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The network of Horizon Europe Cluster 5 National Contact Point.





AIS-driven emission intelligence for ecosystem-aware waterborne transport

Entity profile · HORIZON-CL5-2027-03-D5-17

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Topic and our specific contribution

D5-17 · From ship activity to ecosystem exposure

01
AIS activity data
Vessel-resolved movements, speed and engine load at high spatio-temporal resolution

02
Emission inventory
Bottom-up NOx, SOx, PM, BC and CO_2 loads per ship, route and port call

03
Dispersion and deposition
Coupled modelling linking emissions to exposure in ports, straits and coastal waters

04
Mitigation scenarios
Alternative fuels, operational measures and OPS, with Monte Carlo uncertainty

Test bed Turkish Straits and Sea of Marmara: a dense traffic corridor through ecologically sensitive waters

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Technology profile

Ship emission inventories	AIS-based bottom-up modelling; Gaussian dispersion
Engine combustion and emissions	Converge CFD; ANSYS Fluent, GT-Suite engine and system models
Alternative marine fuels	Biodiesel and nano-additive engine testing; methanol, ammonia and hydrogen modelling
Data-driven modelling	ANN and ANFIS surrogates; RSM and NSGA-II multi-objective optimisation
Sustainability assessment	Life-cycle sustainability assessment (LCSA)

Experience

35+

SCI-indexed publications

Top 2%

Stanford–Elsevier World's Top 2% Scientists (single-year, 2025)

Horizon Europe
AIS-based port air quality and emissions modelling

National ship emission reporting project
Principal investigator; data collection and reporting software

International collaboration
Sandia National Laboratories (USA); University of Catania (Italy)

EU COST Actions
Active member in several Actions on maritime decarbonisation and sustainability

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Role sought and contact details

What we offer

WP or task lead on emission, exposure and impact modelling, scenario analysis and uncertainty quantification

Partners we seek

Coordinator with a ZEWT track record, university, marine engineers, port authorities, ship operators, monitoring and sensor SMEs

Assoc. Prof. Dr. Ramazan Şener

Department of Marine Engineering
Bandırma Onyedi Eylül University · public university, Türkiye

Expertise: marine engines, combustion and emission modelling, alternative fuels, ship emission inventories

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