

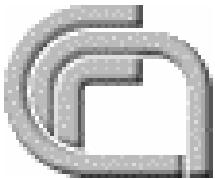
# Hydrodynamics and Morphology of the Venice Lagoon

CORILA

Research 3.2

Coordination:

Georg Umgiesser, ISMAR-CNR



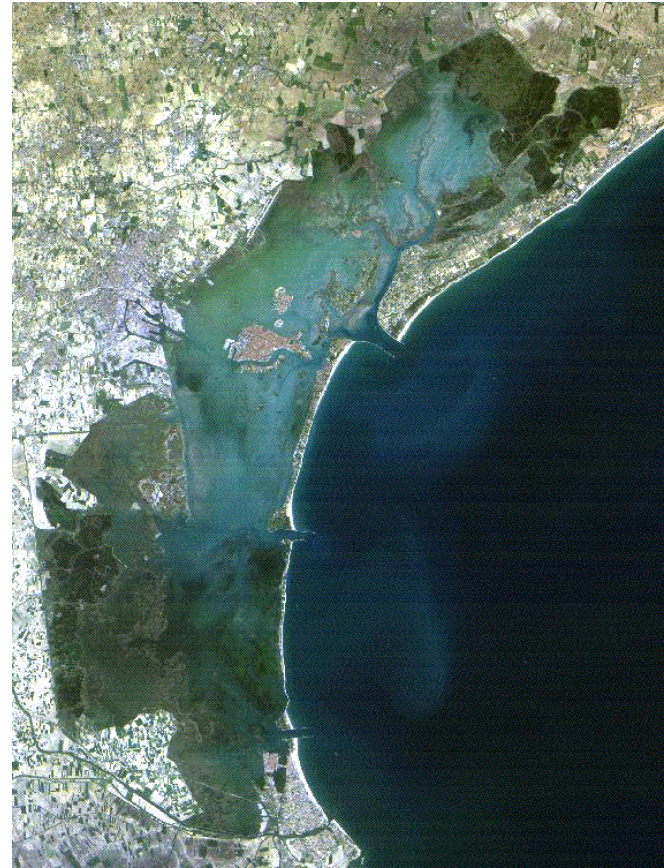
**Southampton  
Oceanography Centre**  
UNIVERSITY OF SOUTHAMPTON AND  
NATURAL ENVIRONMENT RESEARCH COUNCIL





# Workpackage 1: Hydrodynamics

- Circulation modeling
- Wave modeling
- Sediment dynamics
- Integrated modeling

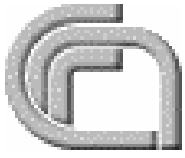




# Workpackage 2: Morphology

- Elaboration of cartography and images
- Interferometry (SAR)
- Bottom Morphology
- Sediment studies
- Biotops
- Areal variations
- Geophysics





# Big open questions

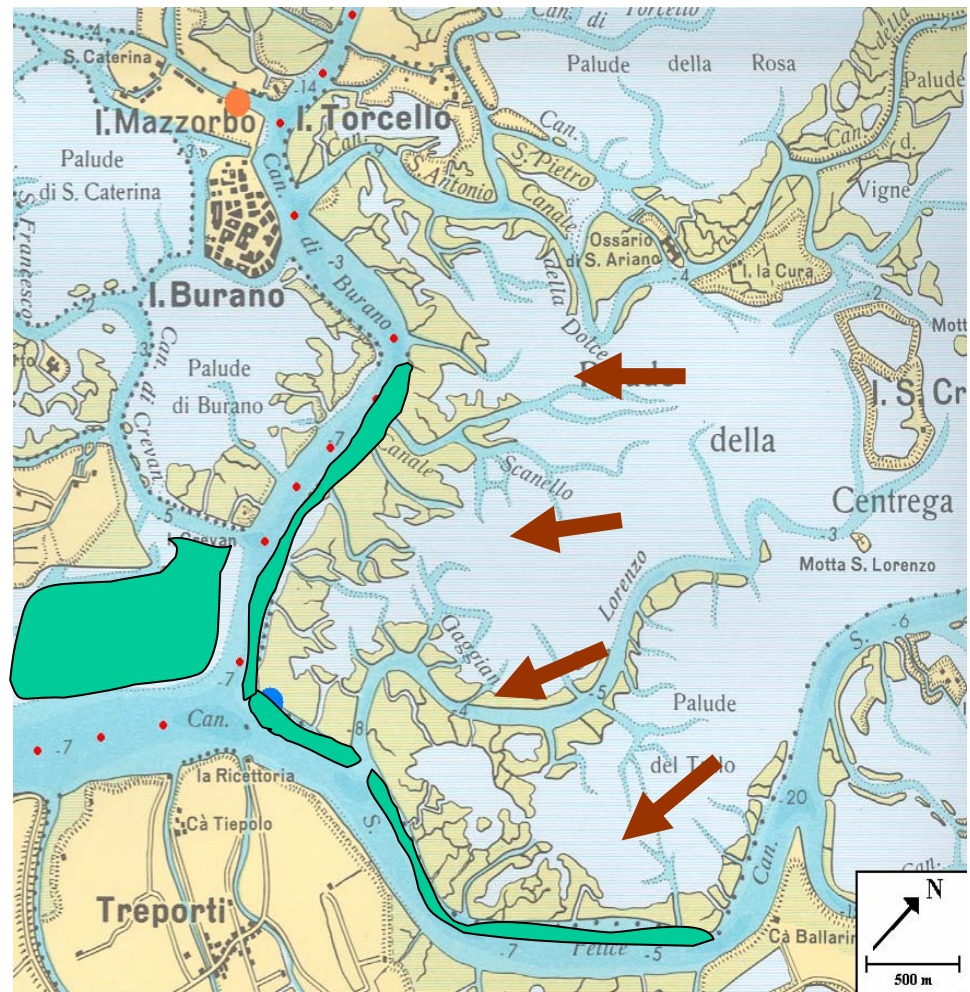
- Why are the tidal marshes still growing in the northern lagoon?
- Why are they eroding in the southern lagoon?
- Where does the sand in the northern lagoon come from? (Inlets, old barrier islands?)
- What is the mechanism of scour hole formation?
- What is the sediment budget of the Venice lagoon?  
And what are its controlling mechanisms?

- The tidal marshes in the northern lagoon are still actively growing
- River input was the source of sediments
- This supply has been shut off by diverging the rivers out of the lagoon
- Sediments may be supplied through the circulation from other parts of the lagoon
- Sand is abundant from ancient barrier islands in the north



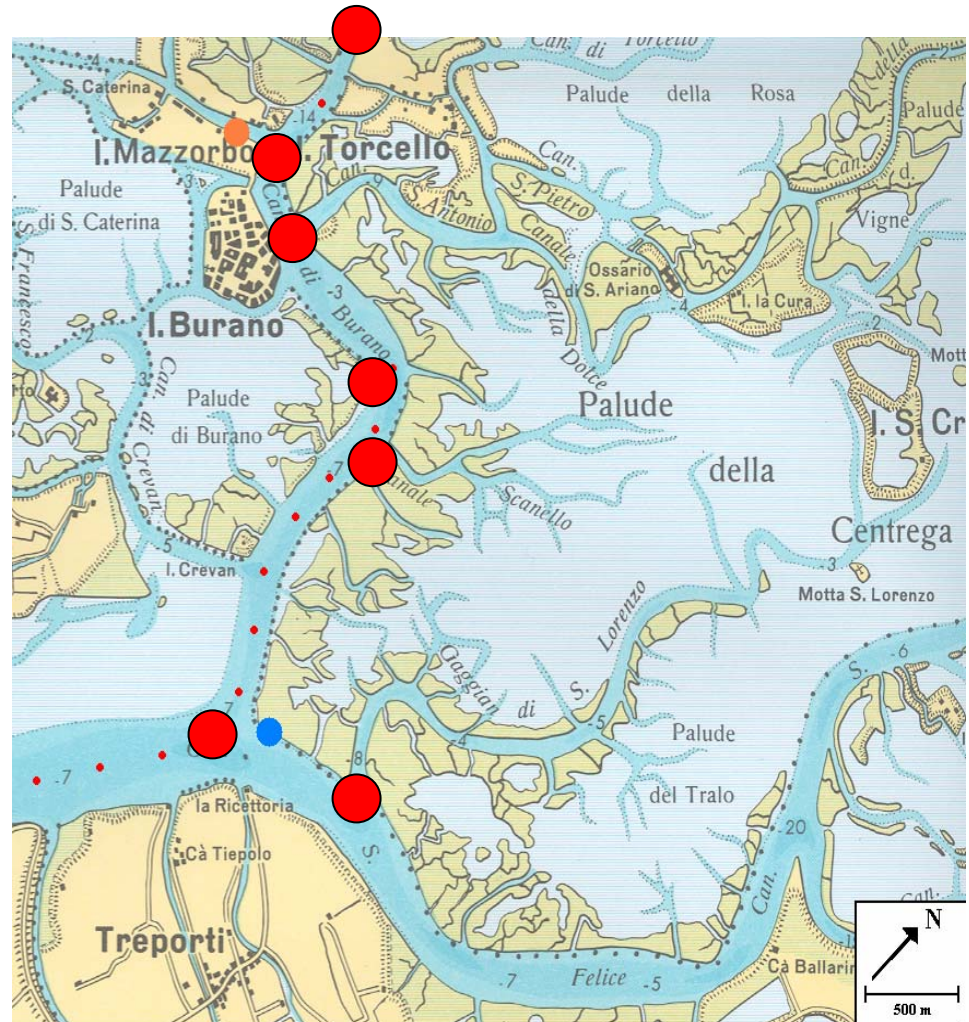
# Submerged beaches for tidal marsh protection

- Submerged beaches are important for the protection of the tidal marshes in the northern lagoon
- Eelgrass growing on these submerged beaches contributes to wave attenuation



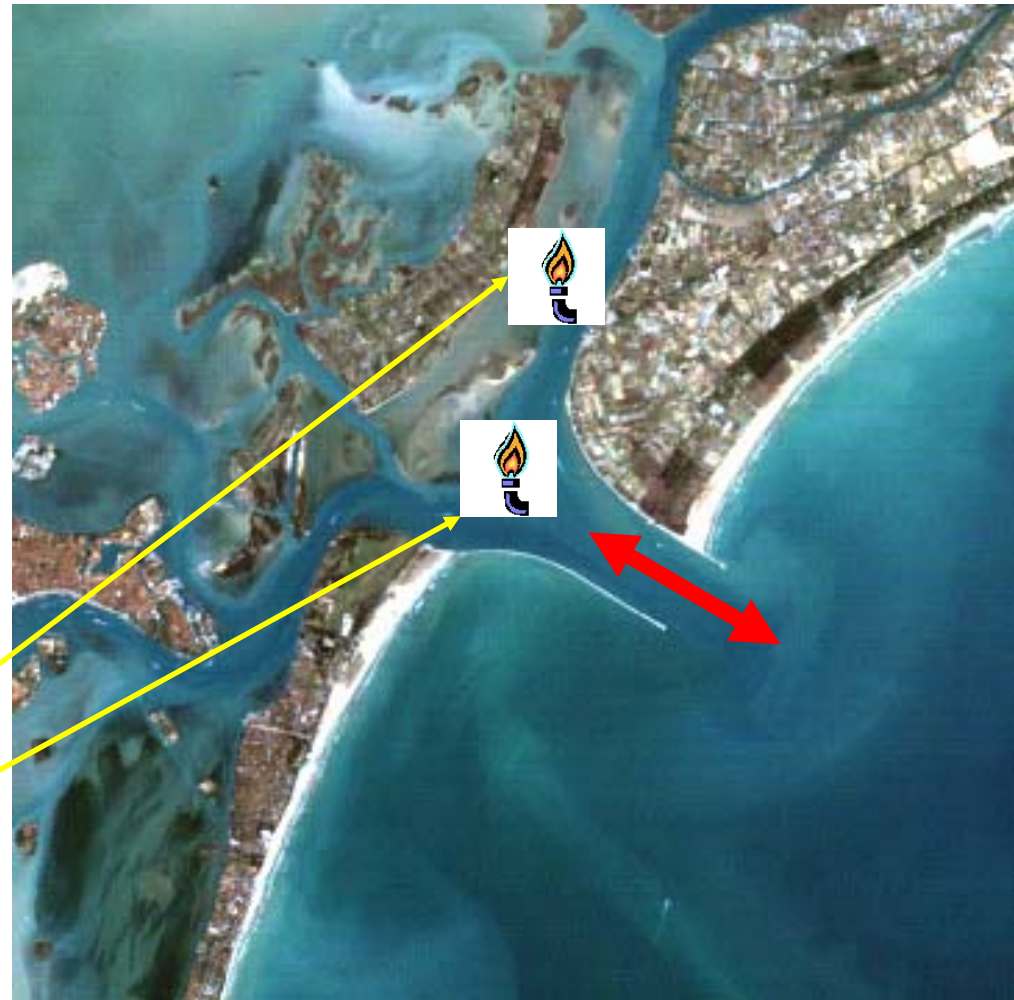
# Scour holes

- Scour holes are a major feature of channel morphology and evolution
- They occur at canal confluences
- They are up to 20 m deep
- They are active and dynamic features of the lagoon



# Sediment transport through the inlets

- Sediments are exchanged through the inlets
- What is the budget of the sediments?
- What will be the long term evolution?



**Warning: Gas escape**



# Results achieved to date

- Measurements
  - 2 intensive field campaigns
  - 52 core samples
  - 200 micropaleontological analyses
  - 30 analyses  $^{14}\text{C}$
- 9 Corila reports
- Articles
  - 5 in proceedings of Corila conference 2002
  - 6 in the JMS special issue on the Venice lagoon
  - 10 in scientific journals
- One CD with results of the research



**Co.Ri.La Project 3.2  
Hydrodynamics and Morphology  
of the Venice Lagoon**

**Reports and Presentations**

**Scientific coordinator:  
Georg Umgiesser**



Version 1.6

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The CD  
contains all  
results and  
presentations  
of the Corila  
project 3.2



The CD is available at  
no cost. Please contact  
[georg@isdgm.ve.cnr.it](mailto:georg@isdgm.ve.cnr.it)  
or fill out the form.  
After the conference the  
CD will be mailed to  
you.



# The structure of the presentation

- An overview of the results from the summer campaign
- Sand transport in the Lido inlet
- Morpho-dynamics and sediment dynamics
- Morphological evolution
- Evolution of biotops
- The evolution of intertidal mudflats