

# Geo-environmental cartography of the Marine Protected Area "Isola di Bergeggi" (Liguria, NW Mediterranean Sea)

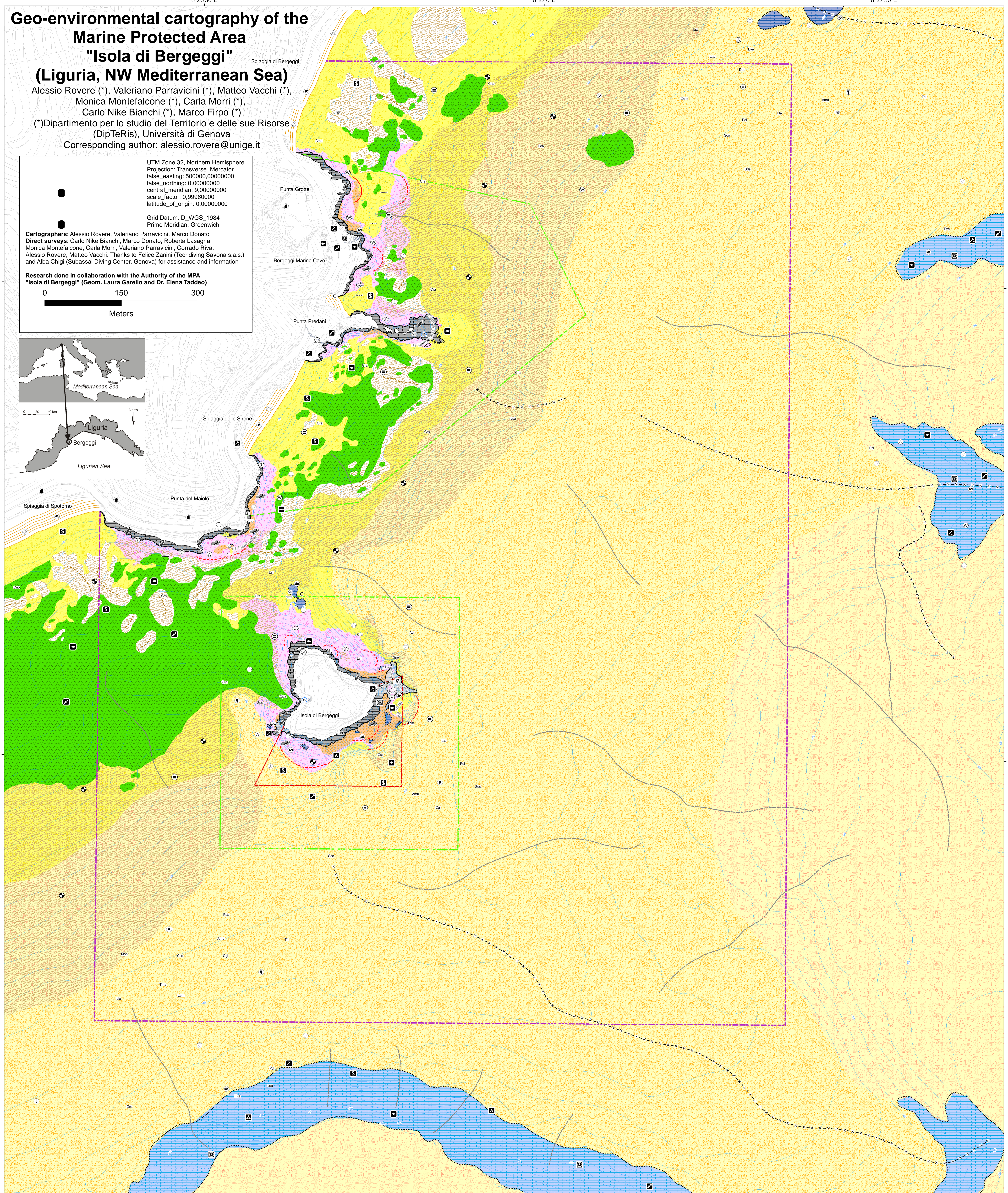
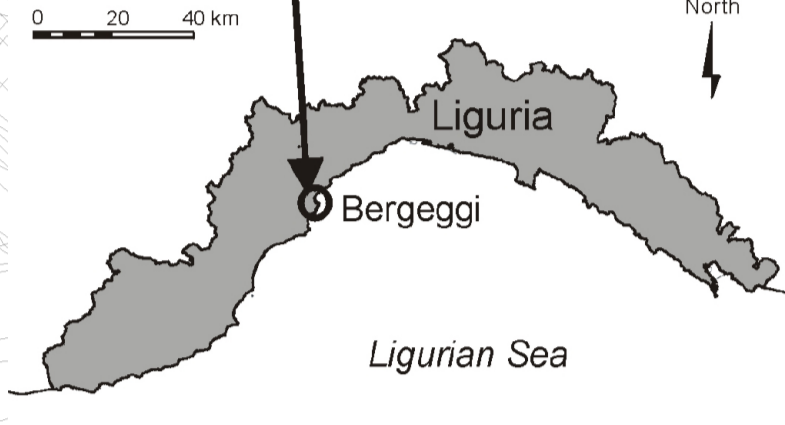
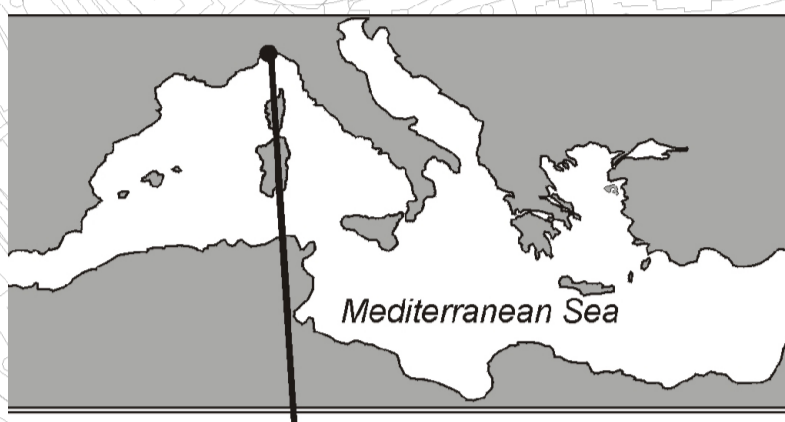
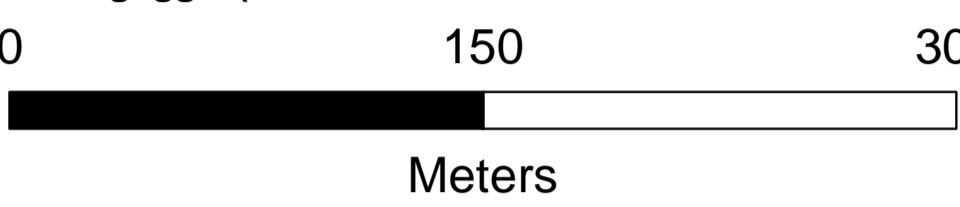
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UTM Zone 32, Northern Hemisphere  
 Projection: Transverse\_Mercator  
 false\_easting: 500000,00000000  
 false\_northing: 0,00000000  
 central\_meridian: 9,000000000  
 scale\_factor: 0,999600000  
 latitude\_of\_origin: 0,00000000

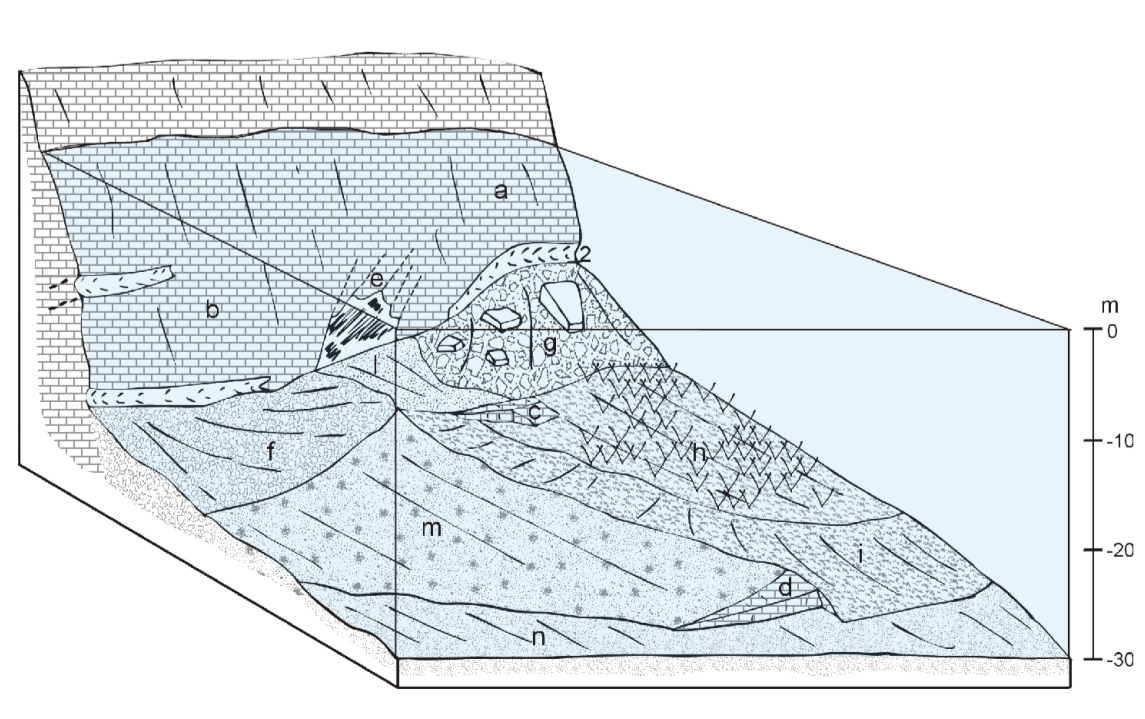
Grid Datum: D\_WGS\_1984  
 Prime Meridian: Greenwich

**Cartographers:** Alessio Rovere, Valeriano Parravicini, Marco Donato  
**Direct surveys:** Carlo Nike Bianchi, Marco Donato, Roberta Lasagna, Monica Montefalcone, Carla Morri, Valeriano Parravicini, Corrado Riva, Alessio Rovere, Matteo Vacchi. Thanks to Felice Zanini (Techdiving Savona s.a.s.) and Alba Chigi (Subassai Diving Center, Genova) for assistance and information

Research done in collaboration with the Authority of the MPA "Isola di Bergeggi" (Geom. Laura Garello and Dr. Elena Taddeo)



- Topography**
  - Sandy coastline
  - Rocky coastline
  - Isobaths (meters)
- Marine Protected Area Zonation**
  - A\_zone
  - B\_zone
  - C\_zone
- Morphotypes**
  - Plunging cliff (a)
  - Deep plunging cliff (b)
  - Rocky outcrop (c)
  - Deep rocky outcrop (d)
  - Submerged cave (e)
  - Rockfall deposits (f)
  - Toppling deposits (g)
  - Seagrass meadows (h)
  - Loose sediments (n)
  - Dead matte (exposed or substratum) (i)
  - Sandy deposits (l)
  - Bioclastic sands (m)



- Landforms and deposits**
- Linear themes**
  - Cliff base
  - Base of rocky outcrop
  - Platform inner margin
  - Platform outer margin
  - Buried Wave cut surface (Outer)
  - Rockfall limit
  - Toppling limit
  - Dead matte channel
  - Morphological relief
  - Drainage line
- Point themes**
  - Wave cut platform (active)
  - Abrasion or wave cut notch
  - Pothole
  - Karst Littoral cave
  - Karst submerged cave
  - Beachrock
  - Rockfall
  - Toppling
  - Ripple marks
- Ecological factors**
  - Bottom currents
  - Settling
  - Intense or rapid sedimentation
  - Mineral sedimentation
  - Organic sedimentation
- Environmental alteration**
  - Anchoring
  - Landing place
  - Bathing area
  - Coastal urbanization
  - Commercial harbour influence
  - Date mussel harvesting
  - Diving site
  - Fishing activity
  - Human waste
  - Beach nourishment

- Geoheritage elements**
  - Aesthetic
  - Cultural
  - Ecological
  - Economic
  - Integrity
  - Paleogeographic
  - Rareness
  - Representativeness
- Trends**
  - Bioconcretion
  - Sedimentary coverage
  - Regression

- Indicator species**
  - Amu Aspidosiphon muelleri* (sipunculidae): intense and/or rapid sedimentation
  - Avi Arthrocladia villosa* (feoliceae): bottom currents
  - Cgi Corbula gibba* (bivalvia): settling
  - Cro Cymodocea nodosa* (phanerogam): substitution
  - Cra Caulerpa racemosa* (chlorofyceae): biotic invasion
  - Cse Chaetozone setosa* (polichetae): mineral sedimentation
  - Dar Ditrupa arietina* (polichetae): slow sedimentation
  - Eve Eunicella verrucosa* (antozoa): turbidity
  - Gro Glycera rouxii* (polichetae): rapid and/or intense sedimentation
  - Lby Lithophyllum byssoides* (rodoliceae): bioconcretion
  - Lem Lumbrineris emandibulata mabii* (polichetae): rapid and/or intense sedimentation
  - Lla Lumbrineris latreilli* (polichetae): settling
  - Lsa Leptogorgia sarmentosa* (antozoa): turbidity

- Lst Lithophyllum sictaeforme* (rodoliceae): bioconcretion
- Mli Mesophyllum lichenoides* (rodoliceae): bioconcretion
- Msp Myrtea spinifera* (bivalvia): settling
- Opa Oculina patagonica* (antozoa): biotic invasion
- Pci Prionospio cirrifera* (polichetae): organic sedimentation
- Pcl Paramuricea clavata* (antozoa): benthic-pelagic coupling
- Ppa Paralacydonia paradoxa* (polichetae): settling
- Sco Syllis cornuta* (polichetae): sedimentary instability
- Sde Siphonocetes dellavallei* (crustacea): organic sedimentation
- Spe Spirochneus pedunculatus* (feoliceae): bottom currents
- Tdi Tellina distorta* (bivalvia): sedimentary instability
- Ttl Thyasira flexuosa* (bivalvia): mineral sedimentation
- Tma Tharyx marioni* (polichetae): rapid and/or intense sedimentation