

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
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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

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