Climate change on the Mula di Muggia sandbank: present challenges and adaptation options

Autonomous Region of Friuli Venezia Giulia(RAFVG)
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On-line event| 11.11.2021

European Regional Development Fund

The pilot site test

Grado is a touristic island at the eastern part of the Marano and Grado Lagoon. The town has about 8.000 inhabitants but during the summer season this number increases at least three times; statistic data says that 1.355.334 is the number of presences in the accommodation facilities for the whole 2017.

The Banco Mula di Muggia is located in the Autonomous Region of Friuli Venezia Giulia

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Sand bank

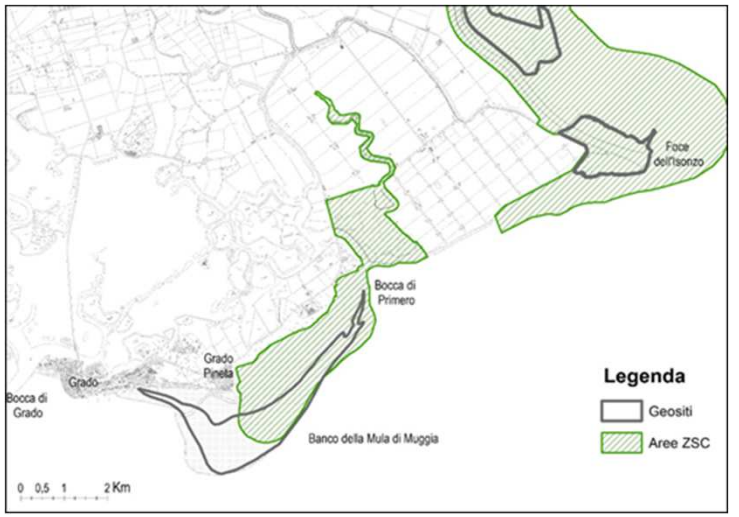
The Banco Mula di Muggia is a system of active and relict sand banks, which extend up to 2 km seawards.
It can be considered as a barrier-island system, an elongate accumulations of unconsolidated sediment that separate the open sea from a landward restricted basin.

Vulnerable environment

The system is really sensitive to sea-level rise and storm patterns, thus providing clues to understand changes through time

Tourism development vs nature protection

Two contrasting elements, such as an area for marine tourism development and a Natura 2000 site, coexist in the same area. Although the Banco Mula di Muggia is a wildness area for its geomorphological peculiarities, the onshore area is densely populated, especially in summer



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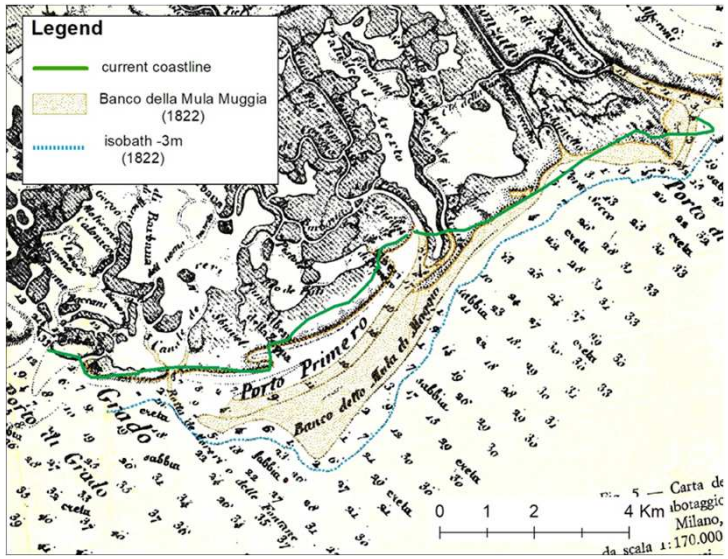
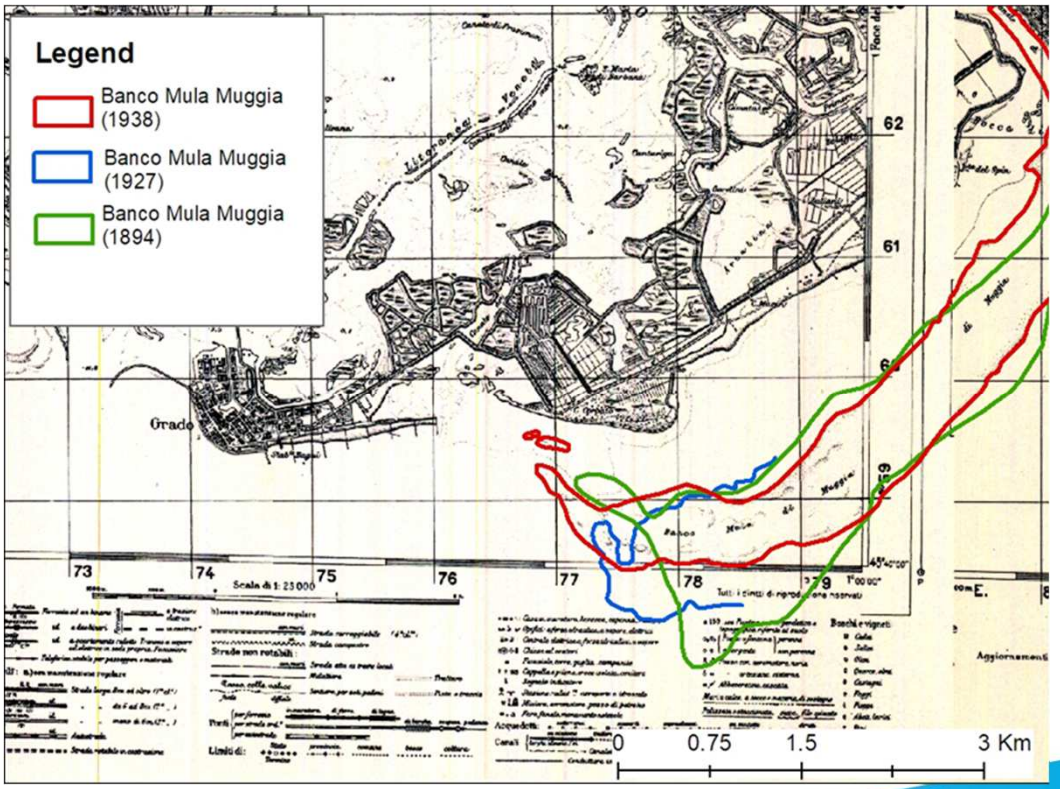
A rapid and complex evolution

A cocktail of natural dynamics combined with important anthropogenic modifications





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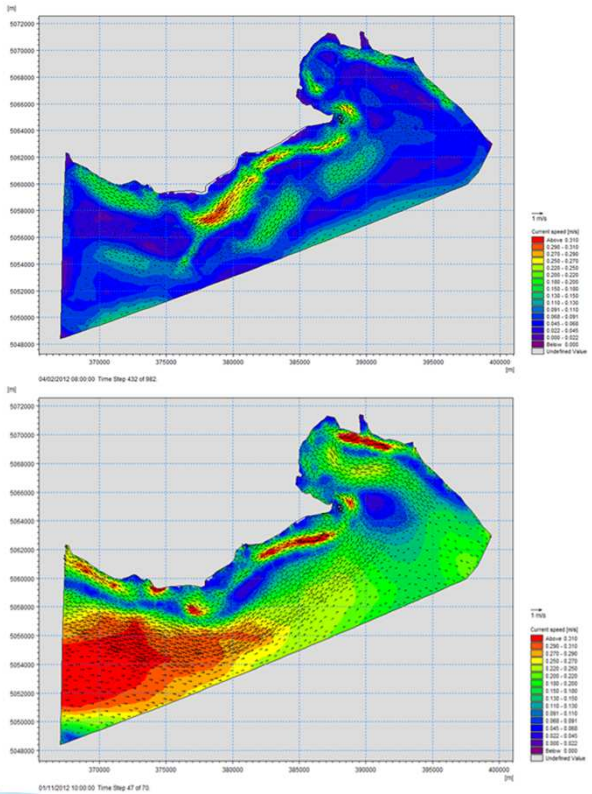
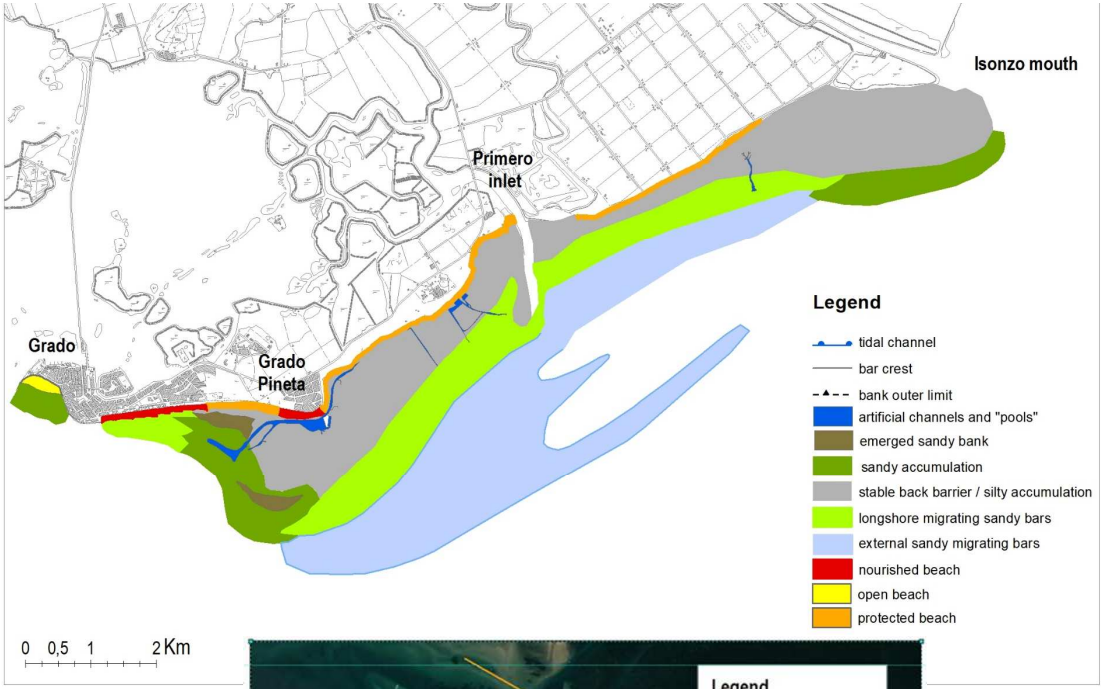
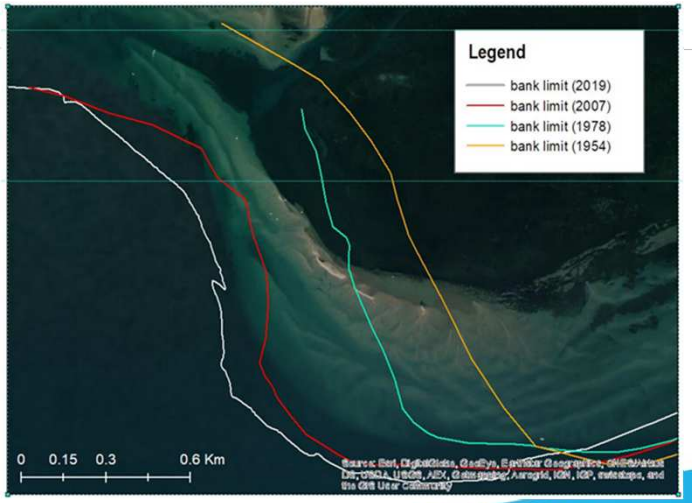
A sediment sink

The external sandy bars tend to migrate toward south-west, following the littoral drift generated by waves.







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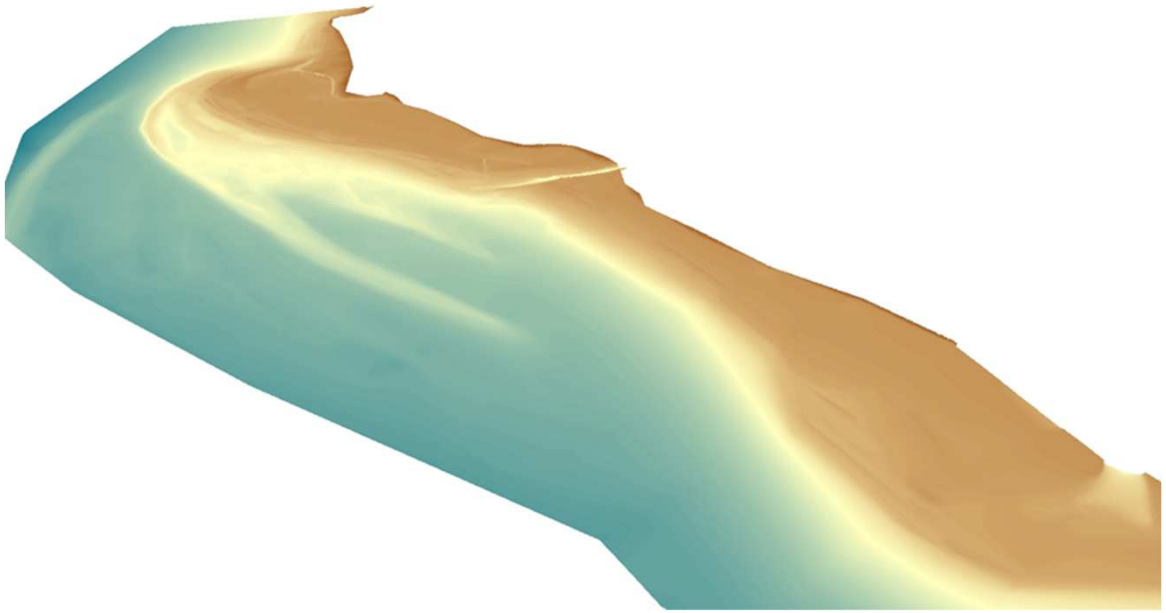
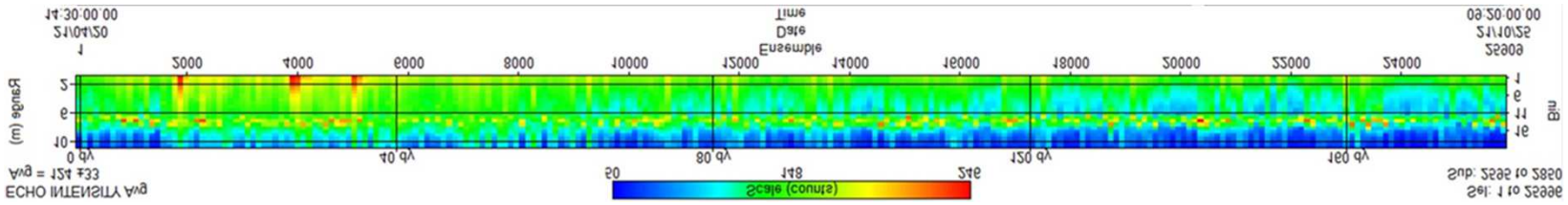
A project to know

Change we care helped to understand sediment dynamics





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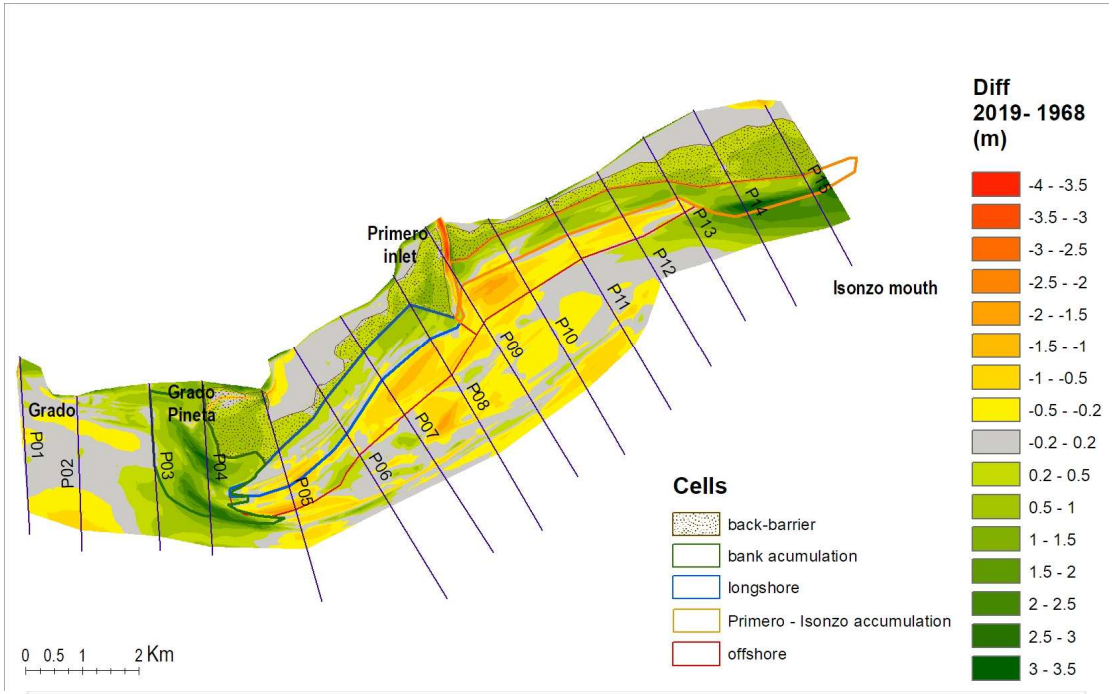

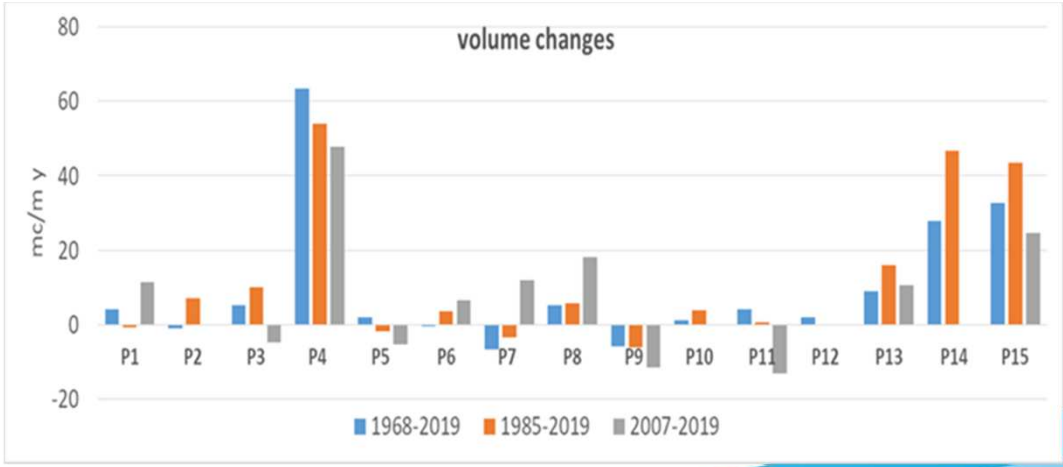

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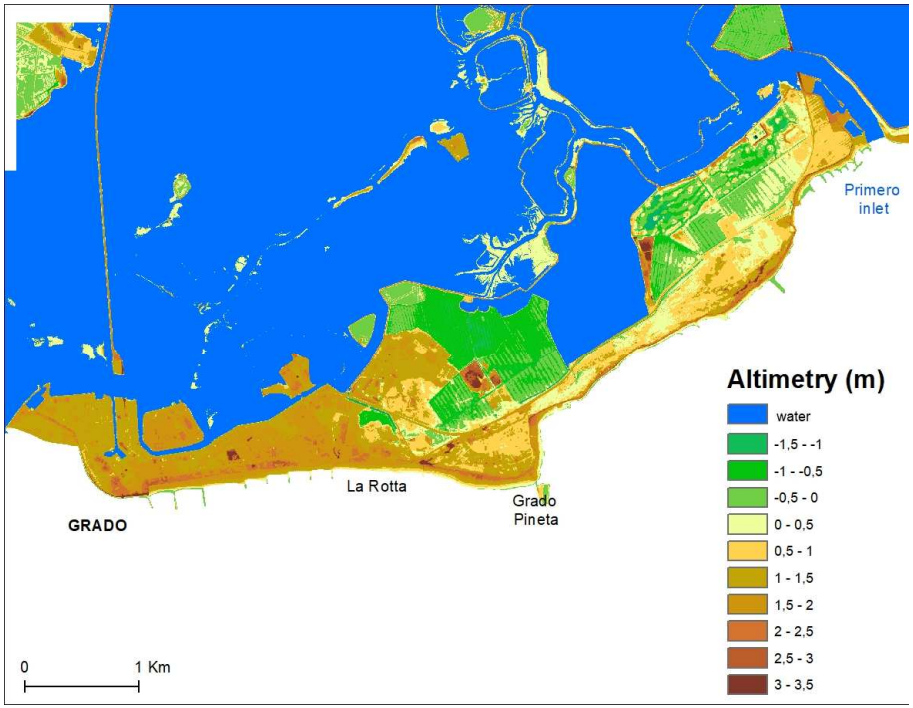
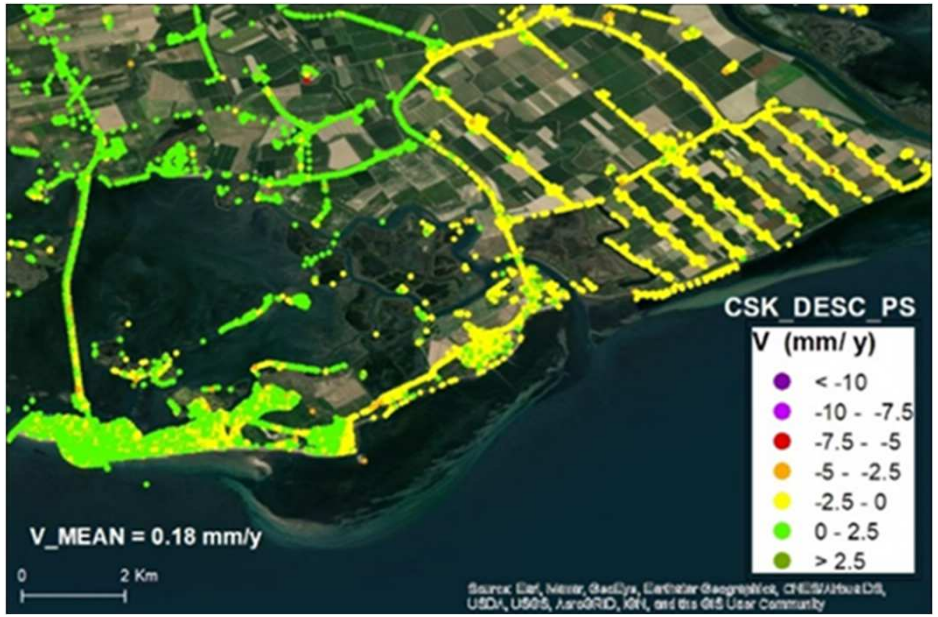
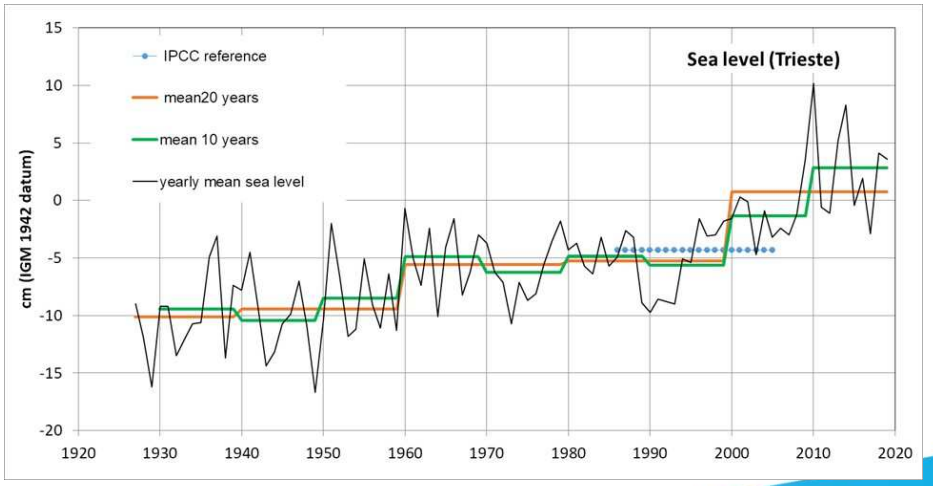
A project to know

Subsidence and sea level rise were compared







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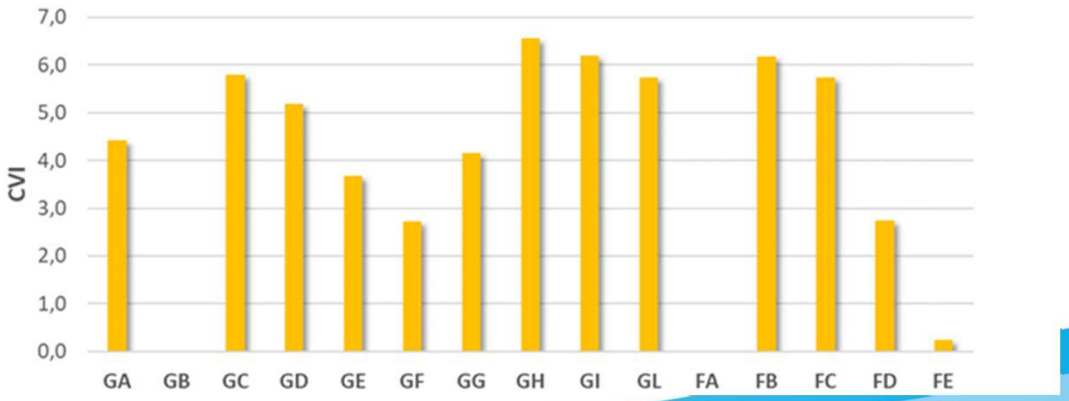
The short-term coastal vulnerability scenario

The coastal vulnerability analysis refers to the principle that vulnerability to flooding is strongly conditioned by the different characteristics of the coastal sectors and the consequent dissipative power of wave energy



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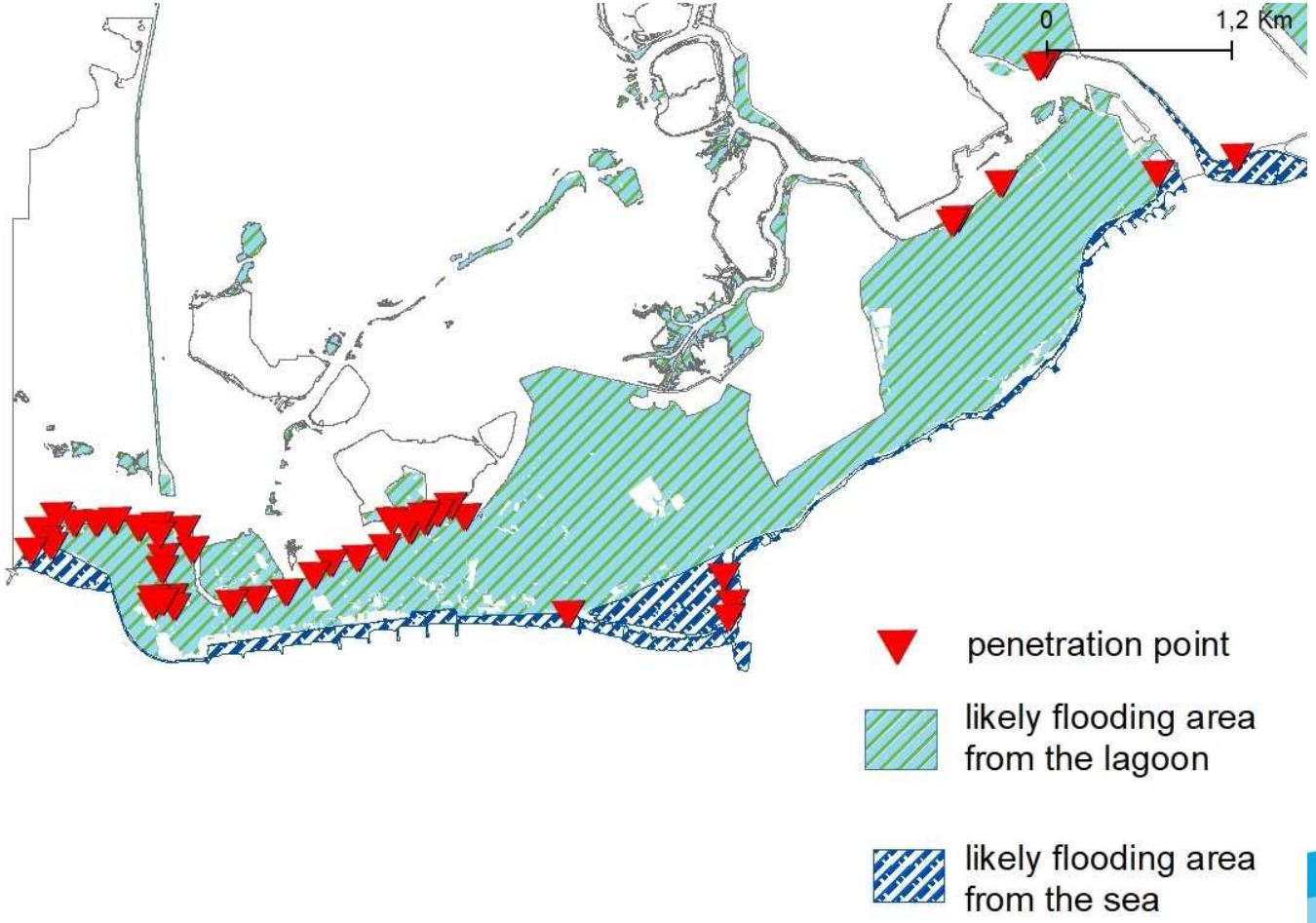
The long-term coastal vulnerability scenario

Different flooding models for RCP scenarios were obtained by imposing the respective sea level rise values on the DTM model

By adding to the sea level rise values, those for high water events (0.59 + 1.40), a potential almost complete flooding of the island of Grado is obtained



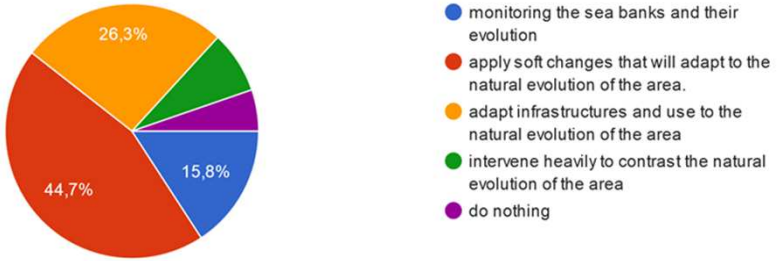
Strom surge condition and RCP 2,6 max (+1,99 m)

The participatory process

Two online events were organized with stakeholders

Which strategies do you consider of importance for the future of Grado?

38 risposte



An online survey received 375 responses

Proposals for the future - Preserve

Monitoring

Rapid Environmental Assessment, REA

Proposals for the future – To preserve

Preserve the morpho-sedimentary system of the bank

Preserve the source of the sediments

The preservation of coastal natural environments responds to the objectives of the Green Deal

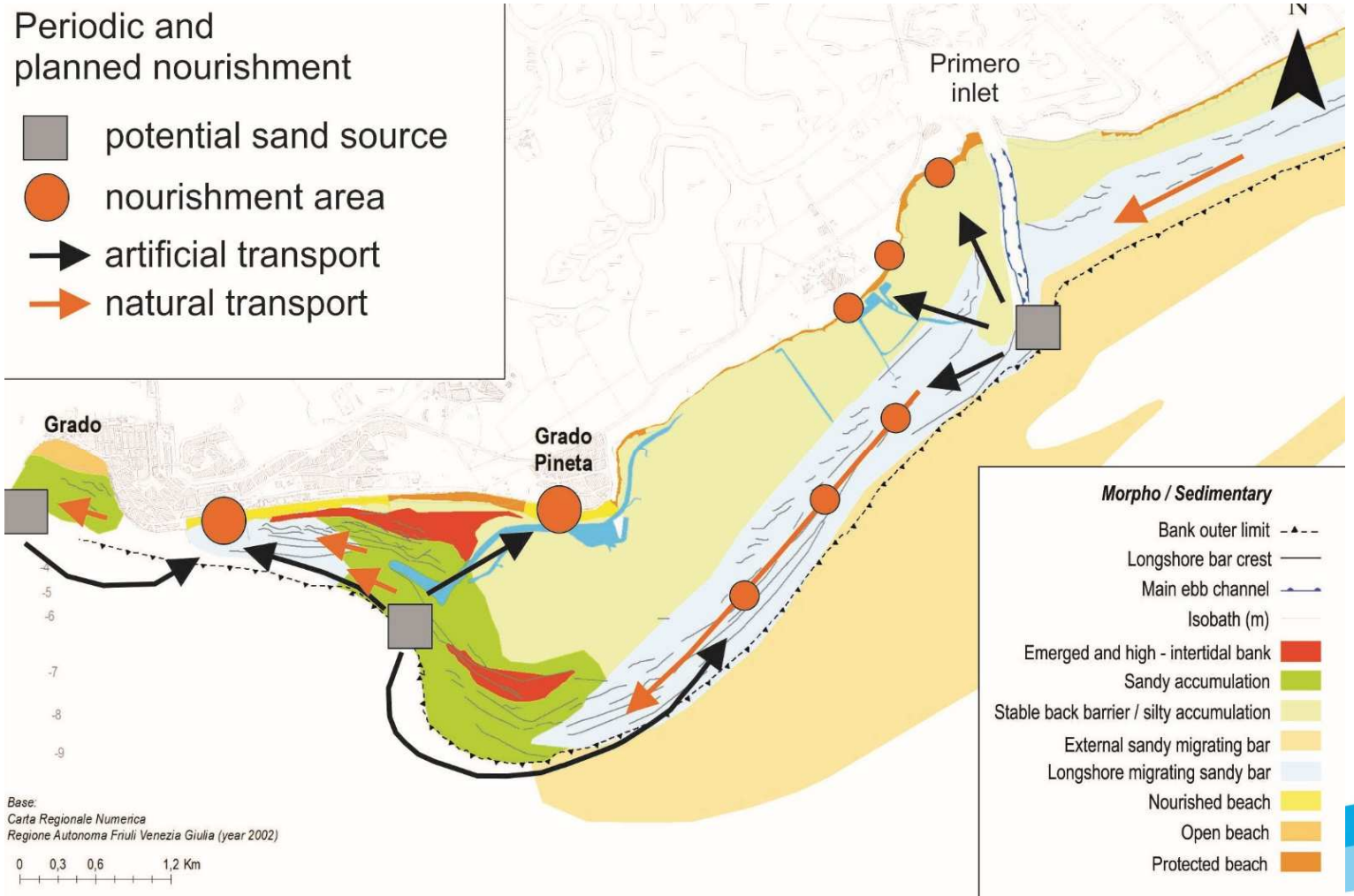
Proposals for the future – To do

Nature protection – kitesurfing regulation

Strengthening of defenses in vulnerable areas

Proposals for the future – To do

The overabundant sediments in these areas can be managed as a temporary reservoir for the nourishment of adjacent beaches, with the adoption of periodic and programmed dredging / nourishment



Proposals for the future – To do

Natural pools and micro – ports, small interventions useful to improve the seaside tourist use of the protected beaches located in the rear barrier areas

Education and information
to fill the lack of acceptance of the specific characteristics of the sites

The results came thanks to….

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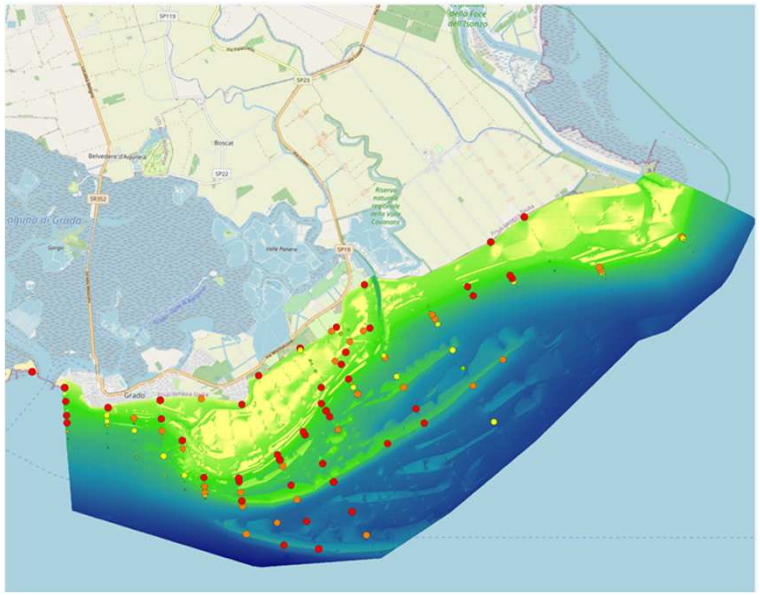

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