

土地被覆・土地利用分類体系のデータベース化

—米国・英国資料の収集と分析—

A Database of Land Cover / Land Use Classification Systems

—Collection and Analysis of Data for the USA and UK—

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1. はじめに

大規模な自然災害や食料安定供給といったグローバルな問題に対応するためには、全球スケールの観測データを用いた学際的な検討が必要である。世界の様々な研究機関には膨大な地球観測データが蓄積されているが、データの共有や相互理解は十分には行われていない。研究分野のディシプリンや対象とする空間スケールの違いなどによって、膨大なデータが不均質な状態で細分化されているのが現状である。たとえば日本を例にとると、都道府県別に調査・編集された土地分類図が作成されているが、県によって分類基準が異なるなど様々な問題を有している（若松ほか，2005）。地球観測データをより効率的かつ効果的に利用するためには、各分野におけるデータやフレームを可能な限り接合していくことが望ましい。

本研究では、米国および英国において作成されてきた「土地被覆 (land cover)」および「土地利用 (land use)」に関わる資料群に着目し、地域や時代によって異なる「分類基準」あるいは「凡例 (legend)」を比較可能とするための基礎研究を行った。具体的には、既存の土地分類体系に関するデータベースを作成して分類体系を比較し、共通点と相違点に関する議論を行った。

2. データベースの作成

2.1. 目的

多数の土地分類体系を収録するデータベースは、異なる分類体系間の比較を行うための有用な手段である。これまで佐藤・建石（2001）によるグローバルな土地分類システムのレビューがあるものの、各分類体系間の相互関係や分類基準の変遷に関する詳しい資料は、ほとんど存在しない。米国都市計画協会（American Planning Association）の Web サイト（<http://www.planning.org/LBCS/GeneralInfo/>）に記載されている情報のように、ある機関が作成した分類体系とそれ以外の分類体系との変換を目的とする資料は存在するが、第三者間の分類体系の比較には利用できない。

また、各分類体系に関する多様な情報が文献や Web などを通じて得られるとしても、それらの分類体系の特徴を把握して相互の比較を行うためには、多くの労力を要する。しかし、それらの情報を統一的な基準に基づいてデータベース上で標準化することにより、情報の整理と相互理解が容易となり、既存データの有効活用が可能となる。以上のような状況に鑑み、筆者らは様々な分類体系の概要を把握するためのデータベースを作成した。

2.2. 作成手順

米国および英国の公的機関あるいは研究者が作成した、土地被覆・土地利用・地形分類・植生といった土地分類図に関する情報を、既存の文献および Web サイトから収集した。次に、データ間の相互比較を容易にするために、各土地被覆・土地利用分類図（分類体系）の属性情報（メタデータ）を整理した。具体的には、以下の項目を抽出した。

1) データに関する基礎情報：

略称 ^{注1}

データ名（出版物あるいは Web サイトのタイトル）

出典（出版物に関して）

URL（Web サイトに関して）

著者（出版物に関して）

発行地（出版社あるいは Web 設置機関の所在地）

発行者（出版社あるいは Web 設置機関）

発行年（出版年あるいは Web 設置年）

データの入手方法 ^{注2}

2) 土地分類体系に関する情報：

分類体系の種類（公式／非公式）

新規分類体系の提示（Yes／No）

その基礎となった既存の分類体系 ^{注3}

分類定義の記載（出版物あるいは Web サイト）

分類項目の詳細 ^{注4}

3) 土地分類調査に関する情報：

調査・分類名

調査・分類カテゴリー（土地被覆・土地利用・土地条件・土地利用可能性・地形・水質・その他）

調査実施機関

調査者のカテゴリー（国際機関・政府機関・地方自治体・民間）

調査対象地域

調査実施期間

調査の目的・特徴

出力図のグリッドサイズ・縮尺

調査上のグリッドサイズ

調査方法（現地調査・リモートセンシング）

注1：データの略称。資料に略称の記載がある場合には、それに作成年代を加えたものを採用し、ない場合にはデータ名の頭文字・作成者名・作成年を基に定義した。

注2：Webよりダウンロードできる場合にはそのURL，入手方法を記載している文献がある場合はその書誌情報。

注3：当該分類体系を作成する際に参照した，既存の分類体系。

注4：主要な分類項目を例示。

2.3. 結果

作成したデータベースを，末尾の付表1および付表2に示す。付表はそれぞれ，米国と英国の情報を作成年代順に並べている。

—米国—

州やそれ以下のレベルの自治体の権限が大きい米国では，地方自治体などが独自に設定した分類体系の数が非常に多く，およそ200程度は存在するようである。今回はまず，Web上で情報を集めることができる連邦や州レベルなどで設定された分類体系のうち，主要な15資料についてデータベース化を行った。このうち，データソースとして主に文献資料を用いたものが2点，Webサイト上の資料を用いたものが13点である。内容別にみると，連邦政府機関作成の土地分類体系に関する資料が8点，州政府作成の土地分類体系に関する資料が4点，研究者などによる分類基準の比較および新たな分類基準の提案に関する資料が3点である。資料の作成時期は1948年～2004年である。土地分類体系（凡例）の詳細について確認できた8点の資料のうち，最も大まかな分類はUSGSによる21分類(NLCD1992)であり，最も詳細な分類はLBCS1994（Land-Based Classification Standards）による約800分類（付表1では最上位カテゴリーのみを示した）である。調査・分類のカテゴリーは，主に土地被覆（land cover）に関するものが7点，土地利用（land use）に関するものが1点，両者を混合したものが4点，植生，土壌，水文に関するものがそれぞれ1点である。調査・分類対象地域は，およそ米国全土を対象としているものが3点，州単位のものが4点であり，残りの8点は新たな土地分類体系の提案を行っているものの，それに依拠した調査やデータセットの作成を行っていないものである。

—英国—

英国に関しても15資料をまとめた。全資料の主なデータソースはWebサイトである。作成機関別にみると，政府機関作成の資料が13点，国立大学作成の資料が1点，個人研究者が作成した資料が1点である。資料の作成時期は1930年代～2004年である。土地分類体系（凡例）は11点の資料で確認された。最も大まかな分類は，Stamp1930sによる6分類であり，最も詳細な分類はLCM2000（Land Cover Map 2000）による72分類である。調査・分類のカテゴリーは，土地被覆（land cover）に関するものが6点，土地利用（land use）に関するものが1点，いくつかの分類カテゴリーが混合したものが8点である。調査・分類対象地域は英国全土（United Kingdom）が2点，ブリテン島（England, Wales and Scotland）が10点，より小地域を対象としたものが3点である。

3. 考察

3.1. 米国

技術進化によって以後の増加が予想された、リモートセンシング・データの利用に適する新たな土地被覆分類体系を提案した Anderson1976 (Anderson et al., 1976) は、その後の米国における土地被覆分類体系に重要な影響を及ぼしたと考えられる。たとえば、USGS が米国本土の大部分とハワイについて 70~80 年代に整備した LULC1986 (Land Use and Land Cover) は、まだ空中写真をデータソースとしていたものの、Anderson1976 の体系をそのまま採用した (U.S. Geological Survey, 1986)。

さらにその後、衛星画像を用いた土地被覆分類が進み、Anderson1976 の土地被覆分類体系を修正利用した NLCD1992 (National Land Cover Dataset 1992) が米国全土について整備された。NLCD1992 の分類体系は Anderson1976 を基礎としているものの (<http://landcover.usgs.gov/classes.php> の“NLCD Land Cover Class Definitions”), 実際の分類カテゴリーはかなり異なる。たとえば、Anderson1976 では3つの分類階層 (Level I, II, III) があり、最下位の Level III はユーザーが必要に応じて設定可能であるが、NLCD1992 は Level III 相当の階層を設定しなかった。また、Level II の分類カテゴリーは Anderson1976 では38個であるが、NLCD1992 では約半数の21個しか設定されていない。たとえば、Anderson1976 では5つに分類されていた“Water”は NLCD1992 では1つになり、7つだった“Barren land”は3つになり、2つだった“Perennial Snow or Ice”は1つに統合されている。また、Anderson1976 では“Residential”, “Commercial and Services”, “Industrial”などの土地利用別に7つに分類されていた“Urban of Built-up Land”は、NLCD1992 では“Low Intensity Residential”, “High Intensity Residential”, “Commercial/Industrial/Transportation”という土地の利用密度を加味した3つの分類をもつ“Developed”へと改変されている。その他にも、Anderson1976 では“Urban of Built-up Land”に含まれていたゴルフコースや公園などは、NLCD1992 では自然の草地や農地における草地と一緒に“Herbaceous Planted/Cultivated”に分類されており、Anderson1976 では“Shrub and Brush Tundra”, “Herbaceous Tundra”などと植生別に5つに分類されていた“Tundra”は、NLCD1992 ではツンドラであるか否かにかかわらず“Grasslands/Herbaceous”または“Shrubland”として分類されている。さらに、Anderson1976 では Level I のカテゴリーとして立てられていた“Agricultural Land”と“Rangeland”の分類カテゴリーは、NLCD1992 では削除され、農地であるか否かにかかわらず、単純に土地の植生のみに基づいて分類されている。これらの変化の理由として、Anderson1976 はリモートセンシングの補完として現地調査も想定していたのに対し、NLCD1992 は現地調査を重視せずに Landsat TM 画像のみを主要なデータソースとしたため、土地利用や自然か人工かの判定が困難になったことがあげられる。Level III の分類カテゴリーが NLCD1992 では採用されていないことも、同じ理由によると思われる。

その後、連邦レベルでの土地分類データとして、NLCD1992 の分類体系を修正利用した NLCD2001 (National Land Cover Database 2001) が登場した。両者の分類体系については、「NLCD2001 は NLCD1992 に近いものとなるように計画されてはいるものの、体系には多少の差異がある」とされている (http://www.mrlc.gov/mrlc2k_faq.asp の“Should I directly compare land cover from NLCD 92 with land cover from NLCD 2001?”)。この点を具体的にみると、NLCD1992 の“Developed”には、“Residential”と“Commercial/Industrial/Transportation”とい

う土地利用の種類に基づいた分類カテゴリーが含まれていたのに対し、NLCD2001の“Developed”では、“Open Space”, “Low Intensity”, “Medium Intensity”, “High Intensity”という土地利用密度のみに基づいたカテゴリーに改変されている。また、NLCD1992の“Non-Natural Woody”はNLCD2001では削除されている。土地利用に関する分類カテゴリーと、自然か人工かの判断を伴う分類カテゴリーを捨象するというNLCD1992でみられた傾向が、NLCD2001では強化されているといえる。また、分類体系だけではなく衛星データの処理の方法も異なっているので、両者の違いが実際の土地を反映しない可能性も高い (http://www.mrlc.gov/mrlc2k_faq.asp の“Should I directly compare land cover from NLCD 92 with land cover from NLCD 2001?”)。NLCD2001の設計は、NLCD1992との経年的な連続性をさほど重要視していないといえる。

州レベルの分類体系においてもAnderson1976の影響力は大きく、たとえばNorth Carolina州のNCLULCS1994 (North Carolina Land Use Land Cover Standard) は、Anderson1976に準拠した土地被覆分類体系を用いている。ただし、州レベルでは現地調査などによる情報取得も容易であるためか、土地利用に関する情報を含む“Urban and developed land”のカテゴリーや、自然か人工かの判断を伴う“Water”などのカテゴリーがAnderson1976よりも拡充されている。またNorth Carolina州の地理的な状況を反映させたためか、“Forest Land”に関する分類カテゴリーがAnderson1976での3つから6つへと増加している。

このように州や地方自治体が独自にデータ整備を進めたり、独自の土地分類体系を用いることが多かった米国では、統一的な土地分類体系を作成する動きも顕著である。連邦政府レベルなどの19の機関によって構成されたFederal Geographic Data Committeeは、多くの分野に関する統一的な土地分類体系を検討しており、植生 (FGDCVegetation1997)、土壌 (FGDCSoil1997)、土地被覆 (FGDCEarthCover1999)、水路誌 (FGDCWater2000) などが提案されている。また、政府機関ではないが、米国都市計画協会 (American Planning Association) は、都市計画にかかわるActivity, Function, Ownership, Site, Structureといった多様な分野における統一的な土地分類体系を独自に提案するとともに (LBCS1994)、その体系と様々な既存の土地分類体系との対照関係を調べることができるWebサイトを公開し、利用者の便宜を図っている。このような土地分類体系の動向は、地方自治体の独立性が高いという米国独特の社会的背景に起因するものであるといえる。

そもそもAnderson1976の設計思想には、様々な場所や目的に対応する拡張性と、異なる土地分類データ間の互換性の確保が共に含まれている (Anderson et al., 1976)。つまり、Level IIIをユーザーが独自に設定することで個々のニーズに対応し、Level IIのカテゴリーを不変とすることで異なるユーザーが整備したデータの比較も可能になるのである。しかし現実には上記の想定とは異なり、後の土地分類はAnderson1976のLevel IIやLevel Iを改変して使用した。その理由として、リモートセンシング・データと現地調査の併用を想定してAnderson1976は作られたが、その後の土地分類データ作成においては現地調査が省かれることが多かった点が挙げられる。また、どのような分類が必要かという需要の多様性がAnderson1976の想定以上に大きかったために、Level IIやLevel Iの改変が行われるようになってしまったとも考えられる。

結局、様々なデータの統合を目的としてAnderson1976が提示され、大きな影響力をもったものの、その目的は十分には果たされなかった。したがって、FGDCなどの機関が現在再びデータの統合を目的として統一的な体系の提案を行っている。この事実は、将来の技術

的・社会的な変化を見通した土地被覆分類体系を作成することの困難さと、他者のデータとの互換性を確保するという点が設計思想の中で重視されてこなかったことを示している。

3.2. 英国

英国における広範囲を対象とした最初の土地分類調査は、Dudley Stampにより1930年代に行われた(Stamp1930s)。これは主に植生に基づく土地利用分類であり、分類数は5つと少ないが、England, Wales および Scotland 南部を調査した大規模なものである。その後1970年代後半より、政府機関による土地分類調査が開始された。まず1978年に植生・土壌と地質・地形などの情報を含む総括的な土地利用・土地被覆調査であるCS1978(Ecological Survey of Britain 1978)が行われた。その後も1984年にCS1984(Land Use Survey of Great Britain 1984)、1990年にCS1990(Countryside Survey 1990)、2000年にCS2000(Countryside Survey 2000)と呼ばれる土地分類調査が継続的に行われた。これらの調査は、基本的にCS1978と同様の分類基準を用いているため、各年のデータを比較することにより、植生や地形といった環境条件や土地利用形態の経時変化を評価することが可能である。

一方、上記の調査に基づいて、1978年にLCS1978(Land Cover Stock CS1978)、1984年にLCS1984(Land Cover Stock CS1984)、1990年にLCS1990(Land Cover Stock CS1990)と呼ばれる土地被覆分類図が作成された。これらの図では、分類基準が経時的に変化しているために、各年のデータをそのまま比較することはできない。たとえば分類項目数をみると、LCS1978は32、LCS1984は37、LCS1990は58であり、新しいものほど増加している。この増加には、2つのパターンが含まれる。1つは、それまで1つの項目で括られていた土地被覆が、個々の項目に分化したものである。たとえば、LCS1978の“Oats, Oil seed rape, Open canopy heath”は、LCS1990では“Oats”, “Oil seed rape”, “Open canopy heath”の3項目に分かれている。もう1つは、新しい分類項目の追加である。たとえば、LCS1990の“Quarries”, “Dune”, “Felled woodland”, “Rock & scree”などは、LCS1974には該当する項目が存在せず、新たに追加されたものである。前者の項目が分化するパターンは、元の項目との対応が把握可能であるため、データの比較の際にはそれほど大きな問題にはならない。しかし、後者の新項目が追加されるパターンでは、既存の項目との対応を把握できないため、データを比較する際に問題となる。

LCS シリーズの分類項目は階層構造を持たないが、現在のヨーロッパにおける汎用的な分類基準であるCLC2000(CORINE Land Cover Map)の大分類に倣って、項目を“Artificial surfaces”, “Agricultural areas”, “Forest and seminatural areas”, “Wetlands”, “Water bodies”の5つのカテゴリーに分けると、項目数の増加が著しいのは“Agricultural areas”(LCS1978の9からLCS1990の20に増加)および“Forest and seminatural areas”(LCS1978の14からLCS1990の24に増加)である。これらの増加の原因は、土地分類手法の向上により詳細な分類が可能になったという技術的背景とともに、1973年の英国のEC加盟に伴う共通農業政策(余剰農作物の買い上げおよびその価格の支持)の実施により耕作地が増大し(マーチン, 2002)、農地・植生に関するより詳細な情報・土地分類が必要になったためと考えられる。また、草地に関する分類項目数を詳細に見ると、LCS1978は5、LCS1984は6、LCS1990は10であり、非常に細かく分類されている。これは、農地の約60%が牧草地である英国(関戸, 1999)では、草地の重要性と注目度が高いことを示すと考えられる。

また、1980年代後半より現地調査とともにリモートセンシングが併用され始め、その結

果, 1990年にLCM1990 (Land Cover Map of Great Britain 1990), 2000年にLCM2000 (Land Cover Map 2000) が Centre for Ecology & Hydrology によって作成された. さらに2004年に欧州委員会 (European Commission) によって作成された CLC2000に至っては, リモートセンシングのみを用いて作成されている. これらの土地分類図においても, 分類基準が異なるためにデータの相互比較は容易ではない. 実際, 衛星データを基にした現在の分類図作成手法では, 土地被覆の変化を定量化するために必要なデータの正確性が得られないことが, LCM1990 と LCM2000 に関する資料の中で明記されている (<http://science.ceh.ac.uk/data/lcm/lcm2000.shtm> の leaflet7.pdf).

LCM2000の項目数は72であり, CLC2000の44よりも分類が細かい. CLC2000の5つの大分類に基づいて両者を比較すると, LCM2000では“Artificial surfaces”に4項目が含まれるのに対し, CLC2000では11項目が含まれ, “Port areas”, “Airports”, “Road and rail networks and associated land”といった流通に関連した項目がみられる. これは, CLCはヨーロッパ全体を対象とした分類基準なので, 国家・地域間の接点として重要な施設の情報を充実させた結果と考えられる. 逆に, LCM2000では“Agricultural areas”に25項目を含むのに対し, CLC2000では11項目のみを含む. 前者は耕作地の穀物の種類だけでも14種類に細かく分類しているのに対し, 後者では作物名を米, ブドウ, オリーブ程度にのみ分類している. これは, LCM2000は一つの国を対象とした分類であるため, 地域に対応した細かい分類がなされているのに対し, CLC2000はヨーロッパ全体を対象とするため, 広く普及している作物名のみを含むためであろう. “Forest and seminatural areas”は, LCM2000では34項目からなるのに対し, CLC2000では12項目のみからなる. ただし後者には“Glaciers and perpetual snow”といった項目も含まれており, 様々な気候条件を持つ国への適用性が考慮されている.

最後に, 各土地分類図の対象地域の変遷に注目すると, これまで作成されたもののほとんどは, Great Britain (すなわち England, Wales, Scotland) を対象としている (LCS1978, LCS1984, LCS1990, LCM1990 など). また, Scotland のみを対象とした土地被覆図 LCMScotland1988 (Land Cover Map of Scotland) や, Northern Ireland のみを対象とした土地分類調査 NICS2000 (Northern Ireland Countryside Survey) のように, 各地域で個別に作成された土地分類図も存在する. 英国全土の統一的な土地分類図が作成されたのは2001年が最初であり (LCM2000), ようやく相互参照や比較といったデータの有効活用のための体制が整ってきたといえる.

4. まとめと今後の課題

地球観測データを効率的かつ効果的に利用するためには, 各分野におけるデータ間の関係を整理し, 統合・共有していく必要がある. 本研究ではその一環として, 米国と英国における既存の「土地被覆 (land cover)」および「土地利用 (land use)」に関する資料を対象として, メタデータの収集・整理を行い, データベースを作成した. さらに, 対象地域や作成時期・機関によって異なる「凡例 (legend)」を比較し, その変遷過程および異同の理由について考察を行った.

以上の結果, 米国, 英国ともにこれまで, 様々な土地分類体系が作成されてきており, 分類基準が異なっていることが明らかになった. 分類基準が異なる要因として, 現地調査またはリモートセンシングといった調査方法の違い, リモートセンシングで使用するデータの種類 (航空写真, 衛星写真) や解像度の違い, 作成時における社会背景・作成目的の

違い、および対象地域の広さや産業構造の違いなどが挙げられる。また、作成機関と対象地域が同じデータでも、作成時期が異なると分類基準が変化しているケースが多く、一方で対象地域および作成時期が同じデータでも、作成機関が違くと異なる分類基準を用いている。調査地域に着目すると、米国では統一基準に基づいた全国規模の土地分類体系が存在する一方で、州や地方自治体といったローカルなニーズを反映した地域ごとの土地分類体系も作成されている。一方英国では、これまで土地分類図は主に **England・Wales・Scotland・Northern Ireland** の地方ごとに作成されてきたが、近年は英国全土を対象とした統一的な土地分類図も作成されており、データの相互利用性を高める体制が整いつつある。

土地被覆・土地利用の調査方法に関しては、かつての現地調査に代わってリモートセンシングが主流になっている。ただし、現地調査が軽視されがちになったために、土地利用に関する情報が不十分になるという問題も生じている。この問題は、近年における衛星データの解像度の飛躍的向上によって、ある程度解決される可能性がある。このためにも、高解像度衛星画像を用いた土地分類手法と分類基準を新たに確立する必要がある。

今後は、今回作成されたデータベースをさらに拡充するとともに、各分類体系間の関係性をさらに明確にする作業を行う予定である。個々の分類体系は、既存の分類体系の弱点を補うために新たな視点を追加したり、複数の既存の分類体系を統合したものが多く、そのような関係の整理を進め、結果を分かりやすく提示する方法を開発したい。また、分類体系間の相違を定量的に比較・表現する手法を開発し、その結果に基づいてデータの融合方法を提案する必要もある。このような研究が蓄積されれば、異なる分類体系によって表示されているデータ同士の比較が可能になり、過去の分類体系に基づくデータを現在の研究の中で活用する道が開かれると考えられる。

文献

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付表 1 土地分類体系データベース (米国 1)

Abbreviation	Wilkens1948	Anderson1976	LULC1986
Bibliography title (Web site title)	Mapping for planning; a procedural guide for the classification and mapping of land use and related technical studies	A Land Use And Land Cover Classification System For Use With Remote Sensor Data	Land Use and Land Cover (LULC)
Source, Series Web URL		Geological Survey Professional Paper 964 http://landcover.usgs.gov/pdf/anderson.pdf	http://edc.usgs.gov/products/landcover/lulc.html
Author	Wilkens, Edward B.	Anderson, James R., Hardy, Ernest E., Roach, John T., and Witmer, Richard E.	
Publication Place	Chicago, Illinois, USA	USA	USA
Publisher (Web site founder)	Public Administration Service	U.S. Geological Survey	U.S. Geological Survey
Publication Data Data availability	1948	1976	http://edc.usgs.gov/geodata/
Type (Formal, Draft) Proposition of a new classification (Y/N)	Draft N	Draft Y	Formal N
Employed previous classification system	"The Procedures suggested are based upon general principles common to most land use studies. These were expressed in the handbook published by the National Resources Committee entitled Suggested Symbols for Plans, Maps and Charts." in FOREWORD.	Revision of existing land cover classification system on US Geological Survey Circular 671	Level II categories of the land use and land cover classification system by Anderson and others (1976)
Definition of classification	Y, Only some categories of residential land uses and Business, Commercial, and Industrial uses on p1-4.	Y, p10-	
Categories	Refer to Table 2	Refer to Table 2	Refer to Table 2
Research / Data set Name			Land Use and Land Cover (LULC)
Research category (land cover, land use, land capability, land condition, geomorphology, geology, vegetation, soil, water quality, etc.) Researcher & Section in charge	Urban land use	Land cover	Land use, land cover USA, U.S. Geological Survey
Researcher Category (International agency, Governmental agency, Local agency, Non-government)	Private	Private	Governmental agency
Research area & country			The conterminous U.S. and Hawaii, but coverage is not complete for all areas 1970's - 1980's
Research year			
Purpose / characteristics of the research / new classification Map scale	Standardization of mapping procedure about colors and symbols	Proposition of an influential land cover classification system.	Land use and land cover data for the most of USA by aerial photography based landcover database. 1:100,000-, 1:250,000
Grid size			
Research method			Manual interpretation of aerial photography, also land use maps and surveys

付表 1 土地分類体系データベース (米国 2)

Abbreviation	NLCD1992	NCLULCS1994	LBCS1994
Bibliography title (Web site title)	National Land Cover Dataset 1992 (NLCD 1992)	A Standard Classification System for the Mapping of Land Use and Land Cover	Land-Based Classification Standards
Source, Series Web URL	http://landcover.usgs.gov/natl/landcover.asp	http://www.cgia.state.nc.us/gicc/standards/ncluc.html	http://www.planning.org/LBCS/GeneralInfo/
Author			
Publication Place	USA	North Carolina, USA	USA
Publisher (Web site founder)	U.S. Geological Survey	North Carolina Geographic Information Coordinating Council	American Planning Association
Publication Data Data availability	http://seamless.usgs.gov/	http://cgia.cgia.state.nc.us/cgdb/datalist.html	
Type (Formal, Draft) Proposition of a new classification (Y/N) Employed previous classification system	Formal Y Modification of the land use and land cover classification system by Anderson and others (1976)	Formal Y <small>*Principal land use schemes and documents examined during the process included: The USGS Level II land use and land cover classification scheme as described in Professional Paper 964 (Anderson, et al). State land use and land cover classification schemes from the states of Florida, Georgia, Maryland, Michigan, Minnesota, and Vermont. "Standard Land Use Coding Manual," U.S. Urban Renewal Administration and Department of Commerce (used SIC codes as a source) "Land Use and Land Cover Classification of the North Carolina Barrier Islands," North Carolina Sea Grant publication UNC-SE-85-01. "Mapping and GIS Development of Land Use and Land Cover Categories for the Albemarle-Pamlico Drainage Basin," Albemarle-Pamlico Estuarine Study, North Carolina, Department of Health and Natural Resources. "NOAA Coastal Watch Change Analysis Program Wetland and Land Cover Classification System (study)." "Classification of the Natural Communities of North Carolina-Third Approximation," North Carolina Natural Heritage Program. "Forest Statistics for North Carolina," U.S. Forest Service" on the paragraph of "Approach and Sources for Preparing Classification Scheme".</small>	Formal Y "1965 Standard Land Use Coding Manual (SLUCM), a standard which was widely adopted for land-use classifications" on http://www.planning.org/LBCS/GeneralInfo/ . Comparison with other classification standards are http://www.planning.org/LBCS/Conversions/ and http://www.planning.org/lbcs/OtherStandards/
Definition of classification	Y (http://landcover.usgs.gov/classes.asp)	Y, "PART 3 DESCRIPTION OF LAND COVER CATEGORIES" of http://www.cgia.state.nc.us/gicc/standards/ncluc.html	Y (http://www.planning.org/lbcs/standards/view.htm?Dimension=&Level=4&Keyword=&style=table&submit1=View+Results)
Categories	Refer to Table 2	Refer to Table 2	Refer to Table 2
Research / Data set Name	National Land Cover Dataset 1992 (NLCD 1992)	North Carolina Land Use Land Cover Standard	
Research category (land cover, land use, land capability, land condition, geomorphology, geology, vegetation, soil, water quality, etc.)	Land cover	Land cover, land use	Comprehensive
Researcher & Section in charge	USA, The Multi-Resolution Land Characteristics (MRLC) including 1. U.S. Geological Survey (USGS), 2. Environmental Protection Agency (EPA), 3. National Oceanic and Atmospheric Administration (NOAA) 4. the U.S. Forest Service (USFS). Later joined by 5. the National Atmospheric and Space Administration (NASA) 6. the Bureau of Land Management (BLM).	USA, State of North Carolina, Governor's Office of State Planning, Center for Geographic Information and Analysis	American Planning Association
Researcher Category (International agency, Governmental agency, Local agency, Non-government)	Governmental agency	Local Agency	Private
Research area & country	USA	North Carolina, USA	
Research year	1992-1995	1994-	
Purpose / characteristics of the research / new classification	Land cover data for the entire USA	Land cover, land use for North Carolina	To set up various standards from the view point of urban planning
Map scale	30m		
Grid size	30m		
Research method	Remote Sensing (Landsat-5 TM)	Remote Sensing	

付表1 土地分類体系データベース (米国3)

Abbreviation	FGDC1996	IL-GAP1996	FGDCSoil1997
Bibliography title (Web site title)	Federal Geographic Data Committee (FGDC) Standards Reference Model	Illinois Gap Analysis Program, Land Cover Classification (IL-GAP)	Soil Geographic Data Standard
Source, Series Web URL	http://www.fgdc.gov/standards/process	http://www.agr.state.il.us/gis/pass/gapdata/index.html http://www.inhs.uiuc.edu/cwe/gap/	Privileges are necessary. For internal members only. (http://www.fgdc.gov/standards/projects/standards/projects/FGDC-standards-projects/index_html)
Author	Federal Geographic Data Committee, USA		Soils Subcommittee, Federal Geographic Data Committee, USA
Publication Place	USA	Illinois, USA	USA
Publisher (Web site founder)	The Federal Geographic Data Committee	Department of Agriculture, Illinois, USA	The Federal Geographic Data Committee
Publication Data Data availability	1996	1996 http://www.agr.state.il.us/gis/pass/account.php	1997
Type (Formal, Draft) Proposition of a new classification (Y/N)	Formal Y	Formal Y	Formal Y
Employed previous classification system	Related to Agency Standards, FIPS Federal Information Processing System Standards, FGDC Federal Geographic Data Committee Standards, Industry Standards, ANS American National Standards, International Standards.	"using the same methodology as for the Illinois Interagency Landscape Classification Project (ILICP, see http://www.agr.state.il.us/gis/landcover99-00.html), with the notable exception of methodological differences in forested and urbanized areas"	
Definition of classification			
Categories	Refer to Table 2	Refer to Table 2	Refer to Table 2
Research / Data set Name		Gap Analysis Program, Land Cover Classification (IL-GAP)	
Research category (land cover, land use, land capability, land condition, geomorphology, geology, vegetation, soil, water quality, etc.)	Comprehensive	Land cover	Soil
Researcher & Section in charge	USA, The Federal Geographic Data Committee (19 member interagency committee composed of representatives from the Executive Office of the President, Cabinet-level and independent agencies)	USA, Illinois Natural History Survey	USA, The Federal Geographic Data Committee
Researcher Category (International agency, Governmental agency, Local agency, Non-government)	Governmental agency	Local agency	Governmental agency
Research area & country		Illinois, USA	
Research year		1996	
Purpose / characteristics of the research / new classification	Explanation of basic nature of FGDC Standards which is for developing the National Spatial Data Infrastructure (NSDI)	Land cover mapping and classification for Illinois	A part of the National Spatial Data Infrastructure (NSDI)
Map scale			
Grid size			
Research method		Remote Sensing (Landsat TM)	

付表1 土地分類体系データベース (米国4)

Abbreviation	FGDCVegetation1997	FGDCEarthCover1999	FGDCWater2000
Bibliography title (Web site title)	National Vegetation Classification Standard	Earth Cover Classification Standard	Nationanl Hydrography Framework Data Content Standard
Source, Series Web URL	http://www.fgdc.gov/standards/projects/FGDC-standards-projects/vegetation/vegclass.pdf	Privileges are necessary. For internal members only. (http://www.fgdc.gov/standards/projects/standards/projects/FGDC-standards-projects/index_html)	Privileges are necessary. For internal members only. (http://www.fgdc.gov/standards/projects/standards/projects/FGDC-standards-projects/index_html)
Author	Vegetation Subcommittee, Federal Geographic Data Committee, USA	Earth Cover Working Group, Federal Geographic Data Committee, USA	Spatial Water Data Subcommittee, Federal Geographic Data Committee, USA
Publication Place	USA	USA	USA
Publisher (Web site founder)	The Federal Geographic Data Committee	The Federal Geographic Data Committee	The Federal Geographic Data Committee
Publication Data Data availability	1997	1999	2000
Type (Formal, Draft) Proposition of a new classification (Y/N)	Formal Y	Proposal Y	Proposal Y
Employed previous classification system	"require all federal vegetation classification efforts to have some core components" on p1. "The UNESCO system was modified and refined to provide greater consistency at all hierarchical levels and includes additional physiognomic types." on p11.		
Definition of classification	Y. The formation of each category is on p19-. definition is on p49-.		
Categories	Refer to Table 2	Refer to Table 2	Refer to Table 2
Research / Data set Name			
Research category (land cover, land use, land capability, land condition, geomorphology, geology, vegetation, soil, water quality, etc.)	Vegetation	Land cover	Hydrography
Researcher & Section in charge	USA, The Federal Geographic Data Committee	USA, The Federal Geographic Data Committee	USA, The Federal Geographic Data Committee
Researcher Category (International agency, Governmental agency, Local agency, Non-government)	Governmental agency	Governmental agency	Governmental agency
Research area & country			
Research year			
Purpose / characteristics of the research / new classification	A part of the National Spatial Data Infrastructure (NSDI)	A part of the National Spatial Data Infrastructure (NSDI)	A part of the National Spatial Data Infrastructure (NSDI)
Map scale			
Grid size			
Research method			

付表1 土地分類体系データベース (米国5)

Abbreviation	NLCD2001	IILCP2002	MLCCS2004
Bibliography title (Web site title)	National Land Cover Database 2001 (NLCD 2001)	Land Cover of Illinois 1999-2000 Classification	Minnesota Land Cover Classification System (MLCCS)
Source, Series Web URL	http://www.mrlc.gov/mrlc2k_nlcd.asp	http://www.agr.state.il.us/gis/landcover99-00.html	http://www.dnr.state.mn.us/mlccs/index.html
Author			
Publication Place	USA	Illinois, USA	Minnesota, USA
Publisher (Web site founder)	U.S. Geological Survey	Department of Agriculture, Illinois, USA	Department of Natural Resources, Minnesota, USA
Publication Data Data availability	Available to MRLC Consortium members and Approved USGS Researchers only	http://www.agr.state.il.us/gis/pass/account.php	ftp://ftp.dnr.state.mn.us/pub/mlccs/ and http://deli.dnr.state.mn.us/
Type (Formal, Draft) Proposition of a new classification (Y/N) Employed previous classification system	Formal Y Modification of National Land Cover Dataset 1992 (NLCD 1992)	Formal Y	Draft Y the National Vegetation Classification System (NVCS), the Minnesota Natural Heritage native plant community types, along with a cultural classification system
Definition of classification	Y, 2004 Draft (http://www.mrlc.gov/nlcd_definitions.asp)		Y, p74- of http://files.dnr.state.mn.us/assistance/nrplanning/community/mlccs/mlccs_manual_v5_4.pdf
Categories	Refer to Table 2	Refer to Table 2	Refer to Table 2
Research / Data set Name	National Land Cover Database 2001 (NLCD 2001)	Illinois Interagency Landscape Classification Project (IILCP)	Minnesota Land Cover Classification System (MLCCS)
Research category (land cover, land use, land capability, land condition, geomorphology, geology, vegetation, soil, water quality, etc.)	Land cover	Land cover	Land cover
Researcher & Section in charge	USA, Multi-Resolution Land Characterization (MRLC) including (as of 2006/3) 1. US Geological Survey, EROS Data Center, National Water Quality Assessment Program, Gap Analysis Program, North American Landscape Characterization Project 2. US Environmental Protection Agency, Office of Research and Development, Office of Environmental Information, Environmental Monitoring and Assessment Program 3. US Forest Service, Rocky Mountain Research Station, Forest Inventory and Analysis Program, Remote Sensing Applications Center, 4. NOAA, Coastal Change Analysis Program	USA, 1. U.S. Department of Agriculture National Agricultural Statistics Service (NASS) 2. the Illinois Department of Agriculture (IDA) 3. the Illinois Department of Natural Resources (IDNR)	USA, 1. the Minnesota Department of Natural Resources 2. the National Park Service 3. the U.S. Fish and Wildlife Service 4. the Corps of Engineers 5. the Dakota Soil and Water Conservation District 6. Ramsey County Parks 7. Friends of the Mississippi River and Great River Greening
Researcher Category (International agency, Governmental agency, Local agency, Non-government)	Governmental agency	Local agency	Local Agency
Research area & country	USA (including Puerto Rico)	Illinois, USA	Minnesota, USA
Research year	1999-2003	1991-1995, 1999-2000	1998-
Purpose / characteristics of the research / new classification	Land cover data for the entire USA	Agricultural land use for Illinois	Natural/semi-natural & cultural land cover for Minnesota
Map scale	30m	30m	1:3,000 or greater scale
Grid size			0.5 hectare for natural vegetation (1.23 acres) and 1 hectare for cultural communities (2.47 acres).
Research method	Remote Sensing (Landsat-7's ETM)	Remote Sensing (Landsat 5 TM, 7 ETM)	Remote Sensing, Field Work

付表 1 土地分類体系データベース (英国 1)

Abbreviation	Stamp1930s	ITELC1978	CS1978
Bibliography title (Web site title)	The Dudley Stamp Land Use Maps	ITE Landclasses ITE Land Classifications	Ecological Survey of Britain 1978 (Countryside Survey 1978)
Source, Series Web URL	http://www.ceh.ac.uk/sections/epms/dynamics_britain.html http://www.visionofbritain.org.uk/maps/map_lib_page.do http://www.defra.gov.uk/wildlife-countryside/resprog/findings/landusemaps/index.htm scan-georef.pdf	http://www.cis-web.org.uk/catalogue/index.html?action=showDataset&set=7	http://www.cs2000.org.uk/DataCat/menu/index.asp
Author	Stamp, L. Dudley		
Publication Place	U.K., University of Portsmouth, Department of Geography	U.K., Natural Environment Research Council, Centre for Ecology & Hydrology, Monks Wood	U.K., Natural Environment Research Council, Centre for Ecology & Hydrology, Lancaster
Publisher (Web site founder)	Department of Geography of the University of Portsmouth	Centre for Ecology & Hydrology	Centre for Ecology & Hydrology
Publication Data Data availability	1930s http://www.ceh.ac.uk/sections/epms/dynamics_britain.html http://www.visionofbritain.org.uk/maps/map_lib_page.do	1978 http://www.cis-web.org.uk/catalogue/index.html?action=showDataset&set=7	1978 http://www.cis-web.org.uk/catalogue/index.html?action=showDataset&set=42
Type (Formal, Draft) Proposition of a new classification (Y/N) Employed previous classification system	Draft Y	Formal Y	Formal N ITE Land Classification
Definition of classification	N	Y d2.pdf (http://www.andra.fr/bioclim/documentation.htm)	Y (in the digital data)
Categories	Refer to Table 2	Refer to Table 2	Refer to Table 2
Research / Data set Name	The Dudley Stamp Land Use Maps	ITE Landclasses ITE Land Classifications	Ecological Survey of Britain 1978
Research category (land cover, land use, land capability, land condition, geomorphology, geology, vegetation, soil, water quality, etc.)	Land use		Land cover, soil type, vegetation
Researcher & Section in charge	U.K., University of Portsmouth, Department of Geography, Stamp Dudley		U.K., Natural Environment Research Council, Institute of Terrestrial Ecology Merlewood
Researcher Category (International agency, Governmental agency, Local agency, Non-government)	Nongovernmental		Governmental agency
Research area & country	England, Wales and southern Scotland	Great Britain	England and Wales
Research year	1931-1939		1977-1978
Purpose / characteristics of the research / new classification	First land utilisation survey of Great Britain		National assessment of vegetation and soil
Map scale	1/62500	1km	1km
Grid size		1km	1km
Research method	Field survey	Field survey	Field survey

付表 1 土地分類体系データベース (英国 2)

Abbreviation	LCS1978	CS1984	LCS1984
Bibliography title (Web site title)	Land Cover Stock CS1978	Land use survey of Great Britain 1984	Land Cover Stock CS1984
Source, Series Web URL	http://www.cis-web.org.uk/catalogue/index.html?action=showDataset&set=42	http://www.cs2000.org.uk/DataCat/menu/index.asp http://www.cis-web.org.uk/catalogue/index.html?action=showDataset&set=44	http://www.cis-web.org.uk/catalogue/index.html?action=showDataset&set=44
Author			
Publication Place	U.K., Natural Environment Research Council, Centre for Ecology & Hydrology, Monks Wood	U.K., Natural Environment Research Council, Centre for Ecology & Hydrology, Monks Wood	U.K., Natural Environment Research Council, Centre for Ecology & Hydrology, Monks Wood
Publisher (Web site founder)	Centre for Ecology & Hydrology	Centre for Ecology & Hydrology	Centre for Ecology and Hydrology
Publication Data Data availability	http://www.cis-web.org.uk/catalogue/index.html?action=showDataset&set=42	http://www.cis-web.org.uk/catalogue/index.html?action=showDataset&set=44	http://www.cis-web.org.uk/catalogue/index.html?action=showDataset&set=44
Type (Formal, Draft) Proposition of a new classification (Y/N) Employed previous classification system	Formal Y Ecological Survey of Britain 1978	Formal N ITE Land Classification	Formal Y Land use survey of Great Britain 1984
Definition of classification	Y (in the digital data)	Y (in the digital data)	Y (in the digital data)
Categories	Refer to Table 2	Refer to Table 2	Refer to Table 2
Research / Data set Name	Land Cover Stock CS1978	Survey of land use in Great Britain 1984 Land use survey of Great Britain 1984	Land Cover Stock CS1984
Research category (land cover, land use, land capability, land condition, geomorphology, geology, vegetation, soil, water quality, etc.)	Land cover	Land use, land cover	Land cover
Researcher & Section in charge	U.K., Natural Environment Research Council, Institute of Terrestrial Ecology Merlewood	U.K., Natural Environment Research Council, Institute of Terrestrial Ecology Merlewood	U.K., Natural Environment Research Council, Institute of Terrestrial Ecology Merlewood
Researcher Category (International agency, Governmental agency, Local agency, Non-government)	Governmental agency	Governmental agency	Governmental agency
Research area & country	Great Britain	Great Britain	Great Britain
Research year	1977-1978	1984	1984
Purpose / characteristics of the research / new classification	To make a national environmental description	To assess changes in the landscape of rural Britain	To test ground survey methodology quantifying change since 1978
Map scale	1km	1km	1km
Grid size	1km	1km	1km
Research method	Field survey	Field survey	Field survey

付表 1 土地分類体系データベース (英国 3)

Abbreviation	LCMScotland1988	CS1990	LCS1990
Bibliography title (Web site title)	Land Cover Map of Scotland Mapping Project Land Cover - Scotland - 1988	Countryside Survey 1990 (CS1990)	Land Cover Stock CS1990
Source, Series			
Web URL	http://www.cis-web.org.uk/catalogue/index.html?action=showDataset&set=43	http://www.cs2000.org.uk/DataCat/menu/index.asp	http://www.cis-web.org.uk/catalogue/index.html?action=showDataset&set=41
Author			
Publication Place	U.K., Scotland, Aberdeen, Craigiebuckler	U.K., Natural Environment Research Council, Centre for Ecology & Hydrology, Lancaster	U.K., Natural Environment Research Council, Centre for Ecology & Hydrology, Monks Wood
Publisher (Web site founder)	Macaulay Land Use Research Institute	Centre for Ecology & Hydrology	Centre for Ecology & Hydrology
Publication Data		1993	
Data availability	http://www.cis-web.org.uk/catalogue/index.html?action=showDataset&set=43	CEH Dorset Data Centre (not found)	
Type (Formal, Draft)	Formal	Formal	Formal
Proposition of a new classification (Y/N)	Y	N	Y
Employed previous classification system		ITE Land Classification	Land Cover Stock CS1984
Definition of classification	N	N	N
Categories	Refer to Table 2	Refer to Table 2	Refer to Table 2
Research / Data set Name	Land Cover Map of Scotland Mapping Project Land Cover - Scotland - 1988	Countryside Survey 1990	Land Cover Stock CS1990
Research category (land cover, land use, land capability, land condition, geomorphology, geology, vegetation, soil, water quality, etc.)	Land cover	Land cover, vegetation, freshwater	Landscape, land cover, land use
Researcher & Section in charge	U.K., Scotland, Aberdeen, Craigiebuckler, Macaulay Land Use Research Institute	U.K., 1. Department of the Environment (DoE), 2. Department of Trade and Industry (DTI), 3. British National Space Centre (BNSC), 4. Natural Environment Research Council (NERC), 5. Nature Conservancy Council (NCC), Institute of Terrestrial Ecology Merlewood, Institute of Freshwater Ecology (Freshwater survey)	U.K., 1. Department of the Environment (DoE), 2. Department of Trade and Industry (DTI), 3. British National Space Centre (BNSC), 4. Natural Environment Research Council (NERC), 5. Nature Conservancy Council (NCC), Institute of Terrestrial Ecology Merlewood, Institute of Freshwater Ecology (Freshwater survey)
Researcher Category (International agency, Governmental agency, Local agency, Non-government)	Governmental agency	Governmental agency	Governmental agency
Research area & country	Scotland	Great Britain	Great Britain
Research year	1987-1992 (aerial photography flown in 1988)	1990-92	1990
Purpose / characteristics of the research / new classification	To provide baseline information on land cover	An assessment of the stock and change in land use and vegetation	To provide estimates of land cover, land use, linear features, vegetation, freshwater faunas and soils
Map scale	1:25,000 (vector) 10m, 20m, 50m (raster)	1km	1km
Grid size	1km	1km	1km
Research method	Remote sensing Field survey	Remote sensing (Landsat Thematic Mapper) Field survey	Field survey

付表 1 土地分類体系データベース (英国 4)

Abbreviation	LCM1990	LCGB1993	CS2000
Bibliography title (Web site title)	Land Cover Map of Great Britain 1990 (LCMGB)	Land Cover Map of Great Britain Land Cover - Great Britain	Countryside Survey 2000 (CS2000)
Source, Series Web URL	http://science.ceh.ac.uk/data/lcm/index.htm	http://www.cis-web.org.uk/catalogue/index.html?action=showDataset&set=47	http://www.cs2000.org.uk/
Author			
Publication Place	U.K., Natural Environment Research Council, Centre for Ecology & Hydrology, Monks Wood	U.K., Natural Environment Research Council, Centre for Ecology & Hydrology, Monks Wood	U.K., Natural Environment Research Council, Centre for Ecology & Hydrology, Lancaster
Publisher (Web site founder)	Centre for Ecology & Hydrology	Centre for Ecology & Hydrology	Centre for Ecology & Hydrology
Publication Data Data availability	1992 http://www.cis-web.org.uk/home/(1km) Centre for Ecology & Hydrology, Monks Wood (25m-1km)	http://www.cis-web.org.uk/catalogue/index.html?action=showDataset&set=47	2000 http://www.cs2000.org.uk/CIS_files.htm
Type (Formal, Draft) Proposition of a new classification (Y/N)	Formal Y	Formal Y	Formal Y
Employed previous classification system	The choice of classes was based on personal experience	Land Cover Map of Great Britain 1990 (LCMGB)	ITE Land Classification
Definition of classification	Y	N	N
Categories	Refer to Table 2	Refer to Table 2	Refer to Table 2
Research / Data set Name	Land Cover Map of Great Britain (1990)	Land Cover Map of Great Britain Land Cover - Great Britain	Countryside Survey 2000
Research category (land cover, land use, land capability, land condition, geomorphology, geology, vegetation, soil, water quality, etc.)	Land cover	Land cover	Land cover, land use, vegetation, soil, freshwater, linear feature, other features
Researcher & Section in charge	U.K., Natural Environment Research Council, Centre for Ecology & Hydrology	U.K., 1. Department of Trade and Industry (DTI), 2. Natural Environment Research Council (NERC), 3. British National Space, Institute of Terrestrial Ecology Monks Wood	U.K., Department for Environment, Food and Rural Affairs along with the Natural Environment Research Council and several other organisations, Centre for Ecology & Hydrology
Researcher Category (International agency, Governmental agency, Local agency, Non-government)	Governmental agency	Governmental agency	Governmental agency
Research area & country	Great Britain	Great Britain	Great Britain
Research year	1990-92	1990-1993	1998-1999
Purpose / characteristics of the research / new classification	The first complete map of the land cover of Great Britain since the 1960s	To compile a digital map of land cover in Great Britain from remote sensing	An assessment of stock and change in habitats
Map scale	25m (or greater)	1km	1km
Grid size	25m	25m	1km
Research method	Remote sensing (Landsat Thematic Mapper) Field survey	Remote sensing (Landsat) Field survey	Remote sensing Field survey

付表1 土地分類体系データベース (英国5)

Abbreviation	NICS2000	LCM2000	CLC2000
Bibliography title (Web site title)	Northern Ireland Countryside Survey (NICS2000)	Land Cover Map 2000 (LCM2000)	CORINE Land Cover Map of the United Kingdom (CLC2000)
Source, Series Web URL	http://www.science.ulster.ac.uk/nics/	http://www.ceh.ac.uk/sections/seo/lcm2000_home.html	http://www.ceh.ac.uk/sections/seo/clm_home.html
Author			
Publication Place	U.K., University of Ulster	U.K., Natural Environment Research Council, Centre for Ecology & Hydrology, Monks Wood	U.K., Natural Environment Research Council, Centre for Ecology & Hydrology, Monks Wood
Publisher (Web site founder)	University of Ulster	Centre for Ecology & Hydrology	Centre for Ecology & Hydrology
Publication Data Data availability	2001 http://www.science.ulst.ac.uk/NICS	2001 http://science.ceh.ac.uk/data/lcm/lcm2kquote.htm	2004 http://dataservice.eea.eu.int/dataservice/available2.asp?type=findkeyword&theme=clc2000
Type (Formal, Draft) Proposition of a new classification (Y/N) Employed previous classification system	Formal	Formal Y Land Cover Map of Great Britain	Formal N
Definition of classification	N	Y	Y
Categories	Refer to Table 2	Refer to Table 2	Refer to Table 2
Research / Data set Name	Northern Ireland Countryside Survey	Land Cover Map 2000 (LCM2000)	CORINE Land Cover Map of the United Kingdom
Research category (land cover, land use, land capability, land condition, geomorphology, geology, vegetation, soil, water quality, etc.)	Land cover, landscape, vegetation, climate, elevation, topography, hydrology, geology, soil	Land cover	Land cover, land use
Researcher & Section in charge	U.K., University of Ulster	U.K., Natural Environment Research Council, Centre for Ecology & Hydrology	U.K., Natural Environment Research Council, Centre for Ecology & Hydrology
Researcher Category (International agency, Governmental agency, Local agency, Non-government)	Local agency	Governmental agency	Governmental agency
Research area & country	Northern Ireland	U.K.	U.K.
Research year	1998	1997-2000	2002-2004
Purpose / characteristics of the research / new classification	To provide an integrated assessment of the landscape and ecological resources	Environmental character assessments et al.	A part of the pan-European maps (CORINE Land Cover map for 2000)
Map scale	0.5km	25m, 1km	1:100,000
Grid size	0.5km	25m	1:100,000
Research method	Remote sensing Field survey	Remote sensing (mainly Landsat) Field survey	Remote sensing

附表 2 土地分類項目 (米國 1)

Wilkins1948	Anderson1976	LULC1986
Mapping for planning; a procedural guide for the classification and mapping of land use and related technical studies	A Land Use And Land Cover Classification System For Use With Remote Sensor Data	Land Use and Land Cover (LULC)
	1 Urban of Built-up Land	1 Urban of Built-up Land
	1-1 Residential	1-1 Residential
	1-2 Commercial and Services	1-2 Commercial and Services
	1-3 Industrial	1-3 Industrial
	1-4 Transportation, Communications, and Utilities	1-4 Transportation, Communications, and Utilities
	1-5 Industrial and Commercial Complexes	1-5 Industrial and Commercial Complexes
	1-6 Mixed Urban of Built-up Land	1-6 Mixed Urban of Built-up Land
	1-7 Other Urban of Built-up Land	1-7 Other Urban of Built-up Land
	2 Agricultural Land	2 Agricultural Land
	2-1 Cropland and Pasture	2-1 Cropland and Pasture
	2-2 Orchards, Groves, Vineyards, Nurseries, and Ornamental Horticultural Areas	2-2 Orchards, Groves, Vineyards, Nurseries, and Ornamental Horticultural Areas
	2-3 Confined Feeding Operations	2-3 Confined Feeding Operations
	2-4 Other Agricultural Land	2-4 Other Agricultural Land
	3 Rangeland	3 Rangeland
	3-1 Herbaceous Rangeland	3-1 Herbaceous Rangeland
	3-2 Shrub and Brush Rangeland	3-2 Shrub and Brush Rangeland
	3-3 Mixed Rangeland	3-3 Mixed Rangeland
	4 Forest Land	4 Forest Land
	4-1 Deciduous Forest Land	4-1 Deciduous Forest Land
	4-2 Evergreen Forest Land	4-2 Evergreen Forest Land
	4-3 Mixed Forest Land	4-3 Mixed Forest Land
	5 Water	5 Water
	5-1 Streams and Canals	5-1 Streams and Canals
	5-2 Lakes	5-2 Lakes
	5-3 Reservoirs	5-3 Reservoirs
	5-4 Bays and Estuaries	5-4 Bays and Estuaries
	6 Wetland	6 Wetland
	6-1 Forested Wetland	6-1 Forested Wetland
	6-2 Nonforested Wetland	6-2 Nonforested Wetland
	7 Barren Land	7 Barren Land
	7-1 Dry Salt Flats	7-1 Dry Salt Flats
	7-2 Beaches	7-2 Beaches
	7-3 Sandy Areas other than Beaches	7-3 Sandy Areas other than Beaches
	7-4 Bare Exposed Rock	7-4 Bare Exposed Rock
	7-5 Strip Mines, Quarries, and Gravel Pits	7-5 Strip Mines, Quarries, and Gravel Pits
	7-6 Transitional Areas	7-6 Transitional Areas
	7-7 Mixed Barren Land	7-7 Mixed Barren Land
	8 Tundra	8 Tundra
	8-1 Shrub and Brush Tundra	8-1 Shrub and Brush Tundra
	8-2 Herbaceous Tundra	8-2 Herbaceous Tundra
	8-3 Bare Ground Tundra	8-3 Bare Ground Tundra
	8-4 Wet Tundra	8-4 Wet Tundra
	8-5 Mixed Tundra	8-5 Mixed Tundra
	9 Perennial Snow or Ice	9 Perennial Snow or Ice
	9-1 Perennial Snowfields	9-1 Perennial Snowfields
	9-2 Glaciers	9-2 Glaciers

附表 2 土地分類項目 (米國 2)

NLCD1992 National Land Cover Dataset 1992 (NLCD 1992)	NCLULCS1994 A Standard Classification System for the Mapping of Land Use and Land Cover	LBCS1994 Land-Based Classification Standards
1 Water 1-1 Open Water 1-2 Perennial Ice/Snow 2 Developed 2-1 Low Intensity Residential 2-2 High Intensity Residential 2-3 Commercial/Industrial/Transportation 3 Barren 3-1 Bare Rock/Sand/Clay 3-2 Quarries/Strip Mines/Gravel Pits 3-3 Transitional 4 Forested Upland 4-1 Deciduous Forest 4-2 Evergreen Forest 4-3 Mixed Forest 5 Shrubland 5-1 Shrubland 6 Non-Natural Woody 6-1 Orchards/Vineyards/Other 7 Herbaceous Upland Natural/Semi-natural Vegetation 7-1 Grasslands/Herbaceous 8 Herbaceous Planted/Cultivated 8-1 Pasture/Hay 8-2 Row Crops 8-3 Small Grains 8-4 Fallow 8-5 Urban/Recreational Grasses 9 Wetlands 9-1 Woody Wetlands 9-2 Emergent Herbaceous Wetlands	Summary of Land Cover Categories 1 Heavily Developed or Disturbed Land 2 Cultivated Land 3 Herbaceous Cover and Shrubland 3-1 Herbaceous Cover 3-2 Shrubland 4 Forest Land 4-1 Broadleaf Deciduous Forest Land 4-2 Needleleaf Coniferous Forest Land 4-3 Non-Deciduous Broadleaf 4-4 Mixed Deciduous-Coniferous Forest Land 4-8 Orchards and Tree Farms 4-9 Other Forest Land 5 Water Bodies 5-1 Coastal/Marine Water Bodies 5-2 Inland Water Bodies 5-4 Linear Drainage 5-9 Other Water Bodies 6 Bare land 6-1 Beaches, Bare Coastal Land, and Upland Sand 6-2 Riverbanks and Bars 6-3 Exposed Rock 6-4 Other Barren Land 9 Other Unclassified land Cover Summary of Land Use Categories 1 Urban and developed land 1-01 Residential 1-02 Commercial and Services 1-03 Institutional 1-04 Manufacturing and Raw Material Processing 1-05 Transportation 1-06 Communication and Utilities 1-07 Industrial and Commercial Complexes 1-08 Mixed Urban or Developed Land 1-09 Public Assembly, Recreational, Cultural, and Entertainment 1-10 Mining and Resource Extraction 1-99 Other Urban or Developed Land 2 Agricultural land 2-01 Cropland and Pasture 2-02 Orchards, Groves, Vineyards, Nurseries, and Ornamental Horticultural Areas 2-03 Confined Animal Operations 2-99 Other Agricultural Land 3 Active forest Management and Harvesting 4 Water Bodies 4-01 Reservoirs and Artificial Lakes 4-02 Retention or Sediment Ponds 4-03 Artificial Drainage Lines 4-98 Other Water Bodies in Active Use 4-99 Non-used or Passively Used Water Bodies 5 Human-induced Bare Land 5-01 Altered Lands 5-02 Burn Areas 5-99 Other Human-induced Barren Land 6 Passive use on undisturbed land 7 Unused, Unknown use, and unmodified land	The top categories are: Activity Function Ownership Site Structure All sub categories are about 800.

附表 2 土地分類項目 (米國 3)

FGDC1996 Federal Geographic Data Committee (FGDC) Standards Reference Model	IL-GAP1996 Illinois Gap Analysis Program, Land Cover Classification (IL-GAP)	FGDCSoil1997 Soil Geographic Data Standard
The details are for members only.		

附表 2 土地分類項目 (米國 4)

FGDCVegetation1997 National Vegetation Classification Standard	FGDCEarthCover1999 Earth Cover Classification Standard	FGDCWater2000 National Hydrography Framework Data Content Standard
1 VEGETATED (>1% Vegetation cover)	The details are for members only.	The details are for members only.
1-1 CLOSED TREE CANOPY		
1-1-1 Evergreen forest		
1-1-2 Deciduous closed tree canopy.		
1-1-3 Mixed evergreen-deciduous closed tree canopy		
1-2 OPEN TREE CANOPY		
1-2-1 Evergreen open tree canopy		
1-2-2 Deciduous open tree canopy		
1-2-3 Mixed evergreen-deciduous open tree canopy		
1-3 SHRUBLAND (SCRUB)		
1-3-1 Evergreen shrubland. (scrub)		
1-3-2 Deciduous shrubland. (scrub)		
1-3-3 Mixed evergreen-deciduous shrubland. (scrub)		
1-4 DWARF-SHRUBLAND		
1-4-1 Evergreen dwarf-shrubland		
1-4-2 Deciduous dwarf-shrubland		
1-4-3 Mixed evergreen-deciduous dwarf-shrubland. (dwarf-scrub)		
1-5 HERBACEOUS VEGETATION		
1-5-1 Perennial graminoid vegetation		
1-5-2 Perennial forb vegetation		
1-5-3 Hydromorphic rooted vegetation		
1-5-4 Annual graminoid or forb vegetation		
1-6 NONVASCULAR VEGETATION		
1-6-1 Bryophyte vegetation		
1-6-2 Lichen vegetation		
1-7 SPARSE VEGETATION		
1-7-1 Consolidated rock sparse vegetation (cliffs, pavement, incl. pahoehoe lava flows)		
1-7-2 Boulder, gravel, cobble, or talus sparse vegetation (incl. a'a lava flows)		
1-7-3 Unconsolidated material sparse vegetation (soil, sand and ash)		
2 NON-VEGETATED (<1% Vegetation cover)		

附表 2 土地分類項目 (米國 5)

NLCD2001 National Land Cover Database 2001 (NLCD 2001)	ILCP2002 Land Cover of Illinois 1999-2000 Classification	MLCCS2004 Minnesota Land Cover Classification System (MLCCS)
11. Open Water		1 Artificial surfaces and associated areas
12. Perennial Ice/Snow		1-1 Artificial surfaces with trees as the dominant vegetation cover
		1-2 Artificial surfaces with coniferous and/or deciduous shrub dominant vegetation
21. Developed, Open Space		1-3 Artificial surfaces with herbaceous dominant
22. Developed, Low Intensity		1-4 Artificial surfaces with less than 25% vegetation
23. Developed, Medium Intensity		2 Planted or cultivated vegetation
24. Developed, High Intensity		2-1 Planted, maintained or cultivated tree vegetation
		2-2 Planted, maintained or cultivated shrub and/or vine vegetation
31. Barren Land (Rock/Sand/Clay)		2-3 Planted or maintained herbaceous vegetation
32. Unconsolidated Shore*		2-4 Cultivated Herbaceous Vegetation.
		3 Forests
41. Deciduous Forest		3-1 Coniferous forest
42. Evergreen Forest		3-2 Deciduous forest
43. Mixed Forest		3-3 Mixed coniferous - deciduous forest
		4 Woodland
51. Dwarf Scrub		4-1 Coniferous woodland
52. Shrub/Scrub		4-2 Deciduous woodland
		4-3 Mixed coniferous-deciduous woodland
71. Grassland/Herbaceous		5 Shrubland
72. Sedge/Herbaceous		5-2 Deciduous shrubland
73. Lichens		6 Herbaceous
74. Moss		6-1 Grasslands or emergent vegetation (perennial graminoid vegetation)
		6-2 Grassland with sparse tree layer
81. Pasture/Hay		6-3 Perennial Forb vegetation
82. Cultivated Crops		6-4 Hydromorphic rooted vegetation
		6-5 Annual grasslands or forb vegetation
90. Woody Wetlands		7 Nonvascular
91. Palustrine Forested Wetland*		7-1 Lichen vegetation
92. Palustrine Scrub/Shrub Wetland*		8 Sparse Vegetation
93. Estuarine Forested Wetland*		8-1 Consolidated Rock (cliffs, bedrock, etc.)
94. Estuarine Scrub/Shrub Wetland*		8-2 Boulder, Gravel, Cobble, or Talus
95. Emergent Herbaceous Wetlands		8-3 Unconsolidated Material (soil, sand, and ash)
96. Palustrine Emergent Wetland (Persistent)*		9 Water
97. Estuarine Emergent Wetland*		9-1 River (riverine)
98. Palustrine Aquatic Bed*		9-2 Lake (lacustrine)
99. Estuarine Aquatic Bed*		9-3 Wetland-Open Water (palustrine)

附表 2 土地分類項目 (英国 1)

Stamp1930s The Dudley Stamp Land Use Maps	ITELC1978 ITE Landclasses ITE Land Classifications	CS1978 Ecological Survey of Britain 1978 (Countryside Survey 1978)
1. Arable land including fallow, rotation grass and market gardens	1. Undulating country, varied agriculture, mainly grassland	1. Undulating country, varied agriculture, mainly grassland
2. Meadowland & permanent grass	2. Open, gentle slopes, often lowland, varied agriculture	2. Open, gentle slopes, often lowland, varied agriculture
3. Forest and woodland	3. Flat arable land, mainly cereals, little native	3. Flat arable land, mainly cereals, little native
4. Heathland, moorland and rough pasture	4. Flat, intensive agriculture, otherwise mainly built-up	4. Flat, intensive agriculture, otherwise mainly built-up
5. Orchards and nursery gardens	5. Lowland, somewhat enclosed land, varied agriculture and vegetation	5. Lowland, somewhat enclosed land, varied agriculture and vegetation
6. Chief urban areas	6. Gently rolling enclosed country, mainly fertile	6. Gently rolling enclosed country, mainly fertile
	7. Coastal with variable morphology and vegetation	7. Coastal with variable morphology and vegetation
	8. Coastal, often estuarine, mainly pasture, otherwise	8. Coastal, often estuarine, mainly pasture, otherwise
	9. Fairly flat, open intensive agriculture, often built-up	9. Fairly flat, open intensive agriculture, often built-up
	10. Flat plains with intensive farming, often arable/grass mixtures	10. Flat plains with intensive farming, often arable/grass mixtures
	11. Rich alluvial plains, mainly open with arable or	11. Rich alluvial plains, mainly open with arable or
	12. Very fertile coastal plains with very productive	12. Very fertile coastal plains with very productive
	13. Somewhat variable land forms, mainly flat, heterogeneous land use	13. Somewhat variable land forms, mainly flat, heterogeneous land use
	14. Level coastal plains with arable, otherwise often urbanised	14. Level coastal plains with arable, otherwise often urbanised
	15. Valley bottoms with mixed agriculture, predominantly pastoral	15. Valley bottoms with mixed agriculture, predominantly pastoral
	16. Undulating lowlands, variable agriculture and native vegetation	16. Undulating lowlands, variable agriculture and native vegetation
	17. Rounded intermediate slopes, mainly improvable permanent pasture	17. Rounded intermediate slopes, mainly improvable permanent pasture
	18. Rounded hills, some steep slopes, varied moorlands	18. Rounded hills, some steep slopes, varied moorlands
	19. Smooth hills, mainly heather moors, often	19. Smooth hills, mainly heather moors, often
	20. Mid-valley slopes, wide range of vegetation types	20. Mid-valley slopes, wide range of vegetation types
	21. Upper valley slopes, mainly covered with bogs	21. Upper valley slopes, mainly covered with bogs
	22. Margins of high mountains, moorlands, often	22. Margins of high mountains, moorlands, often
	23. High mountain summits, with well-drained	23. High mountain summits, with well-drained
	24. Upper, steep, mountain slopes, usually bog-covered	24. Upper, steep, mountain slopes, usually bog-covered
	25. Lowlands with variable land use, mainly arable	25. Lowlands with variable land use, mainly arable
	26. Fertile lowlands with intensive agriculture	26. Fertile lowlands with intensive agriculture
	27. Fertile lowland margins with mixed agriculture	27. Fertile lowland margins with mixed agriculture
	28. Varied lowland margins with heterogeneous land	28. Varied lowland margins with heterogeneous land
	29. Sheltered coasts with varied land use, often crofting	29. Sheltered coasts with varied land use, often crofting
	30. Open coasts with low hills dominated by bogs	30. Open coasts with low hills dominated by bogs
	31. Cold exposed coasts with variable land use and	31. Cold exposed coasts with variable land use and
	32. Bleak undulating surfaces mainly covered with bogs	32. Bleak undulating surfaces mainly covered with bogs

附表2 土地分類項目 (英国2)

LCS1978 Land Cover Stock CS1978	CS1984 Land use survey of Great Britain 1984	LCS1984 Land Cover Stock CS1984
1. Barley	1. Undulating country, varied agriculture, mainly	1. Agricultural buildings
2. Berry-bush heath	2. Open, gentle slopes, often lowland, varied agriculture	2. Barley
3. Broadleaved woods	3. Flat arable land, mainly cereals, little native	3. Berry-bush heath
4. Built up	4. Flat, intensive agriculture, otherwise mainly built-up	4. Broadleaved woods
5. Calcareous grass, Coastal Bare, Conifer woodlands	5. Lowland, somewhat enclosed land, varied agriculture and vegetation	5. Calcareous grass
6. Dense bracken	6. Gently rolling enclosed country, mainly fertile	6. Conifer woodlands
7. Dense heath	7. Coastal with variable morphology and vegetation	7. Crucifer crops
8. Drier northern bogs	8. Coastal, often estuarine, mainly pasture, otherwise	8. Dense bracken, Dense heath
9. Horticulture	9. Fairly flat, open intensive agriculture, often built-up	9. Drier northern bogs
10. Kale	10. Flat plains with intensive farming, often arable/grass mixtures	10. Dune
11. Lake	11. Rich alluvial plains, mainly open with arable or	11. Felled woodland
12. Maize	12. Very fertile coastal plains with very productive	12. Field beans, Field crops, Hard areas
13. Maritime vegetation	13. Somewhat variable land forms, mainly flat, heterogeneous land use	13. Hard coast
14. Mixed woodland	14. Level coastal plains with arable, otherwise often urbanised	14. Horticulture
15. Moorland areas	15. Valley bottoms with mixed agriculture, predominantly pastoral	15. Kale, Maize
16. Neglected pasture	16. Undulating lowlands, variable agriculture and native vegetation	16. Maritime vegetation
17. Nonimproved grass, Non cropped arable	17. Rounded intermediate slopes, mainly improvable permanent pasture	17. Mixed woodland
18. Oats, Oil seed rape, Open canopy heath	18. Rounded hills, some steep slopes, varied moorlands	18. Moorland grass, Non improved grass, Non cropped arable
19. Other cereals	19. Smooth hills, mainly heather moors, often	19. Oats, Oil seed rape, Open canopy heath
20. Other field crops, Other root crops, Peas & Beans, Perennial crops, Potatoes, Purple moor grass, Quarries & Pits	20. Mid-valley slopes, wide range of vegetation types	20. Other buildings
21. Railway	21. Upper valley slopes, mainly covered with bogs	21. Other cereals
22. Recreational area	22. Margins of high mountains, moorlands, often	22. Other legumes
23. Roads	23. High mountain summits, with well-drained moorlands	23. Peas, Perennial crops, Potatoes, Pure rye grass, Purple moor grass, Quarries
24. Rock	24. Upper, steep, mountain slopes, usually bog-covered	24. Railway
25. Running water	25. Lowlands with variable land use, mainly arable	25. Recently sown grass
26. Rye grass ley, Saltmarsh	26. Fertile lowlands with intensive agriculture	26. Recreational grass
27. Shrub	27. Fertile lowland margins with mixed agriculture	27. Residential buildings, Roads
28. Sugar beet	28. Varied lowland margins with heterogeneous land	28. Rock & scree, Root crops, Running water
29. Upland grass	29. Sheltered coasts with varied land use, often crofting	29. Saltmarsh
30. Waste & Derelict	30. Open coasts with low hills dominated by bogs	30. Shrub
31. Well managed grass, Wet heath & bogs, Wetland	31. Cold exposed coasts with variable land use and	31. Soft coast
32. Wheat	32. Bleak undulating surfaces mainly covered with bogs	32. Still water
		33. Sugar beet, Turnips/ swedes, Unmanaged grass
		34. Upland grass
		35. Waste & derelict
		36. Weedy swards, Well managed grass, Wet heath & bogs, Wetland
		37. Wheat

附表 2 土地分類項目 (英国 3)

LCMScotland1988 Land Cover Map of Scotland Mapping Project Land Cover - Scotland - 1988	CS1990 Countryside Survey 1990 (CS1990)	LCS1990 Land Cover Stock CS1990
A: Arable	1. Undulating country, varied agriculture, mainly	1. Agricultural buildings
B: Improved grass	2. Open, gentle slopes, often lowland, varied agriculture	2. Barley
C: Good rough grass	3. Flat arable land, mainly cereals, little native	3. Berry-bush heath
D: Poor rough grass	4. Flat, intensive agriculture, otherwise mainly built-up	4. Broadleaved woods
E: Bracken	5. Lowland, somewhat enclosed land, varied agriculture and vegetation	5. Calcareous grass
F: Heather moorland	6. Gently rolling enclosed country, mainly fertile	6. Conifer woodlands
G: Peatland	7. Coastal with variable morphology and vegetation	7. Crucifer crops
H: Montane	8. Coastal, often estuarine, mainly pasture, otherwise	8. Dense bracken
I: Rocks & cliffs	9. Fairly flat, open intensive agriculture, often built-up	9. Dense heath
J: Felled woodland	10. Flat plains with intensive farming, often arable/grass mixtures	10. Drier northern bogs
K: Recent planting	11. Rich alluvial plains, mainly open with arable or	11. Dune
L: Conifer plantation	12. Very fertile coastal plains with very productive	12. Felled woodland
M: Seminaturnal conifer	13. Somewhat variable land forms, mainly flat, heterogeneous land use	13. Field beans
N: Mixed woodland	14. Level coastal plains with arable, otherwise often urbanised	14. Field crops
O: Broadleaf woods	15. Valley bottoms with mixed agriculture, predominantly pastoral	15. Hard areas
P: Scrub	16. Undulating lowlands, variable agriculture and native vegetation	16. Hard coast
Q: Fresh waters	17. Rounded intermediate slopes, mainly improvable permanent pasture	17. Horticulture
R: Marshes	18. Rounded hills, some steep slopes, varied moorlands	18. Kale
S: Saltmarsh	19. Smooth hills, mainly heather moors, often	19. Maize
T: Dunes and links	20. Mid-valley slopes, wide range of vegetation types	20. Maritime vegetation
U: Tidal waters	21. Upper valley slopes, mainly covered with bogs	21. Mixed woodland
V: Rural development	22. Margins of high mountains, moorlands, often	22. Moorland grass
W: Urban	23. High mountain summits, with well-drained	23. Non improved grass
X: Missing data	24. Upper, steep, mountain slopes, usually bog-covered	24. Non cropped arable
FG: Heather/peat	25. Lowlands with variable land use, mainly arable	25. Oats
FD: Heather/Poor grass	26. Fertile lowlands with intensive agriculture	26. Oil seed rape
FC: Heather/Good rough	27. Fertile lowland margins with mixed agriculture	27. Open canopy heath
HG: Montane/Peat	28. Varied lowland margins with heterogeneous land	28. Other buildings
DC: Poor/Good rough grass	29. Sheltered coasts with varied land use, often crofting	29. Other cereals
BC: Improved/Good rough grass	30. Open coasts with low hills dominated by bogs	30. Other legumes
CE: Good rough grass/Bracken	31. Cold exposed coasts with variable land use and	31. Peas
DG: Poor rough grass/Peat	32. Bleak undulating surfaces mainly covered with bogs	32. Perennial crops
HF: Montane/Heather		33. Potatoes
Z: Other mosaics		34. Pure rye grass
		35. Purple moor grass
		36. Quarries
		37. Railway
		38. Recently sown grass
		39. Recreational grass
		40. Residential buildings
		41. Roads
		42. Rock & scree
		43. Root crops
		44. Running water
		45. Saltmarsh
		46. Shrub
		47. Soft coast
		48. Still water
		49. Sugar beet
		50. Turnips/ Swedes
		51. Unmanaged grass
		52. Upland grass
		53. Waste & derelict
		54. Weedy swards
		55. Well managed grass
		56. Wet heath & bogs
		57. Wetland
		58. Wheat

附表 2 土地分類項目 (英国 4)

LCM1990 Land Cover Map of Great Britain 1990 (LCMGB)	LCGB1993 Land Cover Map of Great Britain Land Cover - Great Britain	CS2000 Countryside Survey 2000 (CS2000)
1. Sea / estuary	1. Sea/estuary	40 classes
2. Inland water	2. Inland water	
3. Beach and coastal bare	3. Coastal bare	
4. Saltmarsh	4. Saltmarsh	
5. Grass heath	5. Managed grassland	
6. Mown / grazed turf	6. Open shrub heath	
7. Meadow / verge / semi-natural	7. Bracken	
8. Rough / marsh grass	8. Rough grass	
9. Moorland grass	9. Dense shrub heath	
10. Open shrub moor	10. Heath grass	
11. Dense shrub moor	11. Bog	
12. Bracken	12. Deciduous woodland	
13. Dense shrub heath	13. Coniferous woodland	
14. Scrub / orchard	14. Tilled land	
15. Deciduous woodland	15. Suburban	
16. Coniferous woodland	16. Urban development	
17. Upland bog	17. Inland bare	
18. Tilled land	0. Unclassified	
19. Ruderal weed		
20. Suburban / rural development		
21. Continuous urban		
22. Inland bare ground		
23. Felled forest		
24. Lowland bog		
25. Open shrub heath		
0. Unclassified		

附表 2 土地分類項目 (英國 5)

NICS2000 Northern Ireland Countryside Survey (NICS2000)	LCM2000 Land Cover Map 2000 (LCM2000)	CLC2000 CORINE Land Cover Map of the United Kingdom (CLC2000)
23 classes	Sea / Estuary	1. Artificial surfaces
lowland (1-16)	Sea / Estuary	1.1 Urban fabric
upland (17-23)	Sea	1.1.1 Continuous urban fabric
	Water (inland)	1.1.2 Discontinuous urban fabric
	Water (inland)	1.2 Industrial, commercial and transport units
	Littoral rock and sediment	1.2.1 Industrial or commercial units
	Littoral rock	1.2.2 Road and rail networks and associated land
	Rock	1.2.3 Port areas
	Rock with algae	1.2.4 Airports
	Littoral sediment	1.3 Mine, dump and construction sites
	Mud	1.3.1 Mineral extraction sites
	Sand	1.3.2 Dump sites
	Sand/mud with algae	1.3.3 Construction sites
	Saltmarsh	1.4 Artificial, non-agricultural vegetated areas
	Saltmarsh	1.4.1 Green urban areas
	Saltmarsh (grazed)	1.4.2 Sport and leisure facilities
	Supra-littoral rock and sediment	2. Agricultural areas
	Supra-littoral rock	2.1 Arable land
	Rock	2.1.1 Non-irrigated arable land
	Supra-littoral sediment	2.1.2 Permanently irrigated land
	Shingle	2.1.3 Rice fields
	Shingle (vegetated)	2.2 Permanent crops
	Dune	2.2.1 Vineyards
	Dune shrubs	2.2.2 Fruit trees and berry plantations
	Bogs (deep peat)	2.2.3 Olive groves
	Bogs (deep peat)	2.3 Pastures
	Bog	2.3.1 Pastures
	Shrub	2.4 Heterogeneous agricultural areas
	Grass/shrub	2.4.1 Annual crops associated with permanent crops
	Undifferentiated (all on deep peat)	2.4.2 Complex cultivation patterns
	Dwarf shrub heath (wet / dry)	2.4.3 Land principally occupied by agriculture, with significant areas of natural vegetation
	Dense dwarf shrub heath	2.4.4 Agro-forestry areas
	Dense ericaceous	3. Forest and seminatural areas
	Gorse	3.1 Forests
	Open dwarf shrub heath	3.1.1 Broad-leaved forest
	Open ericaceous	3.1.2 Coniferous forest
	Montane habitats	3.1.3 Mixed forest
	Montane habitats	3.2 Scrub and/or herbaceous vegetation associations
	Montane	3.2.1 Natural grasslands
	Broad-leaved wood	3.2.2 Moors and heathland
	Broad-leaved / mixed woodland	3.2.3 Sclerophyllous vegetation
	Deciduous	3.2.4 Transitional woodland-shrub
	Mixed	3.3 Open spaces with little or no vegetation
	Open birch	3.3.1 Beaches, dunes, sands
	Scrub	3.3.2 Bare rocks
	Coniferous woodland	3.3.3 Sparsely vegetated areas
	Coniferous woodland	3.3.4 Burnt areas
	Conifers	3.3.5 Glaciers and perpetual snow
	Felled	4. Wetlands
	New plantation	4.1 Inland wetlands
	Arable and horticultural	4.1.1 Inland marshes
	Arable cereals	4.1.2 Peat bogs
	Barley	4.2 Maritime wetlands
	Maize	4.2.1 Salt marshes
	Oats	4.2.2 Salines
	Wheat	4.2.3 Intertidal flats
	Cereal (spring)	5. Water bodies
	Cereal (winter)	5.1 Inland waters
	Arable horticulture	5.1.1 Water courses
	Arable bare ground	5.1.2 Water bodies
	Carrots	5.2 Marine waters
	Field beans	5.2.1 Coastal lagoons
	Horticulture	5.2.2 Estuaries
	Linseed	5.2.3 Sea and ocean
	Potatoes	
	Fas	
	Oilseed rape	
	Sugar beet	
	Mustard	
	Non-cereal (spring)	
	Unknown	
	Non-rotational horticulture	
	Orchard	
	Arable grass (ley)	
	Setaside (bare)	
	Setaside (undifferentiated)	
	Improved grassland	
	Improved grassland	
	Intensive	
	Grass (hay/silage cut)	
	Grazing marsh	
	Neutral / calcareous semi-natural / rough grasslands	
	Setaside grass	
	Grass setaside	
	Neutral grass	
	Rough grass (unmanaged)	
	Grass (neutral / unimproved)	
	Calcareous grass	
	Calcareous (managed)	
	Calcareous (rough)	
	Acid grass and bracken	
	Acid grass	
	Acid	
	Acid (rough)	
	Acid with Juncus	
	Acid with Nardus/Festuca/Molinia	
	Bracken	
	Bracken	
	Fen, marsh and swamp	
	Fen, marsh, swamp	
	Swamp	
	Fen/marsh	
	Fen willow	
	Suburban and urban	
	Suburban/rural developed	
	Suburban/rural developed	
	Continuous Urban	
	Urban residential/commercial	
	Urban industrial	
	Inland bare ground	
	Inland bare ground	
	Despoiled	