Methodology to design the coastal erosion layer for EUROSION database

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Executive Summary

EUROSION is a project commissioned by the Environment Directorate-General (DG) of the European Commission (contract : B4-3301/2001/329175/MAR/B3). Within this project, work package 2 (WP2) has to build a Geographical European Coastal Erosion database according to the standards laid down by the European Environmental Agency. BRGM is in charge of the WP 2.6 which is the "Geology, geomorphology and coastal erosion layer" of this database.

This report aims to describe the methodology in designing the European Coastal Erosion Layer (CEL) for which the data have to be compatible with a 1:100,000 scale. The information will characterise the official coastline of the EUROSION project provided by IGN FI.

The design approach is an update of the 1990 CORINE Coastal Erosion (CCEr) methodology in which 3 criteria were used: i) Morpho-sedimentology (rocky coasts, beaches, muddy coasts, etc.) ii) Evolutionary trends (erosion, aggradation, stability) and iii) presence or not of Coastal defence works.

The CEL contains two new criteria:
- Coastline geology which will provide information on the potential degree of possible erosion
- Data status : no data available, data from CCEr database, updated or new information.

The CEL will extend the inventory to new EU-15 members (Finland, Sweden, East Germany) and to applicant countries with coastlines (except Turkey).

The codes of the different attributes are explained when necessary in order to avoid different interpretation for a same object and thus to provide homogeneous and consistent method for describing the European coastline. Elements for a quality control are also given.

The methodology described in this report can be adapted during the life of the EUROSION project so as to respond to questions and difficulties that may occur when collecting and digitising data.

Contents

Appendix

App. 1 - NOTES ON THE CORINE COASTAL EROSION DATABASE DOWNLOADED FROM THE EUROPEAN ENVIRONMENT AGENCY WEB SITE

List of illustrations

FIGURES

TABLES

1. Introduction

The purpose of this report is to describe the methodology for designing the European Coastal Erosion Layer (CEL) of the EUROSION project (Environment Directorate-General of the European Commission). Data accuracy has to be compatible with a 1:100,000 scale. The information will characterise the official coastline provided by IGN FI.

The work aims to:
- i) update the first CORINE Coastal Erosion (CCEr) database with new existing data, and ii) check the CCEr data according to the new methodology described below,
- extend the inventory to new EU- 15 member countries (Finland, Sweden, Eastern Germany) and to applicant countries with coastlines,
- improve the CCEr methodology. The general principles adopted by the approach developed for the EUROSION project use the following rules :
  - retain as much of the CCEr's codes as possible in order to be able to compare the CEL and CCEr database,
  - to give sufficient explanations for each code to avoid different interpretations for a same type of coast.

The first step is to check and critically analyse the CCEr database.

The approach for designing the CEL is an update of the 1990 CORINE Coastal Erosion (CCEr) which used 3 types of criteria: i) Morpho-sedimentology (rocky coasts, beaches, muddy coast, etc.) ii) Evolutionary trends (erosion, aggradation, stability) and iii) presence or not of coastal defence works. Two new criteria are added for the CEL:
- Coastline geology which will provide information on the potential degree of possible erosion
- Data status : no data available, data from CCEr database, updated or new information.

The codes of the different attributes are explained, when necessary, in order to avoid different interpretations for a same object and therefore to provide homogeneous and consistent method for describing the European coastline. The outline of a modus operandi is proposed, as are elements for a quality control that will have to be checked with the leader of WP2, IGN FI.

The methodology described in this report can be adapted during the life of the EUROSION project so as to respond to questions and difficulties that may occur when collecting and digitising data.

2. History

The objective of the first CORINE Coastal Erosion project (http://themes.eea.eu.int/Specific_areas/coast_sea/data.), which covered 11 Member States at that time (i.e. EU-12 Member States excluding Luxembourg), was to provide a scientific database that would enable the identification of risks from possible coastal-erosion problems on a Europe-wide scale. The method is based on identifying coastal segments and characterising them according to three criteria or attributes:

- Morpho-sedimentology, using 19 code items
- Evolution trend, using 10 code items
- Coastal defence works, using 2 code items (presence or not)

Approximately 17,000 segments of 200 m minimum length and covering almost 56,000 km of coastline have been digitised and entered into the database.

The database contains three types of basic data :

- coastlines built on approximately 0.5 million nodes,
- geographical coordinates of the extremities of the 17,037 coastal segments and a serial number of these segments within NUTS III units,
- codes of the three attributes of each coastal segment,

State of the existing CORINE Coastal Erosion data base

The EUROSION project will update the CORINE Coastal Erosion database (CCEr) published in 1990. In order to start this work on a solid basis, the first step was to check this database so that the new input would provide maximum continuity. The available CCEr database was therefore downloaded from the EEA website and critically analysed. The results are presented in Appendix 1.

3. Geographical extend of the Coastal Erosion Layer (proposed name : CEL)

Below is the list of European countries and related territories whose coastlines have to be covered by the EUROSION project. Some countries and overseas territories, however will have only a part coverage (20% at least) of their coastlines.

Countries covered by the CCEr database

Belgium, Denmark, France (without overseas territories), Germany (Western part), Greece, Ireland, Italy, Portugal (including Azores), Spain (including Canaries Islands), The Netherlands, United Kingdom.

The islands contained in the CCEr database have to be done again with the same specifications i.e. perimeter of coastline of more than 0.5 km (at high tide). Islands linked to the continent by a bridge are considered as islands.

New countries to be included in the EUROSION database

- New EU Countries (complete coverage) : Finland, Sweden, Eastern part of Germany,
- Applicant countries (complete coverage) : Estonia, Latvia, Lithuania, Poland, Slovenia
- Applicant countries (part coverage) : Bulgaria, Cyprus, Malta, Romania.

For these new countries, only islands located more than 1 km from the mainland and which area is greater than 1 km^2 and whose population is at least 50 permanent inhabitants, will be considered. Islands linked to the continent by a bridge are considered as islands.

Details concerning territories with only part of their coastline covered

For France :

- complete coverage of Guadeloupe (306 km of coastline, i.e. 25% of French ultra-peripheral regions).
- part coverage of French Guiana (not exceeding 200 km, i.e. 16% of French ultra-peripheral regions). This is consistent with WP4 site

For Portugal :

- complete coverage of San Miguel island in the Azores archipelago (165 km of coastline, i.e. 18% of Portuguese ultra-peripheral regions).

For Spain :

- complete coverage of Tenerife in the Canaries archipelago (238 km of coastline, i.e. 19% of Spanish ultra-peripheral regions). This is consistent with WP4 site for Canary Islands (El Medano).

For Bulgaria :
- Burgass and Varna region (proposed for WP4 review).

For Cyprus:
- priority should be given to Lanarca area (WP3 pilot area.

For Malta :
- conditioned to data availability.

For Romania :
- priority should be given to the Danube Delta (WP3 pilot area).

The official coastline is purchased by IGN FI. The internal coasts of estuaries, rias, fjords, bays and coastal lagoons are excluded from the inventory when the width of the marine mouth is less than 1 km.
The official coastline can , however, be amended by more detailed national data. In other words, it is possible for the official coastline to be improved by national data at a comparable scale.

4. Codification of the Coastal erosion layer

4.1. COASTAL EROSION SEGMENT IDENTIFIER

Each coastal segment will have an identifier which will be composed of two letters representing the country followed by a sequential number.

Country codes :

Belgium	Bulgaria	Cyprus	Denmark	Estonia	Finland	France	Germany
BE	BG	CY	DK	EE	FI	FR	DE

Greece	Ireland	Italy	Latvia	Lithuania	Malta	Poland	Portugal
GR	IE	IT	LV	LT	MT	PL	PT

Romania	Slovenia	Spain	Sweden	The Netherlands	United Kingdom
RO	SI	ES	SE	NL	UK

BRGM and GIM will allocate the country codes and sequential numbers to the segments once the national databases have been received.

4.2. MORPHO-SEDIMENTOLOGY CODES

The Morpho-sedimentology coding system, originally adopted by the CCEr database, makes it possible to characterise the principal morphological and sedimentological elements of the intertidal strands from generally accessible data and information (photographs, maps, reports, etc.). Each coastal segment is characterised by a single Morpho-sedimentology code chosen from the proposed nomenclature.

Explanations are given, when needed, in order to limit the choice of personal interpretation and to provide a homogenous method for describing the European coastline. Moreover, unless the coast is delimited by rocky structures or artificial structures directly subjected to the action of the sea, the proposed classification emphasises the nature of the constitutive materials of the intertidal strand, this being the zone that exhibits the most visible signs of erosion or sedimentation processes and where the majority of coastal defence works are carried out.

4.2.1. Rocky coasts

A Rocks and/or cliffs made of hard rocks (little subject to erosion) with eventual presence of a rock platform

B Conglomerates and/or soft-rock cliffs (example : chalk) i.e. subject to erosion: presence of rock waste and sediments (sand or pebbles) on the strand

AC Mainly rocky, little erodible, with pocket beaches (< 200 m long) not localised

4.2.2. Beaches

C Small beaches (200 to 1000 m long) separated by rocky capes (<200m long)

D Developed beaches (> 1 km long) with strands made of coarse sediment: gravel or pebbles

E Developed beaches (<1 km long) with strands fine to coarse sand

F Coastlines made of soft non-cohesive sediments (barriers, spits, tombolos)

Where the morphological features begins and ends and when to use codeF:

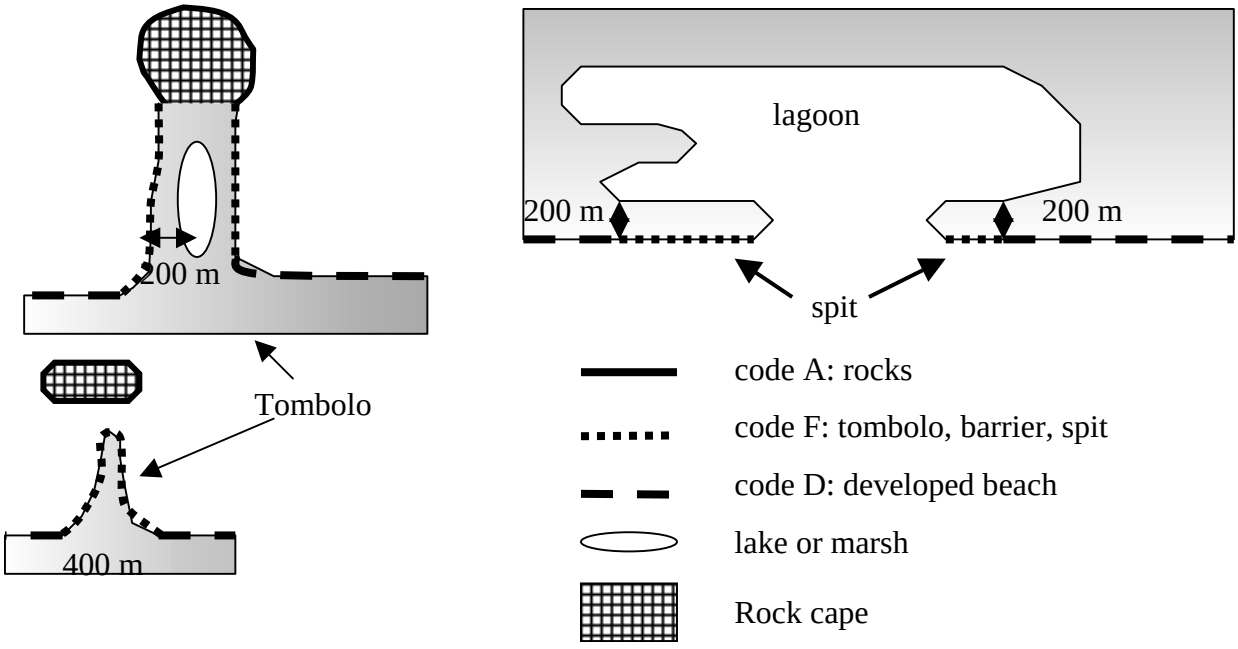


Fig. 1 : Morpho-sedimentology code F

P Soft strands with rocky "platforms" (rocky flat) on intertidal strands

The rock platform was present before the soft strand was deposited. The strand is commonly a thin layer.

R Soft strands with "beach rock" on intertidal strands

The beach rock (cemented sand) is developed within the beach strand. Such cases are usually found in Mediterranean countries.

N Very narrow and vegetated strands (pond or lake shore type)

No sandy or muddy beach at high tide. Vegetation almost reaches the sea.

S Soft strands made of mine-waste sediments

These kind of sediments has not greater physical impact than other sediments for erosion but can have a strong impact in terms of environmental pollution. Moreover, such deposits can be transported by coastal drift and deposited on other beaches.

K Artificial beaches

This code concerns :
- beaches entirely man-made such as found in the Canary Islands
- beaches where the granulometric nature of the sediments changes after installling defence work –e.g. the formation of a sand beach in front of a gravel beach after the defence work has been completed.
- nourished beaches

X Soft strands of heterogeneous grain-size category

Z Soft strands of unknown grain-size category

Priority rules in case of two possible codes

Some of the Morpho-sedimentology beach codes emphasise the sedimentological aspects (grain size) and others the morphological aspect:
- sedimentological types indicate the granulometry of beaches : coarse sediment (D : gravel to shingle), fine to coarse sand (E), heterogeneous granulometry (X), or unknown granulometry (Z),
- morphological types : barriers, spit or tombolo (F), very narrow and vegetated strands (N), soft strands with rocky platform (P), or soft strands with beach rocks (R).

This may give the choice between a sedimentological or a morphological code for the same object. In order to make the database as homogeneous as possible and to avoid the

possibility of different interpretations for a same object, it is recommended that the following rules be adopted :

For beaches :

- case 1: for a flat area with beaches (pebbles, sand or silt) backed by depressions such as marshes or lakes, it is recommended to use the morphological code F. This code is valid for spits and barriers up to 200m wide and for tombolo up to 400 m wide. It is more important to know that it is a barrier, a spit or a tombolo which can be eroded and have important consequences on the hinterland in terms of ecology or damage than to know that it is a beach made of coarse or a fine sediment. Example : south eastern French coast (Languedoc)
- case 2 : for beaches backed by a relief such as well developed dunes, it is recommended to use the code D ,E ,S ,X or Z (depending on the granulometry of the beach). Example : south-western coast of France (Aquitania), NW Portugal.

Giving preference to the morphology will indicate a kind of "width" for the coastline and provide a notion of the consequence of a possible erosion.

4.2.3. Muddy coasts

G Strands of muddy sediments : "wadden" and intertidal marshes with "slikkes and shorres"

M Polders

Note that the code M (Polders) was used in the CCEr database for 135 coastline segments concerning Denmark, France, Germany, Greece and United Kingdom. As polders are areas localised behind the coastline we propose to discontinue code M and replace it as follows:

- *where the embankment is fronted by a strand use the code E or G or X or Z, depending of the granulometry of the beach*
- *where the embankment is active and there is no strand, use code Y.*

4.2.4. Artificial coasts

Y Artificial shoreline or shoreline with longitudinal protection works (walls, dikes, quays, rocky strands) without sandy strands

L Coastal embankments for construction purposes (e.g. by emplacement of rocks earth, etc.)

J Harbour areas

4.2.5. Mouth (virtual coastal segment)

H Estuary (virtual line)

Internal coasts of estuaries, rias, fjords, bays and coastal lagoons are excluded from the inventory when the mouth is less than an arbitrary width of 1 km. In these cases and in order to have a continuous coastline, the two sides of the estuary, ria and bay or coastal lagoon are joined by a virtual line (Fig.2).

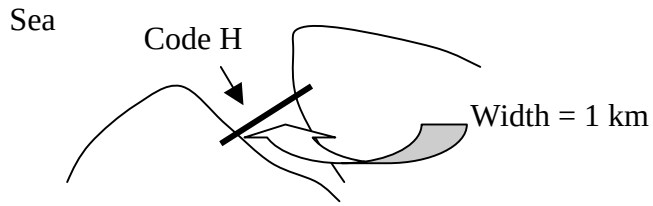


Fig. 2 : Virtual line H

4.3. EVOLUTIONARY TREND CODES

Each coastal segment is characterised by a code representing that segment's evolutionary trend. The ten code items are divided into four main classes:
- out of nomenclature or absence of information
- stability
- erosion
- aggradation (sedimentation, accretion)

Owing to major disparity in the available data, it is not possible to have quantitative information on evolutionary trends at the European scale. Moreover the rate of erosion is far from constant in terms of time and sometimes an inversions occur in the trend. It is therefore important to know the time-frame of collected erosion-data and the meteorological conditions during that time period :
- if measurements occur during a storm a strong erosion will be measure
- if measurements occur after a storm an aggradation may be measured
- if measurements occur before or after the building of a defence work, values will not be of the same range

For all these reasons evolutionary trends are qualitative.

4.3.1. No information

0 Out of nomenclature

e.g. : H (virtual line for mouth) and J for harbour areas

1 No information on evolution

4.3.2. Stability

2 Stable: evolution almost not perceptible at human scale

This code should be used whenever it is impossible to formulate an objective judgement on the recent development tendency of a coastal segment.

3 Generally stable: small "occasional" variations around a stable position - evolutionary trend is uncertain

4.3.3. Erosion

4 Erosion probable, but not documented

Coding on the basis of questionnaires and the judgement of experts of concerning probable tendencies but not documented.

50 Erosion confirmed (available data), localised on parts of the segment

51 Erosion confirmed (available data), generalised to almost the whole segment

4.3.4. Aggradation

6 Aggradation probable, but not documented

Coding on the basis of questionnaires and the judgement of experts concerning probable tendencies but not documented.

70 Aggradation confirmed (available data), localised on parts of the segment

71 Aggradation confirmed (available data), generalised to almost the whole segment

General rules for coding the evolutionary trend

Evolutionary trends will concern the last fifteen years. The choice to give the preference to the last fifteen years is done in order to compare CCEr evolutionary tendencies to CEL ones. In case of different evolutionary tendencies within these last fifteen years, the longest period (or the more representative in terms of duration) of the last 15 years will be coded. When this change is due to construction works (harbours, defence works, etc.), it will be considered as human interaction and not a natural tendency – in this case the choice will be given to the natural tendency. The impact of human interaction on the natural tendency should be extracted when cross-linking the different attributes of this layer concerning erosion features.

If there is only one tendency covering a short period of time (< 15 years) this will be coded too.

4.4. COASTAL GEOLOGY CODES

A new attribute “Coastal geology”, is to be added for all countries covered by the EUROSION Project. It will complete the morpho-sedimentology information by describing the geological context. This will provide a more accurate information on the level of possible erosion according to the geology of the coastline. For example, chalk cliffs are more subject to erosion than granite cliffs.

The Coastline geology nomenclature to be collected within the framework of the EUROSION project is listed in the Table 1. It includes 34 different items within three hierarchical levels of increasing details that allow representation of variably detailed knowledge. The most detailed class code should be attached to each coastal segment when possible. The geological codes are derived from the International Geological Map of Europe and the Mediterranean Regions, edited by UNESCO and the German Bundesanstalt für Geowissenschaften und Rohstoffe, Hannover.

Code	Item	Code	Item	Code	Item
A00	Substratum	A10	Plutonic	A11	Ultramafite and mafic rocks
				A12	Intermediate rocks (diorite, gabbro-diorite,..)
				A13	Granitic rocks
		A20	Volcanic	A21	Lava (basalts, etc.)
				A22	Ashes and stone fragments
				A23	Volcano-sedimentary formations
		A30	Metamorphic	A31	Gneiss
				A32	Schist
				A33	Marble
				A34	Quartzite
		A40	Sediment rocks	A41	Sandstone
				A42	Marl and consolidated clay
				A43	Limestone
				A44	Chalk
				A45	Evaporites
				A46	« Flysch » and interbedded series
B00	Non cohesive	B10	Marine deposits	B11	Undifferentiated recent marine deposits
	Formations	B20	Lacustrine deposits	B21	Undifferentiated recent lacustrine deposits
		B30	Continental deposits	B31	Eolian sands and dunes
				B32	Fluvial (sand and gravel)
				B33	Peat bog
				B34	Loess and silts
				B35	Moraines and glacial or periglacial deposits
				B36	Non cohesive undifferentiated sediments
				B37	Man made grounds
C00	No information				
D00	Out of nomenclature				

Tabl. 1 : Geological code items

Codes A00 and B00 will be used exceptionally when there is no other possibility.

In some cases, the choice will be between a coastal geological formation (sand beach) and the hinterland context. In such cases, if the coastal geological formation extends for less than 100 m seaward (Fig. 3), the land geology will be used.

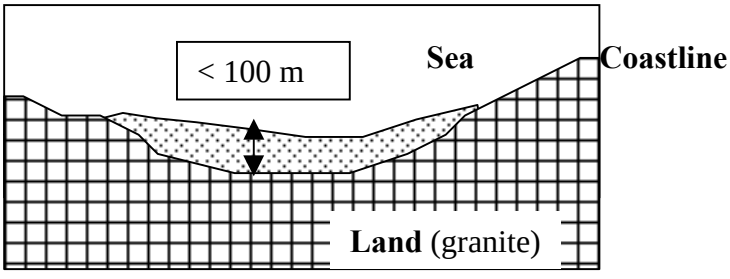


Fig. 3 : Geological context example (plane view)

4.5. COASTAL DEFENCE WORKS CODES

The presence (Yes/No) of coastal defence works, whether longitudinal (walls, quays, rocky strands) or transversal (embankments, groins), built on the strand or offshore is recorded. The nature of the protection works is not specified in the inventory due to the difficulty of accessing this type of information.

It must be stressed that the presence of coastal protection works on a segment does not obligatorily involve the stability of that segment.

4.6. DATA STATUS CODES

This new Data status attribute is to inform on the availability and the status of the information

0 No data available

1 No new data available. Data are from CCEr (version 1)

2 Updated or new information

3 Correction of erroneous information (only for CCEr – version 1)

5. Generalisation rules

A segment should be at least 200 m long, but has no maximum defined length. If a segment has a different value for one of its attributes, then it should be split into 2 different segments, provided that each respects the minimum length of 200 m.

In case segments need to be generalised to fit to the minimum length requirement, the following rules should be followed:

1. The morpho-sedimentology criterion has first priority,
2. Evolutionary trend criterion has second priority,
3. Different geology criterion has third priority,
4. The presence of coastal defence works has last priority.

Fig. 4 gives an example of such a situation. Here, within a single initial segment, characteristics of the 3 attributes change at different places. The first split will therefore be at the Morpho-sedimentology change (result A), and the second split will be at the Evolutionary trend change (result B). Since the new median segment has already reached its minimum 200 m length and it cannot be further divided on the basis of the Coastline geology change

.

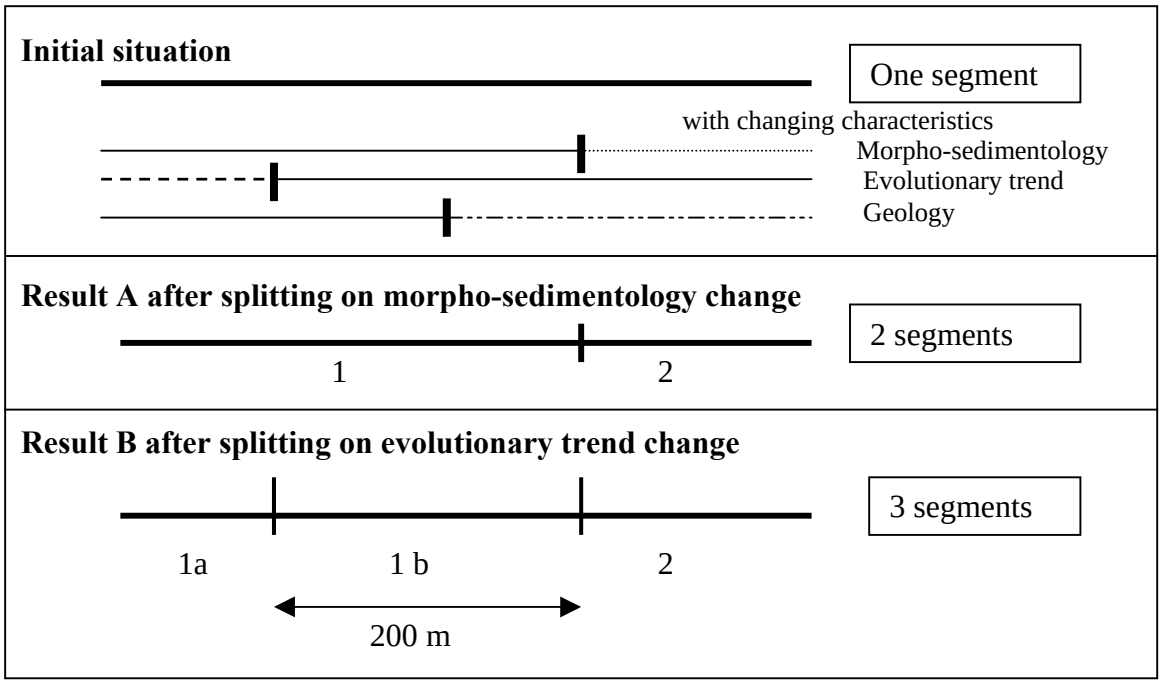


Fig. 4 : Rules to follow for splitting segments

In this case, there are two different features for an attribute within a segment of 200 m length, the choice will be on the longest represented characteristic.
In the event that there are two different features for an attribute within a 200-m-long segment, the choice will be for the attribute showing the greatest segment length.

6. Data delivery

The provision of digitised national data will be highly appreciated - any major GIS format will be accepted. When delivering digital data, the projection system and the original scale of the data will have to be specified by the data provider.

In case of non-availability of digital data, any available analogue coastal erosion data and map will be transferred to the digital coastline provided by IGN FI.

The data should be compatible with a scale of 1:100,000 – more accurate data are welcome.

Data structure

The following attributes need to be provided for each coastal segment

Attribute name	**Attribute Definition**	**Code definition**	**Type**
CESGD	Segment identifier	2-letter country code + sequential number (see Chapter 4.1)	Character (2)
CEMO	Morpho-sedimentology	See Chapter 4.2	Character (2)
CEEV	Evolutionary trend	See Chapter 4.3	Character (3)
CESG	Coastline geology	See Chapter 4.4	Character (3)
CEDW	Defence works	N – no coastal defence work (default) Y – presence of defence work	Character (2)
CEDA	Data status	0 – No available data 1- No new data available, data from CCEr version 1 (default) 2- CEL data (new or updated information) 3- Correction of erroneous information (only for CCEr – version 1)	Character (2)

7. Proposed modus operandi

Updating of the EUROSION coastline can be performed with ArcGIS tools. The arc coverage can be displayed in ArcMap with related information (e.g. topographical or geological maps, etc.) in the background. This provides the base for all the updating work, which can be performed through three main operations:

- valorisation of default values,
- manual updating of selected segments,
- splitting of selected segments.

7.1. VALORISING DEFAULT VALUES

Valorising default values is an operation that starts by opening an “Edit” session (Fig. 5). The “calculator” tool is then used to automatically fill each attribute with a single value on all records of the table (or a set of selected records).

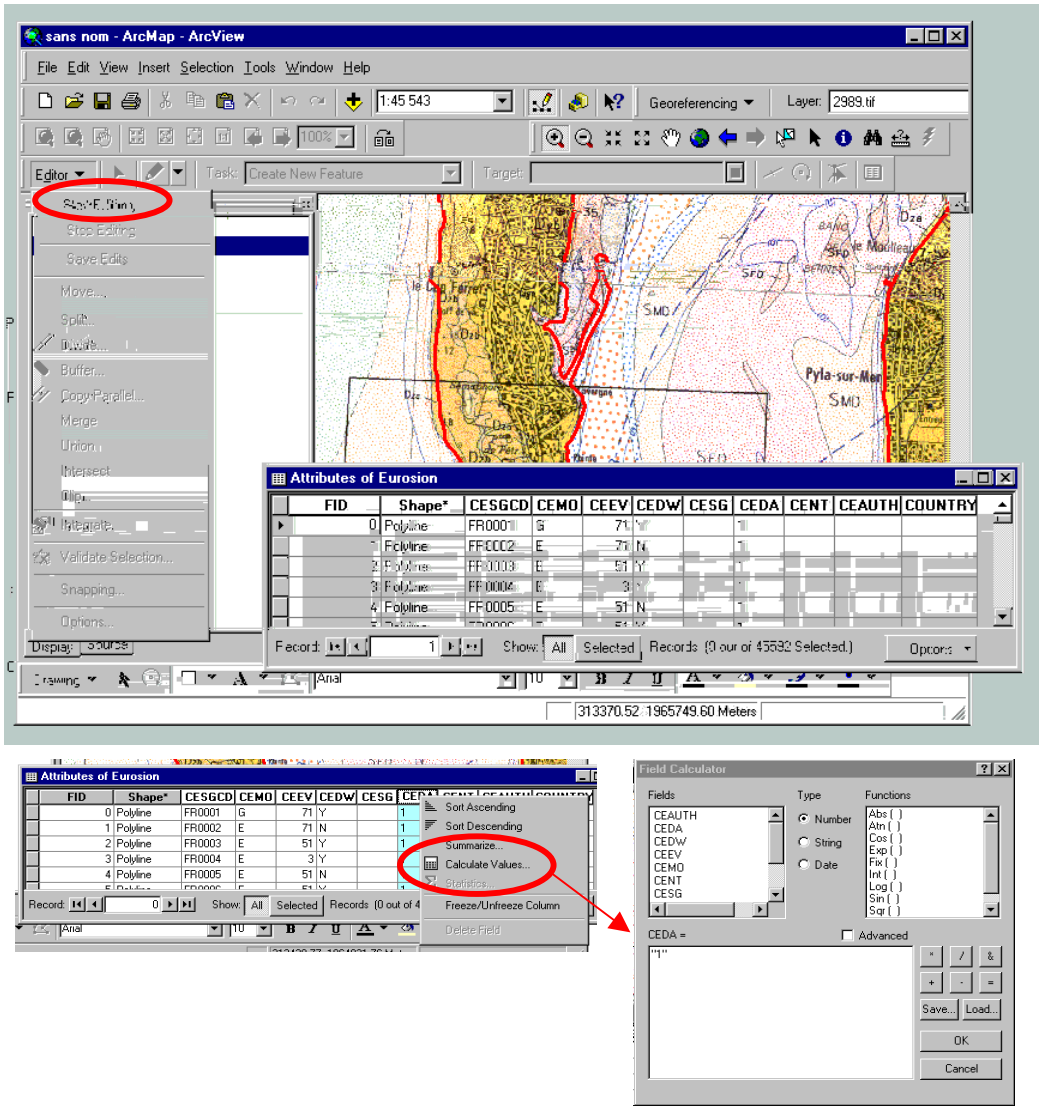


Fig. 5 : Screen shots for filling default values

7.2. MANUAL UPDATING OF SEGMENT DATA

Manual updating of segment data begins by opening an "Edit" session (as above). The segment to be updated is then interactively selected with the black arrow tool (Fig. 6), which displays the attribute table in “selection” mode to focus on selected segments.

The new value can be interactively entered (keyboard) or calculated on multi-selected objects.

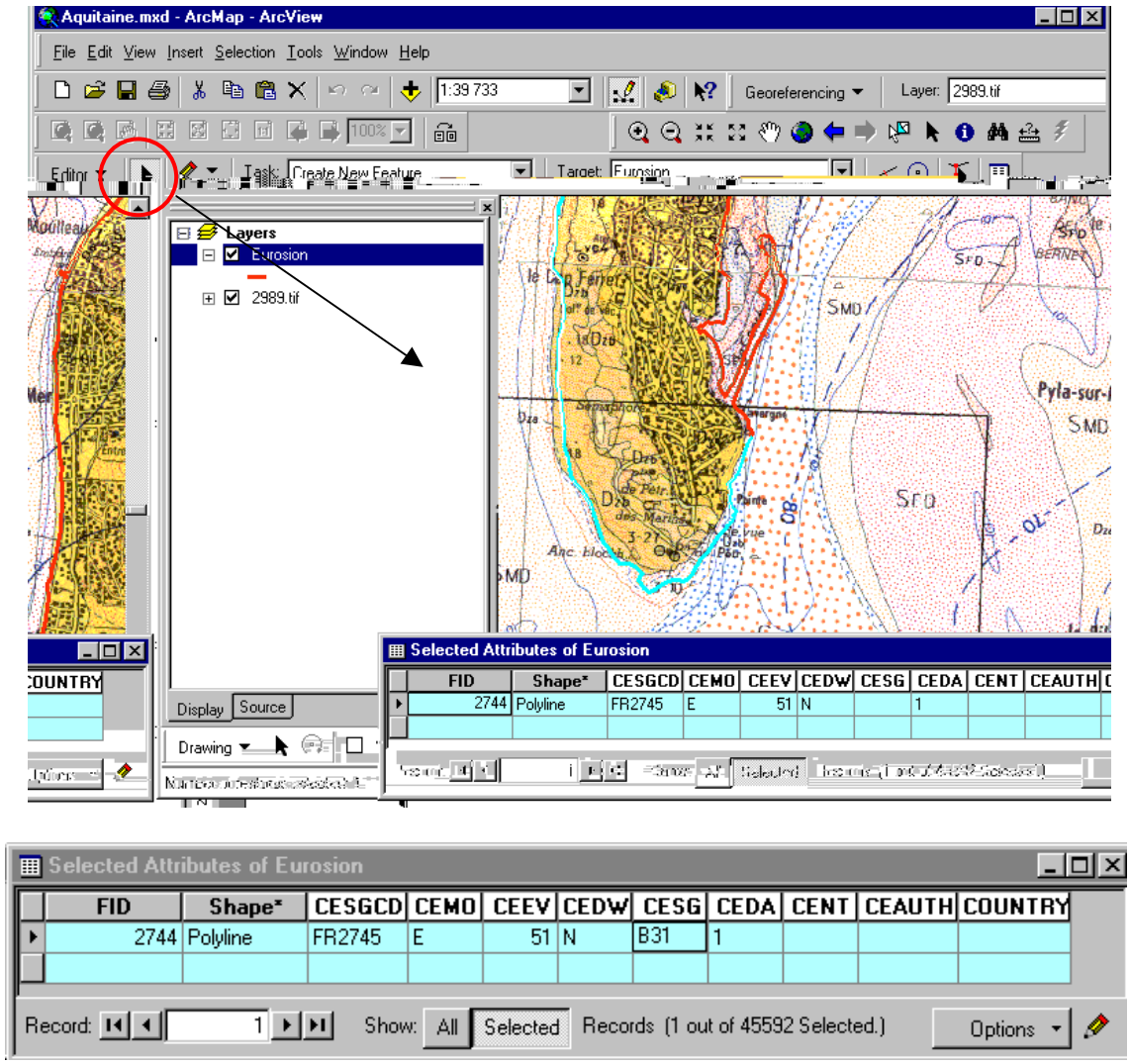


Fig. 6 : Screen shots for manual updating of segments

7.3. SPLITTING SEGMENTS

Segment splitting is done with the splitting tool (Fig. 7) which splits the segment at the selected point and duplicates the attribute row.

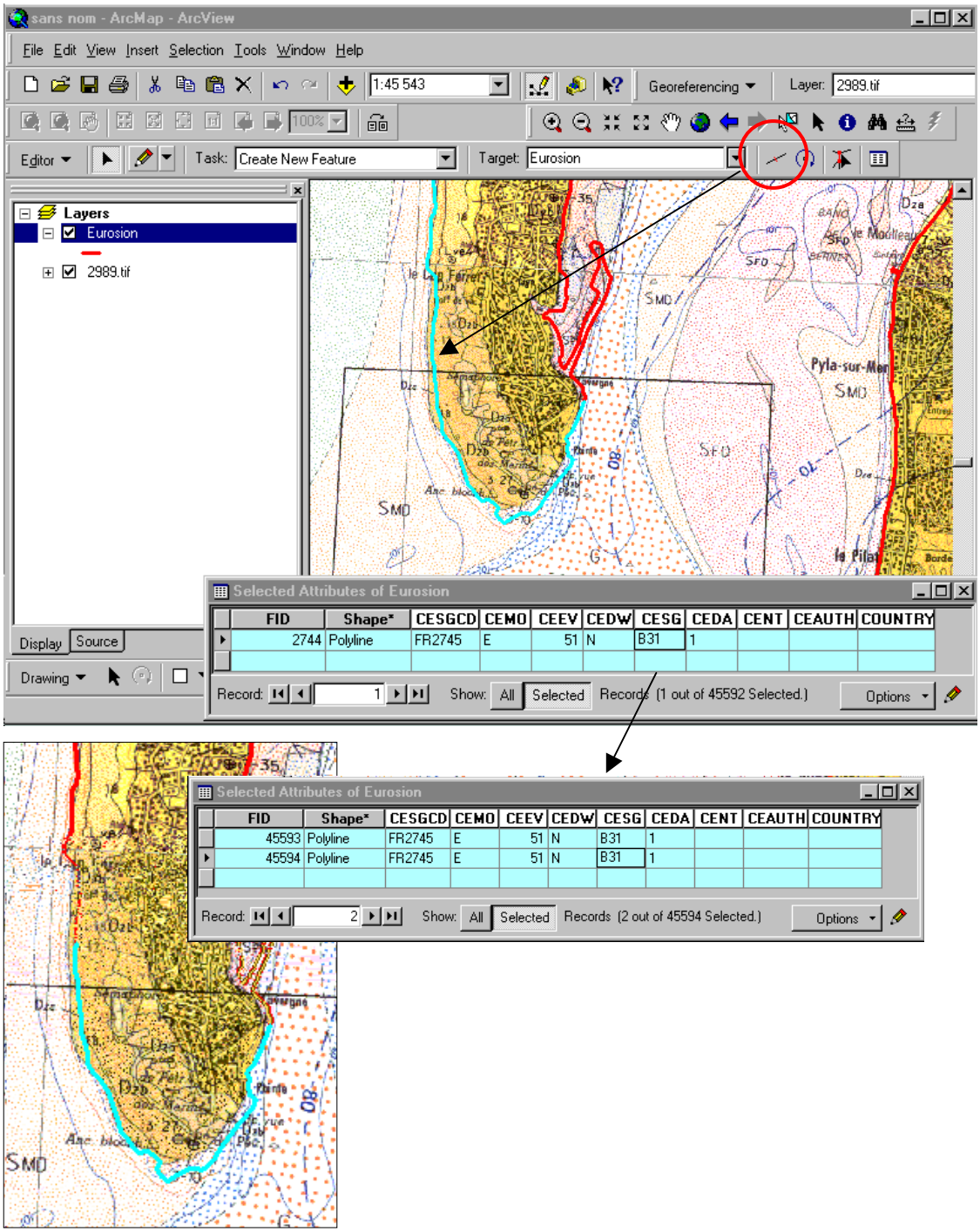


Fig. 7 : Screen shots for splitting segments

8. Quality control

A quality control is implemented on receipt of the digital data. For example :

- control of the coded data will be carried out in order to detect inconsistent associations between the Morpho-sedimentology codes, the Coastline geology codes and the Evolutionary trend codes.
- another control will be carried out to ensure respect of the coastal segment delimitation constraints according to the agreed definitions – for example, the 1 km minimum distance under code H (mouth) for including the inland coast of estuaries , etc..

In a number of cases, this quality control will result in redefining the coastal segment and/or assigning a new code to the segment. These control operations may require some “return” exchanges between data providers and the WP 2.6 team.

APPENDIX 1 :

NOTES ON THE CORINE COASTAL EROSION DATABASE DOWNLOADED FROM THE EUROPEAN ENVIRONMENT AGENCY WEB SITE

This appendix aims to give an overview of the CORINE Coastal Erosion (CCEr) database in its actual state from a "Information Technology" standpoint.

1. DATABASE DOWNLOAD

The CORINE Coastal Erosion (CCEr) database is hosted on the European Environment Agency web site.

Four files have been downloaded from the following address:
http://themes.eea.eu.int/Specific_areas/coast_sea/data.

Three of the files are in compressed ArcInfo Exchange format:

- **ceec.e00.z** (4,4 Meg) Coastline at scale 1:100,000
- **ceec1m.e00.z** (1.255 Meg) Coastline at scale 1:1 000,000
- **infofiles.tar.z** (157 k) Includes following attributes tables
  ceecat.e00,
  cecl.e00,
  ceev.e00,
  ceevl0.e00,
  cemo.e00,
  cemol0.e00,
  cems.e00,
  cetr.e00

One file in Adobe Acrobat PDF format:

- **erosion.pdf** (107 k) Database notice

2. DATABASE STRUCTURE

The database contains10 different tables whose links are summarised in Figure 1:

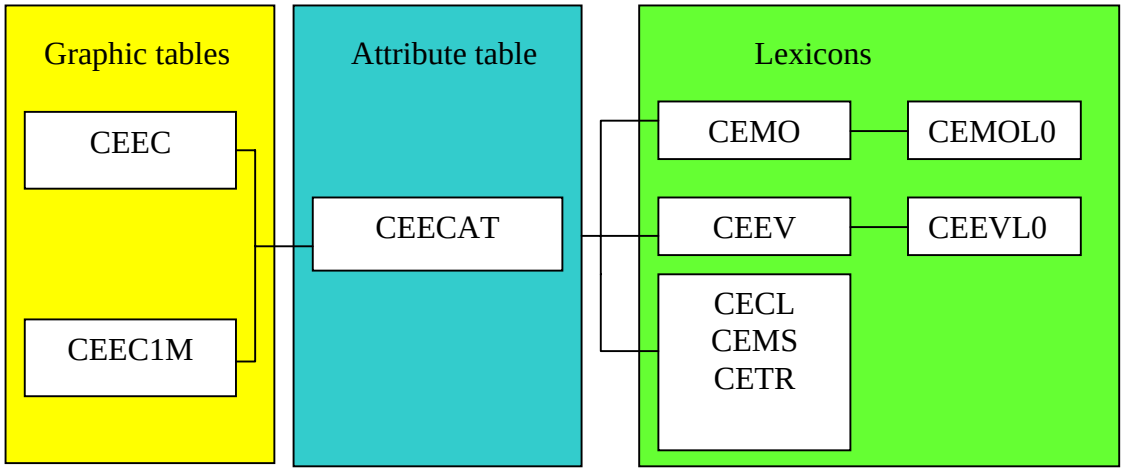


Fig. 1 : Schematic structure of CCEr tables links

- 2 graphic arc tables containing segments representing European coastline
  - *CEEC* 1:100,000 (identifier CESGCD)
  - *CEEC1M* 1:1,000,000 (identifier CESGCD1M)

- 1 attribute table containing coded information for each segment of the graphic tables:
  - *CEECAT*
    (with identifiers CESGCD et CESGCD1M – each row has a valorised CESGCD value; some CESGCD1M codes are voids – see Fig. 1)

- 2 lexicon tables presenting the definitions of codes used in CEECAT and described in the present report[1]:
  - *CEMO* Morpho-sedimentology codes (19 items)
  - *CEEV* Evolutionary trend codes (10 items)

[1] Note that the information concerning the presence or absence of defence works is coded by a unique code in CEECAT table – i.e. code CEDW (with Y or N)

- 5 lexicon tables presenting a more synthetic information with codes associating grouped CEMO or CEEV values. These codes have been designed for 1 / 1,000,000 scaled maps and exist only for CESGCD1M valorised segments:
  - *CETR* Evolution trend (5 items)

Attributs de cetr

Rowid	CETR	CETRDS
1	1	STABLE (2 3)
2	2	EROSION PROBABLE (4)
3	3	EROSION CONFIRMED (50 51)
4	4	AGGRADATION PROBABLE (6)
5	5	AGGRADATION CONFIRMED (70 71)

Enreg: 1 Afficher: Tout Sélection (0 sur 5 Sélectionnés.)

  - *CEMS* Morpho-sedimentology (5 items)

Attributs de cems

Rowid	CEMS	CEMSDS
1	1	ROCKY COAST
2	2	BEACHES
3	3	MUDDY COAST
4	4	NARROW VEGETATED BEACHES
5	5	FICTITIOUS COAST

Enreg: 1 Afficher: Tout Sélection (0 sur 5 Sélectionnés.)

  - *CECL* state of knowledge on coastline evolution trend (5 items) corresponding to a synthesis of CEEV and CEMO attributes.

Attributs de cecl

Rowid	CECL	CECLDS
1	1	MOUTHS AND ESTUARIES (H)
2	2	COASTLINES WITH KNOWN TREND (2 TO 71)
3	3	COASTLINES WITH UNKNOWN TREND (1)
4	4	ARTIFICIAL STRUCTURES (Y L)
5	5	HARBOUR FACILITIES (J)

Enreg: 1 Afficher: Tout Sélection (0 sur 5 Sélectionnés.)

Two other tables do not seem to be used in the database:

- *CEMOL0* synthetic group within CEMO table
- *CEEVL0* synthetic group within CEEV table

3. HIGHLIGHTED POINTS

Some issues have been identified in the downloaded database.

3.1 Ireland

Although they exist in the original database (BRGM archives), Irish coastline attributes are voids in the downloaded base.

3.2 Inconsistency between attributes formats

The same code may exist in different formats between the attribute table CEECAT and the corresponding lexicons. Note that links are difficult to establish between corresponding tables. This concerns only synthetic attributes (1:1,000,000-scale maps) as shown in the following board.

CODE		CEECAT	LEXICON
CEMO	Morpho-sedimentology	Character	Character
CEEV	Evolution trend	Integer	Integer
CEDW	Presence of defence works	Character	No lexicon
CECL	State of knowledge	Character	Integer
CEMS	Grouped morpho-sedimentology	Character	Integer
CETR	Grouped evolution trend	Character	Integer

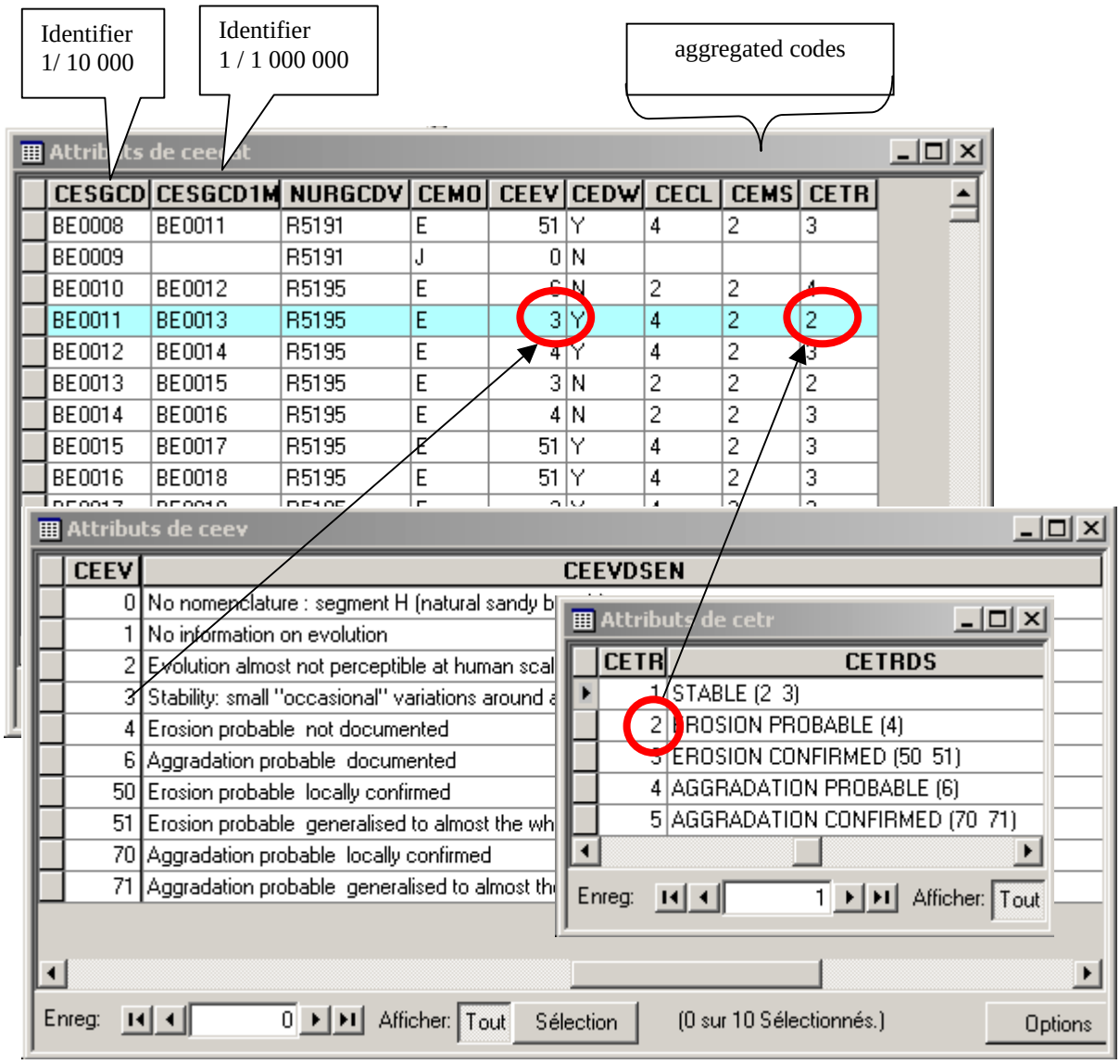
3.2 Erroneous descriptions

When comparing the CEEV lexicon with the description report, some code descriptions are seen to be erroneous, when compared with the database notice:

CODE	Lexicon description	Comment
0	No nomenclature : segment H (natural sandy beach)	H → Estuary, virtual line
6	Aggradation probable documented	Aggradation probable but NOT documented
50	Erosion probable locally confirmed	Erosion confirmed, localised
51	Erosion probable generalised to almost the whole segment	Erosion confirmed generalized to almost the whole segment
70	Aggradation probable locally confirmed	Aggradation confirmed, localised
71	Aggradation probable generalised to almost the whole segment	Aggradation confirmed, generalized to almost the whole segment

3.2 Inconsistency between original values and aggregated codes

It appears that links between original CEEV code and aggregated CETR code have been corrupted in some cases, leading to complete misinformation on 1:1,000,000-scale maps. The following figure gives an example of such a situation.



On the same segment where CESGCD has “BE0011” value, CEEV has a “3” value (meaning “stability”) and CETR has a “2” value (meaning “erosion probable”), instead of the expected “1” value - note that the CETR “2” value description refers to CEEV “4” value.

It seems there was an offset between the CCEV values and the corresponding CETR values when calculating this code.

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