Black Sea Carbonate System
First Results from Sea ReCap Project

11th FerryBox Workshop
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Introduction

Helmholtz EU Partnering Project SeaReCap: Research Capacity building for healthy, productive and resilient Seas

- western Black Sea & German Bight (North Sea)
- Black Sea strongly stratified
  - largest anoxic water basin (below ~200 m)
- North Sea well-mixed with strong tidal & wind forcing
- both seas have experienced human-induced & climate change impacts and ecosystem collapses (1980s)

**Rationale:** Contribute to interdisciplinary knowledge for fundamental improvements in the state of our seas, in line with the urgent transformation towards sustainable blue and circular economy (EU Green Deal*)

Coastal Black Sea Station Deployment: June 2022

- Shkorpilovtsi Research Station & Pier
- South of Varna Port
- Near marine protected areas
Coastal Black Sea Station Deployment: June 2022
Initial Installation

4H Jena HydroC $pCO_2$ Sensor

4H Jena Pocket FerryBox

Pump and temperature measured at intake
Training and survey cruise

- DIC concentrations are high
  - 3000 μmol kg⁻¹
- Water column weak stratification
  - No difference at measurement station
Low salinity after late spring rains
Low salinity -> higher CDOM
Waves

HELMHOLTZ
RESEARCH FOR GRAND CHALLENGES
Challenges

- Biofouling
  - Maintenance every 2 weeks
- High temperatures
  - 0.4-0.5 °C difference from intake temperature
- Stress on electronics

August, 2022
Cuxhaven Station (mouth of the Elbe Estuary) & North Sea FerryBoxes
Cuxhaven Station data

Cai, 2011
Next Steps

• Larger FerryBox at Shkorpilovtsi
  • Cleaning cycle

• Repeat survey cruise
  • Water column characteristics changed?

• Larger Black Sea cruises

• Station near IO-BAS in Varna
  • Larger anthropogenic influence

• Collaboration with modelers

Thanks!