Interactive comment on "Parameterizing the vertical downward dispersion of ship exhaust gas in the near-field" *by* Ronny Badeke et al.

Anonymous Referee #1

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The paper deals with the simulation of the initial plume rise and dispersion of gas released by ship funnels. The topic is of big interest in the assessment of the impact of ship emissions in ports. The paper is well structured and clear.

I have some general comments that require a revision of the paper.

1) The paper can be defined as a study of the "building downwash" effect due to the ship itself. In this sense the paper is not really innovative, but results are interesting for the many different input parameters studied (wind velocity and direction, gas velocity and temperature and atmospheric stability class). Building downwash effect is present as option in many common dispersion models. Did the authors verified if the use of MITRAS gives different results with respect to, as an example, CALPUFF + building downwash?

2) Since the calculation domain is not very large a CFD model could be proposed to perform the same simulations. Do they authors think it could be more accurate?

3) Gas dispersion in the atmospheric boundary layer is a high non-linear process due to the effect of turbulence. But all the correlations reported in Fig.s 6-10 are well described by a simple linear equation between the downward dispersion D and all the input variables studied including also the temperature vertical gradients. Do the authors have an explanation for the very good linear correlation?

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