

General comments

Ship traffic over the ocean is responsible for gaseous and particulate emissions that have a significant effect on the air quality. In addition, these emissions play a role in the physicochemical processes in the atmosphere involved with the global climate. That is why we need data of gas and particulate emissions to be able to establish accurate climate future scenario and hence, the results proposed in the present manuscript is then of great interest. However, if the experimental results could be useful to our community, they suffer from a lack of description and the comparison with model simulations brings a lot of questions. That is why before publication, I recommend a major revision taking into account my comments reported below.

Major concerns

The main results of the present manuscript are based on a comparison between aerosol concentration data and numerical model simulations. The large uncertainties on shipping emission inventories and the models used for numerical simulations would need more discussion and should prevent a too rapid conclusion (i.e., "The incidence of maritime traffic emissions on the levels of particle emission... is insignificant..."). It should be the aim of the present manuscript to assess the reliability of their shipping emission inventories and the accuracy of the comparison with the air quality model outputs. In contrast with the three lines reported in Section 3.5 dedicated to the "Uncertainties and limitations", which are too short and vague, the authors should then produce a strong effort to detail the possible influence of some of them on the results and hence, to explain the substantial disagreement shown in their manuscript between the experiments and model calculations, as reported in Table 12.

- Two much numerical models are used for the study (SENEM, CALPUF, RVCCAA ...) and it is a bit confusing. We could have a redundancy between all these models...

- The model used for the aerosol concentrations reported in Table 12 seems to provide very low values. This makes think to a probable inconsistency of emission inventories or modeling resolution. It seems like the model only uses source terms provided by default using the high resolution European inventory (for instance ECMWF). The authors should try to find out

what is going wrong in their simulations? Inventories compiled from ship activity records and activity-based emission factors for different ship types could be more explained.

- Estimation of the contribution of maritime traffic using the difference between the value measured at the station and the value simulated with the dispersion model should be discussed. First of all, uncertainties on the model dispersion could be more detailed since they affect the difference between the measured value at the station and the simulated value with the dispersion model for the contribution of maritime traffic, which corresponds to the contribution of the other sources. The authors could reduce uncertainties by comparing their results on the contribution of the other sources to those found in the literature on aerosol concentrations of pollutants in other Mediterranean locations (e.g., Bardouki et al., 2003; 2004; Eleftheriadis et al., 2006; Piazzola et al., 2016).

- It could be more convincing to study specifically two or three particular meteorological episodes for which the authors could provide a temporal survey of the main meteorological data, as wind speed and direction, relative humidity and maybe also the height of the MABL, and relate them to the measured aerosol concentrations at each receptor.

- The authors conclude that the incidence of maritime traffic emissions on atmospheric particle concentrations is insignificant. Even though the percentage of ship emissions on total atmospheric pollutants is less than 20 %, does it mean that it is really insignificant. And insignificant for what? Health, air quality, global warming?

Minor comments

- pp. 1 "emission " not " immission".

- Fig. 6 and Fig. 7 are missing.

- result of emissions from maritime traffic *are insignificant* compared with the limit values established in Royal Decree 102/2011..Too strong.

References

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