# Total vegetation cover soil protection Region:LGA Gympie\_(R) QLD

# Date: August 2024

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 Aug 2024**

#### 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 [%]

**Total Vegetation Cover Decile [%]** 





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.









#### **Conservation and natural environments**

1 Conservation and natural environments - Non-forest

3 Conservation and natural environments - Non-woodland forest

2 Conservation and natural environments - Woodland forest

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

#### 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 [%]** 









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







### **Conservation and natural environments non forest**

Catchment Scale Land Use and Forests of Australia (2018) Derived from 1 Conservation and natural environments - Non-Catchment Scale Land forest Use of Australia (2018) and Forests of Australia (2018)

**Total Vegetation Cover [%]** 

Land use and forest cover





Proportion of vegetation cover class in area







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



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



#### **Conservation and natural environments Woodland forest**

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

**Total Vegetation Cover [%]** 



% Area protected from water erosion (>70%)



Proportion of vegetation cover class in area



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 [%]** 





the map using from 2001 to 2



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



100 99 ---- above\_70 98 **—** 10th **——** 50th **—** 2024 Aug 97 96 95 94 4eb Jan In Mai way hy P.Q. month tern Ecosystem Research Infrastructure Australian Government

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

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





### **Conservation and natural environments Forest (non woodland)**



**Total Vegetation Cover [%]** 



% Area protected from water erosion (>70%)



Proportion of vegetation cover class in area





**Total Vegetation Cover Decile [%]** 



**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.



- 20

- 10

- 0

-10

-20



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



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



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





### Agriculture

Land use and forest cover

Proportion of each land class in area

0.7%

99.9%





% Area protected from wind erosion (>50%)





% 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.

**Total Vegetation Cover Decile [%]** 





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.





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



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

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



### Grazing

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 each land class in area

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 [%]** 







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



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

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



### **Grazing non forest**



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 [%]** 







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





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

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



### **Grazing Woodland forest**



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 [%]** 





## Grazing Woodland forest 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%)



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





### Grazing - Forest (non woodland)



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 [%]** 









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



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### Irrigation

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

Total Vegetation Cover [%]

Land use and forest 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 [%]



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 [%]** 











100 99.0 98 96 ---- above\_70 **—** 10th **——** 50th 94 **—** 2024 Aug 92 90 88 86 4eb Jan way In hy Þb, War month tern Ecosystem Research Infrastructure Australian Government

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



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









above\_90

### **Production native forests and plantation forests**

Catchment Scale Land Use and Forests of Australia (2018) Derived from 1 Production native forests and plantation forests 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 [%]



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%)



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



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# Gympie\_(R) (687,350 ha and no data 1,025 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	687,350	100.0% 687,200	100.0% 687,075	99.8% 685,750	98.7% 678,750	81.1% 557,275	38.7% 265,875
Conservation and natural environments	142,850	99.9% 142,700	99.8% 142,575	99.6% 142,250	99.2% 141,725	93.9% 134,125	58.4% 83,425
Conservation and natural environments non forest	9,950	100.0% 9,950	99.2% 9,875	98.7% 9,825	98.2% 9,775	90.7% 9,025	33.7% 3,350
Conservation and natural environments Woodland forest Conservation and	28,975	99.8% 28,925	99.7% 28,900	99.4% 28,800	99.2% 28,750	92.9% 26,925	46.0% 13,325
natural environments Forest (non woodland)	103,925	99.9% 103,825	99.9% 103,800	99.7% 103,625	99.3% 103,200	94.5% 98,175	64.2% 66,750
Agriculture	397,650	100.0% 397,650	100.0% 397,650	99.9% 397,075	98.7% 392,400	78.7% 312,875	31.8% 126,325
Grazing	377,675	100.0% 377,675	100.0% 377,675	99.9% 377,400	99.0% 374,075	80.4% 303,625	32.8% 123,850
Grazing non forest	267,725	100.0% 267,725	100.0% 267,725	99.9% 267,450	98.7% 264,275	75.9% 203,300	27.1% 72,425
Grazing Woodland forest	61,875	100.0% 61,875	100.0% 61,875	100.0% 61,875	99.8% 61,750	88.9% 55,000	39.3% 24,300
Grazing - Forest (non woodland)	48,075	100.0% 48,075	100.0% 48,075	100.0% 48,075	99.9% 48,050	94.3% 45,325	56.4% 27,125
Irrigation	17,200	100.0% 17,200	100.0% 17,200	98.3% 16,900	90.4% 15,550	42.9% 7,375	11.2% 1,925
Production native forests and plantation forests	115,575	100.0% 115,575	100.0% 115,575	100.0% 115,575	99.8% 115,400	77.6% 89,650	43.1% 49,775

