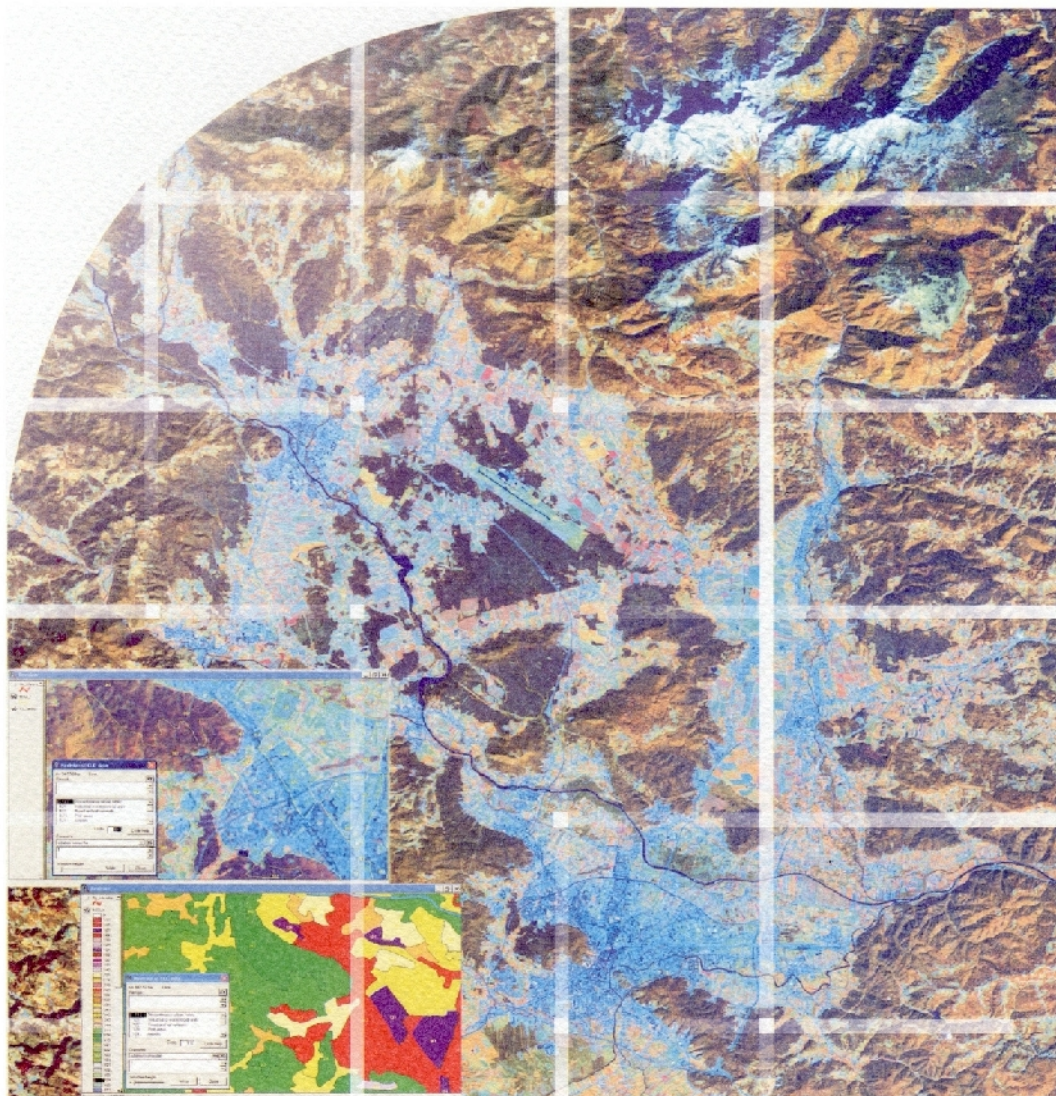


POKROVNOST TAL I&CLC 2000



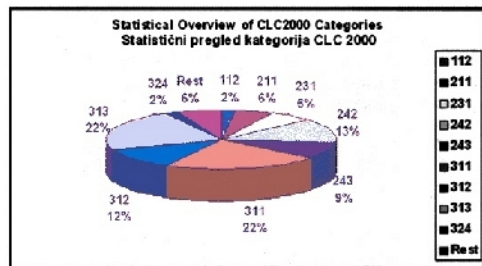
Basic conditions for complete and accurate management of the land cover and natural resources are decisions based on the required knowledge and the quality information about biosphere and its changes. The program for COoRdination of INformation on the Environment - CORINE program- is accepted at EU level. The goal of the project was identification and meaningful categorisation of land cover, which includes defined nomenclature of coding and collecting the quality database needed for supervising, organising and managing natural resources on regional and national level. Data on land cover, in combination with other thematic data give new insight on the condition and changes of the natural resources on different areas such as agricultural fields, forestry, regional space planing, inventory of natural resources and monitoring of the environment and its changes.

Temeljni pogoj za celovito in ustrezno ravnanje z okoljem in naravnimi viri so odločitve, ki temeljijo na potrebnem znanju in kakovostnih informacijah o obstoječi biosferi in njenem spreminjanju. Na evropski ravni je bil v ta namen sprejet program za usklajevanje informacij o okolju z imenom CORINE (COoRdination of INformation on the Environment). Namen programa je določitev, smiselna razvrstitev pokrovnosti tal in izdelava kakovostne baze podatkov. Ugotovljenim tipom pokrovnosti tal je pripisana koda iz, na evropski ravni usklajene klasifikacije. Ta je potrebna za nadzorovanje, organiziranje in upravljanje z naravnimi viri na regionalnem in nacionalnem nivoju. Podatki o stanju pokrovnosti tal, v kombinaciji z drugimi tematskimi podatki, dajejo nov vpogled v stanje in spremembe naravnih virov na različnih področjih, kot so kmetijstvo, gozdarstvo, regionalno prostorsko planiranje, popis naravnih virov in za monitoring okolja ter njegovih sprememb.

CORINE Land Cover Slovenia is a project which for resoult has updated database, which is comparable to the other databases of European countries which have participated to this project. These are: Austria, Belgium, Bulgaria, Czech Republic, Denmark, Estonia, Finland, France, Greece, Croatia, Ireland, Italy, Latvia, Lithuania, Luxembourg, Hungary, Malta, Germany, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom, Cyprus, and Turkey.

Rezultat projekta CORINE Land Cover Slovenije je osvežena baza podatkov, ki je zgrajena skladno s primerljivimi bazami drugih evropskih držav, ki so pristopile k temu projektu. Te so: Avstrija, Belgija, Bolgarija, Češka, Danska, Estonija, Finska, Francija, Grčija, Hrvaška, Irska, Italija, Latvija, Litva, Luksemburg, Madžarska, Malta, Nemčija, Nizozemska, Poljska, Portugalska, Romunija, Slovaška, Slovenija, Španija, Švedska, Velika Britanija, Ciper, Turčija.

The original CLC methodology used in first phase consisted of subjective photo interpretation of satellite images (captured in 1995 and 1996) at scale 1: 100 000, additional digitalization of results and making digital database in CAD, subsequently converted into GIS. CLC methodology describing land cover with 44 classes, hierarchical organized in 3 levels. First level (with 5 classes) have basic land cover category: artificial surface, agricultural surfaces, forests and semi natural areas, wetlands and water. Second level has 15 classes and third level have 44 classes.



Legend/Legenda:

- 112 - Discontinuous urban fabric / Nesključene urbane površine
- 211 - Non-irrigated arable land / Nenamakane njivske površine
- 231 - Pastures / Pašniki
- 242 - Complex cultivation patterns / Kmetijske površine drobnoposestniške strukture
- 243 - Agriculture with natural vegetation / Pretežno kmetijske površine z večjimi območji naravne vegetacije
- 311 - Broad-leaved forest / Listnat gozd
- 312 - Coniferous forest / Iglast gozd
- 313 - Mixed forest / Mešan gozd
- 324 - Transitional woodland-shrub / Ormičast gozd
- The rest of the categories / Ostale kategorije

Slovenia started CORINE project in year 1996. Ortho-rectified and printed in scale 1:100 000, Landsat 5 TM images were used for land cover interpretation. The basis for ortho-rectification were 100m DTM and 1:25 000 topographical maps. The interpretation was made on analogue hardcopy of satellite images, which were subsequently semi-automatically vectorised in CAD program that disallowed the possibility of making one consistent database, with insight on quality and database control. The result was digital data base of land cover according to CORINE nomenclature for referent year 1995, promoted in year 1998. The database was revised in year 2002 during the second phase of CORINE project.

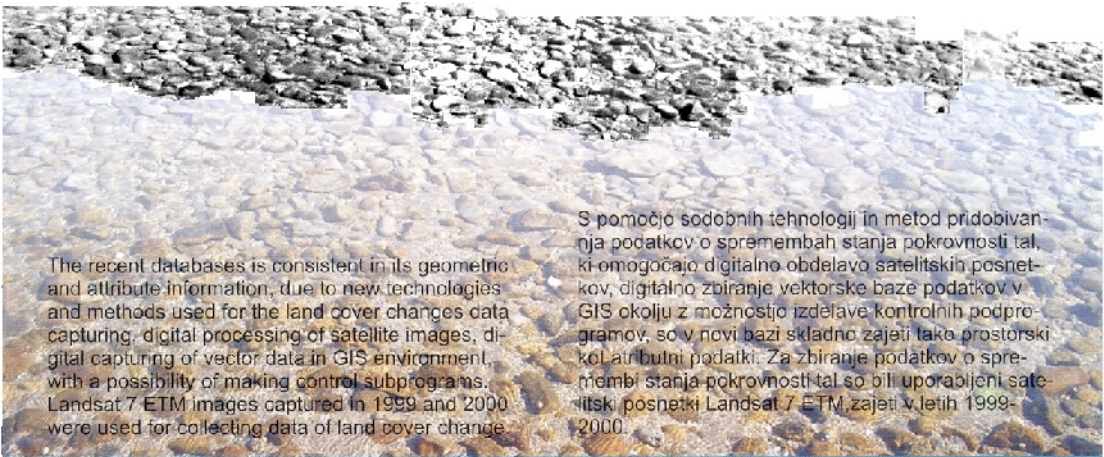
Prvotna metodologija CLC, uporabljena v prvi fazi, je temeljila na vizualni fotointerpretaciji satelitskih posnetkov iz let 1995-1996 v merilu 1:100.000, naknadni digitalizaciji rezultatov in izdelavi digitalne baze podatkov z orodjem za računalniško podprto načrtovanje (CAD), ter kasnejši pretvorbi v GIS. Metodologija CLC opisuje pokrovnost (in delno rabo) tal v skladu z nomenklaturo 44 razredov, hierarhično urejeno v tri ravni. Raven 1 (s petimi razredi) ustreza temeljnim kategorijam pokrovnosti oziroma rabe tal: umetna in kmetijska področja, gozdovi in polnaravne površine, mokrišča in vodne površine. Raven 2 osnovne kategorije podrobneje razčleni na 15 razredov in raven 3 še temeljiteje na skupno 44 razredov.



Slovenija je začela z delom na prvi fazi tega projekta leta 1996, ko so za interpretacijo rabe tal uporabljali analogne satelitske posnetke Landsat 5 TM, ortorektificirane in natisnjene v merilu 1:100 000. Osnova za ortorektifikacijo so bile topografske karte merila 1:25 000 in mreža DMR z gostoto 100 m. Interpretacija je bila opravljena na analognih izrisih satelitskih posnetkov, ki so naknadno polavtomatsko vektorizirani v okolju CAD. Tak pristop ni omogočal izdelave enotne baze, ki bi zagotavljala kakovost podatkov in nadzor nad njimi. Rezultat je bila baza pokrovnosti tal, izdelana po nomenklaturi CORINE iz leta 1995, predstavljena leta 1998. Leta 2002 je bila v drugi fazi projekta CORINE dopolnjena (izpopolnjena).

The EEA (European Environment Agency) initiated the second phase of CORINE project in which all participating countries should make revisions of their first phase CLC databases and detect the changes, developed from the end of first phase. The referred changes enabled qualitative view of a way of land cover/use and a creation of a notion of actual natural resources management. The second phase of the CORINE project started in Slovenia in 2002 with cooperation of the Surveying and Mapping Authority of the Republic of Slovenia, Environmental Agency of the Republic of Slovenia, Slovenian Forestry Institute and GISDATA d.o.o. Ljubljana.

EEA (Evropska agencija za okolje) je začela z drugo fazo projekta CORINE, v kateri naj bi sodelujoče države izvedle pregled obstoječe baze iz prve faze in zajem sprememb, nastalih v času od zaključka prve faze. Navedene spremembe so omogočile kakovosten vpogled v način rabe tal in ustvarjanje slike o razvoju naravnih virov. Druga faza projekta CORINE se je v Sloveniji začela leta 2002 s sodelovanjem Geodetske uprave RS (GURS), Agencije RS za okolje (ARSO), Gozdarskega inštituta in podjetja GISDATA d.o.o., Ljubljana.



The recent databases is consistent in its geometric and attribute information, due to new technologies and methods used for the land cover changes data capturing, digital processing of satellite images, digital capturing of vector data in GIS environment, with a possibility of making control subprograms. Landsat 7 ETM images captured in 1999 and 2000 were used for collecting data of land cover change

S pomočjo sodobnih tehnologij in metod pridobivanja podatkov o spremembah stanja pokrovnosti tal, ki omogočajo digitalno obdelavo satelitskih posnetkov, digitalno zbiranje vektorske baze podatkov v GIS okolju z možnostjo izdelave kontrolnih podprogramov, so v novi bazi skladno zajeti tako prostorski kot atributni podatki. Za zbiranje podatkov o spremembi stanja pokrovnosti tal so bili uporabljeni satelitski posnetki Landsat 7 ETM, zajeti v letih 1999-2000.

Basic characteristics of the Corine Land Cover 2000:

- The mapping scale is 1:100 000; mapping accuracy is at least 100 m
- Minimal mapped area is 25 ha
- Minimum width is 100 m
- The CLC nomenclature distinguishes 5 classes at the first level, 15 classes at the second level and 44 classes at the third level
- No unclassified areas should appear in the final version of the data set

During the revision, 37 out of 44 classes according to CORINE nomenclature were detected on Slovenian territory. Very few changes were detected due to the relatively short time period of four years between referenced interpretable databases.

Temeljne značilnosti baze podatkov pokrovnosti tal 2000:

- Izhodno kartografsko merilo 1:100.000; kartografska natančnost je 100 m
- Najmanjša enota kartiranja je 25 ha
- Najmanjša širina poligona je 100 m
- Nomenklatura CLC vključuje 5 razredov na prvi ravni, 15 na drugi in 44 na tretji
- Neklasificirana kategorija ne sme obstajati

Ob ponovnem pregledu je na področju Slovenije odkritih 37 od 44 razredov, definiranih znotraj standarda CORINE. Zaradi razmeroma kratkega časovnega razmika (4 leta) med referenčnimi leti je baza sprememb ustrezno majhna.

Basic characteristics of Land Cover changes database:

- The minimum unit for inventory is 5 ha
- Minimum width of units is 100 m

Total share of change in base is 1%. The most changes occurred in forest land cover which partially changed into agriculture land, degradation phase or disappeared on account of road network.

Temeljne značilnosti baze sprememb pokrovnosti tal:

- Najmanjša enota kartiranja v bazi sprememb je 5 ha
- Najmanjša širina poligona je 100 m

Skupni delež sprememb v bazi je 1%. Največ sprememb je nastalo na površinah, ki so bile pokrite z gozdom. Del gozdnih površin je spremenjen v kmetijska zemljišča, del gozdom je izgini zaradi zgradnje novih cestnih povezav.

The results of second phase of a CORINE Land Cover project for Slovenia are the following three databases with belonging metadata:

- **CLC95_SI**, revised and corrected version of the old database made in 1995.
- **CLC00_SI**, represents the land cover of year 2000, formed by junction of change database and land cover database of the referent year 1995.
- **CHANG_SI**, contains land cover changes between 1995 and 2000.



CLC95 Land cover database in Slovenia was/will be used:

- For reporting to:
- European Environmental Agency (EEA) on: waters, construction and soil-sealing, condition of sea and coast
- European Commission: for intercalibration exercise on freshwater monitoring sites
- As basic layer on Nopolu project
- As basic layer in INSPIRE*project
- For updating monitoring network for quality of underground water
- As basic layer for monitoring of soil-sealing
- For preparation of indicators

* Initiative of European commission for establishment of Infrastructure for spatial Information in Europe (INfrastructure for SPatial InfoRmation in Europe) <http://inspire.jrc.it/>

Rezultat posodabljanja baze CORINE Land Cover za Slovenijo so tri digitalne baze s pripadajočimi metapodatki:

- **CLC95_SI**, ponovno pregledana in popravljena verzija stare baze, narejene po podatkih in metodologiji za leto 1995.
- **CLC00_SI**, baza, ki predstavlja pokrovnost tal za leto 2000, je nastala z združitvijo baze sprememb in baze pokrovnosti tal popravljene referenčne 1995.
- **CHANG_SI**, baza, ki vsebuje spremembe pokrovnosti tal med letom 1995 in letom 2000.



Podatki o pokrovnosti tal CLC95 so bili/bodo v Sloveniji uporabljeni:

- za poročanje:
- Evropski agenciji za okolje (EEA): o vodah, pozidavi in tesnjenju tal*, o stanju morja in obale;
- Evropski komisiji: pri interkalibracijski vaji merilnih mest na površinskih vodotokih
- kot podlaga pri projektu Nopolu,
- kot temeljni tematski podatki pri projektu Inspire**,
- za izdelavo predloga za posodobitev mreže monitoringa kakovosti podzemnih voda,
- kot podlaga za monitoring tesnjenja tal,
- za pripravo kazalcev

* V angleščini: soil-sealing

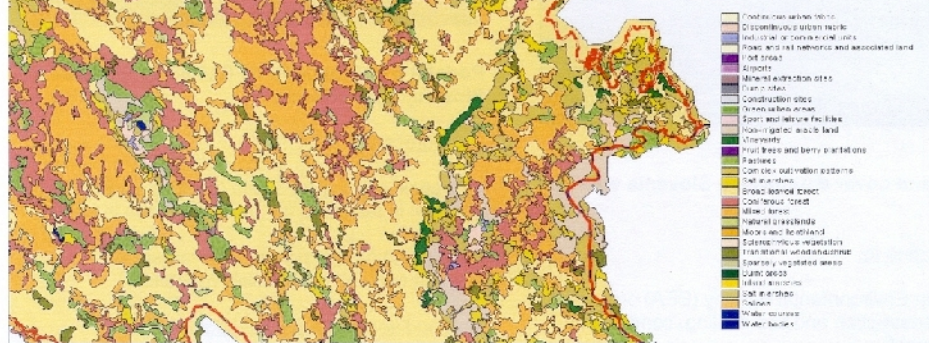
** Gre za pobudo Evropske komisije za vzpostavitev infrastrukture za prostorske informacije v Evropi (INfrastructure for SPatial InfoRmation in Europe) <http://inspire.jrc.it/>

Land cover data was used in middle and east European countries for:

- Air pollution modeling in the black triangle region on the German/Czech/Polish border
- assessment of potential and actual soil erosion at a regional scale in Slovakia
- economic assessment of the landscape in Slovakia
- modeling the prediction of phosphorus concentration in Romanian, Slovakian and Hungarian rivers
- Delimitation of less-favoured farming areas in Poland
- tourist map of Slovakia was compiled
- evaluation of landscape changes in Slovakia

Podatki o pokrovnosti tal CLC95 so bili uporabljeni v državah srednje in vzhodne Evrope za:

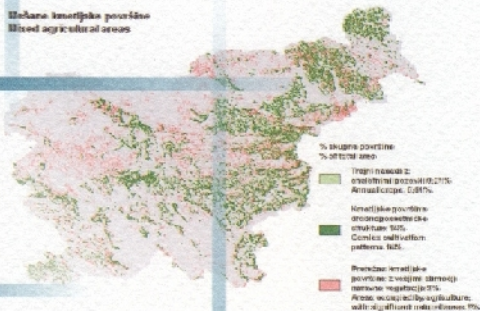
- modeliranje onesnaženosti zraka v črnem trikotniku na nemško-češko-poljski tromeji,
- ugotavljanje nevarnosti erozije prsti na Slovaškem,
- ugotavljanje ekonomske vrednosti pokrajine na Slovaškem,
- modeliranje koncentracije fosforja v rekah v Romuniji, na Slovaškem in Madžarskem,
- razmejitev manj ugodnih kmetijskih površin na Poljskem,
- izdelavo turistične karte Slovaške,
- ugotavljanje sprememb rabe pokrajine na Slovaškem.



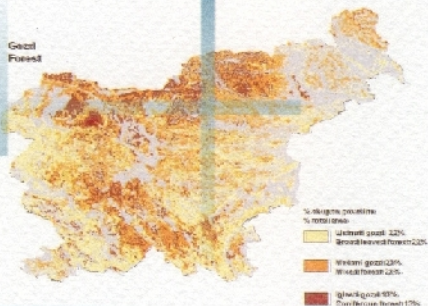
The main characteristic of CLC2000 Land Cover is that the data produced in each participating European country will be consistent and comparable across the Europe because of the usage of the same methodology and the quality check is performed by the same institution.

Pri pokrovnosti tal I&CLC2000 je bistvenega pomena to, da bodo podatki po posameznih evropskih državah primerljivi med seboj, saj bodo narejeni po enotni metodologiji in kvalitativno preverjeni s strani ene ustanove.

Mekana kmetijska površine
Mixed agricultural areas



Gozd
Forest



REPUBLIKA SLOVENIJA

Geodetska uprava Republike Slovenije
Zemljemerska ulica 12, 1000 Ljubljana

GURS: <http://www.gov.si/gu>
kontaktna oseba (contact person)
ga. Marjana Duhovnik
tel.: +386 (0)1 478 4902
e-pošta: Marjana.Duhovnik@gov.si

GISDATA
Elastic Solutions

GISDATA d.o.o., Ljubljana
Zemljemerska ulica 12, 1000 Ljubljana

tel.: +386 (0)1 234 8420 / fax: +386 (0)1 234 8435
e-pošta: info@gisdata.si
GISDATA: <http://www.gisdata.si>



Agencija Republike Slovenije za okolje
Environmental Agency of the Republic of Slovenia
Vojkova 1b, 1000 Ljubljana
Tel. št.: +386 (0) 1 478 4000
Fax. št.: +386 (0) 1 478 4052
ARSO: <http://www.arso.gov.si>
EIONET-SI: <http://nfp-si.eionet.eu.int>

Nacionalni koordinator sodelovanja
z Evropsko agencijo za okolje (NFP):
dr. Irena Rejec Brancalj
Tel. št.: +386 (0) 1 478 4554
e-pošta: irena.rejec-brancalj@gov.si



GOZDARSKI INŠTITUT SLOVENIJE
Gozdarski inštitut Slovenije
Večna pot 2, 1000 Ljubljana

tel.: +386 (0)1 200 7800 / fax: +386 (0)1 257 3589
e-pošta: gisinfo@gozdis.si
GOZDIS: <http://www.gozdis.si>