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

Date: March 2025

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

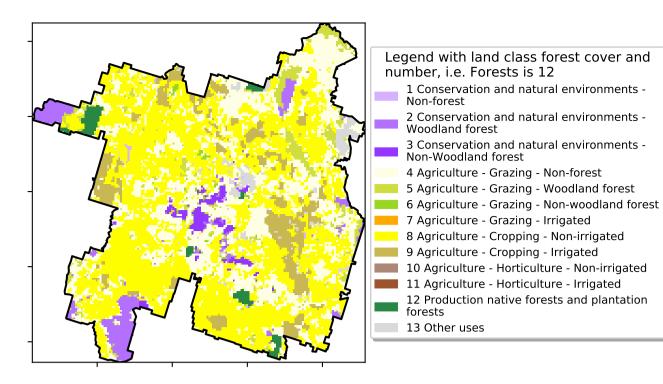


Vegetation Cover Mar 2025

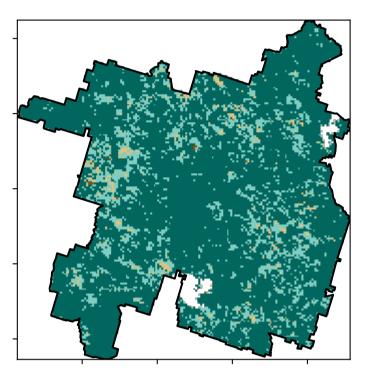
Land use and forest cover

Proportion of each land class in area

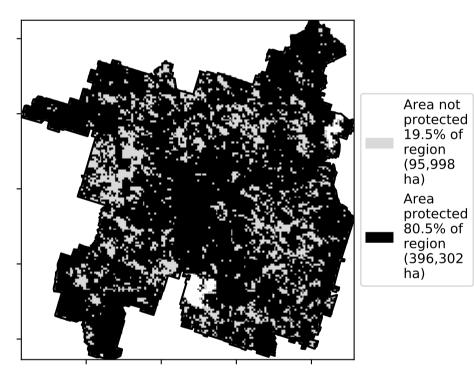
47.3%

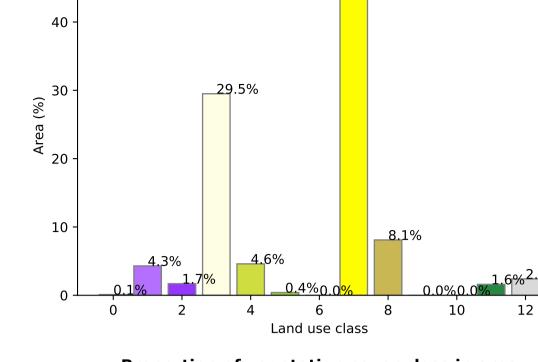


Total Vegetation Cover [%]

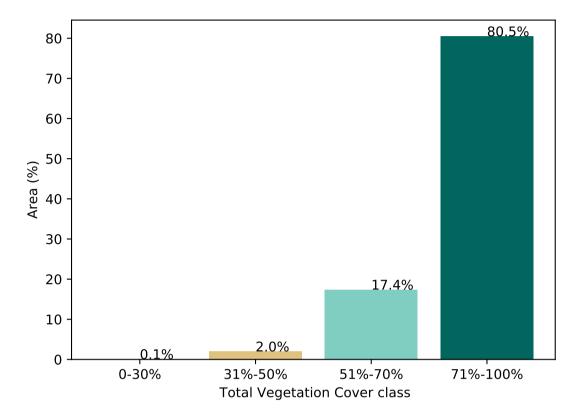


% Area protected from water erosion (>70%)





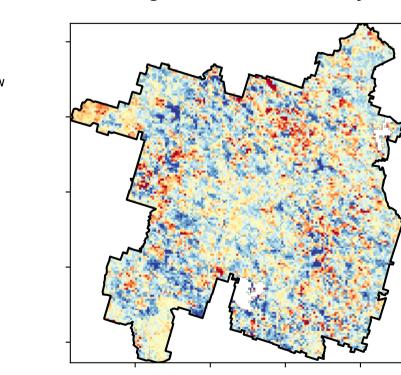
Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)



Total Vegetation Cover Anomaly [%]



20

10

0

-10

-20

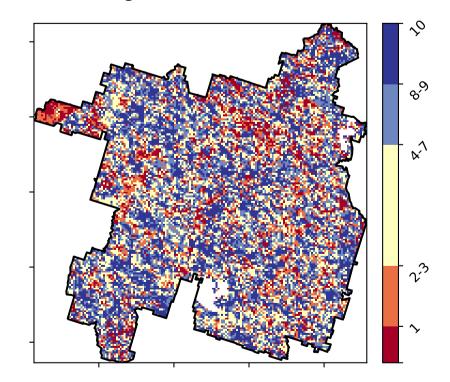
120/070001

52°10°10°10

32%50%

0.30%

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.

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.

Catchment Scale

of Australia (2018)

(2018) and Forests

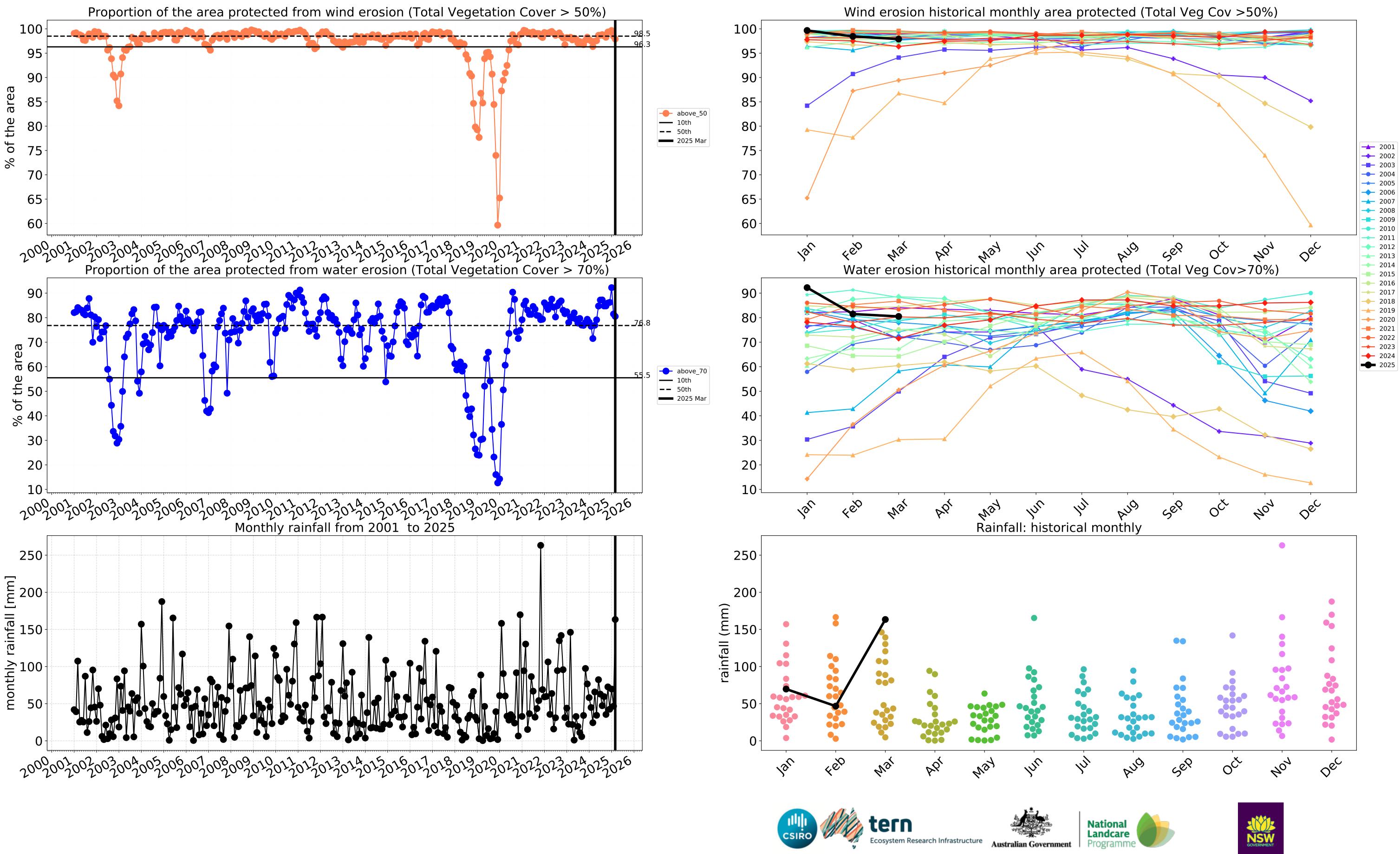
of Australia (2018)

Derived from

Use of Australia

Land Use and Forests

Catchment Scale Land



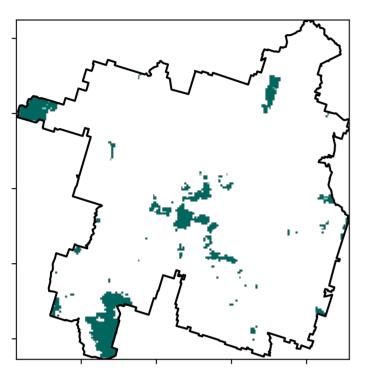
Conservation and natural environments

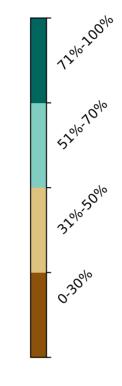
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

forest

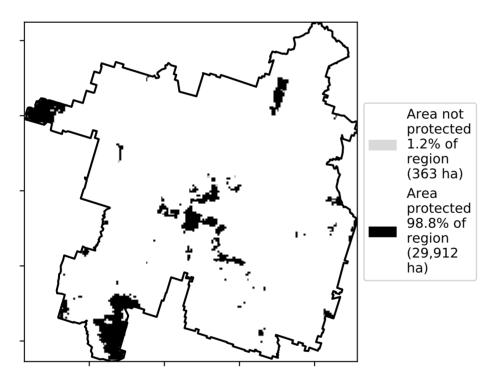
Land use and forest cover

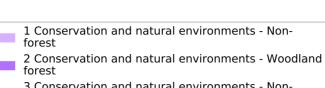
Total Vegetation Cover [%]





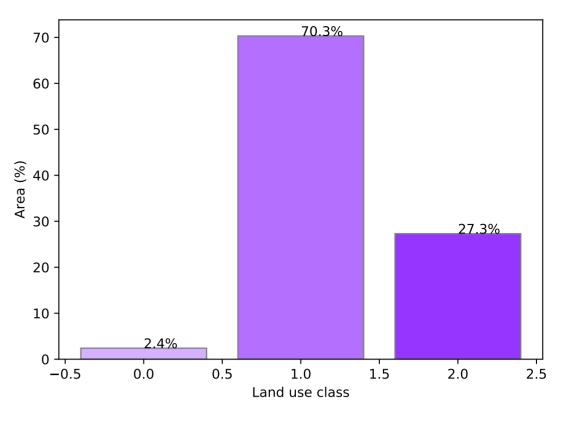
% Area protected from water erosion (>70%)



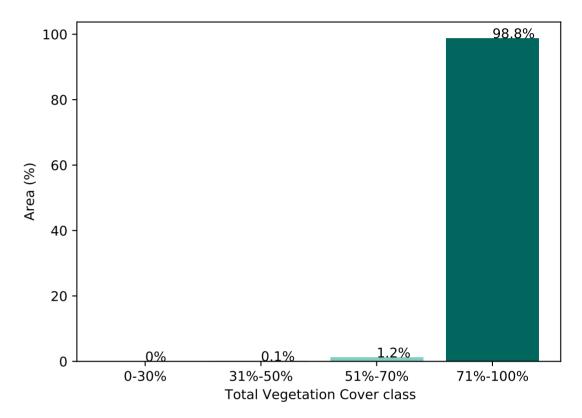


3 Conservation and natural environments - Nonwoodland forest

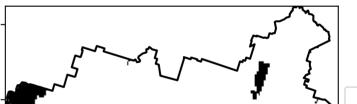




Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)



Total Vegetation Cover Anomaly [%]

Anomaly show how many percetage points each is only for the month of the map

pixel is from

the mean. That is, red pixels

are about 20% lower than the

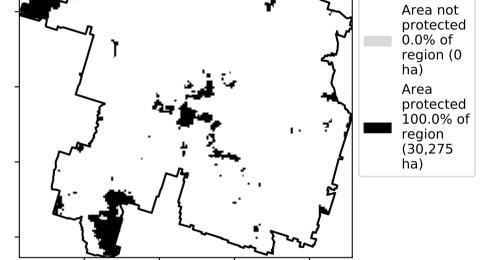
mean of that

pixel. The mean

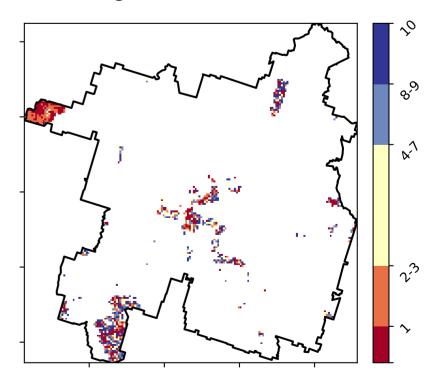
using baseline from 2001 to 2019.

- 20 - 10 0 -10-20

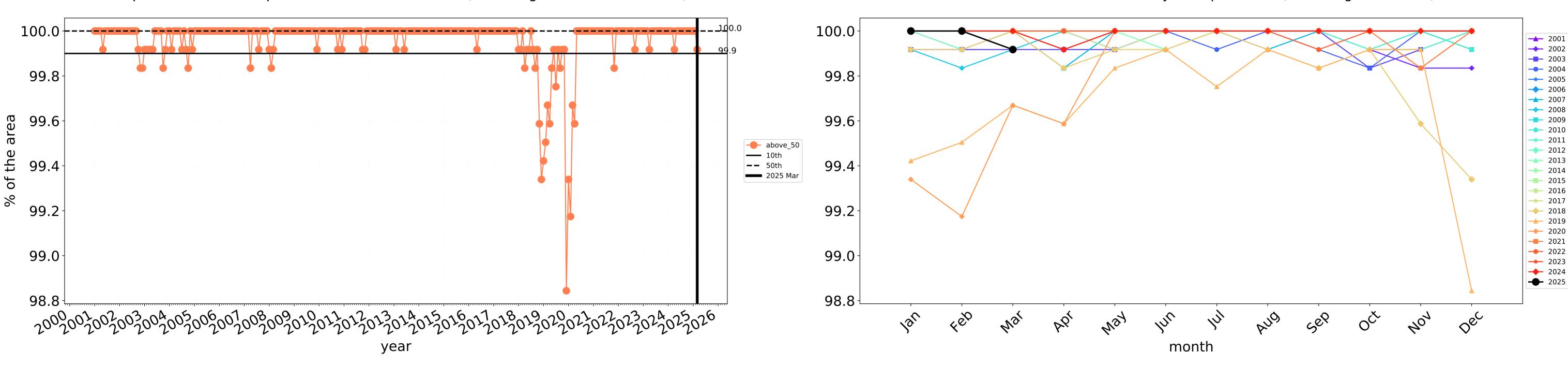
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.



Total Vegetation Cover Decile [%]

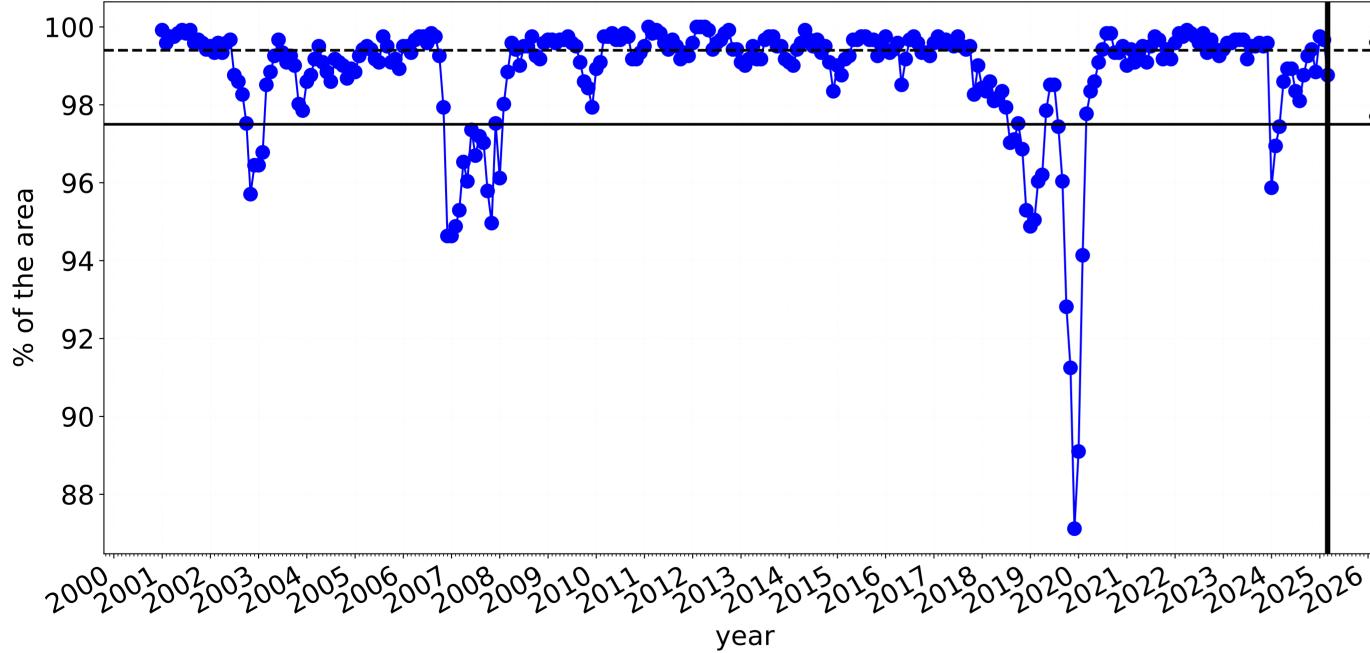






Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

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

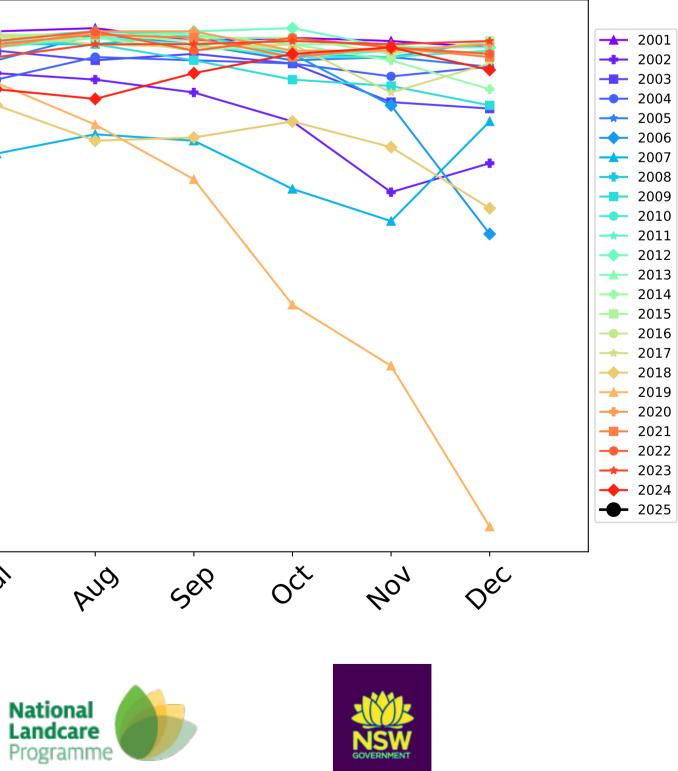


100 98 96 ---- above_70 **——** 10th **——** 50th **—** 2025 Mar 94 92 90 88 4e0 lan In way PQ Mai 1's month tern Ecosystem Research Infrastructure Australian Government

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

5

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

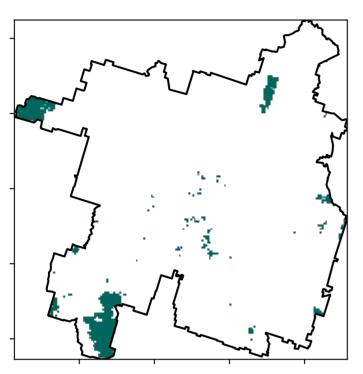


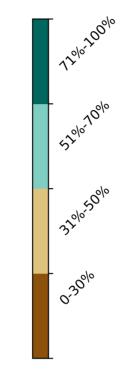
Conservation and natural environments Woodland forest

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

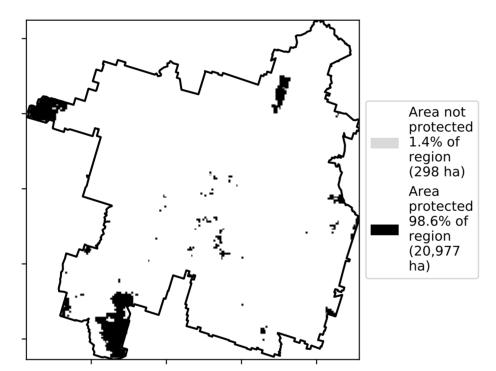
Total Vegetation Cover [%]

Land use and forest cover

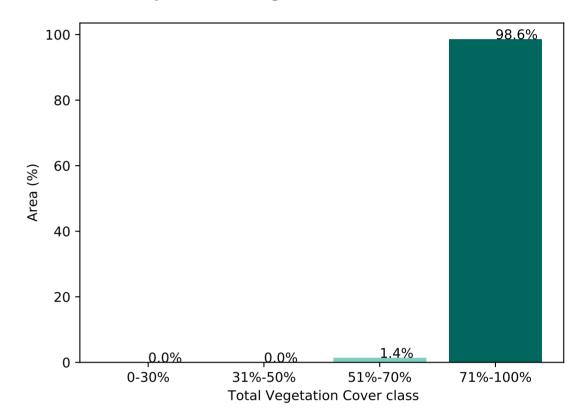




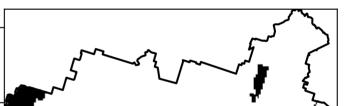
% Area protected from water erosion (>70%)





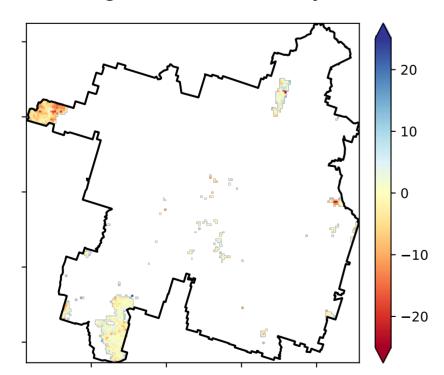


% Area protected from wind erosion (>50%)

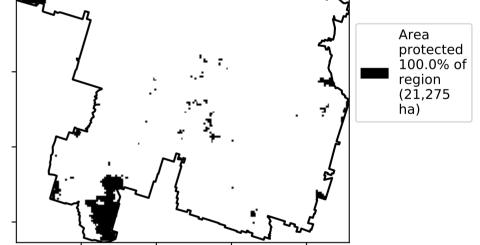


Total Vegetation Cover Anomaly [%]

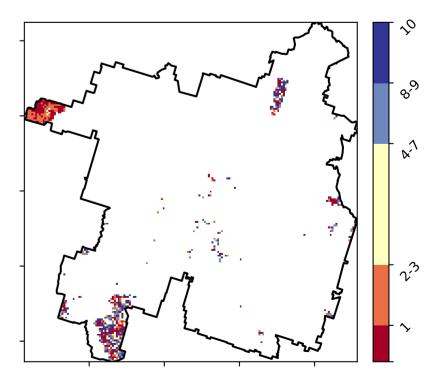
Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.



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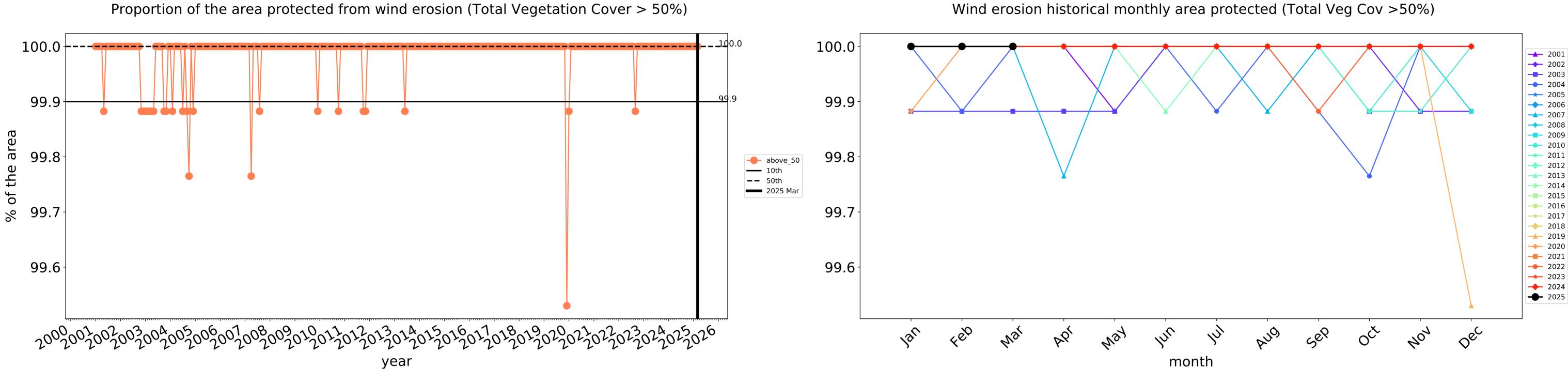


Total Vegetation Cover Decile [%]

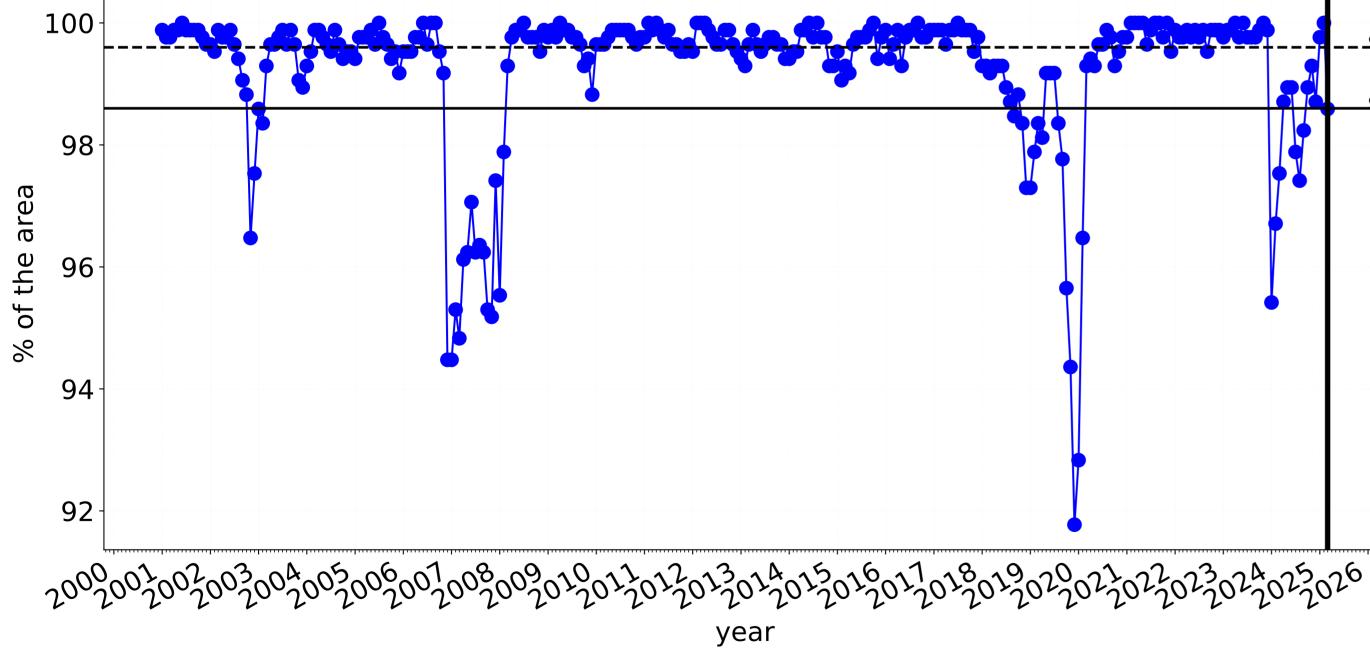






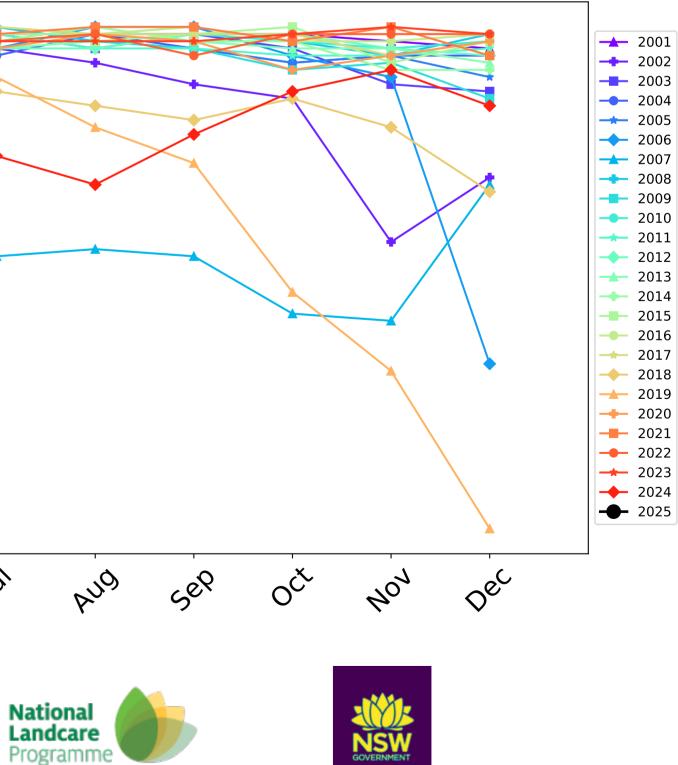


Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)



100 N K 98 ---- above_70 **—** 10th **——** 50th **—** 2025 Mar 96 94 92 4e0 Jan way PQ In 1's Mai month tern Ecosystem Research Infrastructure Australian Government

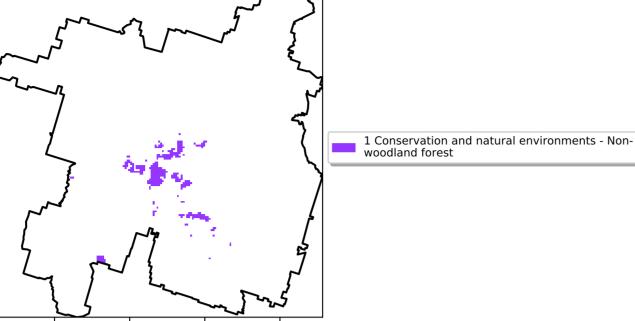
Water erosion historical monthly area protected (Total Veg Cov>70%)



Conservation and natural environments Forest (non woodland)

Land use and forest cover

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



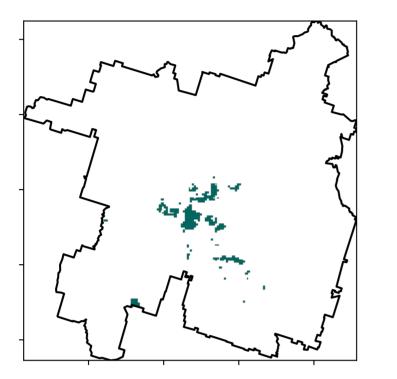
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52°1070°1

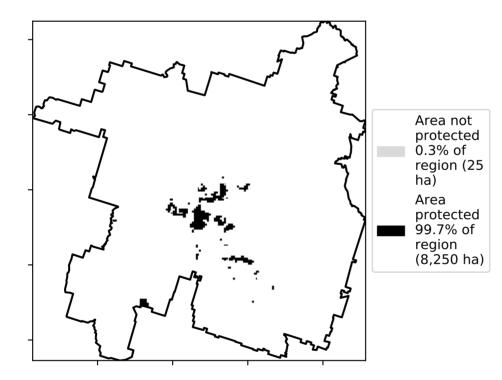
· 320050010

0.30%

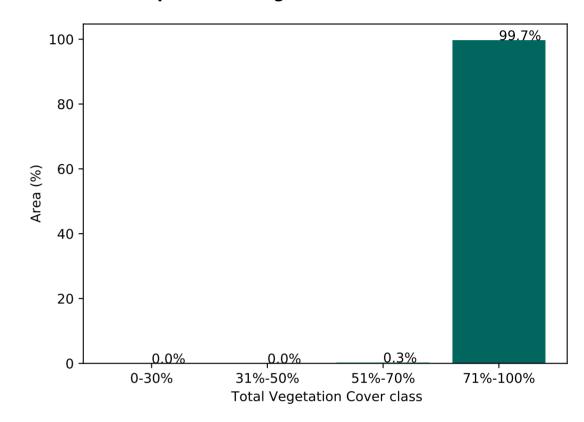
Total Vegetation Cover [%]



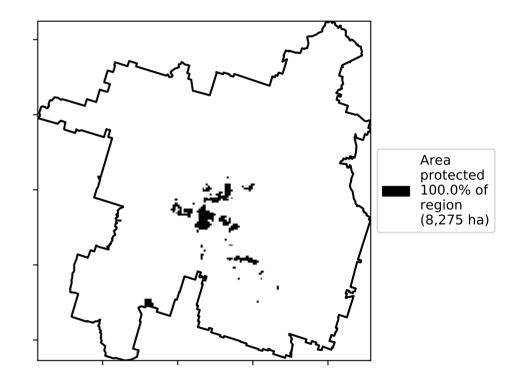
% Area protected from water erosion (>70%)



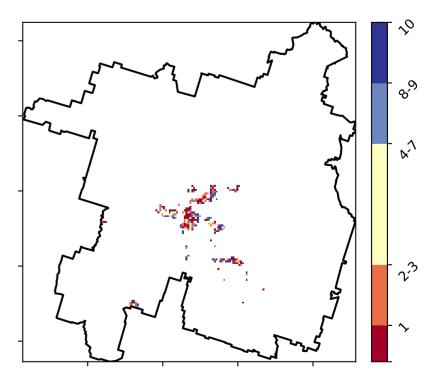
Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)

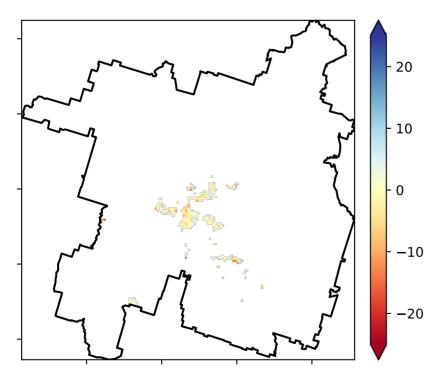


Total Vegetation Cover Decile [%]



Total Vegetation Cover Anomaly [%]

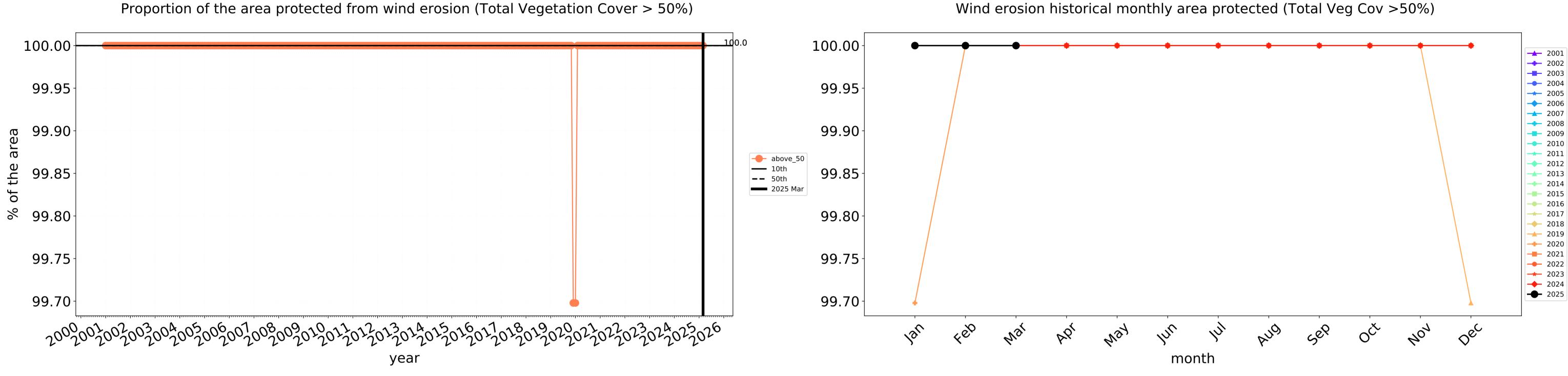
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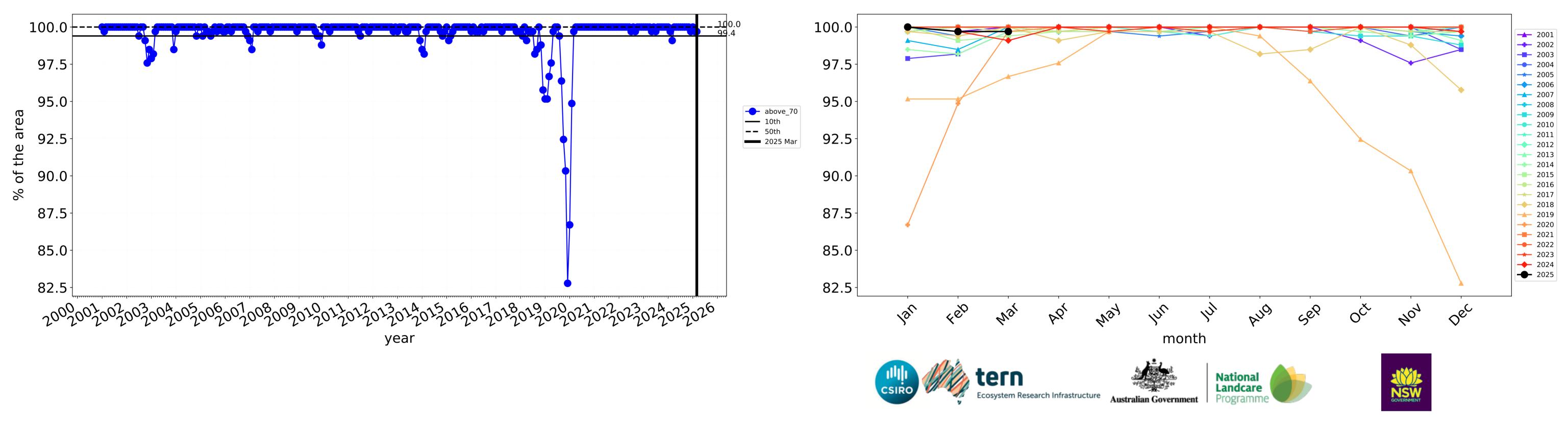
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.



Conservation and natural environments Forest (non woodland) timeseries



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



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

Agriculture

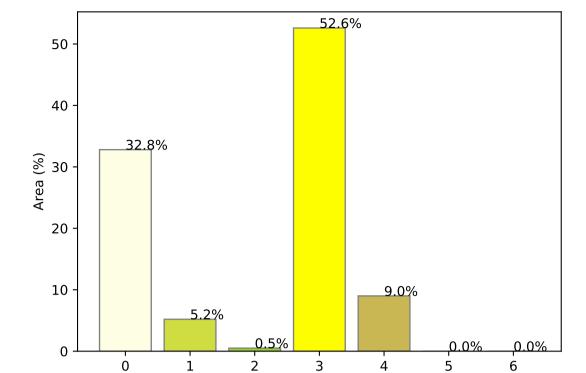
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

Land use and forest cover

- 1 Agriculture Grazing Non forest 2 Agriculture - Grazing - Woodland forest 3 Agriculture - Grazing - Non-woodland forest 4 Agriculture - Cropping - Non-irrigated 5 Agriculture - Cropping - Irrigated
- 6 Agriculture Horticulture Non-irrigated
- 7 Agriculture Horticulture Irrigated

1210,000

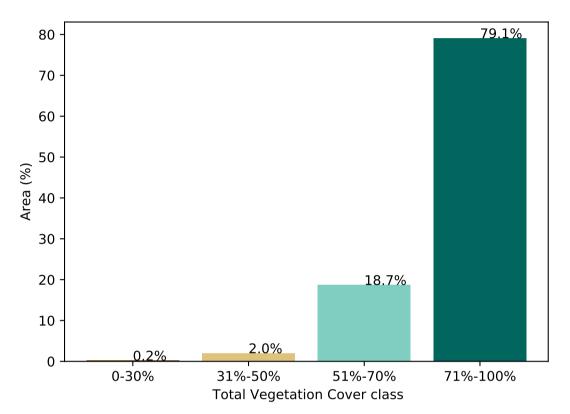
52°1070°1



Proportion of each land class in area

Proportion of vegetation cover class in area

Land use class

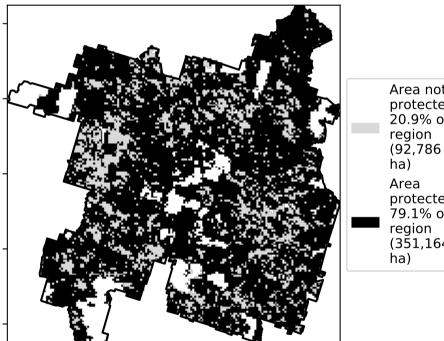


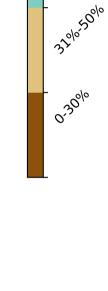
% Area protected from wind erosion (>50%)

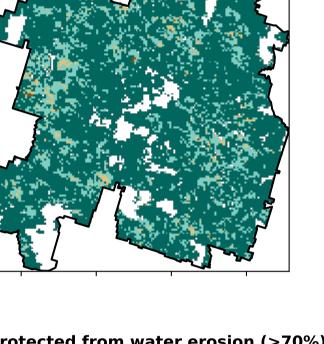


Total Vegetation Cover [%]

% Area protected from water erosion (>70%)

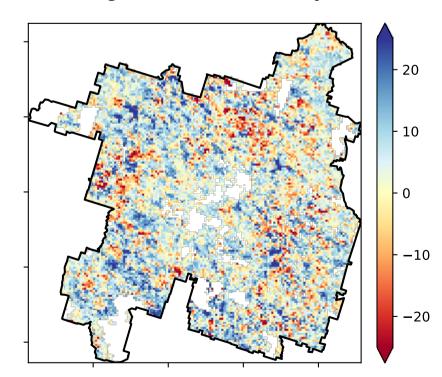






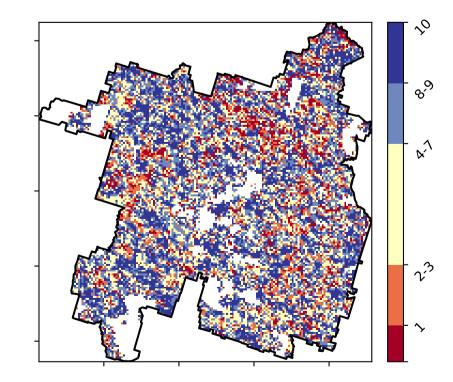


Total Vegetation Cover Anomaly [%]



Area not protected 2.0% of region (8,879 ha) Area protected 98.0% of region (435,071 ha)

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.



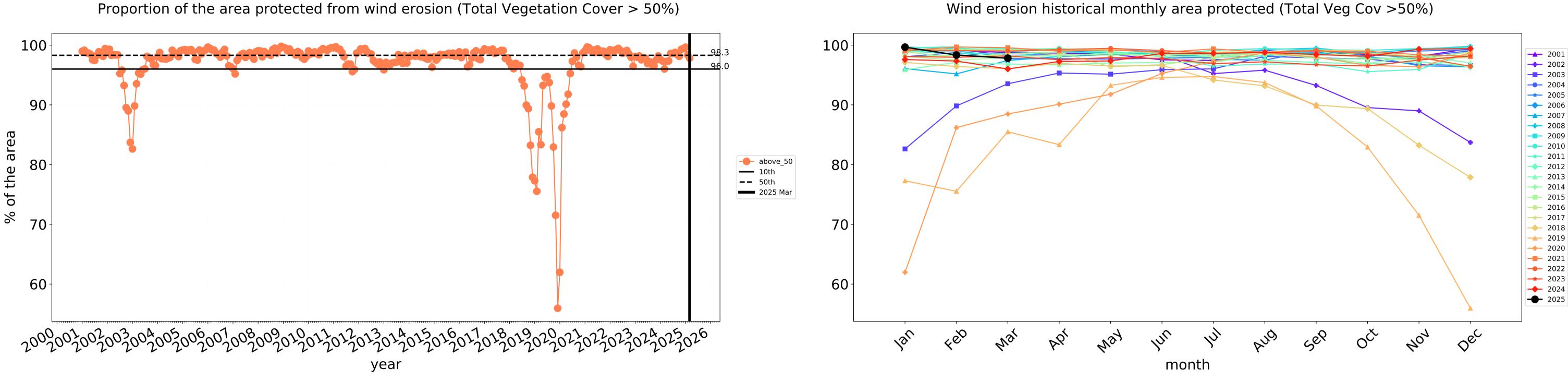
Deciles show where the pixel value lies in the

record, from highest to

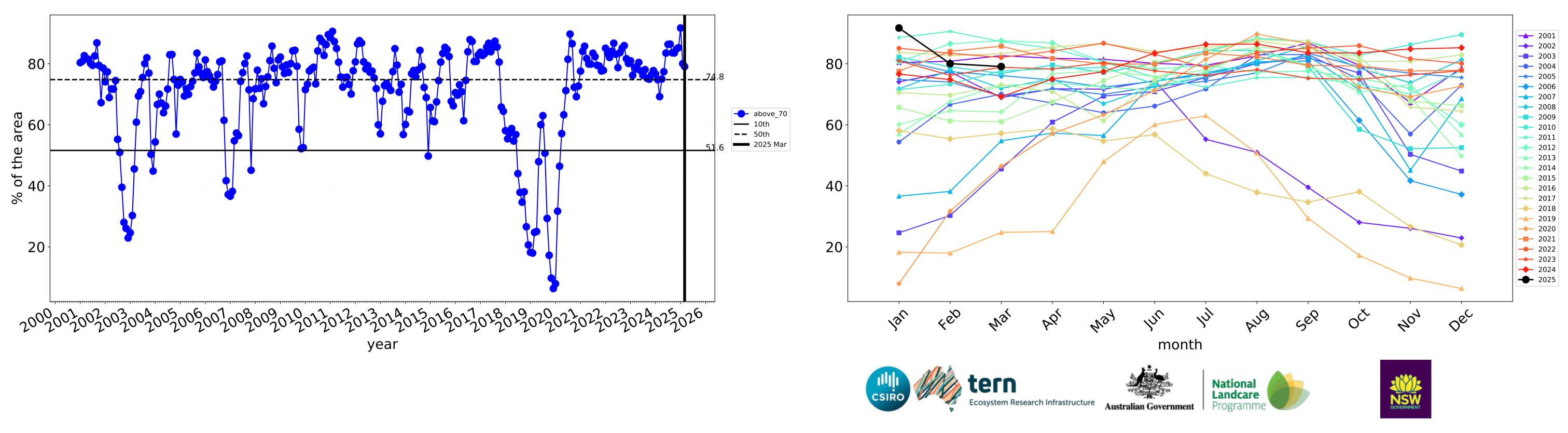
lowest, for that month. That is, red pixels are in the lowest 10% of

records for that month of

the map using baseline from 2001 to 2019.







Agriculture timeseries

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

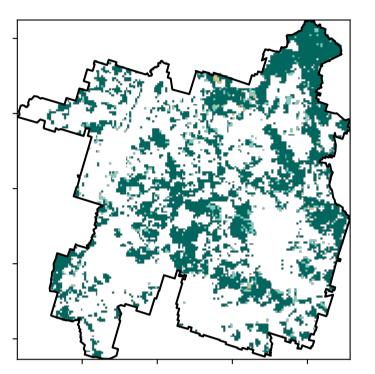
Grazing

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

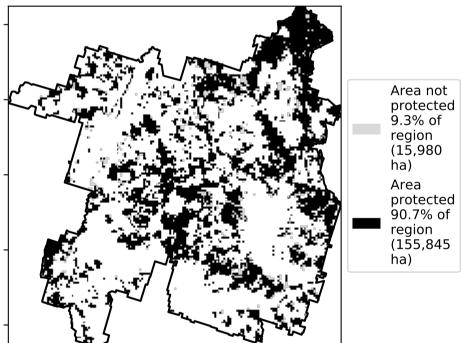
1 Agriculture - Grazing - Non forest 2 Agriculture - Grazing - Woodland forest 3 Agriculture - Grazing - Non-woodland forest

Total Vegetation Cover [%]

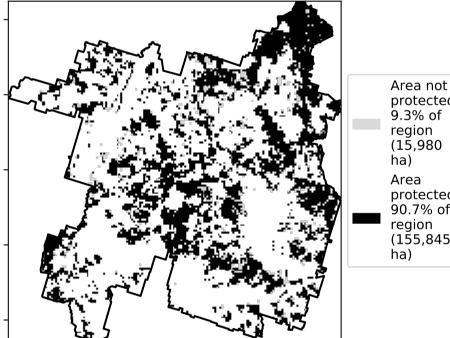
Land use and forest cover



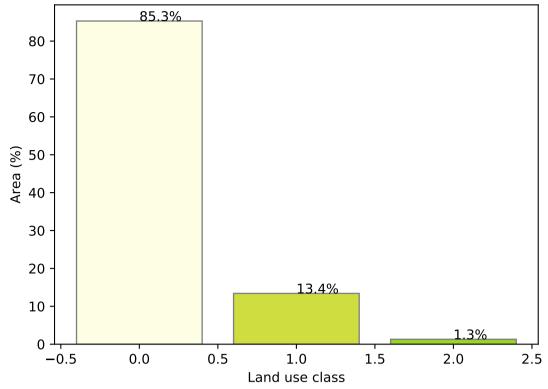
% Area protected from water erosion (>70%)



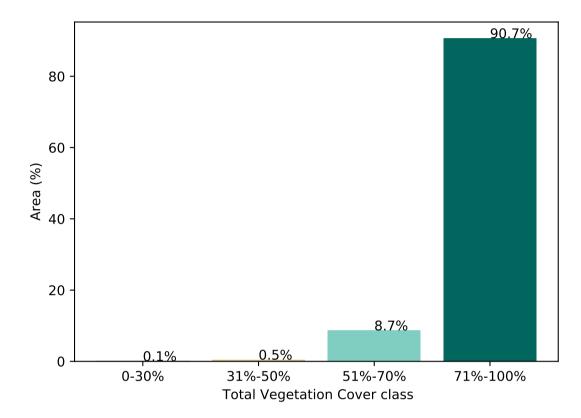
1200,100, · 52%70% 320050010 · 0.30%







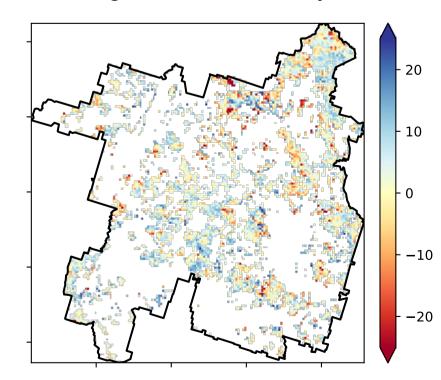
Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)

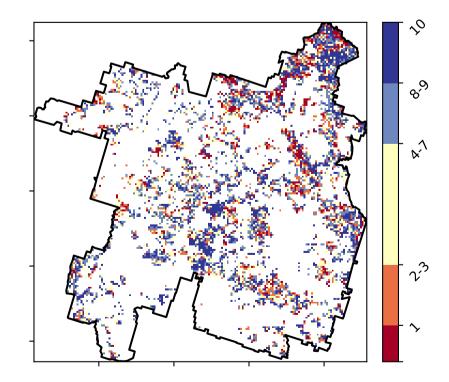


Total Vegetation Cover Anomaly [%]



Area not protected 1.0% of region (1,718 ha) Area protected 99.0% of region (170,107 ha)

Total Vegetation Cover Decile [%]



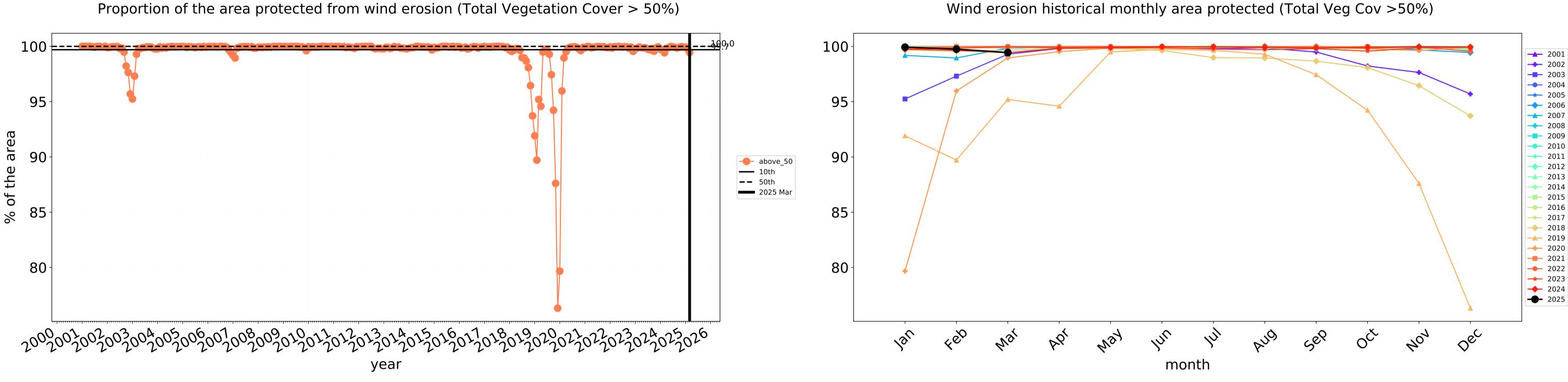




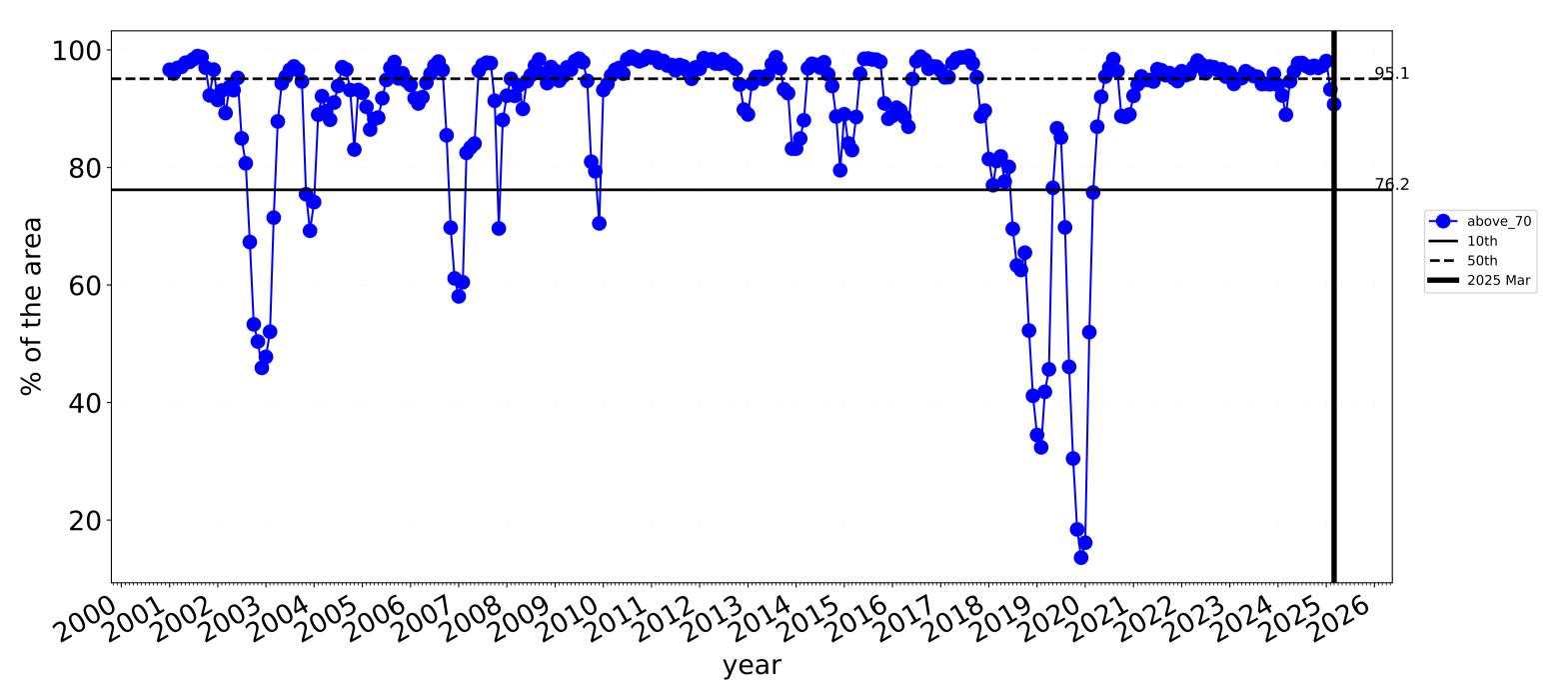
record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

Deciles show where the pixel value lies in the

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 mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.

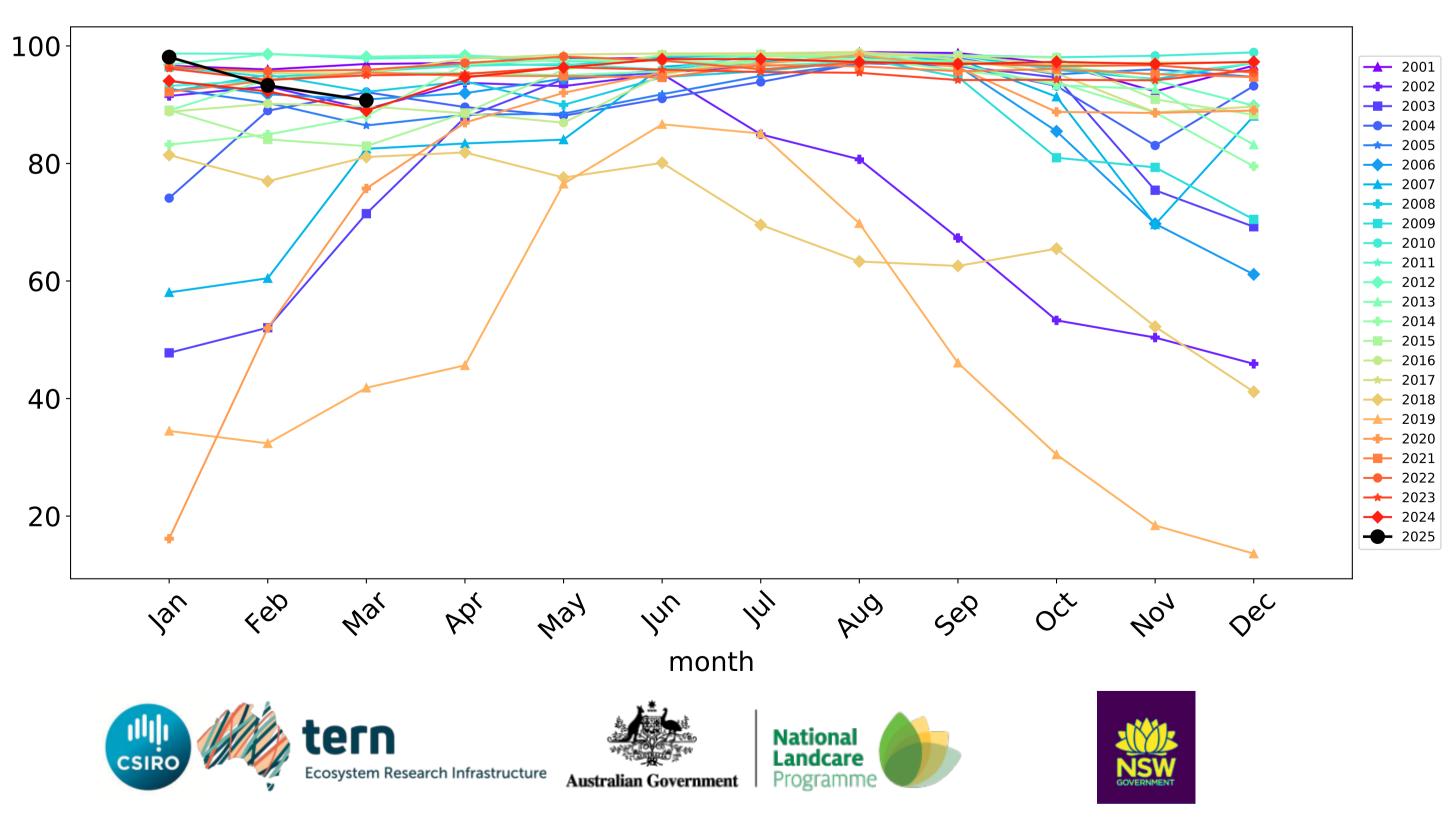


Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)



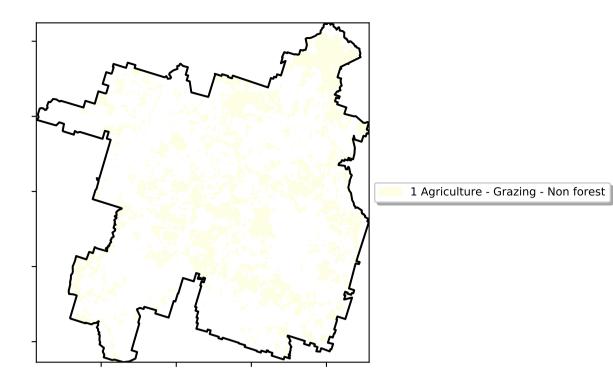
Grazing timeseries

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

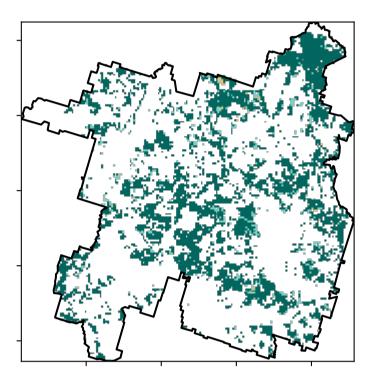


Grazing non forest

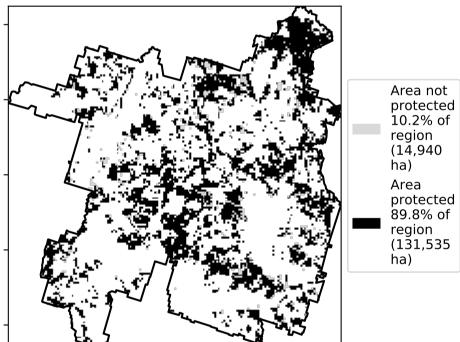
Land use and forest cover

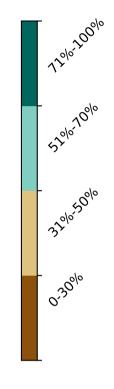


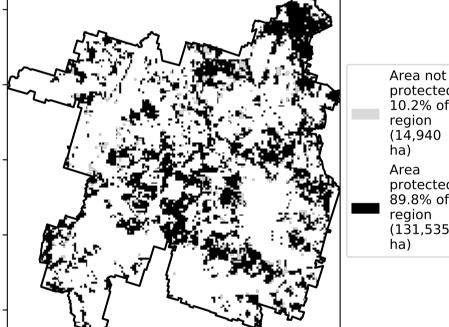
Total Vegetation Cover [%]



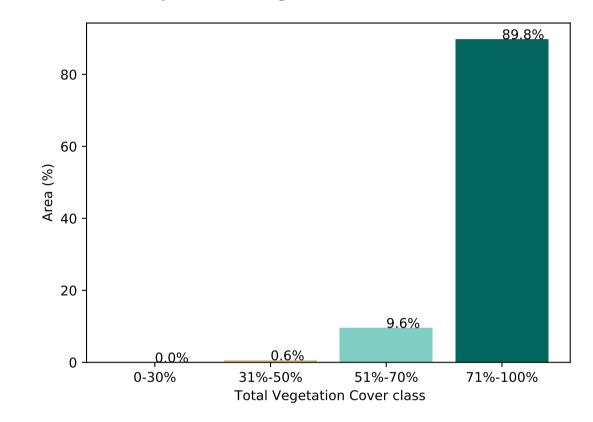
% Area protected from water erosion (>70%)



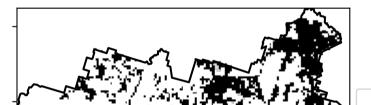




Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)



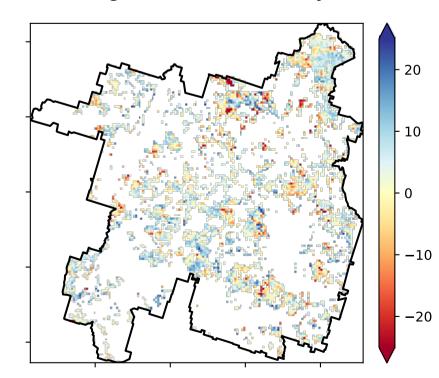
Area

ha)

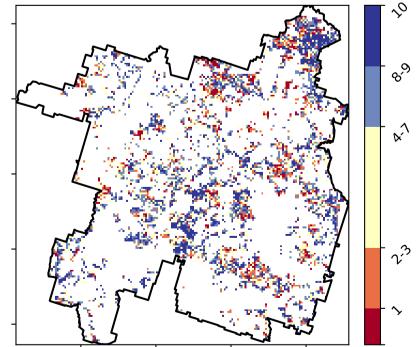
protected 99.0% of

region (145,010

Total Vegetation Cover Anomaly [%]



Total Vegetation Cover Decile [%]







124

Deciles show where the pixel value lies in the

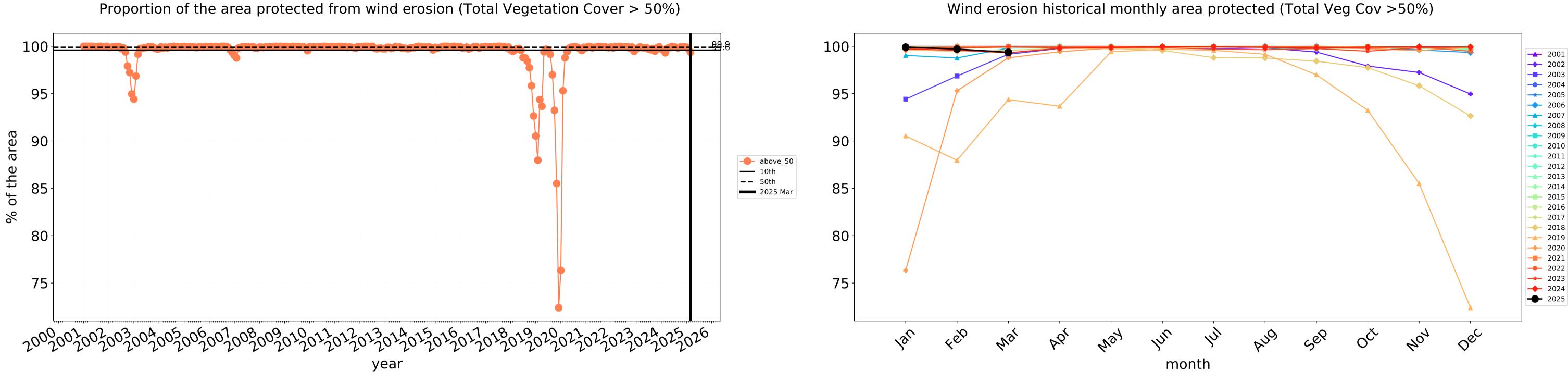
record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of

the map using baseline from 2001 to 2019.

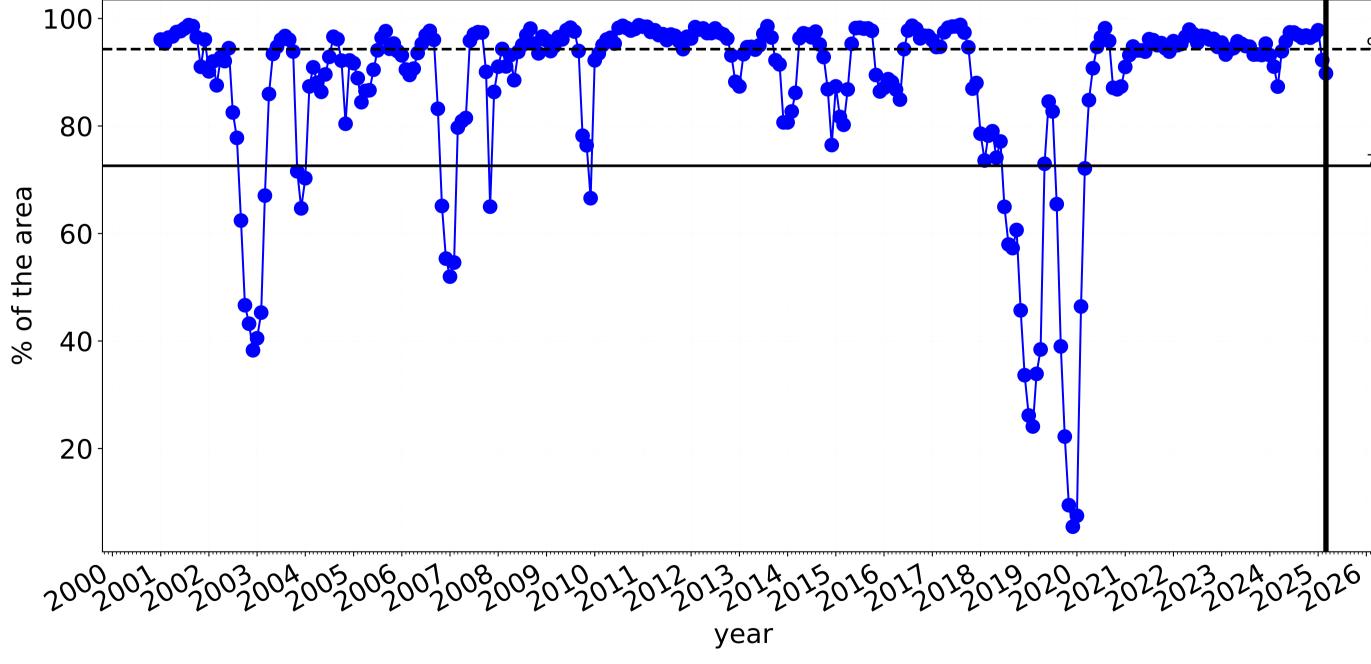
Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.

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

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



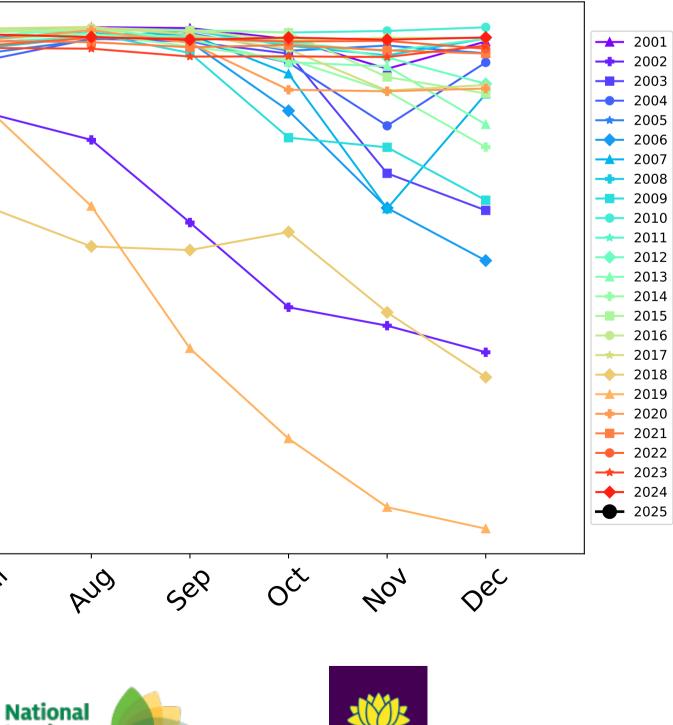
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)



Grazing non forest timeseries

100-80----- above_70 **——** 10th 60 **——** 50th **——** 2025 Mar 40-20 4eb way In War Pla Jan 1/2/ month tern Landcare Ecosystem Research Infrastructure Australian Government Programm

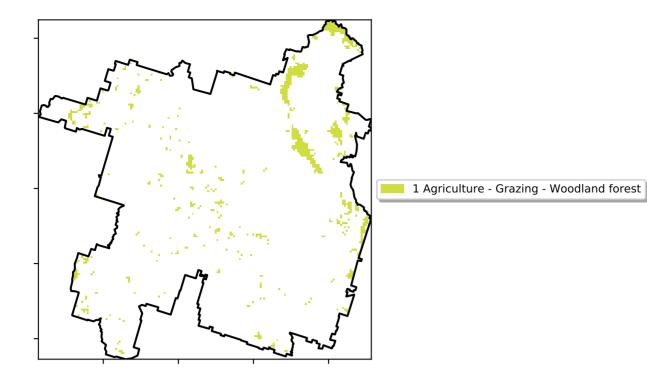
Water erosion historical monthly area protected (Total Veg Cov>70%)



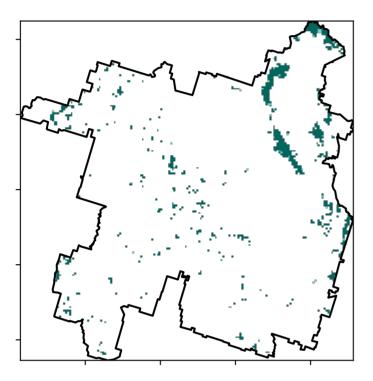
NSW

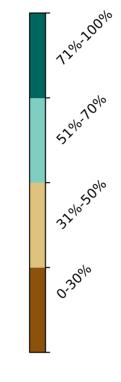
Grazing Woodland forest

Land use and forest cover

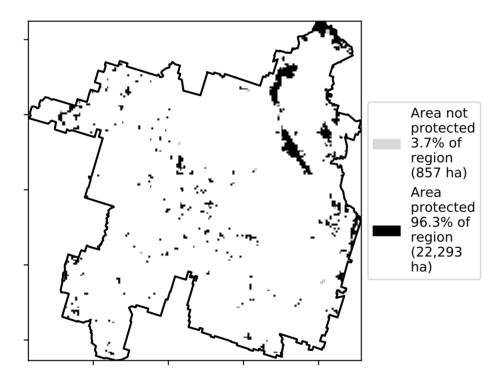


Total Vegetation Cover [%]

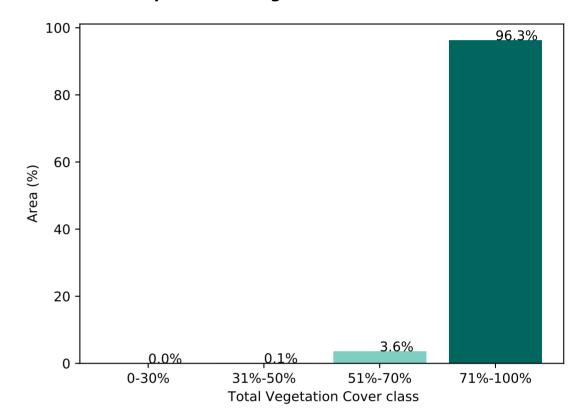




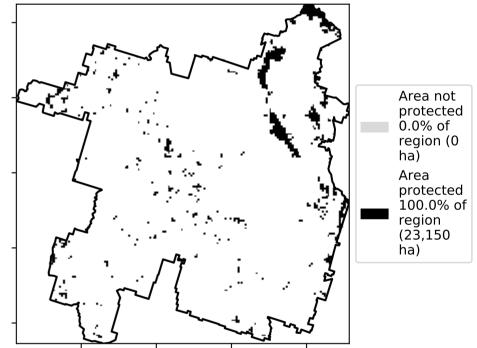
% Area protected from water erosion (>70%)



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)

Anomaly show how many percetage points each

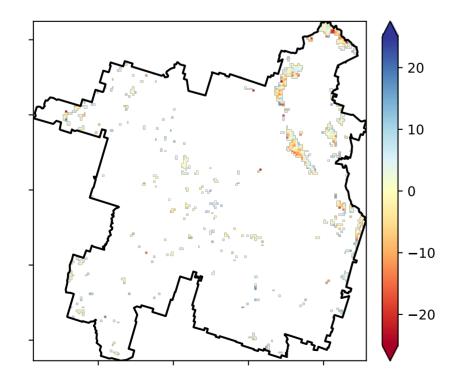
pixel is from the mean. That is, red pixels are about 20%

lower than the

using baseline from 2001 to 2019.

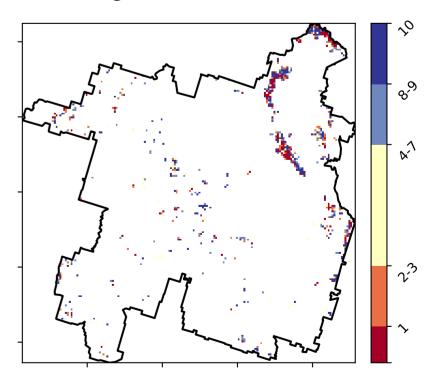
is only for the month of the map

mean of that pixel. The mean Total Vegetation Cover Anomaly [%]



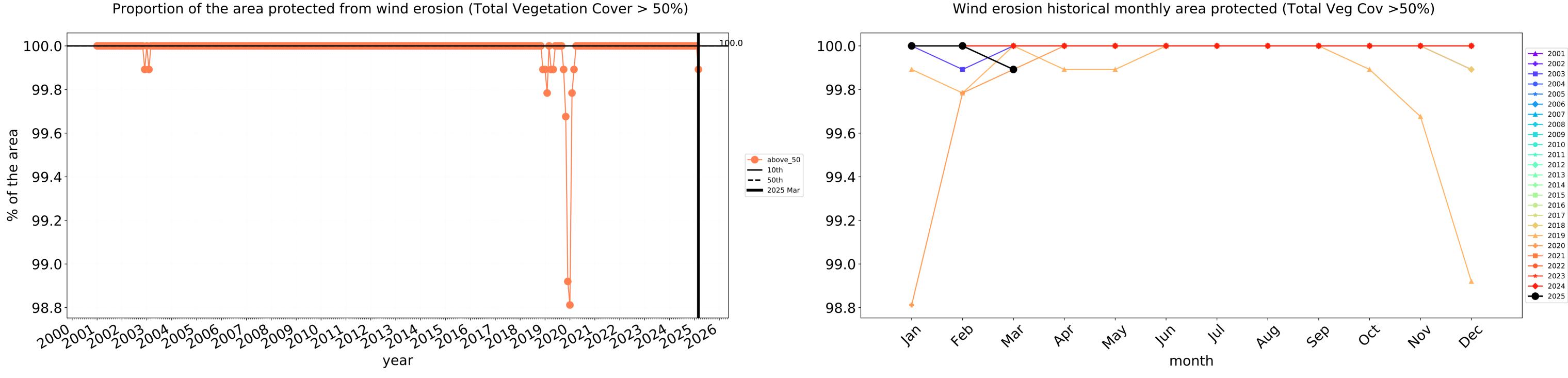
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

Total Vegetation Cover Decile [%]



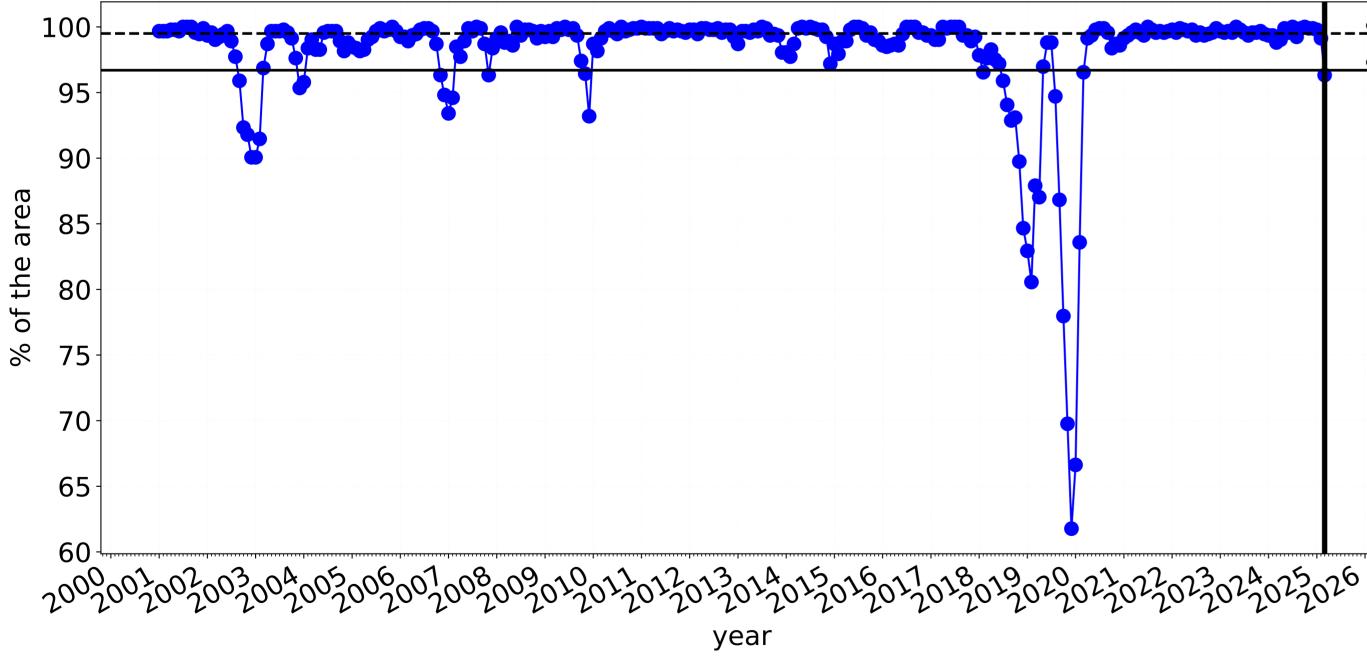


Grazing Woodland forest timeseries

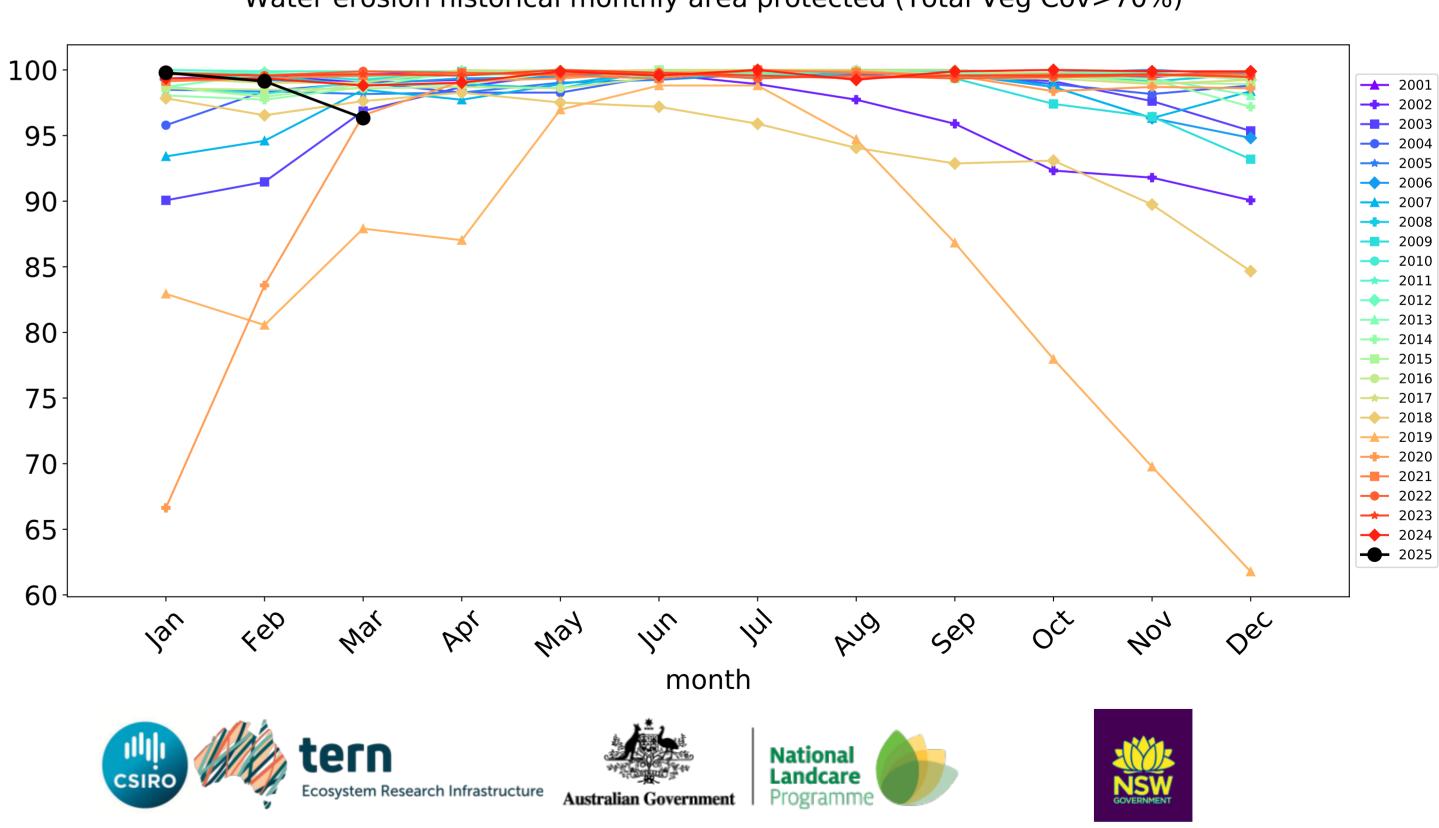


Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

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



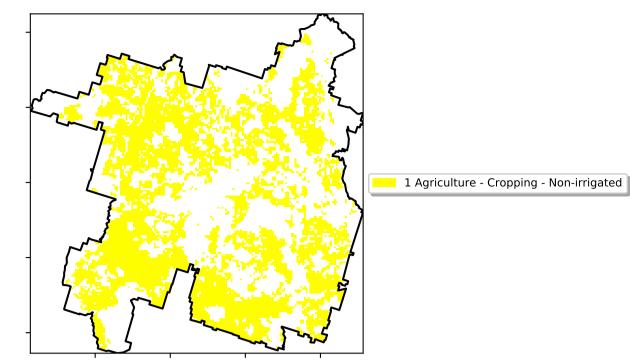
99 ---- above_70 **—** 10th **——** 50th **——** 2025 Mar



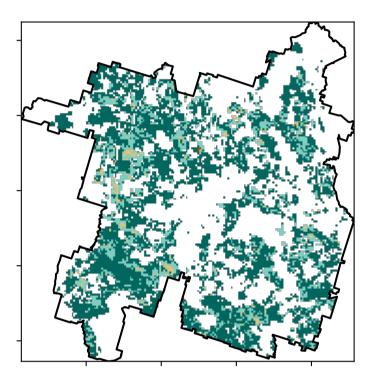
Water erosion historical monthly area protected (Total Veg Cov>70%)

Cropping

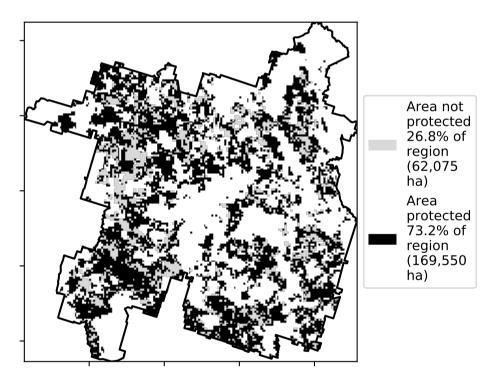
Land use and forest cover



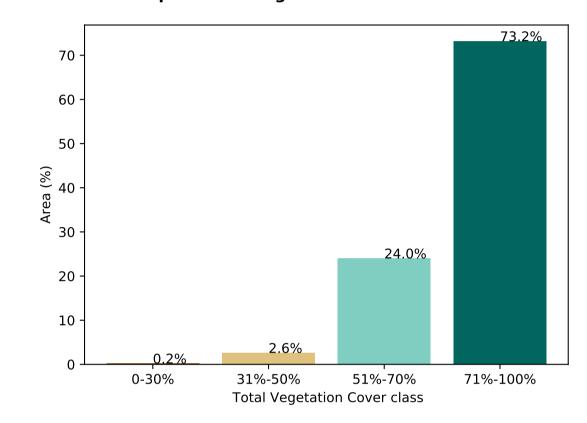
Total Vegetation Cover [%]



% Area protected from water erosion (>70%)



Proportion of vegetation cover class in area



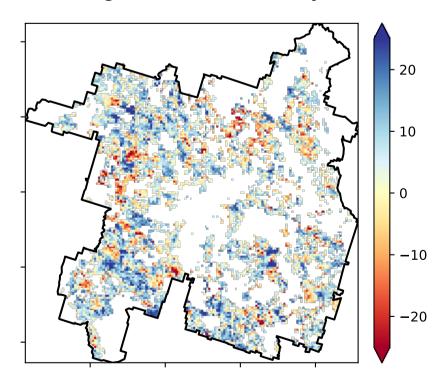
% Area protected from wind erosion (>50%)





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

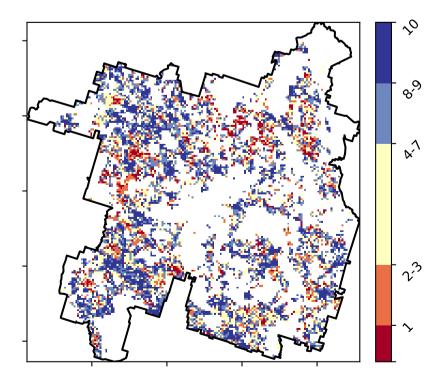
Total Vegetation Cover Anomaly [%]



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.

Area not protected 3.0% of region (6,949 ha) Area protected 97.0% of region (224,676 ha)

Total Vegetation Cover Decile [%]





12%700

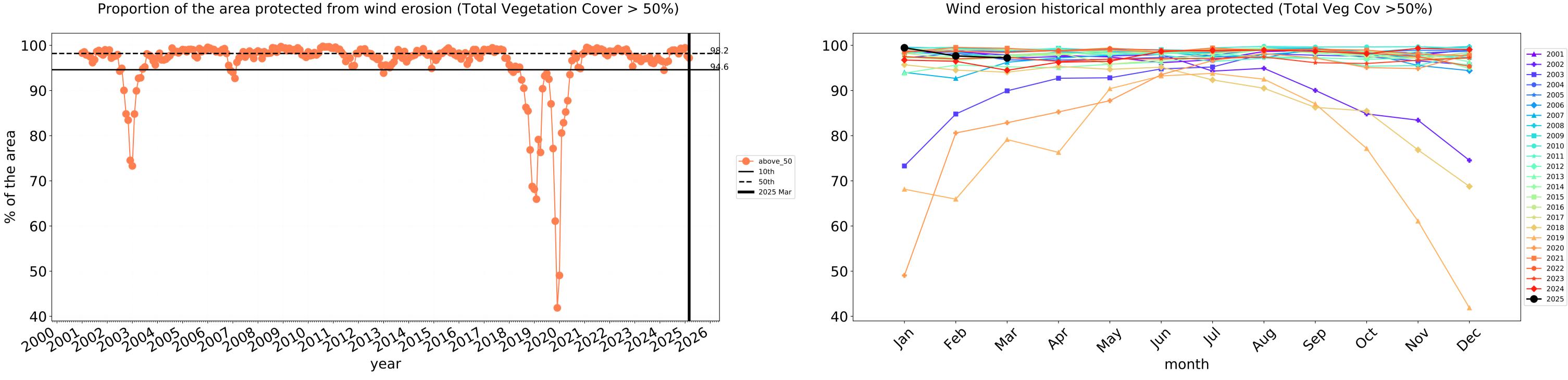
52% TON

3201050010

· 0.30%

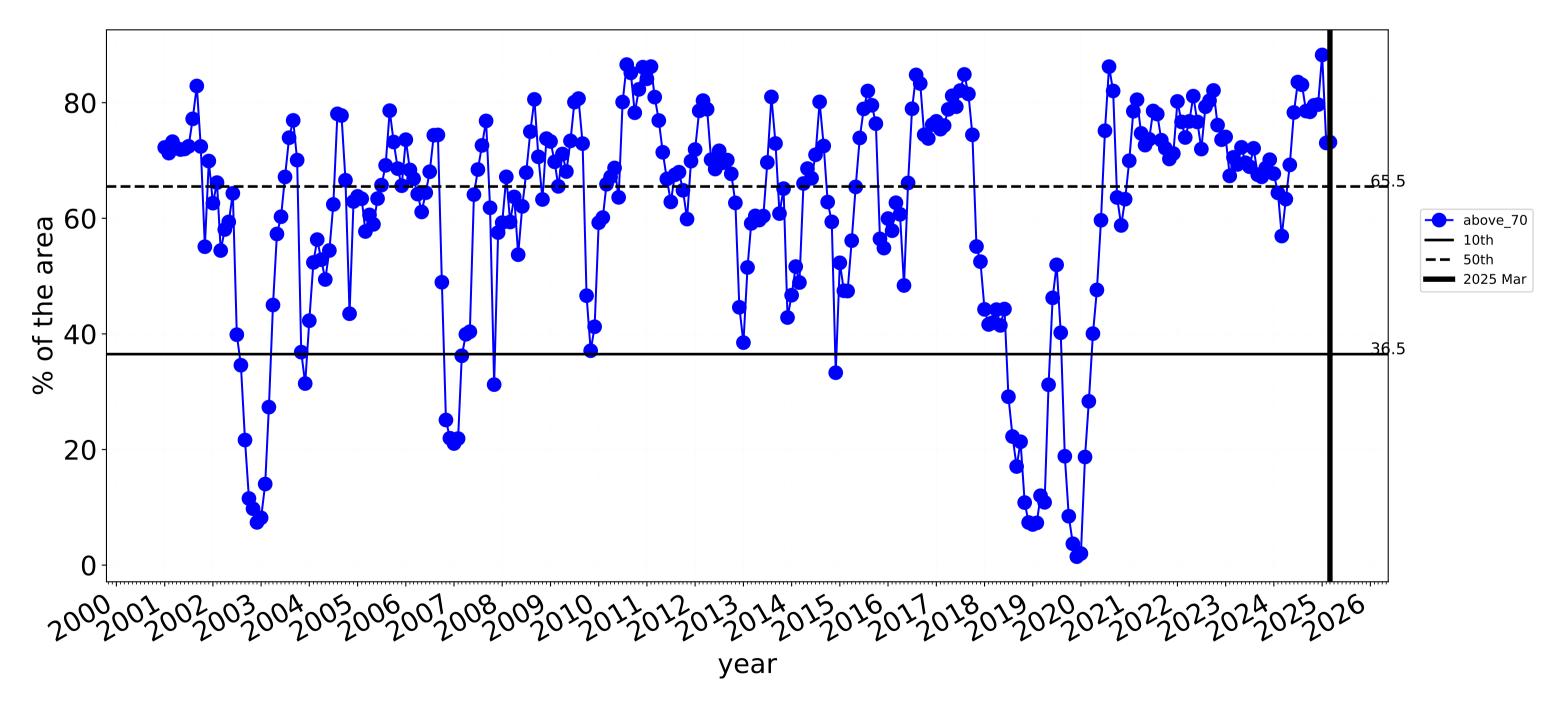


Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.



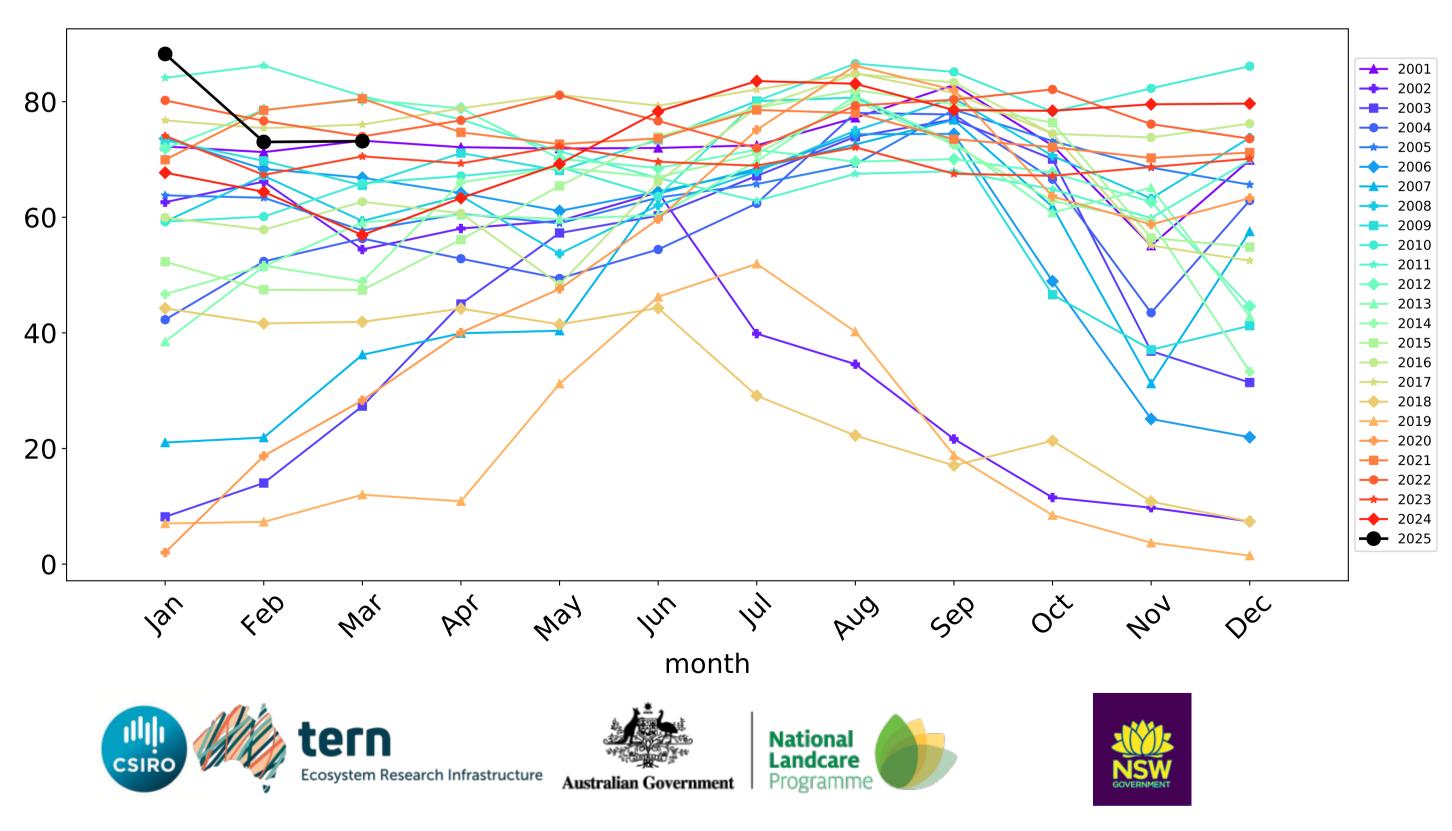
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)





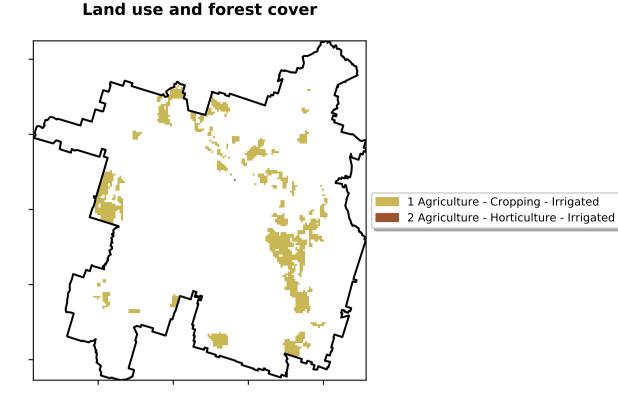
Cropping timeseries

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

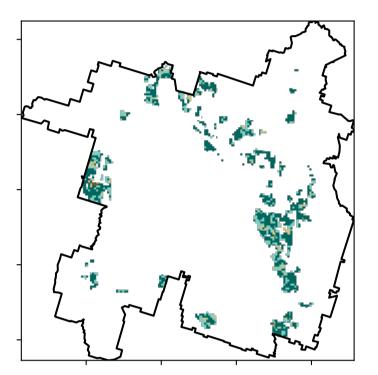


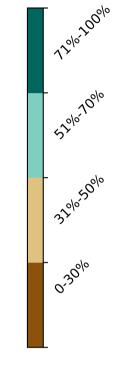
Irrigation

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

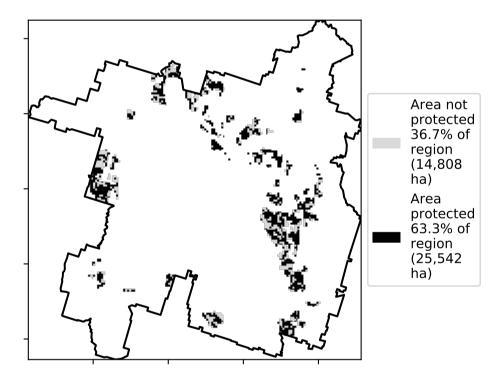


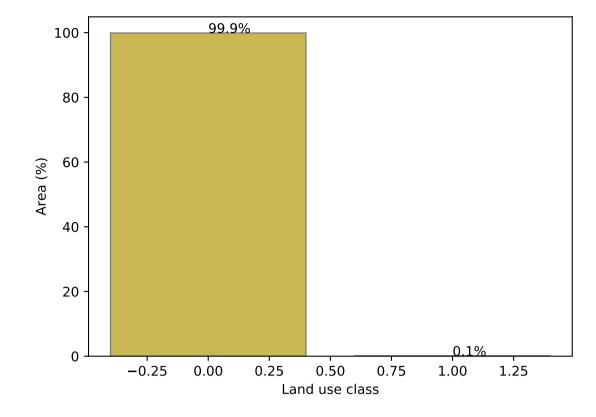
Total Vegetation Cover [%]





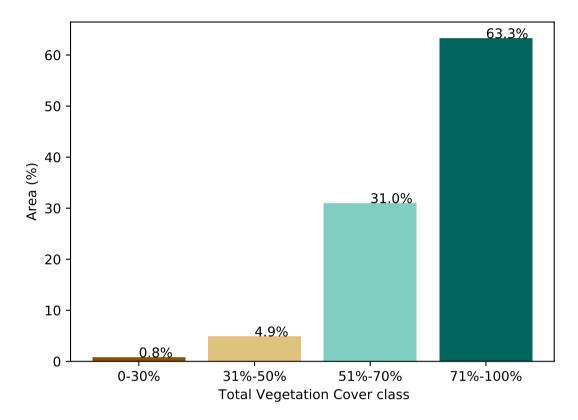
% Area protected from water erosion (>70%)



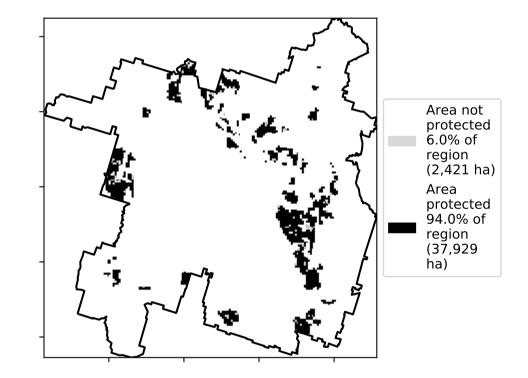


Proportion of each land class in area

Proportion of vegetation cover class in area

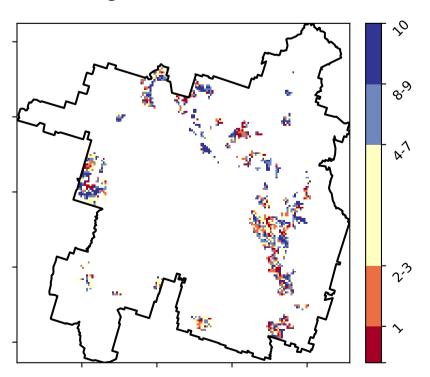


% Area protected from wind erosion (>50%)



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 [%]

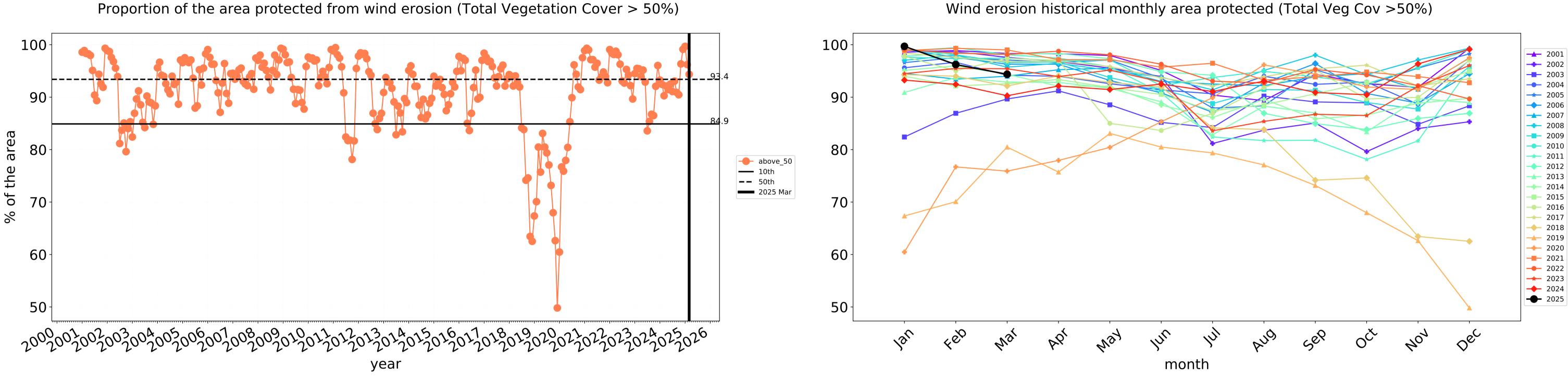






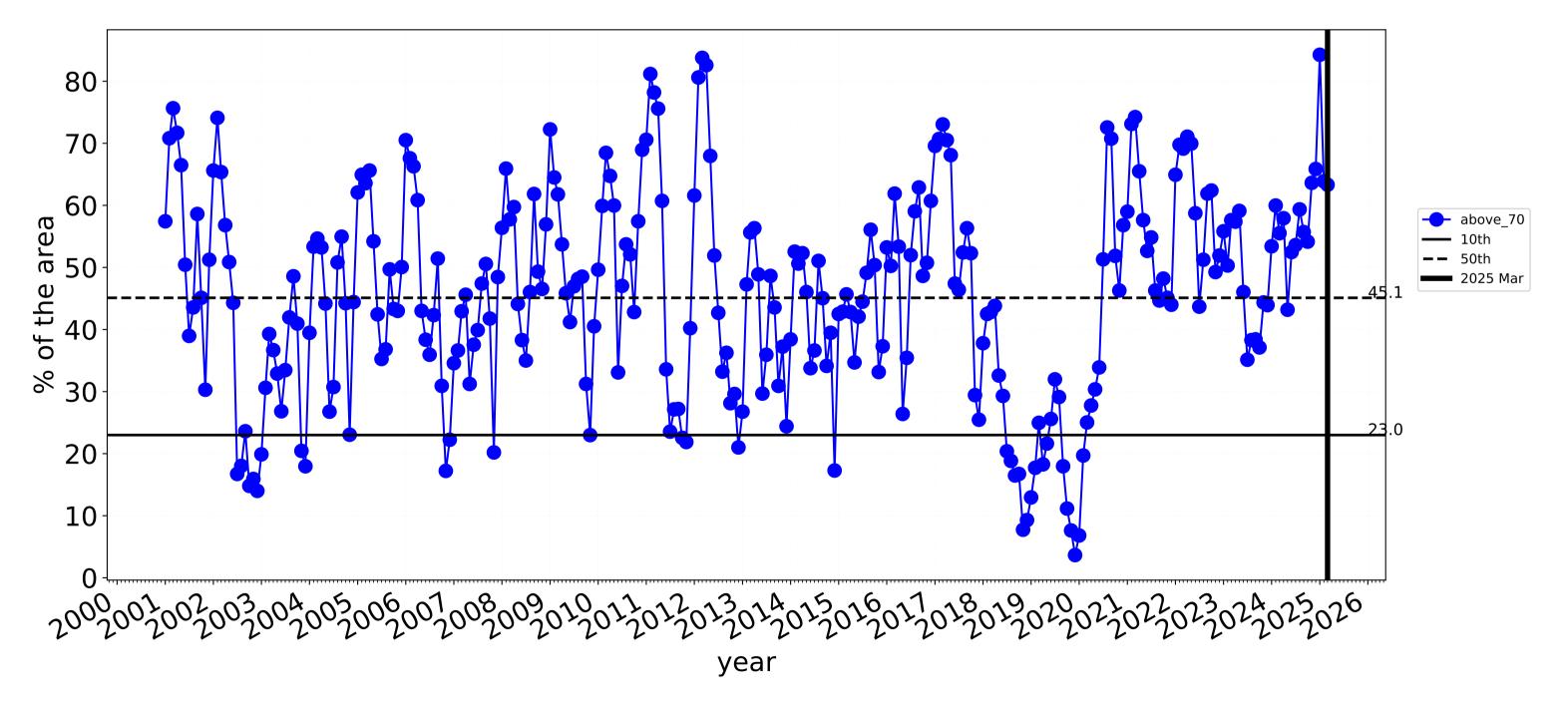
Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.





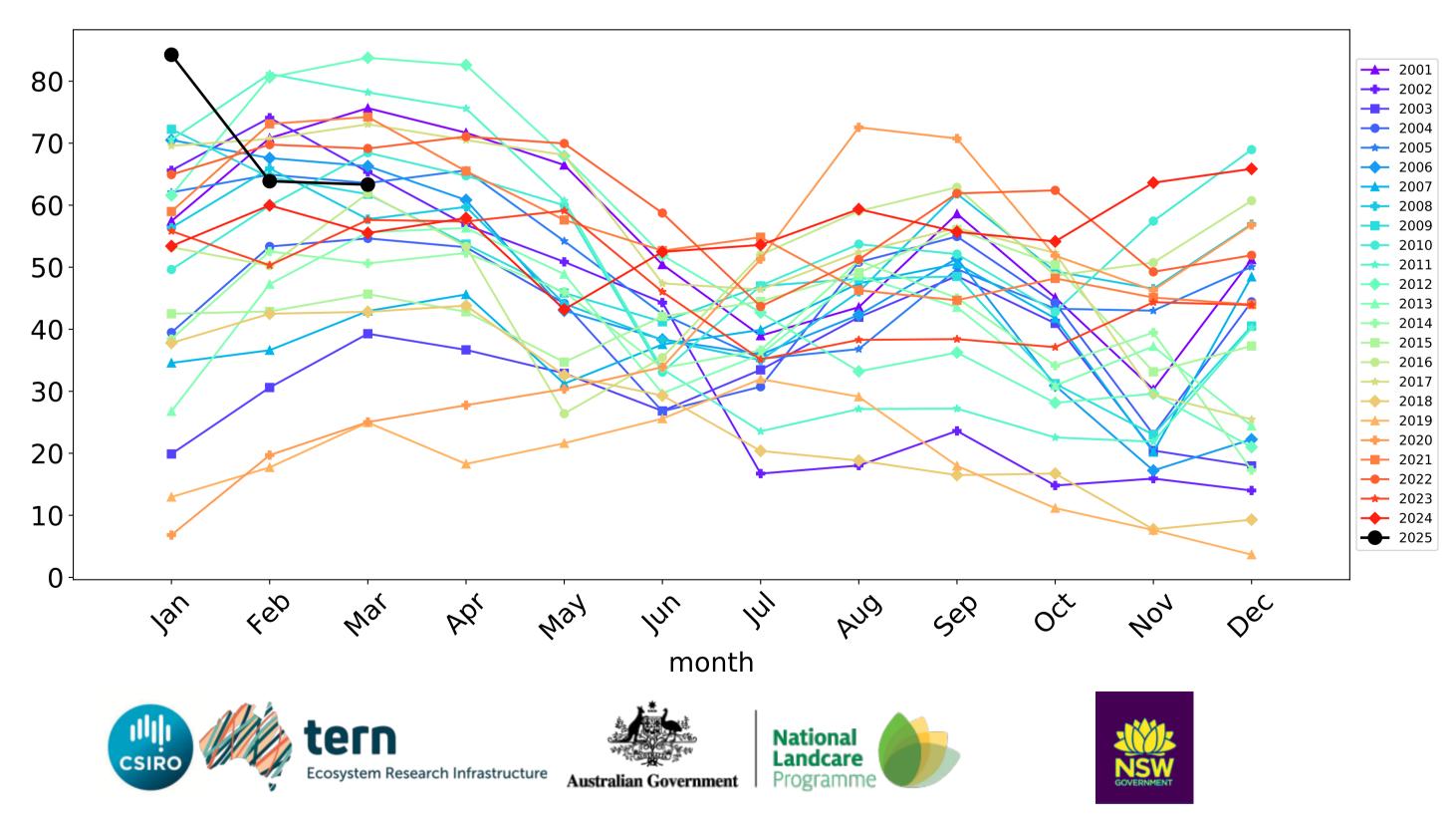
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)





Irrigation timeseries

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

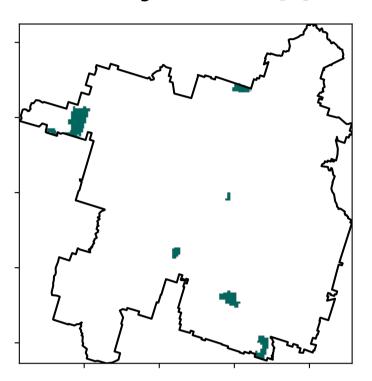


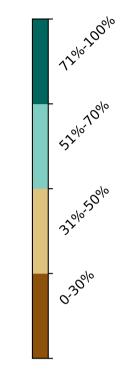
Production native forests and plantation forests

1 Production native forests and plantation forests

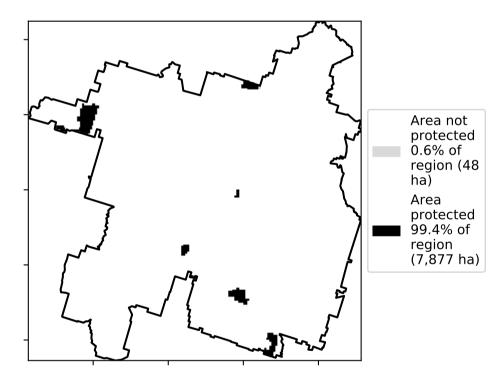
Total Vegetation Cover [%]

Land use and forest cover



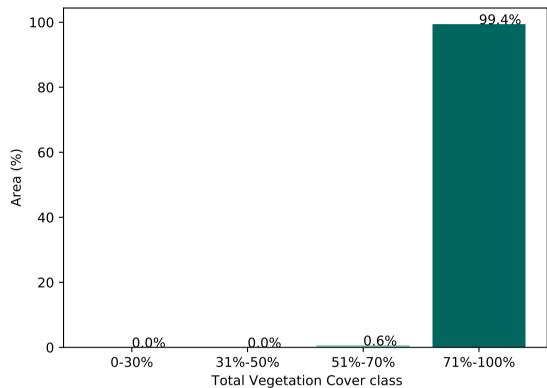


% Area protected from water erosion (>70%)

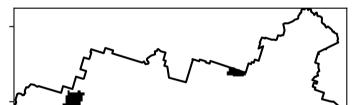




Proportion of vegetation cover class in area



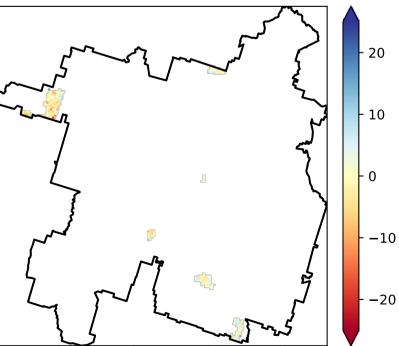
% Area protected from wind erosion (>50%)



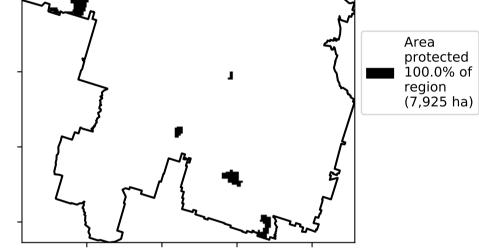
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

Total Vegetation Cover Anomaly [%]

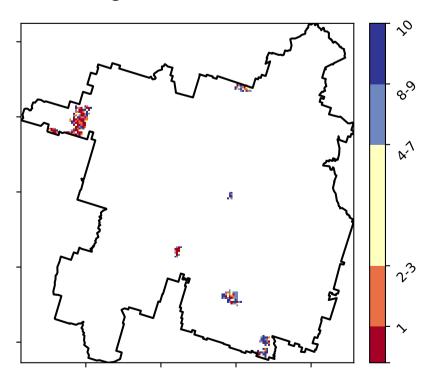
Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.



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.

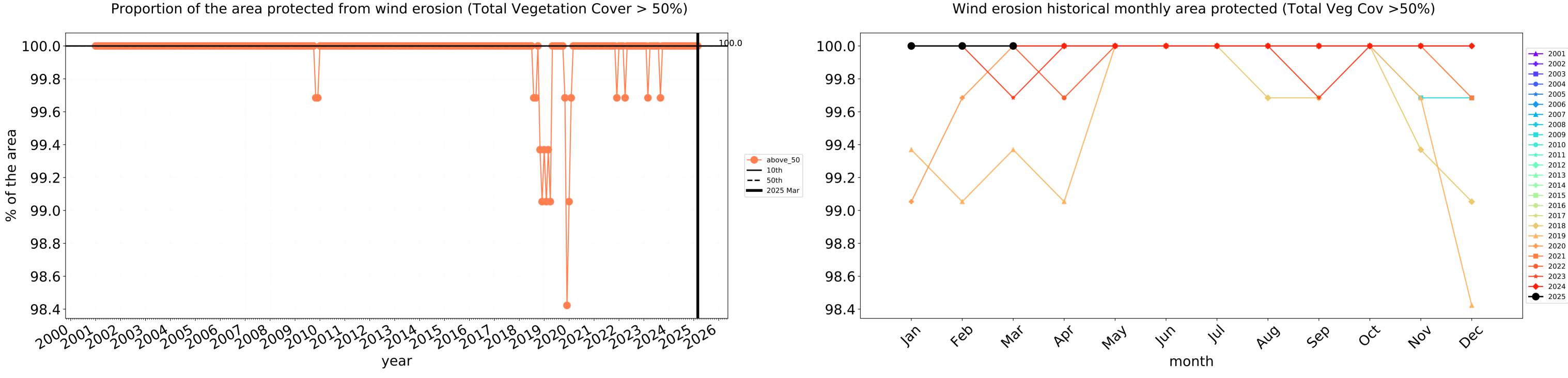


Total Vegetation Cover Decile [%]

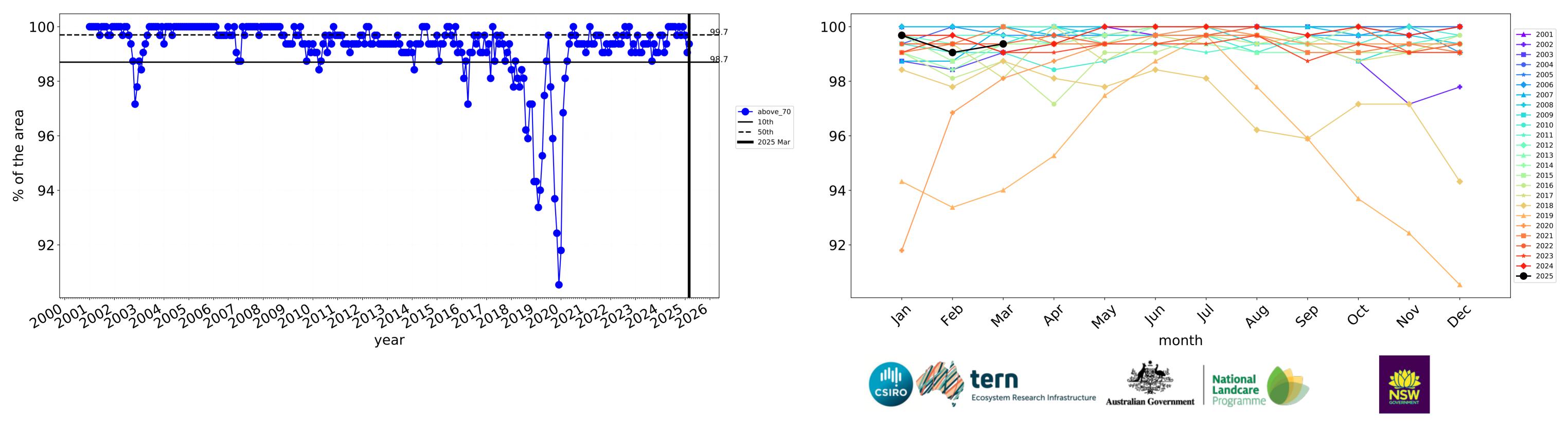




Production native forests and plantation forests timeseries



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



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

Gunnedah_(A) (492,300 ha and no data 6,403 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	492,300	99.9% 491,575	97.9% 481,950	80.5% 396,325	55.9% 275,175	19.8% 97,575	6.9% 34,175
Conservation and natural environments	30,275	100.0% 30,275	99.9% 30,250	98.8% 29,900	90.3% 27,350	36.9% 11,175	6.9% 2,075
Conservation and natural environments Woodland forest	21,275	100.0% 21,275	100.0% 21,275	98.6% 20,975	91.3% 19,425	38.1% 8,100	7.5% 1,600
Conservation and natural environments Forest (non woodland)	8,275	100.0% 8,275	100.0% 8,275	99.7% 8,250	90.9% 7,525	33.5% 2,775	4.2% 350
Agriculture	443,950	99.8% 443,250	97.8% 434,250	79.1% 351,050	53.0% 235,075	18.3% 81,450	6.9% 30,625
Grazing	171,825	100.0% 171,800	99.4% 170,875	90.7% 155,925	70.5% 121,150	27.5% 47,325	9.9% 17,075
Grazing non forest	146,475	100.0% 146,450	99.4% 145,550	89.8% 131,525	68.7% 100,675	27.1% 39,625	10.0% 14,650
Grazing Woodland forest	23,150	100.0% 23,150	99.9% 23,125	96.3% 22,300	81.0% 18,750	30.5% 7,050	9.4% 2,175
Cropping	231,625	99.8% 231,250	97.2% 225,150	73.2% 169,475	43.0% 99,600	12.5% 29,000	4.8% 11,225
Irrigation	40,350	99.3% 40,050	94.4% 38,075	63.3% 25,550	35.4% 14,275	12.7% 5,125	5.8% 2,325
Production native forests and plantation forests	7,925	100.0% 7,925	100.0% 7,925	99.4% 7,875	96.5% 7,650	45.7% 3,625	11.7% 925

