

We thank the reviewer for the many constructive comments and suggestions that have enable us to improve on the manuscript. Comments by the reviewer are given in black, our response to the comments are shown in red, and modified text in the revised manuscript are given in green. In the following, we have addressed these concerns in a point-by-point format.

Anonymous Referee #2, 05 October 2021

The authors have greatly improved the manuscript based on the reviewers' suggestions, so I recommend publication now.

I found a few typos and small mistakes:

The Spelling errors and grammatic errors have been corrected throughout the manuscript and the language has been edited to be more concise throughout. In addition, the name of the Atlas Mohammed V atmospheric observatory was replaced from “AM5” to “AMV”.

A point-by-point description of the changes made to the manuscript is given in the following:

Line 24: "ranged" -> "range"

Ranged has been changed to range. Line 24 now reads:

“During background conditions characterized by low wind speeds (Av. 3 m s^{-1}) and mass concentrations in the range from 9.8 to $12 \mu\text{g m}^{-3}$.”

Line 373: "...the...mountains ... act..."

Acts has been changed to act. Line 373 now reads:

“Thirdly, the High-Atlas Mountains situated at 4000 m of altitude act as a barrier to Saharan dust transport which forces the winds to deviate from their path.”

Line 711 "vanadium"

“Vanadium” has been changed to “vanadium”. Line 711 now reads:

“The nss-sulfate concentrations were slightly correlating with vanadium which is associated with the emissions of oil combustion, ship emissions as well as iron and steel industrial emissions (Pandolfi et al., 2011).”

Line 823 "The long-range..."

“Long-range” has been changed to “long-range”. Line 823 now reads:

“The long-range transport of mineral dust showed a significant impact on PM_{10} composition.”

Line 850: "Sulfate, nitrate, calcium, and ammonium..."

“Sulfate” has been changed to “sulfate”. Line 850 now reads:

“Sulfate, nitrate, calcium, ammonium, showed an increase in the average concentration of about a factor of 4.5 while chloride, magnesium, and potassium experienced an increase in their concentrations by a factor of 5 (Fig 10c, 10d).”

Fig. 6: please check Y-axis labels (μg or ng)

The unit of n-alkanes and PAHs was corrected in Fig. 6 from “ $\mu\text{g}/\text{m}^3$ ” to “ ng/m^3 ”. The modified Figure 6 are shown below:

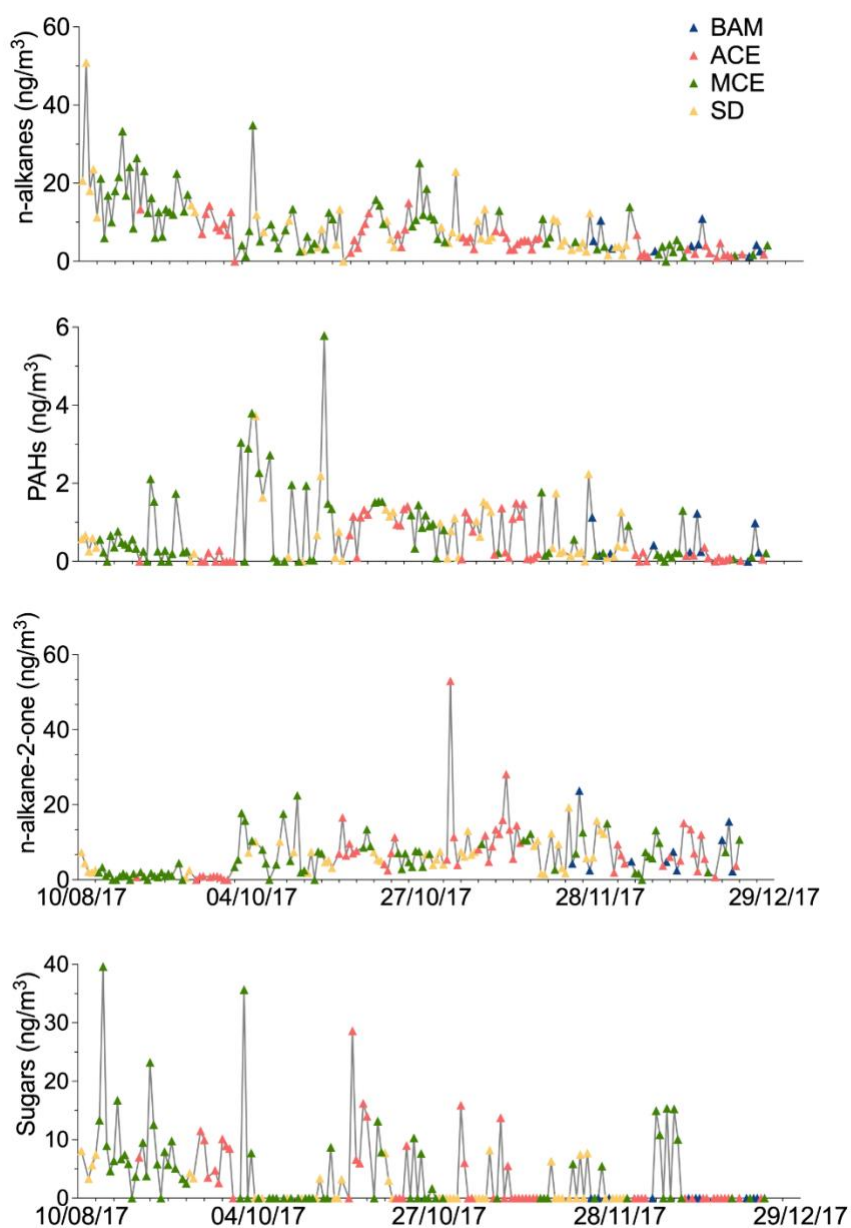


Figure 6. Time series of organic compounds in PM_{10} filter samples collected from August to December 2017 at AM5; The color of the symbols displayed for each sample represents a specific air mass origin: Background (blue); ACE (red); MCE (green); SD (yellow).

Other spelling errors and grammatic errors have been corrected throughout the manuscript as follow:

“AM5” has been changed to “present work”. Lines 15-16 now read:

“The main objectives of the present work are to investigate the variations in the aerosol composition, and better assess global and regional changes in atmospheric composition in North Africa.”

“Assess” has been changed to “to assess”. Lines 103-104 now read:

“The evaluation of local regional, trans-regional, and climate change effects can help to assess air quality and climate-relevant mitigation strategies.”

“In the valleys during high-pressure weather” has been changed to “during high-pressure weather in the valleys” . Line 144 now reads:

“Thermal breezes are common during high-pressure weather in the valleys.”

The Middle-Atlas region is considered “very humid” and “temperate” have been changed to “to be a very humid” and “with temperate”, respectively. Line 154 now reads:

“The Middle-Atlas region is considered to be a very humid and with temperate climate.”

“The limit of detection” has been changed to “detection limit”. Line 192 now reads:

“The detection limit for OC/EC measurement was 0.2 µg/cm².”

“Potassium, calcium, magnesium, and sulfate” has been changed to “Potassium (ss-K⁺), calcium (ss-Ca²⁺), magnesium (ss-Mg²⁺), and sulfate (ss-SO₄²⁻)”. Lines 229-231 now read:

“Sea salt concentrations were calculated by adding chloride to sodium, and the sea salt (ss) contributions of potassium (ss-K⁺), calcium (ss-Ca²⁺), magnesium (ss-Mg²⁺), and sulfate (ss-SO₄²⁻), , have been estimated as 0.03, 0.5, 0.12, and 0.25 fractions of the measured Na⁺, respectively (Marenco et al., 2006).”

“come” has been changed to “blow”. Line 806 now reads:

“Indeed, the winds blows from all directions, but it is dominated from the east section during the day, and by the west during the night, as shown in Fig. S10.”

“distant” has been changed to “distance”. Line 808 now reads:

“This suggests that long-distance transport often occurred during the night while the wind speed during the day was relatively lower.”

“Nonacosane and Heptacosane” has been changed to “nonacosane and heptacosane”. Lines 869-871 now read:

“During this period, a correlation was observed between OC as well as some organic species nonacosane and heptacosane with mineral elements such as calcium ($r^2=0.81$) and magnesium ($r^2=0.73$).”