Title	NSW eastern forest soil condition: empirical soil maps
Alternative title(s)	Determining baselines and trends of soil health and stability in NSW forests – Regional Forest Agreement regions: An empirical approach
Abstract	This dataset includes four soil products using an empirical approach to assess soil condition indicators and complete a data gap analysis covering the Regional Forest Agreement regions of eastern NSW.
	In the empirical analysis, maps presented soil indicator values of topsoil pH, organic carbon and emerson aggregate stability for each of the 2162 soil map units, based on the unit's most representative soil profile available within the Soil and Land Information System (SALIS). Maps reflect values when the sampling occurred with temporal changes not being accounted for and used the 2008 woody vegetation coverage as the baseline extent. The dataset identifies the locations where data is missing or of poor quality, providing a confidence rating map as part of the evaluation process.
	Full description of the empirical maps and methods are presented in: Moyce MC, Gray JM, Wilson BR, Jenkins BR, Young MA, Ugbaje SU, Bishop TFA, Yang X, Henderson LE, Milford HB, Tulau MJ, 2021. _Determining baselines, drivers and trends of soil health and stability in New South Wales forests: NSW Forest Monitoring & Improvement Program_v1.1, Final report for NSW Natural Resources Commission by NSW Department of Planning, Industry and Environment and University of Sydney.

Resource locator

Data quality statement	Name: Data quality statement
	Protocol: WWW:DOWNLOAD-1.0-http--download
	Description:
	Data quality statement for NSW eastern forest soil condition: empirical soil maps.
	Function: download
Eastern forest empirical soil dataset	Name: Eastern forest empirical soil dataset
	Protocol: WWW:DOWNLOAD-1.0-http--download
	Description:
	Download the version 1 of package: GIS spatial map linework, ESRI layer files, soil indicator PDF maps, Final report and metadata. [SIZE: 336MB]
	Function: download
Empirical soil indicator maps	Name: Empirical soil indicator maps
	Protocol: WWW:DOWNLOAD-1.0-http--download
	Description:
	Download PDF version 1 of indicator maps - pH, Organic Carbon, Emerson aggregate and Profile data confidence. Report and metadata also included.
	Function: download
NSW eastern forest soil condition report v1.1	Name: NSW eastern forest soil condition report v1.1
	Protocol: WWW:DOWNLOAD-1.0-http--download
	Description:
	Download the technical report: Determining baselines, drivers and trends of soil health and stability in NSW forests – RFA regions.
	Function: download

Unique resource identifier

Code	d1d8caa6-d92a-4806-a6e9-90425d13f68e

Presentation

Map digital

	form
Edition	version 1
Dataset language	English
Metadata standard	
Name	ISO 19115
Edition	2016
Dataset URI	https://datasets.seed.nsw.gov.au/dataset/d1d8caa6-d92a-4806-a6e9-90425d13f68e
Purpose	For monitoring and managing soil condition in eastern NSW forests into the future.
Status	Planned
Spatial representation	
Type	vector
Geometric Object Type	surface
Spatial reference system	
Code identifying the spatial reference system	4283
Spatial resolution	100 m
Additional information source	**Spatial GIS shapefile attribute table fieldnames:** • *SL_NSWcode* - Unique soil landscape map unit code • *SL_NSWname* - Unique soil landscape map unit name • *ProfileID* - Unique identifer assigned to a profile in SALIS • *TP_confidc* - Soil profile data confidence class code (A-D) • *TP_confid* - Soil profile data confidence class (A - High, B - Moderate, C - Low D - No data) • *Soil_GSG* - Soil profile's Great Soil Group soil type classification • *Soil_ASCo* - Soil profile's Australia Soil Classification soil type classification at order level. • *Soil_ASCso* - Soil profile's Australia Soil Classification soil type classification at suborder level. • *Lyr1_LwDpt* - Lower depth of A1 surface soil horizon • pHca_w_ - topsoil pH value (using 1:5 soil/0.01M calcium chloride extract (4B1). Includes conversions from pH 1:5 soil/water suspension (4A1) using approach of Henderson and Bui (2003). • *OC_6A1* - Total Soil Organic Carbon value (Walkley-Black wet oxidation (C6A1) • *Em_513_98* - Emerson Aggregate Test - 8 class system SCS method (513.98)
Topic category	

Keyword set

keyword value	SOIL
	SOIL-Erosion
	FORESTS
	CLIMATE-AND-WEATHER-Climate-change
Originating controlled vocabulary	
Title	ANZLIC Search Words
Reference date	2008-05-16

Geographic location

West bounding longitude	148
East bounding longitude	154
North bounding latitude	-37.7
South bounding latitude	-28
NSW Place Name	Regional Forest Agreement Regions of eastern 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	1990-01-01
End position	N/A

Dataset reference date

Resource maintenance

Maintenance and update frequency	As needed
Contact info	
Contact position	Data Broker
Organisation name	NSW Natural Resources Commission
Telephone number	131555
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Responsible party role	pointOfContact

Lineage

The empirical soil indicator maps were created by linking existing soil landscape spatial data with NSW SALIS soil profile data. There were 2162 soil map units within the Regional Forest Agreement study area and approximately 2100 soil profiles with some supporting laboratory data were available for the analysis. Most of the detailed profiles were collected from past NSW soil survey program activities.

The approach designated each landscape unit with a representative soil profile. This soil profile was selected from within a landscape unit based on several ranked criteria to determine the most representative soil data. Criteria included its:

- Location within forest area (woody vegetation areas during 2008)
- Soil landscape unit
- Amount of useful laboratory data available
- Representative 'type profile' status
- Forest condition representativeness

The lab results of the selected soil profile were considered to be representative of the whole landscape unit (ideally coming from a forested location of the dominant facet or sub-landscape area) and attributed to the Geographic Information System (GIS) spatial layer to produce the maps

The key soil indicators maps produced included pHca, Total Soil Organic Carbon, and Emerson Aggregate Test. Indicator values are representative of the surface A1 horizon layer of the soil.

Limitations on public access

Scope   dataset

DQ Completeness Commission

Effective date	2021-07-16
Explanation	Only soil map units mapped as woody vegetation in 2008 within the Regional Forest Agreement regions were assessed. As a priority, soil profiles were selected to represent the landscape unit from within these areas. In some cases, profiles were used from within the same landscape unit, but outside this forested extent, e.g. cleared grazing land. For these profiles, indicator values were allocated a lower confidence rating. It is noted that some profile data used in the analysis was selected from outside the NSW 2008 woody vegetation layer extent, but were reflective of forested soil conditions at time of sampling (i.e. the land use or vegetation cover was different at the time of sampling than it was in 2008 and the sample was collected from a location which was forested at the time). A forest condition representativeness index was used in the analysis to help account for this situation and enable more appropriate profile selection.

DQ Completeness Omission

Effective date	2021-07-16
Explanation	This empirical dataset did not use any soil profile data or spatial soil mapping from outside of the NSW RFA regions. The mapping of soil indicators also only occurred from within the woody vegetation extent of 2008. In this version, a small amount of laboratory data was either temporarily unavailable or in an unusable format and therefore not incorporated into the final products. A future version of this dataset proposed to be published in November 2021 will likely update and rectify these data gaps. The attribute table of the spatial shapefile is complete with all available data. Some profiles within the RFA regions, may not be attributed with both classification systems in SALIS and have been left blank. For numerical soil indicator fields, there is no natural test value recorded for zero and hence missing values in this case were assigned a zero number. The numeric value assigned for water is -99 and Not assessed is -98.

DQ Conceptual Consistency

Effective date	2021-07-16
Explanation	In the analysis, soil profile data was not used to represent multiple map units within the RFA area. A standardised process using set criteria was also implemented for

consistency during the assessment and assigning of soil profiles to representative spatial soil landscape areas.

DQ Topological Consistency

Effective date	2021-07-16
Explanation	ArcGIS was used to remove all topological errors including unwanted gaps and overlapping polygons. A cluster tolerance of 0.000003 decimal degrees (~0.3 m) was set.

DQ Absolute External Positional Accuracy

Effective date	2021-07-16
Explanation	These maps used existing soil landscape mapping with a published scale of 1:100,000. Therefore linework has a theoretical accuracy of around 100m on the ground. This will vary between different areas across the RFAs, being also dependant on the type of survey completed there and it's quality.
	An assumption was made that all soil profile data was representative of the exact locational position assigned with the profile, which is particularly important when conducting GIS spatial join interpretations. While this is generally reliable, especially for later profiles collected with a GPS, some degree of quality verification and checking would be recommended to establish or refine detailed on-ground forest soil monitoring assessments.

DQ Non Quantitative Attribute Correctness

Effective date	2021-07-16
Explanation	An indication of the confidence and quality of soil profile data used to assess forest soil condition was provided as part of the dataset. The classification system is outlined below:

- **High confidence:** a profile with laboratory data within the forest area and within the dominant facet of the landscape unit.
- **Moderate confidence:** a profile with laboratory data within the forest area but not within the dominant facet of the landscape unit.
- **Low confidence:** no profiles with laboratory data within the forest area, but representative lab data available for another part of the landscape.
- **No data:** no profiles with laboratory data exist within the landscape.

Other assumptions made regarding the attribute data include:

- That soil indicator values taken from any location within woody vegetation areas during 2008 were significantly more reflective of typical forest baseline conditions than profiles which (were representative of the map unit) but occurred outside the woody vegetation area.

- These empirical soil outputs also did not consider the temporal change of indicator values and soil profiles suite used were collected over a 30 year period. These may not be completely reflective of conditions now.

- In areas that contained limited information and gaps, some educated interpretations were required at times for parts of the analysis, for example during the 'Representative type profile status' allocation process.

Responsible party

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Responsible party role	pointOfContact

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Metadata language