The information we need for the coastal resilience we want: the AdriaCLIM perspective

AdriaCLIM Interreg Project

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The problem: local changes are driven by global signals

nature geoscience

Article

https://doi.org/10.1038/s41561-022-01117-8

Pacific shoreline erosion and accretion patterns controlled by El Niño/Southern Oscillation

ARTICLES

https://doi.org/10.1038/s41558-021-01046-1

nature climate change

Check for updates

Data-driven reconstruction reveals large-scale ocean circulation control on coastal sea level

The problem: sea level regional trend patterns

Sea level rise from

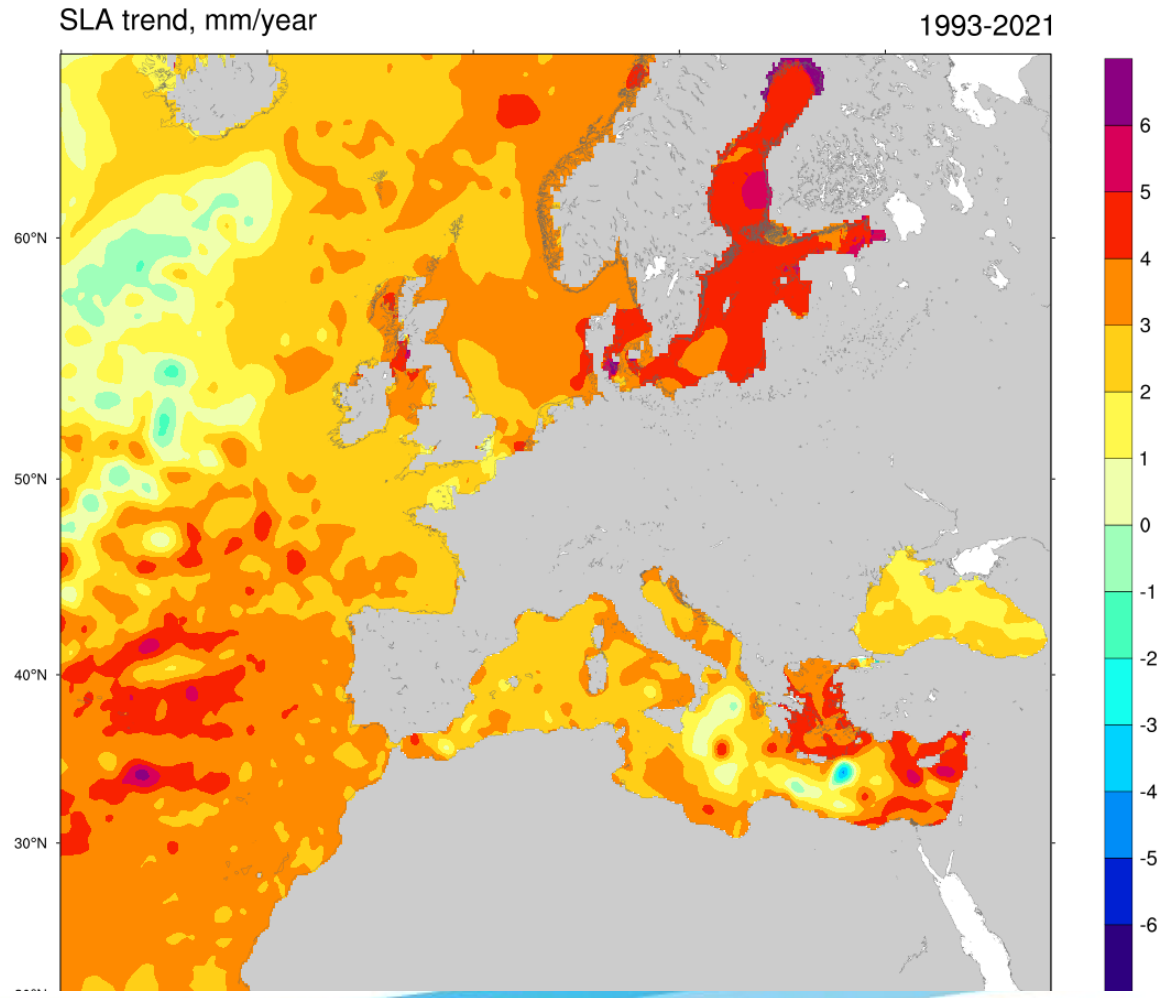
+5 mm/year

to

1-2 mm/year

following circulation patterns

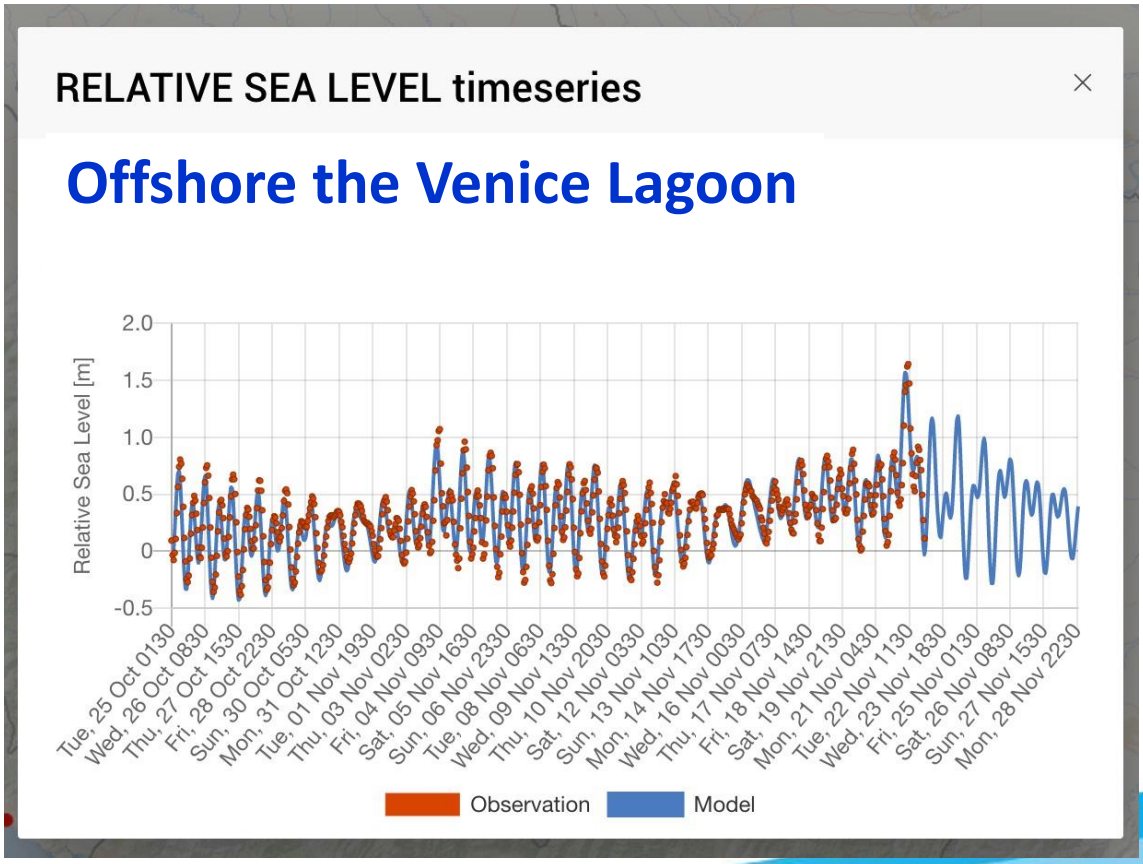
in the past 30 years



What we need: early warning systems for extremes

Marina di Ravenna (Italy)

Copernicus Marine Service forecast for Nov. 22, 2022:
10 cm error (6%) and **two days forecast lead time**



What we need: Nature Based Solutions for coastal protection

Solution to be tested

Are local seagrass meadows capable to decrease wave/surge amplitude?

Digital Twin Modelling Framework

Wind-wave model (WW3) with seagrass

Circulation model (SHYFEM) with seagrass

Calibration/ Validation with EMODnet observations

Nesting in Copernicus data

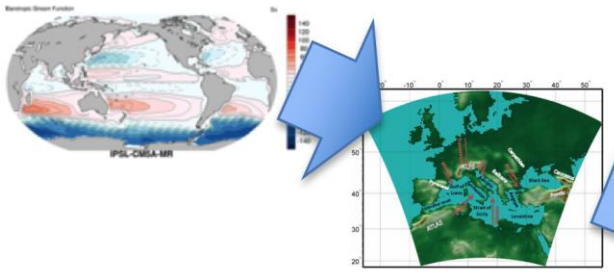
What if scenarios

What is the wave/surge/current reduction due to different seagrass types ?

What is the wave/surge/current reduction due to seagrass landscaping ?

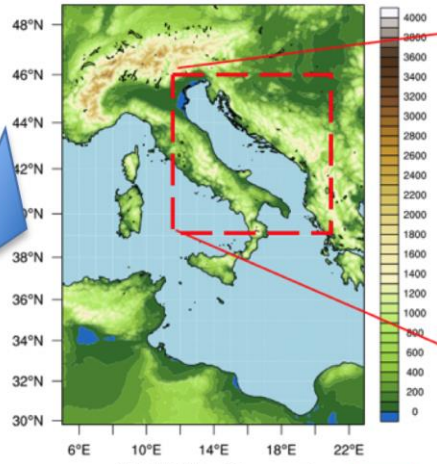
The AdriaCLIM answer: complex workflows for climate downscaled information

GLOBAL CLIMATE MODEL
(CMIP5) IPSL-CM5A-MR

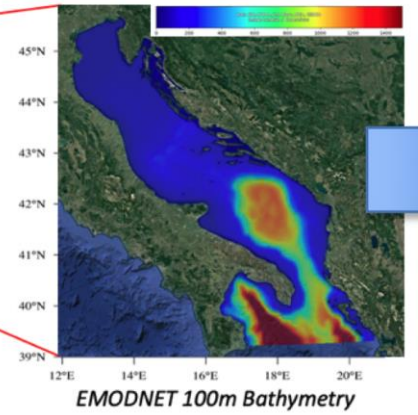


REGIONAL CLIMATE MODEL
(MEDCORDEX) LMDZ+NEMO

SUB-REGIONAL CLIMATE MODEL
WRF+WRFHYDRO + NEMO+BFM+WW3



SRTM 90m Orography



EMODNET 100m Bathymetry

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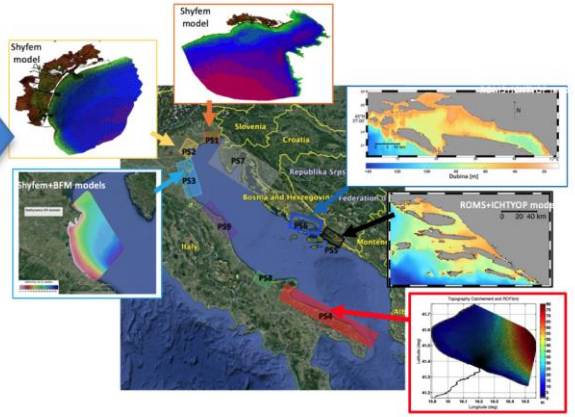
cmcc

ALMA MATER STUDIORUM UNIVERSITÀ DI BOLOGNA

LIMITED AREA MODELING WORKFLOW



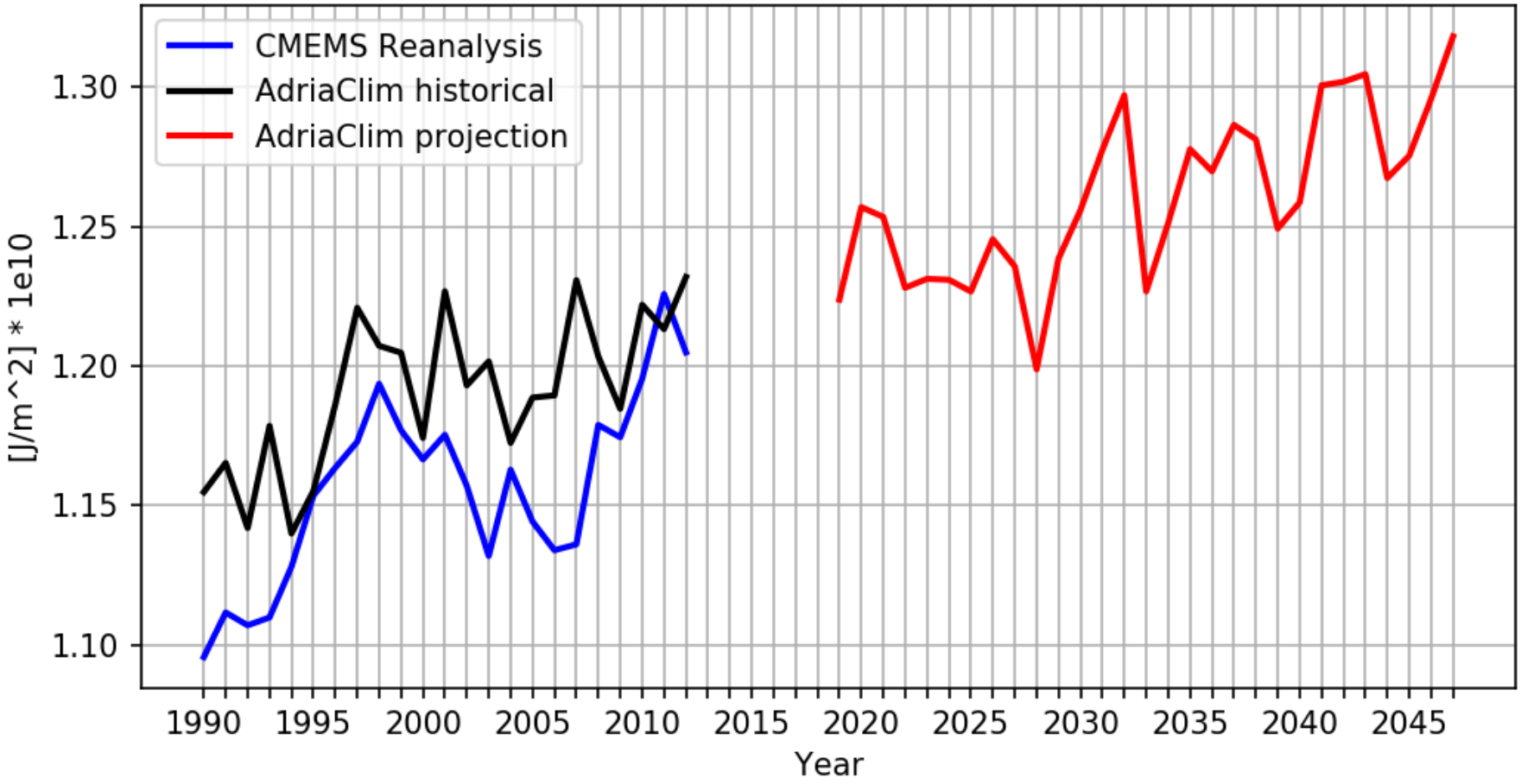
COASTAL CLIMATE MODELS
SHYFEM, ROMS, BFM

Interreg Italy - Croatia AdriaClim
European Regional Development Fund

EUROPEAN UNION

The AdriaCLIM answer: climate indicators to monitor local conditions

Adriatic Sea heat content in the upper water column (0-200)



The coastal resilience we want

We need:

- renewed and improved promotion of science, services, technologies and best practices for adaptation in the Adriatic Sea
- reinforced co-design of solutions between research and local authorities
- new science-based coastal management and delivery of assessments in support of policy makers