

Port of Koper: environmental impacts and monitoring

SMART CITIES

Conference

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University of Primorska, Institute Andrej Marušič

Capo di Istria, some historical issues

- Capo di Istria
- Head of Istria



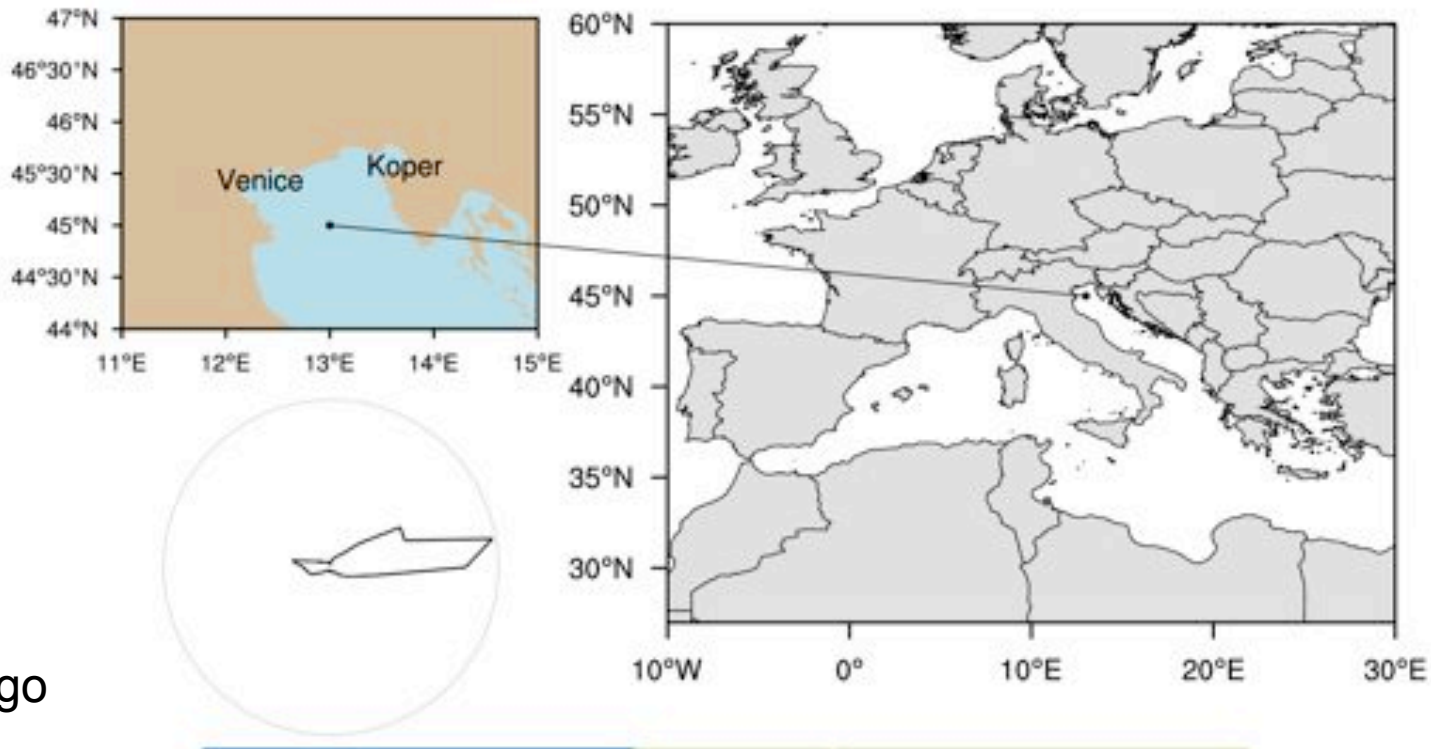
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North Adriatic region

125 million tons of water-borne



- Port of Koper**
- 2 MT of liquid cargo
- 6 MT of dry bulk cargo
- 1 MT of vehicles
- 4 MT of containers
- 2 MT of general cargo

Port of Koper today

In 1957 the Port of Koper was founded

It provides port and logistics services

600 000 containers

medium term plan is to reach 1 million containers per year.



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Cruise terminal

- 50 cruise ships
- 60 000 passenger



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Certificates

year 2000: ISO 14001

year 2010: EMAS



EMAS

PREVERJEN SISTEM RAVNANJA Z OKOLJEM
Luka Koper, d.d.
SI-00004



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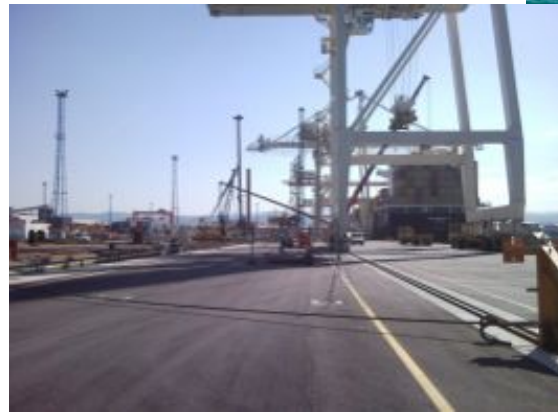


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Impacts of Port of Koper

5000 people are directly or indirectly employed by the port business

- pollution from dredging
- spills
- waste disposal
- exchange of ballast water
- noise and air pollution



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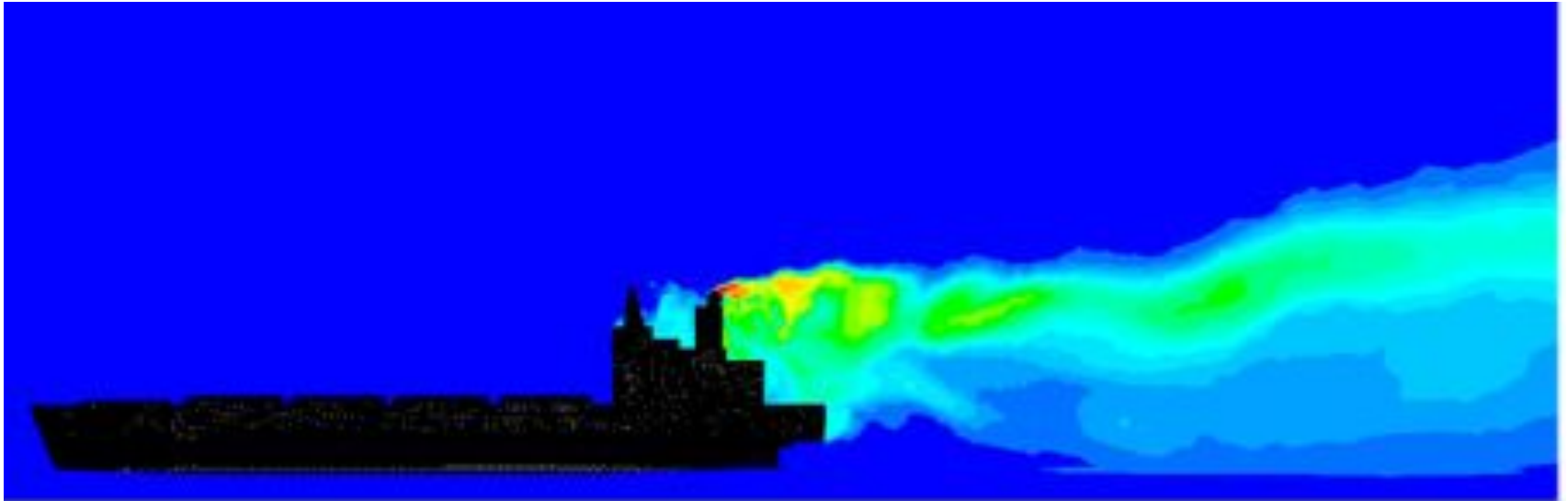
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Air pollution

6-12% million tons of sulfur emissions

global, anthropogenic sources



Reference

Yan Wang. Modeling the evolution of vehicle exhaust plume near road and in laboratory dilution systems using the CTAG model. Ph.D. dissertation. 2012.



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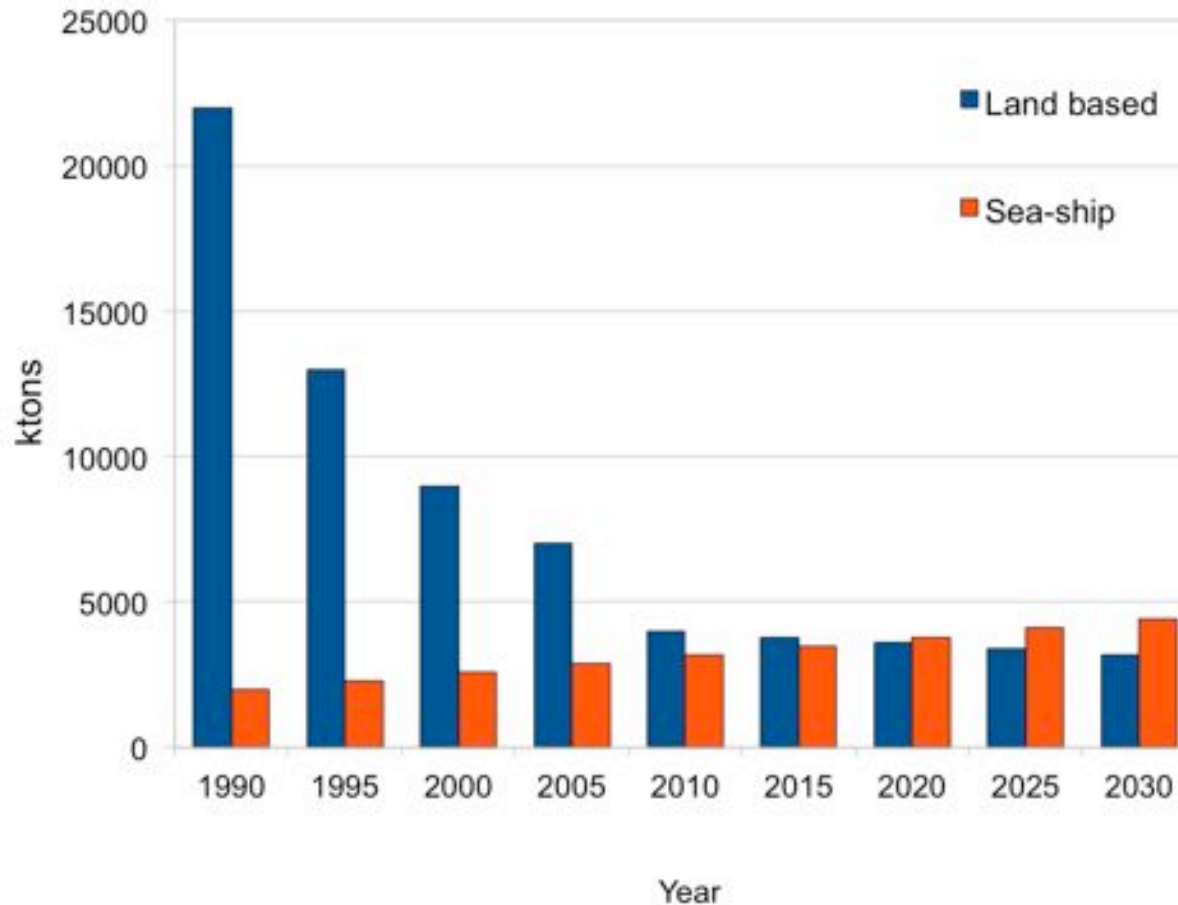


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Air pollution

SO2 emissions

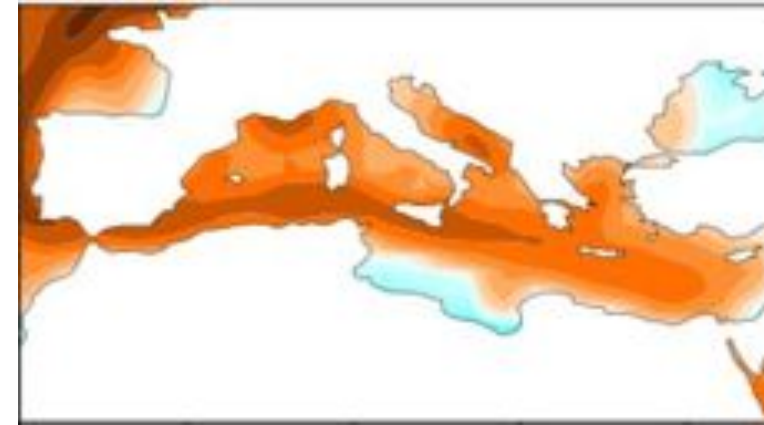
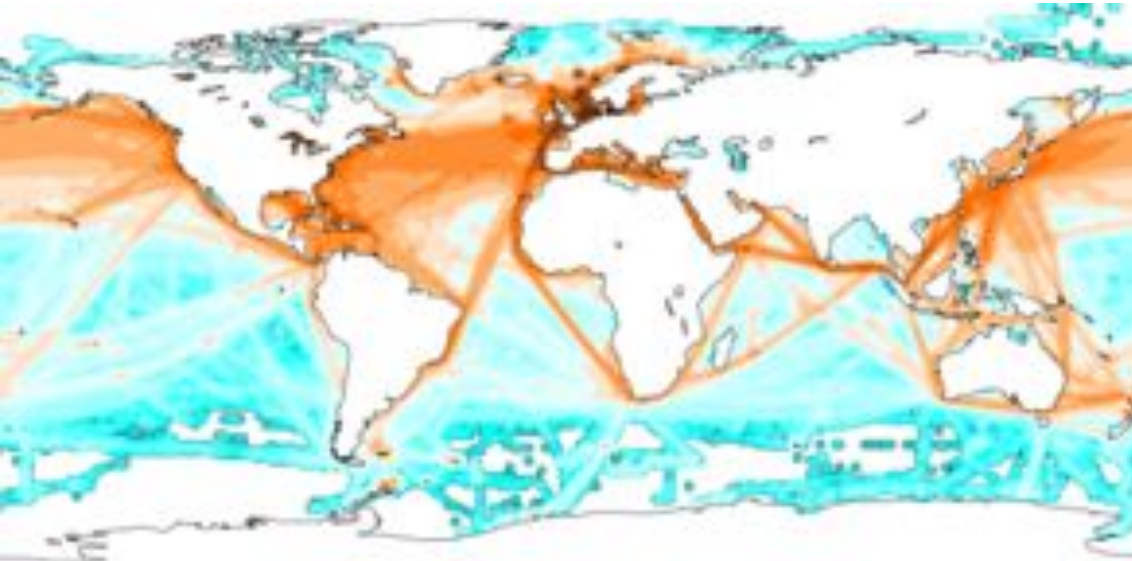


Pollution and Mediterranean

The Mediterranean Sea represents 0.8% of the world's sea area

15% of all port calls made globally

Mediterranean sea is small by the surface but has very dens ship traffic



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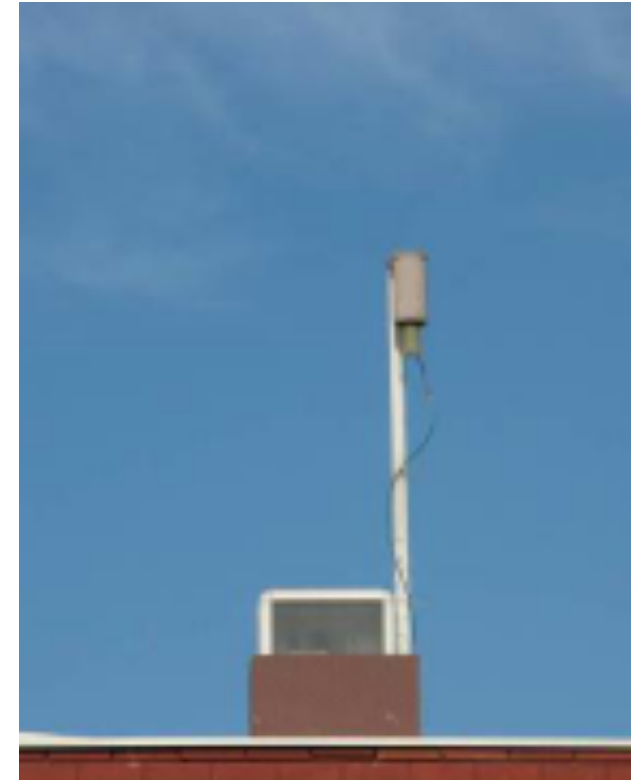
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Early beginnings

- collaboration between University and port were before year 2000

5 samplers at 4 locations

Meteorological station



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Early beginnings

PRAŽNIKAR, Jure, CEPAK, Franka, ŽIBERT, Janez

Long-term analysis of elemental content in airborne particulate matter by PIXE and positive matrix factorization : annual trends and seasonal variability during 2003 and 2008.

Atmospheric environment

ŽIBERT, Janez, PRAŽNIKAR, Jure

Cluster analysis of particulate matter (PM10) and black carbon (BC) concentrations

Atmospheric environment



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Sea water pollution

Shipping is a major source of oil spills, both from normal operations and from accidental discharges by oil tankers.



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Sea water sensors

The Slick Sleuth remotely detecting oil spills in real-time.

Power solar system

Alarming

Multiparameter-sonde:

temperature

conductivity

turbidity

dissolved oxygen



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Noise pollution

- Ships
- Cranes
- Trucks
- trains



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Network of samplers

- server collects real time data from the stations and converts it into information delivered to users through web portals and mobile applications



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Network of samplers

fast and reliable signaling

The Alarm Management System



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Real time data



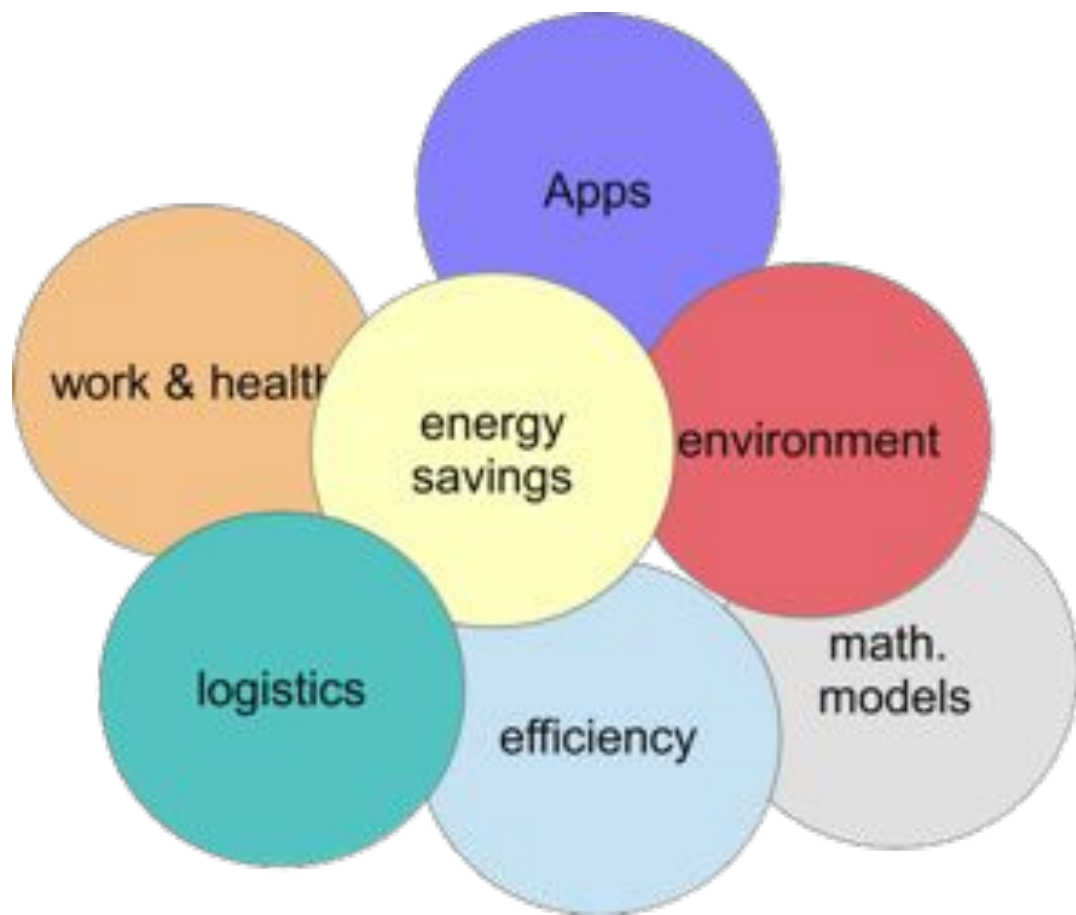
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Step further ...



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Thank You

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