

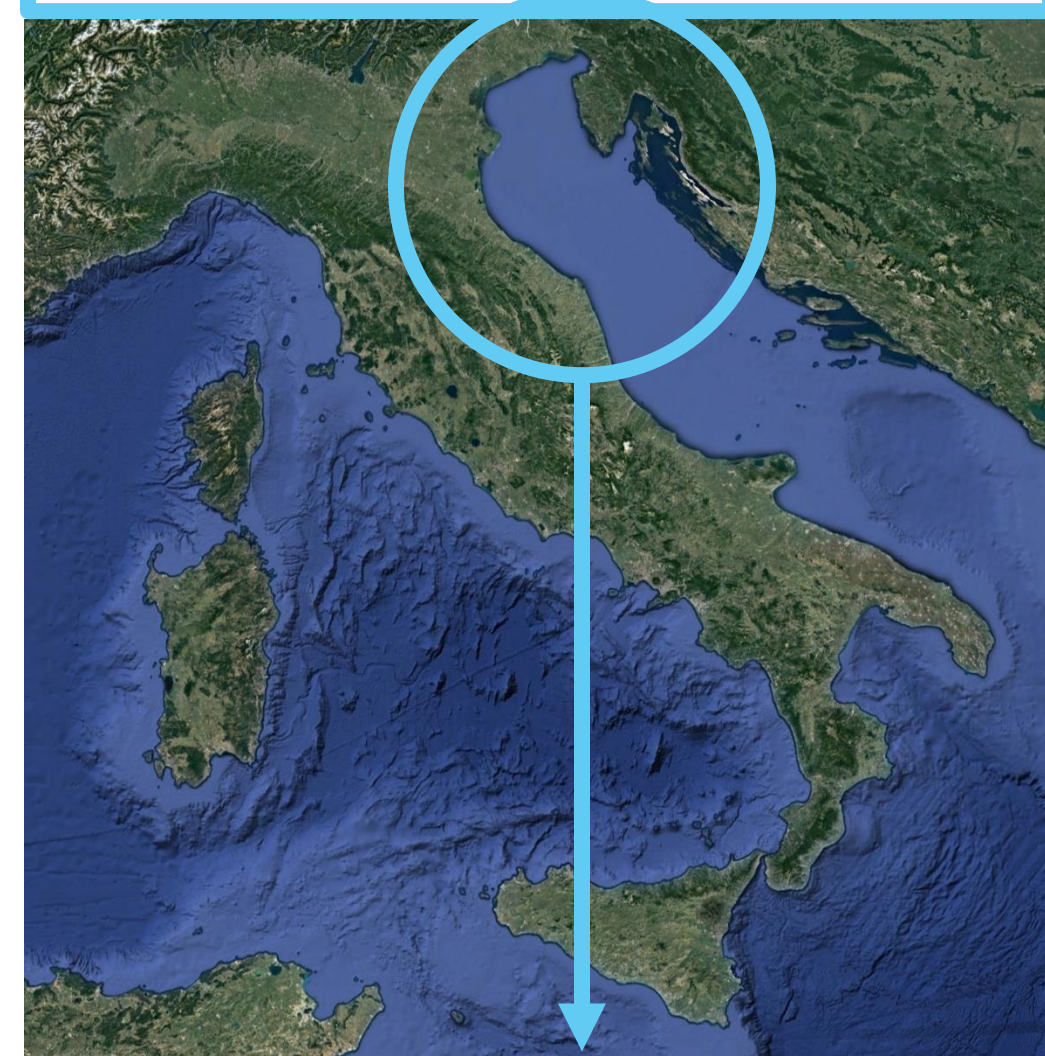
MACROPHYTE COMMUNITIES IN THE NORTHERN ADRIATIC SEA: LONG-TERM CHANGES AND THE NEED OF NEW TOOLS FOR MONITORING

Giulia BELLANTI^{1,2}, Stefano ACCORONI¹, Anna ANNIBALDI¹, Francesco BOSCUCCI³, Ljiljana IVEŠA⁴, Sabina SUSMEL³, Fabio RINDI^{1,2}

¹Polytechnic University of Marche, Ancona, Italy; ²National Biodiversity Future Center, Palermo, Italy; ³University of Udine, Udine, Italy; ⁴Ruder Boskovic Institute, Rovinj, Croatia



North Adriatic



Macrophyte habitats, such as seaweeds and seagrass meadows (SSMs), play a key role in coastal ecosystems (e.g., primary producers, nursery areas, biodiversity repositories).

In North Adriatic SSMs are mainly formed by *Cystoseira sensu lato* (brown seaweeds), *Cymodocea nodosa* (Ucria) Ascherson, *Nanozostera noltei* (Hornemann) Tomlinson & Poluszny and *Zostera marina* Linnaeus (seagrasses).

Over the last decades SSMs have undergone a large scale regression and this negative trend is going to get worse due to the severe effects of climate change and anthropogenic disturbance (e.g., mechanical damages, turbidity increase, nutrient imbalance, hypersedimentation, chemical pollution) on these communities (Boudouresque et al. 2009, Orfanidis et al. 2021).

There is the need of more frequent, accurate and geographically wide monitoring activities to assess temporal changes in these assemblages.

Brigantine project aims to provide innovative tools for monitoring benthic habitats, merging images and chemico-physical data to improve the knowledge about the marine environment effecting on the SSMs stability.

Pilot sites



Autonomous Surface Vehicles capable to combine

- Chemico-physical and multispectral data in monitoring procedures
- Different sensors and cameras
- Adequate energy autonomy
- Eco-friendly materials

ANALYTICAL UNITS:

- Monitoring/measuring the level of nutrients and pollutants in marine ecosystems for the preservation of SSM biodiversity
- Innovative descriptors and/or new reference models
- Data digitalization

BOTANICAL UNITS:

- Describing the current conservation status of macrophytes habitats
- Defining a protocol to evaluate macrophyte assemblages status based on Brigantine data
- Assessing parameters affecting macrophytes health status
- Isolation of macrophytes in laboratory cultures