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Supplement of

MAP-IO: an atmospheric and marine observatory program on board *Marion Dufresne* over the Southern Ocean

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OPC-N3 comparisons

The monthly average of PM2.5 mass concentrations of the 3 OPC-N3 were compared over one year (June 2021 to June 2022).

Apart from OPC-N3 N°3 in October 2021 which underestimates the PM2.5 concentration by 20 µg/m3 compared to the other two instruments, the difference between the three instruments is less than 10 µg/m3. The average relative errors are 1.7% between OPC-N3 N°1 and OPC-N3 N°2, 9% between OPC-N3 N°1 and OPC-N3 N°3 and 7.3% between OPC-N3 N° 2 and OPC-N3 N°3.

In the paper we have used the data of the OPN3 N°1 which is close to the data of the OPC-N3 N°2 (see below).

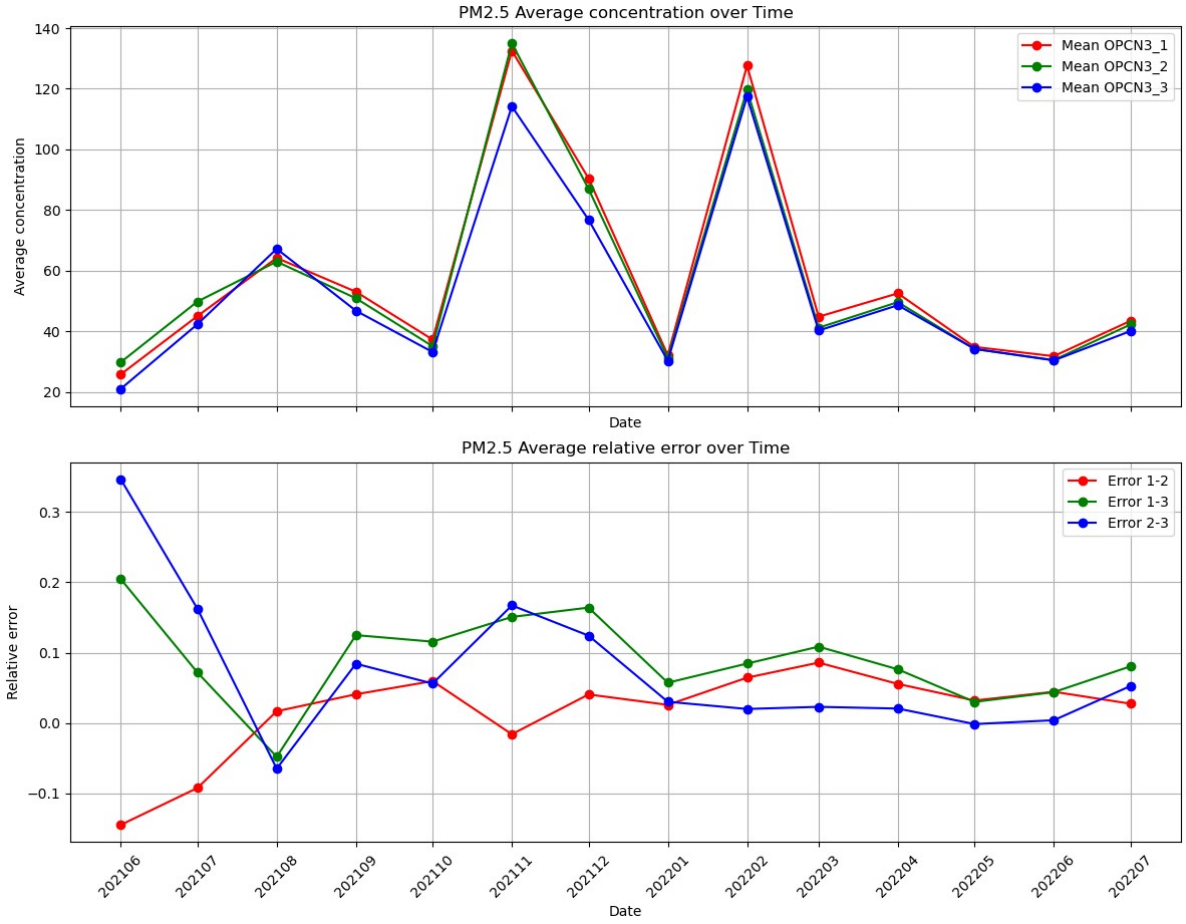

Figure S1. Comparison of the 3 OPC-N3 on-board the Marion Dufresne vessel between June 2021 to June 2022. Top: average monthly total concentration in µg.m^{-3} for OPC-N3 N°1 (red), OPC-N3 N°2 (green) and OPC-N3 N°3 (blue). Bottom: relative error in mean monthly concentrations between OPC-N3 N°1 and OPC-N3 N°2 (red), OPC-N3 N°1 and OPC-N3 N°3 (green) and OPC-N3 N°2 and OPC-N3 (blue).