Thesis Topic: Short term harbor flow forecasting

What's this about?

The aim of this project is to improve the temporal resolution and predictive capability of harbor water flow models for use in vessel navigation and harbor operations, by refining short-term forecasting techniques using meteorological data and in-situ measurements.

Data: We have weather data available from 2 Varna port weather stations. In addition, we have water flow velocity, direction and wave parameters available from 3 mooring stations in a channel the vessels navigate. Further, there is a wave buoy data available from Copernicus services located nearby.

What will you learn?

- Time-series modeling & forecasting
- Data assimilation & fusion
- Critical thinking, analysis skills

Why is this important?

Accurate, high-resolution forecasting of harbor currents, waves, and water flow is crucial for ensuring safe and efficient vessel navigation, helping harbor operators proactively avoid accidents and delays in dynamic port environments.

Requirements: Good command of python and statistics.

Supervisor: Laura Piho