Title	NSW Woody Vegetation Extent & FPC 2011
Alternative title(s)	NSW Foliage Projection Cover (5m)
Abstract	The NSW Woody Vegetation Extent & FPC 2011 is a state-wide classification of woody vegetation and Foliage Projection Cover (FPC) derived from multitemporal 5m SPOT-5 satellite imagery. The product broadly identifies isolated tree crowns as well as contiguous forest at a 5m resolution and each woody pixel also contains a measure of FPC. FPC is the fraction of the ground that is obscured by green leaf, and is a measure of density. This latest map of woody vegetation extent and FPC for NSW is the highest detailed to date. It shows the location, extent, and foliage cover for stands of woody vegetation in NSW for the year 2011. It can be used to identify small features such as paddock trees and trees in scattered woodlands, to the largest expanses of forest in the state. It is intended for use in non-urban environments. The dataset is delivered as a 5m raster product with the following cell values: Contains the following cell values only: 101 - 200: Woody FPC 100: Non-Woody 99: Not woody, ephemeral water 98: Permanent of semi-permanent water 97: Not mapped 96: No observations 0: Null Overall state accuracy for the woody extent (fpc validation pending) is recorded at 90.1% when compared to Lidar datasets (see lineage for more information), and 88% when compared to 6670 visually derived validation points. Although this dataset has undergone extensive manual corrections, the accuracy for specific regions may vary considerably. FPC values: To convert woody FPC pixel values (101 - 200) to standard units of FPC apply the following equation: FPC = pixel_value * 0.01 – 1.0 For example a pixel value of 101 is a FPC of 0.01, and a pixel value of 150 is a FPC of 0.50 etc.

Resource locator

Data Quality Statement	Name: Data Quality Statement Protocol: WWW:DOWNLOAD-1.0-http--download Description: DQS - NSW Woody Vegetation Extent & FPC 2011 Function: download
NSW Woody Vegetation Extent & FPC 2011	Name: NSW Woody Vegetation Extent & FPC 2011 Protocol: WWW:DOWNLOAD-1.0-http--download Description: Woody Extent and Foliage Projective Cover - SPOT, OEH algorithm, NSW coverage Function: download
FTP site	Name: FTP site Protocol: WWW:DOWNLOAD-1.0-http--download Description: Datasets can be downloaded from this site. Function: download
NSW SPOT Woody Extent & FPC 2011 factsheet - 1	Name: NSW SPOT Woody Extent & FPC 2011 factsheet - 1 Protocol: WWW:DOWNLOAD-1.0-http--download Description: Explanation of data and use Function: download
NSW SPOT Woody Extent & FPC 2011 factsheet - 2	Name: NSW SPOT Woody Extent & FPC 2011 factsheet - 2 Protocol: WWW:DOWNLOAD-1.0-http--download Description: Explanation of data and use Function: download

Unique resource identifier

Code	ba29339a-22d3-474b-ab27-c08e966ddda2

Presentation form	Map digital
Edition	1
Dataset language	English
Metadata standard	
Name	ISO 19115
Edition	2016
Dataset URI	https://datasets.seed.nsw.gov.au/dataset/ba29339a-22d3-474b-ab27-c08e966ddda2
Purpose	The map is suited to many applications including property planning, mapping and cartography, local government planning, risk assessment, such as in fire-prone areas, native vegetation mapping and habitat identification and mapping. The measure of FPC was also used produced as a powerful indicator of woody vegetation and used to create the binary classification of woody extent. Both the extent and the FPC are used by the OEH Native Vegetation Information Branch for their regional scale state-wide vegetation mapping program.
Status	Completed
Spatial representation type	grid
Spatial reference system	
Code identifying the spatial reference system	4283
Spatial resolution	5 m
Additional information source	The product is available either as a seamless NSW mosaic (90 GB) or as a collection of subset tiles that intersect with a region of interest. The maps may be requested through the Office of Environment and Heritage's Spatial Data Online catalogue: http://mapdata.environment.nsw.gov.au. Search for woody vegetation and fpc.For data access queries contact the data broker. data.broker@environment.nsw.gov.auSee lineage below for summary of production method. Official report/paper pending for description of methods and validation.External Data Link:http://www.auscover.org.au/xwiki/bin/view/Product+pages/nsw+5m+woody+extent+and+fpcFPC values:To convert woody FPC pixel values (101 - 200) to standard units of FPC apply the following equation:FPC = pixel_value * 0.01 – 1.0For example a pixel value of 101 is a FPC of 0.01, and a pixel value of 150 is a FPC of 0.50 etc.
Topic category	

Keyword set

keyword value	FPC
	foliage
	projeciton
	cover
	woody
	extent
	canopy
	NSW
	5m
	vegetation
	satellite
Originating controlled vocabulary	
Title	ANZLIC Search Words
Reference date	2008-05-16

Geographic location

West bounding longitude	141
East bounding longitude	154
North bounding latitude	-38
South bounding latitude	-28

Vertical extent information

Minimum value	-100
Maximum value	2228
Coordinate reference system	
Authority code	urn:ogc:def:cs:EPSG::
Code identifying the coordinate reference system	5711

Temporal extent

Begin position	2011-01-01
End position	N/A

Dataset reference date

Resource maintenance

Maintenance and update frequency	As needed
Contact info	
Contact position	Data Broker
Organisation name	NSW Department of Climate Change, Energy, the Environment and Water
Telephone number	131555
Email address	data.broker@environment.nsw.gov.au
Web address	https://www.nsw.gov.au/departments-and-agencies/dcceew
Responsible party role	pointOfContact

Lineage

The image data used:

The source data was SPOT5 High Resolution Geometric (HRG) satellite imagery. It consists of 4 multispectral bands (10 m pixels), and a panchromatic band (2.5 m pixels). A time series of one image per year for the period 2008 to 2011 was acquired during dry periods where the contrast between woody vegetation and the ground cover is high. A total 1256 images were used. The images were registered with ground control. The multispectral imagery was corrected for atmospheric and bi-directional reflectance effects and sharpened to 5 m pixels using the panchromatic imagery. The images were masked for cloud, cloud shadow, topographic shadow, and water.

Detecting woody vegetation in the images:

An estimate of foliage projective cover (FPC) was derived for every clear pixel in every image. FPC is the fraction of the ground that is obscured by green leaf. This required a multiple linear regression model that related the multi-spectral reflectance to a reference data set of FPC. Each pixel contained up to 5 observations of FPC and reflectance over time.

The probability of a pixel containing woody vegetation was determined using a binomial logistic regression model. The model parameters were the mean FPC, mean red reflectance, variation in FPC over time, and the climate variable vapour pressure deficit. The model was trained using 25930 observations of woody vegetation presence or absence. These points were interpreted from ADS40 aerial imagery where available (0.5 m pixels) and SPOT5 HRG panchromatic images (2.5 m pixels).

Mapping woody vegetation:

Woody vegetation extent was mapped by applying a threshold to the probability images, with further editing by trained analysts. The comprehensive manual corrections were performed throughout 2013-2014 at a scale of 1:15000. The mean FPC value over time was used to attribute each woody pixel.

Assessing the accuracy:

Two comparisons with independently-derived datasets of woody-vegetation extent were performed. The first used reference data derived from airborne Lidar collected across a range of vegetation formations, that had been related to data collected on the ground. 90.1% overall accuracy was obtained, although over half the errors were identified as being on the edges between woody and non-woody regions that may partly be caused by differences in positioning between the SPOT images and lidar data. The range was from 85.3% in the hunter to 94.5% in the South East. The second used image-interpreted points of woody vegetation presence or absence. The overall accuracy was 88%, which ranged from 77.5% in Western to 95.8% in the North Coast. Validation of the FPC values is forthcoming.

FPC values: To convert woody FPC pixel values (101 - 200) to standard units of FPC apply the following equation: FPC = pixel_value * 0.01 – 1.0 For example a pixel value of 101 is a FPC of 0.01, and a pixel value of 150 is a FPC of 0.50 etc.

Limitations on public access

Scope	dataset

DQ Completeness Commission

Effective date	2015-04-02
Explanation	Dataset buffers the NSW border by an extra 1.5km.

DQ Completeness Omission

Effective date	2015-04-02

DQ Conceptual Consistency

Effective date	2015-04-02
Explanation	Contains the following cell values only:101 - 200: Woody FPC100: Non-Woody99: Not woody, ephemeral water98: Permanent of semi-permanent water97: Not mapped96: No observations0: NullFPC values:To convert woody FPC pixel values (101 - 200) to standard units of FPC apply the following equation:FPC = pixel_value * 0.01 – 1.0For example a pixel value of 101 is a FPC of 0.01, and a pixel value of 150 is a FPC of 0.50 etc.

DQ Topological Consistency

Effective date	2015-04-02
Explanation	No known topological errors.

DQ Absolute External Positional Accuracy

Effective date	2015-04-02
Explanation	The classification was derived from SPOT-5 10m imagery pan-sharpened to 5m. Positional accuracy dependent on raw imagery rectification performed by Geoimage Pty Ltd and the subsequent pan-sharpening by the Remote Sensing and Land Assessment Unit (OEH).

DQ Non Quantitative Attribute Correctness

Effective date	2015-04-02
Explanation	Two comparisons were conducted with independent observations of woody vegetation extent (extent only, not FPC, validation of the FPC values is forthcoming.). The first comparison used independently-derived, fine-detailed maps of woody-vegetation extent derived from airborne Lidar surveys. The state-wide map of extent had an overall accuracy of 90.1%.The second comparison used 6670 image-interpreted points of woody vegetation presence or absence. The points were gathered from images with 2.5 m pixels. The overall accuracy was 88% . The spatial variation in accuracy across the state, reported by Local Land Service region, is also listed below:Local Land service Points LidarNorth Coast 95.80% 93.60%Northern Tablelands 91.80% 89.00%South East 91.60% 94.50%Central Tablelands 91.00% 86.80%Greater Sydney 90.60% 89.10%Central West 89.80% 88.30%Riverina 89.00% 93.00%Hunter 88.70% 85.30%North West 88.30% 89.00%Murray 84.80% 90.30%Western 77.50% 88.60%

Responsible party

Contact position	Data Broker
Organisation name	NSW Department of Climate Change, Energy, the Environment and Water
Telephone number	131555
Email address	data.broker@environment.nsw.gov.au
Web address	https://www.nsw.gov.au/departments-and-agencies/dcceew
Responsible party role	pointOfContact

Metadata point of contact

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Metadata date

2024-02-26T13:01:31.381348

Metadata language