

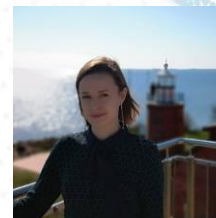
EU Coastal Use Cases Workshop

September 16, 2024

Development of the Operational hydrodynamic model for the Curonian Lagoon and coastal area of the southeastern Baltic Sea



Jovita Mėžinė
Klaipėda University, Lithuania



Klaipėda
University

Marine Research
Institute



PROGRAMME OF
THE EUROPEAN UNION



implemented by



- **The project aims to improve understanding of the shallow lagoon and coastal waters of Lithuania.**

Promote an operational modeling service for stakeholders and enhance the visibility of CMEMS.



THE CORE OF THE NUMERICAL MODELING TEAM



Dr. Jovita Mėžinė

OPER-LIT project lead,
modeller, data analyst,
developer



Dr. Rasa Idzelytė

Modeller, data
analyst, developer



Dr. Georg Umgiesser

Modelling group lead,
modeller, developer



Dr. Petras Zemlys

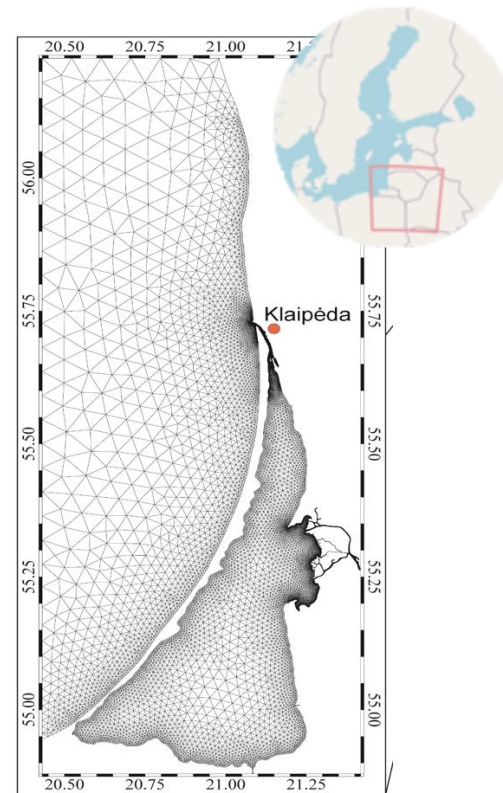
Modeller, data
analyst, developer



- **Copernicus Marine
Products and Coastal
model**

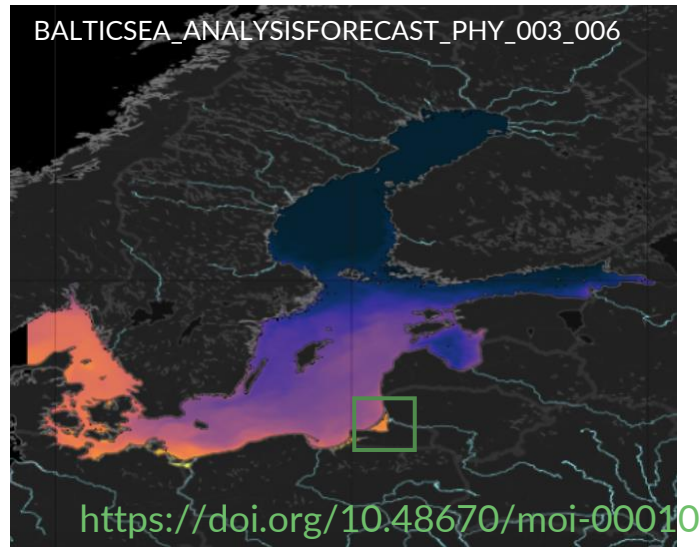


- **MODEL**
 - SHYFEM – Shallow water HYdrodynamic Finite Element Model (<https://github.com/SHYFEM-model/shyfem>)
- **GEOGRAPHICAL COVERAGE:**
 - 20.431° E, 54.87986° N,
 - 21.41875° E, 56.22538° N
- **HORIZONTAL GRID:**
 - triangular elements with varying resolution from 20-5000 m
- **VERTICAL GRID IS IN ZETA LAYERS:**
 - 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 13, 15, 18, 25, 35, 50 and 68 m.





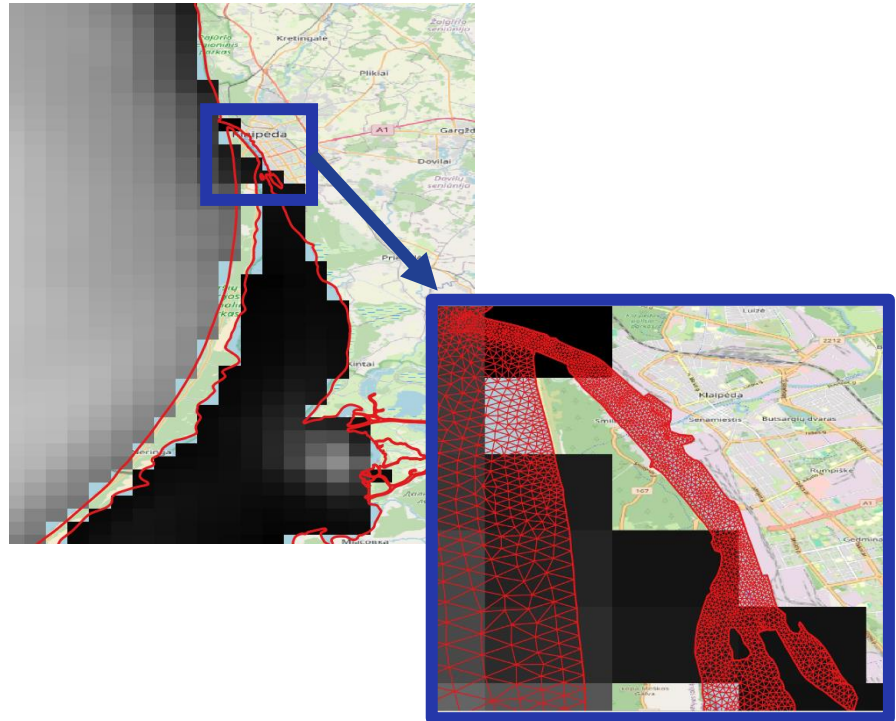
- SEA BOUNDARIES:
 - Copernicus Marine Product - Baltic Sea Physics Analysis and Forecast
- METEOROLOGICAL DATA:
 - ECMWF
- RIVER DATA:
 - Lithuanian Hydrometeorological Service



- **Seamless Coastal Marine Service**



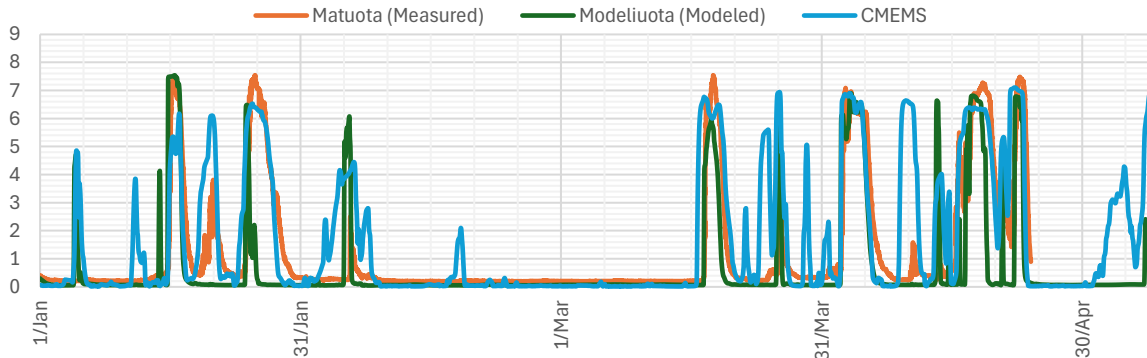
- Very precise coastline
- Much higher resolution, particularly in shallow and narrow areas
- Modelled parameters:
 - Water temperature
 - Salinity
 - Water level
 - Waves
 - Currents



- Website was launched on March 2024 <https://jti.ku.lt/lt/projektai-8/oper-lit>
- Model was validated.
- 5 day forecast are open and updates twice a day.



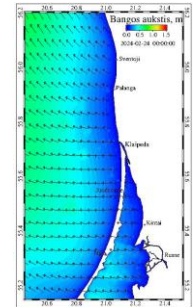
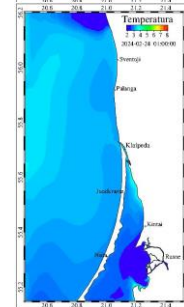
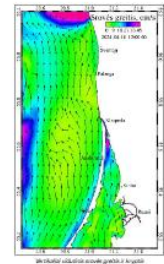
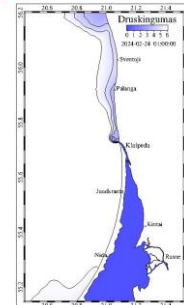
SALINITY



Apibūdinimas: operacininis hidrodinaminis modelis Kuršių mariosms ir pietryčių Baltijos jūrai (OPER-LIT). Operacininis hidrodinaminis modelis Kuršių mariosms ir pietryčių Baltijos jūrai (OPER-LIT) yra žemėlapis, kuris atnaujina duomenis apie jūros paviršiaus srautus, temperatūrą ir salinumą.

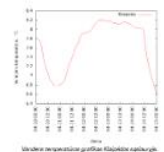
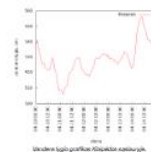
Modelis yra atnaujintas du kartus per dieną ir yra atnaujintas du kartus per dieną.

Daugiau informacijos apie projektą: <https://jti.ku.lt/lt/projektai-8/oper-lit>



Papildomos nuorodos

- [Operacinis žemėlapis](#)
- [Operacinis žemėlapis](#)
- [Operacinis žemėlapis](#)



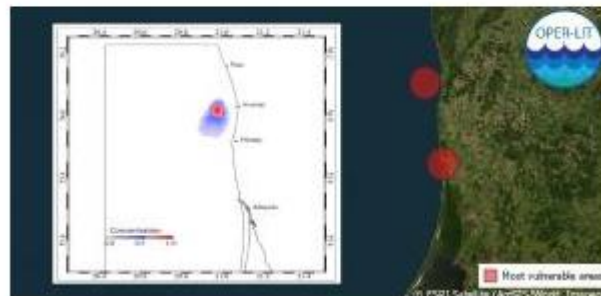
STAKEHOLDER INVOLVEMENT

- Environmental Protection Agency
- Lithuanian Hydrometeorological Service
- Klaipėda State Seaport Authority





An Operational model for monitoring shallow waters in the Curonian Lagoon and the Southeast Baltic Sea coasts



Enhancing Pollution Response in the Southeast Baltic Sea with High-Resolution Hydrodynamic Modelling



3-D suvestinė / 2-D suvestinė

Hidrodinaminės prognozės

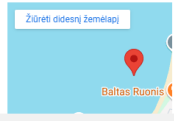
2-D

3-D

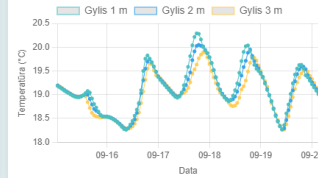
Hidrodinaminės prognozės

Čia pateikiamos hidrodinaminės prognozės 5 skirtingose vietose Kuršių mariose ir Baltijos jūros pakranteje.

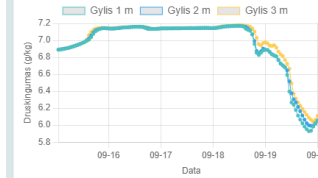
- Klaipėda
- Palanga
- Juodkrantė
- Nida
- Ventspils



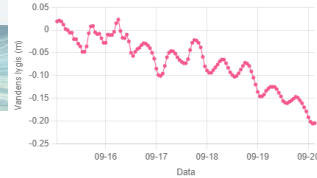
Vandens temperatūra



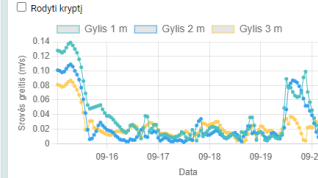
Vandens druskingumas



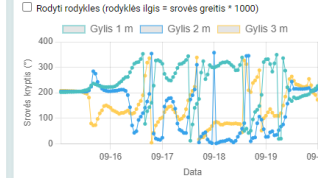
Vandens lygis



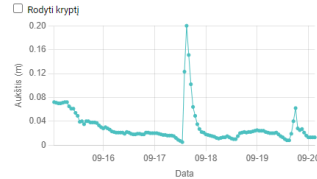
Srovės greitis



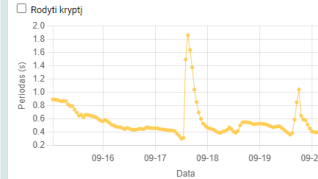
Srovės kryptis



Bangos aukštis



Bangos periodas



Bangos kryptis

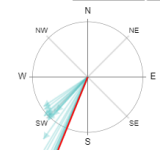


Srovės kryptis

Pasirinkite datą:

- 2024-09-15
- 2024-09-16
- 2024-09-17
- 2024-09-18
- 2024-09-19
- 2024-09-20

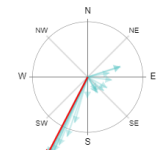
Rodyklų mastelio koeficientas: 1500



Gylis: 1 m, Laikas: 01:00 val., kryptis: 202.131°, greitis: 0.128 m/s



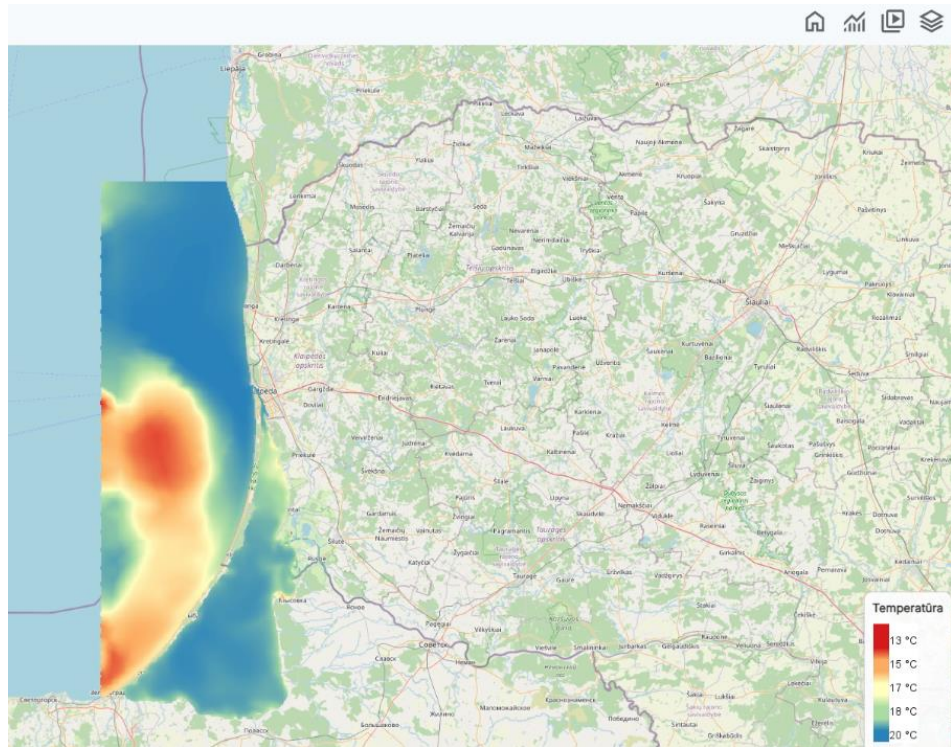
Gylis: 2 m, Laikas: 01:00 val., kryptis: 204.639°, greitis: 0.101 m/s



Gylis: 3 m, Laikas: 01:00 val., kryptis: 207.527°, greitis: 0.081 m/s

Coming soon:

- Online maps for main parameters
- Possibility to check any point data
- To see 5-day forecast graphs





Copernicus
Marine Service



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University
Marine Research
Institute

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Thank you!

We thank for our stakeholders:

Environmental Protection Agency, Lithuanian Hydrometeorological Service,
Klaipėda State Seaport Authority



This work has been carried out as part of the Copernicus Marine Service 'Development of the Operational hydrodynamic model for the Curonian Lagoon and coastal area of the southeastern Baltic Sea (Lithuania)' project. Copernicus Marine Service is implemented by Mercator Ocean in the framework of a delegation agreement with the European Union



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