



# LUCAS NZ Land Use Map 1990 2008 2012 2016 v006

## Metadata

### File Identifier

fbcd091e-54a4-18c6-8408-ac8a12312677

### Language

eng

### Character Set

#### Character Set Code

utf8

### Hierarchy Level

#### Scope Code

dataset

### Hierarchy Level Name

dataset

## Contact

### Responsible Party

#### Individual Name

Michael Cooper

#### Organisation Name

LUCAS, Ministry for the Environment

#### Position Name

GIS Analyst

### Contact Info

#### Contact

##### Address

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Wellington 6143

##### Country

New Zealand

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lucas@mfe.govt.nz

**Role****Role Code**

distributor

**Date Stamp****Date**

2019-04-10

**Metadata Standard Name**ANZLIC Metadata Profile: An Australian/New Zealand Profile of AS/NZS ISO 19115:2005,  
Geographic information - Metadata**Metadata Standard Version**

1.1

**Reference System Info****Reference System****Reference System Identifier****Identifier****Code**

2193

**Identification Info****Data Identification****Citation****Citation****Title**

ANZLIC LUM 1990 2008 2012 2016 v006 NZ

**Date****Date****Date****Abstract**

The Land Use Map is composed of New Zealand-wide land use classifications (12) nominally at 1 January 1990, 1 January 2008, 31 December 2012 and 31 December 2016 (known as "1990", "2008", "2012" and "2016"). These date boundaries were dictated by the First and Second Commitment Periods of the Kyoto Protocol. The layer can therefore be used to create either a 1990, 2008, 2012 or 2016 land use map depending on what field is symbolised.

**Purpose**

LUM tracks and quantifies changes in New Zealand land use so that Land Use, Land Use Change and Forestry (LULUCF) sector carbon accounting can be calculated for national Net Position, Kyoto Protocol and United Nations Framework Convention on Climate Change (UNFCCC) reporting.

## Credit

Manaaki Whenua - Landcare Research

## Status

### Progress Code

completed

## Resource Maintenance

### Maintenance Information

#### Maintenance And Update Frequency

##### Maintenance Frequency Code

irregular

## Resource Format

### Format

#### Name

\*.xml

#### Version

Unknown

## Descriptive Keywords

### Keywords

#### Keyword

New Zealand

#### Type

##### Keyword Type Code

theme

### Thesaurus Name

#### Citation

##### Title

ANZLIC Jurisdictions

##### Date

##### Edition

Version 2.1

##### Edition Date

###### Date

2008-10-29

##### Identifier

###### Identifier

###### Code

<http://asdd.ga.gov.au/asdd/profileinfo/anzlic-jurisdic.xml#anzlic-jurisdic>

##### Cited Responsible Party

Responsible Party

Organisation Name

ANZLIC the Spatial Information Council

Role

Role Code

custodian

Descriptive Keywords

Keywords

Keyword

LAND-Use

Keyword

FORESTS-Natural

Keyword

FORESTS-Plantation

Type

Keyword Type Code

theme

Thesaurus Name

Citation

Title

ANZLIC Search Words

Date

Edition

Version 2.1

Edition Date

Date

2008-05-16

Identifier

Identifier

Code

<http://asdd.ga.gov.au/asdd/profileinfo/anzlic-theme.xml#anzlic-theme>

Cited Responsible Party

Responsible Party

Organisation Name

ANZLIC the Spatial Information Council

Role

Role Code

custodian

Resource Constraints

Legal Constraints

Use Limitation

Creative Commons Attribution 4.0 International by Ministry for the Environment

Access Constraints

Restriction Code

license

Resource Constraints

Legal Constraints

Use Limitation

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Use Constraints

Restriction Code

license

Spatial Representation Type Code

vector

Language

eng

Character Set

Character Set Code

utf8

Topic Category Code

environment

Extent

EX \_ Extent

Geographic Element

EX \_ Geographic Description

Identifier

Authority

Citation

Title

ANZMet Lite Country codelist

Date

Edition

Version 1.0

Edition Date

Date

2009-03-31

Identifier

Identifier

Code

<http://asdd.ga.gov.au/asdd/profileinfo/anzlic-country.xml#Country>

**Cited Responsible Party**

Responsible Party

Organisation Name

ANZLIC the Spatial Information Council

Role

Role Code

custodian

Code

nzl

**Extent**

EX \_ Extent

Geographic Element

EX \_ Geographic Bounding Box

166.425042232178.578169721-47.2900015143-34.3933898159

**Distribution Info**

Distribution

Distributor

Distributor

Distributor Contact

Responsible Party

Individual Name

Michael Cooper

Organisation Name

LUCAS, Ministry for the Environment

Position Name

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### Transfer Options

Digital Transfer Options

On Line

Online Resource

Linkage

URL

<https://data.mfe.govt.nz/layer/52375-lucas-nz-land-use-map-1990-2008-2012-2016-v006/>

### Data Quality Info

DQ \_ Data Quality

Scope

DQ \_ Scope

Level

Scope Code

dataset

Level Description

Scope Description

Other

dataset

### Lineage

LI \_ Lineage

Statement

\*1990 land use mapping\* The 1990 land-use map was derived from 30 m spatial resolution Landsat 4 and Landsat 5 satellite imagery taken between November 1988 and February 1993. In addition to orthorectification and atmospheric correction, the satellite images were standardised for spectral reflectance using the Ecosat algorithms documented in Dymond et al, (2001), Shepherd and Dymond (2003) and Dymond and Shepherd (2004). These standardised images were used for the automated mapping of woody biomass and the classification of woody land use classes. These land-use classes at 1990 included natural forest, pre-1990 planted forest and grassland with woody biomass. This classification process was validated and improved using 15m resolution Landsat 7 ETM+ imagery acquired in 2000-2001, and SPOT 2 and 3 data acquired in 1996-1997. The use of this higher-resolution imagery (coupled with the use of concurrent aerial photography) enabled more certain land-use mapping decisions to be made. To determine the spatial location of the other land-use classes as at 1990, 2008 and 2012, information from three land cover databases, LCDB1 (1996), LCDB2 (2001) (Thompson et al, 2004) and LCDB3 (2008), the New Zealand Land Resource Inventory (Eyles, 1977) and hydrological data from Land Information New Zealand were used (Shepherd and Newsome, 2009a,b). The NZLRI database was used to better define the area of high and Low-producing grassland. Areas tagged as

'improved pasture' in the NZLRI vegetation records were classified as Grassland – high producing in the land-use maps. All other areas were classified as Grassland – low producing. An interpretation guide for automated and visual interpretation was prepared and used so that all mapping processes were undertaken on a consistent basis (Ministry for the Environment, 2012). Independent quality control was undertaken for all mapping. This involved an independent agency looking at randomly-selected points across New Zealand and using the same data as the original operator to decide what land use the point fell within. The two operators were in agreement at least ninety-five percent of the time.

**\*2008 land-use mapping\*** The 2008 land-use map (land-use as at 1 January 2008) was derived from 10 m spatial resolution SPOT 5 satellite imagery which was processed into standardised reflectance images, using the same approach as for the 1990 imagery. The SPOT 5 imagery was taken during the summer periods between November 2006 and April 2008, to establish a national set of cloud-free imagery. Where the SPOT 5 imagery predated 1 January 2008, a combination of aerial photography, Landsat satellite imagery and field verification was used to identify where deforestation has occurred, so that the snapshot of land use at 1 January 2008 would be as accurate as possible.

**\*2012 land-use mapping\*** SPOT 5 satellite imagery was again used in 2013 to create the 2012 land use map. This map was based on imagery acquired primarily in the summers of 2011/12 and 2012/13. Landsat 7 satellite imagery was used subsequently to supplement change detection up to the end of 2012. All imagery was pre-processed as for the 2008 map; however, in this instance, the 2008 and 2012 standardised imagery was then combined into an image stack in order to detect areas of change. Areas of forest loss were extracted and underwent a separate deforestation mapping process (Indufor Asia Pacific, 2013), while the remaining areas of change were mapped directly into the 2012 LUM (Newsome et al, 2013). Finally areas of confirmed deforestation were integrated into the 2012 land use map.

**\*2016 land-use mapping\*** Sentinel 2 satellite imagery was used in 2018 to create the 2016 land use map. This map was based on imagery acquired in the summer of 2016/17. All imagery was pre-processed and the 2012 (SPOT 5) and 2016 (Sentinel 2) standardised imagery was analysed in a stack to detect areas of change. Areas of forest loss were extracted and underwent a separate deforestation mapping process (Indufor Asia Pacific, 2018), while the remaining areas of change were mapped directly into the 2016 LUM (Newsome et al, 2018). Finally areas of confirmed deforestation were integrated into the 2016 land use map. Improvements were made to the mapping of high and low-producing grassland at 2008, 2012 and 2016 using data fusion techniques developed by Manaaki Whenua – Landcare Research as part of the Innovative Data Analysis project (Manderson et al., 2018). This technique involved combining a range of environmental and land use data sources to infer the likely type of grassland (high or low-producing) present at each mapping date.

## Metadata Constraints

### Legal Constraints

### Use Limitation



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**Restriction Code**

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