Total vegetation cover soil protection Region:LGA Byron_(A) NSW

Date: May 2022

This report describes vegetation protecting the soil surface from erosion during a chosen month compared to previous years. This report has been generated using MODIS fractional vegetation cover information available in Rangelands and Pasture Productivity (RAPP) map tool https://map.geo-rapp.org/#australia. The report is based on 500 metre pixel data on monthly time steps. Land use forest cover:

Results can be shown for the whole region (polygon), and separated by land use and forest cover classes which are likely to show different cover patterns and targets. Land use is divided into four broad classes: Conservation and natural environments, Agriculture, production native forests and plantation forests (no report), and other (no report). Agriculture is divided into grazing, crops and horticulture which are sub-divided into non-irrigated and irrigated. If forest is present land use is further divided into: non-forest, woodland forest and non-woodland forest. The area of each land use and forest class are shown as a map and chart. The report content is repeated for each land use and forest covers at least 1% of the area of the chosen region. Total vegetation Cover:

The total vegetation cover indicates where soil is likely to be protected from wind and or water hillslope erosion. Total vegetation cover for this month is shown on a map and chart classified into 4 classes.

• 71-100% High cover - protected from wind and usually water erosion (high rainfall, steep slopes, and erodible soils may need greater than 80, 90, 95 and up to 100% cover)

- 51-70% Moderate cover protected from wind erosion
- 31-50% Low cover not protected
- 0-30% Very Low cover not protected

Erosion protection: Wind erosion 50% total vegetation cover

The vegetation cover threshold required to prevent soil erosion is usually 50% to reduce wind erosion, 70% or 80% to reduce water (hillslope) erosion depending on the steepness and rainfall. Areas protected from erosion for the month:

• Map: water erosion protection (>70% cover) percentage area and hectares.

• Map: wind erosion protection (>50% cover) percentage area and hectares. Comparison with previous years:

• Map: anomaly comparing this month to the average cover from the same month in previous years.

• Map: deciles rank of month against the same month in previous years.

Anomalies and deciles until September 2019 are calculated comparing to the same months 2001 to 2019. Extra monthly data will be used to calculate anomalies and deciles post September 2019 as they become available. Time series monthly from January 2001 to current:

Erosion protection

- Wind erosion protection time series: percentage of the area of the region with greater than 50% cover for each month (orange lines). Horizontal lines are 10th (cover target) and 50th percentiles.
- Water erosion protection time series: percentage of the area of the region with greater than 70% cover for each month (blue line). Horizontal lines are 10th (cover target) and 50th percentiles.

Rainfall

• Millimetres rainfall each month (black line).

Each time series is also stacked by year. The black line shows the current year of data. Water erosion protection for higher rainfall and steeper slopes:

Water erosion protection on higher slopes. As slope increases, more cover is required to control water erosion. The thresholds reported are:

- the percentage area with pixels greater than 80% total cover.
- the percentage area with pixels greater than 90% total cover.
- the percentage area with pixels greater than 95% total cover.

Acknowledgment of data:

- 1. http://www.agriculture.gov.au/abares/aclump/land-use/alum-classification
- 2. http://www.agriculture.gov.au/abares/forestsaustralia/sofr/sofr-2018
- 3. https://www.dpi.nsw.gov.au/agriculture/pastures-and-rangelands/establishment-mgmt/production-management2/groundcover
- 4. MODIS Fractional cover algorithm:

https://doi.org/10.4225/08/5848a3f19a7b3



Vegetation Cover May 2022

Land use and forest cover

Proportion of each land class in area





Total Vegetation Cover [%]



% Area protected from water erosion (>70%)









Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)



Total Vegetation Cover Anomaly [%]



Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019. **Total Vegetation Cover Decile [%]**





- 20

10

0

-10

-20



Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.







Conservation and natural environments

Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)



Total Vegetation Cover [%]



% Area protected from water erosion (>70%)











Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)



Total Vegetation Cover Anomaly [%]



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Total Vegetation Cover Decile [%]





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Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)





Wind erosion historical monthly area protected (Total Veg Cov >50%)

100 99 ---- above_70 **—** 10th **--** 50th 98 2022 May 97 96 4eb ar In May PQ' Way month tern Ecosystem Research Infrastructure Australian Government

Water erosion historical monthly area protected (Total Veg Cov>70%)







Conservation and natural environments non forest

Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)



Total Vegetation Cover [%]





% Area protected from water erosion (>70%)



Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)



Total Vegetation Cover Anomaly [%]

Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.



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9







Conservation and natural environments Woodland forest

Land use and forest cover



Total Vegetation Cover [%]





% Area protected from water erosion (>70%)



Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)







Total Vegetation Cover Anomaly [%]

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Water erosion historical monthly area protected (Total Veg Cov>70%)







Conservation and natural environments Forest (non woodland)

Land use and forest cover



1200-2001

52% 70%

32%50%

0.30%

Total Vegetation Cover [%]



% Area protected from water erosion (>70%)







% Area protected from wind erosion (>50%)



Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

Total Vegetation Cover Anomaly [%]

Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.



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Water erosion historical monthly area protected (Total Veg Cov>70%)







Agriculture

Land use and forest cover

Proportion of each land class in area



Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)



Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

Anomaly show how many percetage points each

pixel is from

the mean. That is, red pixels

are about 20% lower than the

mean of that

pixel. The mean

using baseline

from 2001 to 2019.

is only for the month of the map



% Area protected from water erosion (>70%)





Total Vegetation Cover Anomaly [%]



Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.













Water erosion historical monthly area protected (Total Veg Cov>70%)







Grazing

Land use and forest cover



Total Vegetation Cover [%]



% Area protected from water erosion (>70%)





1 Agriculture - Grazing - Non forest



10 -

0

-0.5

0.0

Proportion of each land class in area

Proportion of vegetation cover class in area

1.0

Land use class

0.5

8.6%

1.5

9.9%

2.5

2.0



% Area protected from wind erosion (>50%)



Total Vegetation Cover Anomaly [%]



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Total Vegetation Cover Decile [%]





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Catchment Scale Land Use and Forests of Australia (2018)

Catchment Scale Land

Derived from

Use of Australia (2018) and Forests of Australia (2018)







Water erosion historical monthly area protected (Total Veg Cov>70%)



Grazing non forest

Land use and forest cover



Total Vegetation Cover [%]



% Area protected from water erosion (>70%)





Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)





Total Vegetation Cover Anomaly [%]



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Total Vegetation Cover Decile [%]





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Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)





___10p.o ---- above_70 **——** 10th **——** 50th **——** 2022 May

100.0 99.9 99.8 99.7 99.6 99.5

Water erosion historical monthly area protected (Total Veg Cov>70%)





Grazing Woodland forest

Land use and forest cover



Total Vegetation Cover [%]





% Area protected from water erosion (>70%)



Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)



Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

Total Vegetation Cover Anomaly [%]



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Total Vegetation Cover Decile [%]





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Grazing Woodland forest timeseries





Water erosion historical monthly area protected (Total Veg Cov>70%)



Australian Government

Grazing - Forest (non woodland)

Land use and forest cover



Total Vegetation Cover [%]





% Area protected from water erosion (>70%)







% Area protected from wind erosion (>50%)



Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

Total Vegetation Cover Anomaly [%]



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Total Vegetation Cover Decile [%]





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Grazing - Forest (non woodland) timeseries

Water erosion historical monthly area protected (Total Veg Cov>70%)





Cropping

Land use and forest cover



Total Vegetation Cover [%]





% Area protected from water erosion (>70%)



Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)







Total Vegetation Cover Anomaly [%]

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Cropping timeseries

33

Water erosion historical monthly area protected (Total Veg Cov>70%)



Horticulture

12º1010010

· 52% 70%

32%50%

0.30%

Land use and forest cover



Total Vegetation Cover [%]



% Area protected from water erosion (>70%)







% Area protected from wind erosion (>50%)



Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)



Total Vegetation Cover Anomaly [%]

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Horticulture timeseries

Water erosion historical monthly area protected (Total Veg Cov>70%)



Production native forests and plantation forests

Land use and forest cover



Total Vegetation Cover [%]





% Area protected from water erosion (>70%)



Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)







Total Vegetation Cover Anomaly [%]

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Water erosion historical monthly area protected (Total Veg Cov>70%)



Byron_(A) (55,800 ha and no data 895 ha) Percentage area and hectares protected with TVC threshold 30,50,70,80,90 and 95%

Land use and forest cover Class	area(ha)	above_30	above_50	above_70	above_80	above_90	above_95
Entire region	55,800	99.8% 55,675	99.6% 55,600	98.6% 55,025	95.1% 53,075	60.5% 33,775	35.4% 19,775
Conservation and natural environments	10,900	99.5% 10,850	99.5% 10,850	97.9% 10,675	95.9% 10,450	76.1% 8,300	55.7% 6,075
Conservation and natural environments non forest	1,150	97.8% 1,125	97.8% 1,125	89.1% 1,025	84.8% 975	56.5% 650	21.7% 250
Conservation and natural environments Woodland forest	625	100.0% 625	100.0% 625	100.0% 625	92.0% 575	68.0% 425	48.0% 300
Conservation and natural							
environments Forest (non woodland)	9,125	99.7% 9,100	99.7% 9,100	98.9% 9,025	97.5% 8,900	79.2% 7,225	60.5% 5,525
Agriculture	33,725	100.0% 33,725	100.0% 33,725	99.6% 33,600	96.7% 32,625	58.4% 19,700	30.7% 10,350
Grazing	30,325	100.0% 30,325	100.0% 30,325	99.6% 30,200	96.9% 29,375	59.0% 17,900	31.2% 9,450
Grazing non forest	24,725	100.0% 24,725	100.0% 24,725	99.5% 24,600	96.5% 23,850	55.6% 13,750	26.6% 6,575
Grazing Woodland forest	2,600	100.0% 2,600	100.0% 2,600	100.0% 2,600	99.0% 2,575	73.1% 1,900	49.0% 1,275
Grazing - Forest (non woodland)	3,000	100.0% 3,000	100.0% 3,000	100.0% 3,000	98.3% 2,950	75.0% 2,250	53.3% 1,600
Cropping	1,175	100.0% 1,175	100.0% 1,175	100.0% 1,175	89.4% 1,050	38.3% 450	14.9% 175
Horticulture	2,200	100.0% 2,200	100.0% 2,200	100.0% 2,200	98.9% 2,175	60.2% 1,325	31.8% 700
Production native forests and plantation forests	600	100.0% 600	100.0% 600	100.0% 600	100.0% 600	66.7% 400	33.3% 200

