Title

Monitoring of sustainable land management using remotely sensed vegetation cover, NSW, 2010-2021

Abstract

This dataset provides maps and data that identify the sustainability of land management over NSW over the period 2010 to 2021. It is based on a new method for monitoring sustainable land management using widely available remotely sensed data: MODIS fractional vegetation cover data. The method relies on maintaining sufficient vegetation cover to prevent hillslope water erosion beyond tolerable soil erosion targets. The targets were based on long-term natural erosion rates plus a small constant and are spatially and temporally variable. Results were initially generated for individual months then were amalgamated into yearly sustainable land management indices (SLMI), presented as raster maps (100 m spatial resolution). These results were further stratified by land uses and natural resource management regions, revealing useful data and trends. Data on rainfall patterns over the preceding 12 months (relative rainfall index, RRI) can aid interpretation of the results. The method and sample results were presented in an international journal paper: Gray et al. (2023). Monitoring of sustainable land management using remotely sensed vegetation cover and variable tolerable soil erosion targets across New South Wales, Australia. https://doi.org/10.1111/sum.12876

Resource locator

Data Quality Statement

Name: Data Quality Statement

Protocol: WWW:DOWNLOAD-1.0-http--download

Description:

Data quality statement for Monitoring of sustainable land management using remotely sensed vegetation cover, NSW, 2010-2021

Function: download

Sustainable Land Management Indices (SLMI), NSW, 2010-2021

Name: Sustainable Land Management Indices (SLMI), NSW, 2010-2021

Protocol: WWW:DOWNLOAD-1.0-http--download

Description:

Raster maps (100 m resolution) of SLMI over NSW for each year 2010 to 2021

Function: download

Relative Rainfall Indices (RRI), NSW, 2010-2021

Name: Relative Rainfall Indices (RRI), NSW, 2010-2021

Protocol: WWW:DOWNLOAD-1.0-http--download

Description:

Raster maps (100 m resolution) of RRI over NSW for each year 2010-2021, revealing areas affected by dry periods (relative to average) over the preceding 12 months

Function: download

Working files for SLMI, April 2020

Name: Working files for SLMI, April 2020

Protocol: WWW:DOWNLOAD-1.0-http--download

Description:

Example raster files (100 m resolution) used in derivation of sustainable land management indices for April 2020, including SLMI and relative rainfall indices for year 2020

Function: download

Published 2023 journal paper

Name: Published 2023 journal paper

Protocol: WWW:DOWNLOAD-1.0-http--download

Description:

Journal paper (Gray et al. 2023) presenting methodology and 2010-2021 results for NSW and discussion

Function: download

Tolerable erosion working 2001-2021 working files	Name: Tolerable erosion working 2001-2021 working files Protocol: WWW:DOWNLOAD-1.0-http--download Description: Working files for derivation of final tolerable erosion 2001-2021 Function: download

Unique resource identifier

Code	ad2418e1-b8e1-4886-8498-d49e0bc4a6b5

Presentation form	Map digital
Edition	1.0
Dataset language	English

Metadata standard

Name	ISO 19115
Edition	2016

Dataset URI	https://datasets.seed.nsw.gov.au/dataset/ad2418e1-b8e1-4886-8498-d49e0bc4a6b5
Purpose	For better management and protection of NSW soil and land, and for broader environmental protection
Status	Completed
Spatial representation type	grid

Spatial reference system

Code identifying the spatial reference system	4283

Spatial resolution	100 m
Additional information source	Raster maps (at 100 m resolution) are provided for Sustainable Land Management Indices (SLMI) and Relative Rainfall Index (RRI) for each year from 2010-2021. The preliminary working files are provided for generation of monthly indices for April 2020, as used for the generation of SLMI for year 2020. Details on methodology, NSW results and associated discussion are provided in the copy of Gray et al. (2023) journal paper (open access).

Topic category

Keyword set

keyword value	LAND-Use VEGETATION SOIL-Erosion PHOTOGRAPHY-AND-IMAGERY-Remote-Sensing
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	-37.7
South bounding latitude	-28
NSW Place Name	NSW

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	2010-01-01
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
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Responsible party role	pointOfContact

Lineage

In overview, the broad approach adopted was to assess whether vegetation cover across NSW lands was sufficient to prevent hillslope water erosion beyond tolerable levels. The tolerable erosion rate has two components: (i) spatially variable long-term natural erosion rates (varies for each pixel) plus (ii) a small additional tolerable erosion rate (constant across all lands). The sum of these two components gives the required spatially variable tolerable erosion rates across the State. Where the actual vegetation cover for each month (derived from MODIS satellite data) is more than the vegetation cover required for effective prevention of non-tolerable erosion, the land is considered to be sustainably managed for that month. Monthly results are combined into a yearly index, the sustainable land management index (SLMI). Recent rainfall conditions are also qualitatively considered through a relative rainfall index (RRI) when interpreting the results. The process is presented and described in more detail in the published journal paper (Gray et al 2023: https://doi.org/10.1111/sum.12876)

Limitations on public access

Responsible party

Contact position	Data Broker
Organisation name	NSW Department of Climate Change, Energy, the Environment and Water
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Metadata date

2024-02-26T13:47:46.357122

Metadata language