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

Date: July 2023

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:

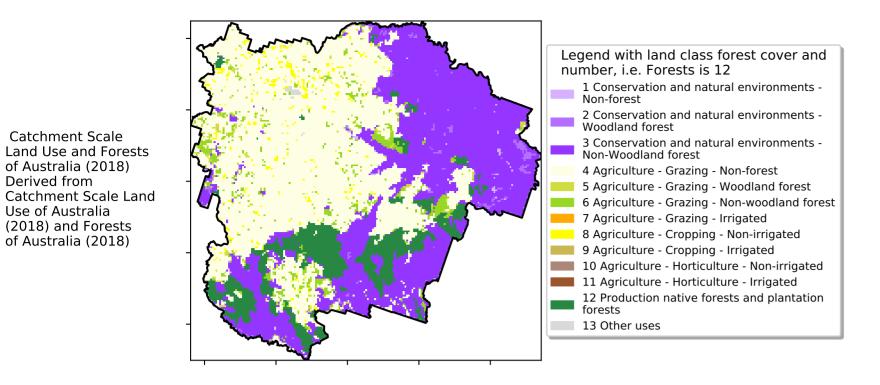
https://doi.org/10.4225/08/5848a3f19a7b3



Vegetation Cover Jul 2023

Land use and forest cover

Proportion of each land class in area



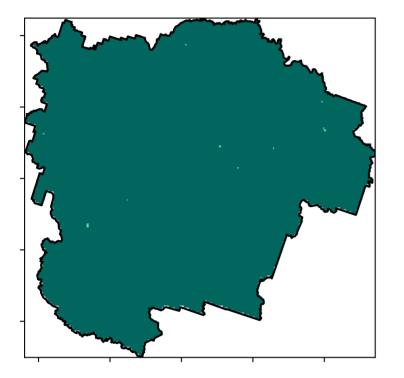
12%200%

52% 70%

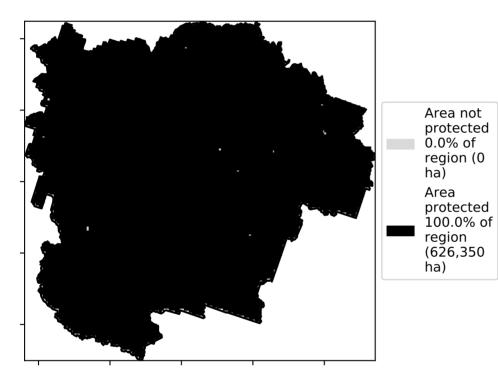
32005001

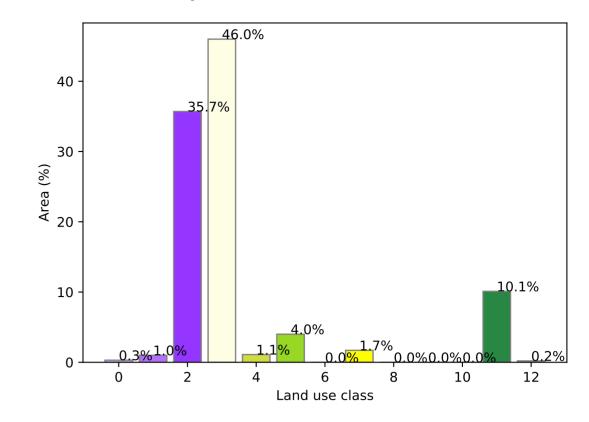
0.30%

Total Vegetation Cover [%]

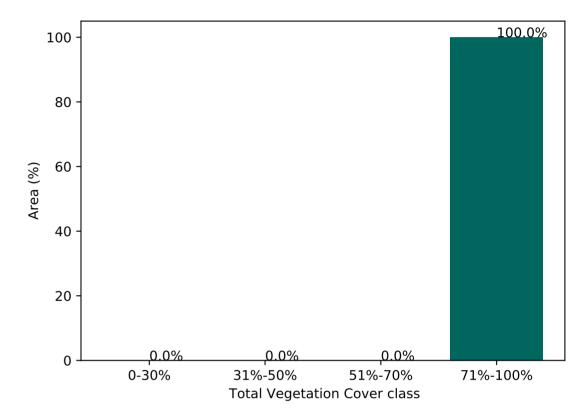


% Area protected from water erosion (>70%)

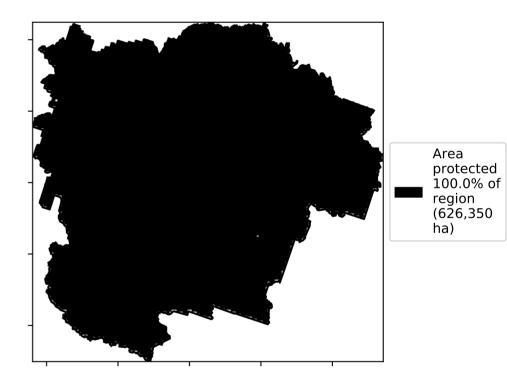




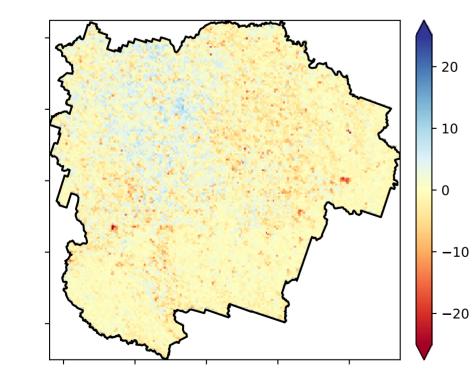
Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)

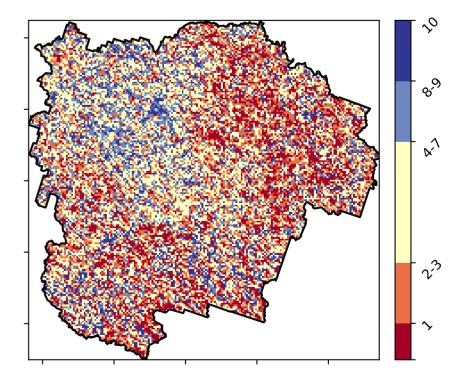


Total Vegetation Cover Anomaly [%]



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.

Catchment Scale

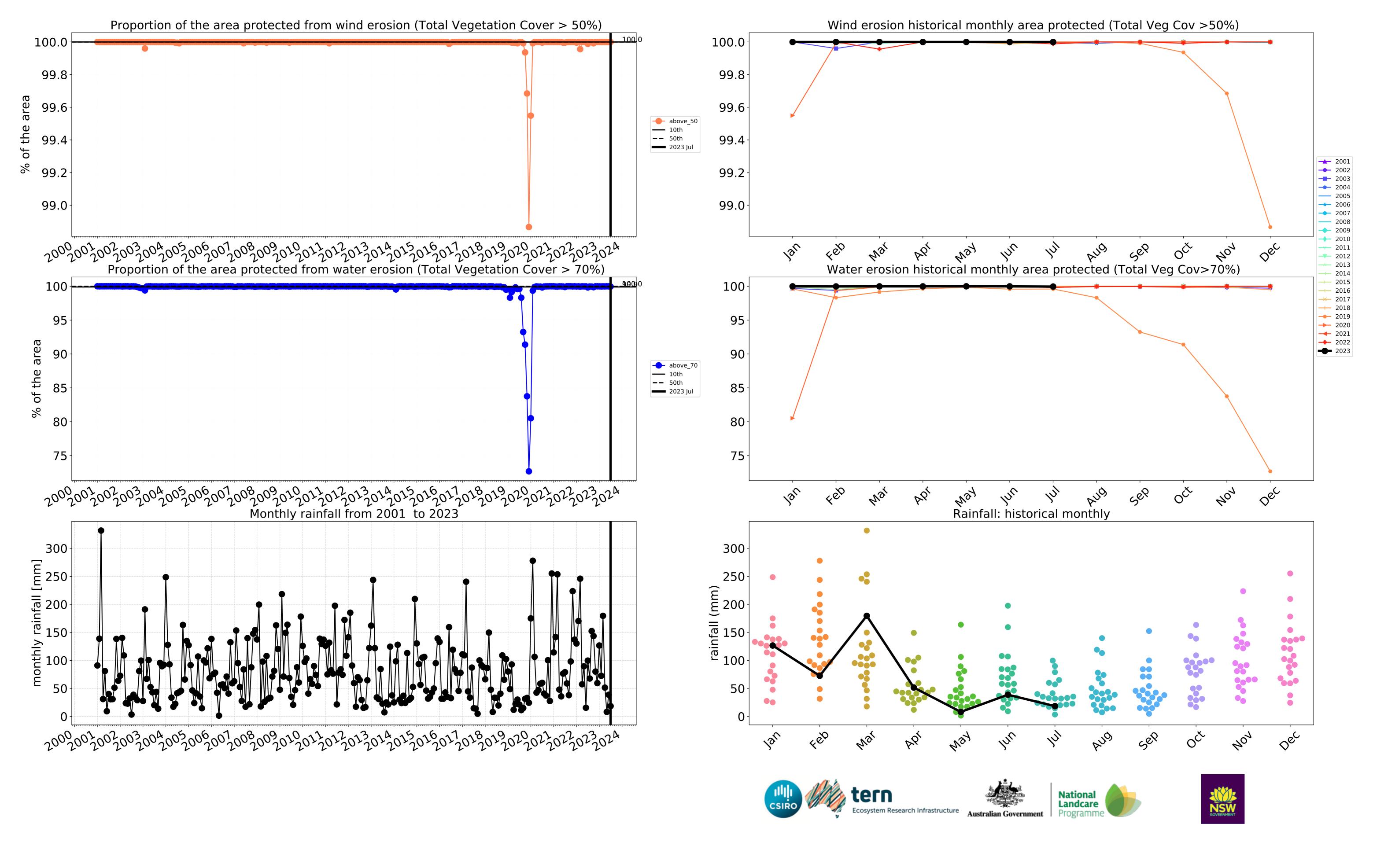
of Australia (2018)

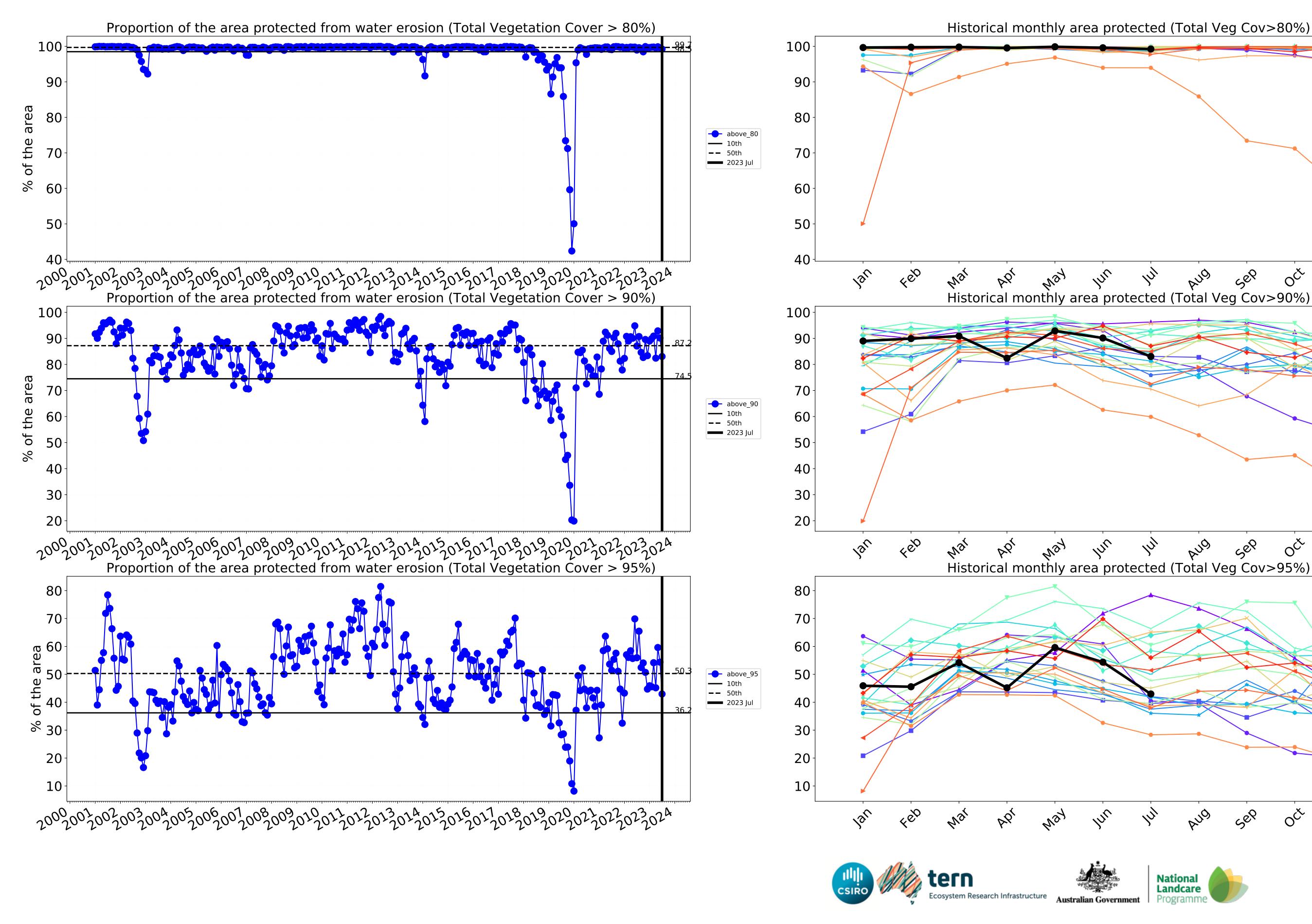
(2018) and Forests

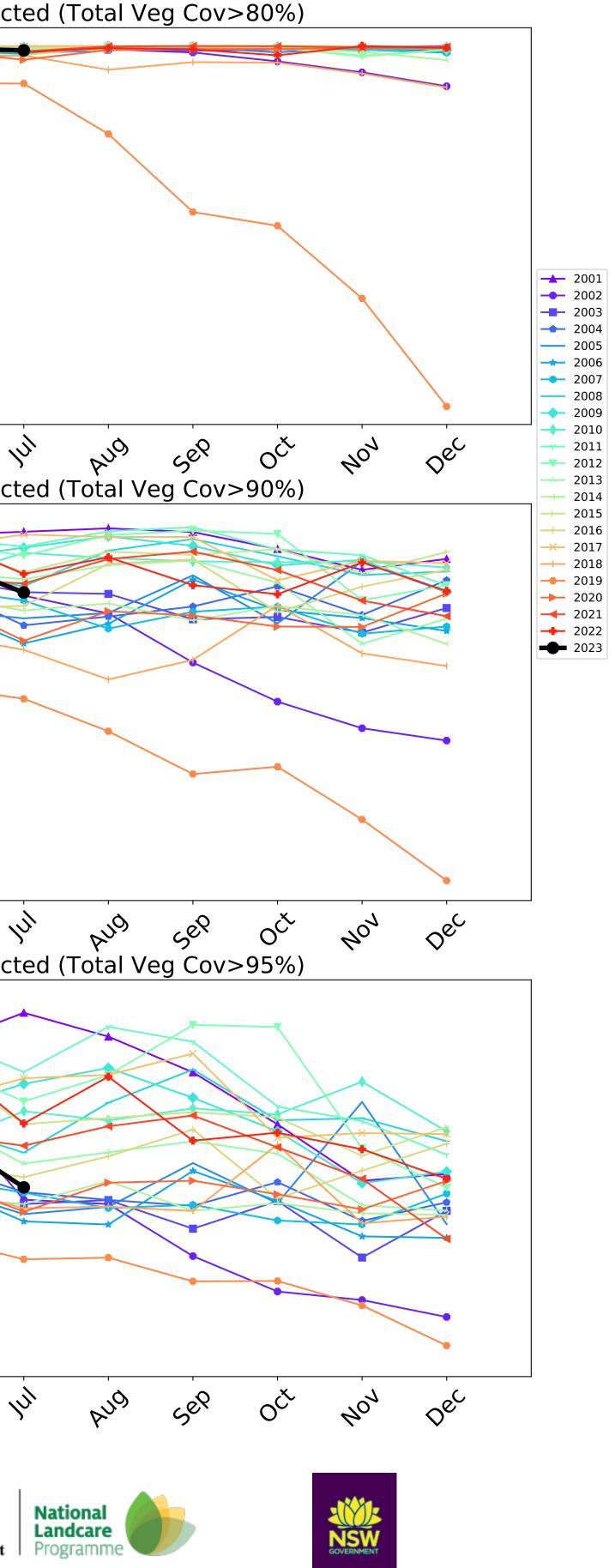
of Australia (2018)

Derived from

Use of Australia



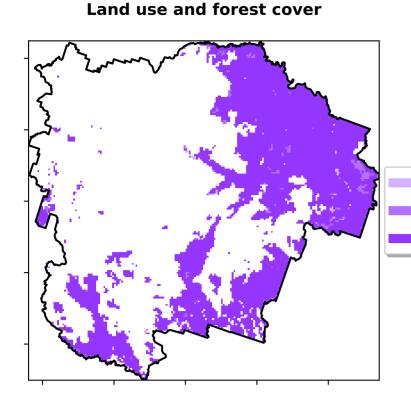




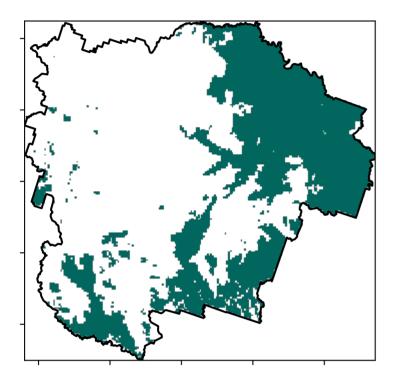
Conservation and natural environments

forest

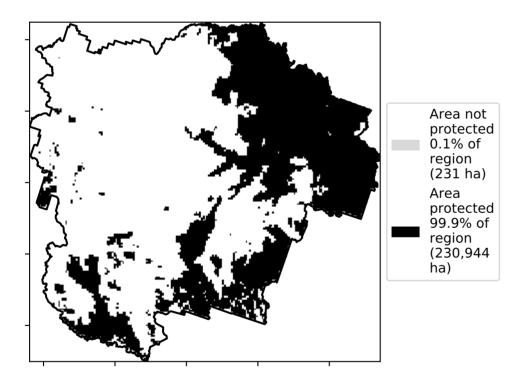
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

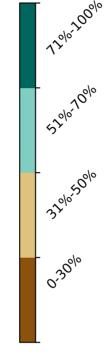


Total Vegetation Cover [%]



% Area protected from water erosion (>70%)

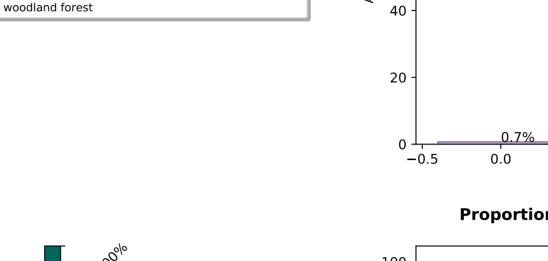




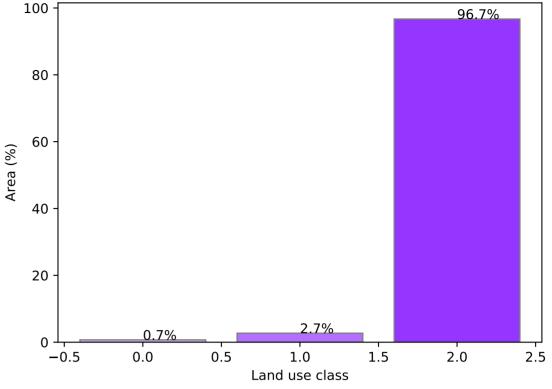
1 Conservation and natural environments - Nonforest

3 Conservation and natural environments - Non-

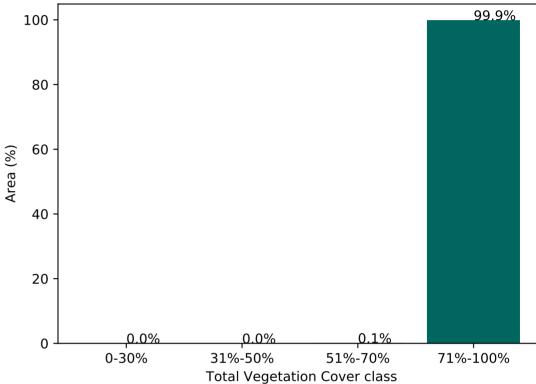
2 Conservation and natural environments - Woodland



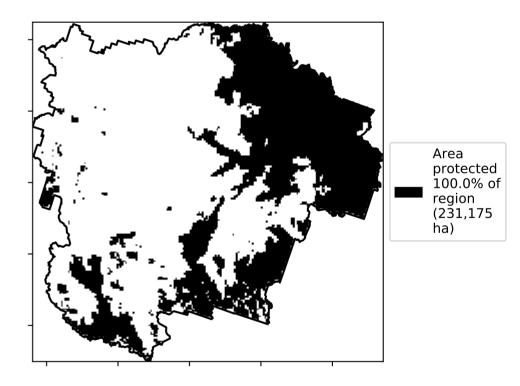
Proportion of each land class in area



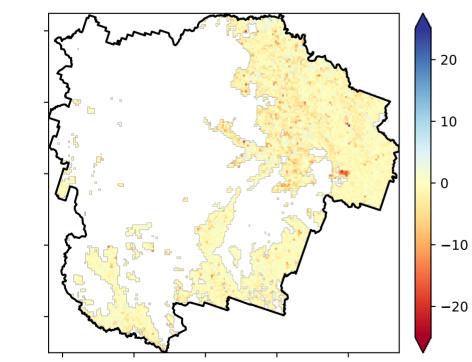
Proportion of vegetation cover class in area



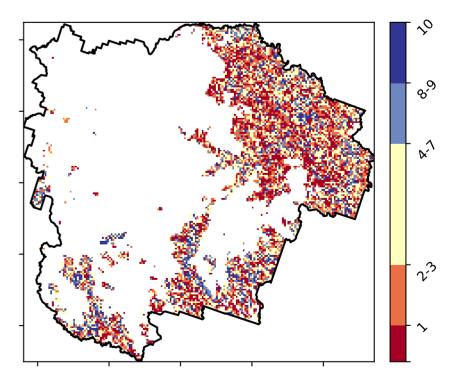
% Area protected from wind erosion (>50%)



Total Vegetation Cover Anomaly [%]



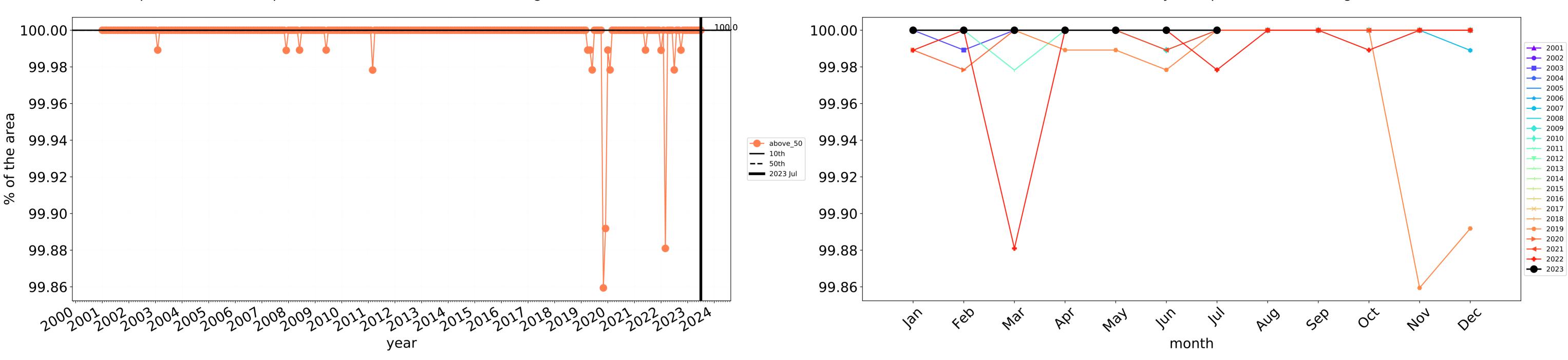
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019. **Total Vegetation Cover Decile [%]**

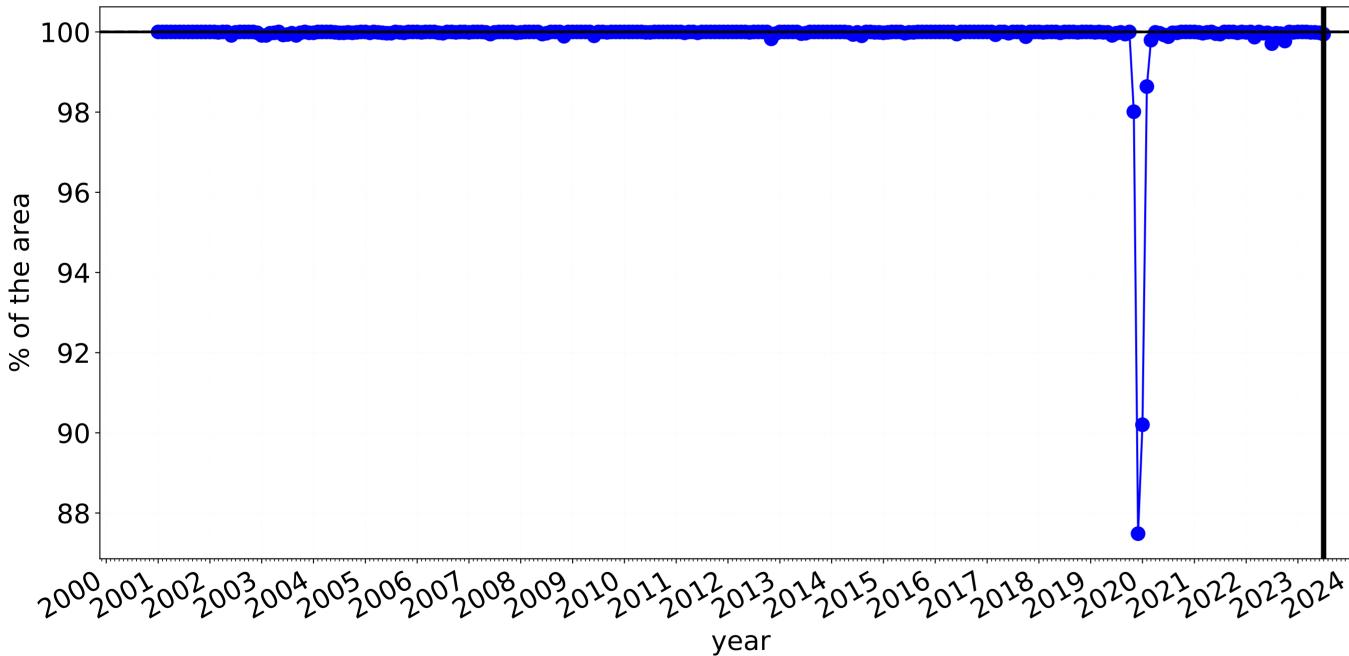






3

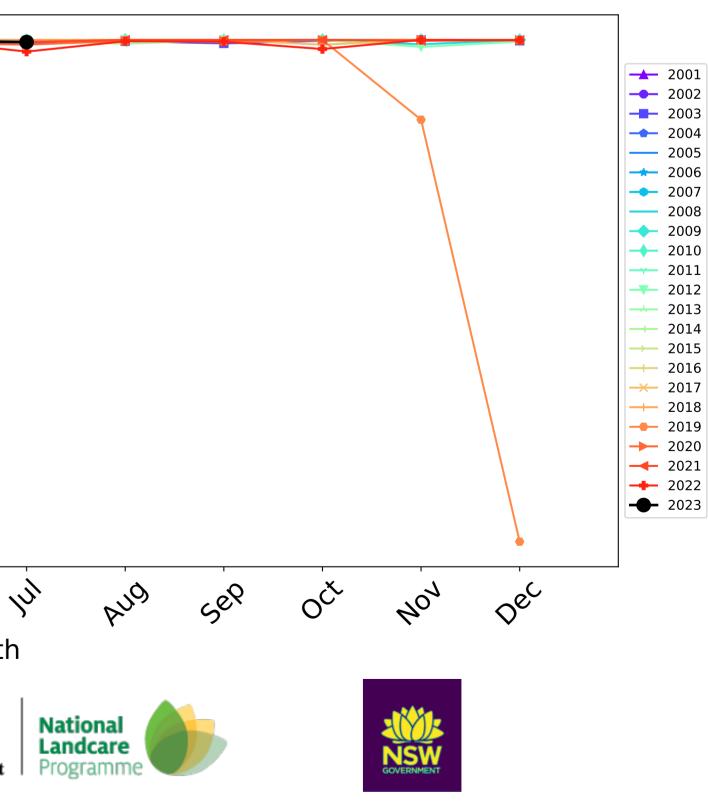


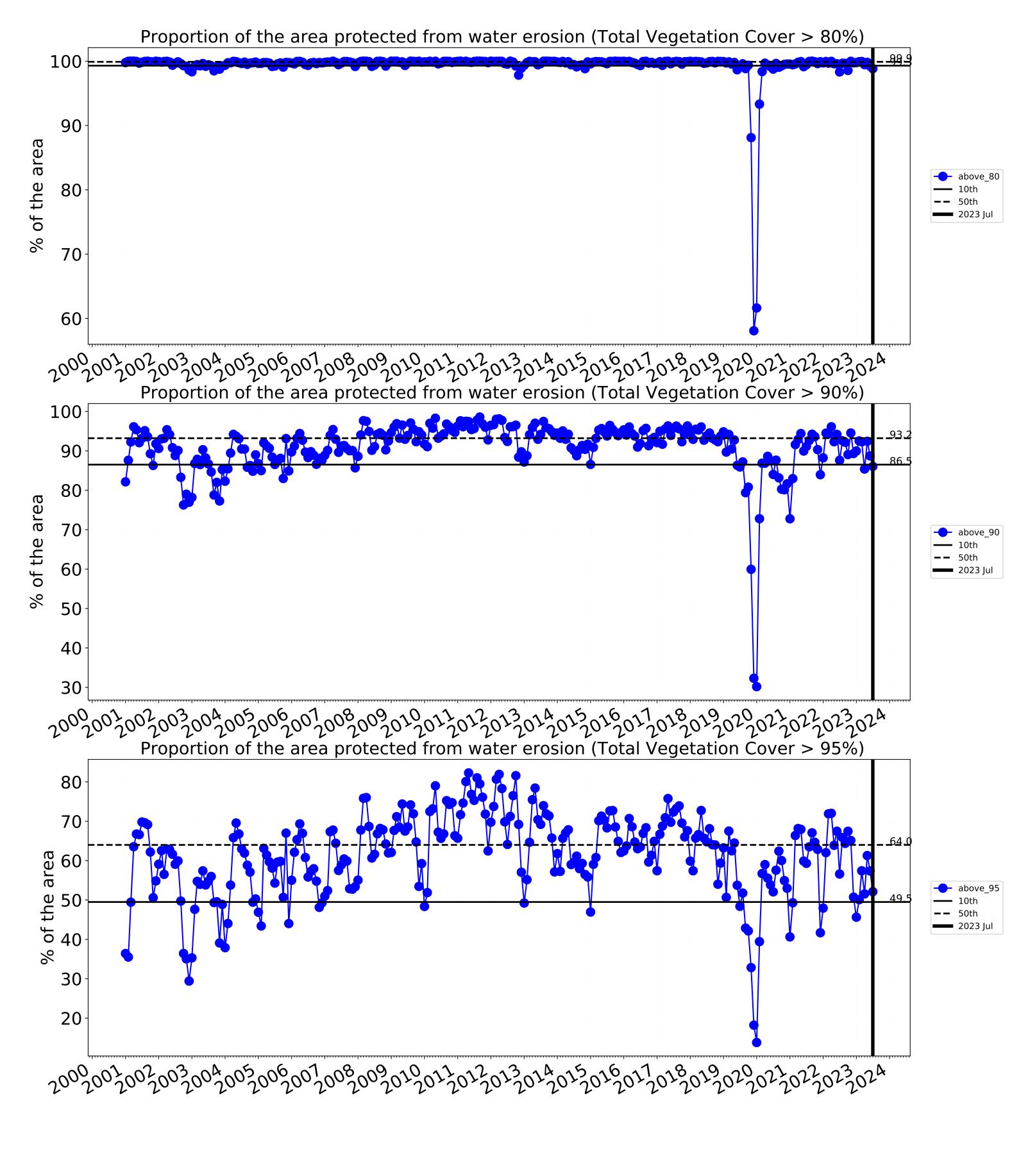


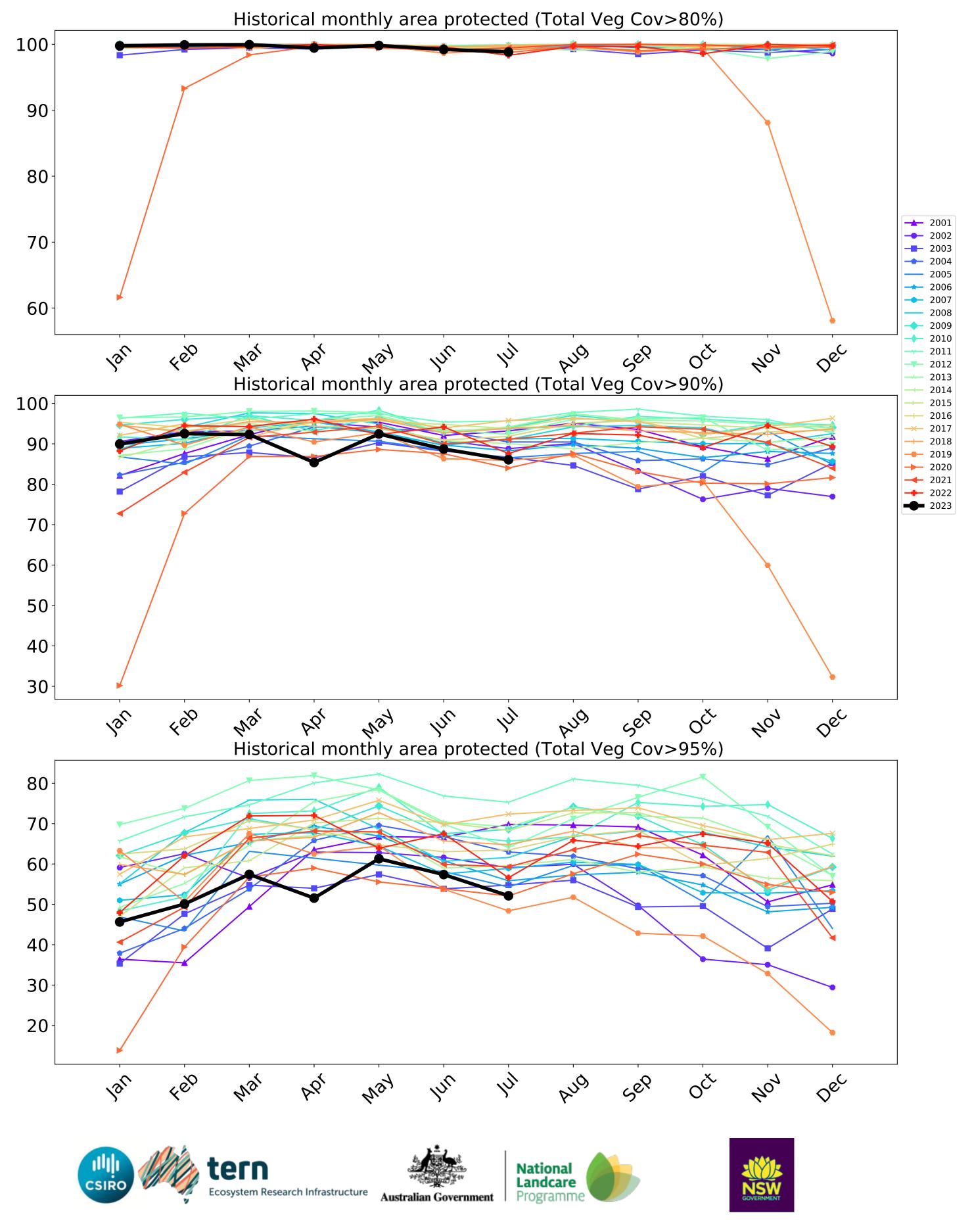
Wind erosion historical monthly area protected (Total Veg Cov >50%)

1000 100 98 96 --- above_70 **—** 10th **--** 50th 94 92 90 88 400 1ar In way PQ War month **Wh** tern CSIRO Ecosystem Research Infrastructure Australian Government

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



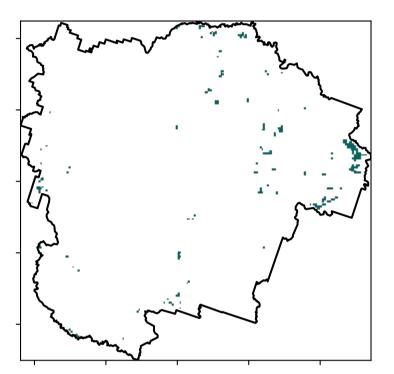


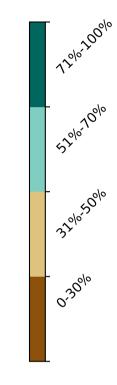


Conservation and natural environments Woodland forest

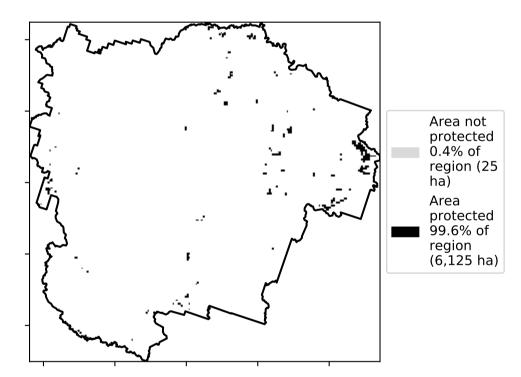
1 Conservation and natural environments - Woodland forest

Total Vegetation Cover [%]

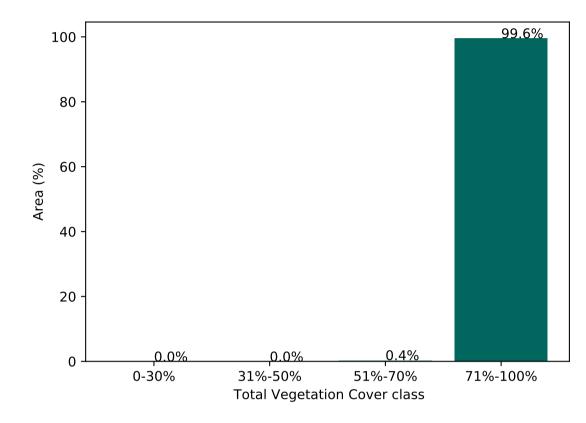




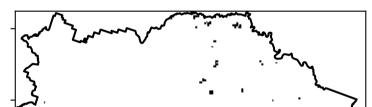
% Area protected from water erosion (>70%)

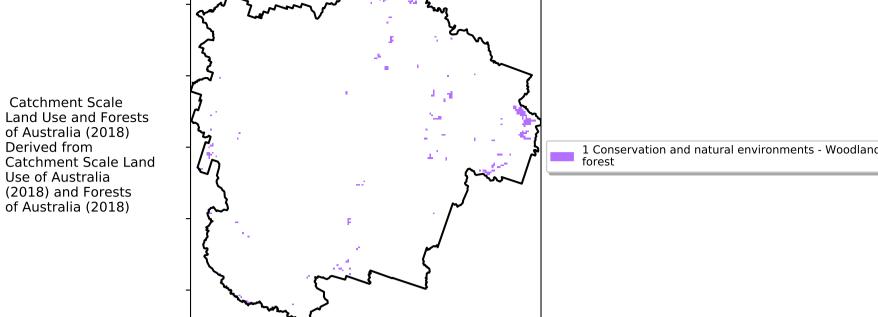


Proportion of vegetation cover class in area



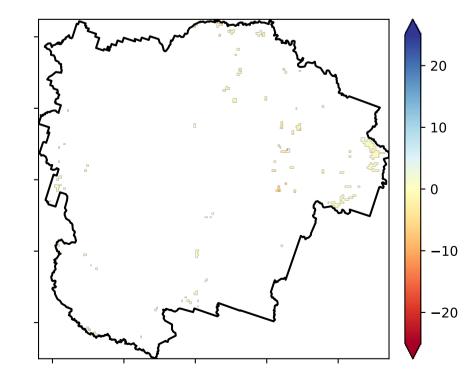
% Area protected from wind erosion (>50%)



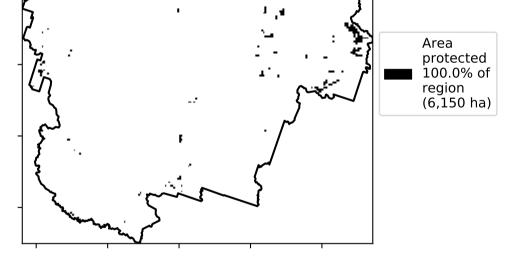


Land use and forest cover

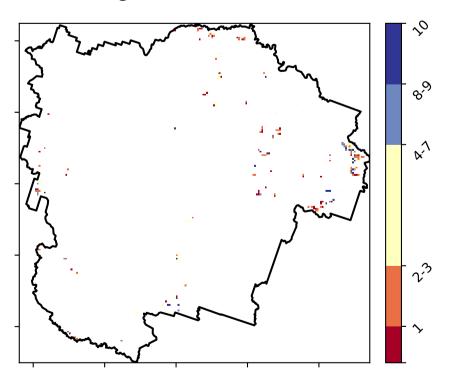
Total Vegetation Cover Anomaly [%]



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 [%]







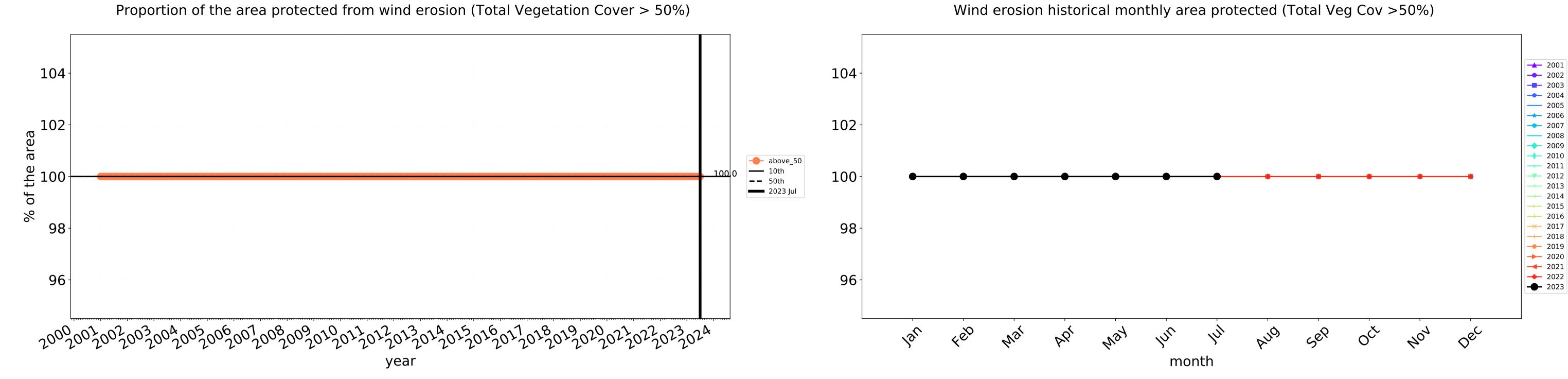
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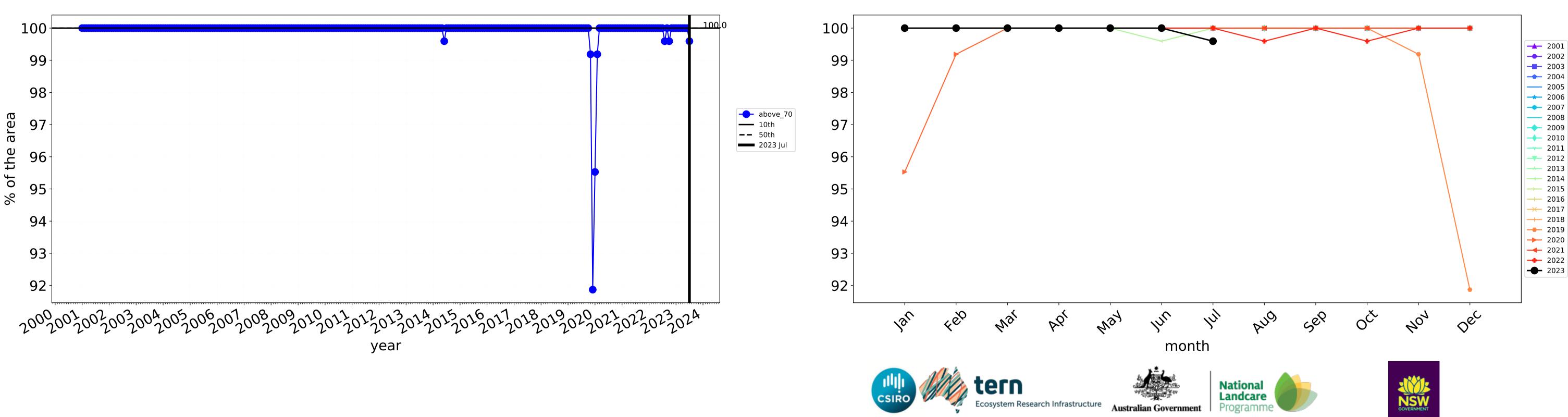
Catchment Scale

Derived from

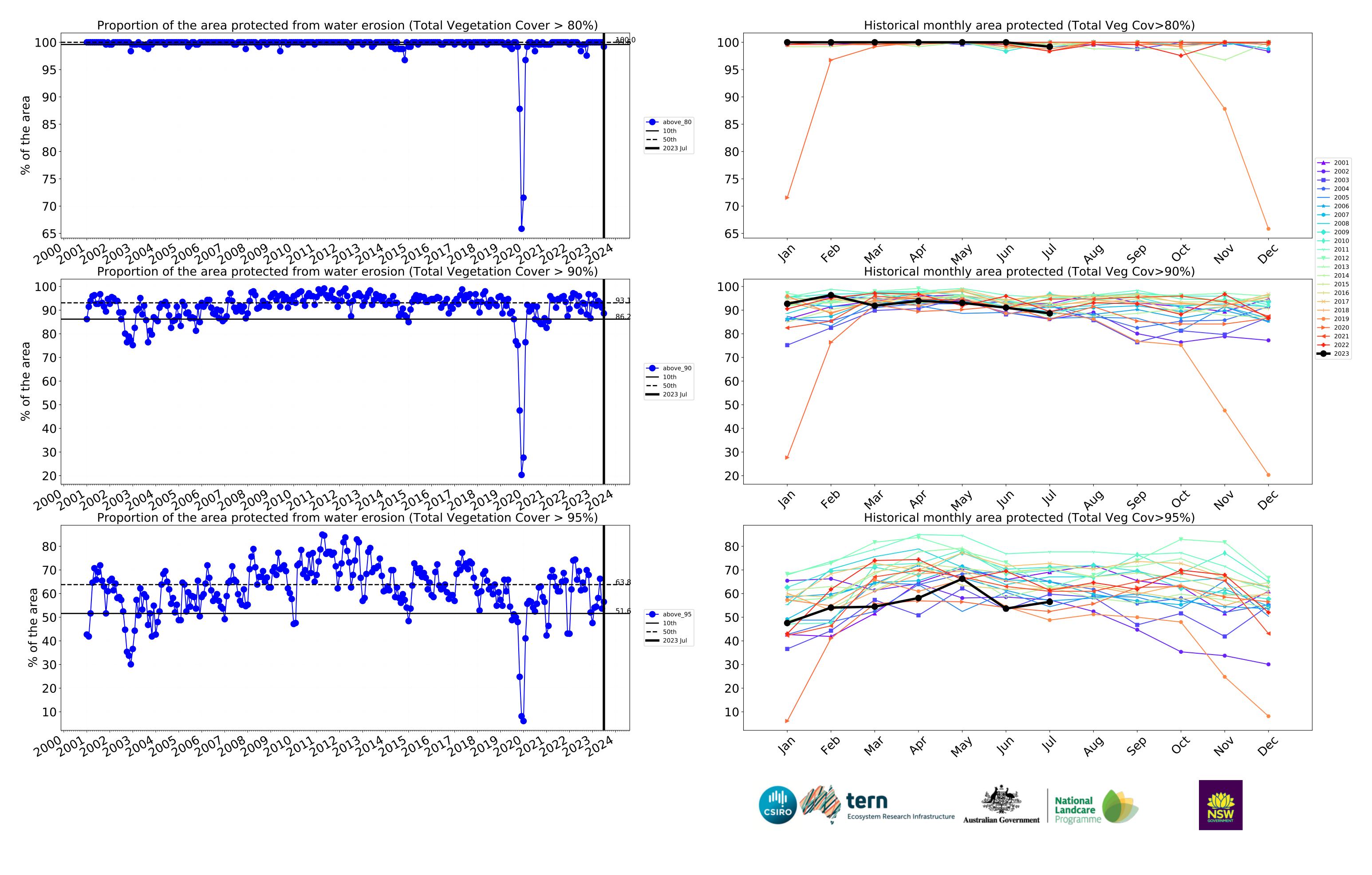
Use of Australia (2018) and Forests of Australia (2018)







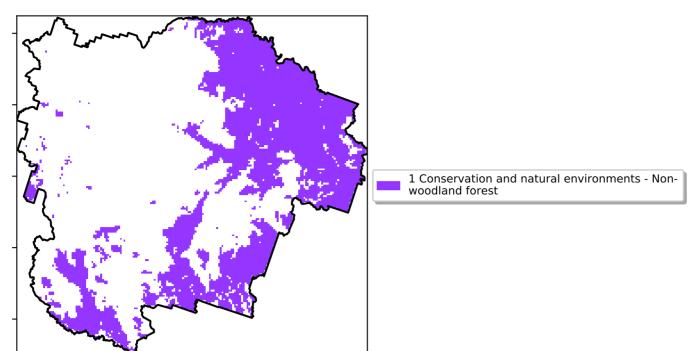
Water erosion historical monthly area protected (Total Veg Cov>70%)



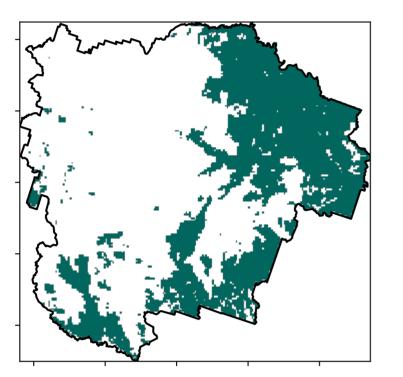
Conservation and natural environments Forest (non woodland)

Land use and forest cover

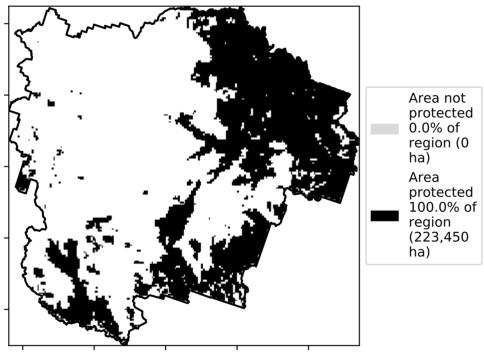
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

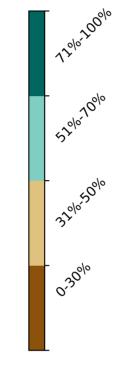


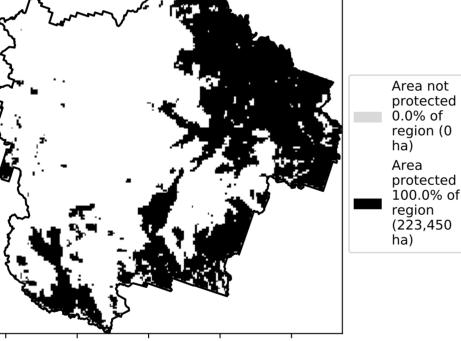
Total Vegetation Cover [%]



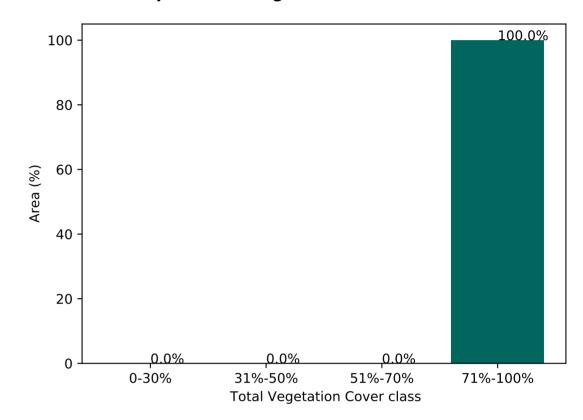
% Area protected from water erosion (>70%)



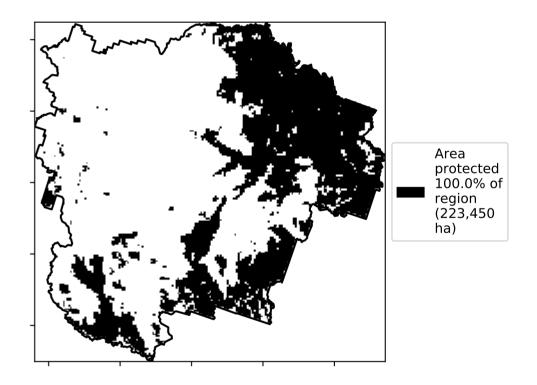




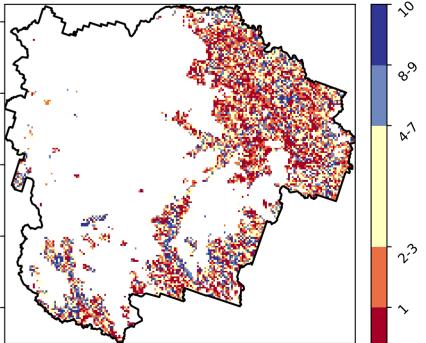
Proportion of vegetation cover class in area

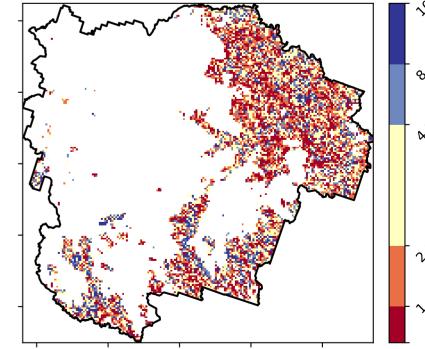


% Area protected from wind erosion (>50%)

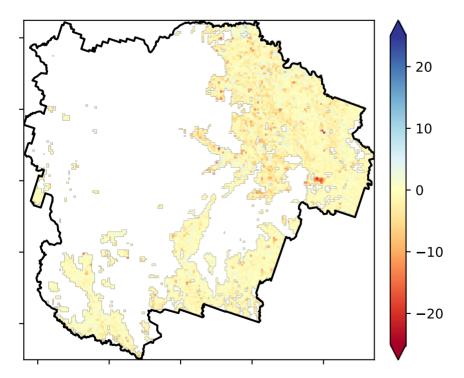


Total Vegetation Cover Decile [%]





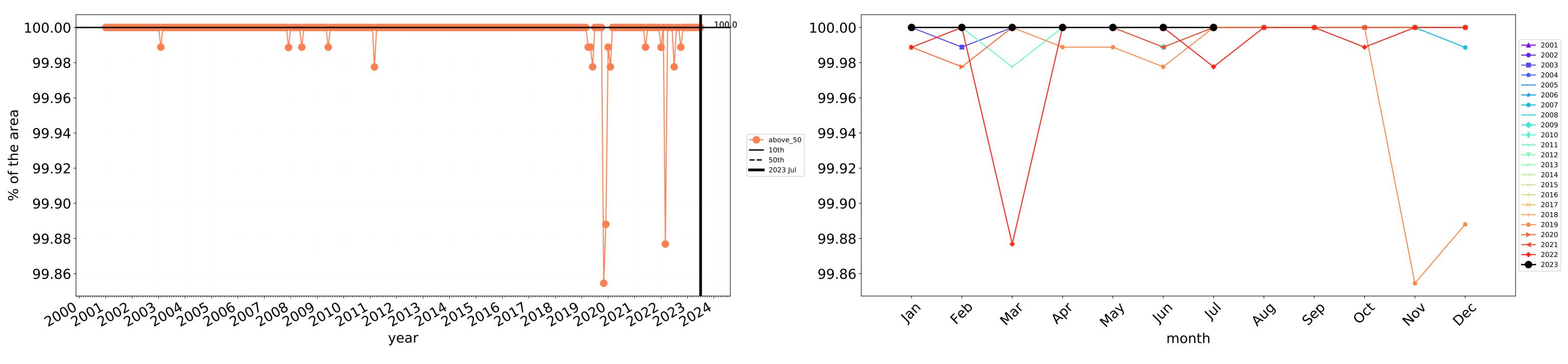
Total Vegetation Cover Anomaly [%]



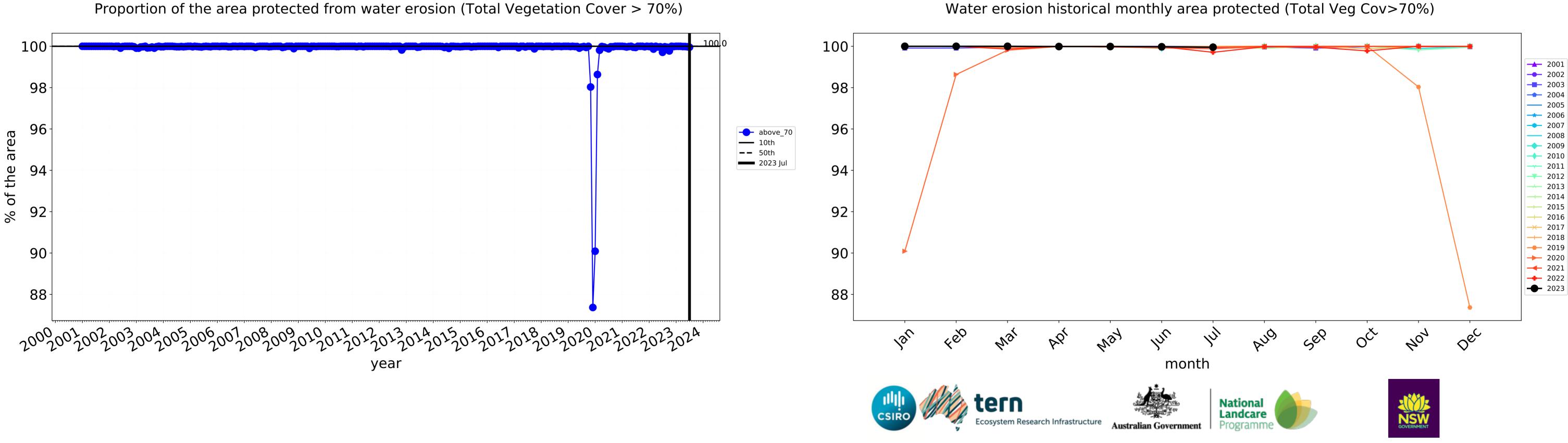
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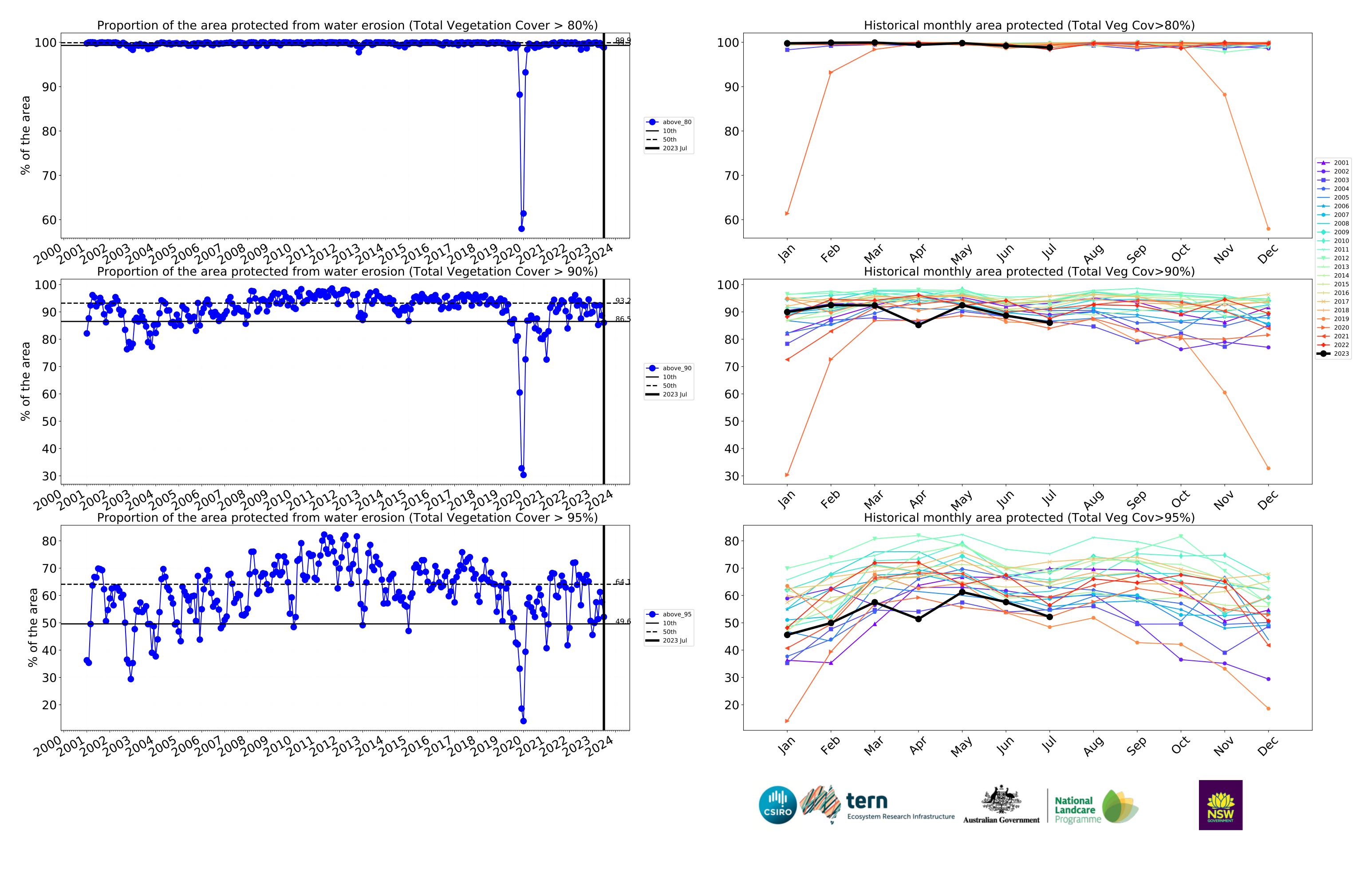
Conservation and natural environments Forest (non woodland) timeseries



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

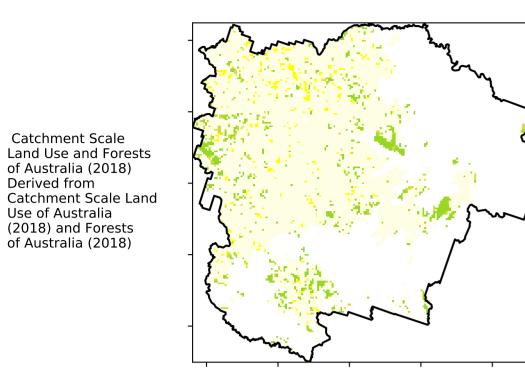


Wind erosion historical monthly area protected (Total Veg Cov >50%)



Agriculture

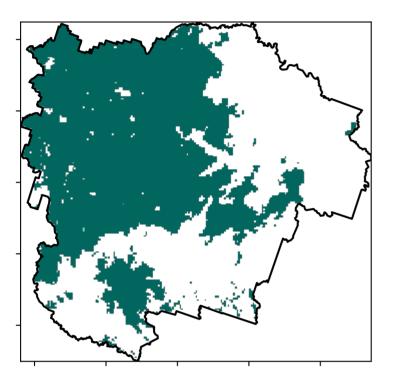
Land use and forest cover

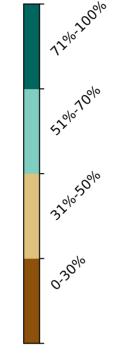


Derived from

Use of Australia

Total Vegetation Cover [%]





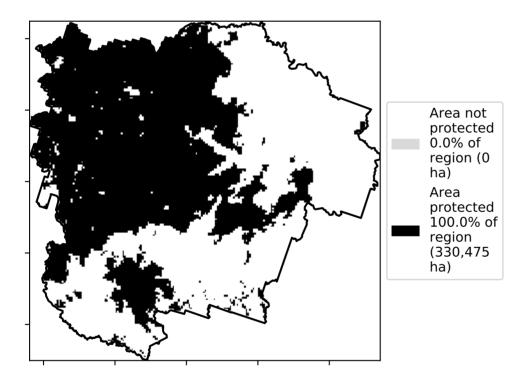
1 Agriculture - Grazing - Non forest

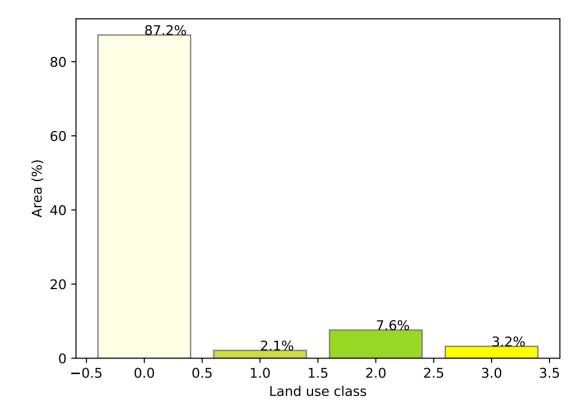
2 Agriculture - Grazing - Woodland forest

3 Agriculture - Grazing - Non-woodland forest

4 Agriculture - Cropping - Non-irrigated

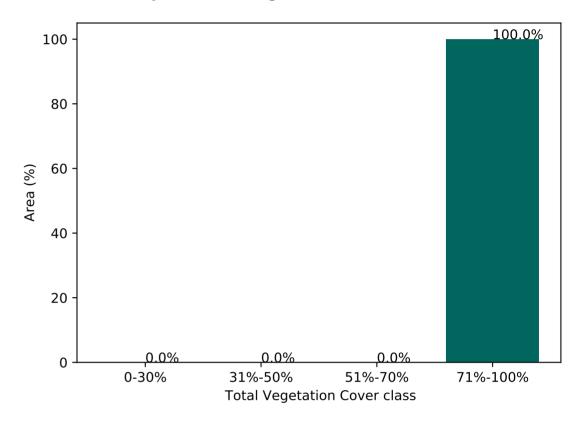
% Area protected from water erosion (>70%)





Proportion of each land class in area

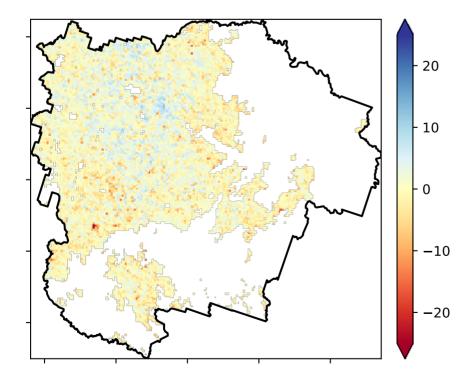
Proportion of vegetation cover class in area



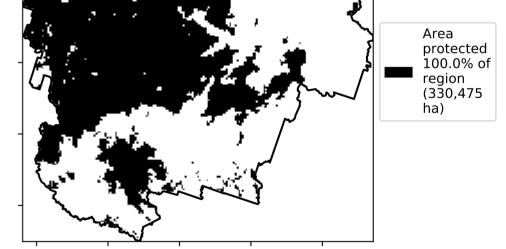
% Area protected from wind erosion (>50%)



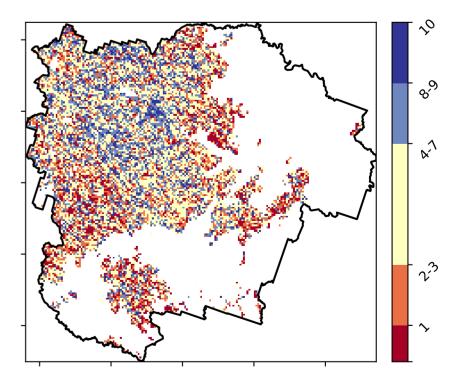
Total Vegetation Cover Anomaly [%]



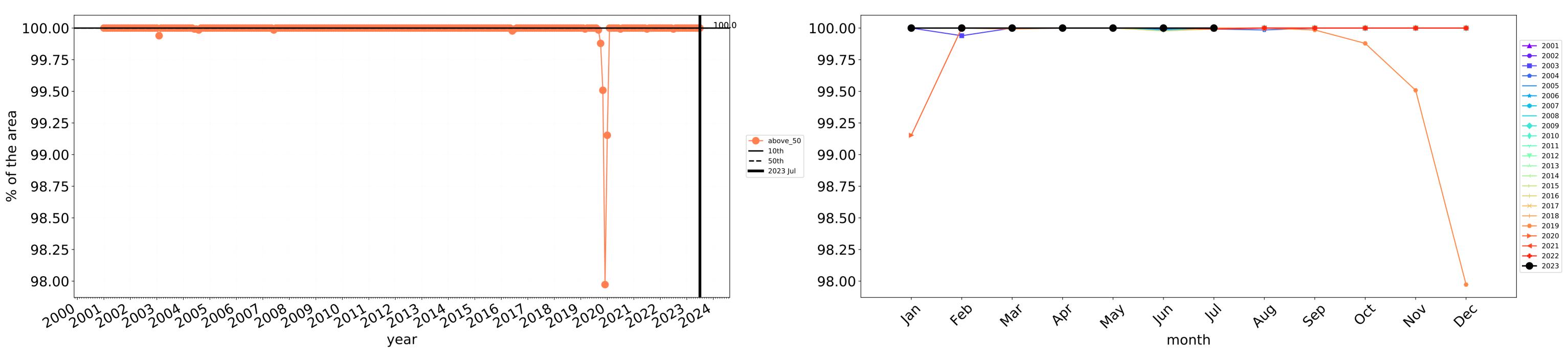
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

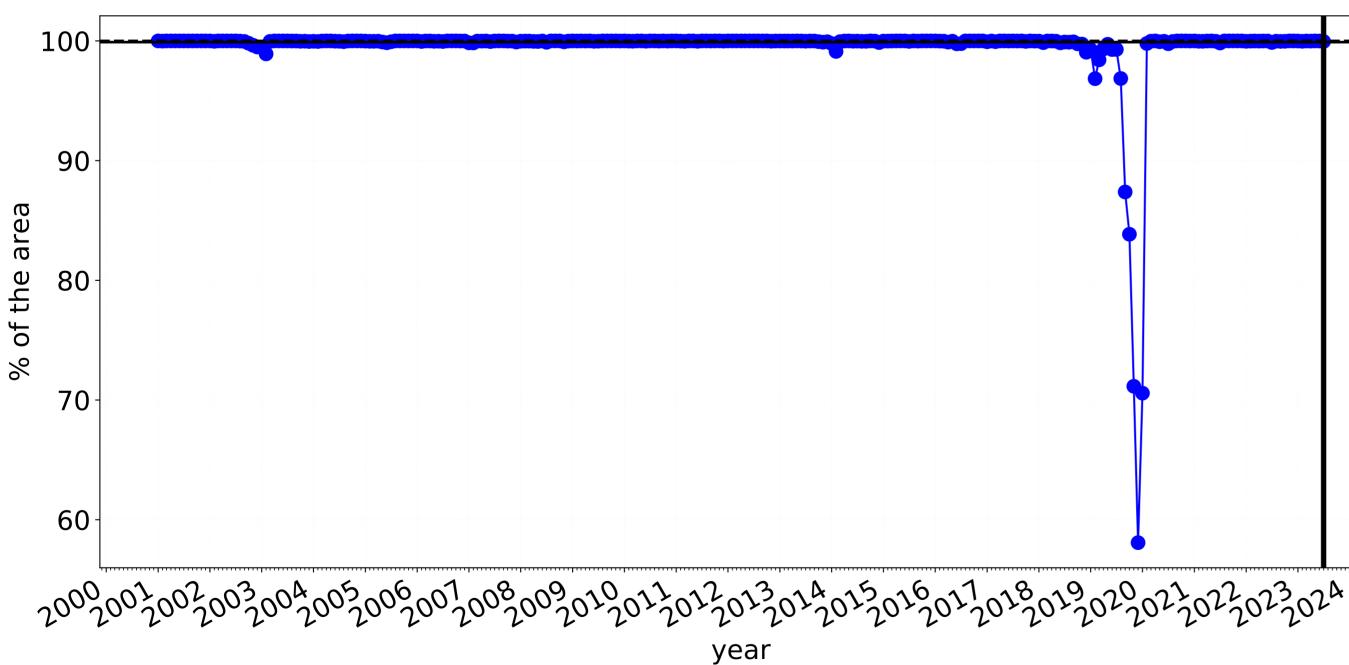


Total Vegetation Cover Decile [%]









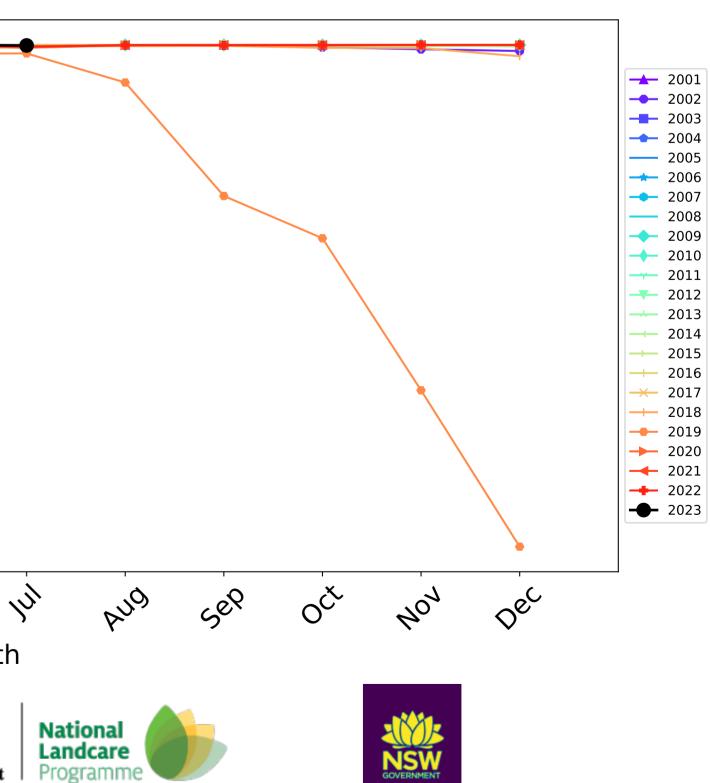
Agriculture timeseries

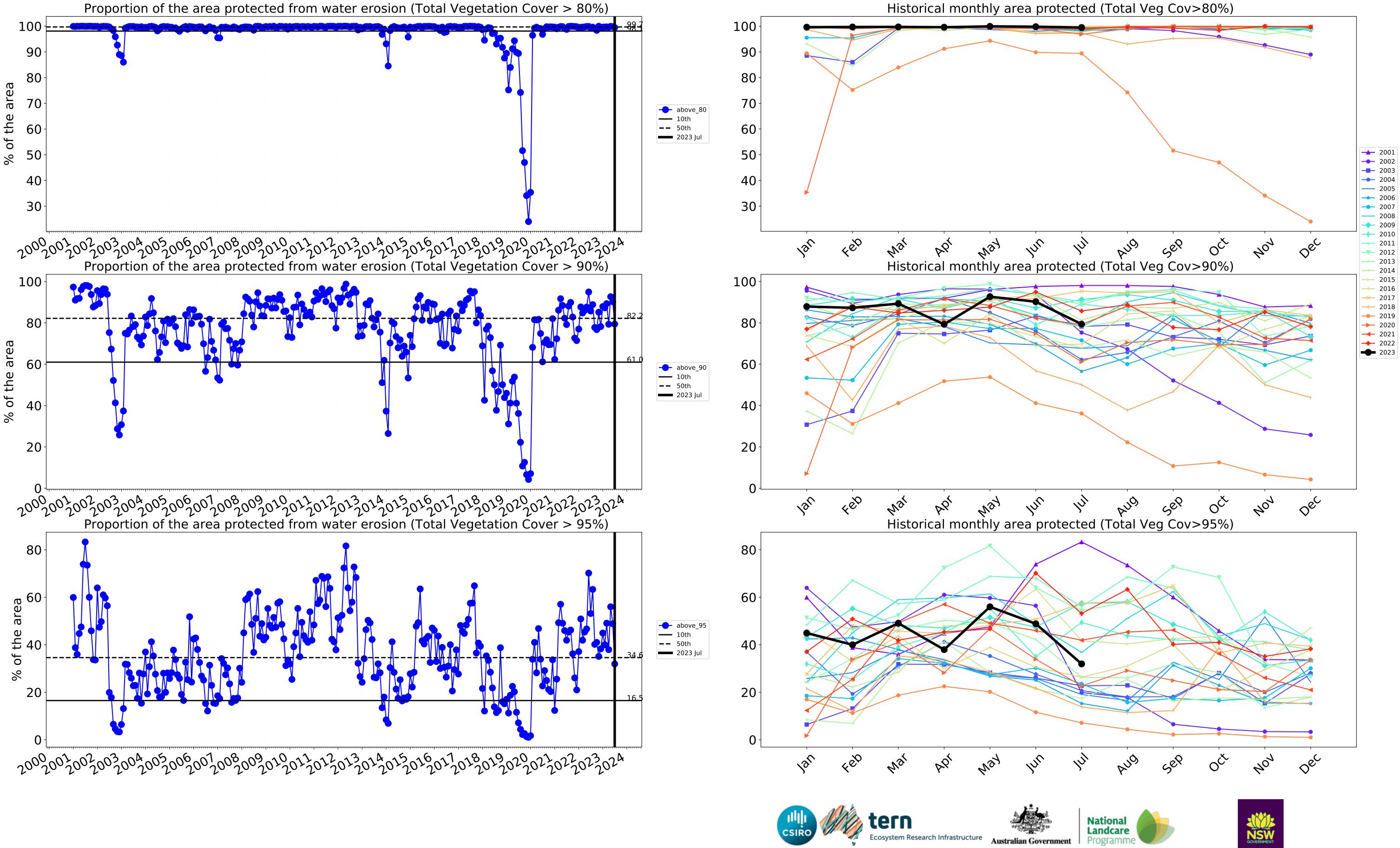


Wind erosion historical monthly area protected (Total Veg Cov >50%)

99090 100 90 ---- above_70 **—** 10th **--** 50th 80 70 60 400 Par In may PQ hyar. month **un**it tern CSIRO Ecosystem Research Infrastructure Australian Government

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





Grazing

12%-100

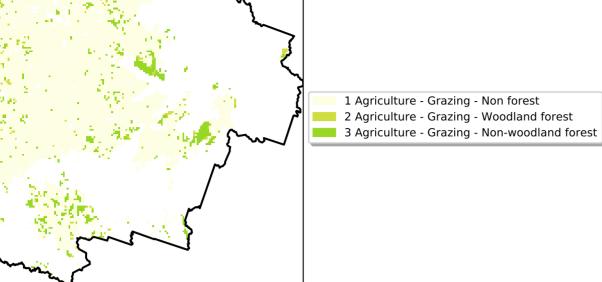
· 52°1070°1

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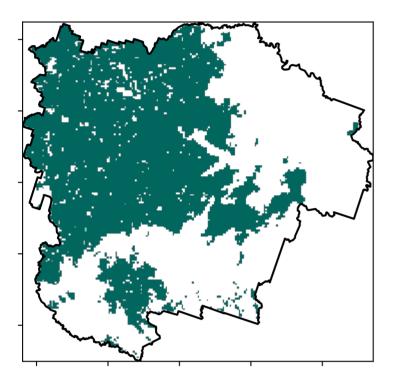
0.30%

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

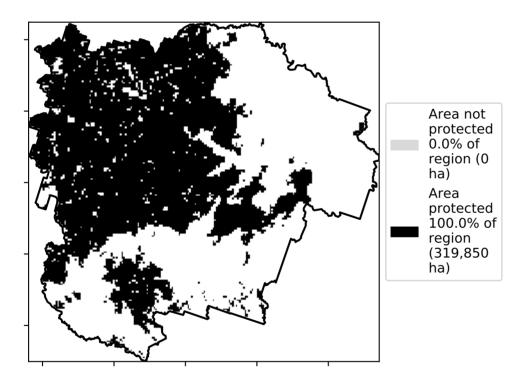
Land use and forest cover

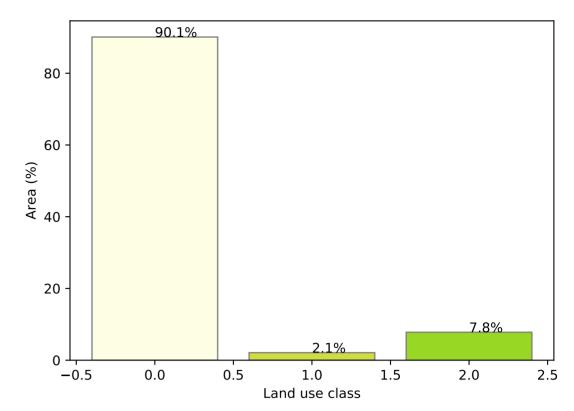


Total Vegetation Cover [%]



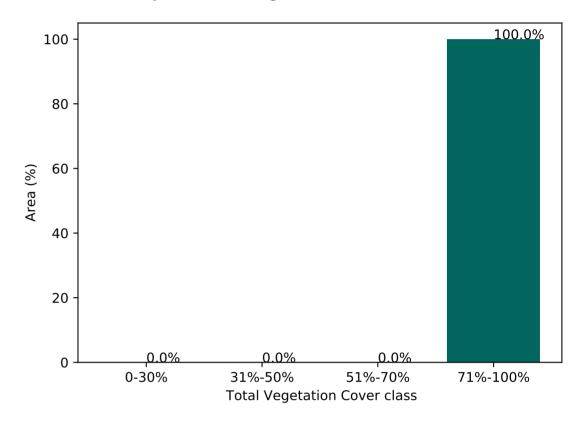




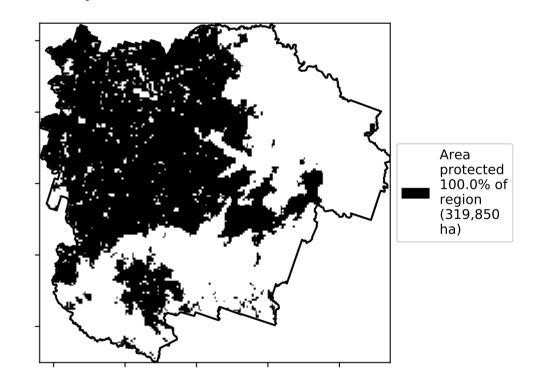


Proportion of each land class in area

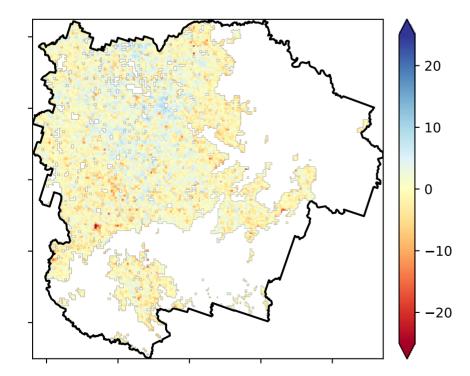
Proportion of vegetation cover class in area



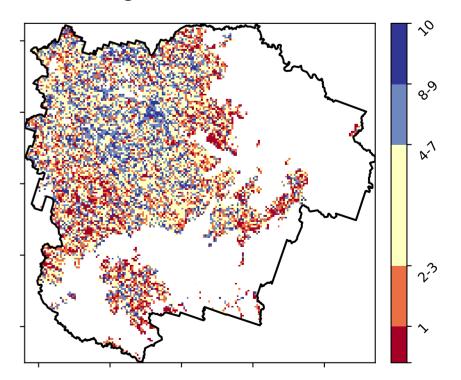
% Area protected from wind erosion (>50%)



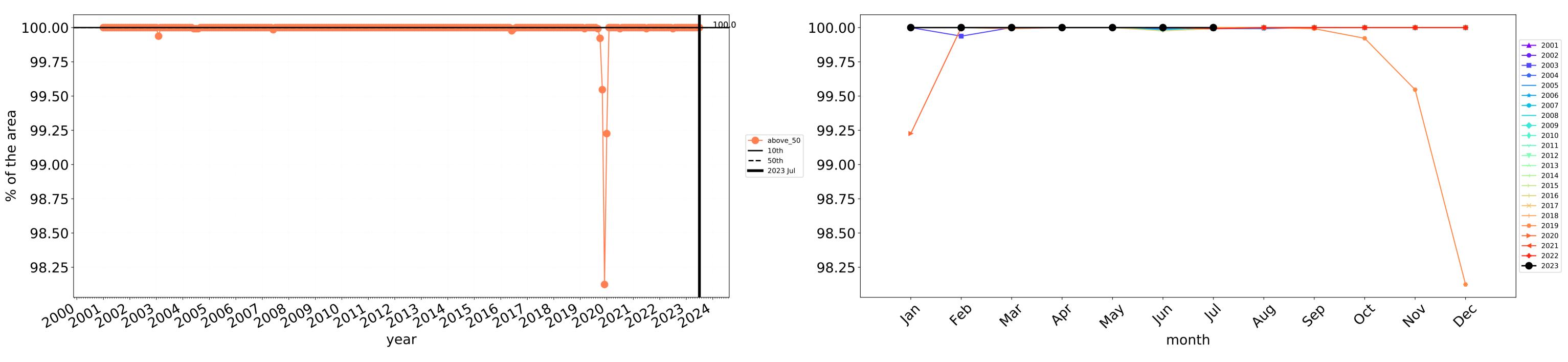
Total Vegetation Cover Anomaly [%]



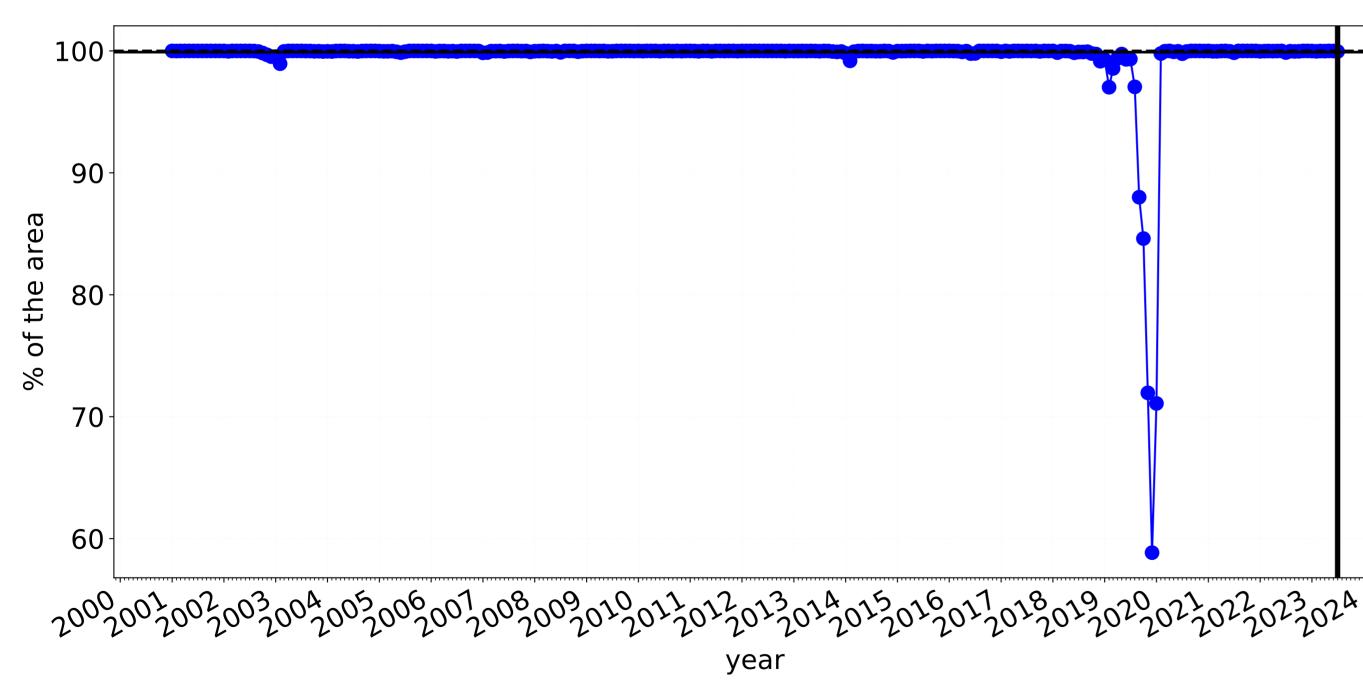
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019. **Total Vegetation Cover Decile [%]**







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

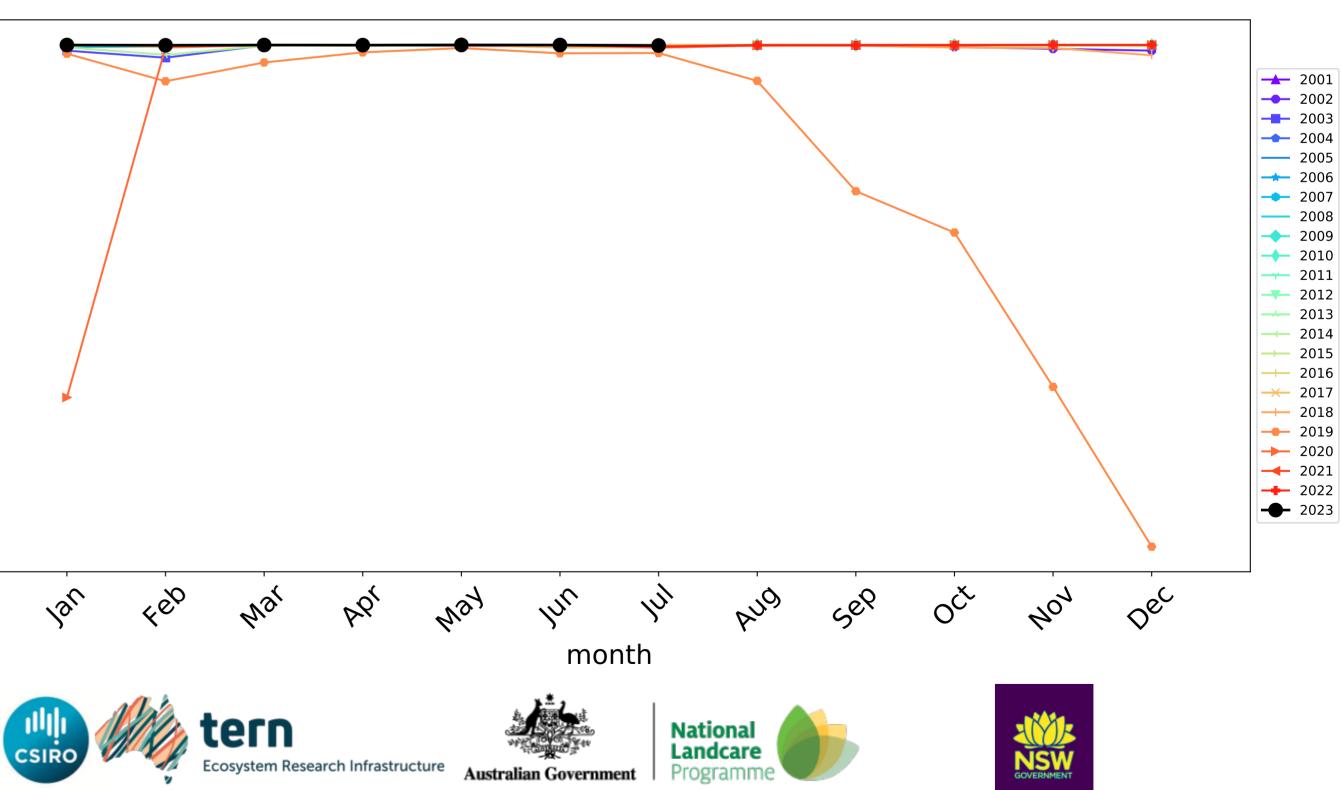




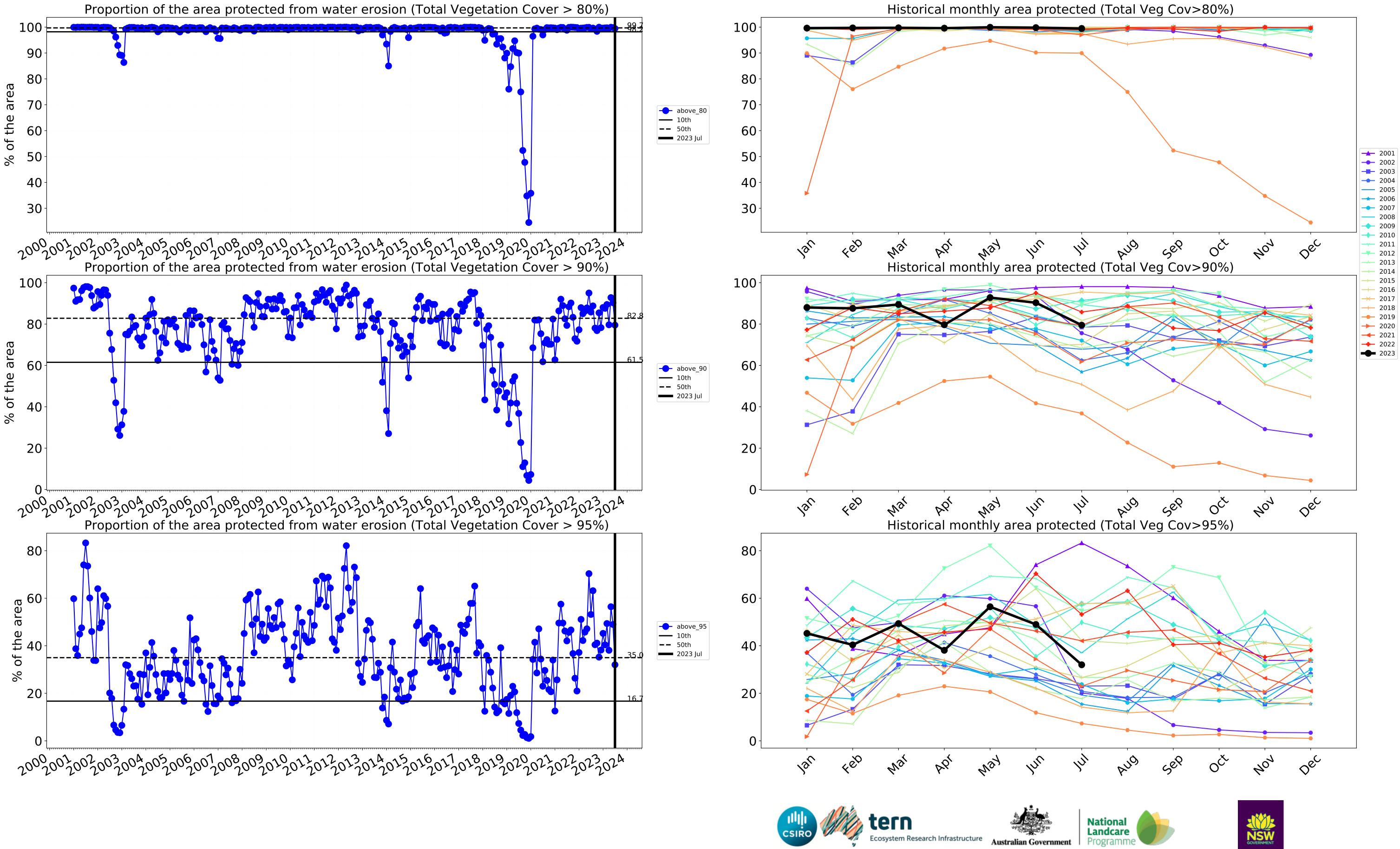
Wind erosion historical monthly area protected (Total Veg Cov >50%)

99090

100 90 ---- above_70 **—** 10th **--** 50th 80 70 60

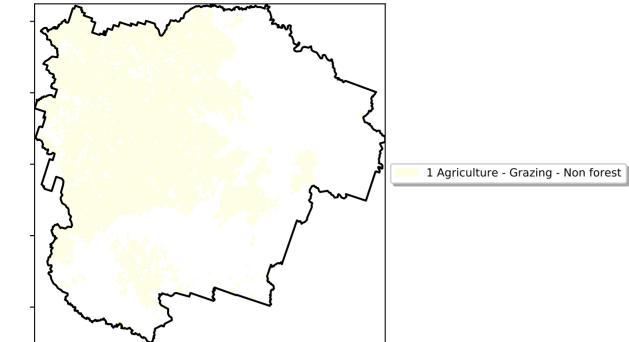


Water erosion historical monthly area protected (Total Veg Cov>70%)

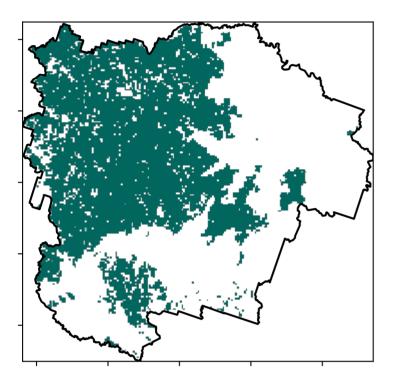


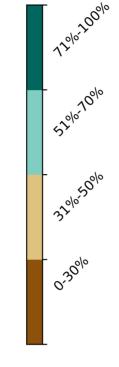
Grazing non forest

Land use and forest cover

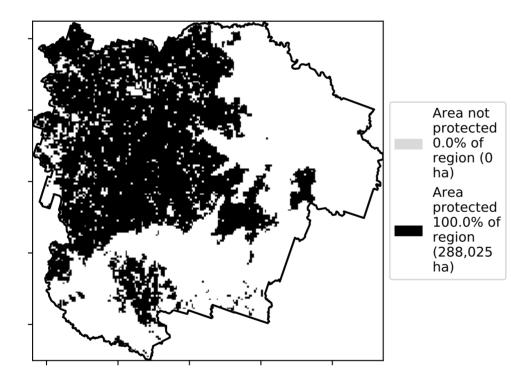


Total Vegetation Cover [%]

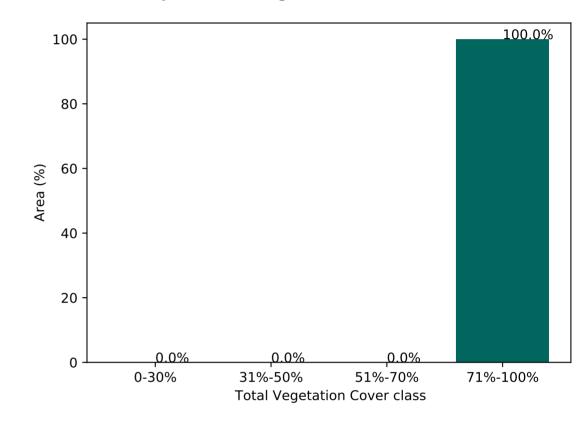




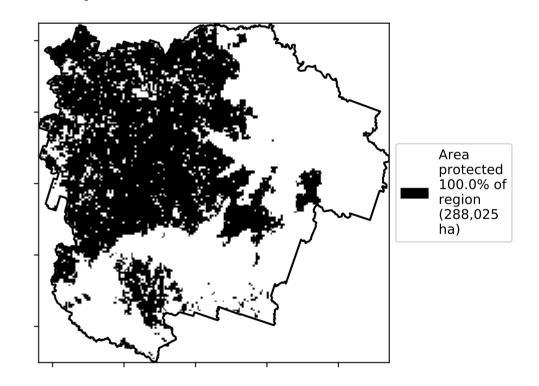
% Area protected from water erosion (>70%)



Proportion of vegetation cover class in area

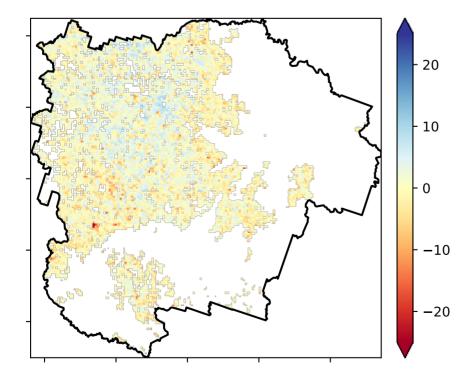


% Area protected from wind erosion (>50%)

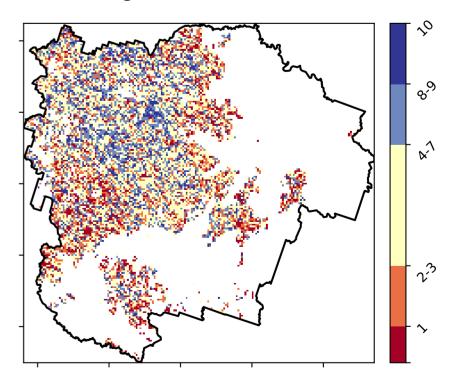


Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

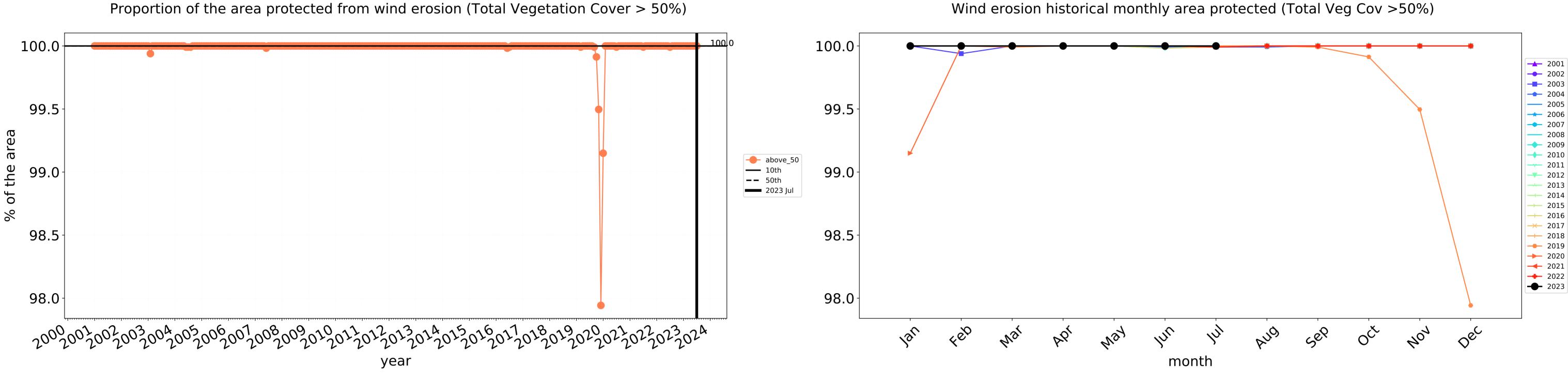
Total Vegetation Cover Anomaly [%]

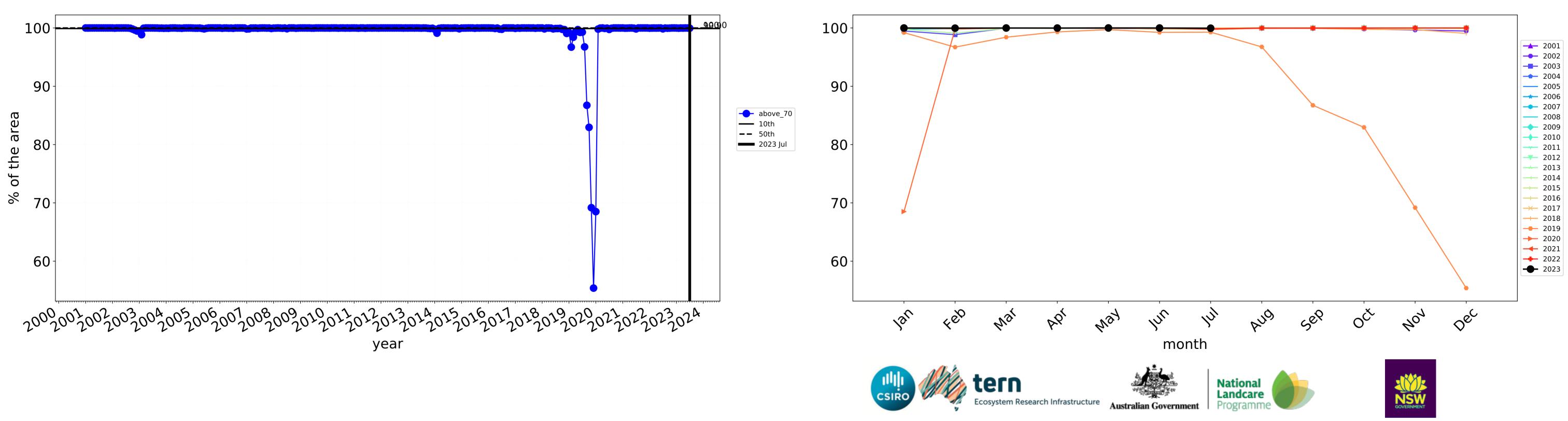


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019. **Total Vegetation Cover Decile [%]**

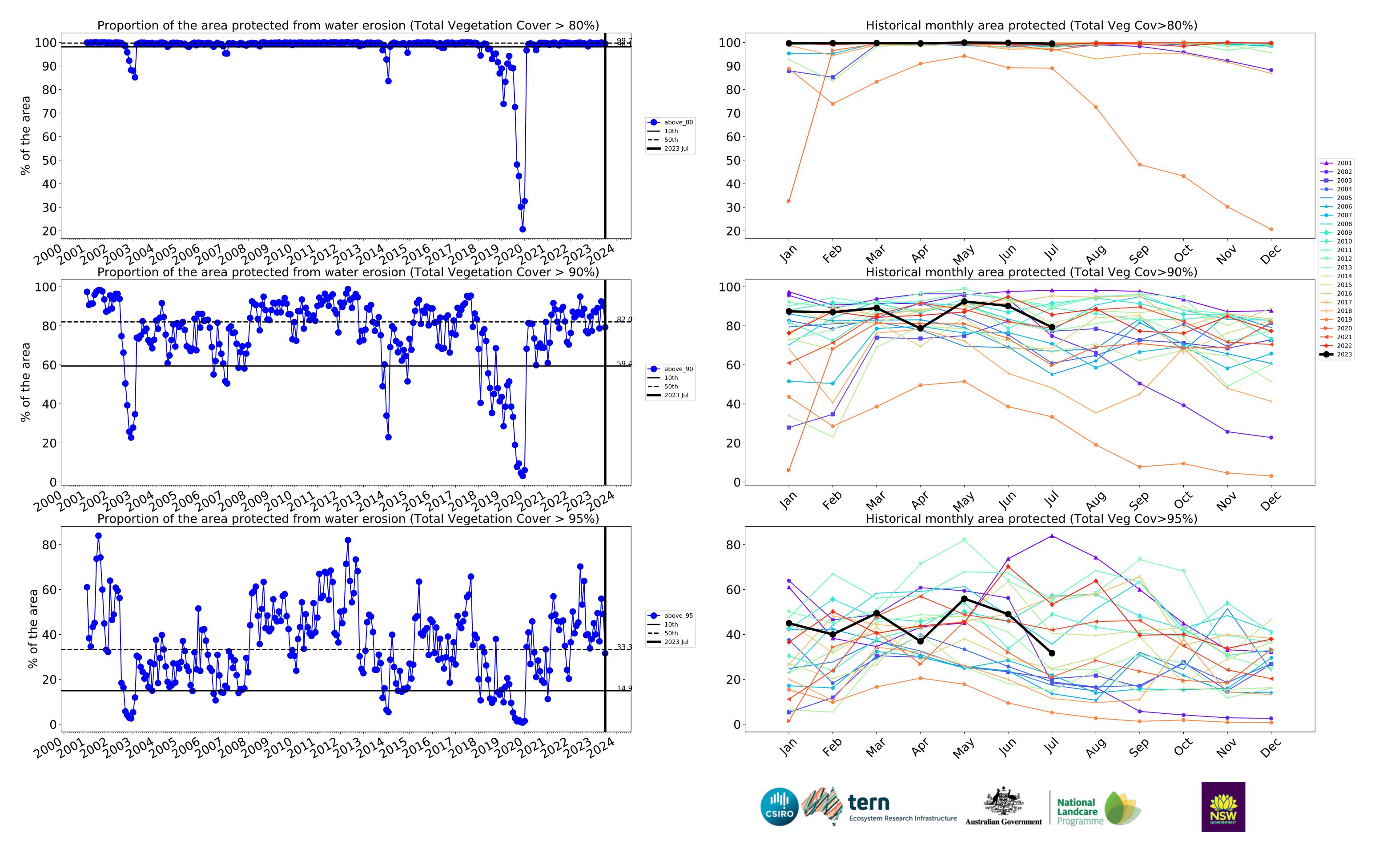








Water erosion historical monthly area protected (Total Veg Cov>70%)



Grazing Woodland forest

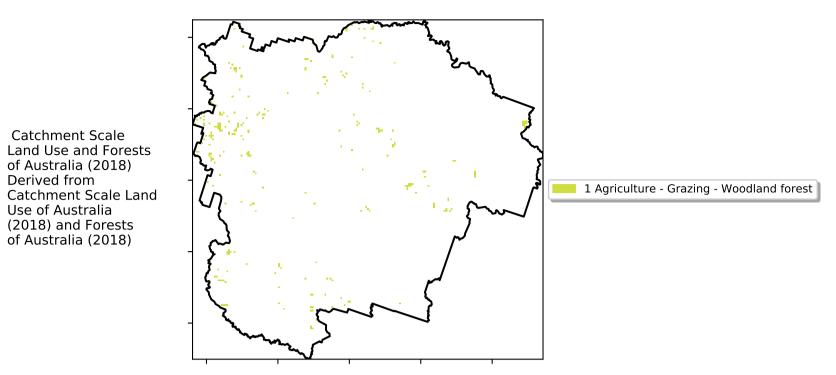
12%200%

5201070010

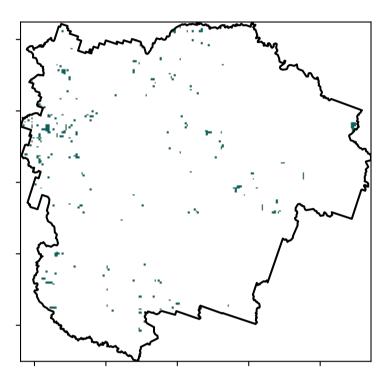
320050010

0.30%

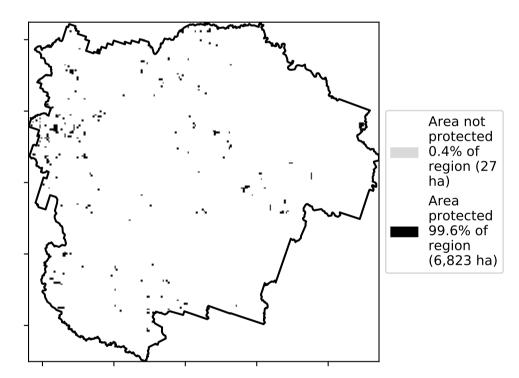
Land use and forest cover



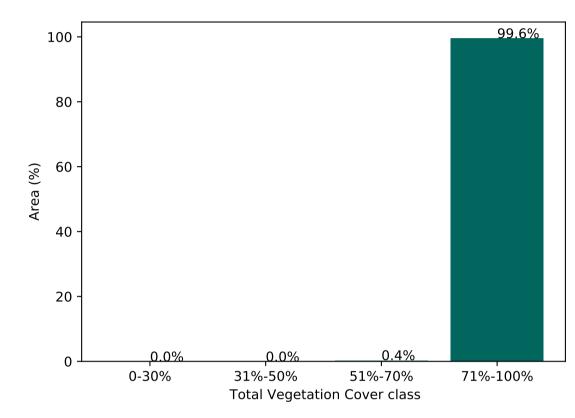
Total Vegetation Cover [%]



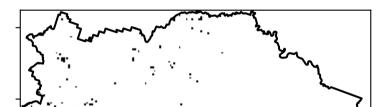




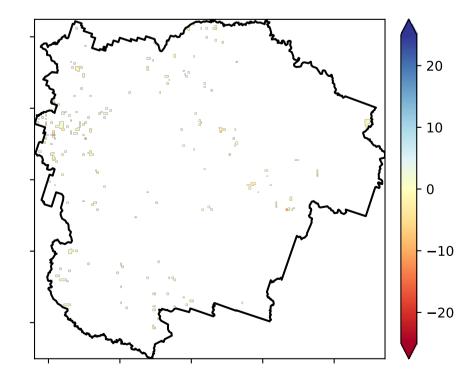
Proportion of vegetation cover class in area



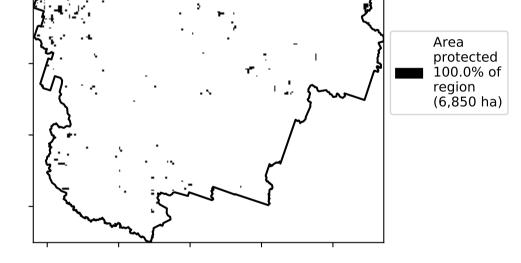
% Area protected from wind erosion (>50%)



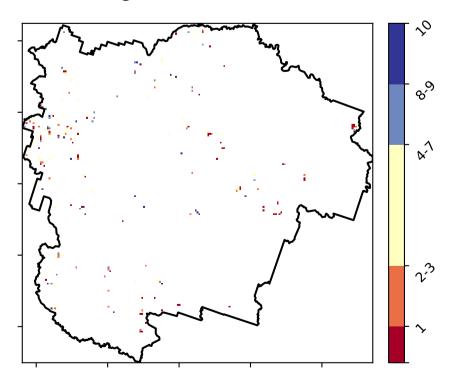
Total Vegetation Cover Anomaly [%]



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.

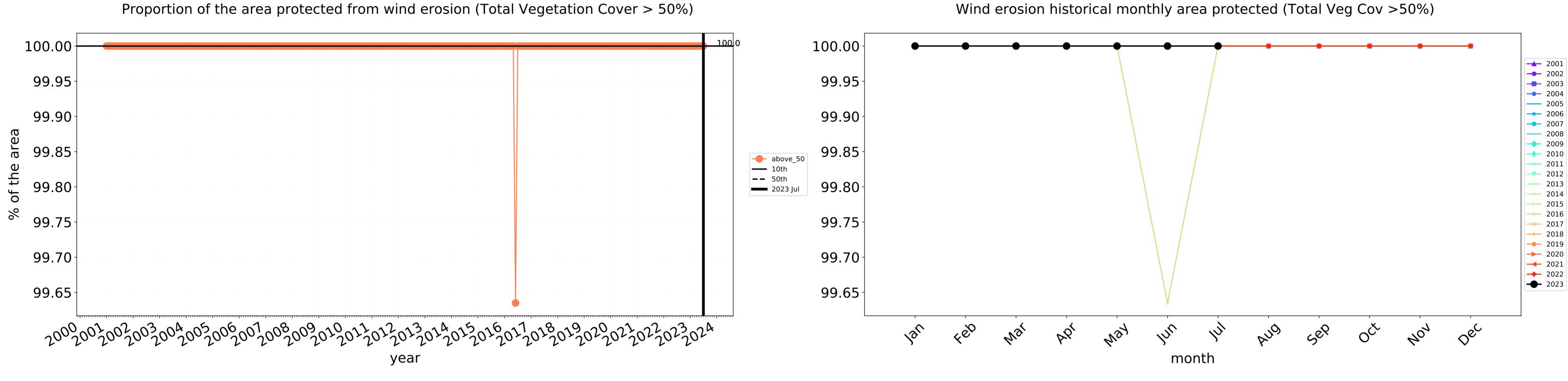


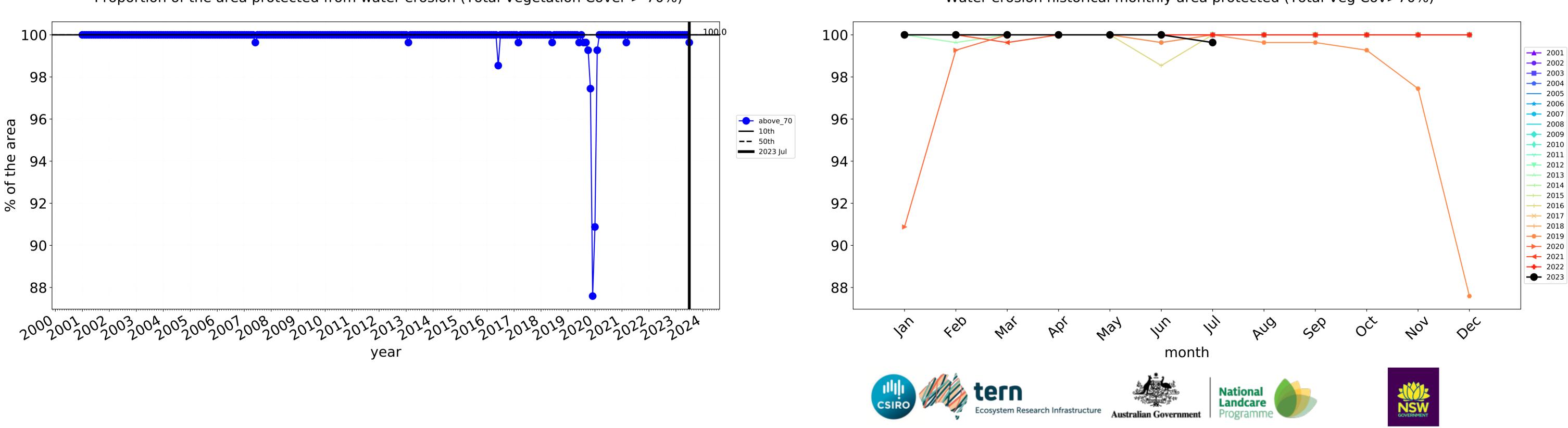
Total Vegetation Cover Decile [%]



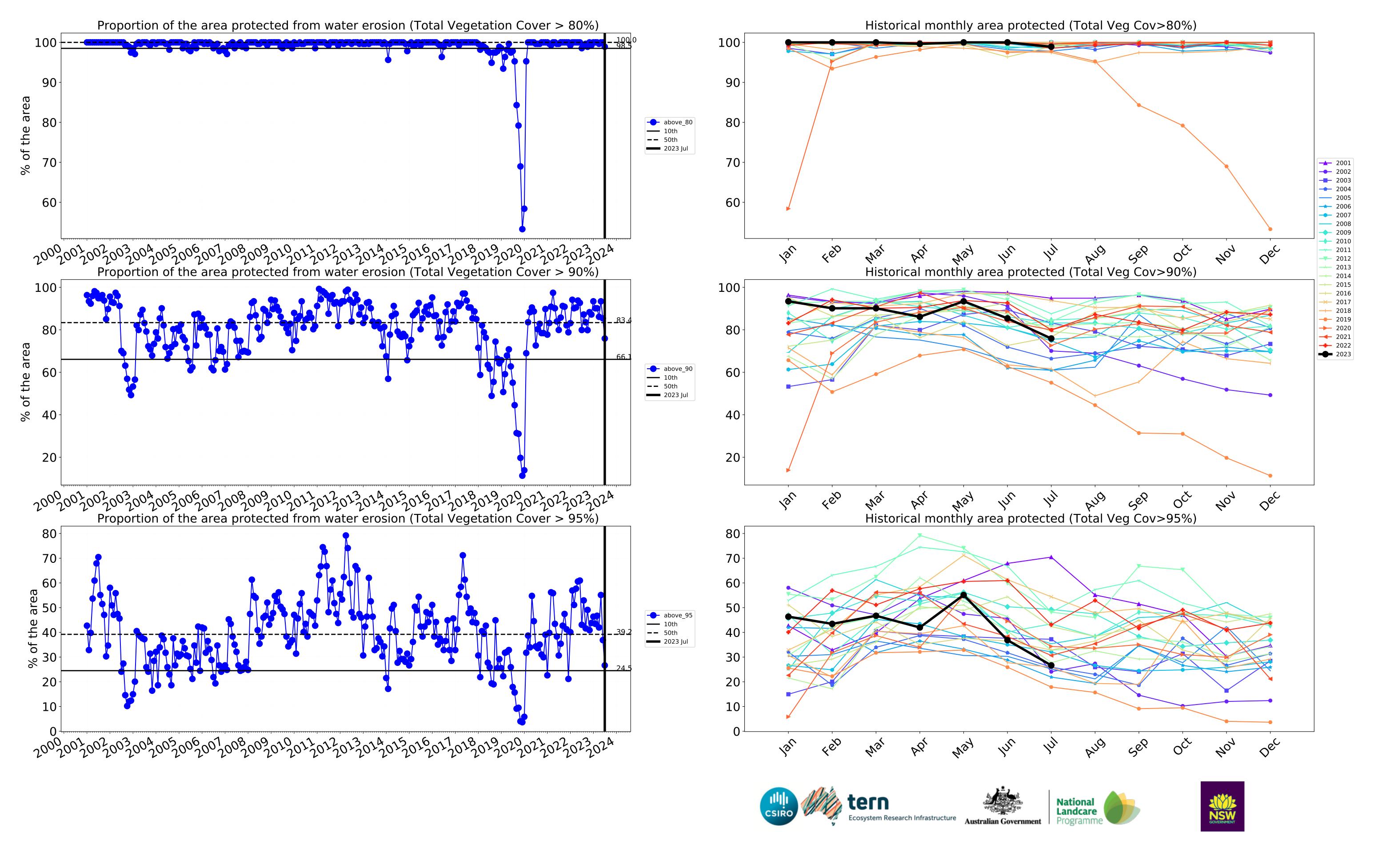




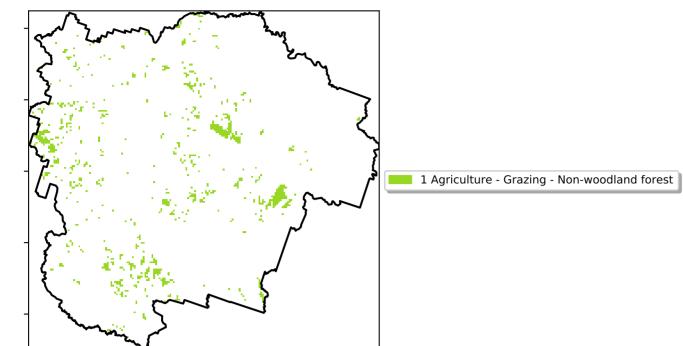




Water erosion historical monthly area protected (Total Veg Cov>70%)

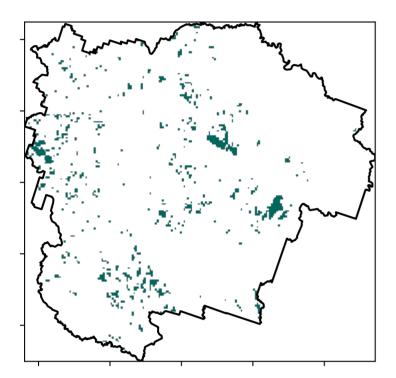


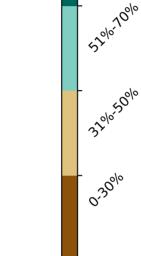
Grazing - Forest (non woodland)



Total Vegetation Cover [%]

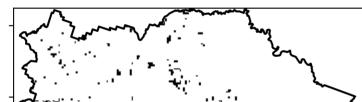
Land use and forest cover



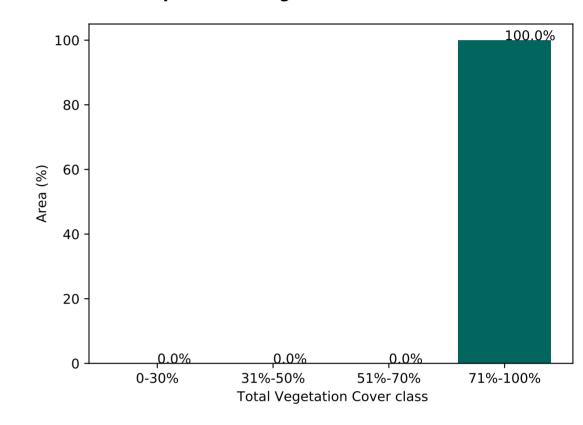


12%200%

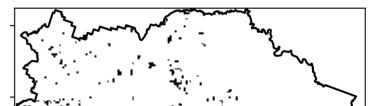
% Area protected from water erosion (>70%)



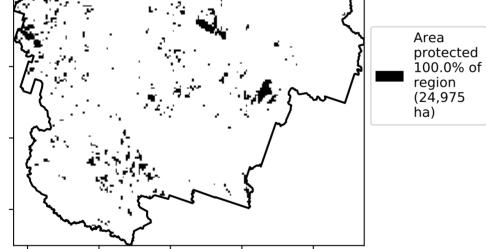
Proportion of vegetation cover class in area



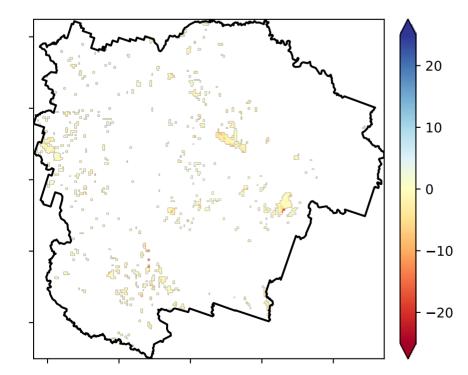
% Area protected from wind erosion (>50%)



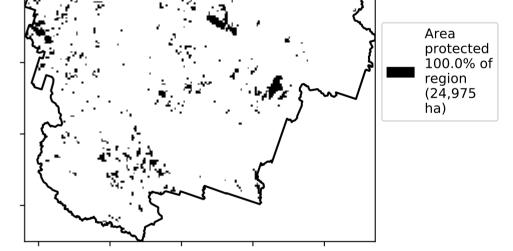
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)



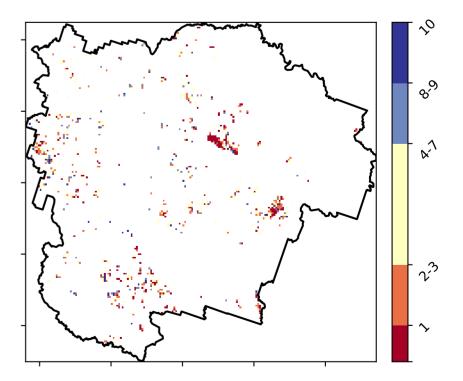
Total Vegetation Cover Anomaly [%]



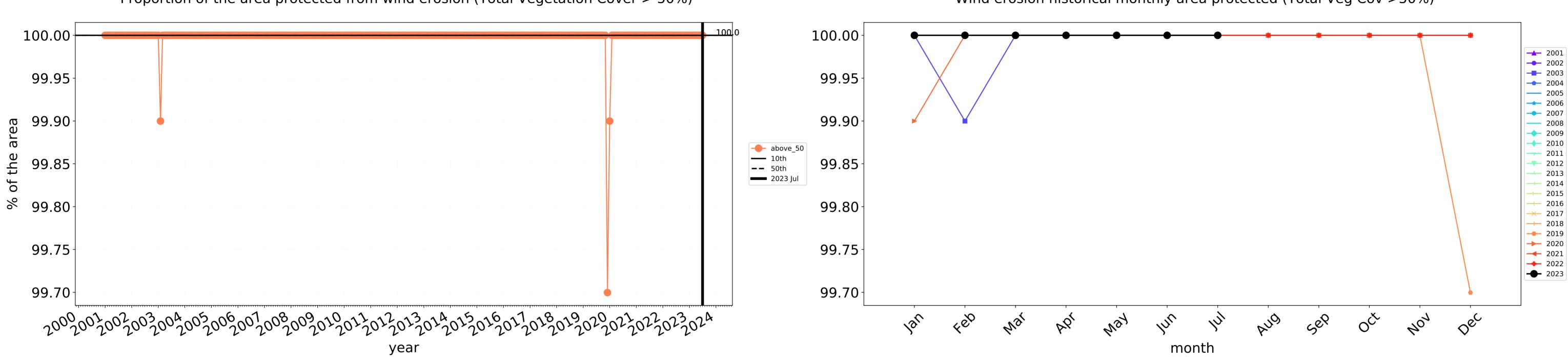
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

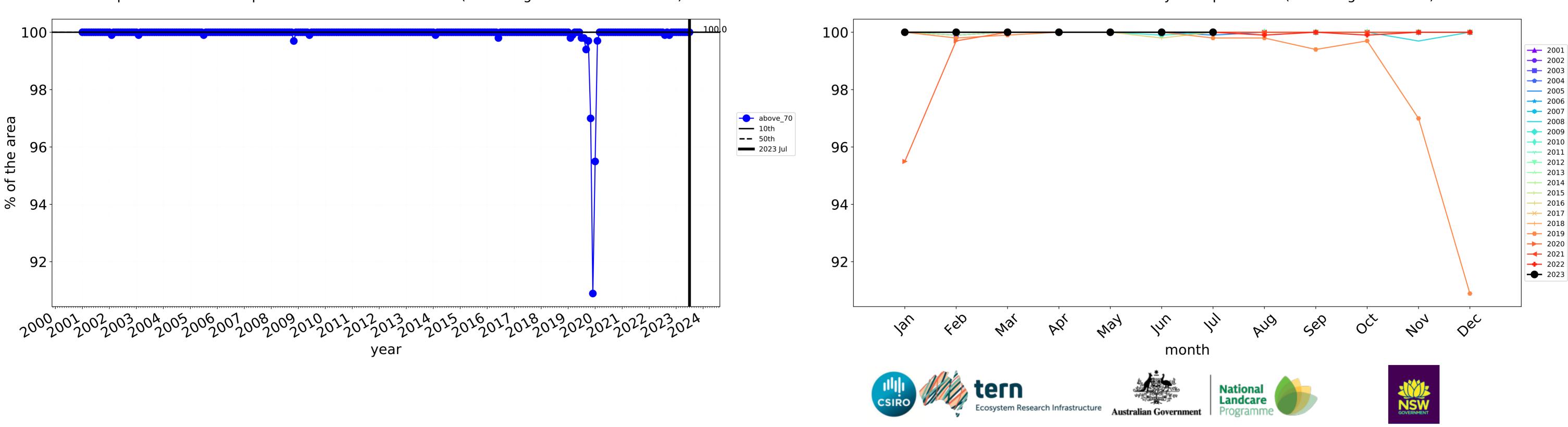


Total Vegetation Cover Decile [%]



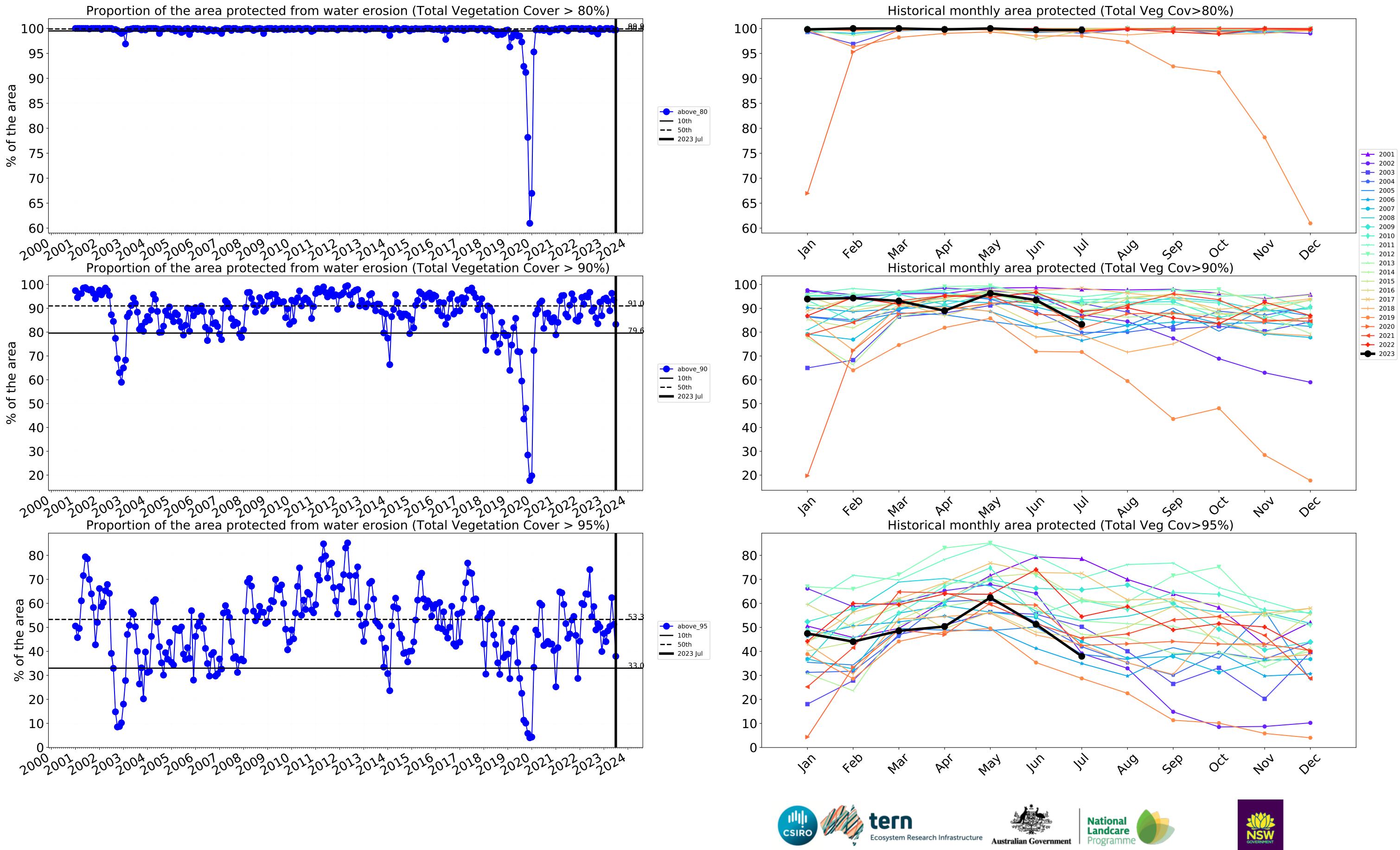






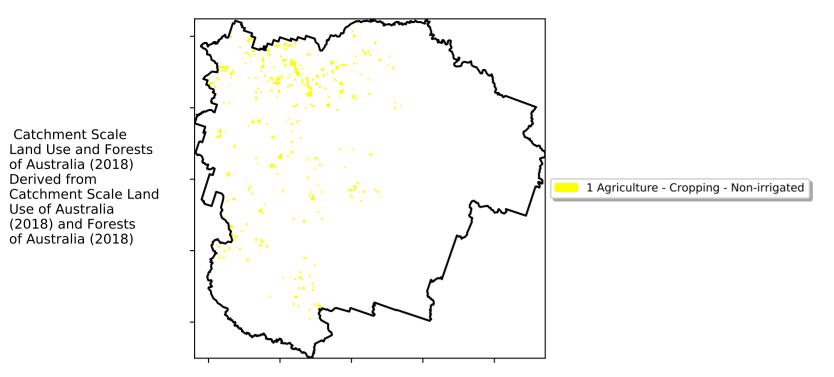
Wind erosion historical monthly area protected (Total Veg Cov >50%)

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

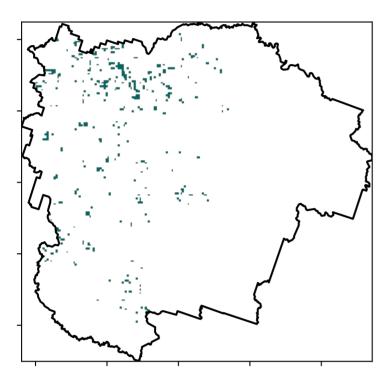


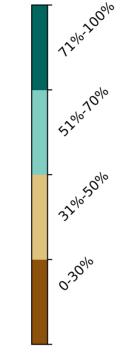
Cropping



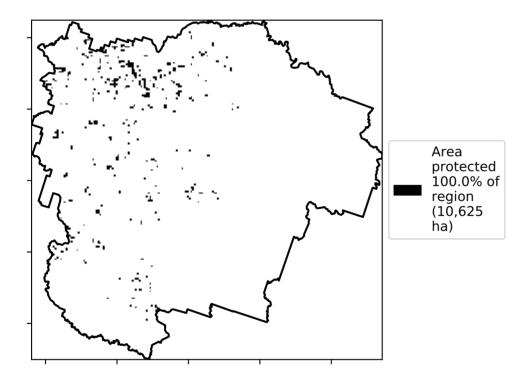


Total Vegetation Cover [%]

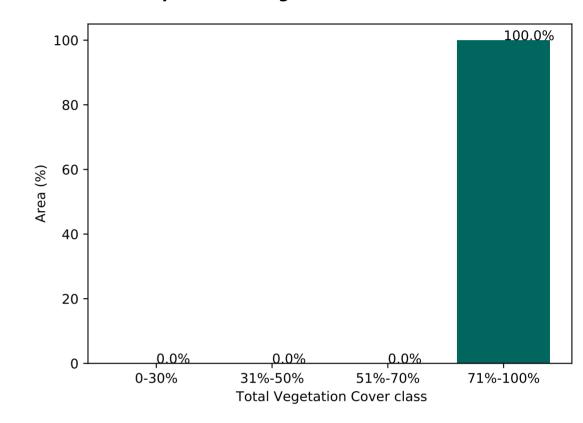




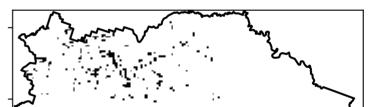
% Area protected from water erosion (>70%)



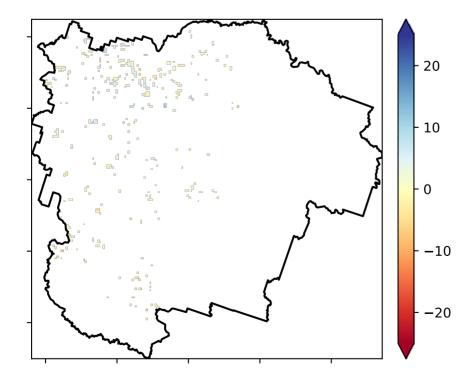
Proportion of vegetation cover class in area



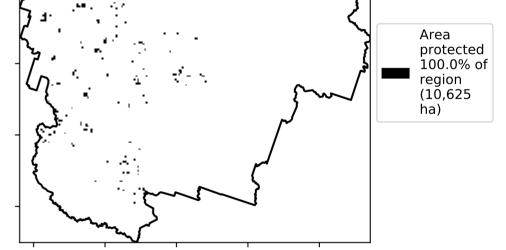
% Area protected from wind erosion (>50%)



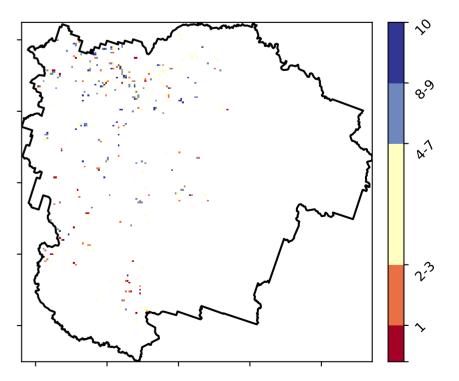
Total Vegetation Cover Anomaly [%]



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.



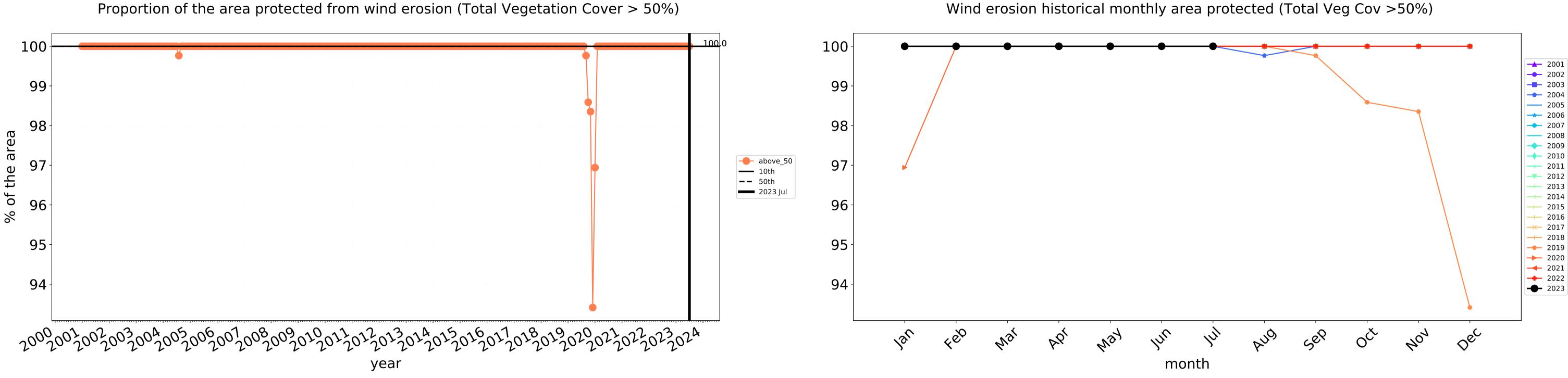
Total Vegetation Cover Decile [%]

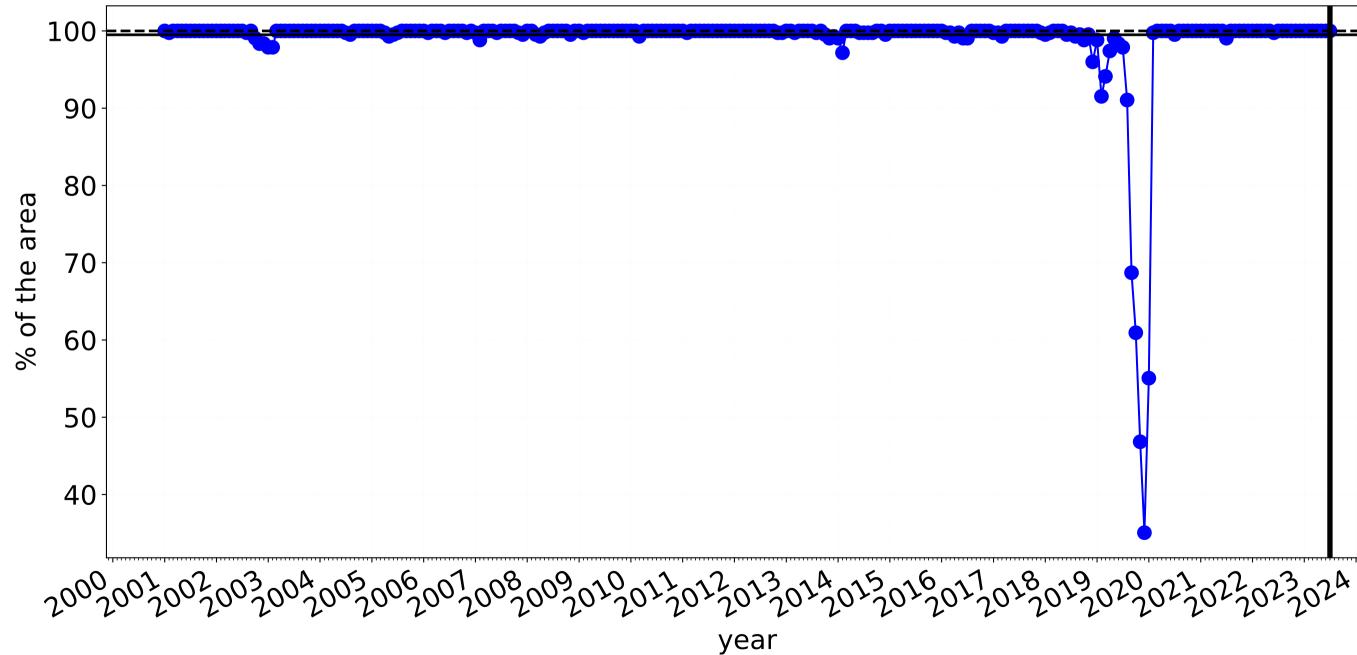




Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map from 2001 to 2019.

Derived from

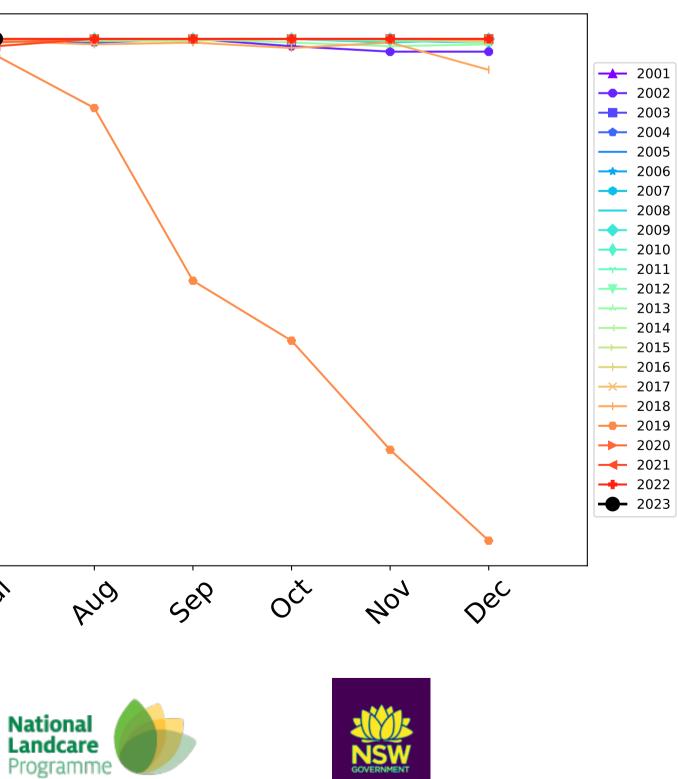


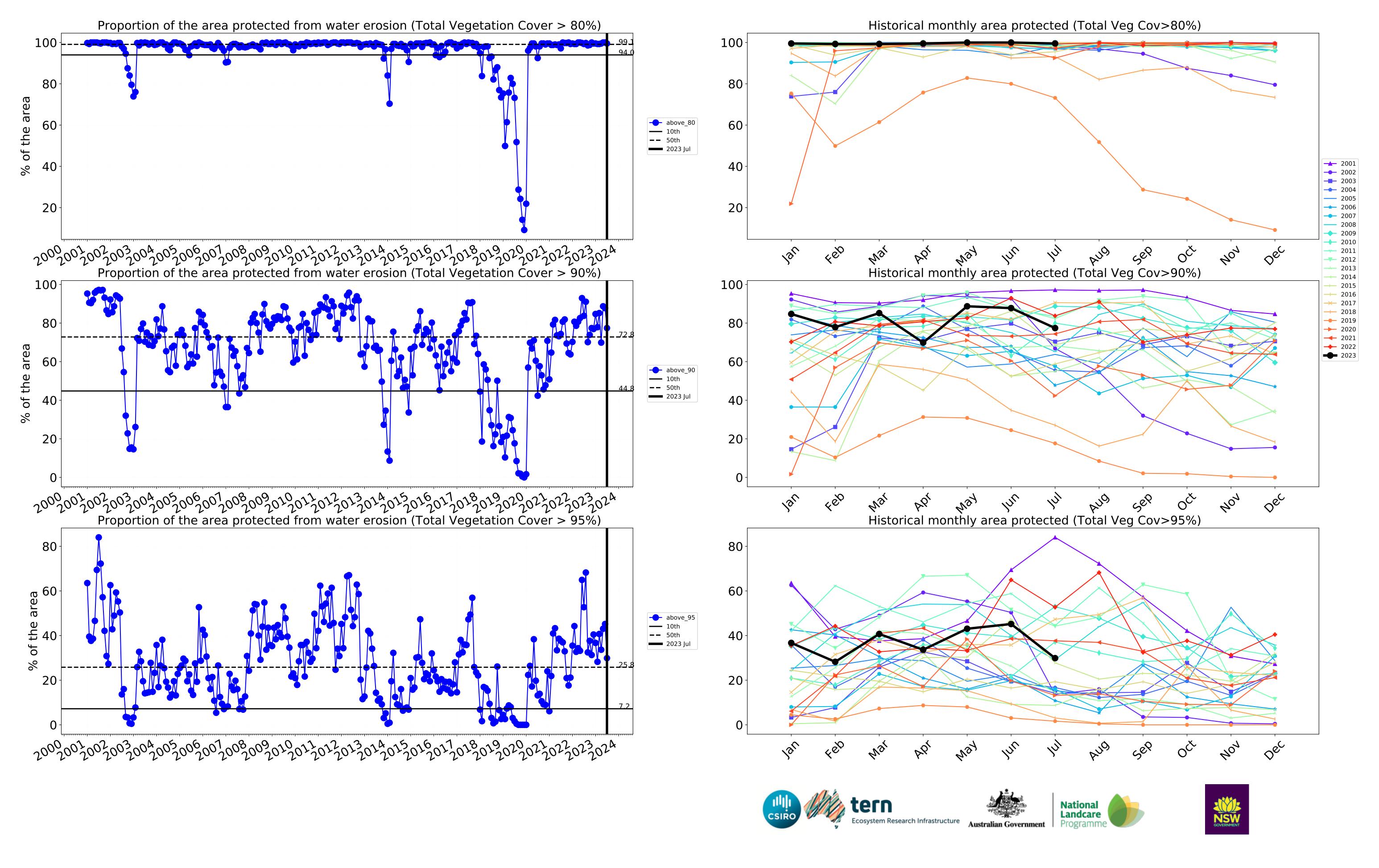


Cropping timeseries

100 <u>860</u>60 90 80----- above_70 **——** 10th **——** 50th **——** 2023 Jul 70 60 50 40 400 Par way War PQ 1¹1 In In month tern Ecosystem Research Infrastructure Australian Government

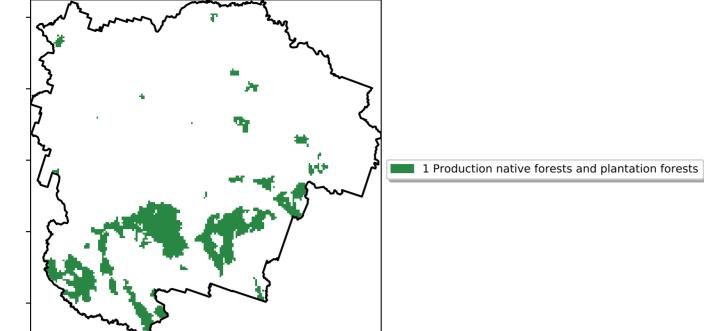
Water erosion historical monthly area protected (Total Veg Cov>70%)



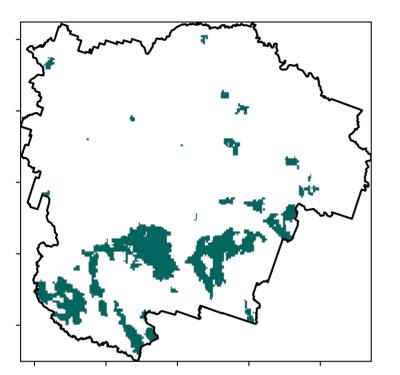


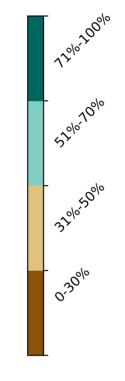
Production native forests and plantation forests

Land use and forest cover

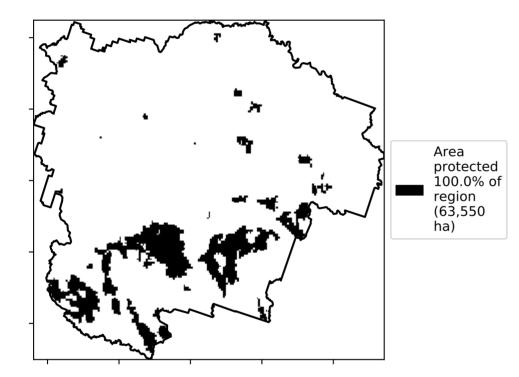


Total Vegetation Cover [%]

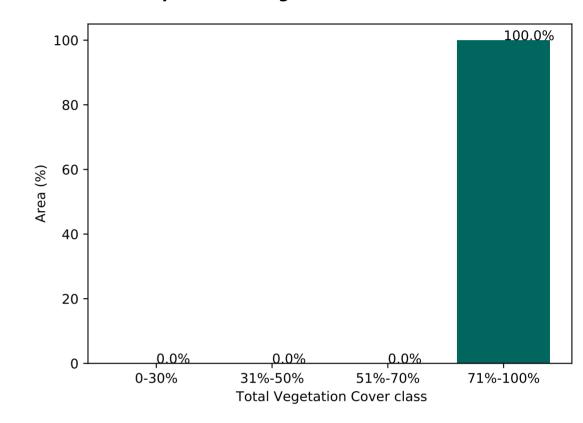




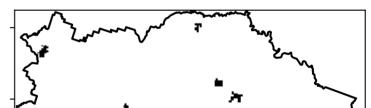
% Area protected from water erosion (>70%)



Proportion of vegetation cover class in area

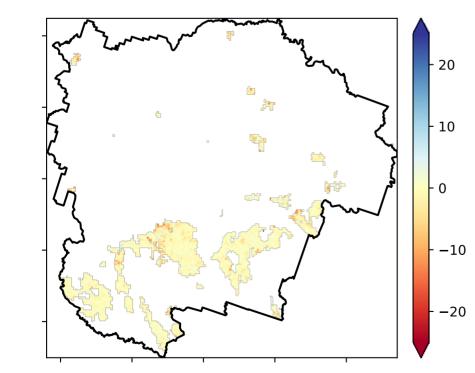


% Area protected from wind erosion (>50%)

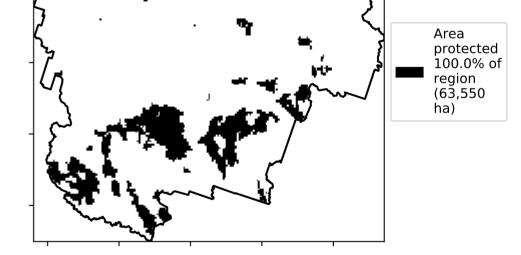


Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

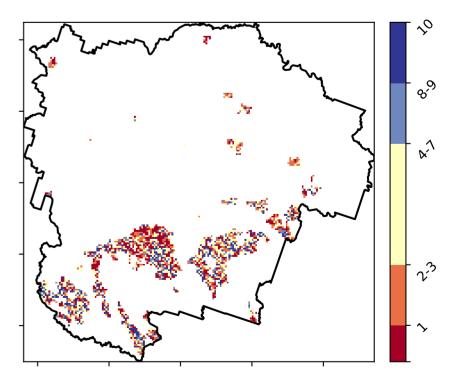
Total Vegetation Cover Anomaly [%]



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.

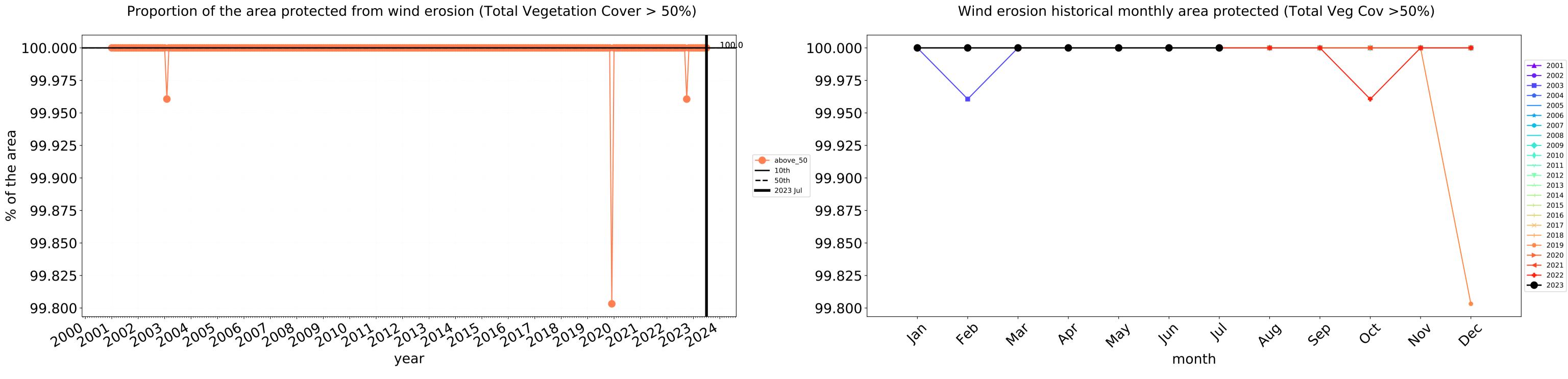


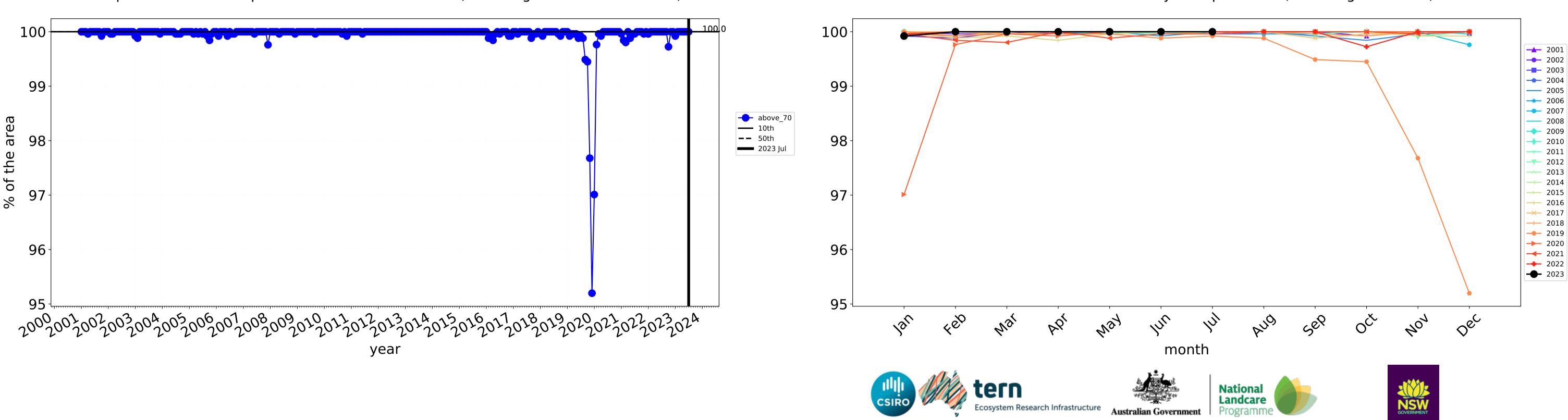
Total Vegetation Cover Decile [%]



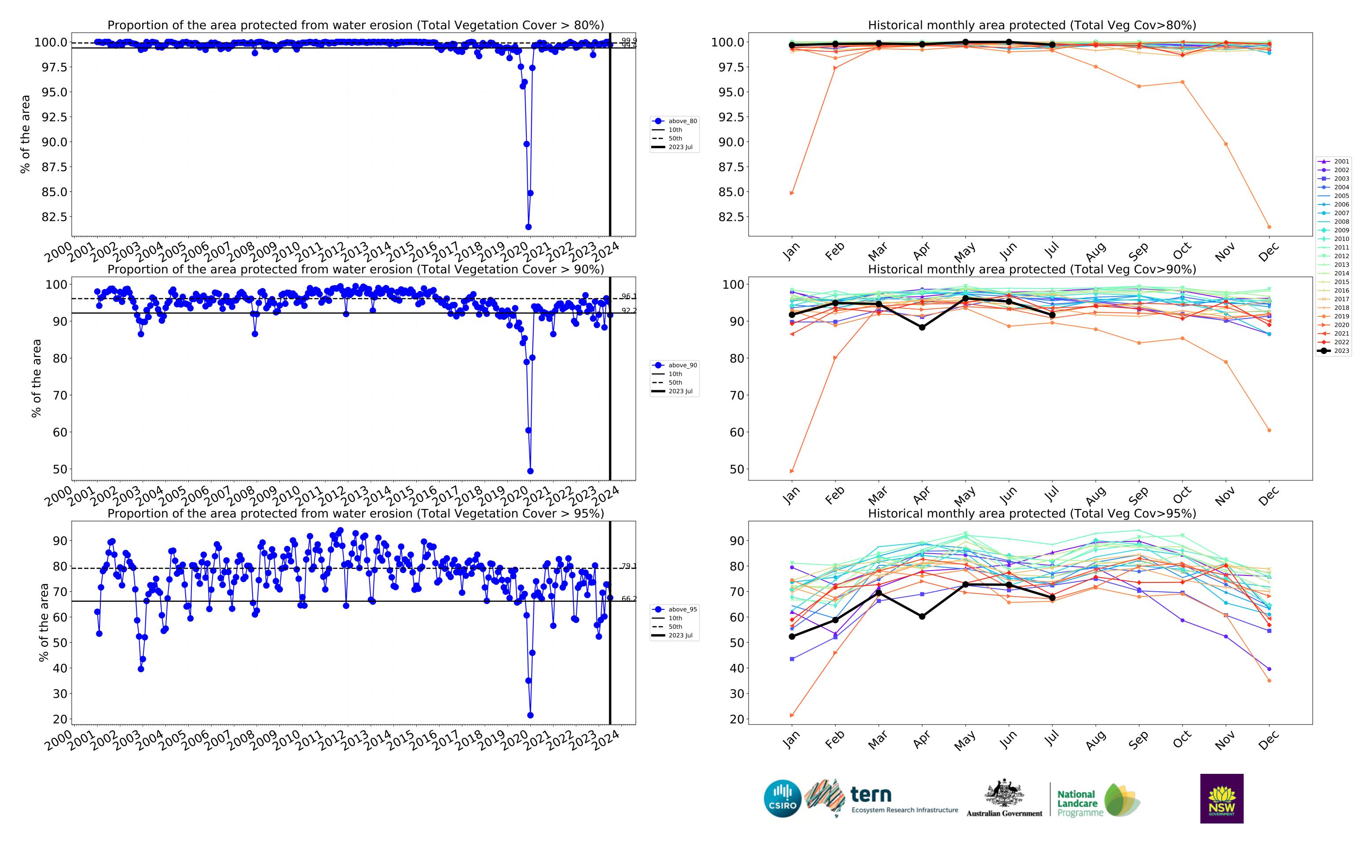








Water erosion historical monthly area protected (Total Veg Cov>70%)



Walcha_(A) (total 626,350 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	626,350	100.0% 626,350	100.0% 626,350	100.0% 626,075	99.2% 621,625	83.0% 520,150	43.0% 269,075
Conservation and natural environments	231,175	100.0% 231,175	100.0% 231,175	99.9% 231,050	98.8% 228,475	86.0% 198,925	52.1% 120,500
Conservation and natural environments Woodland forest	6,150	100.0% 6,150	100.0% 6,150	99.6% 6,125	99.2% 6,100	88.6% 5,450	56.5% 3,475
Conservation and natural environments Forest (non woodland)	223,450	100.0% 223,450	100.0% 223,450	100.0% 223,350	98.8% 220,825	86.0% 192,250	52.1% 116,525
Agriculture	330,475	100.0% 330,475	100.0% 330,475	100.0% 330,325	99.5% 328,700	79.4% 262,450	31.9% 105,525
Grazing	319,850	100.0% 319,850	100.0% 319,850	100.0% 319,700	99.5% 318,125	79.5% 254,225	32.0% 102,350
Grazing non forest	288,025	100.0% 288,025	100.0% 288,025	100.0% 287,900	99.5% 286,450	79.2% 228,225	31.6% 91,050
Grazing Woodland forest	6,850	100.0% 6,850	100.0% 6,850	99.6% 6,825	98.9% 6,775	75.9% 5,200	26.6% 1,825
Grazing - Forest (non woodland)	24,975	100.0% 24,975	100.0% 24,975	100.0% 24,975	99.7% 24,900	83.3% 20,800	37.9% 9,475
Cropping	10,625	100.0% 10,625	100.0% 10,625	100.0% 10,625	99.5% 10,575	77.4% 8,225	29.9% 3,175
Production native forests and plantation forests	63,550	100.0% 63,550	100.0% 63,550	100.0% 63,550	99.7% 63,375	91.7% 58,250	67.5% 42,925

