



**University of
Leicester**

Centre for Landscape and Climate Research

Department of Geography

Technical Report

No. 8

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23rd July 2015

Table of Contents

Executive Summary	3
Quality control.....	4
Internal quality control.....	4
External quality control results	4
Acknowledgment.....	7

Executive Summary

This report contains information about internal and external quality assessment measure applied on the following datasets; (i) CLC2012_UK.mdb, (ii) CLC2012_UK_GG.mdb and (iii) CLC2012_UK_JE. The first dataset covers the UK including Northern Ireland and the Isle of Man. The second and third datasets cover the Channel Isles, Guernsey and Jersey, respectively.

Quality control

Internal quality control

All of the WUs went through internal quality control. The finished units were sent to an independent photo-interpreter, Geoff Smith at SN, who has a lot of experience with land cover mapping, and has been involved in the production of previous CLC maps in the UK. The WUs were checked using the InterCheck software provided as part of the CLC support package, using the same imagery and ancillary data as the initial interpreter. Comments were sent back to the production team as exported shapefiles. These were then acted upon and implemented by the interpreters before the unit was considered finished. With this method every WU was interpreted twice by two different people.

External quality control results

The external verification consisted of two remote verifications by the European Technical Team (CTT) in July 2013 and September 2014. These verifications were performed to check that the production by the UK team was of a sufficient standard to guarantee a harmonised European CLC2012. The first verification (July 2013) checked 3 WUs, one from each interpreter working on the project at the time, and the second verification (September 2014) checked a further 4 WUs, one for each of the interpreters who had worked on the project up to that point. This resulted in a somewhat skewed representation, as a larger proportion of early work was checked for interpreters who started the project, but who left after shorter term contracts expired, rather than subsequent work from the team around the time of the second verification. The total 7 WUs that were checked externally accounted for 19% of the UK coverage.

The external verification was carried out in much the same way as the internal verification. Detailed visual checks of the CLC2006_{revision} and the CLC-Changes₂₀₀₆₋₂₀₁₂ layers were made using the InterCheck software developed by ETC-SIA. The errors identified were marked in as points in a shapefile, with descriptive attributes, which were passed back to the interpretation team, along with a verification report, containing more detailed descriptions of the types of errors found in each WU.

The results of the external verification are given in table 2.3 and the typical errors from the report summarised below.

TECHNICAL REPORT

Table 2.3. Results of external verification

Working Unit	Revision layer	Change layer	Verification mission (date)	Inter-preter	Comments
SD	CA	CA	1 st (2 nd -6 th May 2013)	Beth Cole	
NZ	CA	A	1 st (7 th -10 th June 2013)	Booker Ogutu	
TF	CA	CA	1 st (10 th -11 th June 2013)	Diane Palmer	
NT	CA	R	2 nd (23 rd -25 th Aug 2014)	Booker Ogutu	Main reason for reject – mapping forest clear-cuts missed changes. Verification done with summer 2013 imagery –not available when interpreted in early 2013.
SN	A	CA	2 nd (12 th Aug 2014)	Sophie King	
TA	R	CA	2 nd (6 th Aug 2014)	Diane Palmer	Main reason for reject – mistakes in classes, and too many omitted mistakes in the 2006 layer that needed revising. This interpreter left the project in April 2013, this a WU interpreted very early in the production. Re-interpreted by someone else after feedback from verification.
TV_TQ	CA	A	2 nd (25 th -27 th Aug 2014)	Beth Cole	

A (Accepted): no major mistakes were found. CA (Conditionally accepted): several mistakes, but relatively easy to correct. R (Rejected): several, different types of mistakes, more work is needed to correct

The verification reports highlight the importance of a thorough revision of CLC2006 as previous verification of the UK CLC versions revealed several inaccuracies. The main problems found were in this layer.

The most typical were:

- Omissions of discontinuous built-up areas (112), especially smaller built up areas.
- Omissions of infrastructure elements e.g. industries, airports, wind turbines.
- Inaccuracies separating continuous urban fabric (111) and Industry (121).
- Inaccuracies found in mineral extraction (131) and dumpsites (132).
- Inaccuracies found in green urban areas (141) and sport and recreation (142).
- Inaccuracies in separating arable (211) and pasture land (231).
- Inaccuracies in separating pasture (231) and natural grasslands (321).
- Some forest patches were missing, forest boundaries sometimes not precise enough, and some mixed forest could be separated.
- Boundaries of moors and heathland (322) with natural grassland (321) and peatland (412) are sometimes unclear.
- Bare rocks (332) often need reclassifying as sparse vegetation (333).
- Intertidal flats (423) and estuaries (522) need revisiting.

Further revision of the inherited problems with the CLC2006 layer were recommended as can be seen from the list.

The mapping of changes were usually correct, but with a few missed changes noted, and changes that were not able to be mapped with the available satellite imagery over the UK. A couple of points to note were;

- Care had to be taken to use the latest IMAGE2012 imagery to make sure change was mapped correctly.
- Ensure that greater than 5ha of change were separated out of complex change polygons.

Full details are available in the verification reports (Büttner, 2013; 2014).

All identified errors were addressed and corrected. The two working units that were rejected were re-interpreted by a different interpreter subsequent to the verification, using the additional IMAGE 2012 images. Remarks and general advice were applied to all subsequent working units to assure high quality of the final database.

Acknowledgment

This project was carried out by the University of Leicester, The Centre for Landscape and Climate Research and the consultancy company Specto Natura. It was supported by Defra and the European Environment Agency under Grant Agreement 3541/B2012/R0-GIO/EEA.55055 in the European Unionerminus Programme with funding by the European Union.