

In this work, the fluorescent properties of water-soluble organic carbon (WSOC) present in particulate matter collected in the Western Arctic Ocean area were studied. Potential WSOC emission sources were also determined by combining parallel factor analysis (PARAFAC) and fluorescence index. On the other hand, part of the chemical composition of the collected aerosols was determined by ion chromatography.

The topic addressed in the work is relevant and current, in addition there are not many studies that use these methods to determine the sources of particulate matter, which is why it is of the utmost importance to increase knowledge of the sources that can contribute to the emission of particulate matter. WSOC in the MP.

In general terms, the work is well presented, however, the discussion of the results could be improved on some points.

Here are some recommendations in order to improve the writing:

In the Introduction section, the authors should delve into the relevance of using the EEM-PARAFAC tools in the study of particulate matter, since there are few studies on this matrix, most of which focus on the study of organic matter. dissolved in water (DOM)

In line 127 the authors could specify the type of detector of the equipment used, as well as the slit used in the measurement of both excitation and emission.

In line 133 the authors should go deeper into the objective and advantages of using fluorescence index.

Line 167. The authors should delve into how sea fog events affect the other parameters analyzed, such as TOC, among others.

Line 197. Correct resistivity units.

In section 3.2. the authors should consider changing the word “bulk” (line 232 and 236) for another that better describes the conjunction of the two fractions of the MP studied.

In section 3.4. Authors could privately benchmark their model data and compare it to a previously published dataset found in the open-access OpenFluor database located at <http://openfluor.org>

In section 3.4. The authors could include in the supplementary material the Split-half graphs resulting from the validation of the components of the PARAFAC models.

In the conclusions section. The authors could emphasize how their study contributes to the assignment of emission sources of the WSOC present in the PM using the EEM-PARAFAC tool.