Marine water quality under climate change conditions/scenarios

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The increase of sea temperature and the changes in marine currents are generating impacts on coastal waters such as changes in water biogeochemical and physical parameters (e.g. primary production, pH, salinity) leading to progressive degradation of the marine environment.

With the main aim of analysing the potential impacts of climate change on coastal water quality, a Regional Risk Assessment (RRA) methodology was developed and applied to coastal marine waters of the North Adriatic (i.e. coastal water bodies of the Veneto and Friuli Venezia Giulia regions, Italy).

RRA integrates the outputs of regional models providing information on macronutrients (i.e. dissolved inorganic nitrogen e reactive phosphorus), dissolved oxygen, pH, salinity and temperature, etc., under future climate change scenarios with site-specific environmental and socio-economic indicators (e.g. biotic index, presence and extension of seagrasses, presence of aquaculture). The presented approach uses Geographic Information Systems to manage, analyse, and visualize data and employs Multi-Criteria Decision Analysis for the integration of stakeholders preferences and experts judgments into the evaluation process. RRA outputs are hazard, exposure, vulnerability, risk and damage maps useful for the identification and prioritization of hot-spot areas and vulnerable targets in the considered region.

Therefore, the main aim of this contribution is to apply the RRA methodology to integrate, visualize, and rank according to spatial distribution, physical and chemical data concerning the coastal waters of the North Adriatic Sea in order to predict possible changes of the actual water quality.