



European Topic Center
Terrestrial Environment

Under contract with the

European Environment Agency



CLC2000 3rd Verification in Montenegro

Mission Report

Podgorica, Montenegro (Geological Survey of Montenegro)

13-14 September 2006

Ref.: Verification Mission Report 5/2006

22th September 2006

Submitted by J. Feranec, L. Mari

ETC-TE / Universitat Autònoma de Barcelona
Torre C5-S, 4a planta
Edifici C - Facultat de Ciències
Universitat Autònoma de Barcelona
08193 Bellaterra (Barcelona)
Spain

Tel. Secretariat: + 34 93 581 3518

Direct Tel.: + 34 93 581 3519

Fax.: +34 93 581 3545

<http://terrestrial.eionet.eu.int>

1. Activities linked to the preparation of the verification mission

This was the 63rd verification mission undertaken by the CLC2000 Technical Team, and the third verification mission organised for Montenegro.

CLC2000 in Serbia and Montenegro is implemented under the CARDS programme. 100 % of the total surface of Montenegro has been prepared for the verification. Especially land cover changes have been checked during this mission.

1.1 Verification procedure

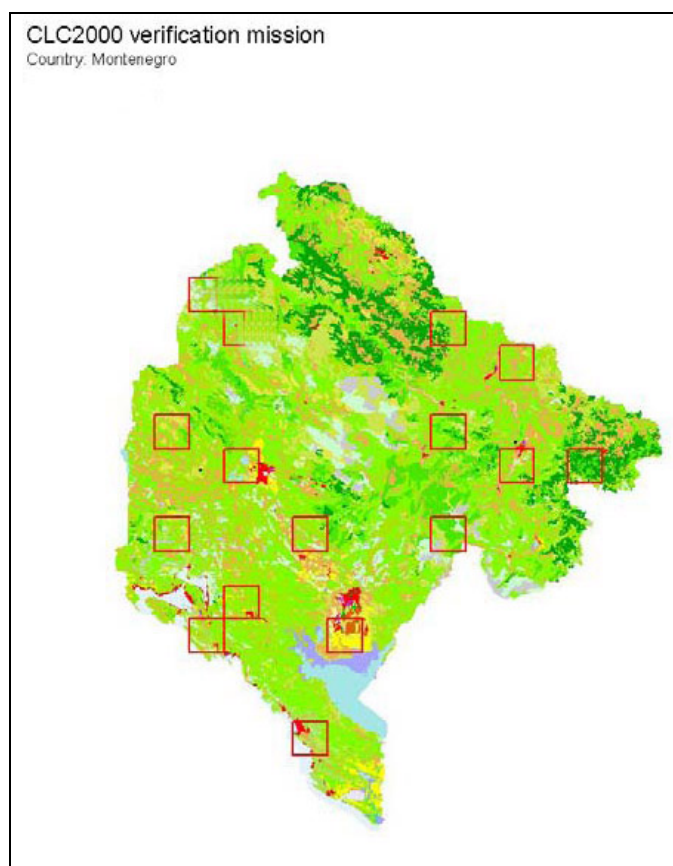
The verification mission was conducted by following the standard verification procedure, defined by CLC2000 Technical Team:

- Verification of the total area.
- All working unit was checked in a systematic way.

1.2 Objectives of the verification

The objectives of the verification missions are manifold:

- To assist the national team to produce CLC2000 database and assure a homogenous implementation across Europe.
- Corrective goal: highlight specific problems occurred during the production, correcting the database if necessary and thereby assure a harmonised European CLC database.
- Provide the EEA with information about the overall quality of the work performed by the countries.



Map 1. The preliminary CLC2000 coverage in Montenegro

1.3 Selection of verification units

Due to the relatively small size of the country and the relatively stable land use, no specific verification units have been selected. All mapsheet and all changes have been checked (see Table 1).

Table 1. Summary of the verification activities

Working units
Cajni
Cetinje
Danilovgrad
Gacko
Ivangrad
Niksic
Pec
Pljevlja
Podgorica
Prijepolje
Sjenica
Skadarsko
Trebinje
Ulcinj
Visegrad

All the above working units have been checked.

2. Mission Agenda

Place of the verification mission: Geological Survey of Montenegro: Cetinski put bb 81000 Podgorica.

13 September 2006

16.00 - 19.00
Verification (TT)

14 September 2006

09.00 - 13.00
Verification (TT)

13.00 – 14.00 Discussion (TT, NT)

3. Participants

The following experts participated in the meeting:

From the Montenegrin national team:

- Slobodan Radusinovic, technical manager
- Neda Devic, photointerpreter
- Bozica Jovanovic, photointerpreter

From the CLC2000 Technical Team:

- Ján Feranec
- László Mari

4. Summary conclusions of the verification

4.1 Method of verification

The InterCheck software running under ArcView 3.2 was used as a support tool for verification. Topographic maps were always available in digital format. The checking process was as follows:

- a) Checking validity of codes and neighbouring polygons with the same code (merge errors) in CLC2000.
- b) Checking size errors in CLC2000.
- c) Checking CLC2000 statistics (to reveal non-relevant codes)
- d) Checking validity of codes and neighbouring polygons with the same code (merge errors) in CLC-changes.
- e) Checking size errors in CLC-changes.
- f) Checking change statistics (to reveal invalid changes).
- g) Visual evaluation inside verification unit.

The first six checks [from a) to f)] were being performed for the entire working unit. Visual evaluation was mostly concentrated onto the verification units. In case of change database all polygons were investigated. Annex 1 includes detailed verification comments produced by TT.

4.2 General conclusions concerning results in Montenegro

The TT concluded that the Montenegrin CLC2000 database is good. The CLC-change database is also good, but needs some improvement.

The summarized technical evaluation is as follows:

- In CLC2000 two merge errors are present.
- All codes are valid in CLC2000 and CLC-change database.
- Size limits were kept rather well.

The summarized thematic evaluation concerning CLC2000 and CLC-changes:

- Not enough details in some forest areas: e.g. inside 311: missing 313 and/or 312; inside 313: missing 311.
- If a forest is cut we prefer the use of 324 code, e.g. 311-324, not 311-231.
- Better separation of 324 and 243 is expected in some places.
- Land Cover in Montenegro at the working scale of CORINE seemed to be rather stable. Some non real changes have been found (324-222, 332-333, 243-242, 333-321, 311-243 etc.)
- Some examples of seasonal changes interpreted as land cover change: 331-512, 211-231, 324-333, 411-512.

Table 2. Summary results of verification, Montenegro

Working units	CLC-change Database
Cajni	Accepted
Cetinje	Accepted
Danilovgrad	Accepted
Gacko	Accepted
Ivanograd	Accepted
Niksic	Accepted
Pec	Accepted
Pljevlja	Accepted
Podgorica	Accepted
Prijepolje	Accepted
Sjenica	Accepted
Skadarsko	Accepted
Trebinje	Accepted
Ulcinj	Accepted
Visegrad	Accepted

4.3 Metadata

Metadata were not checked.

5. Proposed corrections in CLC-change

- Study detailed remarks related to CLC-change (see Annex 1).
- Changes between agricultural classes (mainly 231-211 and 211-231 or 243-242 and 231-243) have to be applied carefully.
- In case of clear cutting the recommended change is: 31x-324 (and not 31x-231 or 243).
- 332-333 or 333-332 changes seemed improbable (it is only seasonal difference), therefore not recommended to use it.
- Temporary changes due to water level changes in reservoirs or wetlands are not CLC changes.

6. Difficulties encountered during the mission and proposed solutions

--

7. Materials collected

--

8. Summary of actions to be undertaken

Derive CLC1990 by using CLC2000 and CLC-change
Produce seamless databases (CLC2000, CLC-change, CLC1990) for CG.
Compile metadata

Deadline for sending deliverables (seamless CLC2000, CLC-Change and CLC90, metadata for Serbia and Montenegro) to ETC-TE by EvroGeomatika: 15 October 2006

9. Next foreseen mission in the country

As this was the third and last verification in the country, no more missions are foreseen.

10. Proposals for further verification missions in any countries

--

11. Annexes

- Annex 1: Detailed verification protocols