

CHAPTER 3

Coastal/Marine GI/GIS - A Pan-European Perspective

R. A. Longhorn

ABSTRACT: This chapter reviews the status of coastal and marine GI (geographic information) and GIS (geographic information systems) with regard to trans-national projects or programmes wholly or partly funded by the EU Institutions and other international bodies. The chapter examines the degree to which GI and GIS are taken into consideration at planning stages in new pan-EU initiatives for coastal and marine use, such as the current focus on the Baltic and regional planning in the Maghreb (Mediterranean basin) and European participation in various global climate change actions. The chapter concludes with recommendations for national and international GI/GIS organisations, public and private, to ensure that their voices are heard at the highest political level in the European Institutions in the current Information Society debate. Important initiatives are now underway, such as the EC Communication to the Council of Ministers and European Parliament “GI2000: Towards a European Policy Framework for Geographic Information”, the development of the “EGII - European Geographic Information Infrastructure” working document by EUROGI, GISDATA and other pan-European organisations, and the degree to which GI will be covered in the EU’s 13 billion ECU Fifth Framework Programme for Research and Technological Development, especially for coastal and marine research.

Introduction

Geographic information is usually described as any information which can be related to a location on the Earth, particularly information on natural phenomena, cultural and human resources, or pertaining to the natural or man-made environment. Historically, geographic information was represented by two-dimensional maps which focused on the ownership or control and management of territory (land and sea). The more

modern definition of GI covers a very wide spectrum of information which is gathered, processed, disseminated and used in daily life in countless practical applications for governing society, e.g. land registration to record ownership details and for taxation purposes, environmental monitoring, urban and rural development planning, for planning and maintaining transport corridors (land, sea and air) and in many other ways.

Carrying out practical projects in coastal zone management (CZM) or other ocean-related research would be almost impossible without geographic information, i.e. recording the spatial or location attribute of each piece of data collected - often in 3-dimensions! Coastal and deep-ocean marine geographic information offers considerable opportunity for expanded use of GIS (geographic information systems) tools and modelling techniques to make better and more rapid use of the data collected. Marine GI often requires the latest technology to provide the position attributes for the data being collected, including remote sensing, GPS for data collected in the field, and sonar for determining depths or locations of objects. Data integration is difficult and expensive, especially across scientific disciplines, across projects, across data collection and management technologies and across country borders.

This chapter attempts to briefly introduce major initiatives relating to coastal zone research and management of the coastal regions which are pan-European in nature, i.e. inherently trans-national or cross-border, rather than looking at specific programmes at national level. Table 1 lists the many countries in the EU, the EEA - European Economic Area, East and Central Europe, plus the Russian Federation and Maghreb and Mediterranean regions, all of which participate in coastal projects which are often partly or wholly funded by the EU Institutions or by EU Member States via international aid and development programmes.

Note that several countries span "regions" and thus may find themselves participating in several different cross-border programmes at one time, often executed under different rules and/or with different objectives, while other countries may share a common border on a single ocean or sea, yet be unable to participate in a single programme because of funding restrictions, which are often political and geographical in nature. A typical example is funding to the Russian Federation under TACIS but not under Phare, even though a major Phare project might be enacted in the Baltic.

Diverse Coastal Zone Activities Require Diverse Programmes of Research

Table 2 attempts to categorise the diversity in types of activities relating to coastal zone management, to remind the reader of the wide range and diverse nature of projects and programmes which are conducted at national or international (cross-border) level. These go beyond pure scientific research, and require quite different types of funding and forms of agreement or rules of participation, depending upon the type of activity and scope of the project or programme. Knowing that many of the policy makers who set up these rules or project/programme skeletons have little or no experience in CZM or of GI/GIS, you begin to realise the importance of education,

TABLE 1
Countries sharing coastlines in “Europe”

Grouping	Country	EU Progs	Coastal “Regions”
EU	Belgium	All	North Atlantic, North Sea
	Denmark	All	Baltic Sea, North Sea
	Finland	All	Baltic Sea, Nordkap
	France	All	Mediterranean, North Atlantic, English Channel
	Germany	All	Baltic Sea, North Sea
	Greece	All	Mediterranean
	Ireland	All	North Atlantic
	Italy	All	Mediterranean
	Netherlands	All	North Atlantic, North Sea
	Portugal	All	North Atlantic
	Spain	All	Mediterranean, North Atlantic
	Sweden	All	Baltic Sea, Nordkap
	United Kingdom	All	Atlantic, North Sea, English Channel
	Iceland	All	Atlantic, Norwegian Sea
	Norway	All	Baltic Sea, Norwegian Sea, North Sea, Nordkap
East & Central Russia	Albania	Phare	Mediterranean
	Bulgaria	Phare	Black Sea
	Croatia	Phare	Mediterranean
	Estonia	Phare	Baltic Sea
	Georgia	Phare	Black Sea
	Letland (Latvia)	Phare	Baltic Sea
	Lithuania	Phare	Baltic Sea
	Poland	Phare	Baltic Sea
	Romania	Phare	Black Sea
	Russia	Tacis	Baltic Sea, Nordkap, Black Sea
Maghreb (M) Mediterranean	Slovenia	Phare	Mediterranean
	Ukraine	Tacis	Black Sea
	Algeria (M)		Mediterranean
	Cyprus		Mediterranean
	Egypt (M)		Mediterranean
	Israel	Frame-work	Mediterranean
	Lebanon		Mediterranean
	Libya (M)		Mediterranean
	Malta		Mediterranean
	Morocco (M)		Mediterranean
	Syria		Mediterranean
	Tunisia (M)		Mediterranean
	Turkey		Mediterranean, Black Sea

TABLE 2
Different aspects of activities related to Coastal Zone Management

Work type	Examples
Pure research	<ul style="list-style-type: none"> • marine sciences (investigating flora and fauna) • geophysics and oceanography topics
Practical research and applications development	<ul style="list-style-type: none"> • managing and protecting marine flora and fauna • bottom topology, causes of erosion • hydrology, land/sea interface, river/estuary/ocean interface • pollution control
Activities related to the economy	<ul style="list-style-type: none"> • fisheries and aquaculture • harvesting marine products from the coastal zone • pollution monitoring and control • coastal/harbour/sea lane navigation • beach erosion control • leisure use of the coastal zone
Work of importance for social reasons	<ul style="list-style-type: none"> • environmental monitoring and global climate change • impact on human and animal health of the misuse of the coastal zone • offering safe amenities and leisure activities affecting both commerce and quality of life
Legal issues	<ul style="list-style-type: none"> • regulations for pollution control • regulations controlling use of coastal regions, i.e. planning restrictions for developers, etc.
Political issues	<ul style="list-style-type: none"> • establishing instruments for cross-border cooperation on legal or regulatory issues • settling cross-border disputes • participating in regional or global initiatives, including education, research and raising awareness of problems facing use and users of the coastal zone
Education and Training	<ul style="list-style-type: none"> • higher education in disciplines pertinent to CZM research • training in use of CZM "tools" to provide a better environment

awareness and wider dissemination of information on key issues, at all levels, from secondary school children to national Ministers and EU Commissioners.

Pure and applied research into coastal zone issues is supported by a range of EU funding instruments and programmes available from EU Institutions, including the European Commission, European Environmental Agency (EEA) and EUREKA. Scores of projects with CZM objectives, or which create or further develop new technologies or techniques useful to CZM, or which effect new research into CZM/marine issues, are enacted via pan-European partnerships under many different RTD (Research and Technological Development) programmes. Unfortunately, there is seldom (if ever) a specific GI/GIS focus in any of these programmes, except in the sense that it is almost impossible to do CZM research without using GIS tools in one form or another. For that reason, it is important that the marine and CZM research community make its special needs heard in the current EGII and GI2000 debates.

Initiatives from EU Institutions

The major programmes for effecting research or technological development with EU financial support include:

- **MAST (I, II & III) - Marine Science and Technology Programme, under DG XII (Science, Research and Development), has three main areas of scientific content: Marine Sciences, Strategic Marine Research and Marine Technology. Because MAST is probably the most focused “marine” scientific programme of the EC, it is described more fully in a later section.**
- **The COST research support programme (European Cooperation in the field of Scientific and Technical Research) of DG XII includes among its 15 main domains the following areas of possible interest to CZM researchers: oceanography, environment, meteorology. Typical projects from these domains are described in a later section.**
- **Subsidiary actions or programmes which are also effected under DG XII include seven special Task Forces created in the final years of the Fourth Framework Programme, of which “Maritime Systems of the Future” and “Environment - Water” have some relevance to both marine and CZM research. There is also the RTD International Cooperation initiative (INCO) which involves non-EU members in technology development and transfer projects.**
- **The ESPRIT RTD programme, overseen by DG III (Industry) has nine different research domains, four cross-domain research “themes”, nine “preparatory, support and transfer activities” and several “Joint Calls” with other programmes, such as Telematics, Socrates, Leonardo da Vinci, TEN Telecom, etc. There are no specific domains or themes for GI/GIS or CZM in the current ESPRIT programme, which ends with a final Call for Proposals in September 1997.**
- **Education and exchange of academic research staff are/were effected under the COMETT 1 & 2 programme(s), and its newer replacements, SOCRATES (European Community action programme for co-operation in the field of education) and LEONARDO DA VINCI (for part-funding of trans-national partnerships for projects in training). The education and training initiatives are often the focus of joint calls from EC Directorates, especially DG III, DG XII and DG XIII, in the technology or research areas.**
- **The Telematics Applications Programme (TAP), coordinated by DG XIII, was divided into 17 different streams of activities, including Telematics for Research, Telematics for the Environment, Telematics for Education and Training and Research Networks, Telematics Engineering, Information Engineering and more, for which individual calls for proposals were issued and certain projects relating to CZM or other marine research were considered.**

Coastal and Marine Geo-Information Systems

Applying the Technology to the Environment

Green, D.R.; King, S.D. (Eds.)

2003, XX, 596 p., Hardcover

ISBN: 978-0-7923-5686-8