



TEDEN SREDOZEMSKO OBALE  
IN MAKROREGIONALNIH  
STRATEGIJ

Izola, Slovenija  
16. – 20. september 2024

MEDITERRANEAN COAST  
AND MACRO-REGIONAL  
STRATEGIES WEEK

Izola, Slovenia  
16 – 20 September 2024



## Consultation within TSG 3: Construction Activities in the Sea and on the Seashore and Achieving good environmental status of the Sea



2021  
2030 United Nations Decade  
of Ocean Science  
for Sustainable Development

# Analysis of benthic habitats burial in the study case of Koper bay

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the Republic  
of Slovenia

# PREMESIS

Influence on benthic habitats burial in the study case of Koper Bay

- Riverine input of suspended solids (TSS)
- Characteristics of the Koper Bay
- Anthropogenic pressure on the environment
- Pollution inputs
- Marine traffic influence





# Riverine input of fluvial material



River plume in the Bay of Koper due to high Rižana River discharge and high precipitation in the inland (17<sup>th</sup> March 2011 at 8:21 – Rižana River discharge:  $46 \text{ m}^3 \text{ s}^{-1}$ )



# Maritime traffic influence



Resuspension of sediment due to the manoeuver of the MSC Uruguay (20<sup>th</sup> March 2011 at 11:27)

# THE MAIN AIM OF THE RESEARCH

Evaluate the influence of the local rivers on TSS spatial distribution

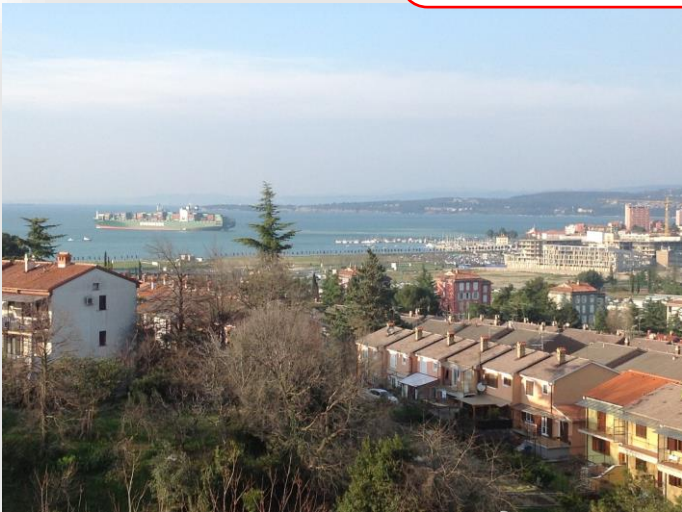
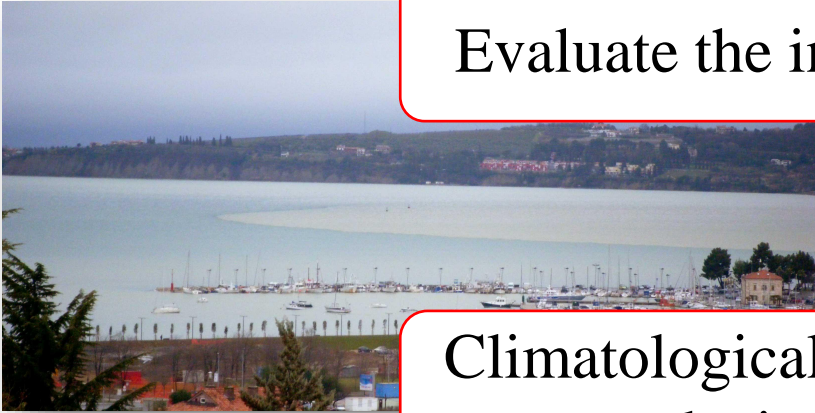
Climatological data  
analysis

Spatio temporal  
data analysis

Model simulation  
analysis

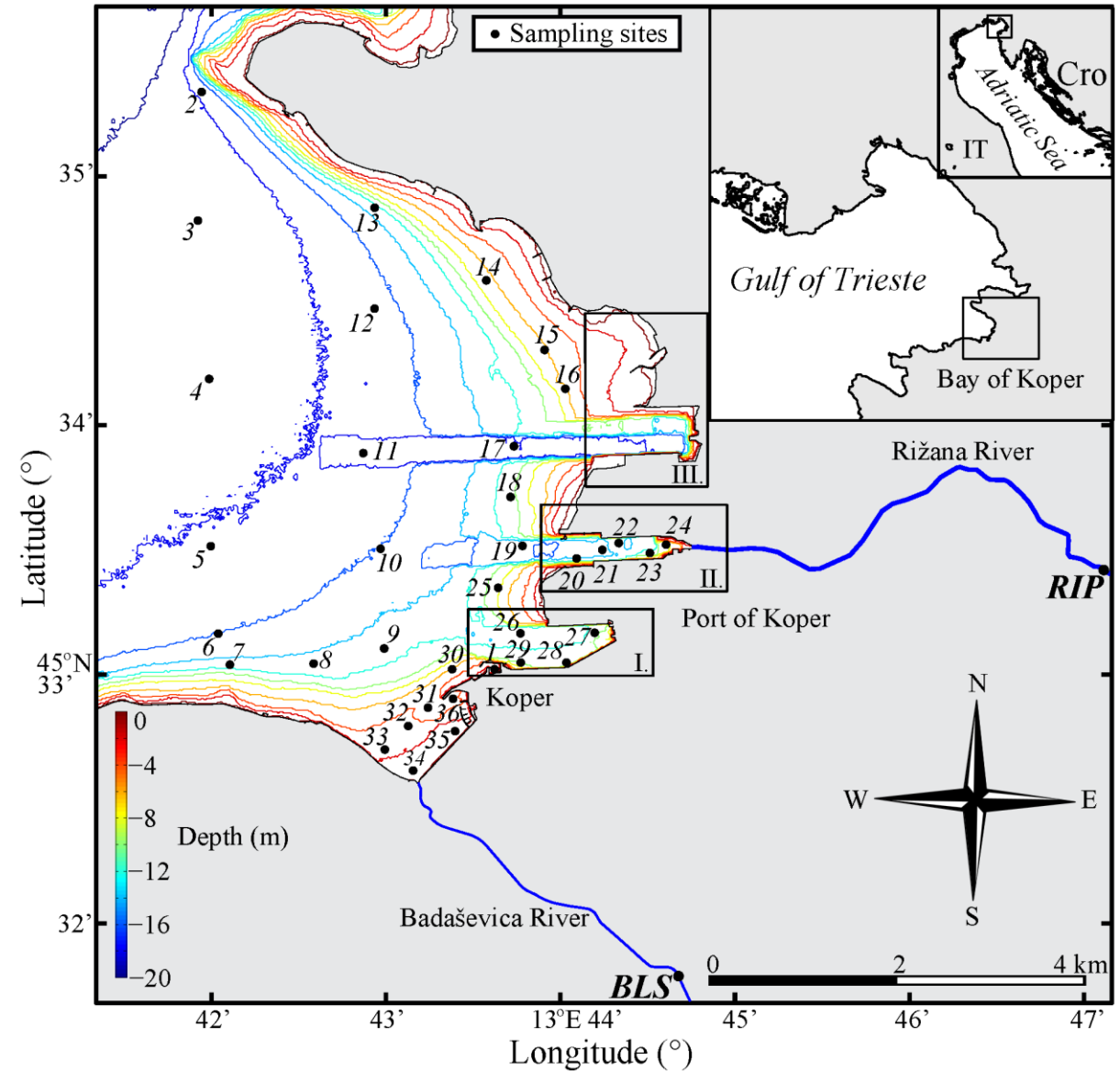
# SECONDARY AIM OF THE RESEARCH

Evaluate the influence of the **maritime traffic**

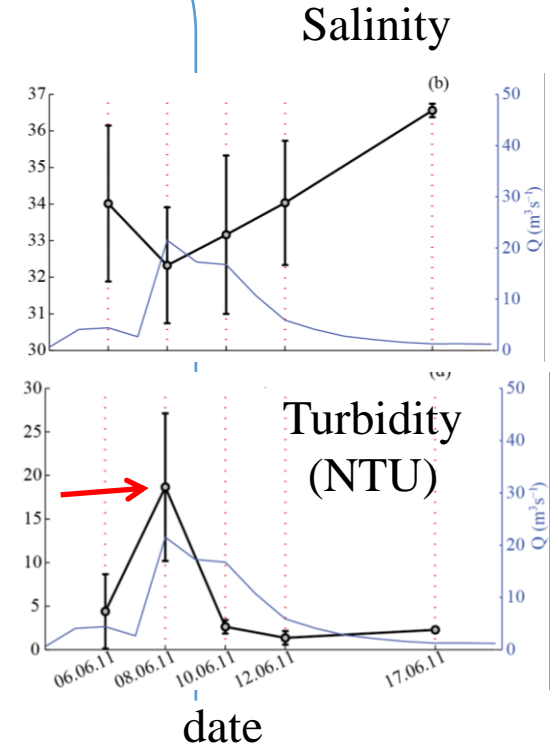
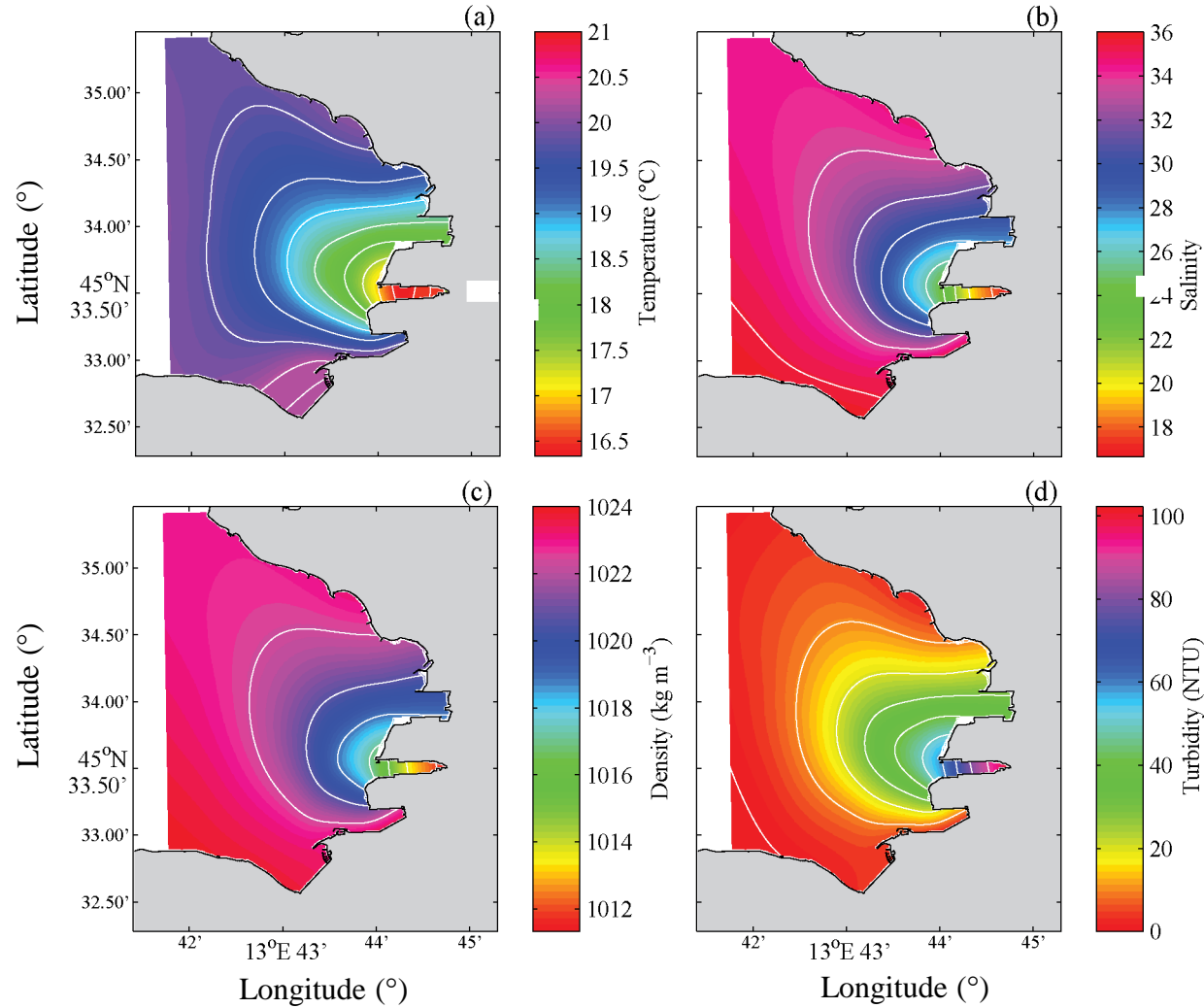
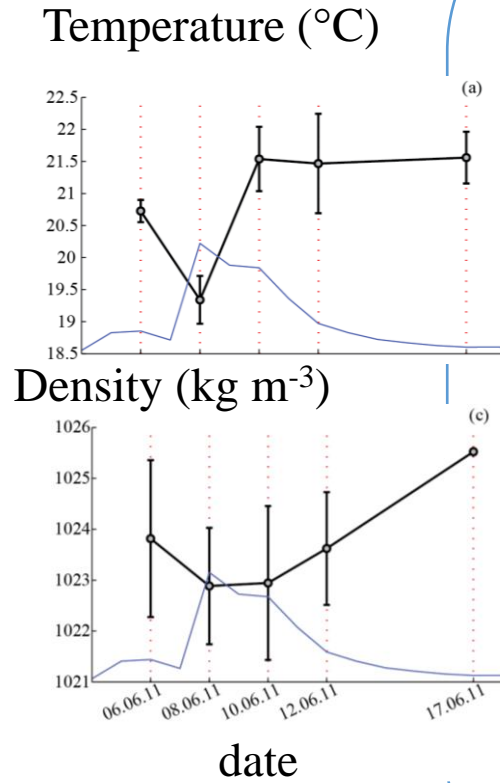




# IN-SITU MEASUREMENTS AND SAMPLINGS CAMPAINS IN THE PERIOD 2011-2013

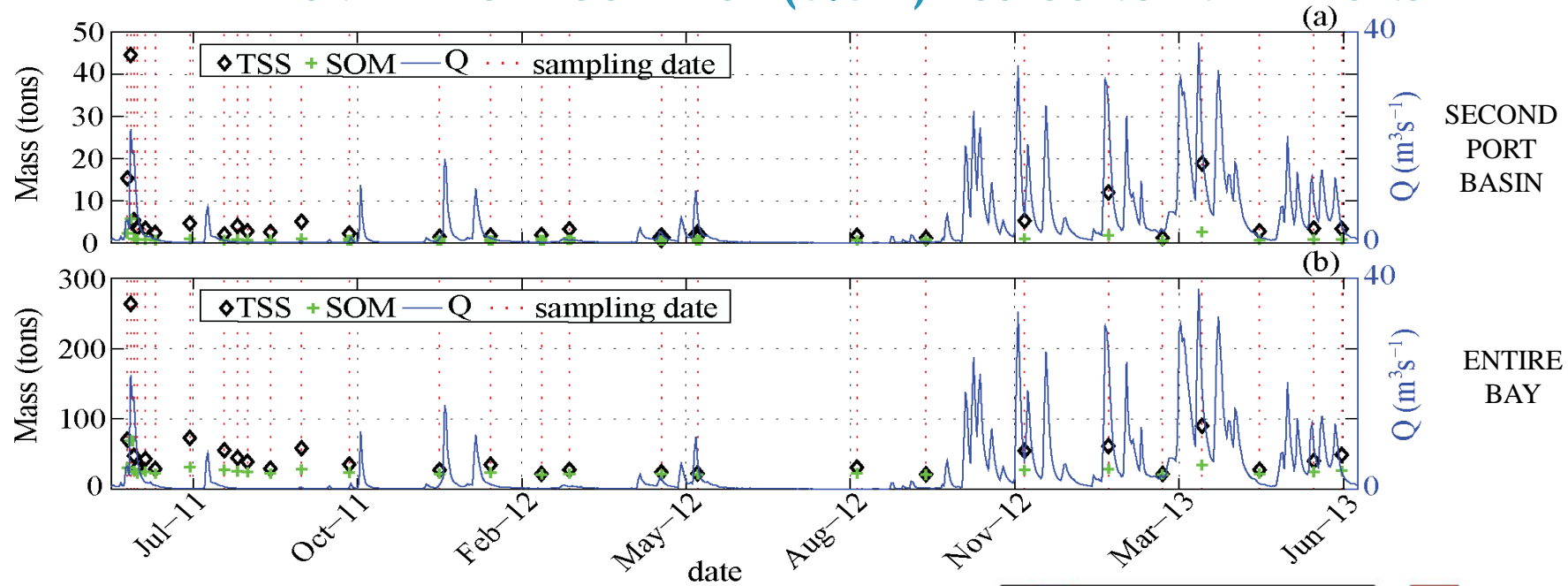


# SPATIAL DISTRIBUTION OF VARIABLES DURING A PLUME EPISODE 8th JUNE 2011



RIŽANA RIVER DISCHARGE  $Q_h = 21 \text{ m}^3\text{s}^{-1}$

# EVALUATION OF TSS MASS INPUT AND DEPOSITION RATE FROM THE SEA SURFACE (0.5m) TSS CONCENTRATIONS



## Equations for non-spherical particles (van Rijn, 1993)

Settling velocity of a single particle (van Rijn, 1993)

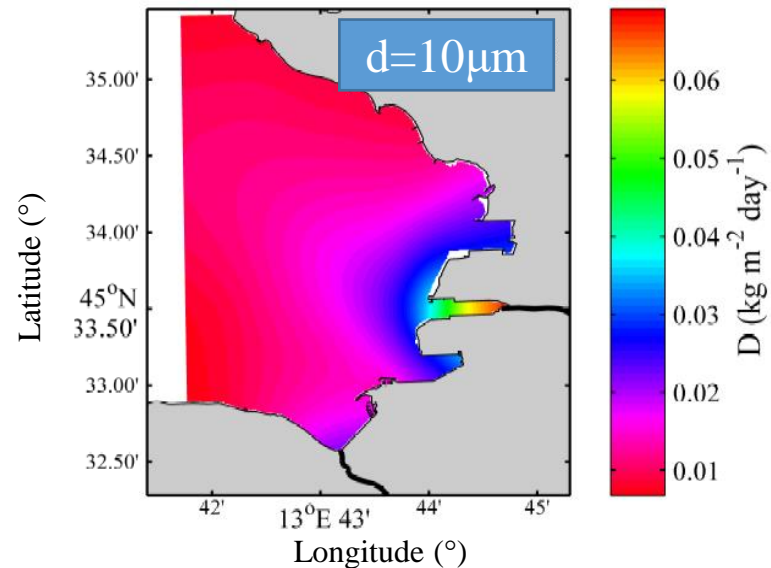
$$W_s \text{ (cm s}^{-1}\text{)} = \frac{(s-1)gd^2}{18\nu}$$

Settling velocity at higher particle concentrations (van Rijn, 1993)

$$W_{s,m} \text{ (cm s}^{-1}\text{)} = (1-2.15C)(1-0.75C^{0.33})W_s$$

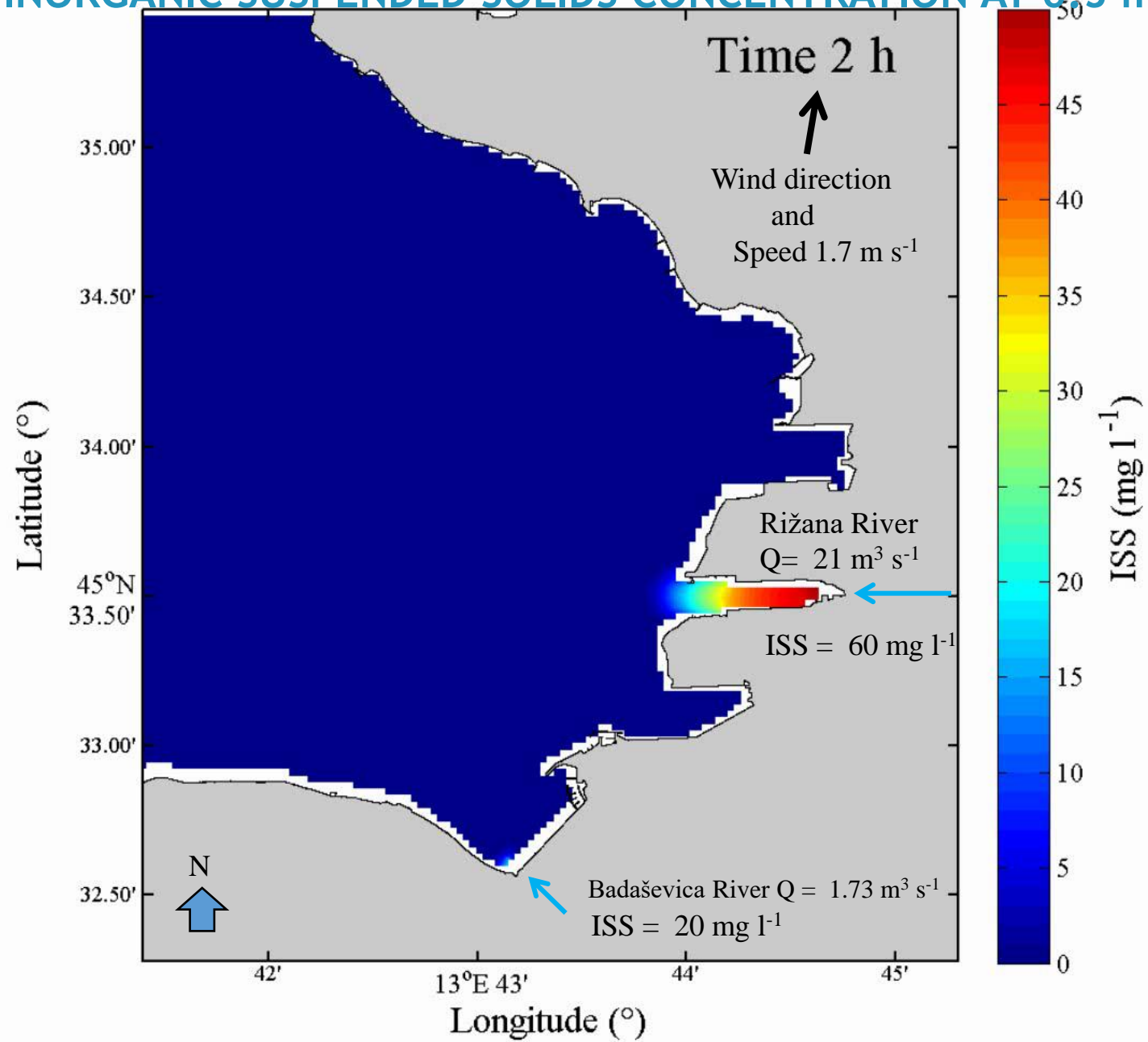
Deposition rate (van Rijn, 1993)

$$D \text{ (kg m}^{-2}\text{ day}^{-1}\text{)} = W_{s,m} \times C$$



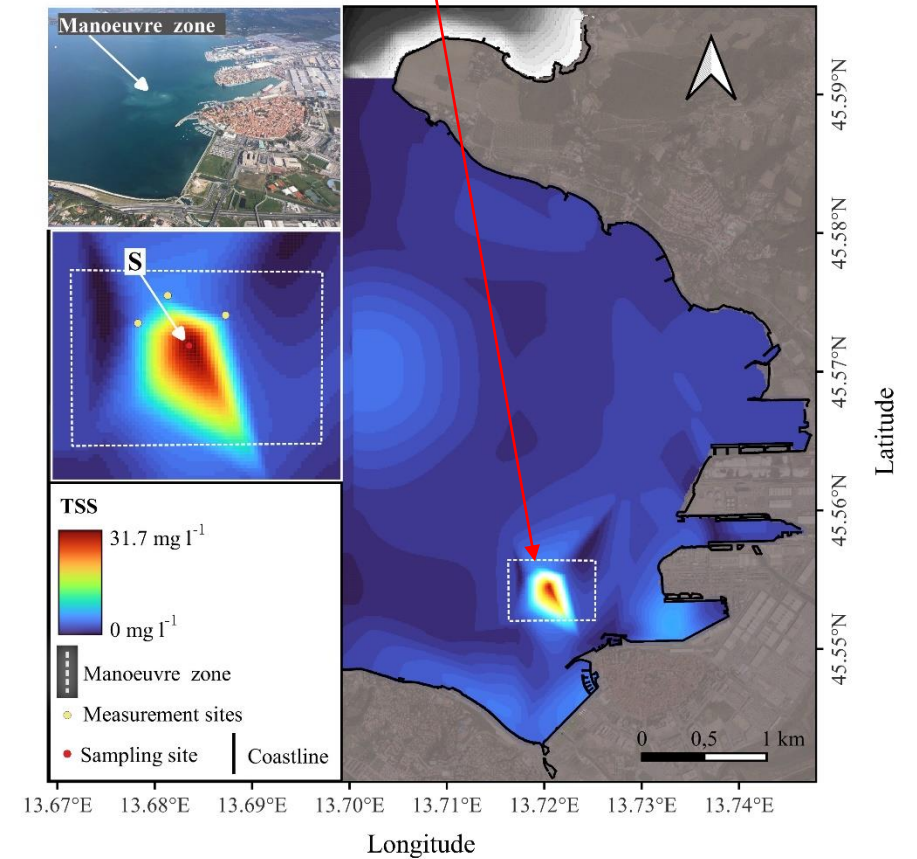
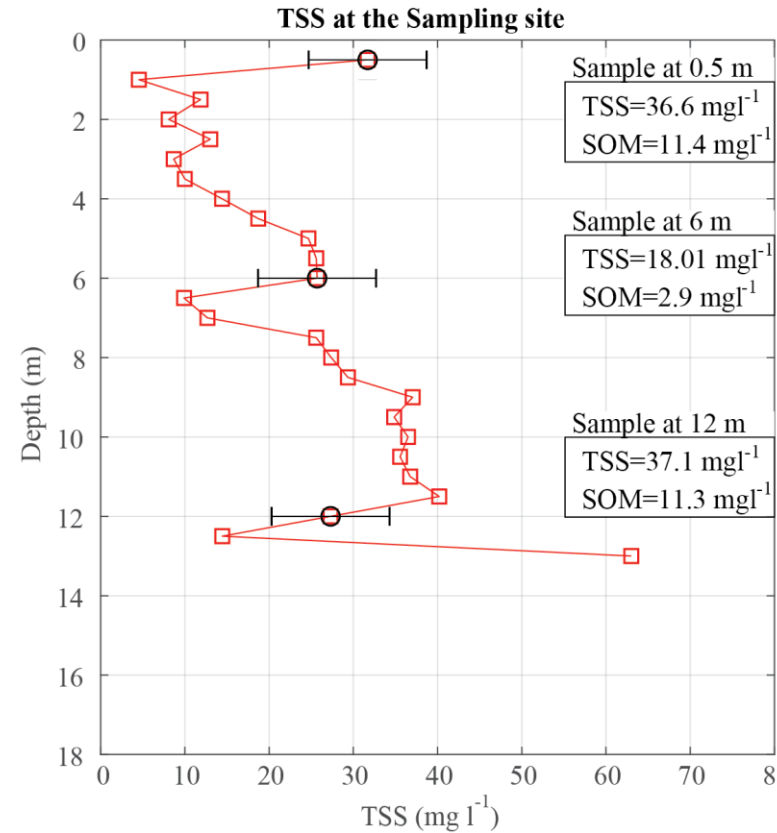
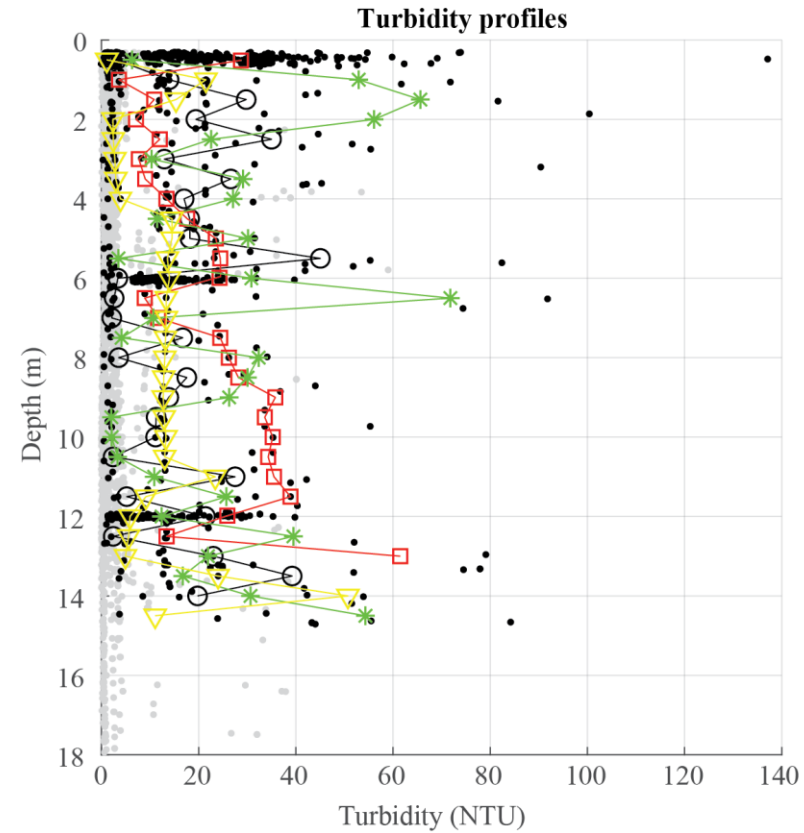


# SIMULATION OF THE EPISODE ON 8th JUNE 2011 INORGANIC SUSPENDED SOLIDS CONCENTRATION AT 0.5 m



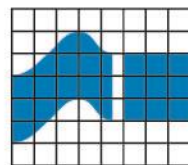
# ANALYSIS OF TSS MASS RESUSPENSION DURING A VESSEL MANOEUVRE

The estimated resuspension mass of total suspended solids (TSS) was 100 tons





THANK YOU!



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