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Air quality simulations and forecasting of along-route ship emissions in realistic meteo-marine scenarios

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In the present study, scenario simulations are performed by integrating ship performances prediction models with meteo-marine forecasting and pollutants emissions transport models. By considering the detailed simulation of seakeeping and powering performances of a ship along predefined routes, in different realistic meteo-marine conditions, the concentration of the emitted pollutants and their fate in the atmosphere are analysed in order to investigate the relationship between the increase of pollutants emissions due to adverse meteo-marine conditions and the corresponding pollutant diffusion characteristics of the ensuing atmospheric dynamics.

In this paper the authors report the results of the first part of the study, finalized to better comprehend the numerical implementation details of an integrated system aimed at forecasting the powering performances and corresponding pollutant emissions impact based on realistic meteo-marine conditions and ship data.

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