

ANZLIC LUM 1990 2008 2012 2016 v011 NZ

General Properties

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Hierarchy Level Name	dataset
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Key Dates and Languages

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Abstract

The LUCAS NZ Land Use Map 2016 v011 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, the Paris Agreement and United Nations Framework Convention on Climate Change (UNFCCC) reporting.

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Credit

Lineage Statement	<p>Manaaki Whenua - Landcare Research</p> <p>*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</p>
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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 pre-dated 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.

Jurisdictions

New Zealand

Search Words

LAND-Use
FORESTS-Natural
FORESTS-Plantation

Themes and Categories

Topic Category

environment

Status and Maintenance

Status

completed

Maintenance and Update Frequency

irregular

Date of Next Update

Reference system

Reference System

2193
(NZGD2000 / New Zealand Transverse Mercator 2000)

Spatial Representation Type

Spatial Representation Type

vector

Dataset Access Constraints

Identifier

license

Annotation

Creative Commons Attribution 4.0 International by Ministry for the Environment

Dataset Use Constraints

Identifier

license

Annotation

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Additional Extents - Geographic

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<i>Distribution Information</i>	
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