Total vegetation cover soil protection Region:LGA Hinchinbrook_(S) QLD

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 Sep 2021

Land use and forest cover

Proportion of each land class in area



12%200%

52°1070°10

32%50%

0.30%

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 [%]



Catchment Scale

Derived from

Use of Australia

of Australia (2018)



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Total Vegetation Cover Decile [%]





2

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 using baseline from 2001 to 2019.





Proportion of the area protected from water erosion (Total Vegetation Cover > 80%)





Conservation and natural environments

Land use and forest cover

1 Conservation and natural environments - Non-forest Ś

2 Conservation and natural environments - Woodland forest

3 Conservation and natural environments - Nonwoodland forest





% Area protected from water erosion (>70%)







Proportion of each land class in area

Proportion of vegetation cover class in area

Land use class

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% Area protected from wind erosion (>50%)



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Total Vegetation Cover Anomaly [%]





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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

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 from 2001 to 2019.

Catchment Scale Land Use and Forests of Australia (2018)

Catchment Scale Land

Derived from

Use of Australia

(2018) and Forests

of Australia (2018)





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



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

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

100.00 99.75 99.50 ---- above_70 99.25 --- 10th -- 50th 99.00 98.75 98.50 98.25 98.00 feb Jan POL May In Mai month tern Ecosystem Research Infrastructure Australian Government

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





Conservation and natural environments Woodland forest

Land Use and Forests of Australia (2018) Ş 1 Conservation and natural environments - Woodland forest Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

Land use and forest cover

Total Vegetation Cover [%]



% Area protected from water erosion (>70%)





99.6%

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Proportion of vegetation cover class in area

100

80

60

Area (%)

Total Vegetation Cover class

% Area protected from wind erosion (>50%)

Total Vegetation Cover Anomaly [%]



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Total Vegetation Cover Decile [%]





Deciles show where the pixel value lies in the

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Catchment Scale

Derived from





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

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



100.0 99.8 99.6 ---- above_70 **—** 10th 99.4 **--** 50th **——** 2021 Sep 99.2 99.0 98.8 98.6 feb Jan In May PQ' War month tern Ecosystem Research Infrastructure Australian Government

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





Conservation and natural environments Forest (non woodland)

Land use and forest cover

Catchment Scale Land Use and Forests of Australia (2018) Ş 1 Conservation and natural environments - Non-Catchment Scale Land woodland forest Use of Australia (2018) and Forests Ľ of Australia (2018)



% Area protected from water erosion (>70%)







Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)



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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 from 2001 to 2019.

Derived from







Total Vegetation Cover Decile [%]





Conservation and natural environments Forest (non woodland) timeseries



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



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

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

100.0 99.5 ---- above_70 **—** 10th **——** 50th 99.0 **——** 2021 Sep 98.5 98.0-Jan feb In way Mai 1¹₁ PG1 month tern Ecosystem Research Infrastructure Australian Government

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







Agriculture

Land use and forest cover

Proportion of each land class in area



12%-100

52°1070°1

32905001

0.30%

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)





% Area protected from water erosion (>70%)



Total Vegetation Cover Anomaly [%]



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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 [%]







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

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



Agriculture timeseries

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





Proportion of the area protected from water erosion (Total Vegetation Cover > 80%) 100 90 area 80 of the % 60 70 60 area 20 of the % 30 20 10 Proportion of the area protected from water erosion (Total Vegetation Cover > 95%) 40 % of the area 0 0 0 10



Grazing

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



Land use and forest cover

Total Vegetation Cover [%]



% Area protected from water erosion (>70%)





Proportion of each land class in area



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.







Total Vegetation Cover Decile [%]

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100 99.9 99 ---- above_70 **—** 10th 98 **--** 50th **——** 2021 Sep 97 96 95 feb Jan hill way Mai PQ' month min tern Ecosystem Research Infrastructure Australian Government

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





Grazing non forest

12%200%

52°1070°10

32005001

0.30%



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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Grazing non forest timeseries

100 99.8 99 98 ---- above_70 **—** 10th **——** 50th 97 **—** 2021 Sep 96 95⁻ 94 93 Jan 4eb way In PQ 1's Mai month tern Ecosystem Research Infrastructure Australian Government

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







Grazing Woodland forest

1200-2000

52°10-70°10

320050010

· 0.30%



Total Vegetation Cover [%]



% Area protected from water erosion (>70%)



Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)





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Ecosystem Research Infrastructure

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Area

protected 100.0% of

region (2,675 ha)

Grazing Woodland forest timeseries



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



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





Grazing - Forest (non woodland)

1200-2000

52°10-70°10

320050010

· 0.30%



Total Vegetation Cover [%]



% Area protected from water erosion (>70%)



Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)

Area

protected 100.0% of

region (3,150 ha)

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Grazing - Forest (non woodland) timeseries

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



Cropping



Total Vegetation Cover [%]



% Area protected from water erosion (>70%)



Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)



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Total Vegetation Cover Anomaly [%]



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32%50%

0.30%

Total Vegetation Cover Decile [%]





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



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









Irrigation

Land use and forest cover Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018) 2 1 Agriculture - Cropping - Irrigated **Total Vegetation Cover [%]** 12%200% 2 52% TO% 0 32005001

Proportion of each land class in area



Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)





% Area protected from water erosion (>70%)



Total Vegetation Cover Anomaly [%]

Anomaly show how many percetage points each pixel is from the mean That 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 from 2001 to 2019.



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Total Vegetation Cover Decile [%]





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





Production native forests and plantation forests

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 [%]

Land use and forest 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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0.30%

Total Vegetation Cover Decile [%]

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Deciles show where the pixel value lies in the

record, from highest to

lowest, for that month. That is, red pixels are

records for that month of

the map using baseline from 2001 to 2019.

in the lowest 10% of





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



Hinchinbrook_(S) (278,725 ha and no data 1,937 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 | 278,725 | 100.0% 278,600 | 99.7% 277,825 | 96.4% 268,600 | 86.4% 240,875 | 62.7% 174,775 | 35.6% 99,175 |
| Conservation and natural environments | 130,825 | 100.0% 130,800 | 99.8% 130,500 | 99.4% 129,975 | 98.2% 128,450 | 89.9% 117,625 | 55.1% 72,075 |
| Conservation and natural environments Woodland forest | 46,350 | 100.0% 46,350 | 100.0% 46,350 | 99.6% 46,175 | 98.7% 45,750 | 92.6% 42,900 | 66.5% 30,825 |
| Conservation and natural environments Forest (non woodland) | 82,625 | 100.0% 82,600 | 99.7% 82,350 | 99.3% 82,075 | 98.3% 81,200 | 89.3% 73,825 | 49.5% 40,925 |
| Agriculture | 104,700 | 100.0% 104,700 | 99.8% 104,500 | 93.0% 97,375 | 72.5% 75,900 | 30.8% 32,250 | 14.5% 15,175 |
| Grazing | 21,925 | 100.0% 21,925 | 100.0% 21,925 | 99.3% 21,775 | 95.3% 20,900 | 73.9% 16,200 | 43.4% 9,525 |
| Grazing non forest | 16,100 | 100.0% 16,100 | 100.0% 16,100 | 99.1% 15,950 | 93.6% 15,075 | 65.2% 10,500 | 32.3% 5,200 |
| Grazing Woodland forest | 2,675 | 100.0% 2,675 | 100.0% 2,675 | 100.0% 2,675 | 100.0% 2,675 | 95.3% 2,550 | 69.2% 1,850 |
| Grazing - Forest (non woodland) | 3,150 | 100.0% 3,150 | 100.0% 3,150 | 100.0% 3,150 | 100.0% 3,150 | 100.0% 3,150 | 78.6% 2,475 |
| Cropping | 64,650 | 100.0% 64,650 | 99.7% 64,450 | 90.1% 58,250 | 63.3% 40,925 | 17.5% 11,300 | 6.1% 3,950 |
| Irrigation | 18,100 | 100.0% 18,100 | 100.0% 18,100 | 95.7% 17,325 | 77.6% 14,050 | 26.2% 4,750 | 9.4% 1,700 |
| Production native forests and plantation forests | 19,650 | 100.0% 19,650 | 100.0% 19,650 | 99.9% 19,625 | 99.4% 19,525 | 90.3% 17,750 | 48.3% 9,500 |

