

**Evaluation, control and Mitigation of the EnviRonmental
impacts of shippinG Emissions (EMERGE)**



Deliverable 8.4

**“List of Scientific articles and presentations to international
conferences”**

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ABBREVIATIONS	
FMI	Finnish Meteorological Institute
GA	Grant Agreement
MarInEM	Maritime Institute of Eastern Mediterranean
US	University of Southampton
WP	Work Package

EXECUTIVE SUMMARY

This report has been prepared by the University of Southampton and MarInEM in the framework of WP8 ‘Dissemination, communication and exploitation’ of the EMERGE project. The report addresses Deliverable 8.4 (D8.4) “‘List of scientific articles and presentations to international conferences.’ It includes two separate lists accurate to end May 2024. Other articles and presentations are in review or are planned later in 2024, and even in 2025, so the final lists will be longer.

US is the Lead Beneficiary for WP8, but MarInEM and US managed WP8 together and closely cooperated on the implementation of its tasks and its deliverables.

1. LIST OF PEER-REVIEWED ARTICLES

1.1. Published peer-reviewed articles and articles accepted for publication

2020

1. Kukkonen, J., E. Fridell, J. Moldanova, J.-P. Jalkanen, A. Maragkidou, M. Sofiev, L. Ntziachristos, J. Borken-Kleefeld, R.S. Sokhi, V. Zervakis, I.-M. Hassellöv, E. Ytreberg, I. Williams, L. R. Hole, M. Petrovic, S. Maragkidou, A. Ktoris, & A. Monteiro. (2020). Environmental impacts of shipping: from global to local scales. in: *Proceedings of 12th International Conference on Air Quality, Science and Application*; Moussiopoulos, N., Sokhi, R.S., Tsegas, G., Fragkou E., Chourdakis, E., Pipilis, I. (Eds.), Hatfield, U.K., p.161, DOI: [10.18745/PB.22217.2020](https://doi.org/10.18745/PB.22217.2020).

2021

2. Geels, C., Winther, M., Andersson, C., Jalkanen, J. P., Brandt, J., Frohn, L. M., Leung, W., & Christensen, J. H. (2021). Projections of shipping emissions and the related impact on air pollution and human health in the Nordic region. *Atmos. Chem. Phys. Discuss.*, 21, 12495–12519. <https://doi.org/10.5194/acp-21-12495-2021>.
3. Grönholm, T., Mäkelä, T., Hatakka, J., Jalkanen, J. P., Kuula, J., Laurila, T., Laakso, L., & Kukkonen, J. (2021). Evaluation of Methane Emissions Originating from LNG Ships Based on the Measurements at a Remote Marine Station. *Environmental Science & Technology*, 55, 13677-13686. <https://doi.org/10.1021/acs.est.1c03293>.
4. Lunde Hermansson, A., Hassellöv, I. M., Moldanová, J., & Ytreberg, E. (2021). Comparing emissions of polycyclic aromatic hydrocarbons and metals from marine fuels and scrubbers. *Transportation Research Part D: Transport and Environment*, 97, 102912. <https://doi.org/10.1016/j.trd.2021.102912>.

5. Jalkanen, J. P., Johansson, L., Wilewska-Bien, M., Granhag, L., Ytreberg, E., Eriksson, K. M., Yngsell, D., Hassellöv, I.-M., Magnusson, K., Raudsepp, U., Maljutenko, I., Styhre, L., Winnes., H. & Moldanova, J. (2021). Modeling of discharges from Baltic Sea shipping. *Ocean Science*, 17(3), 699–728. <https://doi.org/10.5194/os-2020-99>.
6. Kiihamäki, S.P., Korhonen, M., & Jaakkola, J.J.K. (2021). Ambient particulate air pollution and daily stock market returns and volatility in 47 cities worldwide. *Sci Rep*, 11, 8628, <https://doi.org/10.1038/s41598-021-88041-w>.
7. Maljutenko, I., Hassellöv, I. M., Eriksson, M., Ytreberg, E., Yngsell, D., Johansson, L., Jalkanen, J. P., Kouts., M., Kasemtes, M.-L., Moldanova, J., Magnusson, K., & Raudsepp, U. (2021). Modelling spatial dispersion of contaminants from shipping lanes in the Baltic Sea. *Marine Pollution Bulletin*, 173, 112985. <https://doi.org/10.1016/j.marpolbul.2021.112985>.
8. Nunes, R. A., Alvim-Ferraz, M. C., Martins, F. G., Penuelas, A. L., Durán-Grados, V., Moreno-Gutiérrez, J., Jalkanen, J. P., Hannuniemi., H., & Sousa, S. I. (2021). Estimating the health and economic burden of shipping related air pollution in the Iberian Peninsula. *Environment International*, 156, 106763. <https://doi.org/10.1016/j.envint.2021.106763>.
9. Sokhi, R. S., Singh, V., Querol, X., Finardi, S., TTargino, A.C., Andrade, M.F., Pavlovic, R., Garland, R.M., Massagué, J., Kong, S., Baklanov, A., Ren, L., Tarasova, O., Carmichael, G., Peuch, V.H., Anand, V., Arbilla, G., Badali, K., Beig, G., Belalcazar, L.C., Bolignano, A., Brimblecombe, P., Camacho, P., Casallas, A., Charland, J.P., Choi, J., Chourdakis, E., Coll, I., Collins, M., Cyrys, J., da Silva, C.M., Di Giosa, A.D., Di Leo, A., Ferro, C., Gavidia-Calderon, M., Gayen, A., Ginzburg, A., Godefroy, F., Gonzalez, Y.A., Guevara-Luna, M., Haque, S.M., Havenga, H., Herod, D., Hörrak, U., Hussein, T., Ibarra, S., Jaimes, M., Kaasik, M., Khaiwal, R., Kim, J., Kousa, A., Kukkonen, J., Kulmala, M., Kuula, J., La Violette, N., Lanzani, G., Liu, X., MacDougall, S., Manseau, P.M., Marchegiani, G., McDonald, B., Mishra, S.V., Molina, L.T., Mooibroek, D., Mor, S.,

- Moussiopoulos, N., Murena, F., Niemi, J.V., Noe, S., Nogueira, T., Norman, M., Pérez-Camaño, J.L., Petäjä, T., Piketh, S., Rathod, A., Reid, K., Retama, A., Rivera, O., Rojas, N.Y., Rojas-Quincho, J.P., San José, R., Sánchez, O., Seguel, R.J., Sillanpää, S., Su, Y., Tapper, N., Terrazas, A., Timonen, H., Toscano, D., Tsegas, G., Velders, G.J.M., Vlachokostas, C., von Schneidemesser, E., Vpm, R., Yadav, R., Zalakeviciute, R., & Zavala, M. (2021). A global observational analysis to understand changes in air quality during exceptionally low anthropogenic emission conditions. *Environment International*, 157, 106818. <https://doi.org/10.1016/j.envint.2021.106818>.
10. Thor, P., Granberg, M. E., Winnes, H., & Magnusson, K. (2021). Severe Toxic Effects on Pelagic Copepods from Maritime Exhaust Gas Scrubber Effluents. *Environmental Science & Technology*, 55(9), 5826-5835. <https://doi.org/10.1021/acs.est.0c07805>.

2022

11. Manshausen, P., Watson-Parris, D., Christensen, M. W., Jalkanen, J. P., & Stier, P. (2022). Invisible ship tracks show large cloud sensitivity to aerosol. *Nature*, 610, 101-106, <https://doi.org/10.1038/s41586-022-05122-0>.
12. Kukkonen, J., Fridell, E., Jalkanen, J.-P., Moldanova, J., Ntziachristos, L., Grigoriadis, A., Barmpas, F., Tsegas, G., Maragkidou, A., Sofiev, M., Grönholm, T., Majamäki, E., Borken-Kleefeld, J., Sokhi, R.S., Tiwari, P. R., Ozdemir, U.A., Zervakis, V., Krasakopoulou, E., Hassellöv, I.-M., Ytreberg, E., Williams, I., Hudson, M., Zapata-Restrepo, L., Hole, L.R., Aghito, M., Breivik, O., Petrovic, M., Rodriguez-Mozaz, S., Ktoris, A., Neophytou, M., Monteiro, A., Russo, M.A., Oikonomou, F., Arampatzi, P., Gondikas, A., Marcomini, A., Giubilato, E., Calgaro, L., Jaakkola, J.J.K., Kiihamäki, S.-P., Aittamaa, R., Broström, G. Hassellöv, M., Tamminen, J., Nicolas, F., Kaitaranta, J., Granberg, M., and Magnusson, K. (2022). Towards a comprehensive evaluation of the environmental and health impacts of shipping emissions, *International Technical Meeting On Air Pollution Modelling And Its Application*, 18 – 22 October 2021, Barcelona, Spain, Proceedings, 5 pp.

13. Sofieva, S., Asmi, E., Atanasova, N. S., Heikkinen, A. E., Vidal, E., Duplissy, J., Romantschuk, M., Kouznetsov, R., Kukkonen, J., Bamford, D.H., Hyvärinen, A.P., & Sofiev, M. (2022). Effects of temperature and salinity on bubble-bursting aerosol formation simulated with a bubble-generating chamber. *Atmospheric Measurement Techniques*, 15, 6210-6219. <https://doi.org/10.5194/amt-15-6201-2022>.
14. Manshausen, P., Watson-Parris, D., Christensen, M. W., Jalkanen, J. P., & Stier, P. (2022). Invisible ship tracks show large cloud sensitivity to aerosol. *Nature*, 610(7930), 101-106 <https://doi.org/10.1038/s41586-022-05122-0>.
15. Frohn, L. M., Geels, C., Andersen, C., Andersson, C., Bennet, C., Christensen, J. H., Im, U., Karvosenoja, N., Kindler, P.A., Kukkonen, J., Lopez-Aparicio, S., Nielsen, O.-K., Palamarchuk, Y., Paunu, V.-V., Plejdrup, M.S., Segersson, D., Sofiev, M., & Brandt, J. (2022). Evaluation of multidecadal high-resolution atmospheric chemistry-transport modelling for exposure assessments in the continental Nordic countries. *Atmospheric Environment* 290, 119334 (22 pp) <https://doi.org/10.1016/j.atmosenv.2022.119334>.
16. Im U, Geels C, Hanninen R, Kukkonen J, Rao S, Ruuhela R, Sofiev M, Schaller N, Hodnebrog Ø, Sillmann J, Schwingshackl C, Christensen JH, Bojariu R and Aunan K. (2022). Reviewing the links and feedbacks between climate change and air pollution in Europe. *Front. Environ. Sci.* 10:954045 <http://doi.org/10.3389/fenvs.2022.954045>.
17. Karl, M., Pirjola, L., Grönholm, T., Kurppa, M., Anand, S., Zhang, X., Held, A., Sander, R., Dal Maso, M., Topping, D., Jiang, S., Kangas, L., & Kukkonen, J. (2022). Description and evaluation of the community aerosol dynamics model MAFOR v2.0. *Geosci. Model Dev.*, 15, 3969–4026 <https://doi.org/10.5194/gmd-15-3969-2022>.
18. Johansson, L., Karppinen, A., Kurppa, M., Kousa, A., Niemi, J. V., & Kukkonen, J. (2022). An operational urban air quality model ENFUSER, based on dispersion modelling and data

- assimilation. *Environmental Modelling & Software*, 156, October 2022, 105460 (19 pp.)
<https://doi.org/10.1016/j.envsoft.2022.105460>.
19. Ytreberg, E., Hansson, K., Lunde Hermansson, A., Parsmo, R., Lagerström, M., Jalkanen, J. P., & Hassellöv, I. M. (2022). Metal and PAH loads from ships and boats, relative other sources, in the Baltic Sea. *Marine Pollution Bulletin*, 182, 113904,ISSN 0025-326X
<https://doi.org/10.1016/j.marpolbul.2022.113904>.
20. Sokhi, R. S., Moussiopoulos, N., Baklanov, A., Bartzis, J., Coll, I., Finardi, S., Friedrich, R., Geels, C., Grönholm, T., Halenka, T., Ketzel, M., Maragkidou, A., Matthias, V., Moldanova, J., Ntziachristos, L., Schäfer, K., Suppan, P., Tsegas, G., Carmichael, G., Franco, V. Hanna, S., Jalkanen, J.-P., Velders, G.J.M. & Kukkonen., J. (2022). Advances in air quality research – current and emerging challenges. *Atmos. Chem. Phys.*, 22, 4615–4703 <https://doi.org/10.5194/acp-22-4615-2022>.
21. Choi HM, Lee W, Roye D, Heo S, Urban A, Entezari A, Vicedo-Cabrera AM, Zanobetti A, Gasparrini A, Analitis A, Tobias A, Armstrong B, Forsberg B, Íñiguez C, Åström C, Indermitte E, Lavigne E, Mayvaneh F, Acquaotta F, Sera F, Orru H, Kim H, Kyselý J, Madueira J, Schwartz J, Jaakkola JJK, Katsouyanni K, Diaz MH, Ragettli MS, Pascal M, Rytí N, Scovronick N, Osorio S, Tong S, Seposo X, Guo YL, Guo Y, Bell ML. Effect modification of greenness on the association between heat and mortality: A multi-city multi-country study. *EBioMedicine*. 2022 Oct;84:104251. doi: 10.1016/j.ebiom.2022.104251. Epub 2022 Sep 8. Erratum in: *EBioMedicine*. 2023 Jan;87:104396. PMID: 36088684; PMCID: PMC9471476.
22. Petalas, S., Tragou, E., Mamoutos, I.G., Zervakis, V. Simulating the Interconnected Eastern Mediterranean–Black Sea System on Climatic Timescales: A 30-Year Realistic Hindcast. *J. Mar. Sci. Eng.* 2022, 10, 1786. <https://doi.org/10.3390/jmse10111786>.

2023

23. Manshausen, P., Watson-Parris, D., Christensen, M. W., Jalkanen, J. P., & Stier, P. (2023). Rapid saturation of cloud water adjustments to shipping emissions. *Atmospheric Chemistry and Physics*, 23(19), 12545-12555. <https://doi.org/10.5194/acp-23-12545-2023>.
24. García-Gómez, E., Gkotsis, G., Nika, M.C., Hassellöv, I.M., Salo, K., Lunde Hermansson, A., Ytreberg, E., Thomaidis, N.S., Gros, M., & Petrović, M. (2023). Characterization of scrubber water discharges from ships using comprehensive suspect screening strategies based on GC-APCI-HRMS. *Chemosphere*, 26;343:140296. doi: <http://doi.org/10.1016/j.chemosphere.2023.140296>. Epub ahead of print. PMID: 37769908.
25. May, C.; Williams, I.D.; Hudson, M.D.; Osborne, P.E. and Zapata-Restrepo, L. (2023). The Solent Strait; water quality trends within a heavily trafficked marine environment, 2000 to 2020. *Marine Pollution Bulletin*, 193, 115251. <https://doi.org/10.1016/j.marpolbul.2023.115251>.
26. Owusu-Mfum, S., Hudson, M.D., Osborne, P.E., Roberts, T.J., Zapata-Restrepo, L.M. and Williams, I.D. (2023). Atmospheric Pollution in Port-Cities. *Atmosphere*, 14, 1135. <https://doi.org/10.3390/atmos14071135>.
27. Heikkilä, M., & Jalkanen, J. P. (2023). The Association between Vessel Departures and Air Pollution in Helsinki Port Area 2016–2021. *Atmosphere*, 14(4), 757. <https://doi.org/10.3390/atmos14040757>.
28. Aghito, M., Calgaro, L., Dagestad, K. F., Ferrarin, C., Marcomini, A., Breivik, Ø., & Hole, L. R. (2023). ChemicalDrift 1.0: an open-source Lagrangian chemical fate and transport model for organic aquatic pollutants. *Geoscientific Model Development Discussions*, 16, 2477–2494. <https://doi.org/10.5194/gmd-16-2477-2023>.

29. Lunde Hermansson, A., Hassellöv, I. M., Jalkanen, J. P., & Ytreberg, E. (2023). Cumulative environmental risk assessment of metals and polycyclic aromatic hydrocarbons from ship activities in ports. *Marine Pollution Bulletin*, 189, 114805 <https://doi.org/10.1016/j.marpolbul.2023.114805>
30. Marco Picone, Martina Russo, Gabriele Giuseppe Distefano, Marco Baccichet, Davide Marchetto, Annamaria Volpi Ghirardini, Anna Lunde Hermansson, Mira Petrovic, Meritxell Gros, Elisa Garcia, Elisa Giubilato, Loris Calgaro, Kerstin Magnusson, Maria Granberg, Antonio Marcomini. (2023) Impacts of exhaust gas cleaning systems (EGCS) discharge waters on planktonic biological indicators, *Marine Pollution Bulletin*, 190, 114846, ISSN 0025-326X, <https://doi.org/10.1016/j.marpolbul.2023.114846>.
31. Xiong D., Williams I.D., Hudson M.D., Osborne P.E., & Zapata-Restrepo L.M. (2023). The impact of an annual major recreational boating event on water quality in the Solent Strait. *Marine Pollution Bulletin*, 186, 114450. <https://doi.org/10.1016/j.marpolbul.2022.114450>.
32. Savvas Genitsaris, Polyxeni Kourkoutmani, Natassa Stefanidou, Evangelia Michaloudi, Meritxell Gros, Elisa García-Gómez, Mira Petrović, Leonidas Ntziachristos, Maria Moustaka-Gouni, (2023). Effects from maritime scrubber effluent on phytoplankton and bacterioplankton communities of a coastal area, Eastern Mediterranean Sea, *Ecological Informatics*, 77, 2023, 102154, ISSN 1574-9541, <https://doi.org/10.1016/j.ecoinf.2023.102154>.
33. Michael Russo, David Carvalho, Jalkanen Jukka-Pekka, Alexandra Monteiro, (2023). Future impact of shipping emissions on air quality in Europe under climate change, *Atmosphere* 2023, 14 (7), 1126, <https://doi.org/10.3390/atmos14071126>.

2024

34. García-Gómez, E., Insa, S., Gros, M., & Petrović, M. (2024). Rapid and sensitive method for the simultaneous determination of PAHs and alkyl-PAHs in scrubber water using HS-SPME-GC-MS/MS. *MethodsX*, 12, 102589. <https://doi.org/10.1016/j.mex.2024.102589>.
35. Heikkilä, M., Grönholm, T., Majamäki, E., & Jalkanen, J. P. (2024). Effect of ice class to vessel fuel consumption based on real-life MRV data. *Transport Policy*, 148, 168-180. <https://doi.org/10.1016/j.tranpol.2024.01.014>.
36. Genitsaris, S., Stefanidou, N., Hatzinikolaou, D., Kourkoutmani, P., Michaloudi, E., Voutsas, D., ... & Moustaka-Gouni, M. (2024). Marine Microbiota Responses to Shipping Scrubber Effluent Assessed at Community Structure and Function Endpoints. *Environmental Toxicology and Chemistry*. <https://doi.org/10.1002/etc.5834>.
37. Aghito, M., Pampanin, D. M., Nepstad, R., Hole, L. R., & Breivik, Ø. (2024). Modelling and Validation of Polycyclic Aromatic Hydrocarbons Emissions from Offshore Oil Production Facilities. *Science of The Total Environment*, 933, 2024, 173043. <https://doi.org/10.1016/j.scitotenv.2024.173043>.
38. Toby J. Roberts and Ian D. Williams (2024). Implementing Sustainable Development in Port-cities. *Proceedings of the Seventh Symposium on Circular Economy and Urban Mining*, Capri, Italy, 15-17 May 2024. Paper no. 2903. CISA Publisher, Padova, Italy. ISBN: 9788862650403.
39. Ian D. Williams, Toby J. Roberts, Lina M. Zapata-Restrepo, Maria Neophytou, Angelos Ktoris, Androniki Maragkidou, Jukka-Pekka Jalkanen (2024). Communicating Outputs, Outcomes and Impacts of Waste-related Research: The “EMERGE” Case Study. *Proceedings of the Seventh Symposium on Circular Economy and Urban Mining*, Capri,

- Italy, 15-17 May 2024. Paper no. 2881. CISA Publisher, Padova, Italy. ISBN: 9788862650403.
40. Lina M. Zapata-Restrepo, Ian D. Williams, Malcolm D. Hudson, Georgia Freeman, Bronwyn Lee, Clement Prieul (2024). Wastes from International Shipping: Ecotoxicological Assessment of Scrubber Water in Unicellular Algae (*Tetraselmus Suecica*) and Blue Mussel (*Mytilus Edulis*) Larvae. *Proceedings of the Seventh Symposium on Circular Economy and Urban Mining*, Capri, Italy, 15-17 May 2024. Paper no. 2880. CISA Publisher, Padova, Italy. ISBN: 9788862650403.
41. Lunde Hermansson, A., Hassellöv, I.-M., Grönholm, T., Jalkanen, J.-P., Fridell, E., Parsmo, R., Hassellöv, J. & Ytreberg, E. (2024). Strong economic incentives of ship scrubbers promoting pollution. *Nature Sustainability*. <https://doi.org/10.1038/s41893-024-01347-1>.
42. Heidi Hellén, Rostislav Kouznetsov, Kaisa Kraft, Jukka Seppälä, Mika Vestenius, Jukka-Pekka Jalkanen, and Hannele Hakola (2024). Shipping and algae emissions have a major impact on ambient air mixing ratios of NMHCs and methanethiol on Utö island in the Baltic Sea. *Atmos. Chem. Phys.*, 24, 4717–4731, <https://doi.org/10.5194/acp-24-4717-2024>, 2024.
43. Mazioti, A.A., Kolovoyiannis, V., Krasakopoulou, E., Tragou, E., Zervakis, V., Assimakopoulou, G., Athiniotis, A., Paraskevopoulou, V., Pavlidou, A., Zeri, C. (2024). Implementation of a Far-Field Water Quality Model for the Simulation of Trace Elements in an Eastern Mediterranean Coastal Embayment Receiving High Anthropogenic Pressure. *J. Mar. Sci. Eng.* 2024, 12, 797. <https://doi.org/10.3390/jmse12050797>.
44. Kiihamäki, Simo-Pekka, Marko Korhonen, Jaakko Kukkonen, Ivy Shiue, Jouni J.K. Jaakkola, 2024. Effects of Ambient Air Pollution from Shipping on Mortality: A

Systematic Review. Provisionally accepted with minor revisions, *Science of The Total Environment*.

45. Monteiro A., Rodrigues V., Picado A., Dias J.M., Abrantes N., Ré A., Rosa M., Russo M., Barreirinha A., Potiris M., Aghito M., Hänninen R., Majamäki E., Grönholm T., Alyuz U., Sokhi, R., Kukkonen J., Jalkanen J-P, (2024). Holistic evaluation of the environmental impacts of shipping in the sensitive region of Ria de Aveiro. Accepted with minor revisions, May 29th, 2024 (Accepted in *Sci. Tot. Env.*).

46. Heikkilä, M., Luoma, K., Mäkelä, T., and Grönholm, T.: Local ship speed reduction effect on black carbon emissions measured at remote marine station. (accepted in *Atmos. Chem. Phys.*)

Total published peer-reviewed publications (29/05/2024) = 43

Total accepted peer-reviewed publications (29/05/2024) = 3

1.2. Articles in preparation stage and under review

1. Androniki Maragkidou, Tiia Grönholm, Laura Rautiainen, Juha Nikmo, Jukka-Pekka Jalkanen, Timo Mäkelä, Timo Anttila, Lauri Laakso and Jaakko Kukkonen. The effects of SECA regulations on the atmospheric SO₂ concentrations in the Baltic Sea, based on long-term observations at the Finnish Utö Island. (to be submitted to ACP).
2. Alyuz, U., Sokhi, R., Momoh, K., Kukkonen, J., Sofiev, M., & EMERGE team. Improving WRF model performance for European coastal regions: Contribution to the H2020 Emerge Project.

3. Alyuz, U., Sokhi, R., Momoh, K., Kukkonen, J., Sofiev, M., & EMERGE team. Future scenario analysis of shipping contributions to air pollutant concentrations in five case study regions in Europe.
4. Tiia Grönholm, Jukka-Pekka Jalkanen, Ida-Maja Hassellöv, Jaakko Kukkonen. Discharges from Exhaust Gas Cleaning Systems in the OSPAR Marine area.
5. Hänninen, R. M., Kouznetsov, R., and Sofiev, M.: Positive semi-definite variants of CBM4 and CBM05 chemistry schemes for atmospheric composition models.
6. Jukka-Pekka Jalkanen, Huan Liu, Elisa Majamäki, Lasse Johansson, Xiaotong Wang, Wen Yi, Zhenyu Luo, Edward Carr, James Corbett. Global shipping emissions during 2014-2020 - the impact of global sulfur regulations and the Covid-19 pandemic.
7. Lasse Johansson, Tiia Grönholm, Androniki Maragkidou, Jukka-Pekka Jalkanen, Jaakko Kukkonen. STREAM for dispersion puff-modelling of shipping emissions.
8. Krista Luoma, Tiia Grönholm, Timo Mäkelä, Mikko Heikkilä, Aki Virkkula. Ethalometer measurements at Utö island.
9. Andreas Gondikas, Karin Mattsson, Martin Hassellöv: A new form of hazardous microparticulate contamination to the marine environment from ships using heavy fuel oil with exhaust gas scrubbers – characterization and implications for fate, transport and ecotoxicity. (under review in Science of the Total Environment).
10. Elisa Majamäki, Jukka-Pekka Jalkanen, Lasse Johansson, Tiia Grönholm, Jaakko Kukkonen. Improving the global predictions of ship emissions by inclusion of ambient conditions.

11. Mikhail Sofiev, Yuliia Palamarchuk, Juha Nikmo, Niilo R.I. Rytö, Mari Kauhaniemi, Androniki Maragkidou, Fiorella Acquaotta, Michelle Bell, Susanne Breitner, Patricia Isabel Matus Correa, César De la Cruz Valencia, Magali Hurtado Diaz, Bertil Forsberg, Rebecca M. Garland, Yue-Liang Leon Guo, Yuming Guo, Masahiro Hashizume, Yasushi Honda, Veronica Huber, Carmen Iñiguez, Haidong Kan, Éric Lavigne, Joana Madureira, Chris Fook Sheng Ng, Baltazar Nunes, Nicolás Valdés Ortega, Shih-Chun Pan, Martina S. Ragetti, Alexandra Schneider, Joel Schwartz, Noah Scovronick, Susana Pereira da Silva, Aurelio Tobias, Shilu Tong, Anamaria Vicedo-Cabrera, Antonella Zanobetti, Christofer Åström, Antonio Gasparrini, Jouni J.K. Jaakkola, Jaakko Kukkonen: A global multidecadal hindcast of air quality for assessment of exposure and health effects: data description and evaluation at 3984 locations.
12. Jouni J.K. Jaakkola, Simo-Pekka Kiihamäki, Niilo R.I. Rytö, Maritta S. Jaakkola, Jaakko Kukkonen, Mikhail Sofiev, MCC team: Short-term exposure to shipping related fine particles (PM_{2.5}) and burden of mortality from cardiovascular and respiratory causes.
13. Simo-Pekka Kiihamäki, Marko Korhonen, Jouni J.K. Jaakkola: Optimal unemployment: do economic and public health perspectives differ?
14. Lunde Hermansson, A., Gustavsson, M., Hassellöv, I.-M., Svedberg, P., García-Gómez, E., Gros, M., Petrović, M. and Ytreberg, E. Combining ecotoxicological tests with Quantitative Structure-Activity Relationship (QSAR) models to predict the toxicity of scrubber water.
15. Elisa Majamäki, Volker Matthias, Jana Moldanova, Jukka-Pekka Jalkanen, Leonidas Ntziachristos. Emission scenarios for EU area/SCIPPER.
16. Elisa Garcia, R. Gil, P. Gago-Ferrero, P. Lara-Martín, E. Mikkolainen, M. Gros, M. Petrovic and others. Chemicals of emerging concern in grey and scrubber water effluents emitted from ships.

17. Calgaro, L., Cecchetto, M., Giubilato, E., Jalkanen, J.-P., Majamaki, E., Erik.Fridell, Semenzin, E., Marcomini, A., 2024. The contribution of shipping emissions to the loads of metals, PAHs, and nutrients in the Northern Adriatic Sea - current and future scenarios.

18. Loris Calgaro, Giubilato E., Aghito M., Jalkanen J.P., Majamaki E., Ferrarin C., R. Hänninen, Palamarchuk Y., Sofiev M., Semenzin E., and Marcomini A., et al. Lagrangian modelling of the environmental fate of metals and polyaromatic hydrocarbons from land-based and shipping emissions in the Northern Adriatic Sea (to be submitted to the special issue of Marine Pollution Bulletin (Marine Pollution Caused by Ships)).

19. Zervakis, V., V. Kolovoyiannis, L. Calgaro, A. A. Mazioti, E. Giubilato, C. Ferrarin, E. Majamäki, E. Potiris, E. Krasakopoulou, E. Tragou, J. Kukkonen, J.-P. Jalkanen. A new method to assess the dilution of complex mixtures in the marine environment: application to marine scrubber water effluents (In preparation for submission to Marine Pollution Bulletin - SI on Marine Pollution Caused by Ships).

20. Kolovoyiannis V., Mazioti A.A., Zervakis V., Krasakopoulou E., Tragou E., Potiris E., Jukka-Pekka Jalkanen, Majamäki Elisa, Risto Hänninen et al. Modelling the impact of maritime transport on marine pollution levels of Saronikos Gulf, Eastern Mediterranean. under preparation for submission to Marine Pollution Bulletin - SI on Marine Pollution Caused by Ships.

21. Zervakis V. et al. Shipping impacts on the Mediterranean region (To be prepared during 2024; not shaped yet).

22. Ana Picado, Humberto Pereira, Nuno Vaz and João Miguel Dias. Assessing Present and Future Ecological Water Quality of Ria de Aveiro: A Modelling Study (to be submitted to the Journal of Marine Science and Engineering).

23. Ana Picado, João Dias and others. Simulating the impact of shipping emissions in the water quality of Ria de Aveiro (delayed, but still under preparation).
24. E. Fragkou, G. Tsegas, G. Ioannidis, L. Ntziachristos, U. Alyuz, R. S. Sokhi, R. Hänninen, M. Sofiev, J.-P. Jalkanen, E. Majamäki, J. Moldanova, S. Jutterström, J. Kukkonen. Assessing the efficiency of different mitigation strategies to reduce shipping related air pollution in the Mediterranean coastal region- An ensemble modelling approach.
25. Manuel Aghito, Lars Robert Hole, Majamäki E, Hänninen R, Jalkanen J.P. Øyvind Breivik, Anna Lunde Hermansson, Maria Grandberg, Vassilis Zervakis, Vassilis Kolovoyannis, Jana Moldanova. Modelling of emissions of organic pollutants and heavy metals from shipping in European seas (to be submitted it to the Marine Pollution Bulletin special issue).
26. Samuel Guéret, W. Winiwarter, A.L. Hermansson, E. Ytreberg, I-M. Hassellöv, E. Giubilato, L. Calgaro, A. Marcomini. Impact assessment of shipping activities: Applying the critical load concept to both the atmosphere and marine environment.
27. Samuel Guéret, W. Winiwarter. Holistic environmental impact assessment from shipping: A decision support tool for stakeholder engagement.
28. Chen C.Y., Magnusson K., Dupont S., Pfeiffer R. & M.E. Granberg. Scrubber water impairs fertilization and development in the green sea urchin (*Strongylocentrotus droebachiensis*) at very low concentrations. (to be submitted to STOTEN).
29. Granberg M.E., Magnusson K., Abrantes N., Baccichet M., Calgaro L., Chen C.Y., Distefano G. G., Dupont S., Garcia Gomez E, Genitsaris S, Volpi Ghirardini A., Giubilato E., Gros M., Hassellöv I.-M., Lunde Hermansson A., Hudson M.D., Marchetto D., Marcomini A., Monteiro A., Moustaka-Gouni M., Ntziachristos L., Osborne P., Petrovic

- M., Picone M., Ré A., Russo M., Salo K., Stefanidou N., Williams I., Zapata-Restrepo L. M. & E. Ytreberg. A multi species and multi system evaluation of the ecotoxicological effects of scrubber water – a synopsis of results from the EMERGE project. (to be submitted to the special issue of Marine Pollution Bulletin (Marine Pollution Caused by Ships)).
30. Jalkanen, J-P et al, (everybody). Environmental Impacts of Shipping. To be submitted to Nature or Science.
31. Elisa Majamäki, Others. STEAM technical paper on revised power profiles, LNG modelling.
32. Elisa Majamäki, Tiia Grönholm, Jukka-Pekka Jalkanen, Jaakko Kukkonen, Lasse Johansson, Others. Modeling of ships as source of methane - Utö case study.

2. LIST OF PRESENTATIONS TO INTERNATIONAL CONFERENCES

2020

1. F. Barmpas, G. Tsegas, N. Moussiopoulos, C. Boikos, N. Rapkos, S. Mamarikas and L. Ntziachristos. Advanced modelling approach for the assessment of the short- and long-term impacts of shipping emission reduction scenarios on marine air quality. 12th International Conference on Air Quality - Science and Application, Thessaloniki, Greece. 9-13 March 2020. Online.
2. Jalkanen, Jukka-Pekka (2020). Out of the frying pan, into the fire. 12th International Conference on Air Quality Shipping emissions, (Online), 18-26 May 2020.

2021

3. Kolovoyiannis V., Krasakopoulou E., Zervakis V., Tragou E., Kontoyiannis H. (2021). Implementing a numerical model for the investigation of the hydrodynamics of Saronikos gulf (Eastern Mediterranean). Proc. 4th Int. Congress on Applied Ichthyology & Aq. Environment (HydroMediT2021). Virtual, 4-6 Nov. 2021, 259-263 <https://hydromedit.gr/wp-content/uploads/2023/11/HydromediT2021-Proceedings-Book-Preview.pdf>.
4. J. Kukkonen, E. Fridell, J.-P. Jalkanen, J. Moldanova, L. Ntziachristos, A. Grigoriadis, F. Barmpas, G. Tsegas, A. Maragkidou, M. Sofiev, T. Grönholm, E. Majamäki, J. Borken-Kleefeld, R.S. Sokhi, P. R. Tiwari, U.A. Ozdemir, V. Zervakis, E. Krasakopoulou, I.-M. Hassellöv, E. Ytreberg, I. Williams, M. Hudson, L. Zapata-Restrepo, L. R. Hole, M. Aghito, O. Breivik, M. Petrovic, S. Rodriguez-Mozaz, A. Ktoris, M. Neophytou, A. Monteiro, M.A. Russo, F. Oikonomou, P. Arampatzi, A. Gondikas, A. Marcomini, E. Giubilato, L. Calgari, J.J.K. Jaakkola, S.-P. Kiihamäki, R. Aittamaa, G. Broström, M. Hassellöv, J. Tamminen, F. Nicolas, J. Kaitaranta, M. Granberg, K. Magnusson Comprehensive evaluation of the environmental impacts of shipping emissions (Online).

International Technical Meeting on Air Pollution Modeling And Its Application, 18-22 Oct 2021.

2022

5. Aghito, M., Calgaro, L., Giubilato, E., Boscherini, M., Hole, L. R., and Marcomini, A. (2022). ChemicalDrift: development and application of a Lagrangian chemical fate model for the exposure assessment of pollutants from shipping activity in the Northern Adriatic Sea. in SETAC Europe 32th Annual Meeting, Copenhagen, Denmark, 15-19 May 2022.
6. Calgaro, L., Giubilato, E., Boscherini, M., Lima, A. C., Pastres, R., Picone, M., et al. (2022a). An interdisciplinary approach to assess the impacts of shipping emission control technologies on the marine environment: EMERGE project and the Northern Adriatic case study. in SETAC Europe 32th Annual Meeting, Copenhagen, Denmark, 15-19 May 2022.
7. Picado A., Vaz N., Dias J.M. (2022). Impact of pollution emitted by maritime transport: Ria de Aveiro case study. Encontro de Oceanografia 2022, 6-7 Junho, Vieira de Leiria, Portugal.
8. E. García-Gómez; M. Gros, N. S. Thomaidis; E. Ytreberg; S. Rodriguez; M. Petrovic. Characterization of scrubber water discharges from ships using a suspect screening approach. 12th Micropol and Ecohazard conference, Santiago de Compostela, Spain, 6-10 June 2022.
9. Calgaro, L., Giubilato, E., Boscherini, M., Lima, A., Pastres, R., Picone, M., et al. (2022b). A novel integrated approach for assessing the impact of shipping emissions control technologies on the marine environment in the Northern Adriatic Sea. in XIX Congresso Nazionale di Chimica dell’Ambiente e dei Beni Culturali, Turin, Italy, 20-23 June 2022.

10. Alyuz, U., Sokhi, R. S., Momoh, K., Kukkonen, J., Sofiev, M., & EMERGE team. (2022). Improving WRF Model Performance for European Coastal Regions: Contribution to The H2020 Emerge Project. Poster presentation at 13th International Conference on Air Quality - Science and Application, June 27 - July 1, 2022, Thessaloniki, Greece.

11. Jalkanen, Jukka-Pekka (2022). Modelling emissions originating from marine LNG engines. 13th International Conference on Air Quality. Thessaloniki, Greece, 27 June - 1 July 2022.

12. Jalkanen, Jukka-Pekka (2022). Ground-based measurements of methane emissions from LNG ships. 13th International Conference on Air Quality. Thessaloniki, Greece, 27 June - 1 July 2022.

13. E. García-Gómez; M. Gros, N. S; Thomaidis; E. Ytreberg; S. Rodriguez; M. Petrovic. Identification of organic contaminants emitted from ships using non-target screening strategies. NTS workshop on analytical techniques and implementation, Odense, Denmark, 29-30 November 2022.

14. Manuel Aghito, Lars Robert Hole, Knut-Frode Dagestad, Loris Calgaro (2022). ChemicalDrift: Lagrangian modelling of transport and fate of aquatic pollutants. EMERGE - PAHs, heavy metals from scrubbers in marine environments MoSAb project workshop, 2.12.2022, (online).

15. Samuel Guéret, Anna Lunde Hermansson, Jens Borcken-Kleefeld, Wilfried Winiwarter. Impact assessment of shipping emissions – developing a critical loads framework for the marine environment. Presented at the ECSA59 Conference in San Sebastian, 5-9 September, 2022.

16. Lars R. Hole, Manuel Aghito, Loris Calgaro (2022). ChemicalDrift: An open-source code for Lagrangian modelling of transport and fate of chemicals in the ocean. EuroGOOS annual meeting, Rotterdam, 14-16 Sept 2022. <http://noos.eurogoos.eu/events/noos-annual-meeting-2022/>.
17. Russo M., Monteiro A., Gama C., Jalkanen J. (2022). EU maritime transport and air quality: impacts in current and future climate change scenarios. In 21st International Conference on Harmonisation within Atmospheric Dispersion Modelling for Regulatory Purposes, 27-30 September, Aveiro, Portugal.
18. Zervakis V., Ntziachristos L., Moustaka M., Gondikas A., Genitsaris S., Barmpas F., Chatzilaou Ch., Kalatzi I., Kolovoyiannis V., Kourkoutmani, P., Krasakopoulou E., Kougioumtzoglou F., Mamoutos I., Mazioti A. A., Petalas S., Potiris E., Stefanidou N., Tragou E. and Tsegas, G. (2022). Assessing the marine scrubbers’ impact on the Saronikos Gulf marine ecosystem through the project EMERGE. Proceedings of the Marine and Inland Waters Research Symposium 2022, Porto Heli, Argolida, Greece, 693-697. https://symposia.gr/wp-content/uploads/2022/10/Proceedings_5.10.22.pdf.
19. Monteiro A., Russo M., Carvalho D., Jukka-Pekka J (2022). The impact of future climate change scenarios on maritime transport air pollution: Mediterranean case study. MedGU Annual Meeting, 27-30 November, Marrakech, Morocco.
20. E Ytreberg*, K Hansson, A Lunde Hermansson, R Parsmo, M Lagerström, J-P Jalkanen, I-M Hassellöv. Metal and PAH loads from ships and boats, relative other sources, in the Baltic Sea. 21st International symposium on pollutant responses in marine organisms (PRIMO21). Gothenburg, Sweden. 2022. Oral presentation.
21. Anna Lunde Hermansson*, Ida-Maja Hassellöv, Jana Moldanová, Erik Ytreberg. Ship exhaust scrubbers – a primary polluter of the sea. 21st International symposium on

- pollutant responses in marine organisms (PRIMO21). Gothenburg, Sweden. 2022. Oral presentation.
22. Lunde Hermansson, A.*, Hassellöv, I.-M., Jalkanen, J.-P & Ytreberg, E. Cumulative effects of contaminants from multiple waste streams, results in an unacceptable risk in areas of intensive shipping activity. ICES ANNUAL SCIENCE CONFERENCE. Hybrid conference, Dublin, Ireland. 2022. Prerecorded oral presentation and Q&A session.
23. Lunde Hermansson, A.*, Hassellöv, I.-M., Jalkanen, J.-P & Ytreberg, E. Contaminants emitted from ships in ports, result in unacceptable risk. ECSA 59: Using the best scientific knowledge for the sustainable management of estuaries and coastal seas. 2022. Oral presentation.

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24. Savvas Genitsaris, Natassa Stefanidou, Leonidas Ntziachristos, Meritxell Gros, Elisa Garcia-Gomez, Mira Petrovic, Maria Moustaka-Gouni (2023). Ecotoxicological effects of marine scrubbers' discharge on multi-domain microbial communities at molecular biodiversity endpoints. SETAC Europe Annual Meeting, 30 April - 4 May 2023, Dublin, Ireland.
25. Picone, M., Russo, M., Distefano, G. G., Baccichet, M., Marchetto, D., Ytreberg, E., et al. (2023c). The Effects of Scrubber Water Discharge on Survival, Larval Development and Reproduction of the Planktonic Copepod *Acartia tonsa* (Dana). in SETAC Europe 33th Annual Meeting, Dublin, Ireland, 30 April-04 May 2023 (Dublin).
26. Calgaro, L., Giubilato, E., Elena, S., and Marcomini, A. (2023b). Environmental Fate Modelling of Organic Pollutants From Land-Based and Shipping Emissions (Including Scrubber Water) In the Northern Adriatic Sea Coastal Areas. in SETAC Europe 33th Annual Meeting, Dublin, Ireland, 30 April-04 May 2023.

27. Ana Ré; Alexandra Monteiro and Nelson Abrantes (2023). Ecotoxicological Effects of Three Different Scrubber-Waters on The Larval Development of The Polychaeta Sabellaria alveolata. SETAC Europe 33rd Annual Meeting, 30 April-4 May 2023, Dublin, Ireland. (Poster).
28. Lunde Hermansson, A.*, Hassellöv, I.-M., Jalkanen, J.-P & Ytreberg, E. Assessing cumulative risk of metals and polycyclic aromatic hydrocarbons from ship activities in ports. SETAC 33rd Annual Meeting, Dublin, Ireland, 30 April-4 May 2023. Oral presentation.
29. Russo M., Monteiro A., Gama C., Jalkanen J. (2023). Future impact of shipping emissions on air quality in Europe under climate change scenarios. In 39th NATO/CCMS International Technical Meeting on Air Pollution Modelling and its Application, 22-26 May, Chapel Hill, USA.
30. G. Tsegas, N. Rapkos, V. Zervakis, V. Kolovoyiannis, L. Ntziachristos. Simulating the dispersion of air emissions and water pollution discharges from scrubber-equipped ships taking into account the air-water mass transfer. 39th International Technical Meeting On Air Pollution Modeling And Its Application, Chapel Hill, USA. 22-26 May, 2023. Oral.
31. Majamäki, E., Jalkanen, J.-P, Grönholm, T., Johansson, L. and Kukkonen, J. Improving prediction of global shipping emission by evaluating the effect of ambient conditions. International Technical Meeting on Air Pollution Modeling And Its Application (2023). Chapel Hill, North Carolina, U.S.A., 22 - 26 May 2023.
32. Calgaro, L., Giubilato, E., Aghito, M., Jalkanen, J.-P. J. P., Ferrarin, C., Semenzin, E., et al. (2023b). Environmental fate modelling of organic pollutants from land-based and shipping emissions in the Northern Adriatic Sea coastal areas. in 18th International Conference on Chemistry and Environment (ICCE 2023), Venice, Italy, 11-15 June 2023.

33. S. Guéret, W. Winiwarter, A. Lunde Hermansson, E. Giubilato, L. Calgaro, J. Borken-Kleefeld, I.-M. Hassellöv, E. Ytreberg, and A. Marcomini. Impact assessment of shipping activities: Applying the critical load concept to both the atmosphere and marine environment. Presented at the 18th International Conference on Chemistry and the Environment. Venice, June 11 – 15, 2023.

34. S. Guéret, W. Winiwarter, B. Nguyen. Holistic Environmental Impact Assessment From Shipping: A Decision Support Tool for Stakeholder Engagement. Presented at the 18th International Conference on Chemistry and the Environment. Venice, June 11 – 15, 2023.

35. Picado A., Vaz N., Russo M., Monteiro A. and Dias J.M. (2023). Impact of shipping emissions on Ria de Aveiro water quality. In 10th short Course/Conference on Applied Coastal Research, 4-6 September, Istanbul, Turkey.

36. Gondikas, M. Hassellöv, K. Mattsson, S. Chen, and I.-M. Hassellöv. Shipping pollution in the marine environment: a particulate challenge. 13th International Conference on Instrumental Methods of Analysis: Modern Trends and Applications, Chania, Crete. 17-20 September, 2023. Oral.

37. Monteiro A., Russo M., Carvalho D., Jukka-Pekka J. (2023). Future impact of shipping emissions on air quality in Europe under climate change scenarios. In 25th International Transport & Air Pollution (TAP) and the 3rd Shipping & Environment (S&E) Conference, 25-28 September, Gothenburg, Sweden

38. Calgaro, L., Giubilato, E., Aghito, M., Jalkanen, J.-P., Ferrarin, C., Semenzin, E., et al. (2023a). Environmental fate modelling of organic pollutants from land-based and shipping emissions in the Northern Adriatic Sea coastal areas. in 25th International Transport and Air Pollution and 3rd Shipping and Environment Conference, 25-28 September 2023, Gothenburg, Sweden.

39. Wilfried Winiwarter, Samuel Guéret. Holistic environmental impact assessment from shipping: A decision support tool for stakeholder engagement. Poster presented at the TAP and S&E conference, Gothenburg, September 25-28, 2023.
40. Samuel Guéret, Wilfried Winiwarter, Anna Lunde Hermansson, Jens Borcken-Kleefeld, Ida-Maja Hassellöv and Erik Ytreberg. Impact assessment of shipping activities: Applying the critical load concept to both the atmosphere and marine environment. Presented at the TAP and S&E conference, Gothenburg, September 25-28, 2023.
41. Maragkidou, T. Grönholm, L. Rautiainen, J. Nikmo, T. Mäkelä, L. Laakso and J. Kukkonen, Direct evidence of the substantial effect of SECA in the Baltic Sea. Joint TAP and SE conference (25th International Transport and Air Pollution and 3rd Shipping and Environment Conference), Gothenburg, Sweden (25-28 September 2023). Oral presentation.
42. Gondikas, M. Hassellöv, S. Chen, I.-M. Hassellöv. Identification and quantification of contaminant particles from scrubber water effluents in a high-intensity shipping area. 25th International Transport and Air Pollution and 3rd Shipping and Environment Conference, Gothenburg, Sweden. 25-28 September, 2023. Poster.
43. J. Moldanová, A. Lunde Hermansson*, B. Strandberg, E. García-Gómez, M. Gros, M. Petrović, S. Rodríguez-Mozaz, I.-M. Hassellöv and E. Ytreberg. Distribution of PAHs and metals between exhaust and scrubber water discharge from a large 2-stroke slow speed marine engine equipped with open-loop scrubber. 25th International Transport and Air Pollution and 3rd Shipping and Environment Conference, Gothenburg, Sweden. 25-28 September, 2023. Oral presentation.
44. Lunde Hermansson, A.*, Hassellöv, I.-M., Grönholm, T., Jalkanen, J.-P., Fridell, E., Parsmo, R., Hassellöv, J. & Ytreberg, E. Monetary return on scrubber installations at the expense of environmental damage. 25th International Transport and Air Pollution and 3rd

- Shipping and Environment Conference, Gothenburg, Sweden. 25-28 September, 2023.
Poster.
45. Picone, M., Giubilato, E., Magnusson, K., Granberg, M., Volpi Ghirardini, A., Marcomini, A. (2023). Ecotoxicological effects of exhaust gas cleaning systems (EGCS) discharge water on marine copepods. 25Th International Transport and Air Pollution and 3rd Shipping and Environment Conference (TAP&SE), Gothenburg, 25-28 September 2023.
46. Calgaro, L., Aghito, M., Giubilato, E., Jalkanen, J.-P., Ferrarin, C., Majamäki, E., et al. (2023a). Chemicaldrift 1.0: a new open-source lagrangian chemical-fate and transport model for organic aquatic pollutants: the Northern Adriatic sea case study. in XX Congresso Nazionale di Chimica dell’Ambiente e dei Beni Culturali, Ischia, Italy, 28 September - 01 October 23 2023.
47. Polyxeni Kourkoutmani, Savvas Genitsaris, Maria Demertzioglou, Natassa Stefanidou, Dimitra Voutsas, Leonidas Ntziachristos, Maria Moustaka-Gouni, Evangelia Michaloudi (2023). Effects of scrubber effluent on natural metazooplankton communities of Thermaikos Gulf. Hellenic National Conference for the Environment, 6-8 October 2023, Thessaloniki, Greece.
48. M. Gros, E. García-Gómez, R. Gil-Solsona, E. Mikkolainen, M. Hytti, S. Rodriguez-Mozaz, E. Ytreberg, P. Gago-Ferrero and M. Petrović. Identification of emerging contaminants in greywater emitted from ships by a comprehensive LC-HRMS target and suspect screening approach. International Conference on Environmental & Food Monitoring ISEAC-41, Amsterdam, The Netherlands, 20-24 November 2023. Oral.
49. Manuel Aghito, Daniela M Pampanin, Raymond Nepstad, Lars Robert Hole, Øyvind Breivik (2023). ChemicalDrift model: Transport and Fate of Chemicals in Water Column and Sediments — A Case Study of WCM 2021 Campaign Forum Offshore Miljøovervåking, Norwegian Environmental Agency, Oslo, 31.Oct-1.Nov 2023.

50. Lars Robert Hole, Øyvind Breivik, Knut-Frode Dagestad, Loris Calgaro, Jukka-Pekka Jalkanen (2023). Modelling shipping emissions with STEAM and ChemicalDrift: Some outcomes of the EMERGE EU h2020 project. EuroGOOS Webinar, 10.1.2023, (online).
51. Kolovoyiannis, V., Mazioti, A. A., Krasakopoulou, E., Zervakis, V., Tragou, E. A., Mamoutos, I., Potiris, E., Petalas, S., Chatzilaou, C., Mosiou, K., Kontoyiannis, H., Paraskevopoulou, V., and Athiniotis, A. (2023). Implementation of a modelling system for the investigation of the Saronikos Gulf marine ecosystem (Eastern Mediterranean), EGU General Assembly 2023, Vienna, Austria, 24–28 Apr 2023, <https://doi.org/10.5194/egusphere-egu23-12514>.
52. Kolovoyiannis V., Petalas S., Mamoutos I., Krasakopoulou E., Zervakis V., Tragou E. and Kontoyiannis H. (2023). Optimizing the parameterization of a high-resolution numerical simulation of the Saronikos Gulf hydrodynamics. 2nd International Scientific Conference on Design and Management of Port Coastal and Offshore Works Thessaloniki, Greece, May 24-27 2023, 75-79, https://dmcco.web-idea.gr/files/DMPCO2023_Proceedings_Vol_I.pdf.
53. Mazioti A. A., Kolovoyiannis V., Petalas S., Mamoutos I., Potiris E., Krasakopoulou E., Tragou E. A., Zervakis V. (2023) (*oral presentation) Simulating the fate of selected PAHs in Saronikos gulf, Eastern Mediterranean, using a far-field water-quality model. CEST2023 -18th International Conference on Environmental Science and Technology, Athens, Greece. 30 August - 2 September 2023, <https://doi.org/10.30955/gnc2023.0022>.
54. Ana Ré; A.T. Rocha; Alexandra Monteiro and Nelson Abrantes (2023). Can the post-exposure feeding inhibition of *Artemia* sp. and *Mytilus galloprovincialis* be impaired by the exposure to different scrubber-waters? 25th International Transport and Air Pollution and 3rd Shipping and Environment Conference. 25-28 September, Gothenburg, Sweden. (Poster).

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55. Calgaro, L., Giubilato, E., Aghito, M., Jalkanen, J. P., Majamäki, E., Ferrarin, C., et al. (2024). Impacts of shipping discharges (including scrubber water) in the Northern Adriatic Sea: exploring current and future environmental exposure using a modelling approach. in SETAC Europe 34th Annual Meeting, Seville, Spain, 5 – 9 May 2024.
56. Ana Ré; Alexandra Monteiro and Nelson Abrantes (2024). Vulnerability of the Sea Urchin (*Paracentrotus lividus*) to various Scrubber-waters: Implications for Fertilization and Larval Development. SETAC Europe 34rd Annual Meeting, 5-9 May 2024, Seville, Spain. (Poster).
57. E. Fragkou, G. Tsegas, G. Ioannidis, L. Ntziachristos, U. Alyuz, R. S. Sokhi, R. Hänninen, M. Sofiev, J.-P. Jalkanen, E. Majamäki, J. Kukkonen, J. Moldanova, S. Jutterström, E. Fridell, M. Russo, A. Monteiro, L. Calgaro, E. Giubilato, and EMERGE WP5 teams. Assessing the contribution of shipping emissions to the Mediterranean air quality. 14th International Conference on Air Quality - Science and Application, Helsinki, Finland. May 13–17, 2024. Oral.
58. Alyuz, U., Sokhi, R., Arghavani, S., Fragkou, E., Tsegas, G., Ioannidis, G., Ntziachristos, L., Hänninen, R., Sofiev, M., Kukkonen, J., Jalkanen, J.-P., Majamäki, E., Moldanova, J., Jutterström, S., Russo, M., Monteiro, A., & EMERGE Team. (2024). Impact of shipping emissions in highly populated Mediterranean coastal cities predicted by three regional models. Paper presented at the 14th International Conference on Air Quality in Kumpula, Helsinki, May 13–17, 2024.
59. J.-P. Jalkanen, E. Fridell, J. Kukkonen, J. Moldanova, L. Ntziachristos, A. Grigoriadis, M. Moustaka, E. Fragkou, G. Tsegas, A. Maragkidou, M. Sofiev, R. Hänninen, T. Grönholm, J. Palamarchuk, E. Majamäki, W. Winiwarter, S. Gueret, R.S. Sokhi, S. Kumar, U.A. Ozdemir, V. Kolovoyiannis, V. Zervakis, A.-A. Mazioti, E. Krasakopoulou, I.-M. Hassellöv, A. Lunde Hermansson, E. Ytreberg, I. Williams, M. Hudson, L.Z. Restrepo, L.

- R. Hole, M. Aghito, O. Breivik, M. Petrovic, M. Gross, S. Rodriguez-Mozaz, M. Neophytou, A. Monteiro, M.A. Russo, F. Oikonomou, P. Arampatzi, A. Gondikas, A. Marcomini, E. Giubilato, L. Calgaro, M. Picone, J.J.K. Jaakkola, I. Shiue, S.-P. Kiihamäki, G. Broström, M. Hassellöv, J. Kaitaranta, M. Granberg, K. Magnusson (2024). The impacts of the emissions from shipping on atmospheric and marine environments. 14th International Conference on Air Quality - Science and Application, Helsinki, Finland. May 13–17, 2024. Oral.
60. Hellén, H., Kouznetsov, R., Kraft, K., Laakso, L., Seppälä, J., Vestenius, M., Jalkanen, J.-P., and Hakola, H. (2024). Anthropogenic and biogenic influences on mixing ratios of non-methane hydrocarbons and methanethiol on an island in Baltic Sea. 14th International Conference on Air Quality - Science and Application, Helsinki, Finland. May 13–17, 2024. Oral.
61. G. Tsegas, E. Fragkou, G. Ioannidis, N. Rapkos, L. Ntziachristos, U. Alyuz, R. S. Sokhi, J.-P. Jalkanen, E. Majamäki, and EMERGE WP5 teams. Assessing the effect of maritime emissions on the air quality of a Mediterranean port. 14th International Conference on Air Quality - Science and Application, Helsinki, Finland. May 13–17, 2024. Oral.
62. Konstantina Liveri, Savvas Genitsaris, Natassa Stefanidou, Polyxeni Kourkoutmani, Evangelia Michaloudi, Leonidas Ntziachristos, Maria Moustaka-Gouni (2024). Changes in marine bacterioplankton functional groups under the influence of shipping scrubber effluent. National Conference of the Hellenic Society of Biological Sciences, 23-25 May 2024, Alexandroupoli, Greece.
63. M. Gros; E. García-Gómez; G. Gkotsis; M.C. Nika; I.M. Hasselöv; K. Salo; A. Lunde-Hermansson; J. Moldanova; L. Ntziachristos; A. Gondikas; E. Ytreberg; N. S. Thomaidis; M. Hassellöv; M. Petrovic. Characterization of scrubber water discharges from ships using advanced suspect and target screening strategies. SETAC 34th Annual Meeting, Seville, Spain, 5-9 May 2024. Poster Corner.

64. E. García-Gómez; R. Gil-Solsona; E. Mikkolainen; M. Hytti; S. Rodríguez-Mozaz; E. Ytreberg; P. Gago-Ferrero; M. Petrovic; M. Gros. Characterization of scrubber water discharges from ships using advanced suspect and target screening strategies. SETAC 34th Annual Meeting, Seville, Spain, 5-9 May 2024. Poster.

65. Mazioti A.A., Kolovoyiannis V., Krasakopoulou E., Tragou E., Zervakis V. (2024) (*oral presentation) Modelling the fate of chemical pollution in the coastal marine environment. A case study from the Saronikos Gulf, Eastern Mediterranean. THALASSA 2024 – CMMI, Larnaca, Cyprus, 28 - 29 May 2024.

66. Mazioti A.A., Kokiasmenou E., Krasakopoulou E. (2024) (poster) Antifouling Paints: Estimation of the Pollution Levels in the Marine Environment with the Use of a 2D Model. 5th International Congress on Applied Ichthyology, Oceanography, and Aquatic Environment (HydroMediT 2024), Mytilene, Greece, 30 May - 2 June 2024.

67. Mazioti A.A., Kolovoyiannis V., Krasakopoulou E., Tragou E., Zervakis V., Assimakopoulou G., Athiniotis A., Pavlidou A., Zeri C. (2024) (poster) Application of a Far-field Water Quality Model for the Reproduction of Chlorophyll-a Observations in Saronikos Gulf, Eastern Mediterranean. 5th International Congress on Applied Ichthyology, Oceanography, and Aquatic Environment (HydroMediT 2024), Mytilene, Greece, 30 May - 2 June 2024.

68. Zervakis V., Kolovoyiannis V., Mazioti A.A., Potiris E., Krasakopoulou E., Tragou E., Calgaro L., Giubilato E., Majamäki E., Jalkanen J.-P. (2024). A method to assess the rate of dilution of marine scrubber-water from water-quality model results: application in the Saronikos Gulf, Eastern Mediterranean. 5th International Congress on Applied Ichthyology, Oceanography and Aquatic Environment - HydroMedit2024, Mytilene, Greece, 30 May - 2 June 2024.

Total number of abstracts published in the respective series of international conference publications. (29/05/2024) = 68

2.1 Other presentations given by EMERGE consortium members include:

- ICES Annual Science Conference (2022). Global Environmental Pressures from Shipping. Dublin, Ireland. 19-23 Sep 2022.
- ICES Annual Science Conference (2022). Studying environmental pressures from shipping. Dublin, Ireland. 19-23 Sep 2022. Keynote lecture.
- 29th International Conference on Modelling, Monitoring and Management of Air Pollution (2021). Health Impacts of PM 2.5 and NO2 ship-related air pollution in Matosinhos Municipality, Portugal. Wessex, UK. 26-28 Oct 2021.
- EUSBSRegion, Policy Area SHIP EMERGE Introduction (2020) (Online). Jan 22 2020.
- EUSBSRegion, PA SHIP (14th meeting) EMERGE Update (Online). 15-Jun-20.
- EUSBSRegion, PA SHIP (15th meeting) EMERGE Update (Online). 10-Nov-20.
- EUSBSRegion, PA SHIP (16th meeting) EMERGE Update (Online). 03-Jun-21.
- EUSBSRegion, PA SHIP (17th meeting) EMERGE Update (Online). Dec 7 2021.
- EUSBSRegion, PA SHIP (19th meeting) EMERGE Update (Online). 24-Nov-22.
- EUSBSRegion, PA SHIP (20th meeting) EMERGE Update (Online). 29-May-23.
- EUSBSRegion, PA SHIP (Operational group meeting) EMERGE Update (Online). 23-Apr-24.
- OSPAR - Monitoring and on Trends and Effects of Substances in the Marine Environment (MIME) EMERGE Introduction (Online). 23-27/11/2020.
- OSPAR - Monitoring and on Trends and Effects of Substances in the Marine Environment (MIME) (Online). 22-26 Nov 2021.
- OSPAR Hazardous Substances & Eutrophication working group (HASEC). Discharges from Exhaust Gas Cleaning Systems in the OSPAR Marine area (Online). 29 Mar 2022.
- OSPAR Environmental Impacts of Human Activities working group (EIHA). Discharges from Exhaust Gas Cleaning Systems in the OSPAR Marine area (Online). 22 Mar 2022.

- Arctic Passion Seminar organized by Aker Arctic (2024). Global ship emissions.....Helsinki, Finland. 15 Feb 2024.
- European Maritime Transport Environmental Report I, launch event (Online). 01 Sep 2021.
- European Maritime Transport Environmental Report II, stakeholder consultation (Online). 14 Feb 2024.
- Clean Arctic Alliance scrubber webinar. Risk and Impact Assessment of Scrubber Water Discharge (Online). 21 Nov 2023.
- KISO - Meeting of National Air Protection working group. Meriliikenteen ilmansaastepäästöjen inventaario ja skenaariotyö. Helsinki, Finland, 22 Jan 2024.
- IMO Intersessional Working Group for Greenhouse Gases (7th) (Online). 23-27 Mar 2020.
- IMO ISWG GHG (8th session) (Online). 24-28 May 2021.
- IMO ISWG GHG (9th session) (Online). 15-17 Sep 2021.
- IMO ISWG GHG (10th session) (Online). 18-22 Oct 2021.
- IMO ISWG GHG (13th session) (Online). 5-9 Dec 2022.
- IMO Marine Environment Protection Committee, 76th session (Online). 14-18 June 2021.
- IMO MEPC, 77th session (Online). 22-26 Nov 2021.
- IMO MEPC, 78th session (Online). 6-10 Jun 2022.
- IMO MEPC, 79th session (Online). 12-16 Dec 2022.
- IMO MEPC, 81st session. Environmental impact assessment of EGCS effluents. London, UK, 18-22 Mar 2024.
- IMO Pollution Prevention and Response (11th session). Environmental impact assessment study of EGCS effluents discharges in the Baltic Sea and the North Sea area. London, UK. 19-23 Feb 2024.
- ICES Working Group SHIP (Online). 16 Nov 2020.
- ICES Working Group SHIP (Online). 04 Nov 2021.
- ICES Working Group SHIP (Online). 15-18 Nov 2022.

- ICES Working Group SHIP (Online). 2-3 May 2023.
- ICES Working Group SHIP. Gothenburg, Sweden. 25-29 Sep 2023.
- EMSA visit to discuss extending cooperation. EMERGE project findings, scenarios, possibilities to support future IMO submissions. Lisbon, Portugal, 1-3 Feb 2023.
- EMSA workshop on coastguard functions. Ship emission modeling for policy support tasks (Online). 18-19 April 2023.

3. LIST OF OTHER PUBLICATIONS AND ARTICLES

2022

1. E. Majamäki (2022). Shipping contribution to global emissions. Joint SCIPPER and EMERGE H2020 projects seminar: “Monitoring and decrease of shipping emissions”, Posidonia 2022 Exhibition, 9 June 2022, Metropolitan Expo, Athens, Greece.
2. E. Krasakopoulou (2022). Water pollution impacts. Joint SCIPPER and EMERGE H2020 projects seminar: “Monitoring and decrease of shipping emissions”, Posidonia 2022 Exhibition, 9 June 2022, Metropolitan Expo, Athens, Greece.
3. L. Ntziachristos (2022). The potential of monitoring techniques. Joint SCIPPER and EMERGE H2020 projects seminar: “Monitoring and decrease of shipping emissions”, Posidonia 2022 Exhibition, 9 June 2022, Metropolitan Expo, Athens, Greece.
4. J. Moldanova (2022). New fuels and emission control impacts. Joint SCIPPER and EMERGE H2020 projects seminar: “Monitoring and decrease of shipping emissions”, Posidonia 2022 Exhibition, 9 June 2022, Metropolitan Expo, Athens, Greece.

2024

5. Jalkanen, Jukka-Pekka; Fridell, Erik; Kukkonen, Jaakko; Moldanova, Jana; Ntziachristos, Leonidas; Grigoriadis, Achilleas; Moustaka, Maria; Fragkou, Evangelia; Tsegas, George; Maragkidou, Androniki; Sofiev, Mikhail; Hänninen, Risto; Grönholm, Tiia; Palamarchuk, Julia; Majamäki, Elisa; Winiwarter, Wilfried; Gueret, Samuel; Sokhi, Ranjeet S.; Kumar, Saurabh; Alyuz Ozdemir, Ummugulsum; Kolovoyiannis, Vassilis; Zervakis, Vassilis; Mazioti, Aikaterini-Anna; Krasakopoulou, Evangelia; Hassellöv, Ida-Maja; Lunde Hermansson, Anna; Ytreberg, Erik; Williams, Ian; Hudson, Malcolm; Zapata Restrepo, Lina; Hole, Lars Robert; Aghito, Manuel; Breivik, Oyvind; Petrovic, Mira; Gross, Meritxel; Rodriguez-Mozaz, Sara; Neophytou, Maria; Monteiro, Alexandra; Russo,

- Michael A.; Oikonomou, Fotis; Gondikas, Andreas; Marcomini, Antonio; Giubilato, Elisa; Calgaro, Loris; Jaakkola, Jouni J. K.; Shiue, Ivy; Kiihamäki, Simo-Pekka; Broström, Göran; Hassellöv, Martin; Kaitaranta, Joni; Granberg, Maria; Kerstin, Magnusson (2024). Environmental impacts of exhaust gas cleaning systems in the Baltic Sea, North Sea, and the Mediterranean Sea area. Finnish Meteorological Institute, Helsinki, Finland. Available at: <https://helda.helsinki.fi/items/bb939453-8311-4e1e-88c7-4a3e8b9e80a3>. <https://doi.org/10.35614/isbn.9789523361898>. <http://hdl.handle.net/10138/569605>. ISBN: 978-952-336-189-8.
6. Ricky Tart, Ian D. Williams, Toby J. Roberts, Isaac Fravashi (Eds) (2024). Tidelines @ Cedar. University of Southampton, UK. ISBN: 978-1-912431-27-4.
7. Ricky Tart, Ian D. Williams, Toby J. Roberts, Isaac Fravashi (Eds) (2024). Tidelines @ Upper Shirley High. University of Southampton, UK. ISBN: 978-1-912431-26-7.
8. Ian D. Williams, Maria Neophytou, Androniki Maragkidou (2024). The EMERGE Project: Evaluation, control and Mitigation of the EnviRonmental impacts of shipping Emissions (EMERGE). University of Southampton, UK. ISBN: 978-1-912431-28-1.

4. MEETINGS, SEMINARS AND WORKSHOPS ORGANIZED OR CO-ORGANIZED BY THE EMERGE PROJECT

- EMERGE Stakeholder workshop, online, 11 March 2021. Recording of the meeting can be found here: <https://www.youtube.com/watch?v=dQrdnYvt360&t=13s>
- SCIPPER and EMERGE H2020 projects organized and hosted in Posidonia 2022 Exhibition the seminar “Monitoring and decrease of shipping emissions” on 9 June 2022 at Metropolitan Expo, Athens (Greece).
- EMERGE Stakeholder workshop, online, 29 February 2024. Recording of the meeting can be found here: <https://www.youtube.com/watch?v=vD7jZTKfSZ4&t=4s>
- EMERGE EU Stakeholder workshop, online, 21 May 2021.

4.1 EMERGE booth participation and dissemination of promotional material in conferences, seminars, etc.

- Booth and distribution of dissemination materials (roll-up banner, poster, flyers) to the 14th International Conference on Air Quality - Science and Application, Helsinki, Finland. May 13–17, 2024. Representatives from MarInEM and FMI
- Booth and distribution of dissemination materials (roll-up banner, poster, flyers, booklet) to the THALASSA 2024 – Marine Sciences Conference, Larnaka, Cyprus. May 28-29, 2024. Representatives from MarInEM and University of Aegean.