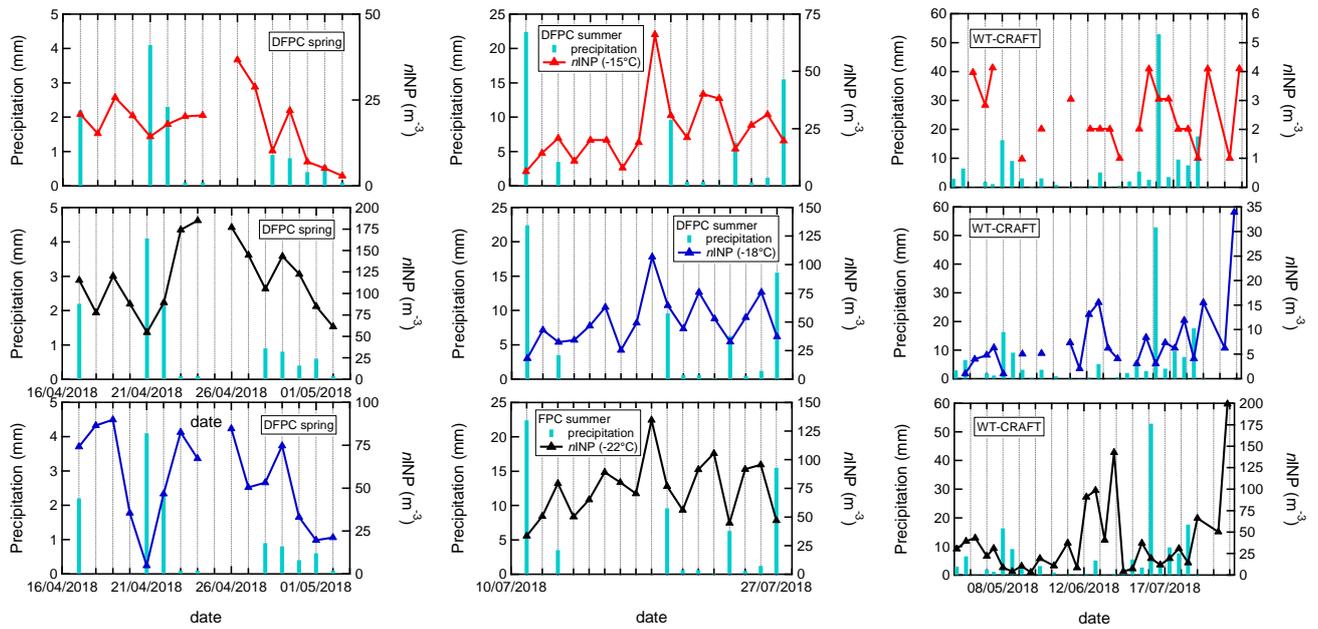


Figure S2: Effect of precipitation events on the INP concentration at Ny-Ålesund.

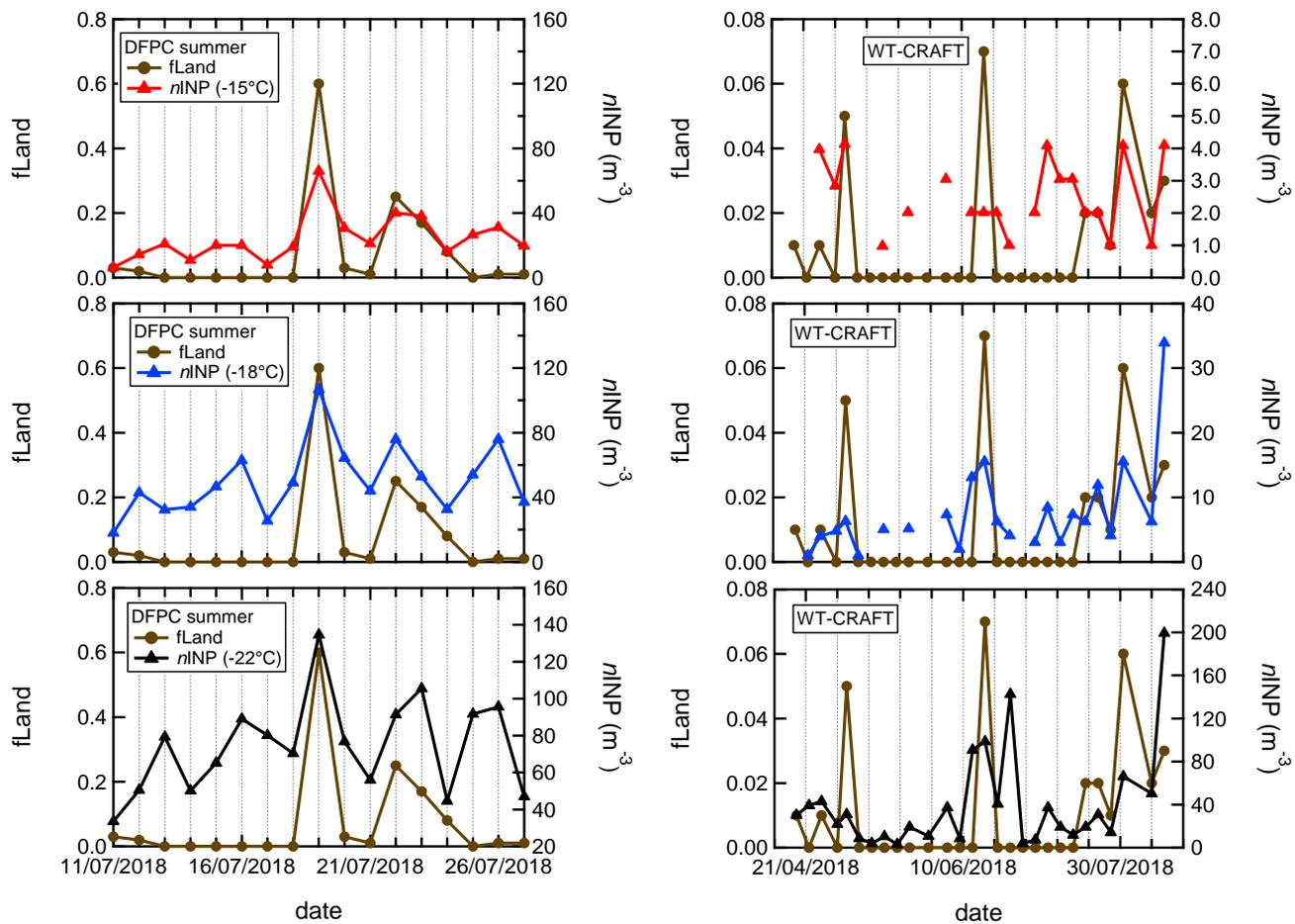


Figure S3: Influence of the “Land” ground type (fLand) during the DFPC summer (left) and WT-CRAFT (right) campaigns overlapped with the INP atmospheric concentrations at T = -15, -18 and -22°C.

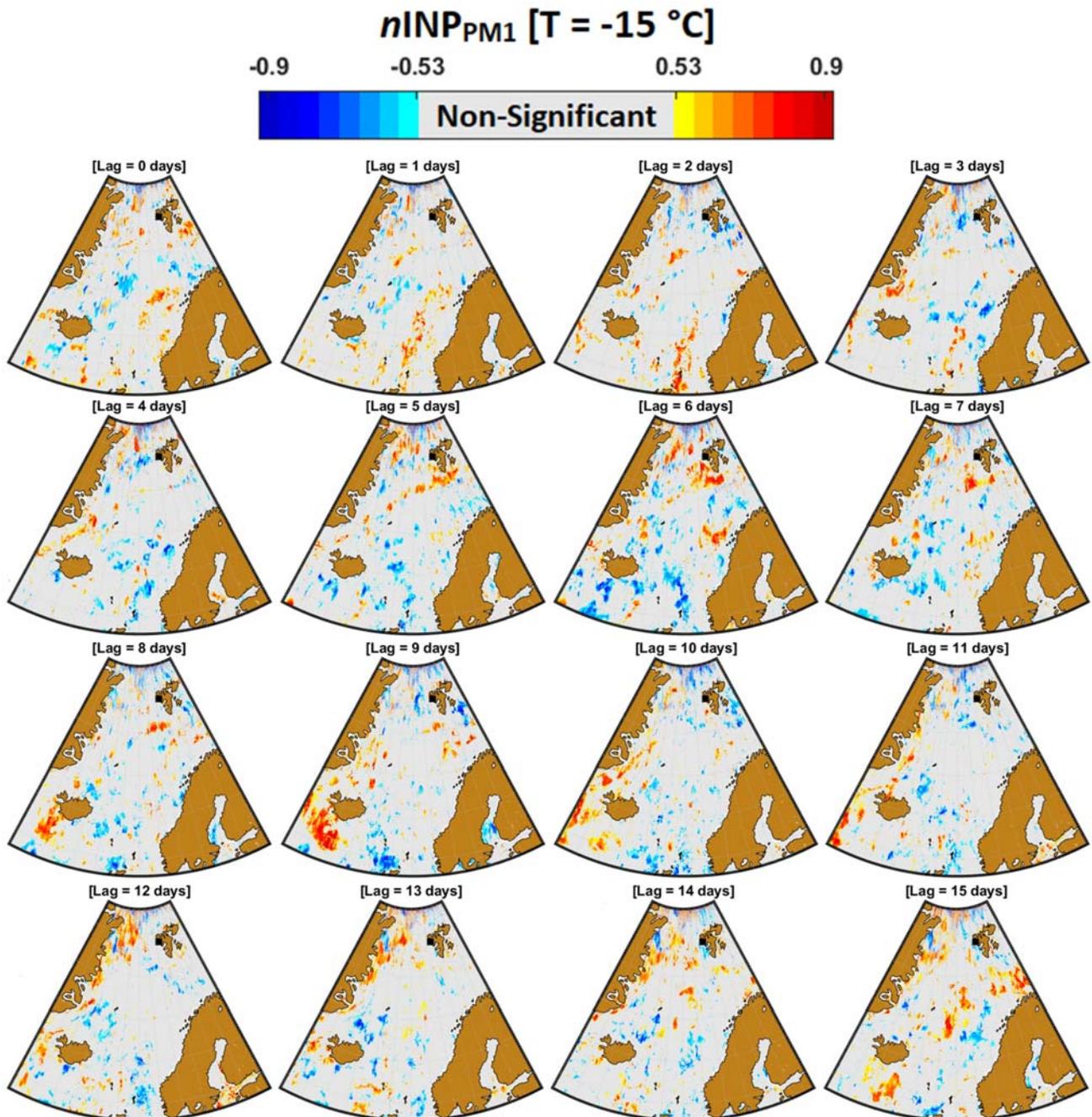


Figure S4: Spatial distribution of the correlation coefficient between DFPC $nINPPM1$ [T= -15 °C] sampled at Ny-Ålesund in Summer 2018 and CHL over the Arctic Ocean at different time-lags from 0 to 27 days. The grey color represents non-significant correlation coefficients ($p < 0.05$). The 3 samples with land influences were excluded from the analysis.

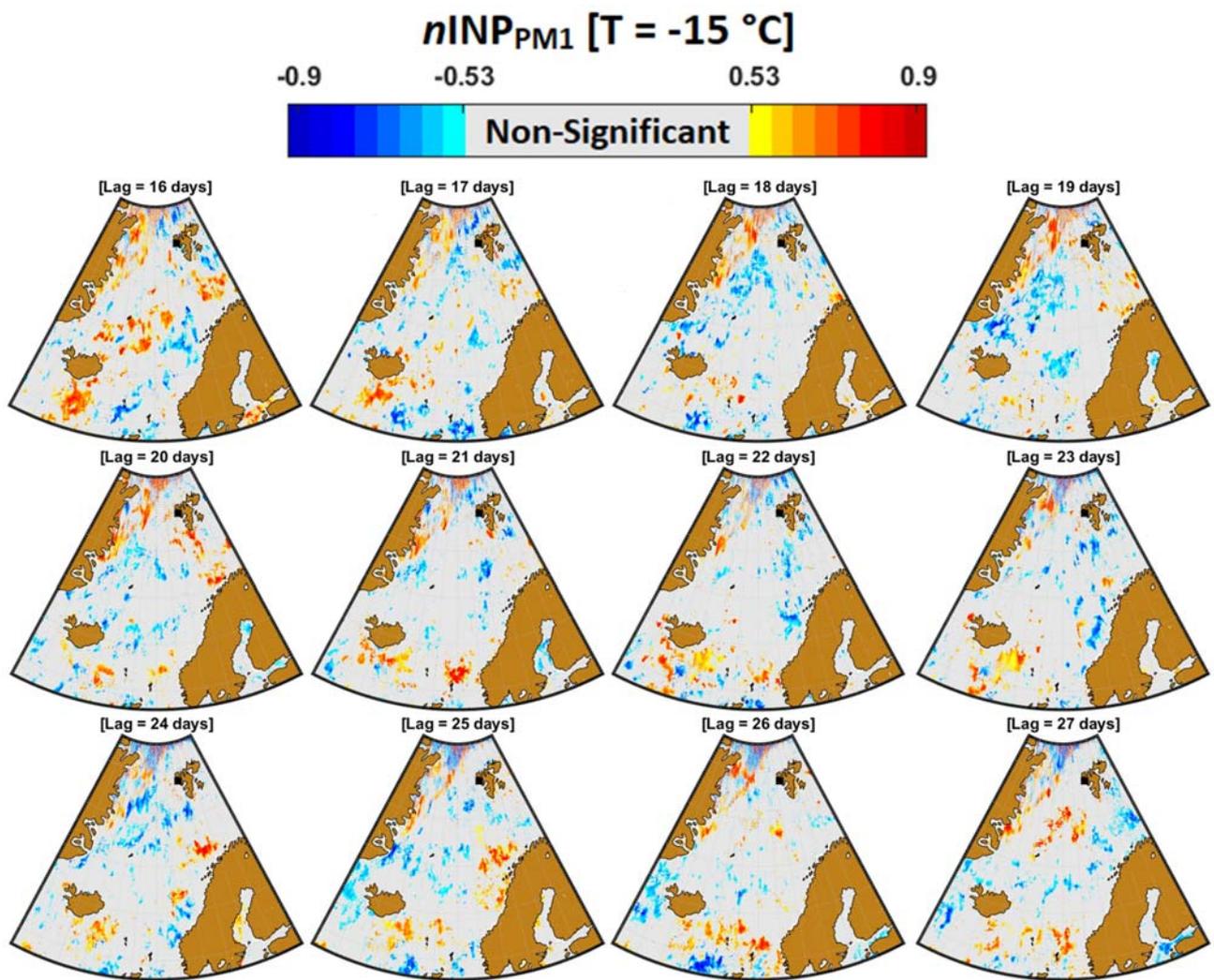


Figure S4: Continued.

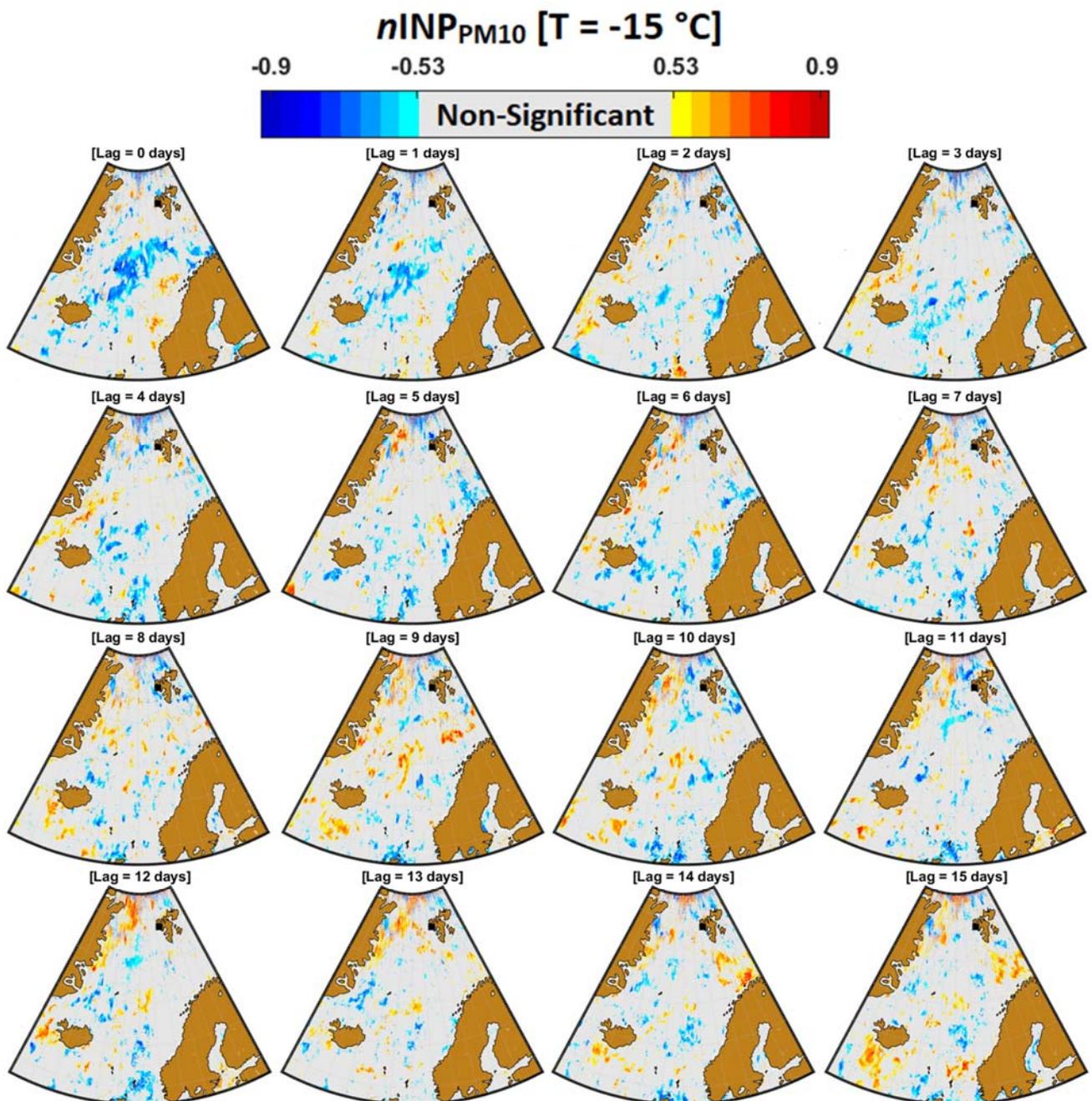


Figure S5: Spatial distribution of the correlation coefficient between DFPC $nINPPM10$ [T= -15 °C] sampled at Ny-Ålesund in Summer 2018 and CHL over the Arctic Ocean at different time-lags from 0 to 27 days. The grey color represents non-significant correlation coefficients ($p < 0.05$). The 3 samples with land influences were excluded from the analysis.

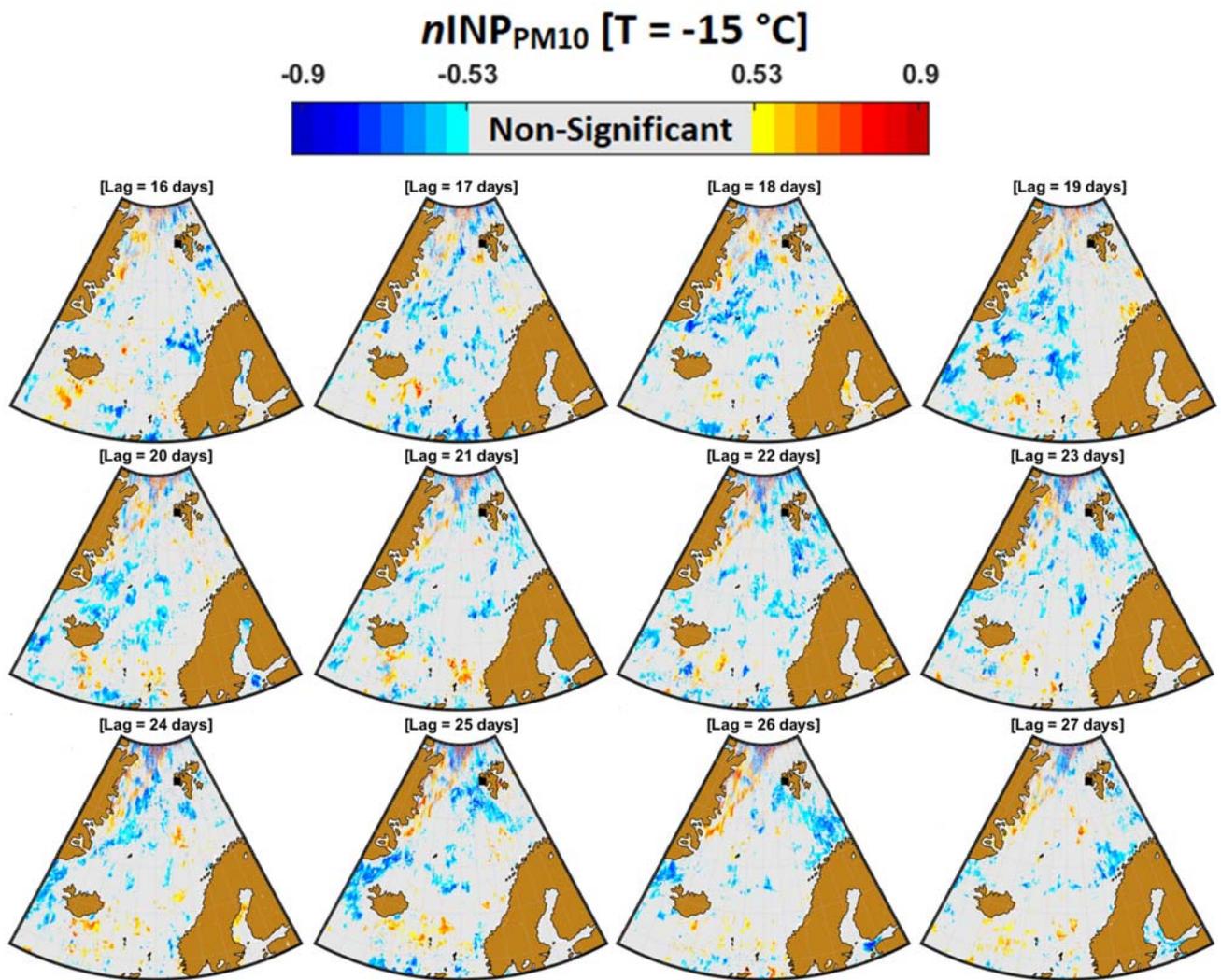


Figure S5: Continued.

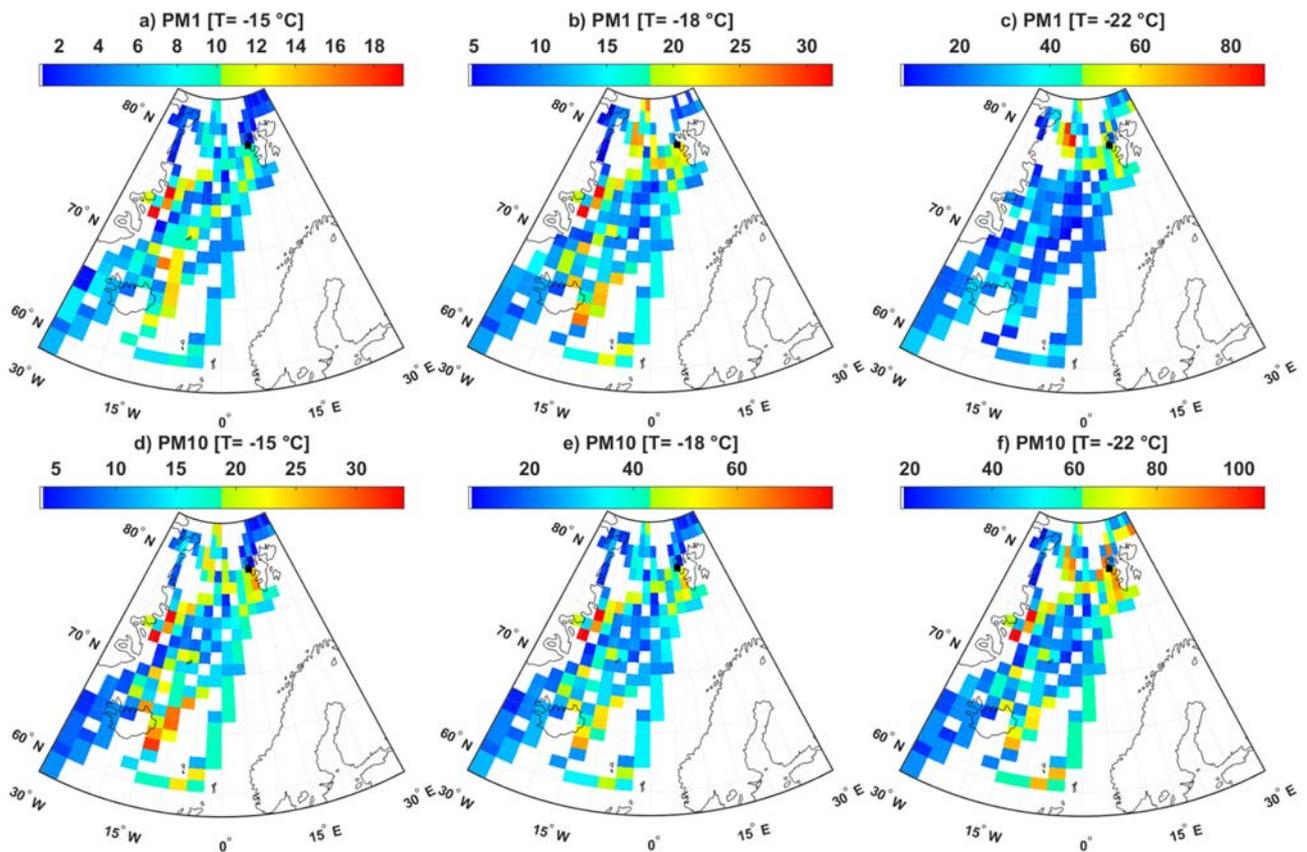


Figure S6: CWT plots for nINPPM1 at (a) $T = -15\text{ }^{\circ}\text{C}$, (b) $T = -18\text{ }^{\circ}\text{C}$, and (c) $T = -22\text{ }^{\circ}\text{C}$ and nINPPM10 at (d) $T = -15\text{ }^{\circ}\text{C}$, (e) $T = -18\text{ }^{\circ}\text{C}$, and (f) $T = -22\text{ }^{\circ}\text{C}$ measured by DFPC in Summer 2018. The 5-days low travelling ($< 500\text{ m}$) air masses back-trajectories simultaneous to the INP samples calculated by the NOAA HYSPLIT model arrived at Ny-Ålesund were used in this approach. The 3 samples with land influences were excluded from the analysis.