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**BULGARIAN ACADEMY OF SCIENCES
INSTITUTE OF OCEANOLOGY - VARNA**

The Bulgarian Black Sea Coastal Atlas (BULGCOAST Atlas) – developments and forthcomings

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ICAN 4th Workshop
Trieste, Italy, 16-20 November 2009





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BULGCOAST Atlas.... **MAIN GOAL**

The main objectives of the currently developed BULGCOAST Atlas are to:

- ▶ Foster sharing and using of geographically-linked spatial information on marine and coastal features along the Bulgarian part of the Black Sea coastal zone.
- ▶ Provide coastal and marine data available to general public.
- ▶ Improve public access to coastal information to help and support different authorities, institutions and stakeholders in coastal zone management.

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BULGCOAST Atlas.... **GENERATION**

The Bulgarian Black Sea Coastal Atlas has been developed at the Institute of Oceanology – Bulgarian Academy of Sciences (hosted BGODC).

- BULGCOAST Atlas was initially generated as a part of the BGODC initiative and it has been developed with financial support of SIBEMA Project (Scientific and Institutional Capacity Building for Implementing European Marine Policy in the Black Sea Region).
- ESRI ArcInfo 9.1 (Desktop); ESRI ArcSDE 9.1 and ESRI GIS Server software have been provided at the Institute of Oceanology.
- In addition, topographic and nautical maps in different scales (1:100 000; 1:25 000; 1:5 000); Colortrac SmartLF Cx40 Scanner and HP DesignJet 5500 printer 42 RTL were obtained.

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BULGCOAST Atlas.... **DISTINGUISHING FEATURES**

- CTD data for T-S from field surveys (ship cruises)
- Geomorphic typology/classification of the Bulgarian Black Sea coast: erosion sections/sandy beaches/coast-protection structures
- Satellite SST and *Chl a* Level 3 Products
- Census data for population in 14 Bulgarian Black Sea coastal municipalities and whole catchments area for the period 1934-2001
- Photos of coastline and port/coast-protection structures along the Bulgarian coast are available for viewing and can be directly downloaded from the Web Coastal Atlas site.

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BULGCOAST Atlas.... **DATA COLLECTION**

Main contributors to spatial marine/coastal data gathering in Bulgaria:

- ✓- Water Basin Directorate – branch Varna (Ministry of Ecology)
- ✓- Cadastre Agency – Ministry of Regional Development and Public Works
- ✓- Navy Hydrographic Service
- ✓- National Institute of Meteorology and Hydrology – BAS
- ✓- Institute of Fisheries and Aquaculture – Varna
- ✓- Institute of Oceanology – BAS

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BULGCOAST Atlas.... **TARGET GROUPS/END USERS**

Wide target audience will benefit from the implementation of the BULGCOAST Atlas

- scientific/research coastal community in Bulgaria and outside, such as universities, oceanographic and coastal institutes/laboratories
- environmental agencies
- governmental and municipal authorities
- civil protection authorities
- coast-protection agencies
- local communities/owners
- decision-makers
- stake holders

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BULGCOAST Atlas... **Data and cartographic information included**

- Geographic Area: **Bulgarian Black Sea catchment's area, coastline, internal waters, territorial waters, contiguous zone and exclusive economic zones (EEZs)**

- Number of Datasets: **Variable**

- Topics:
 - Hydrology
 - Biology
 - Fisheries, Aquaculture
 - Coastal Habitats
 - Coastal Geomorphology and Geology
 - Imagery
 - Human Impact
 - Tourism & Recreation
 - Culture & Heritage
 - Infrastructure
 - Socio-economic data
 - Natural Resources
 - Environmental Monitoring

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BULGCOAST Atlas... DATA ISSUES

➤ Costs

Intellectual Property Rights (IPR)

Data use restrictions

Price restrictions

➤ Accessibility

Limited GIS-ready data

Inaccessible data

Data sources and acquisition

➤ Quality

Inappropriate data scales

Non-existent metadata

Variable data quality

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BULGCOAST Atlas... **Current problems and challenges**

- Lack of funding sources for WEB Atlas generation and maintenance;
- Lack of common spatial data standards and harmonised data management between different institutions responsible for the Bulgarian Black Sea coastal zone;
- Lack of common agreements for sharing spatial data between institutions involved in data gathering;
- Lack of qualified staff at the IO-BAS

Main challenges:

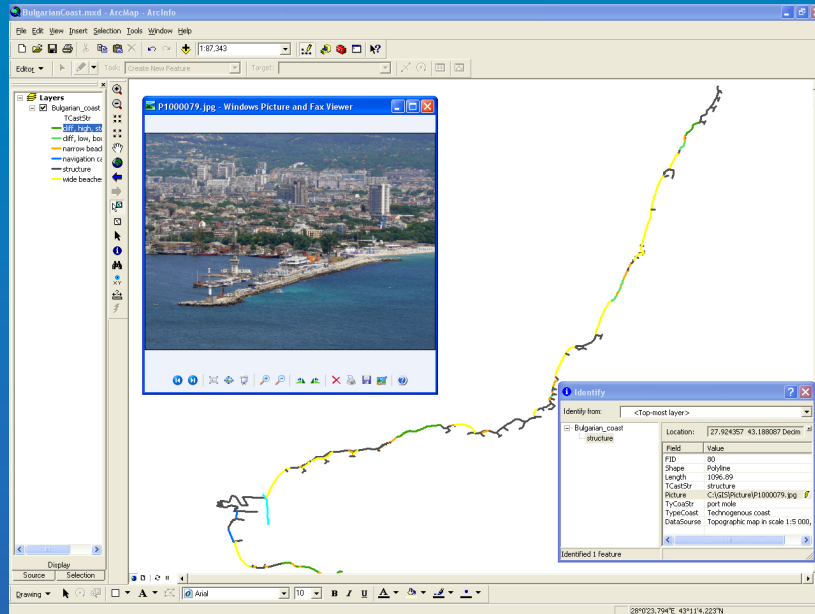
Only a few projects have been published until now throughout the GIS Server under the BGODC database. However, there are many other GIS-layers existing in IO-BAS geodatabase, that cover different coastal and marine topics and they have to be published online during the next year in order to start BULGCOAST Atlas.





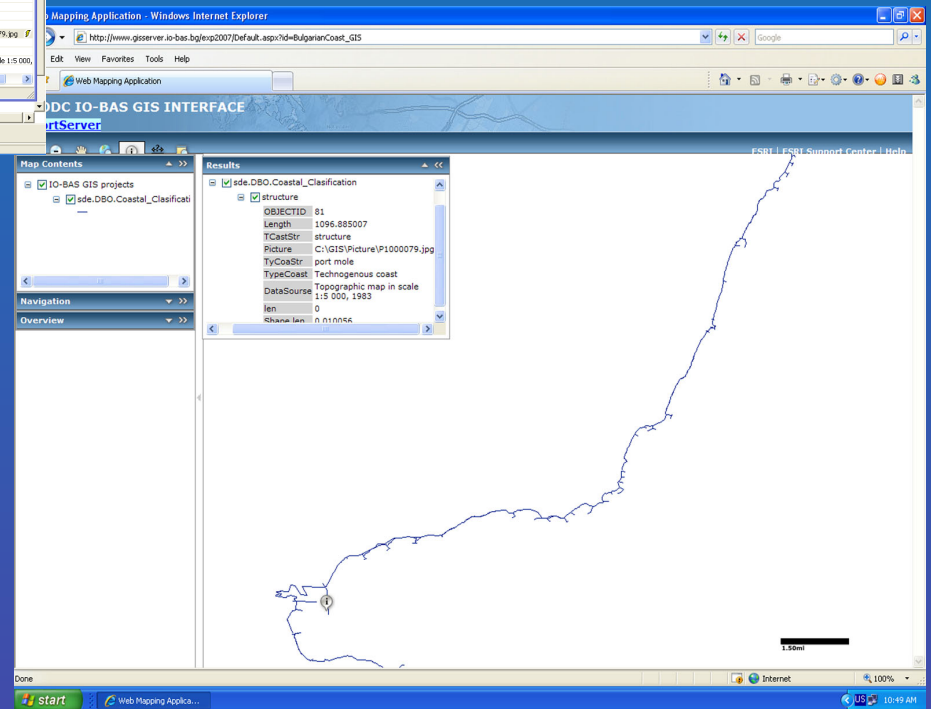
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GIS layers to be included COASTAL CLASSIFICATION



Desktop view

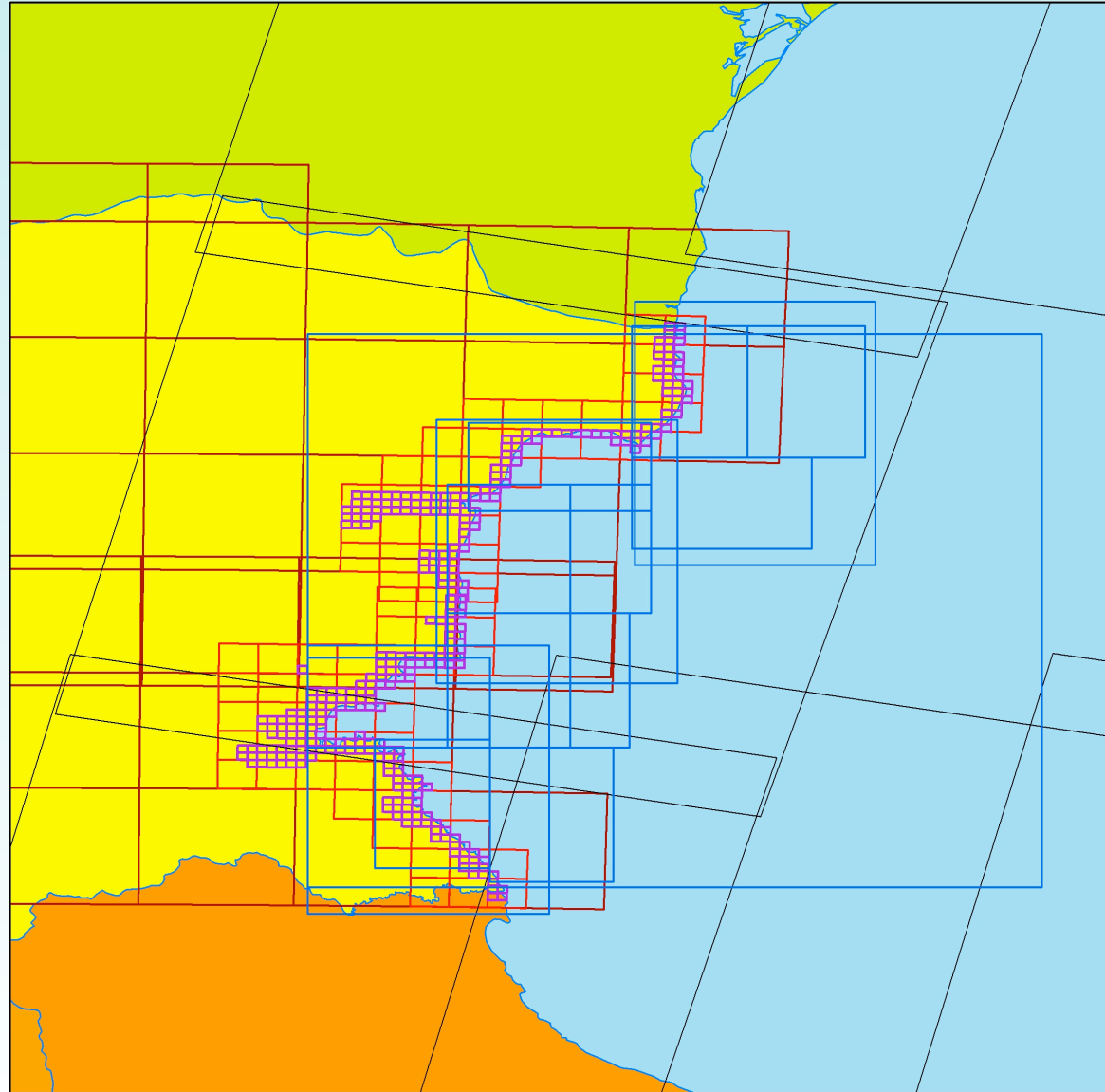
WEB view





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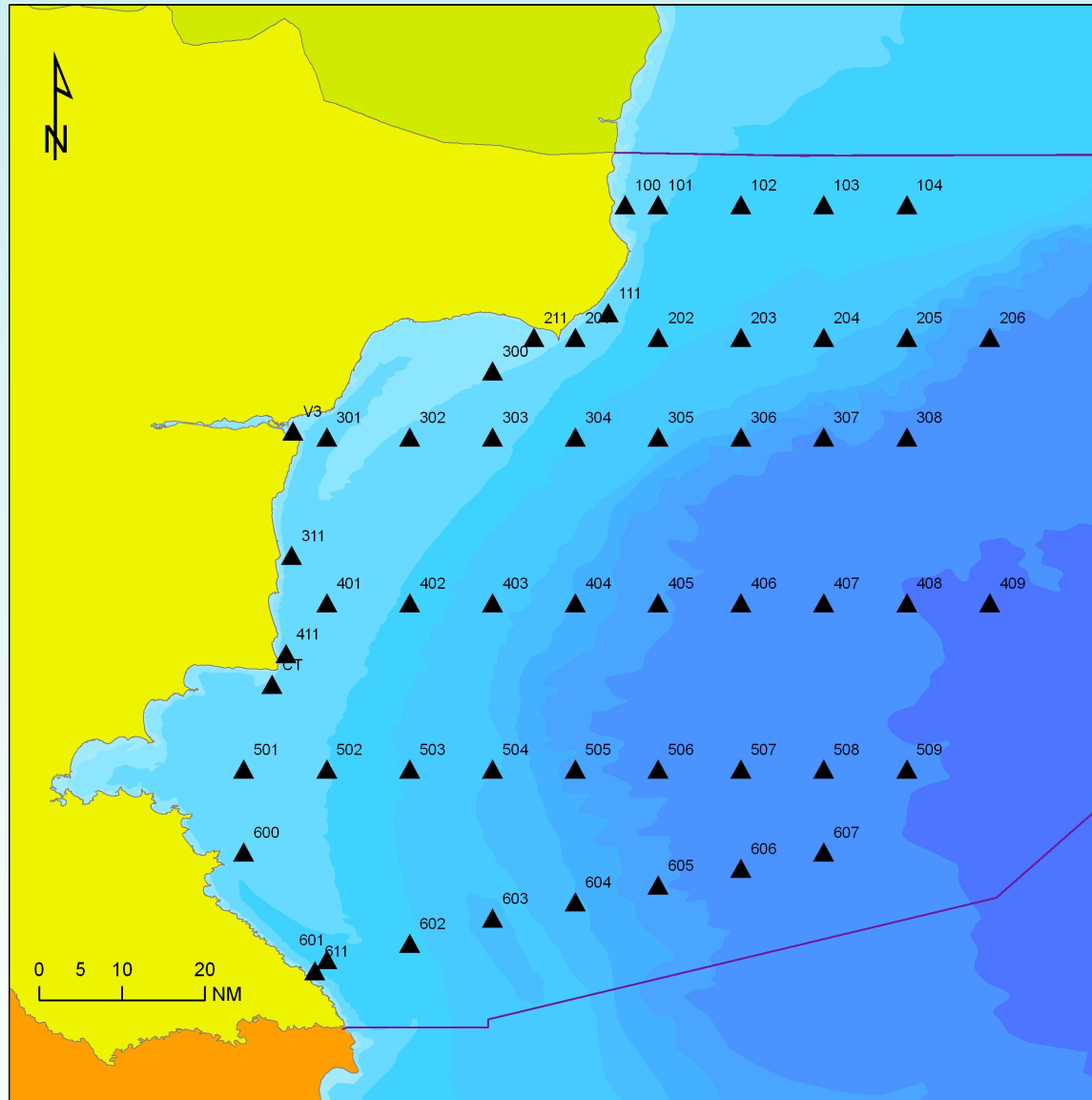
GIS layers to be included Catalog of Topographical and Nautical maps





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GIS layers to be included CTD data sets





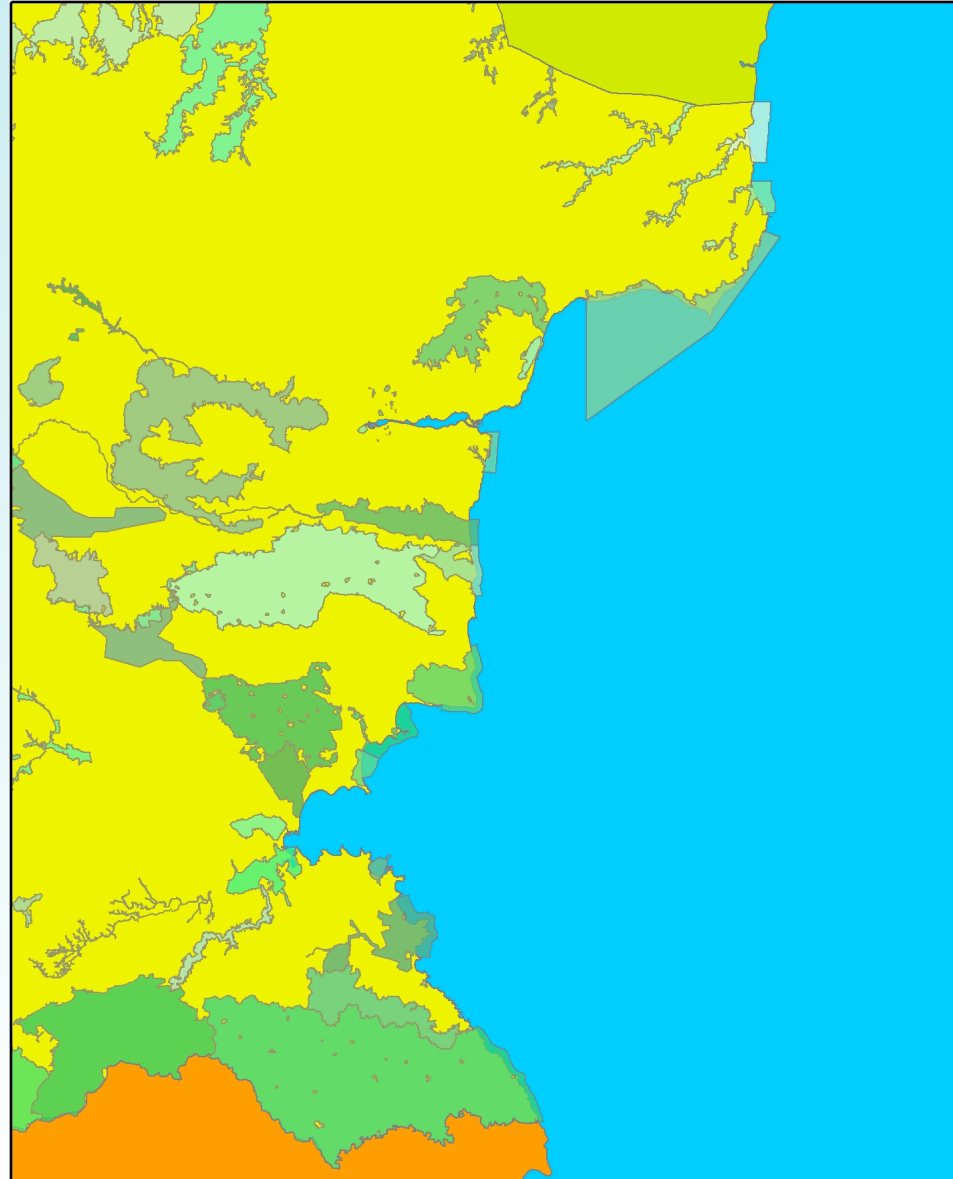
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GIS layers to be included NATURA 2000

Natura 2000 is the EU network of sites designated by Member States under the

Birds Directive (EEC/79/409 directive) signed in 1979 (Special Protection Areas = SPAs) and under the

Habitats Directive (EEC/92/43 Directive) signed in 1992 (Special Areas of Conservation = SACs).



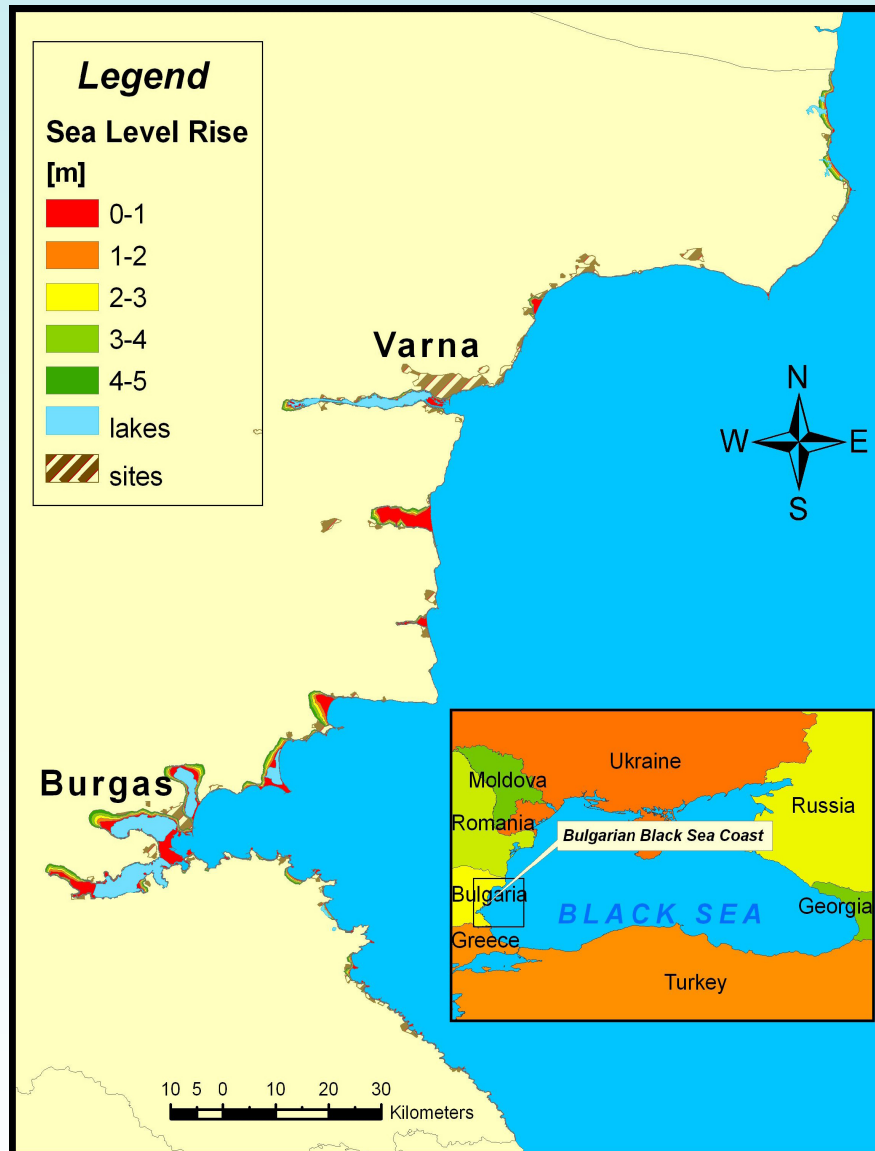
<http://www.natura2000bg.org/>



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GIS layers to be included

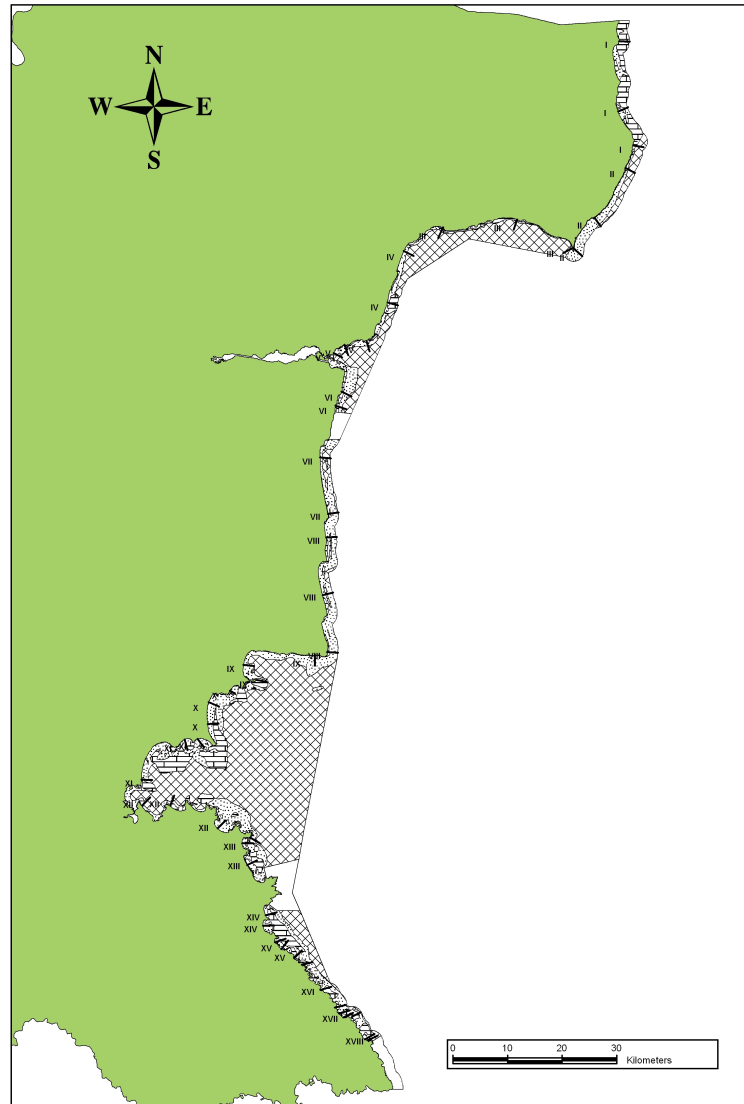
Low-laying territories identified along the Bulgarian coast





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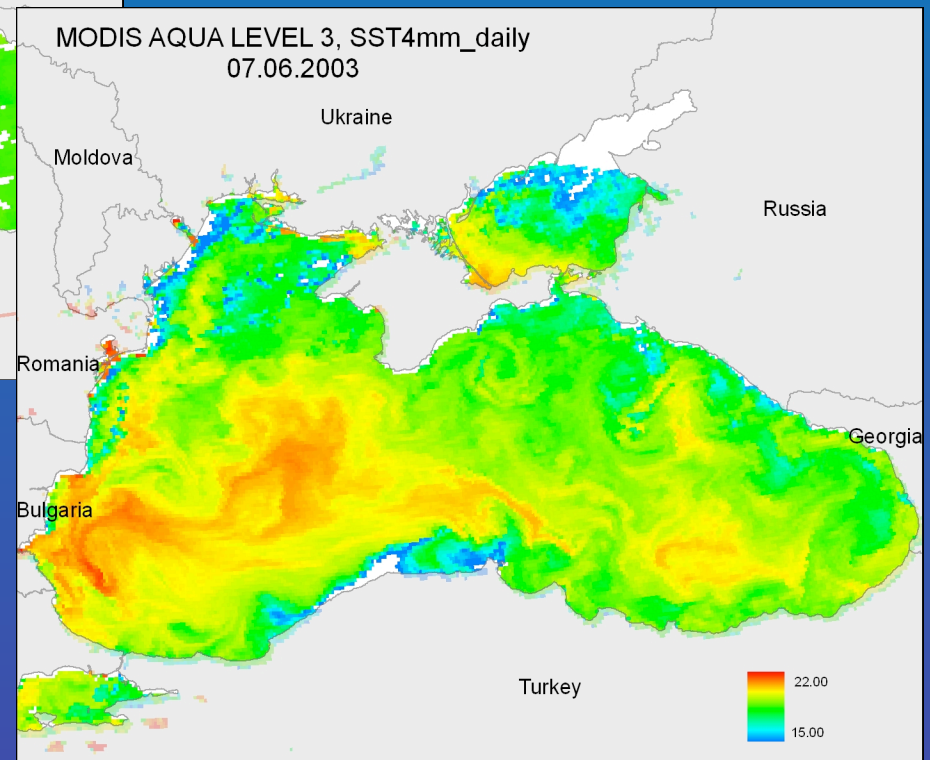
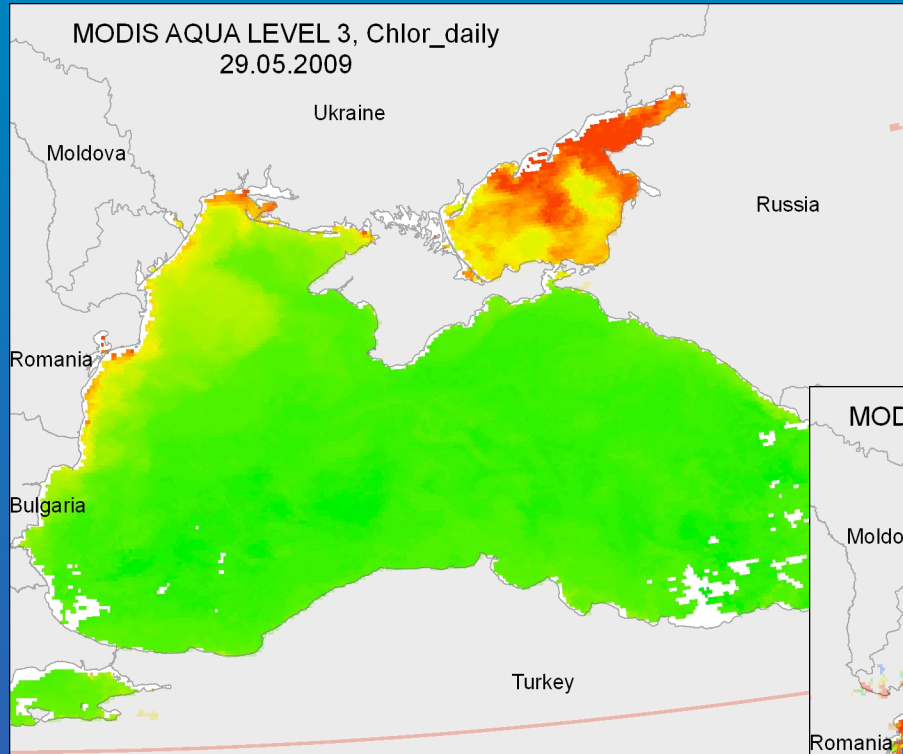
GIS layers to be included **BOTTOM SUBSTRATE TYPOLOGY**





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GIS layers to be included Satellite SST&Chla Level 3 Products





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COST (ESF) INITIATIVE

Proposal: Towards a European Coastline Classification Based on GIS Standards Infrastructure for Assessment of Coastal Zone Risks” (COASTCLASS)

➤ The long-term objective of the COST Action: to develop a European universal coastal classification hierarchy, based on the utilities of GIS for global scale appreciation of risk zones and a more comprehensive perception of the interrelations between natural and anthropogenic variables in the coastal zone.

The specific objectives of the COST Action:

- ✓ To establish a classification methodology for the development of a single pan European coastal classification system
- ✓ To promote coastal data standardisation with help of GIS in the context of INSPIRE Directive
- ✓ To identify coastal indicators for natural and anthropogenic hazards
- ✓ To generate a Coastal Classification Atlas for a number of test coastal areas with high priority of risks
- ✓ To contribute to coastal zone hazards assessment

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COST (ESF) INITIATIVE: DELIVERABLES

- **Common coastline classification criteria and harmonised coastal datasets based on the GIS infrastructure**
- **An integrated and systematic European coastline classification, supported by the GIS framework as an open-ended system, flexible and dynamic in terms of continuous updating**
- **Digital Europe-wide Coastal Atlas providing the primary base for risks zones assessment**
- **A web site giving an online access to the project activities and outputs**

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COST (ESF) INITIATIVE: WGs and Partners involved

- **WG1-Coastal processes and landforms**
- **WG2-GIS data management**
- **WG3-Coastal risks mapping**
- **WG4-Web design and maintenance**

The following 15 COST countries, involving more than 40 researchers from different organisations, have actively participated in the preparation of the Action or have indicated their interest to participate:

- **Bulgaria**
- **Estonia**
- **France**
- **Greece**
- **Italy**
- **Ireland**
- **Netherlands**
- **Norway**
- **Poland**
- **Portugal**
- **Romania**
- **Spain**
- **Sweden**
- **Turkey**
- **United Kingdom**

It was expected that more participants from other COST countries will be involved in the Action. Wider involvement will be actively encouraged to ensure coverage of potential region-specific coastline objects and peculiarities across Europe for incorporation into one classification scheme.

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THANK YOU FOR ATTENTION,
QUESTIONS and ADVICE



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