Total vegetation cover soil protection Region:LGA Indigo_(S) VIC

Date: June 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:

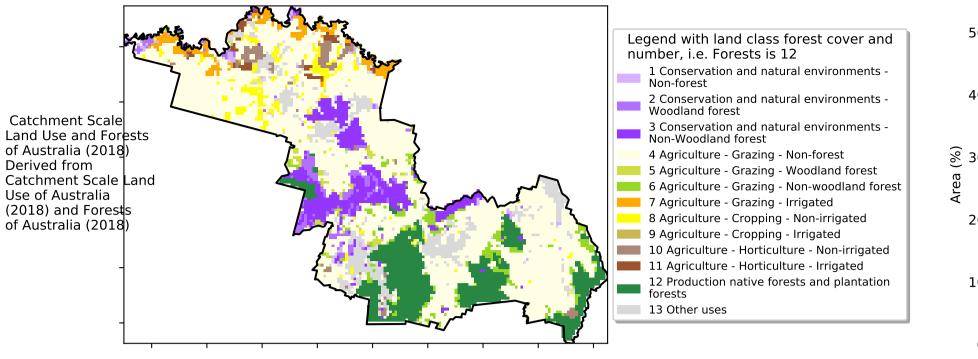
https://doi.org/10.4225/08/5848a3f19a7b3



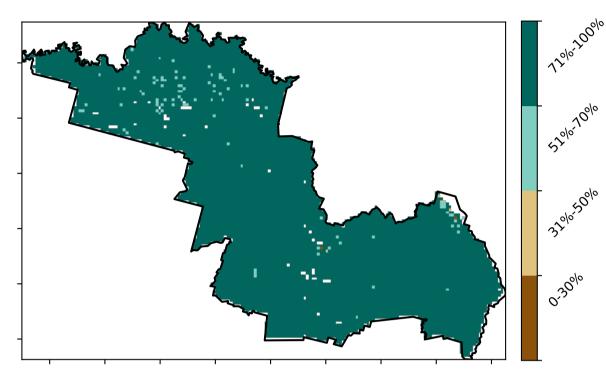
Vegetation Cover Jun 2023

Land use and forest cover

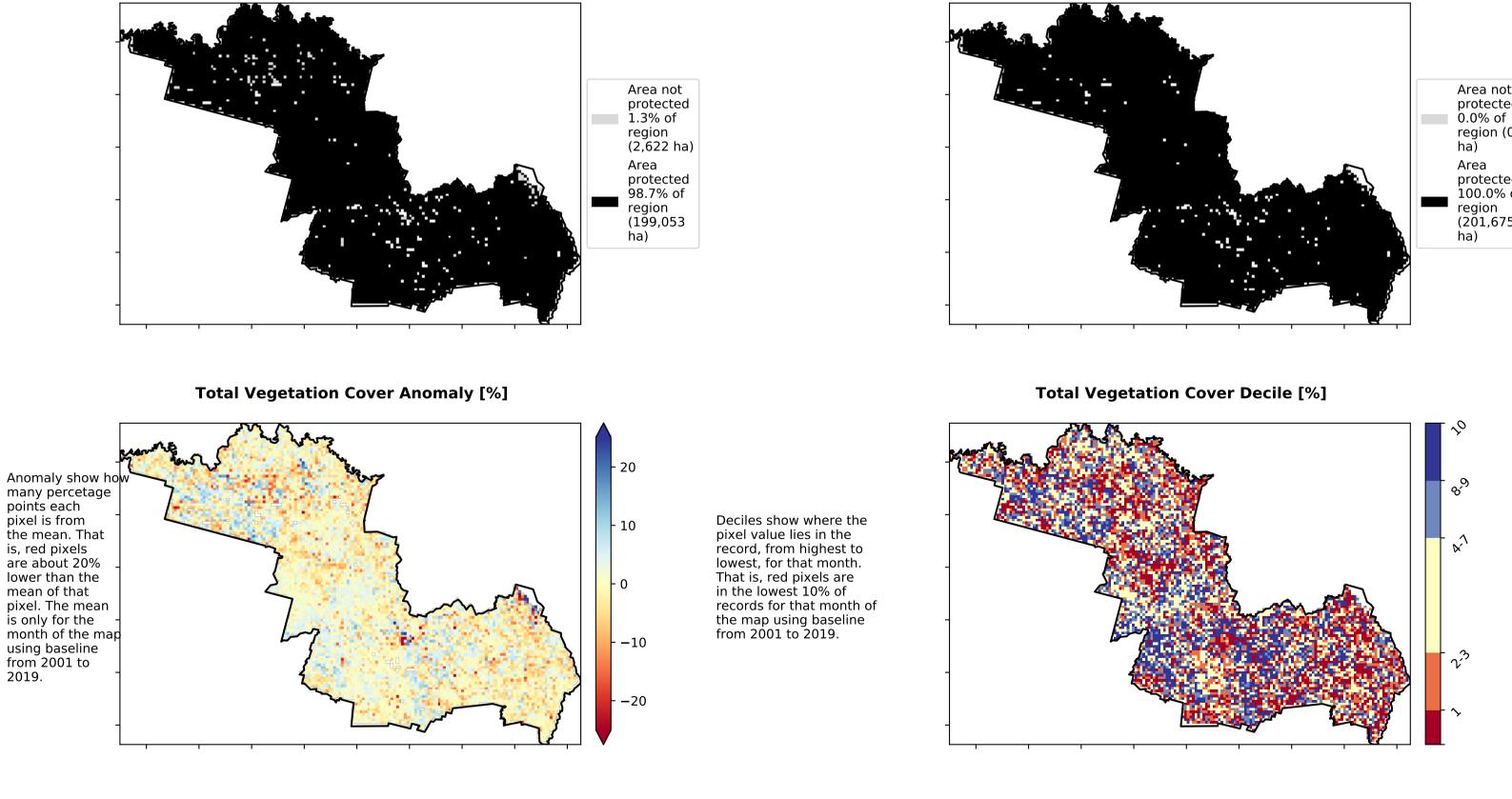
Proportion of each land class in area

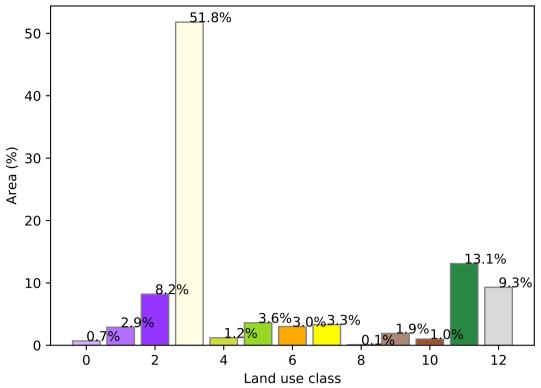


Total Vegetation Cover [%]

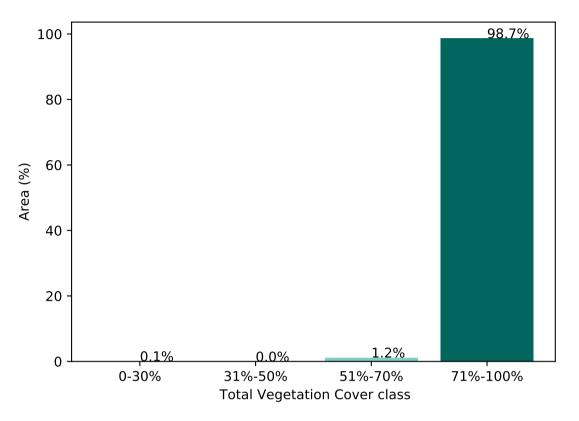


% Area protected from water erosion (>70%)

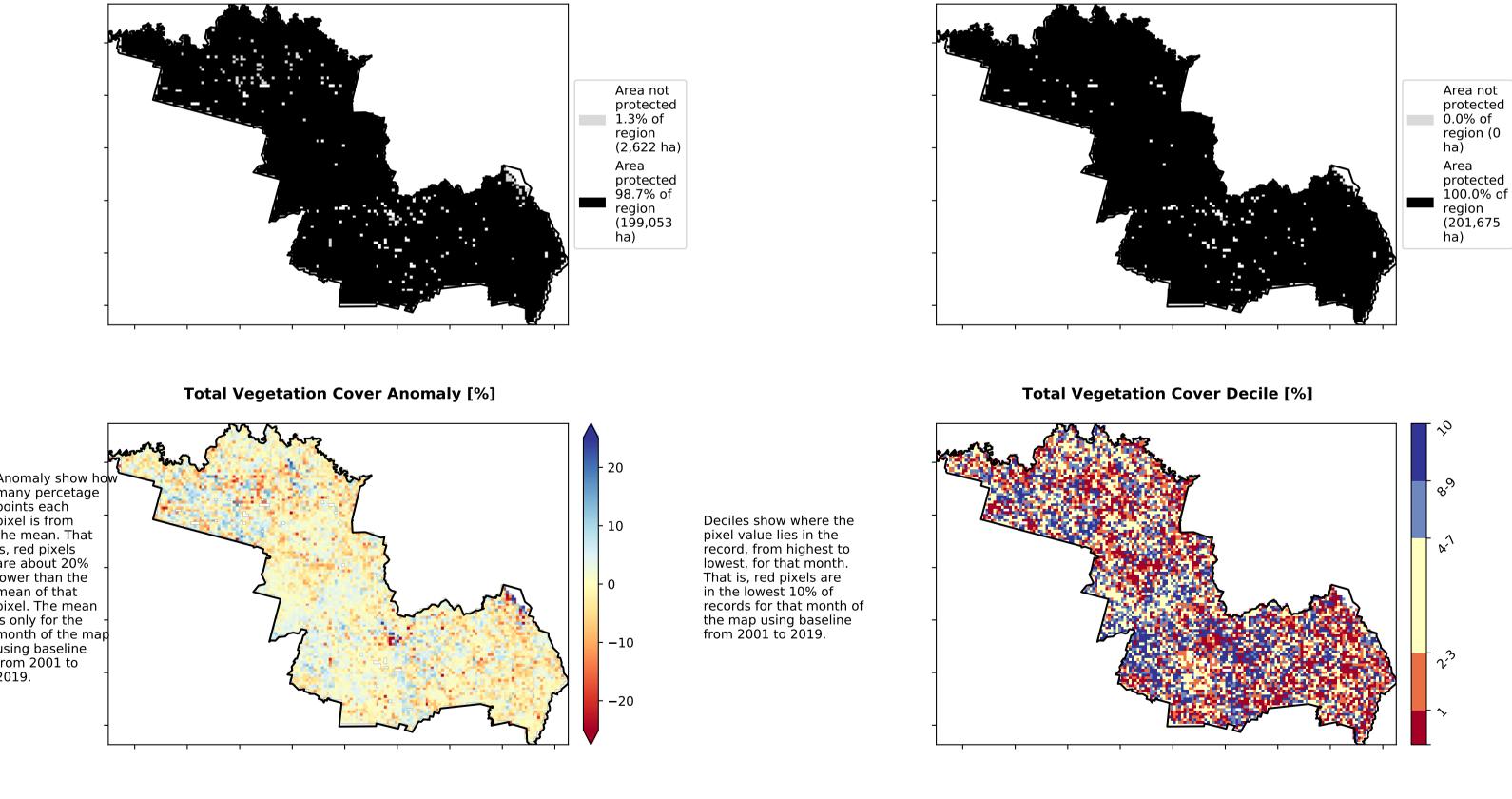




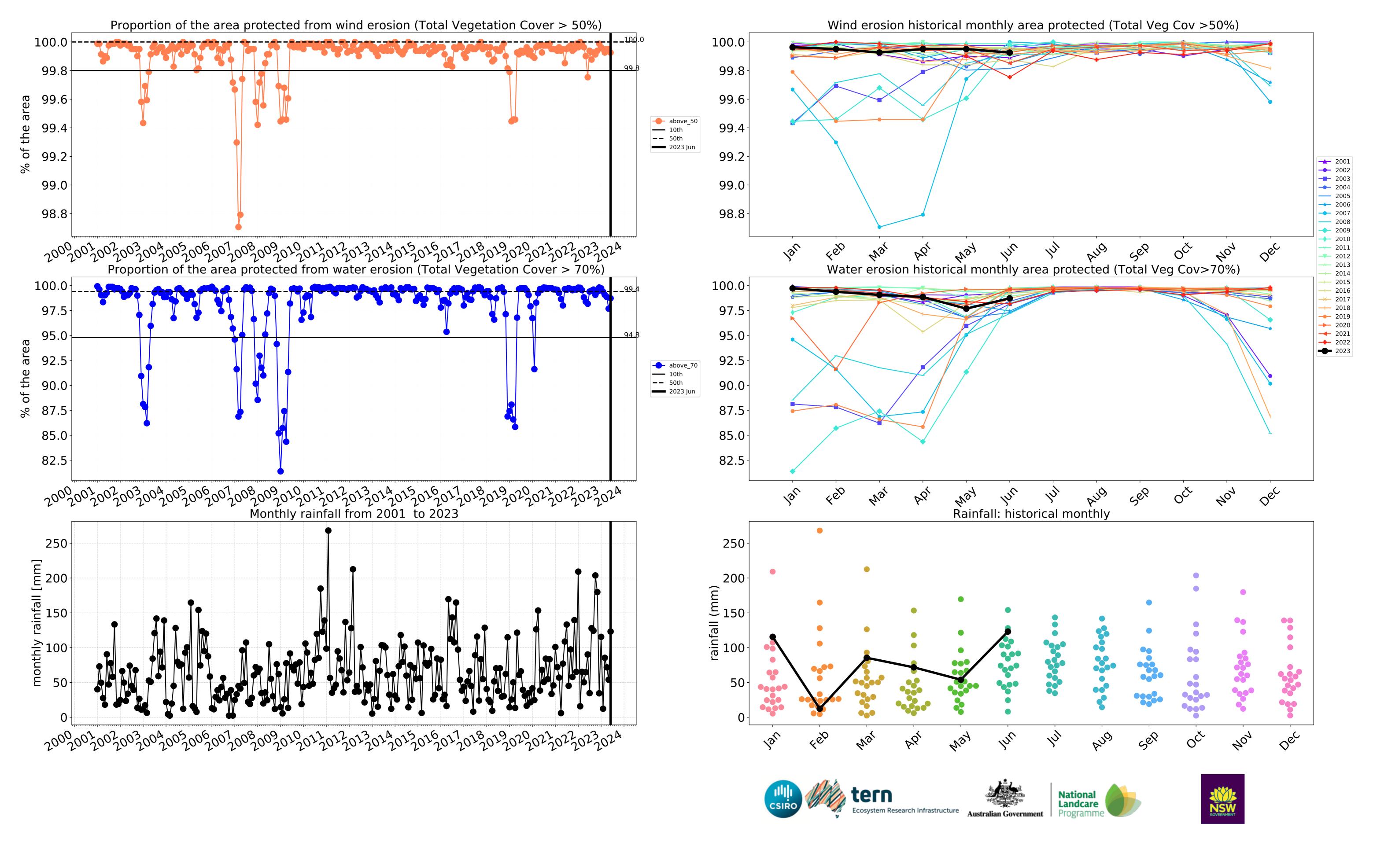
Proportion of vegetation cover class in area

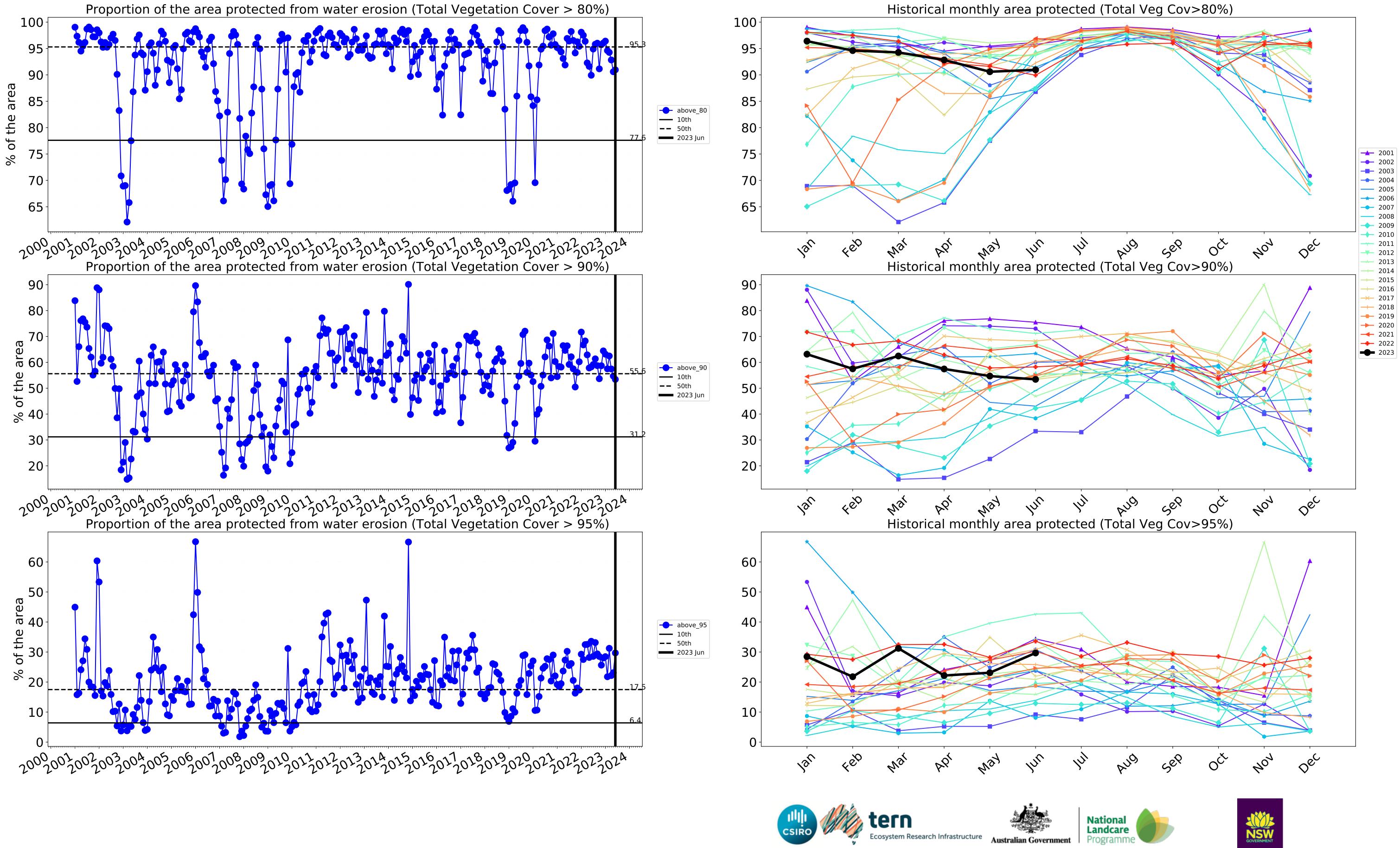


% Area protected from wind erosion (>50%)







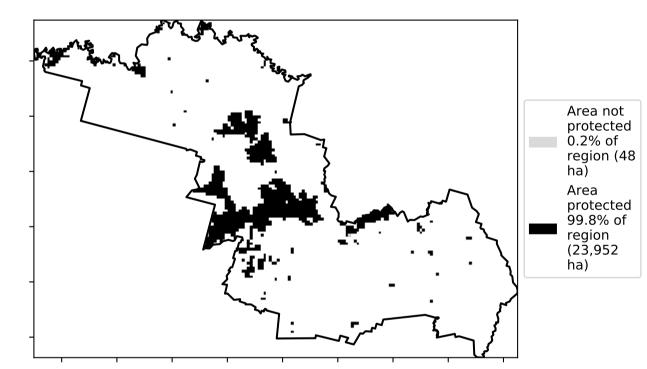




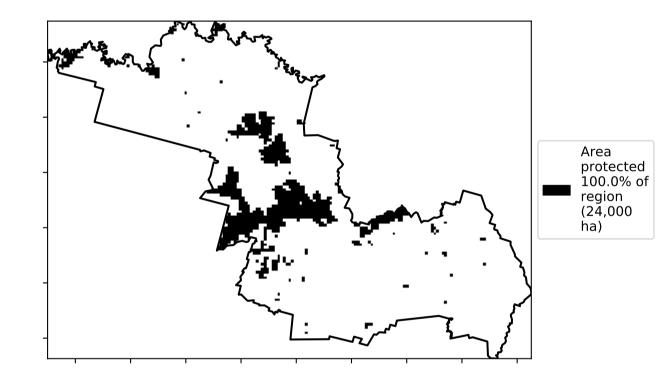
Conservation and natural environments

Land use and forest cover Proportion of each land class in area 69.3% 70 60 · 50 Catchment Scale Land Use and Forests of Australia (2018) Derived from 1 Conservation and natural environments - Non-forest 2 Conservation and natural environments - Woodland 40 ea Catchment Scale Land forest Use of Australia (2018) and Forests of Australia (2018) 3 Conservation and natural environments - Non-woodland forest 30 24.5% 20 · 10 6.1% 0 1.5 -0.5 0.0 0.5 1.02.0 2.5 Land use class Proportion of vegetation cover class in area **Total Vegetation Cover [%]** 12/00/10001 99.8% 100 80 · 52°10'10°1 Area (%) 60 32%50% 40 · 0.30% 20 · 0.2% 0.0% 0.0% 0 51%-70% 0-30% 31%-50% 71%-100% Total Vegetation Cover class

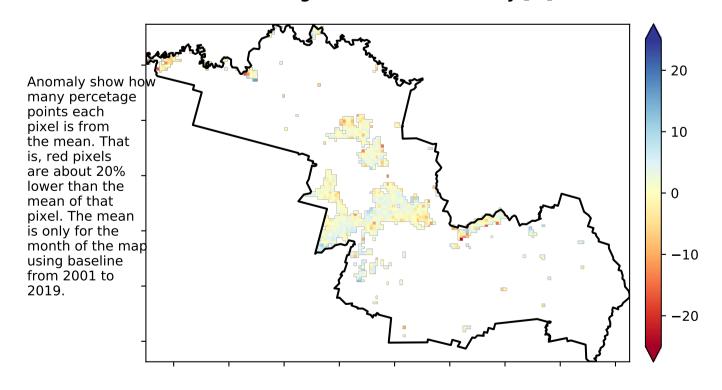
% Area protected from water erosion (>70%)



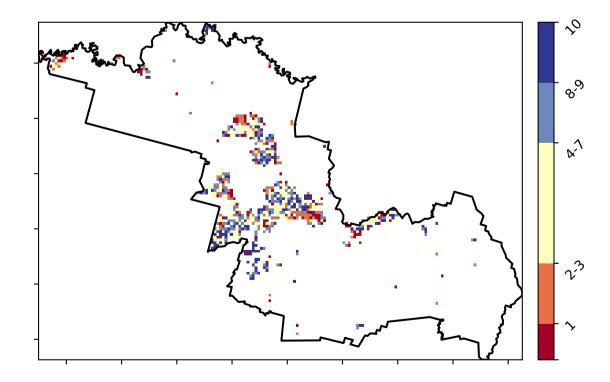




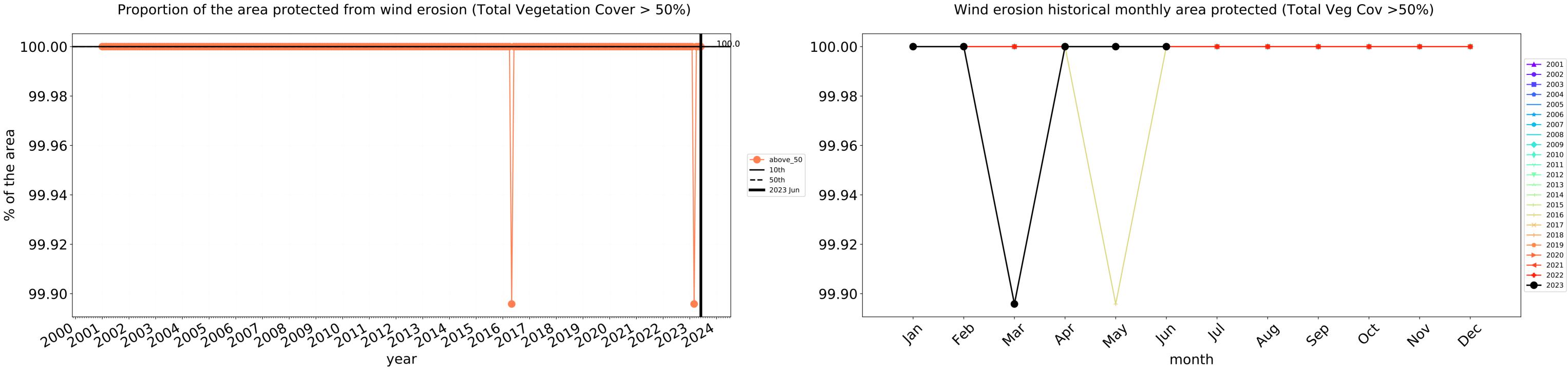
Total Vegetation Cover Anomaly [%]

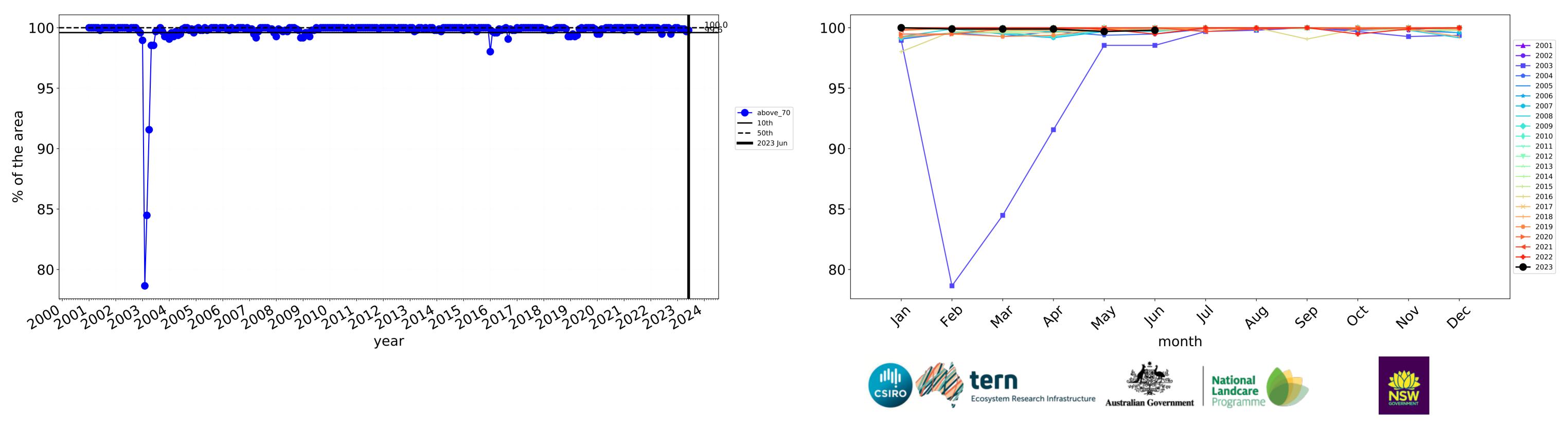


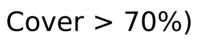
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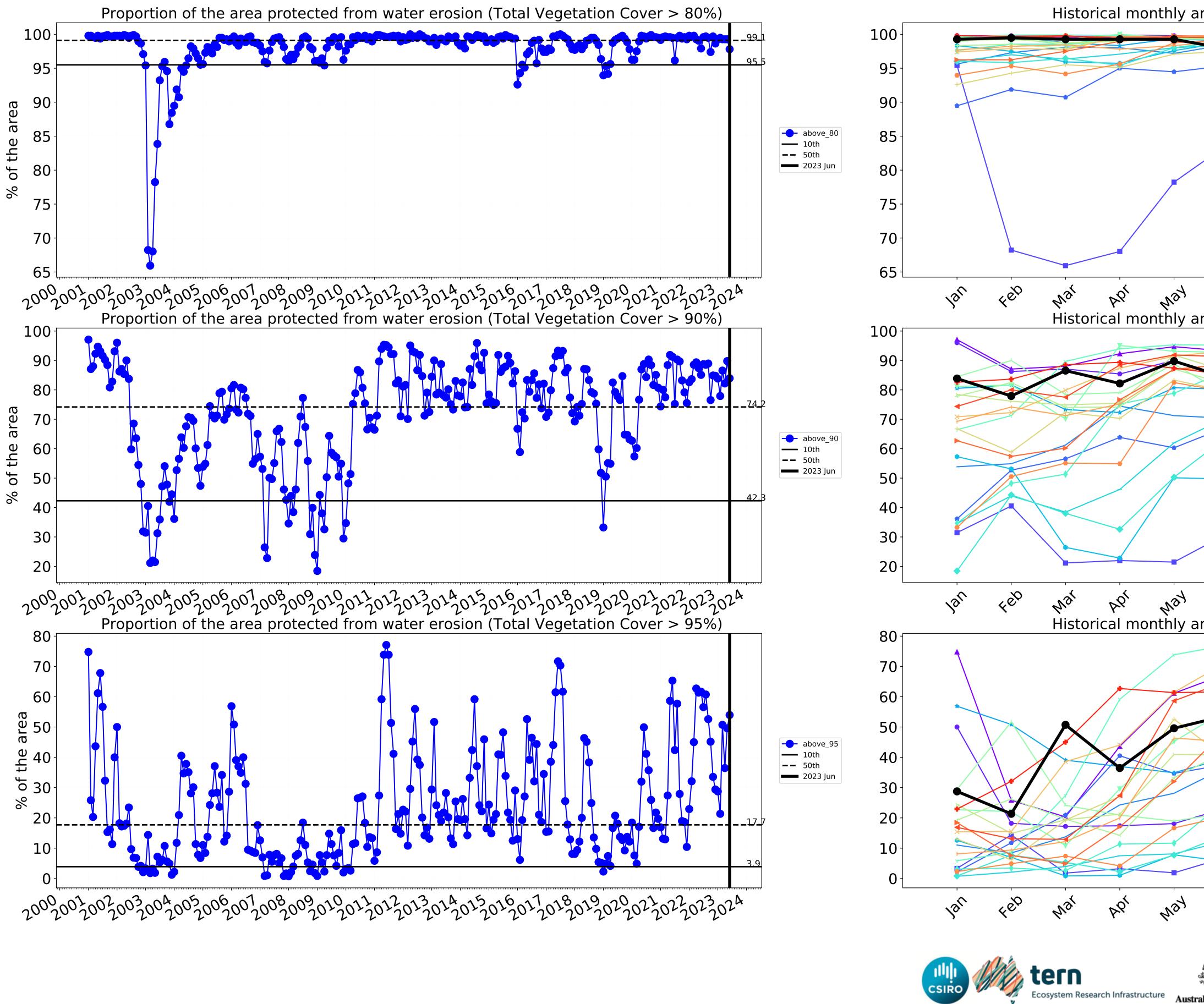








Water erosion historical monthly area protected (Total Veg Cov>70%)



Historical monthly area protected (Total Veg Cov>80%)

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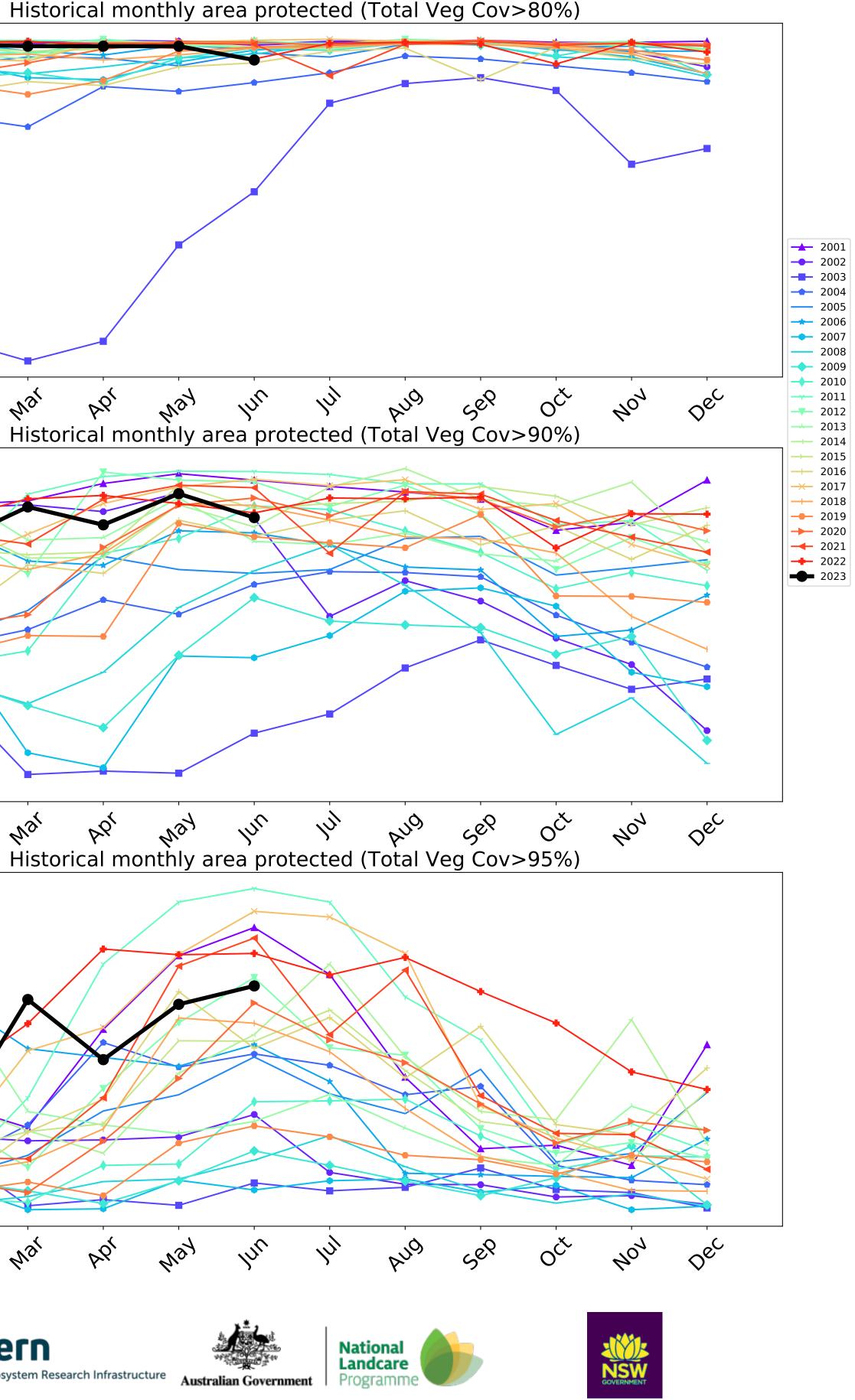
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Australian Government

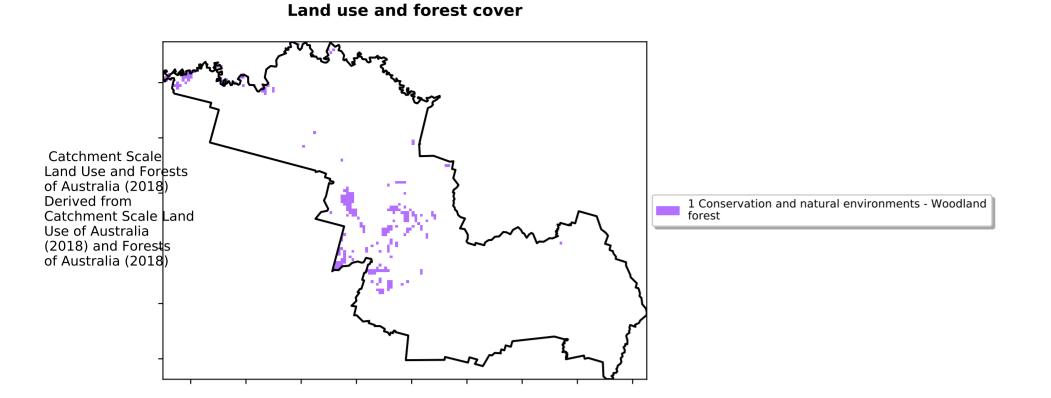
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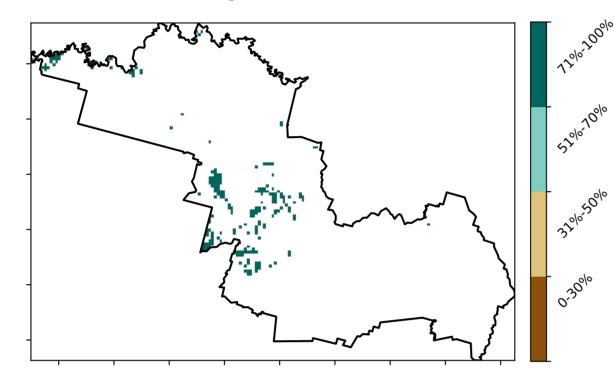
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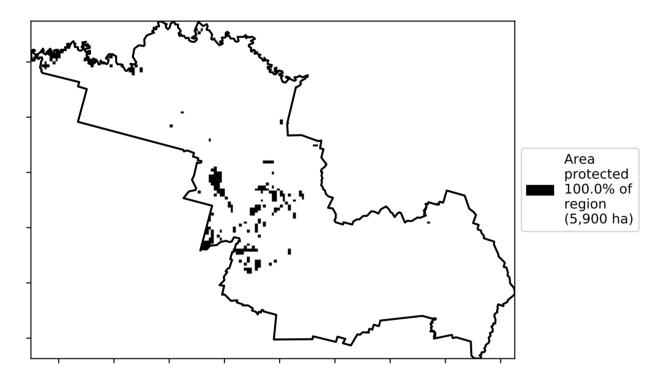
Conservation and natural environments Woodland forest



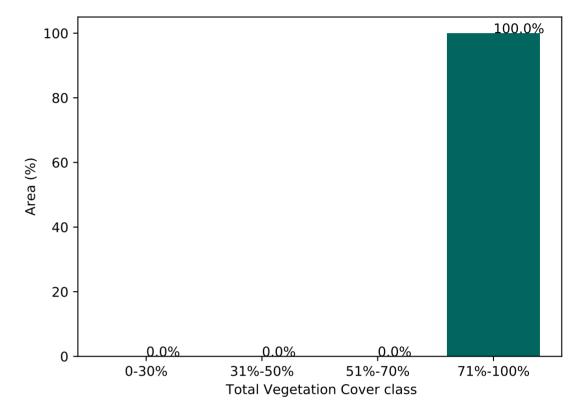
Total Vegetation Cover [%]



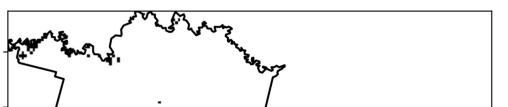
% Area protected from water erosion (>70%)



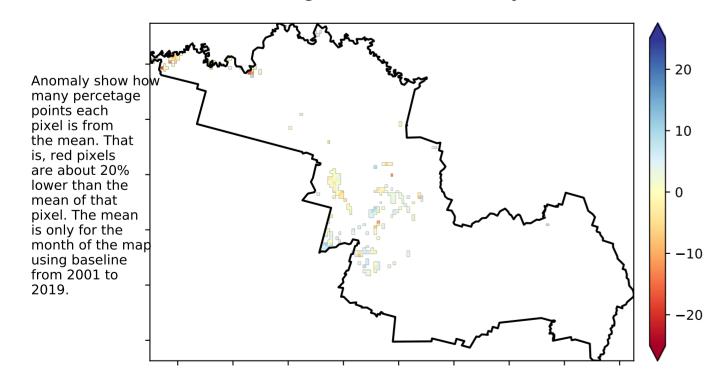
Proportion of vegetation cover class in area



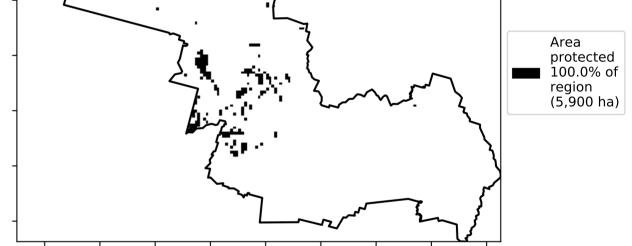
% Area protected from wind erosion (>50%)

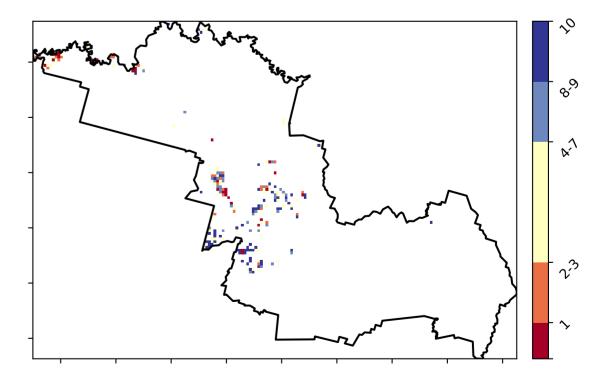


Total Vegetation Cover Anomaly [%]



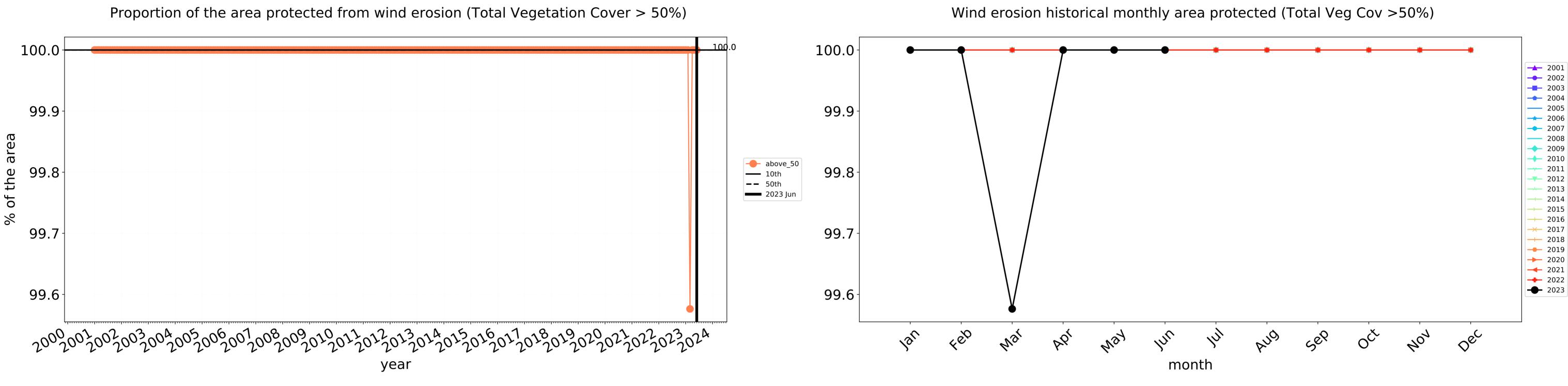
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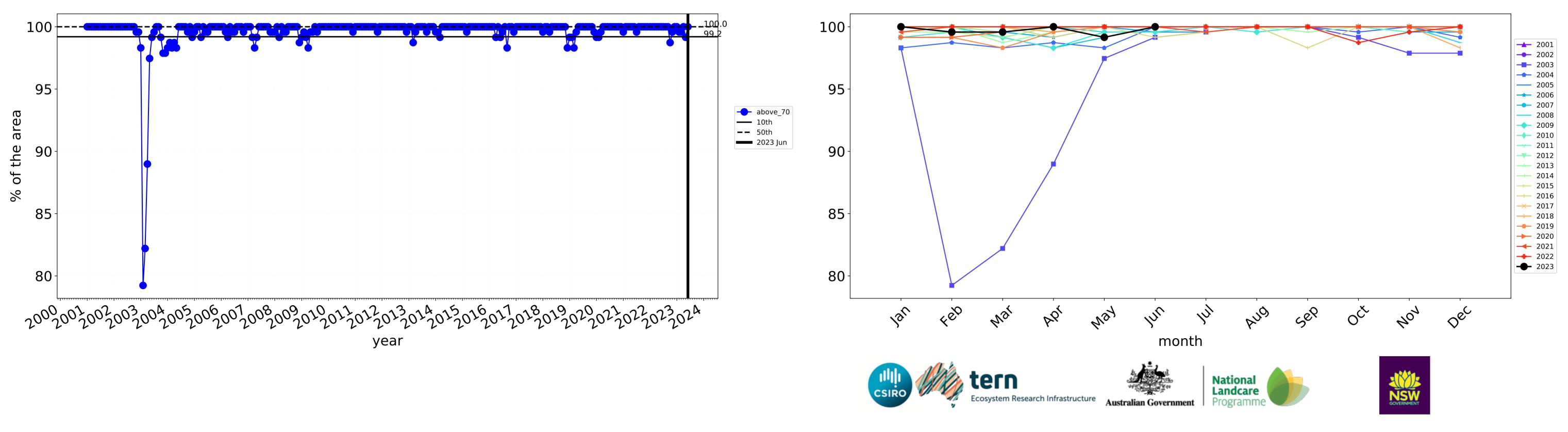




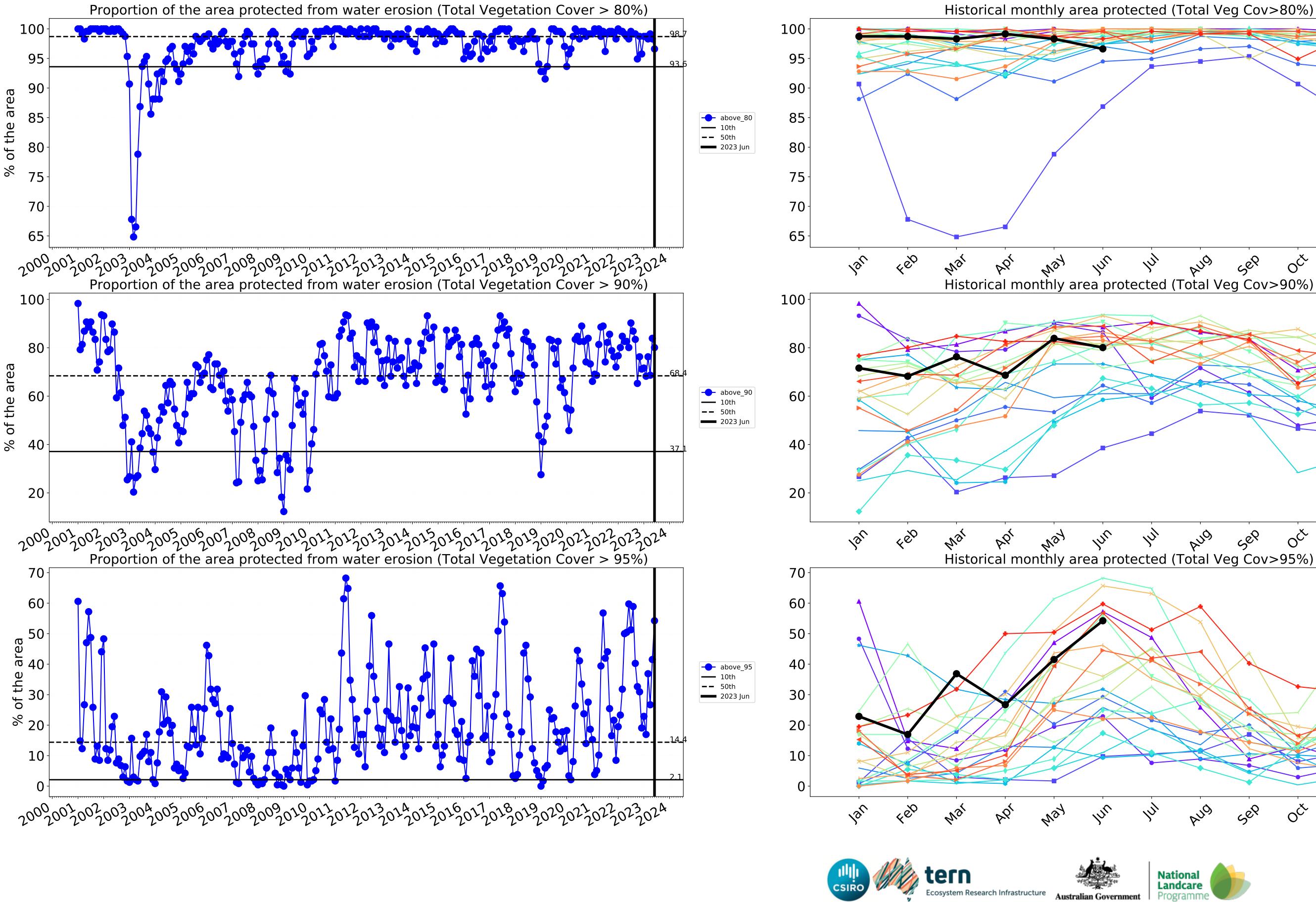
Conservation and natural environments Woodland forest timeseries



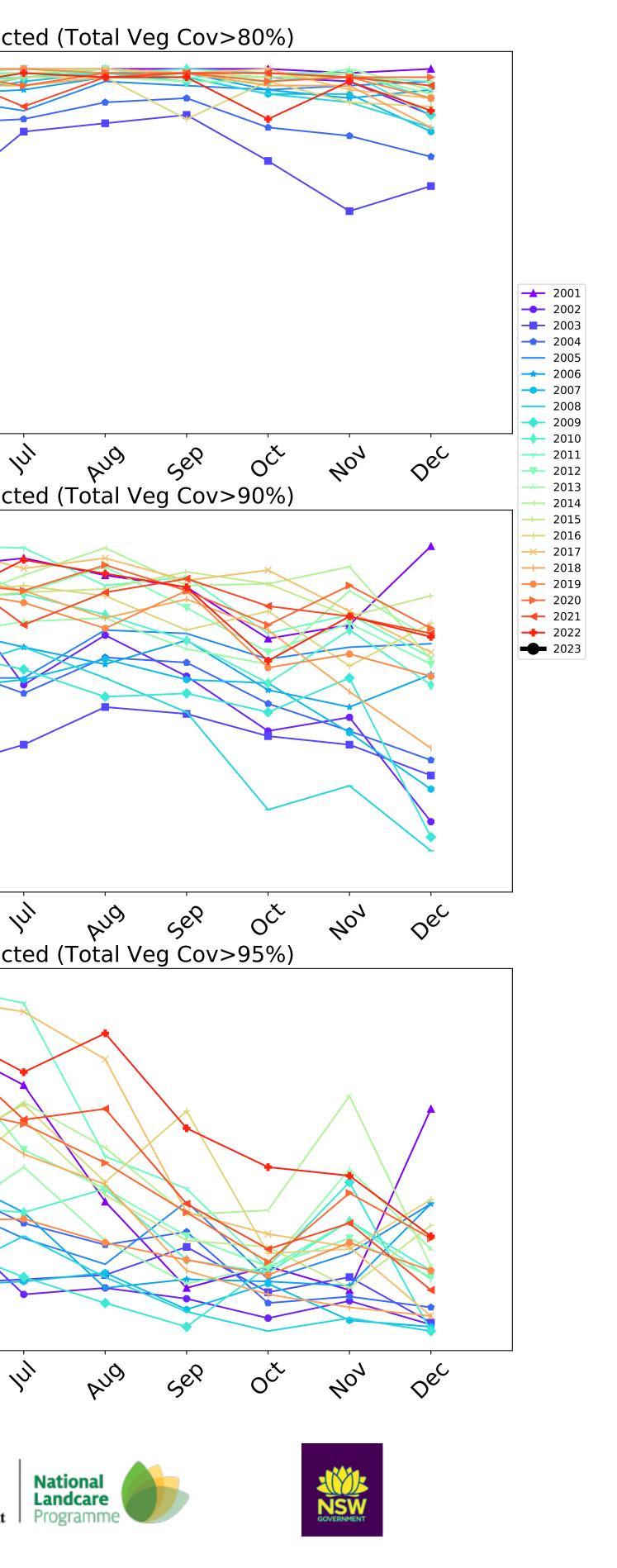
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)



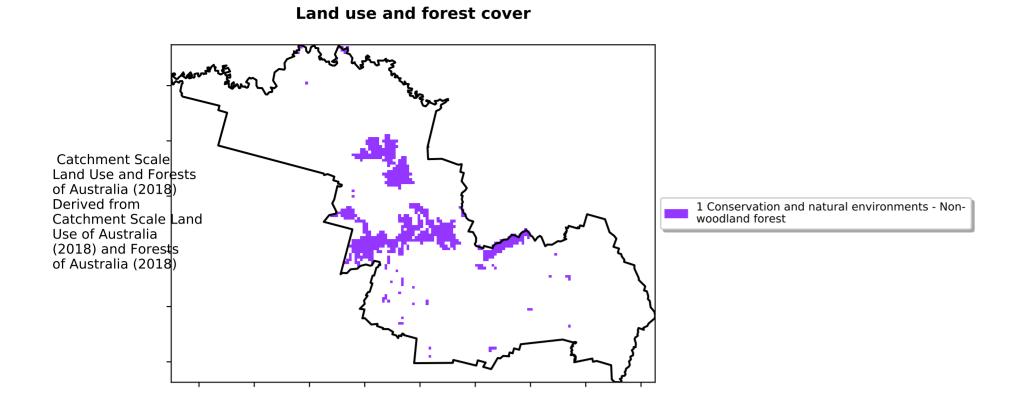
Water erosion historical monthly area protected (Total Veg Cov>70%)



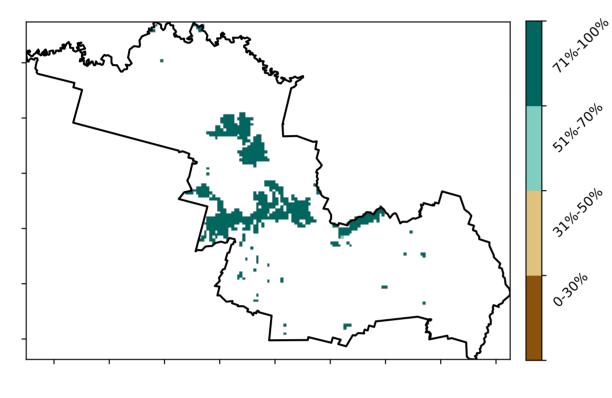
Australian Government



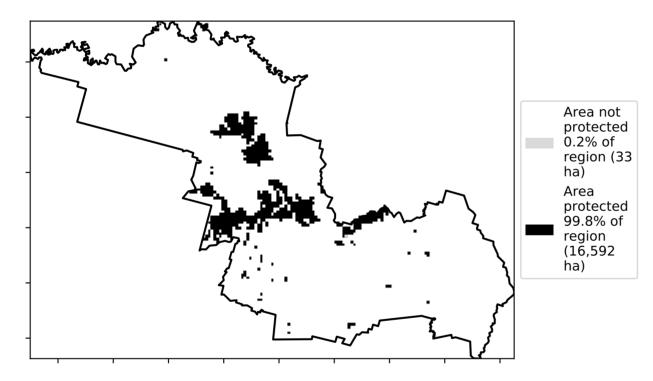
Conservation and natural environments Forest (non woodland)



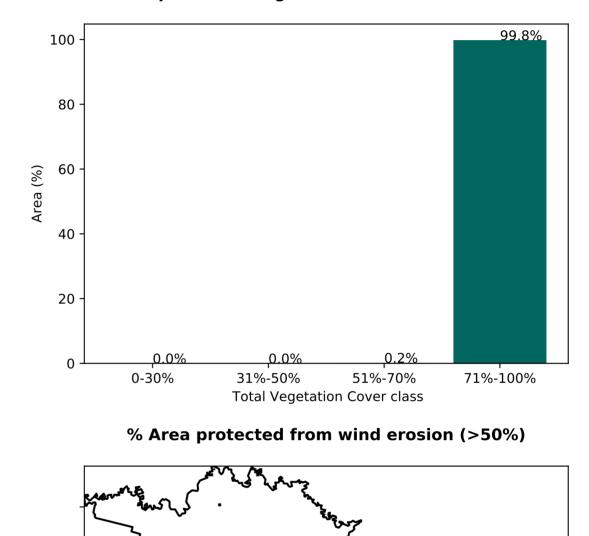
Total Vegetation Cover [%]



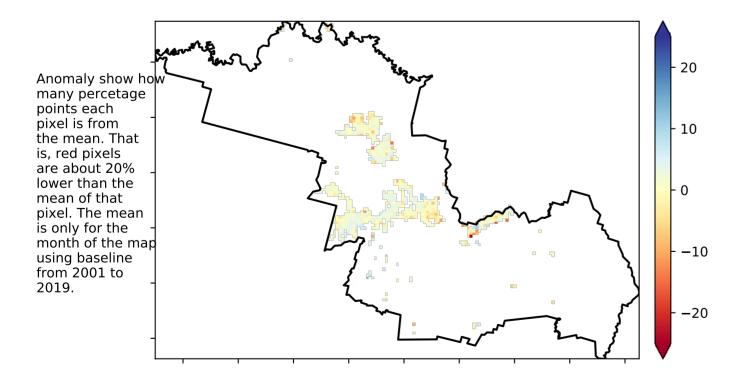
% Area protected from water erosion (>70%)



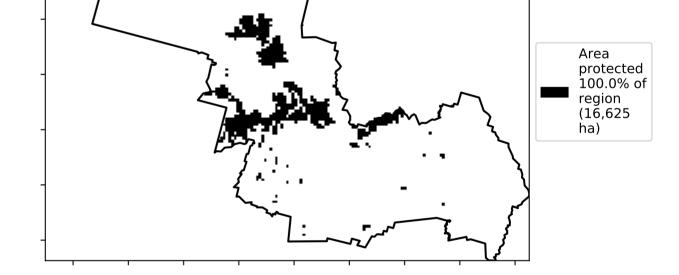


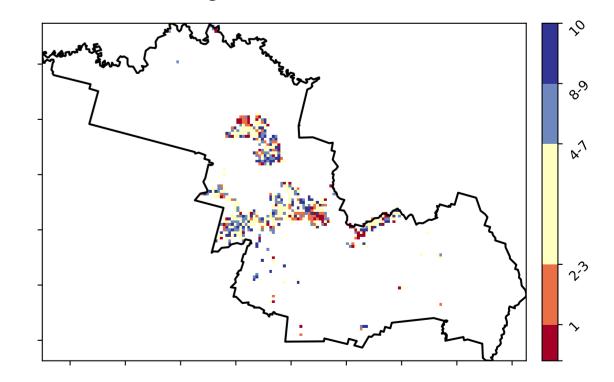


Total Vegetation Cover Anomaly [%]



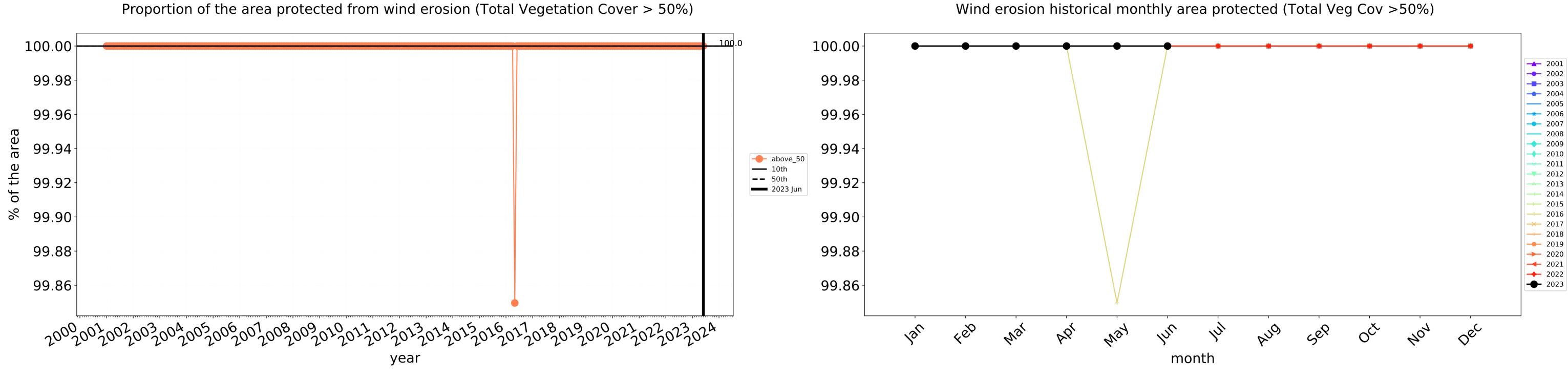
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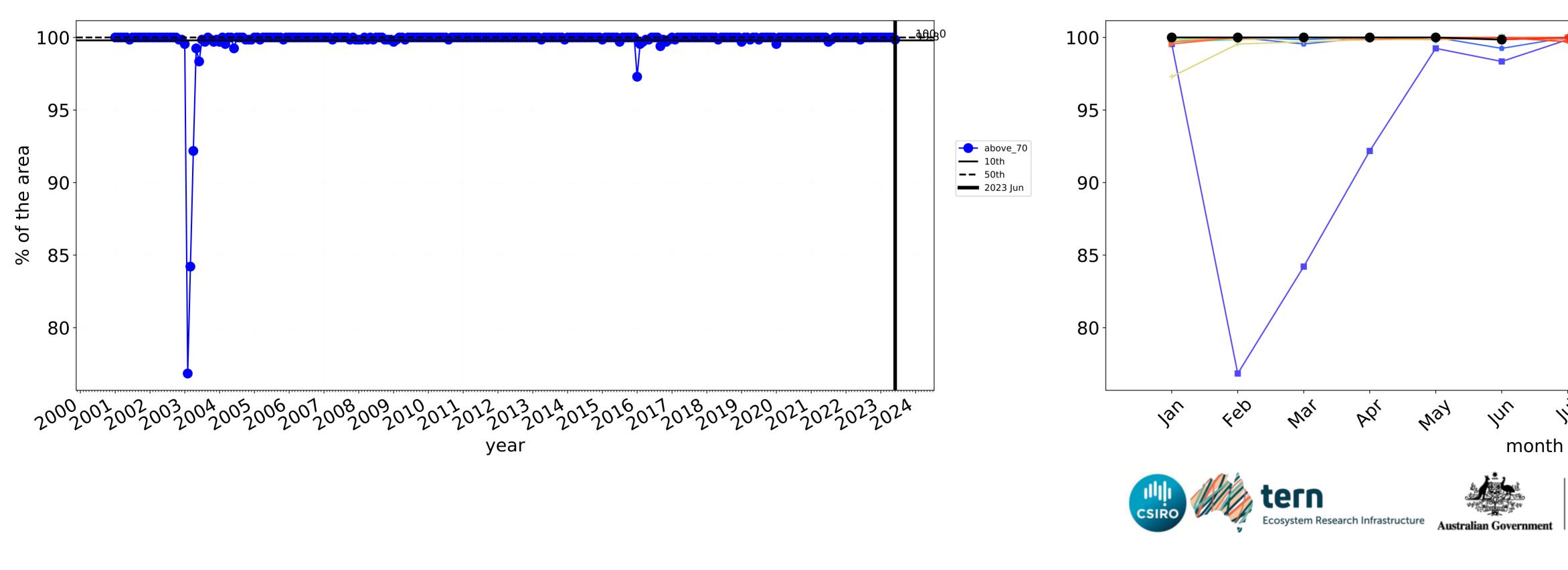




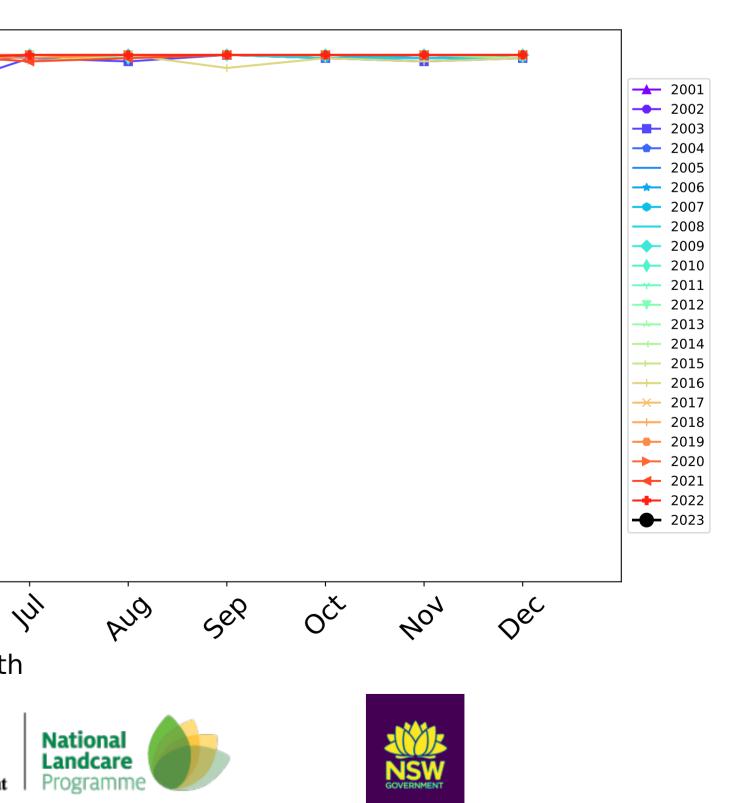
Conservation and natural environments Forest (non woodland) timeseries

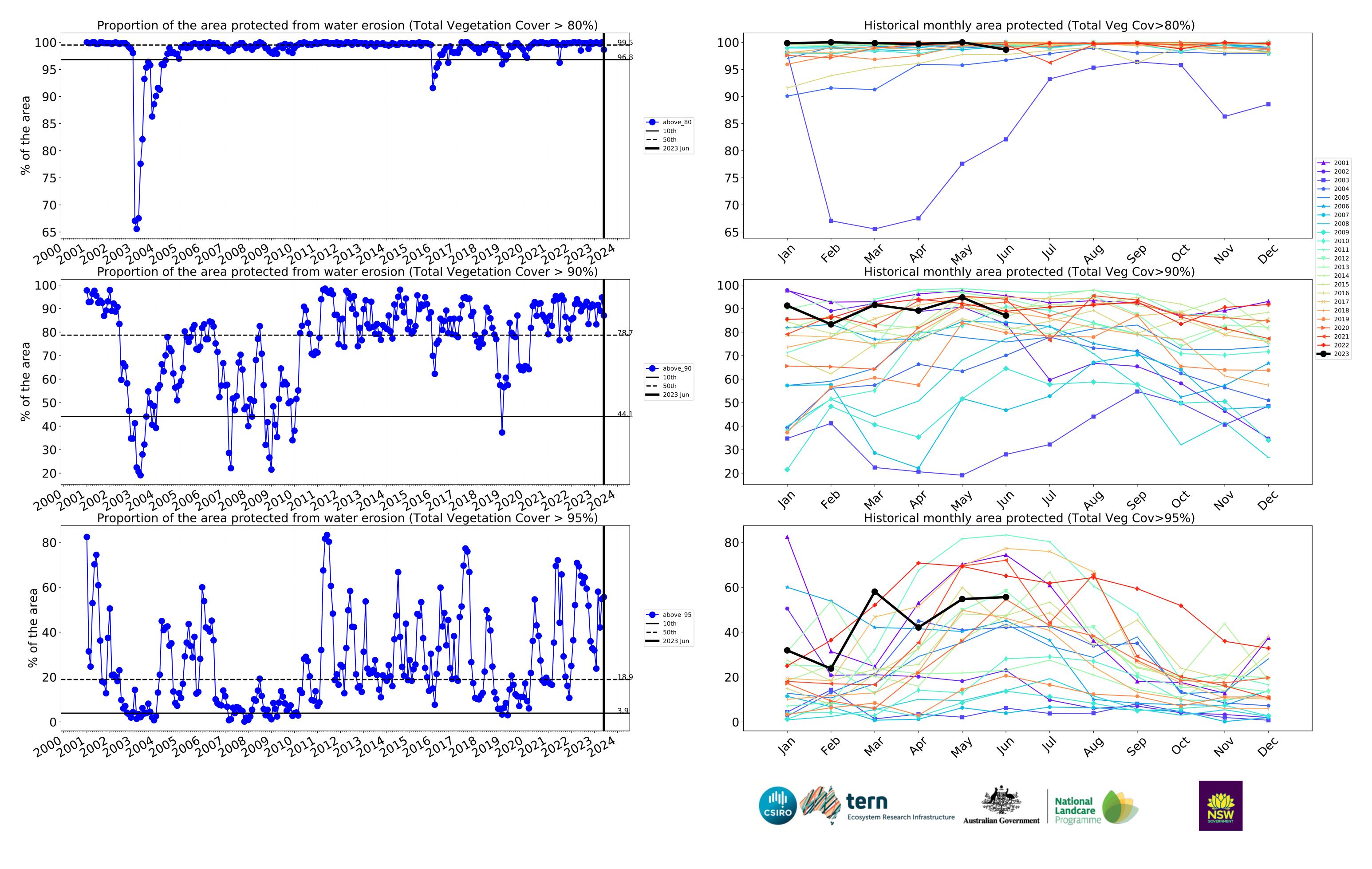


Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)



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



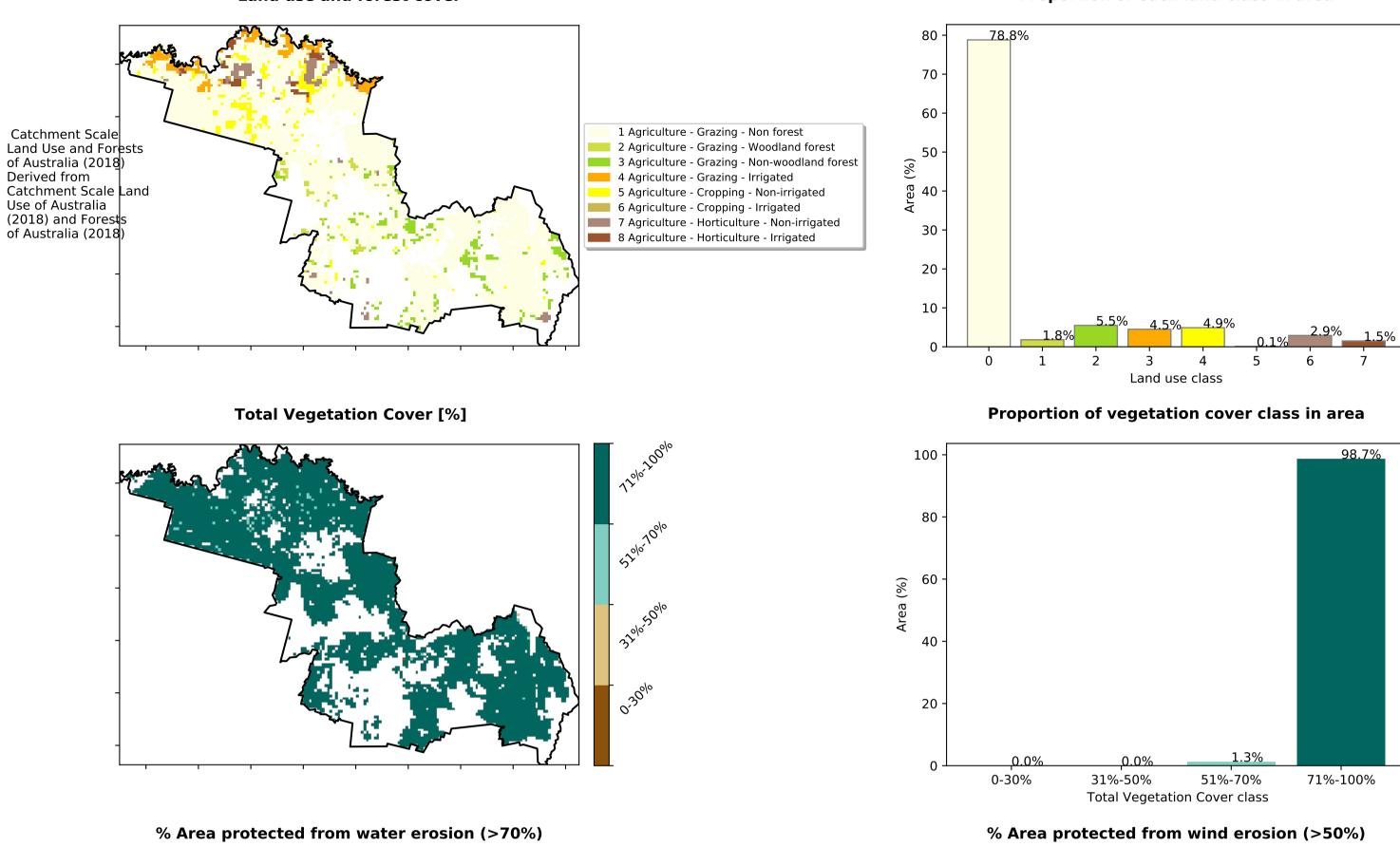


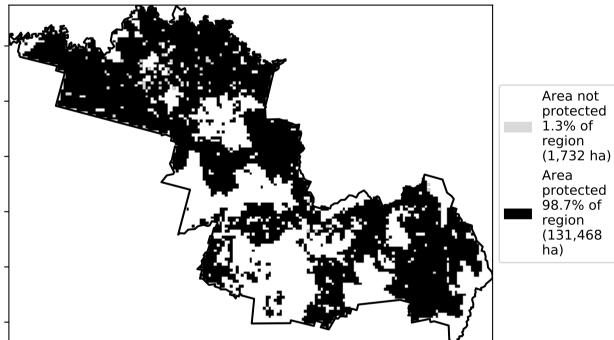
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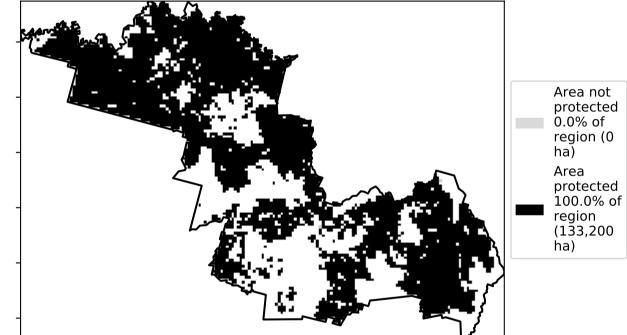
Agriculture

Land use and forest cover

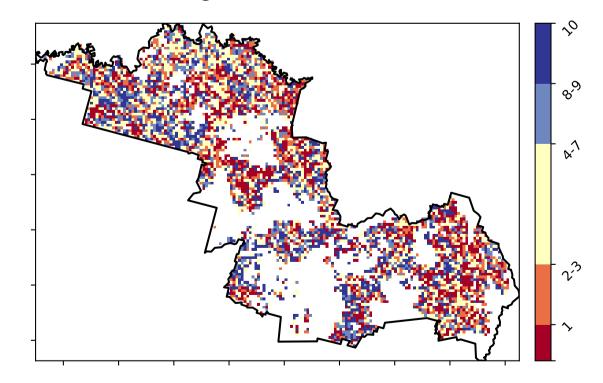
Proportion of each land class in area



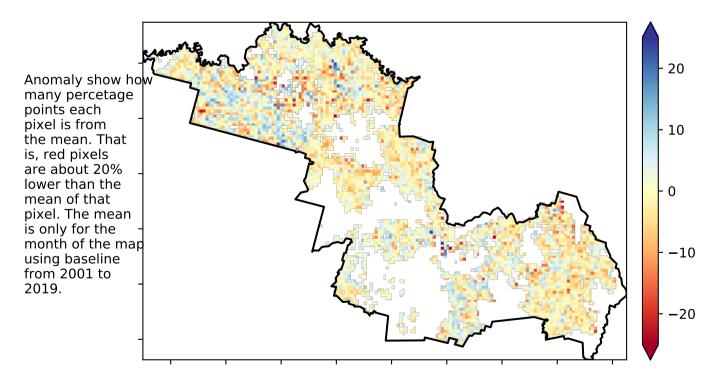




Total Vegetation Cover Decile [%]



Total Vegetation Cover Anomaly [%]



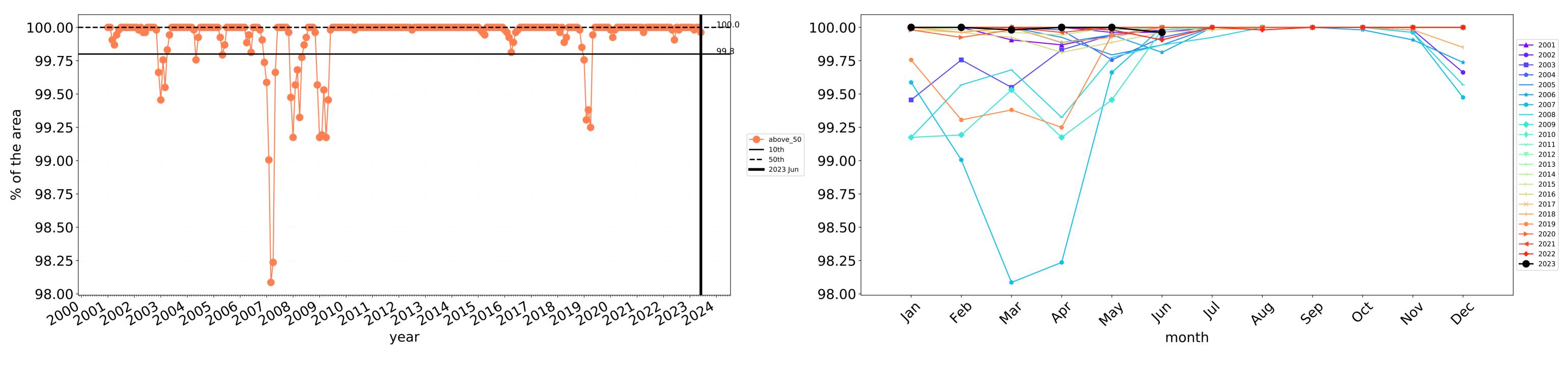


Deciles show where the pixel value lies in the

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

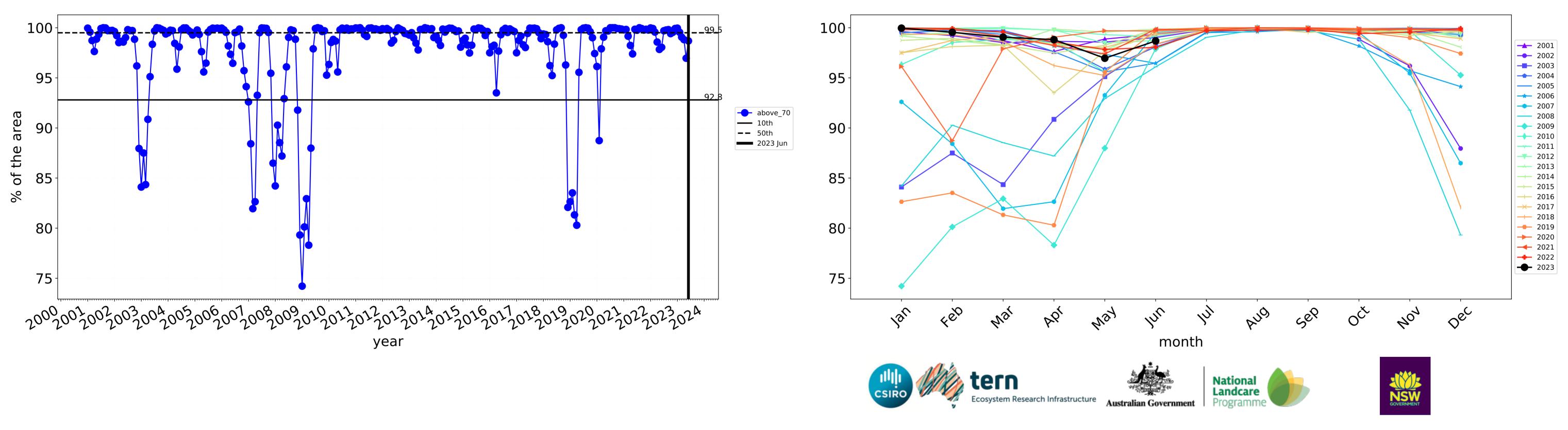
records for that month of the map using baseline from 2001 to 2019.

124



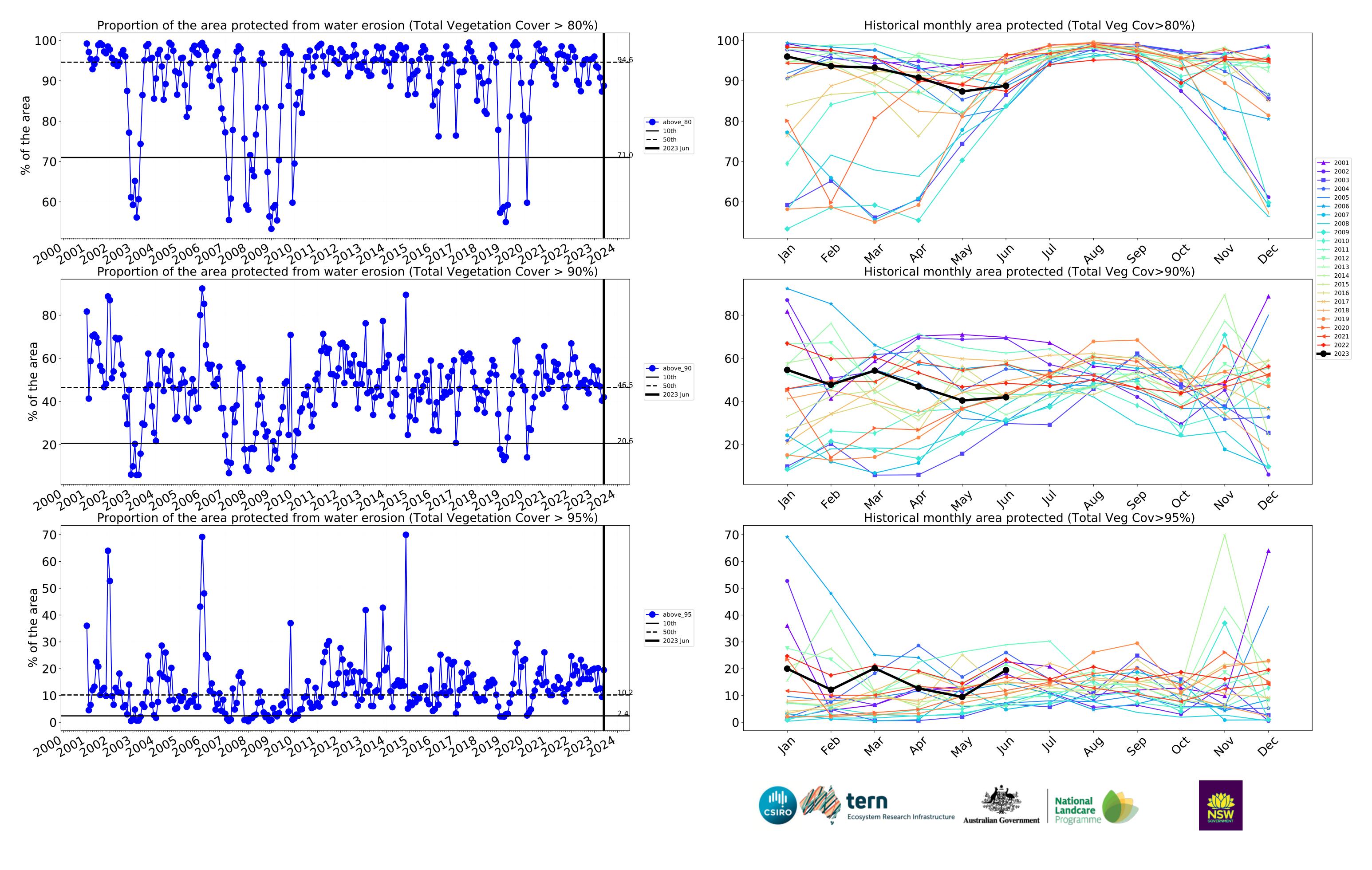
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

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



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

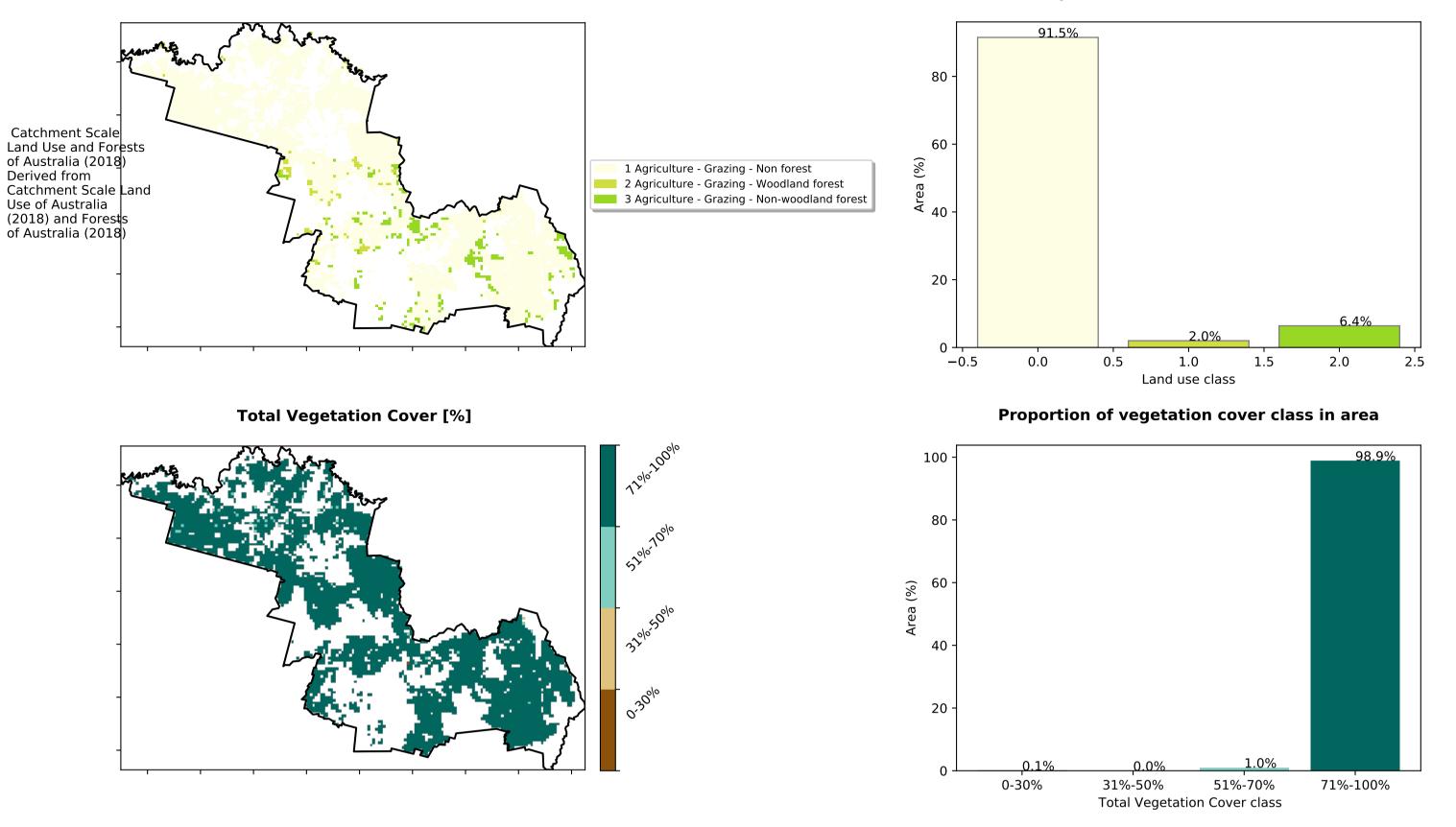
Water erosion historical monthly area protected (Total Veg Cov>70%)



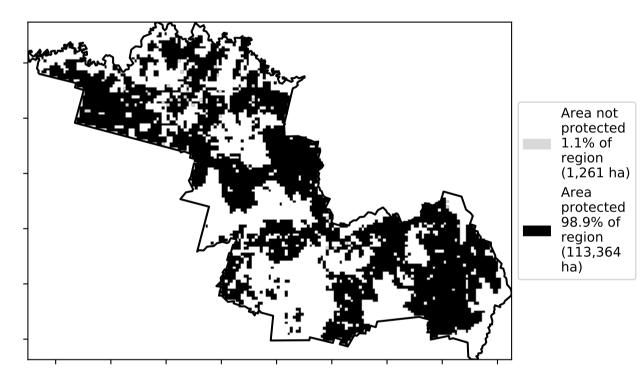
Grazing

Land use and forest cover

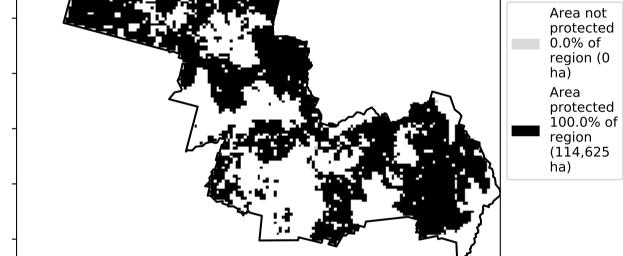
Proportion of each land class in area



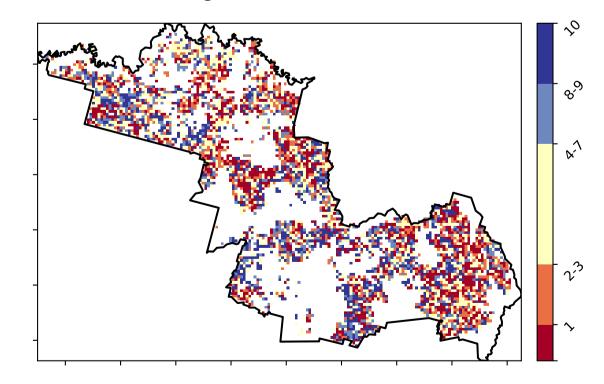
% Area protected from water erosion (>70%)



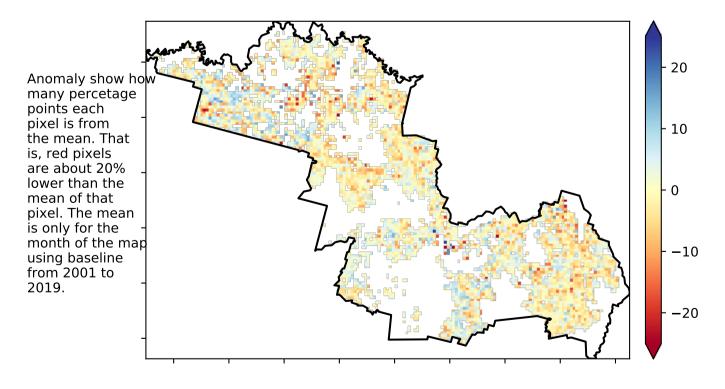
% Area protected from wind erosion (>50%)



Total Vegetation Cover Decile [%]

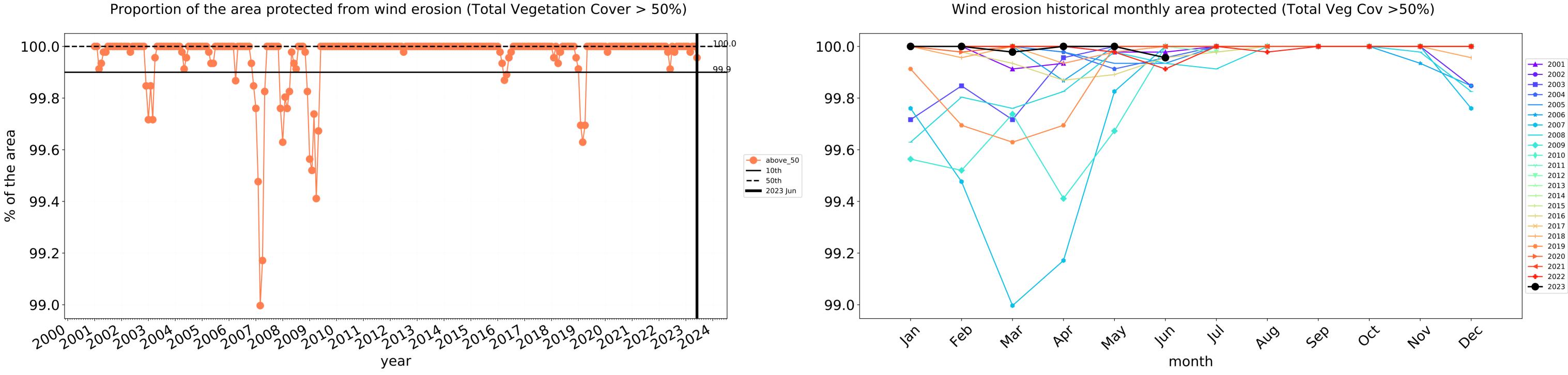


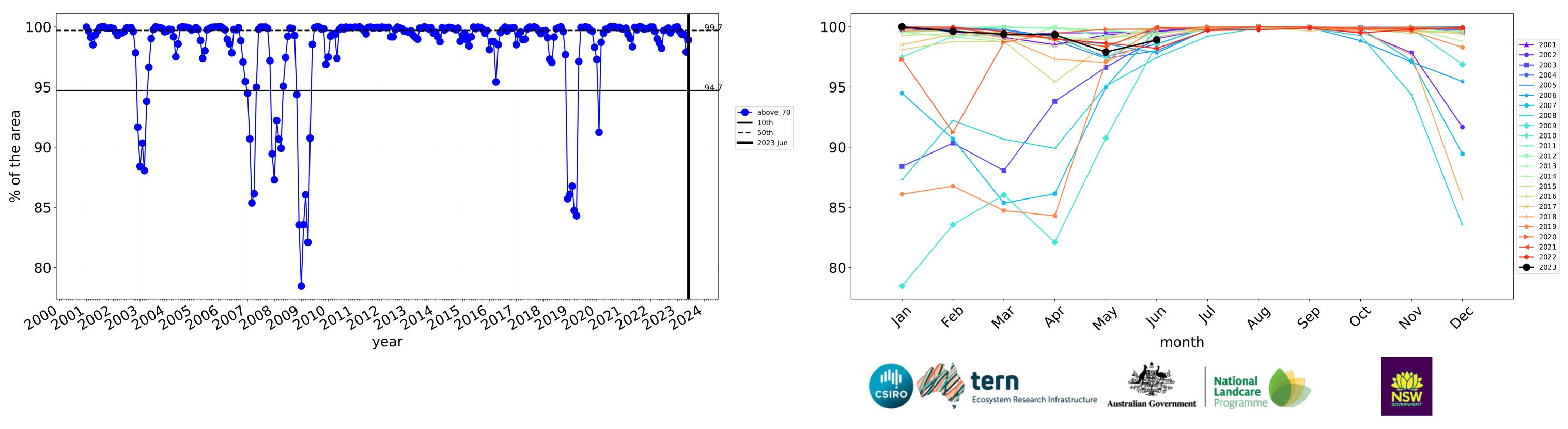
Total Vegetation Cover Anomaly [%]



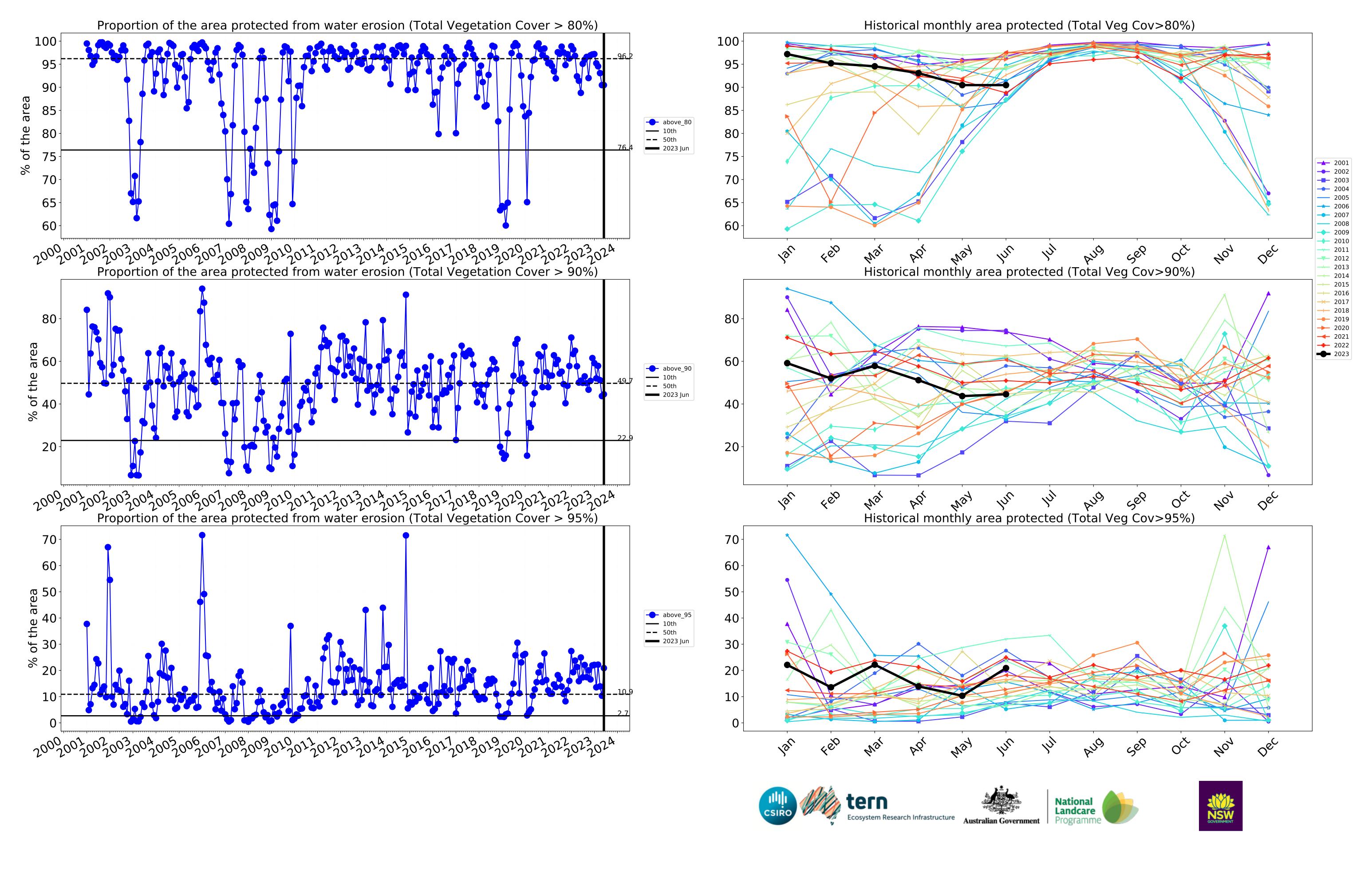


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

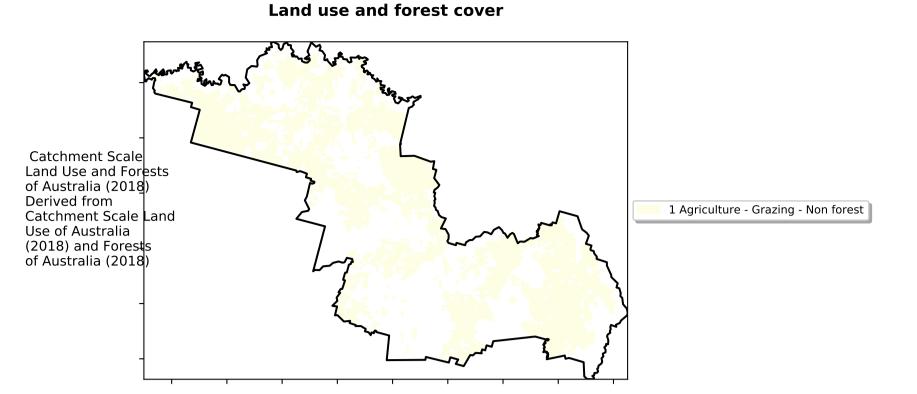




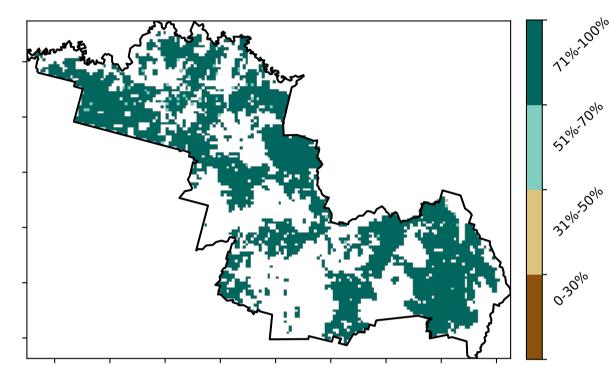
Water erosion historical monthly area protected (Total Veg Cov>70%)



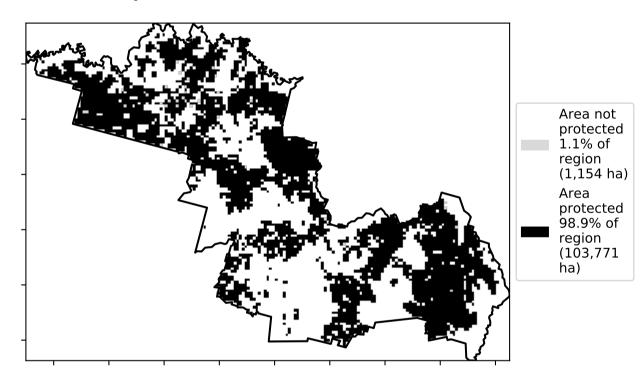
Grazing non forest



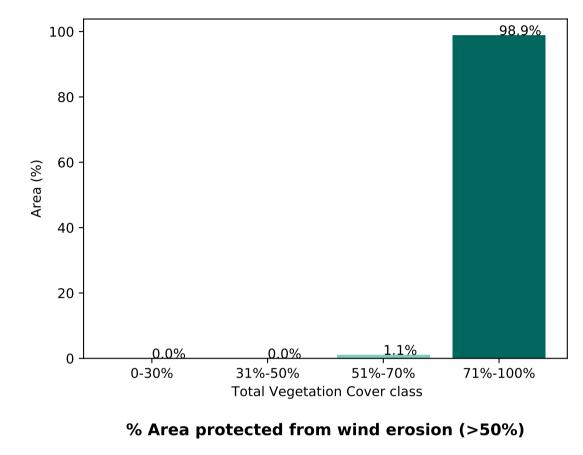
Total Vegetation Cover [%]

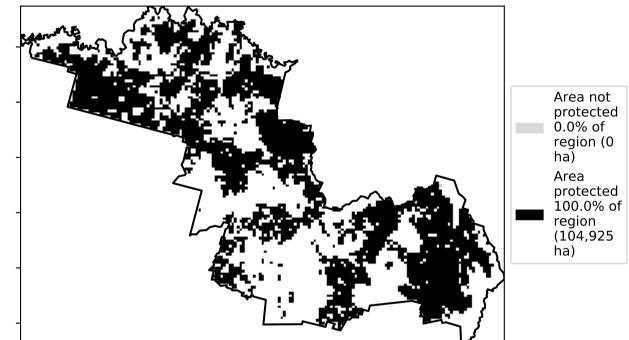


% Area protected from water erosion (>70%)

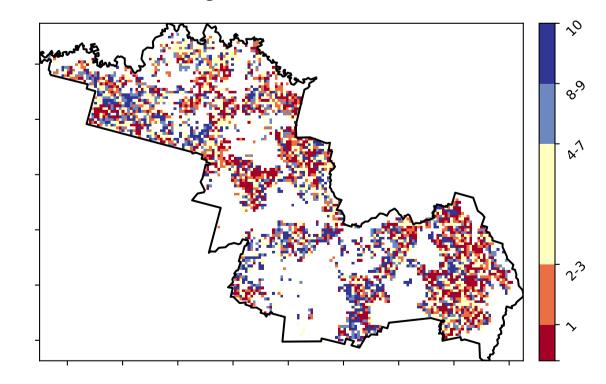


Proportion of vegetation cover class in area

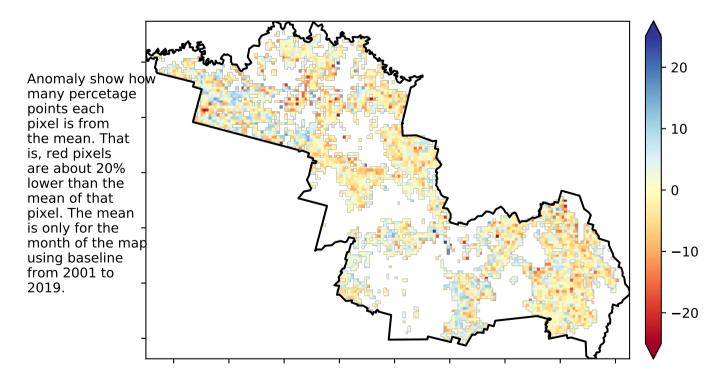




Total Vegetation Cover Decile [%]



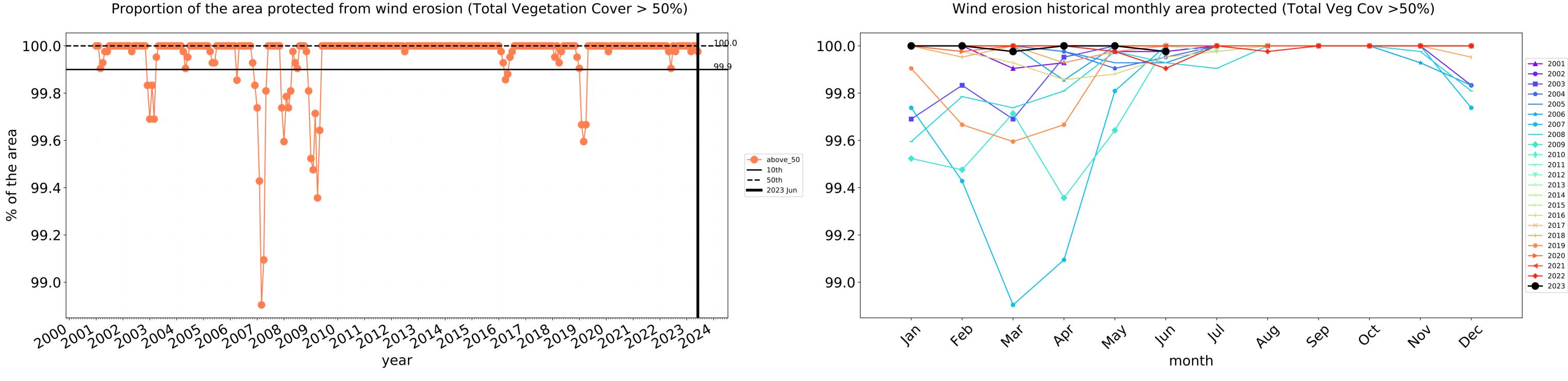
Total Vegetation Cover Anomaly [%]



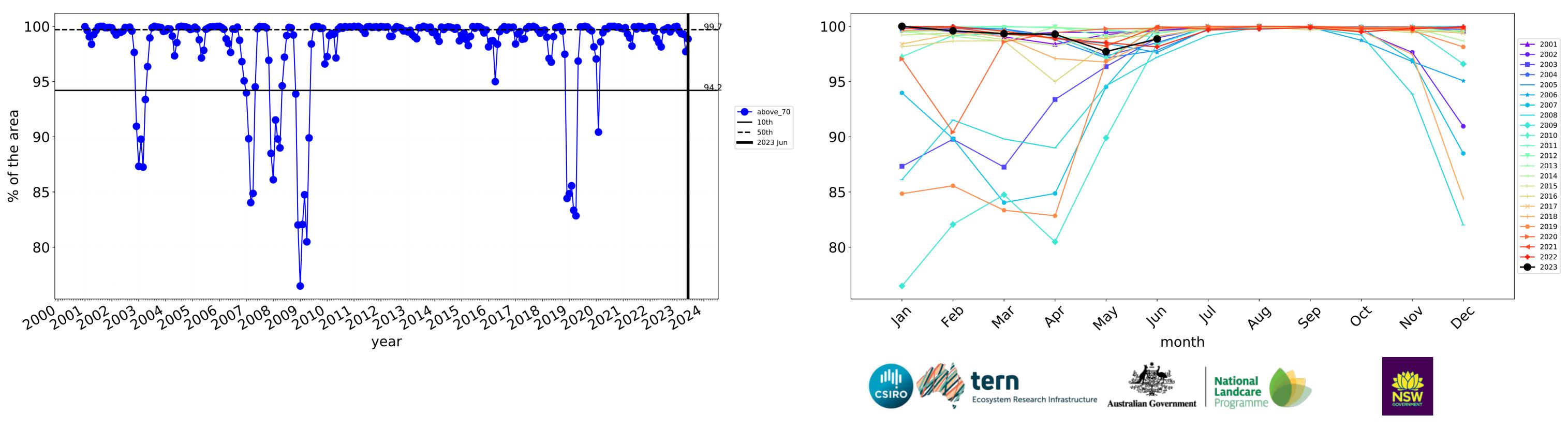


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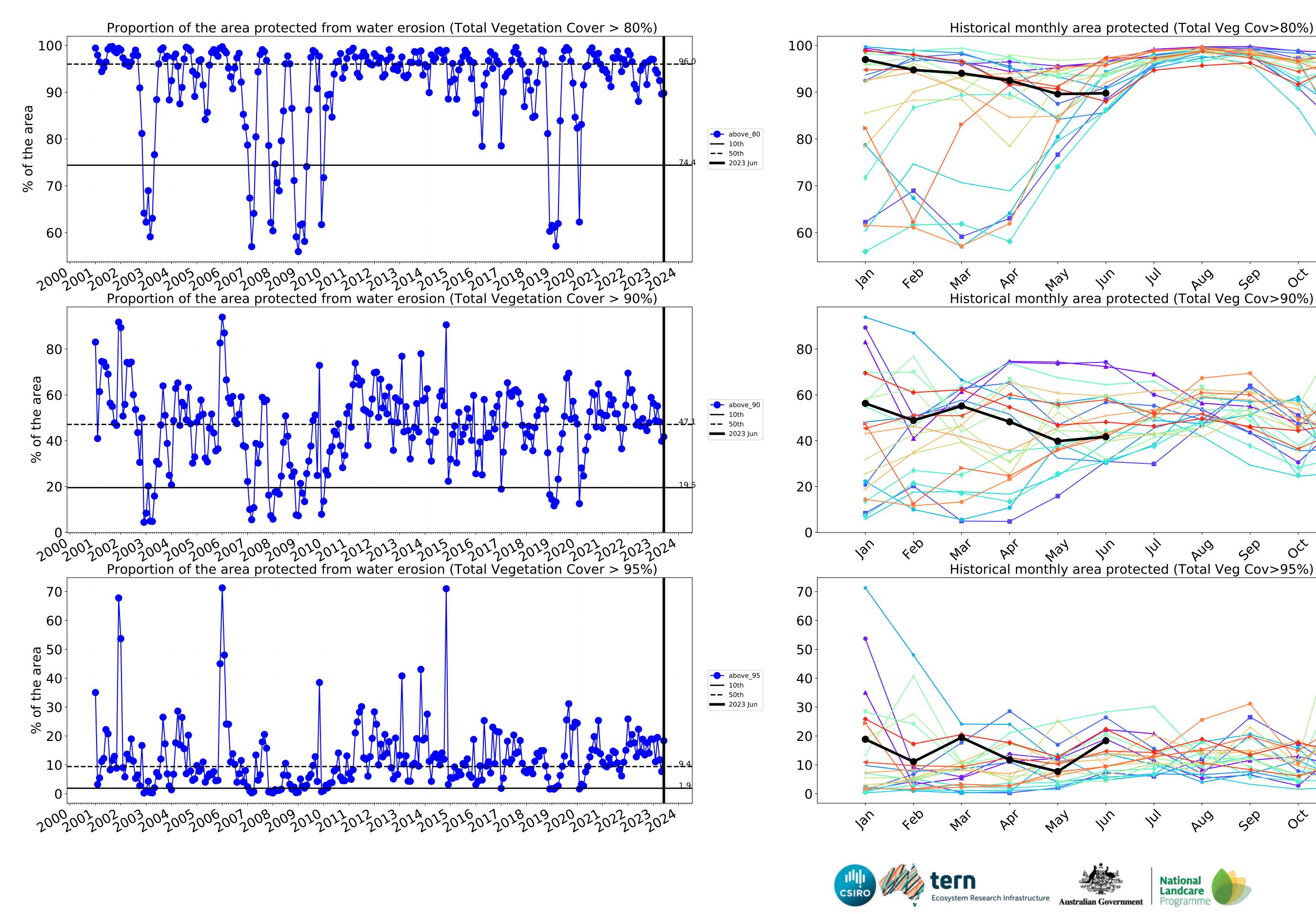
20



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

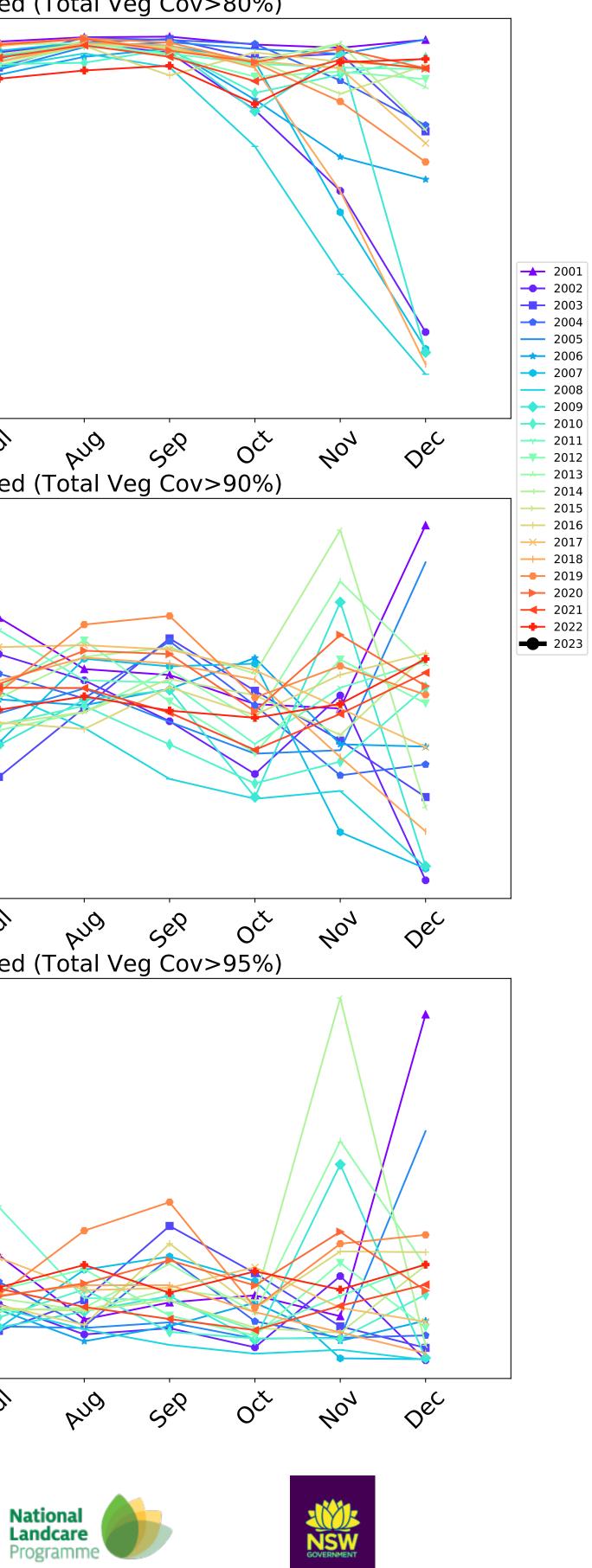


Water erosion historical monthly area protected (Total Veg Cov>70%)

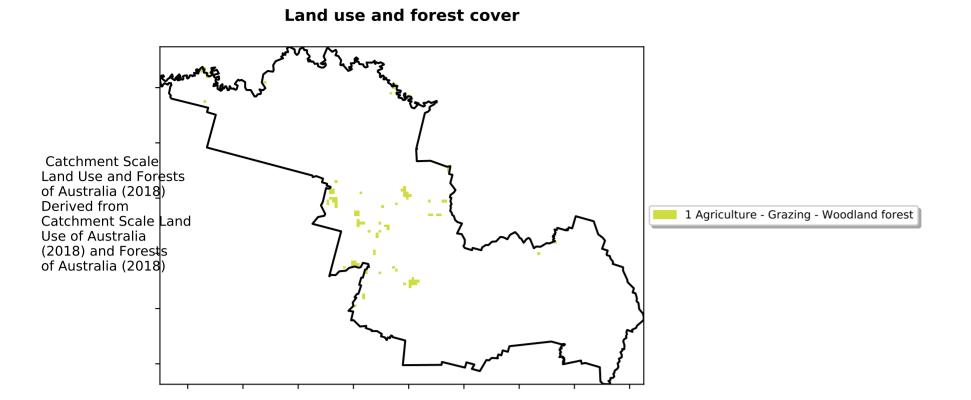


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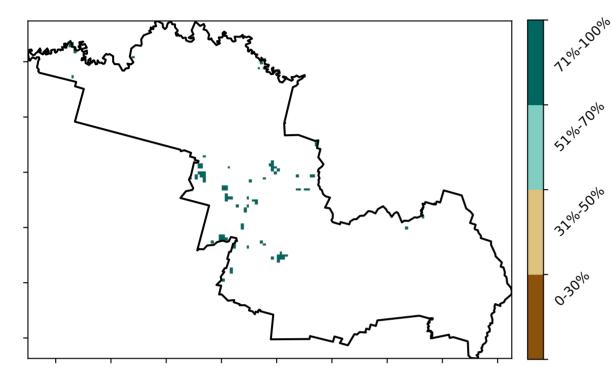
 $\sqrt{\gamma}$



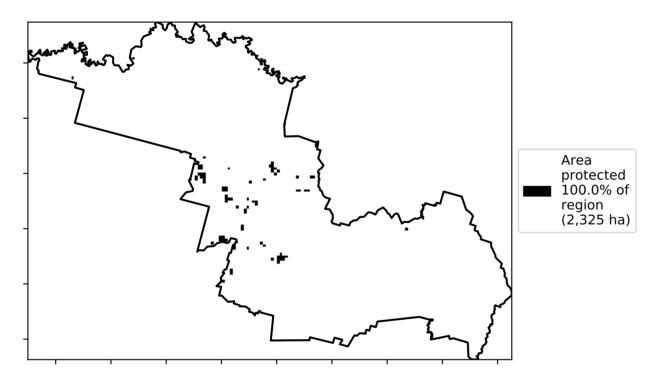
Grazing Woodland forest



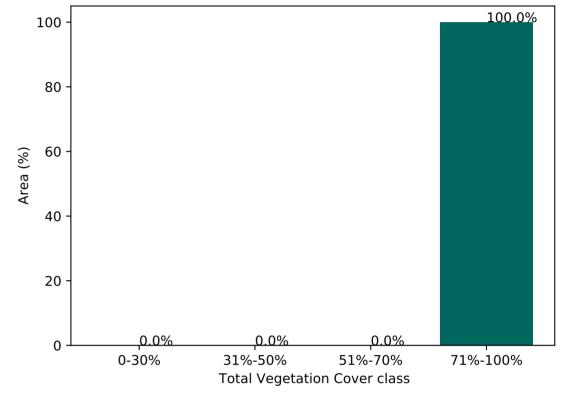
Total Vegetation Cover [%]



% Area protected from water erosion (>70%)



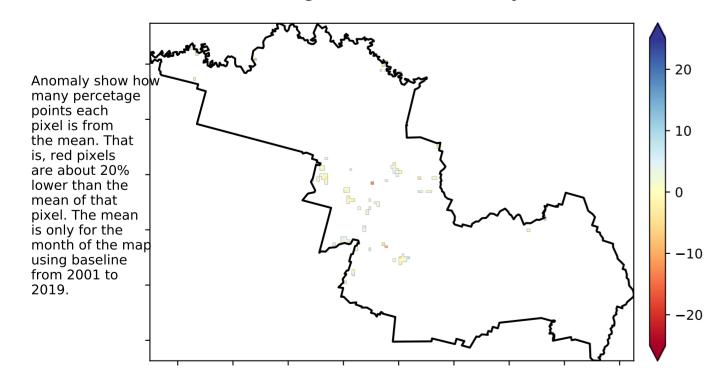
Proportion of vegetation cover class in area



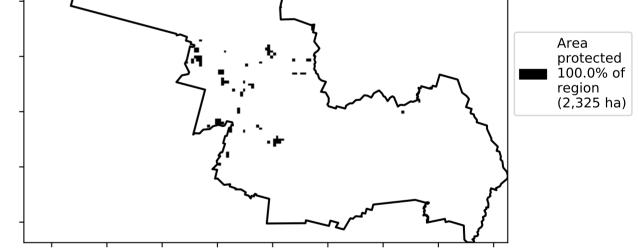
% Area protected from wind erosion (>50%)

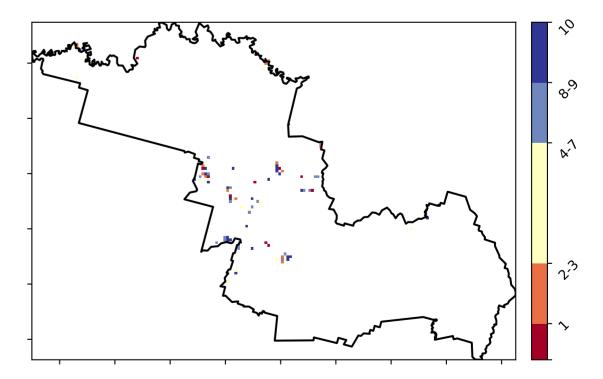


Total Vegetation Cover Anomaly [%]



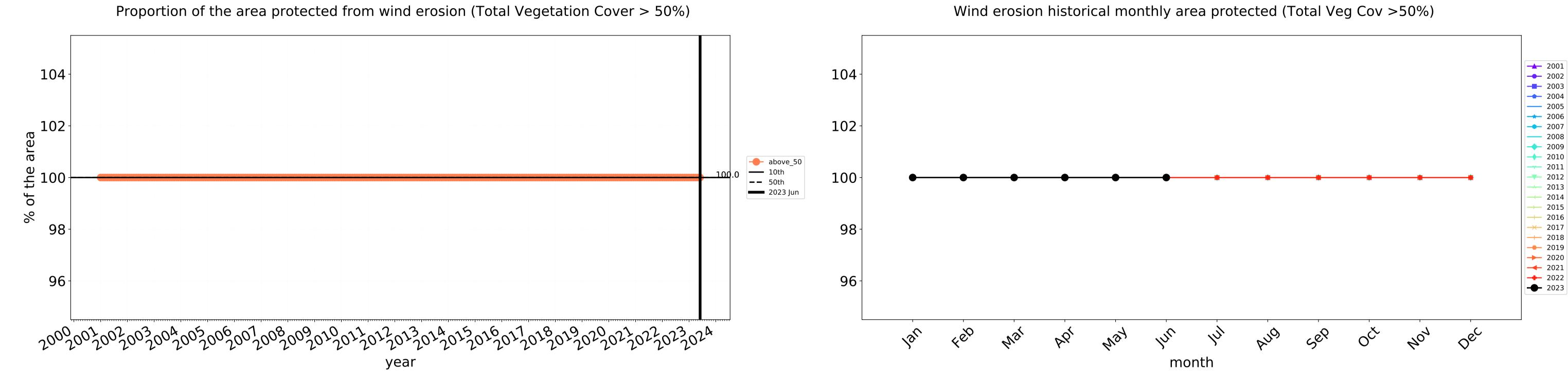
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

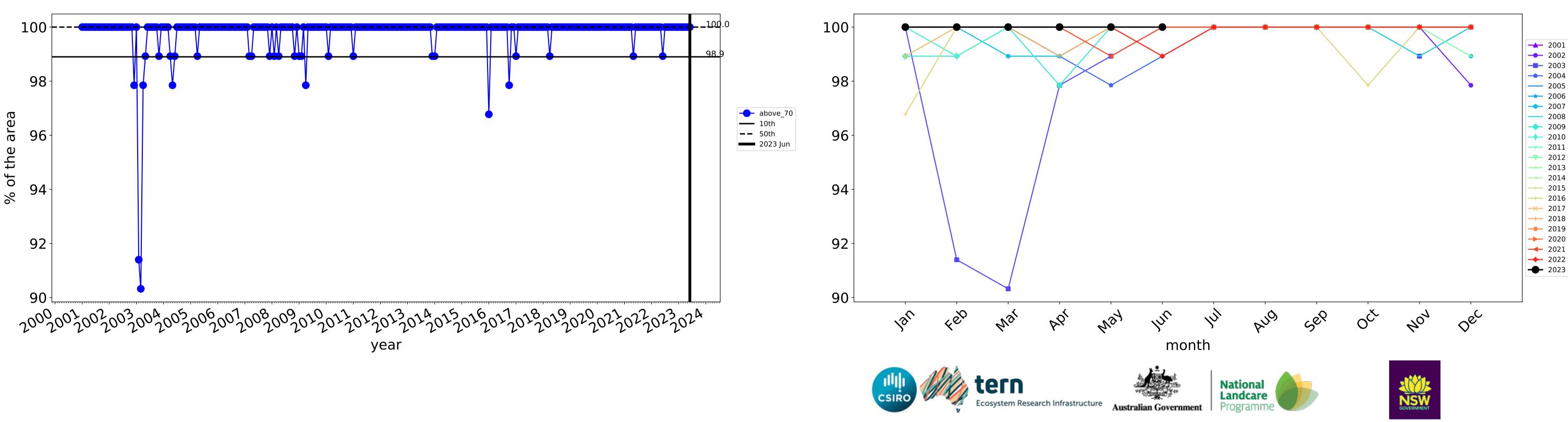








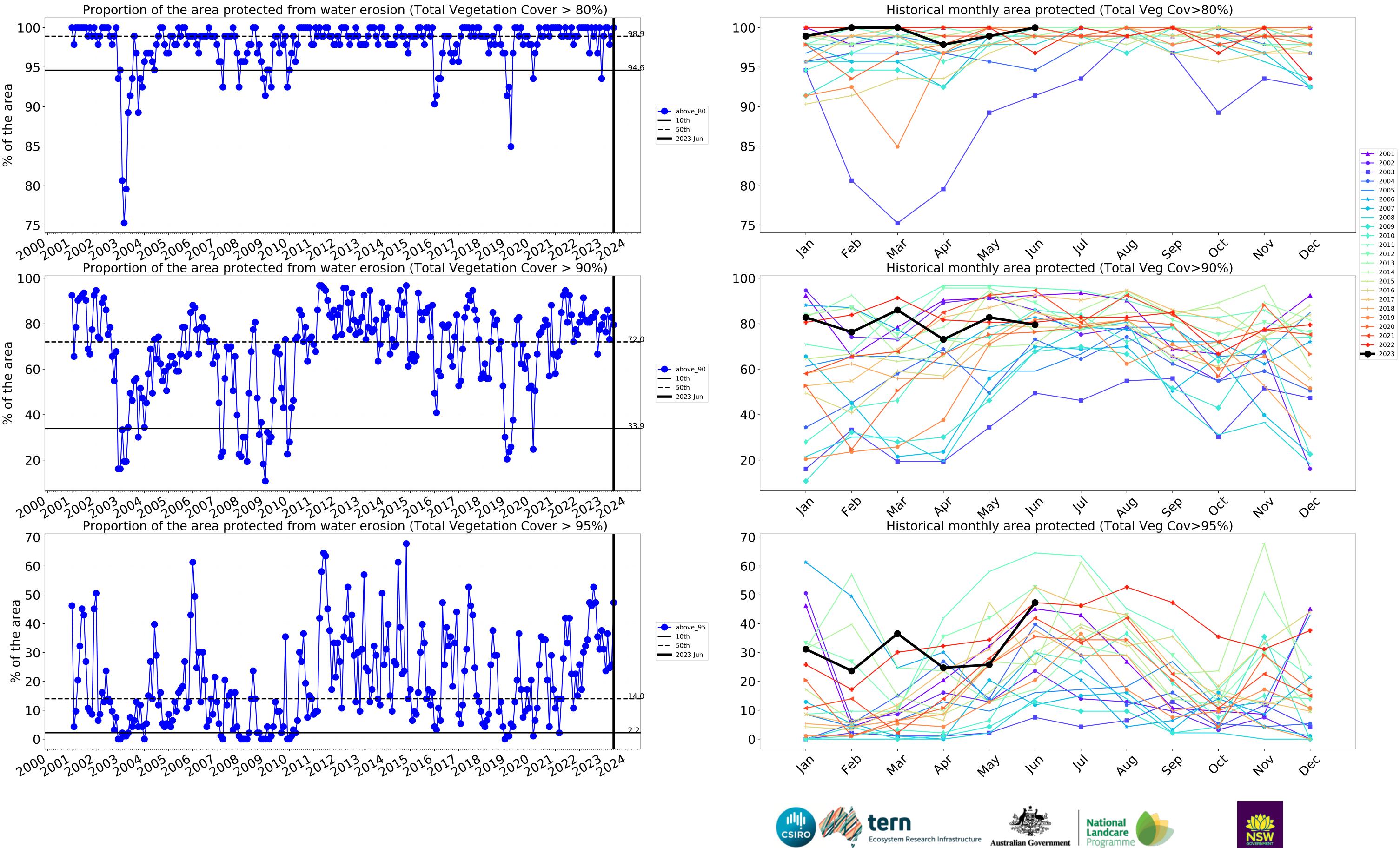


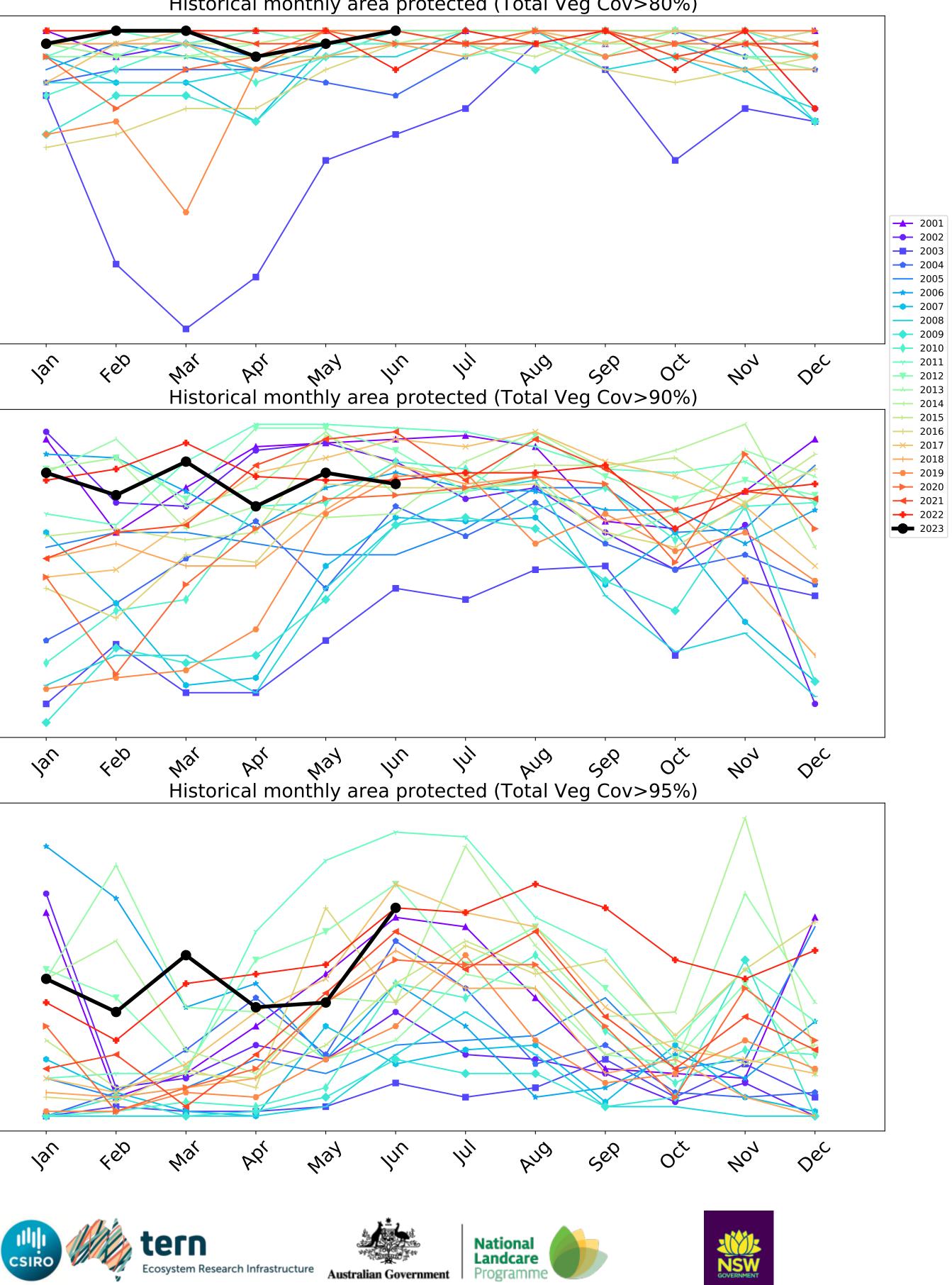


Grazing Woodland forest timeseries

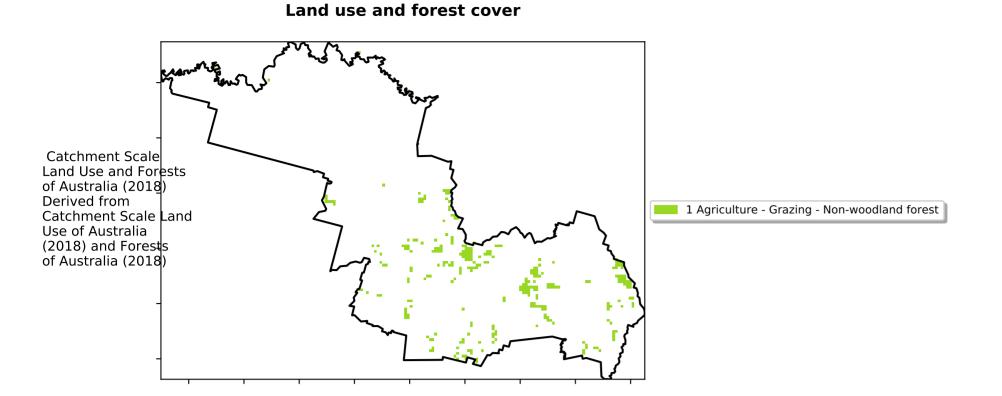
2**3**

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

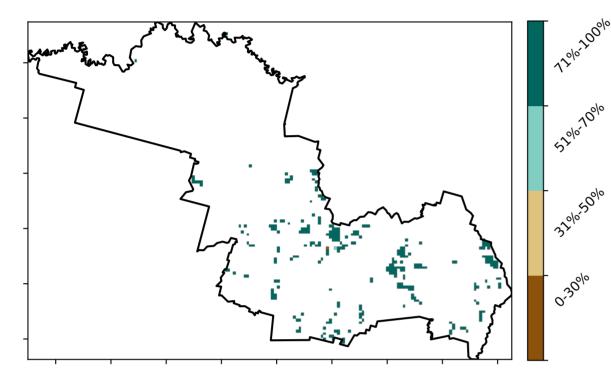




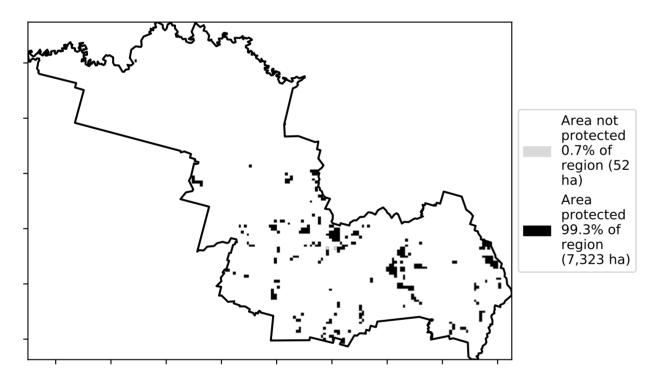
Grazing - Forest (non woodland)



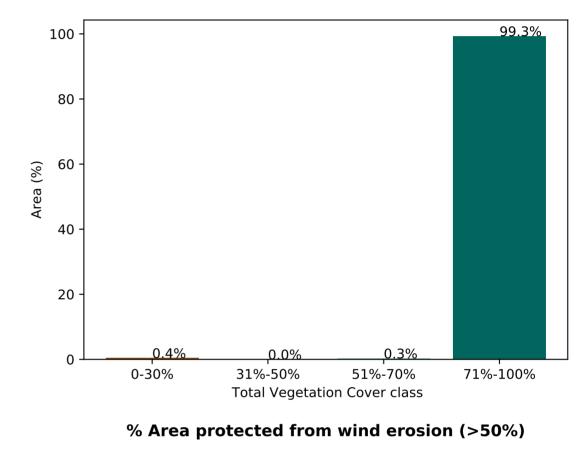
Total Vegetation Cover [%]

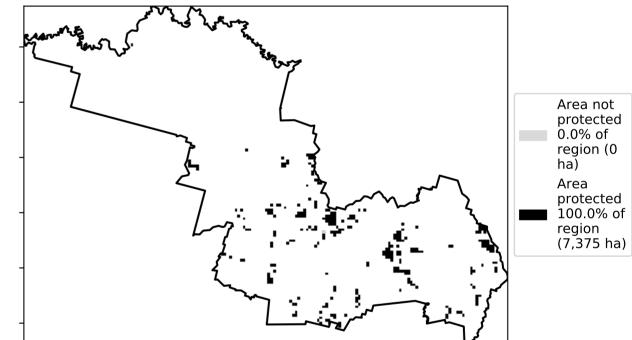


% Area protected from water erosion (>70%)

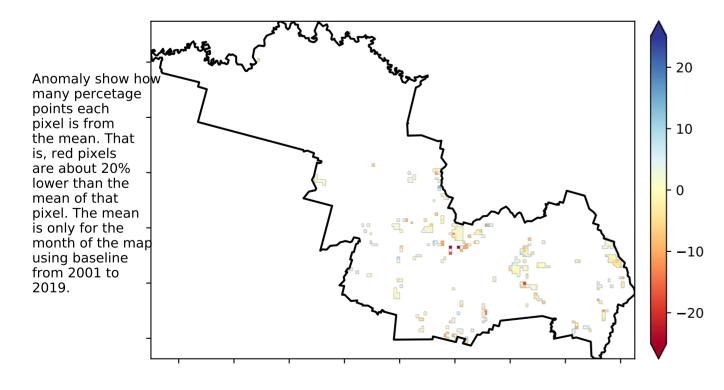


Proportion of vegetation cover class in area

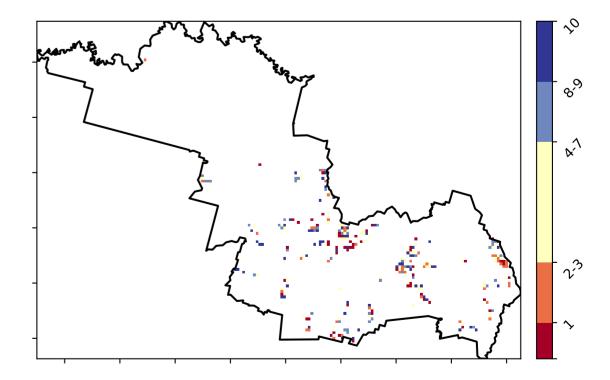




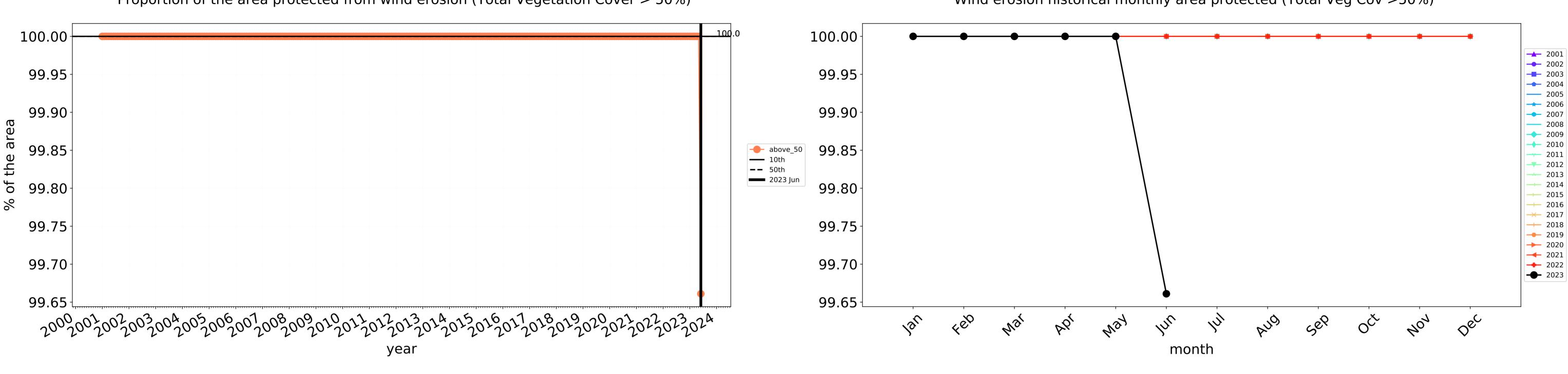
Total Vegetation Cover Anomaly [%]



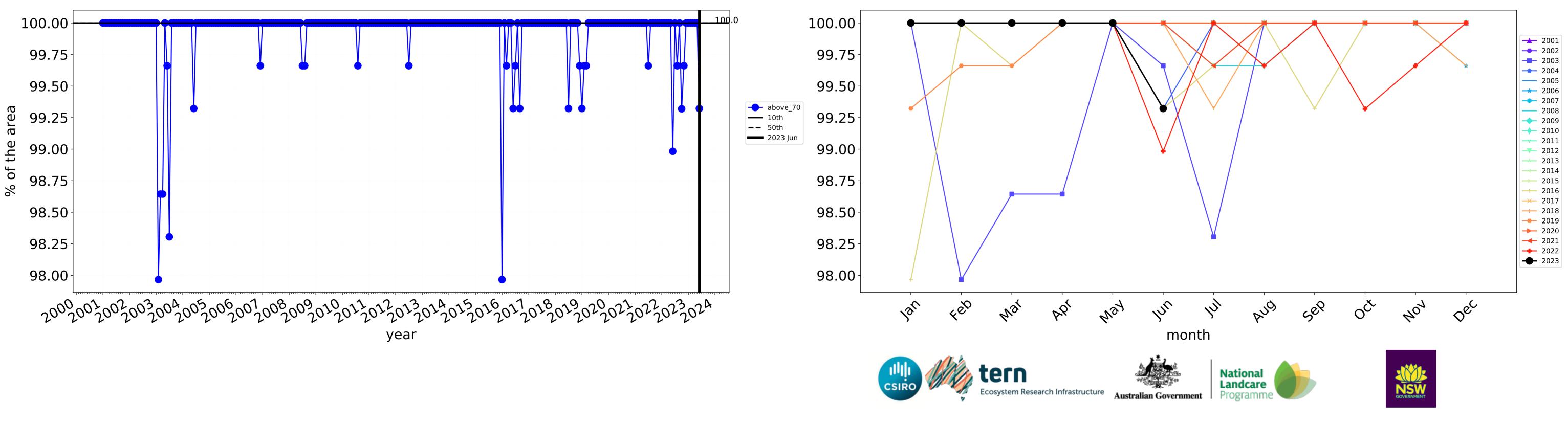
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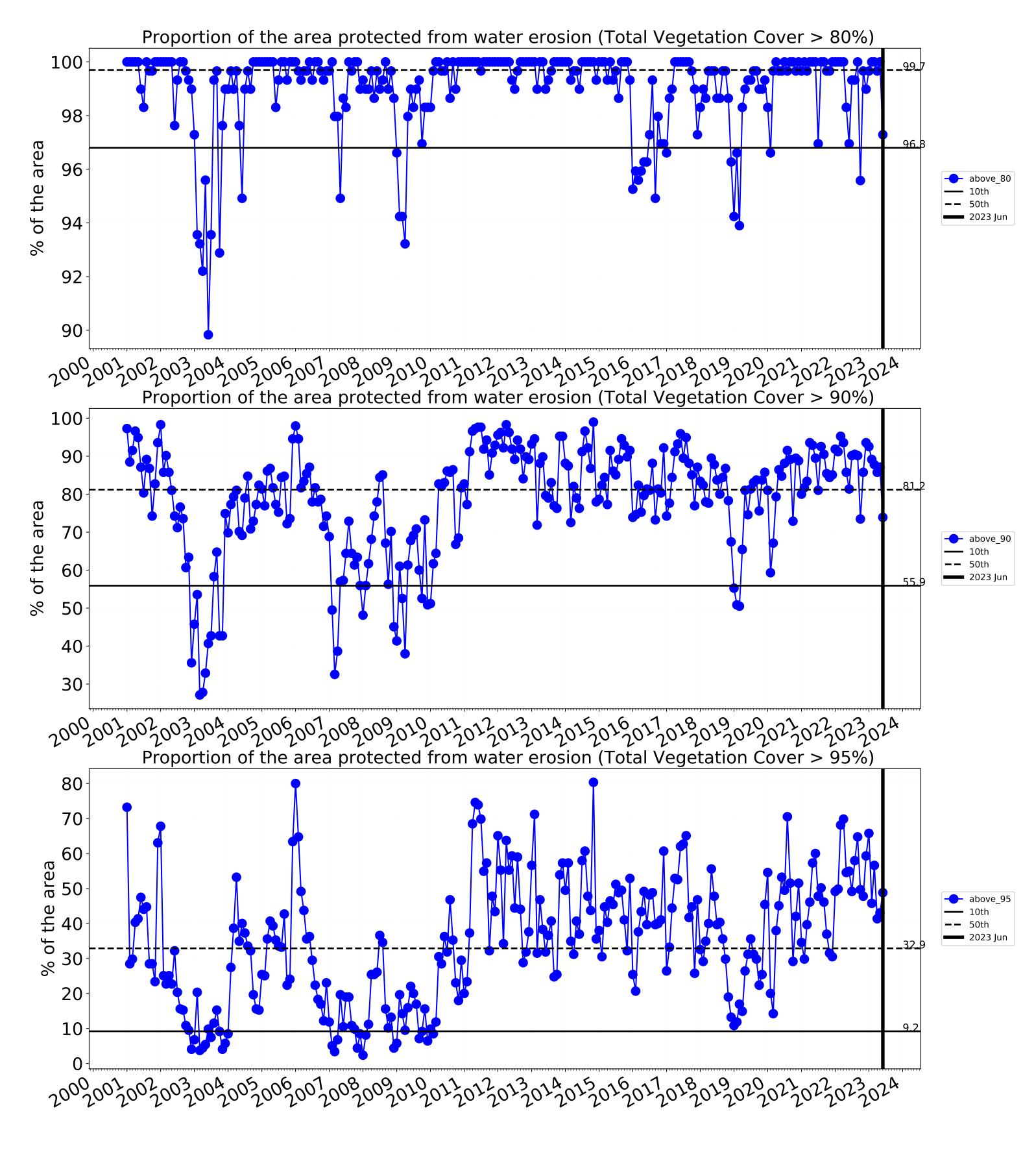




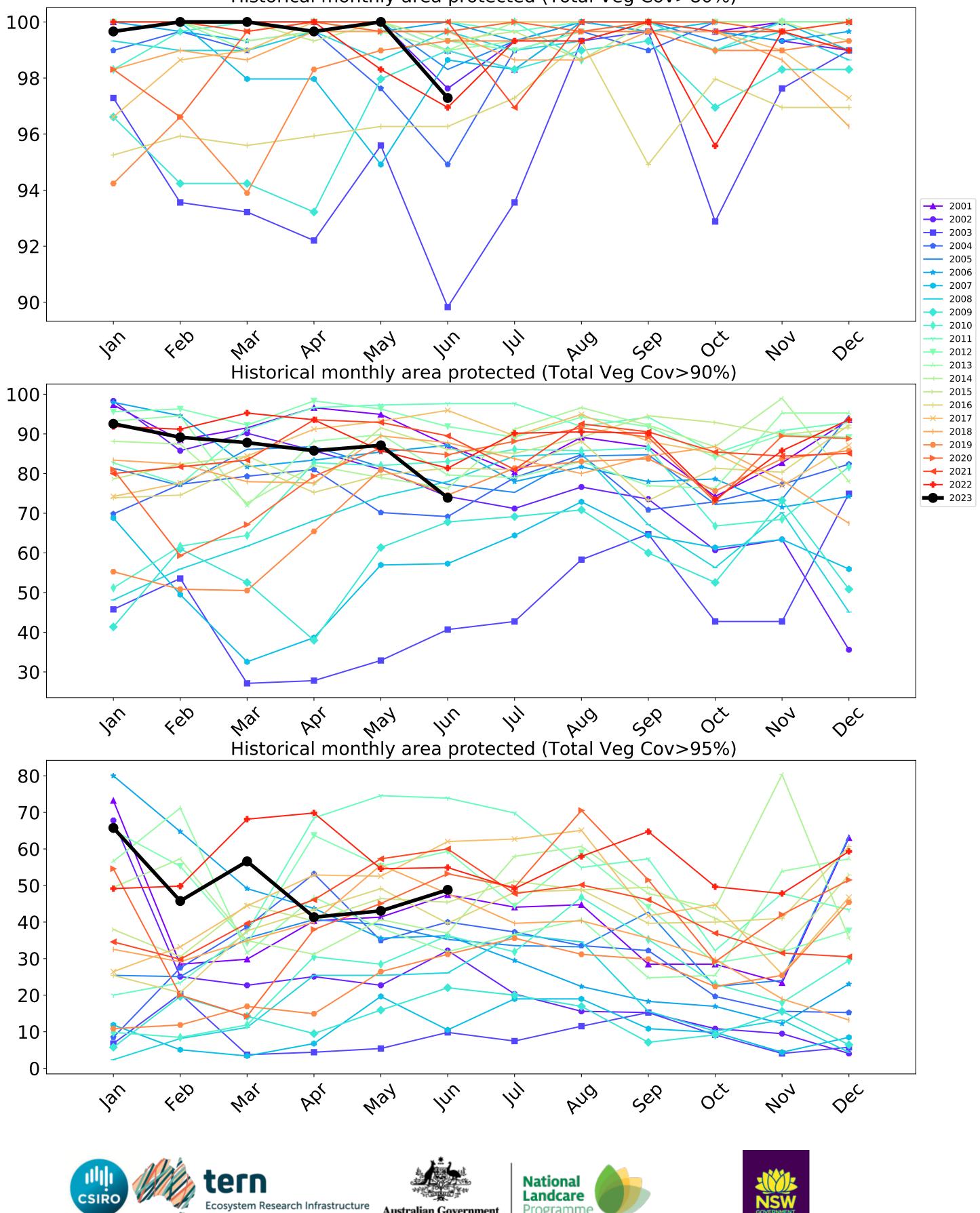


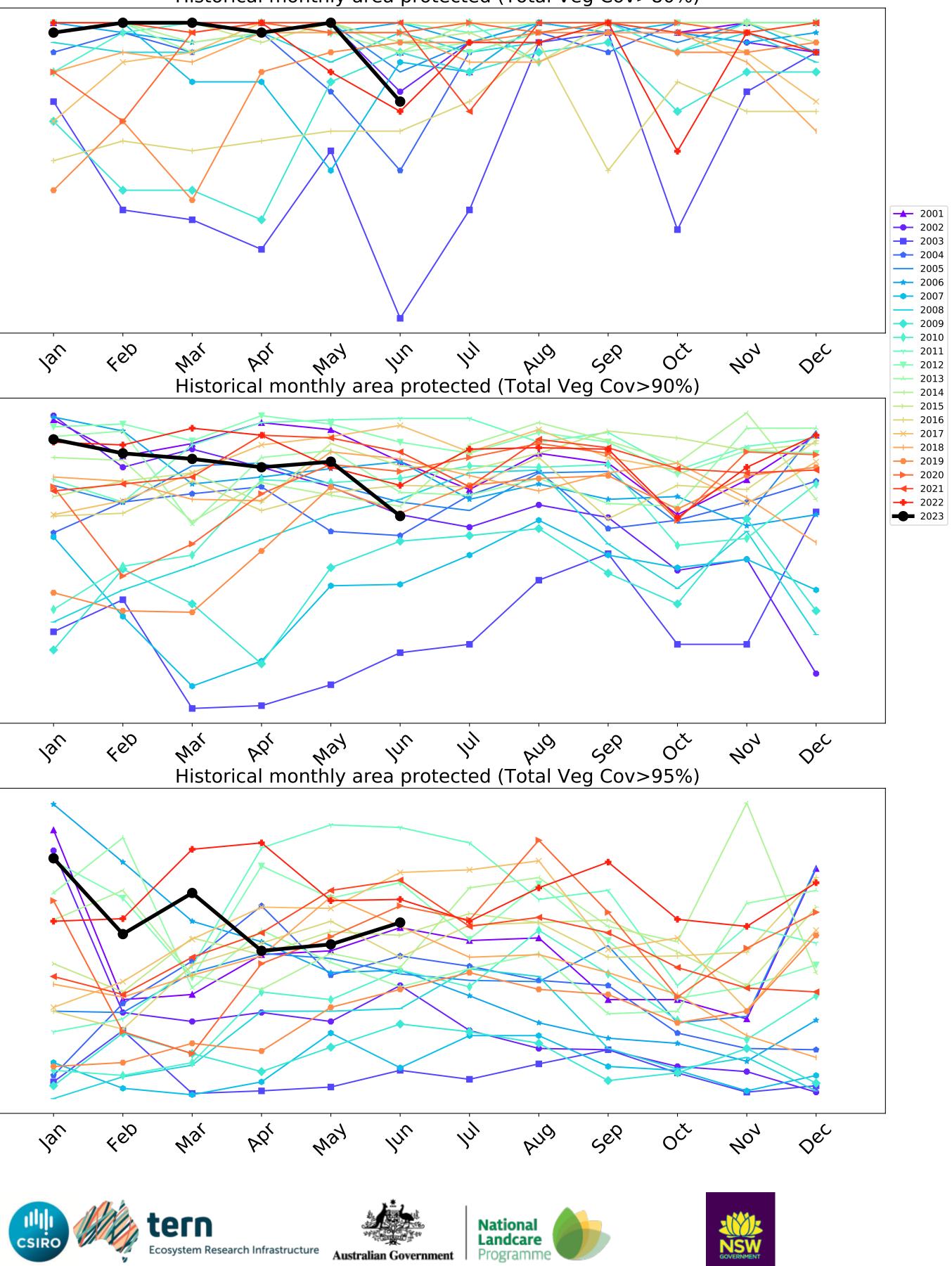
Water erosion historical monthly area protected (Total Veg Cov>70%)

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

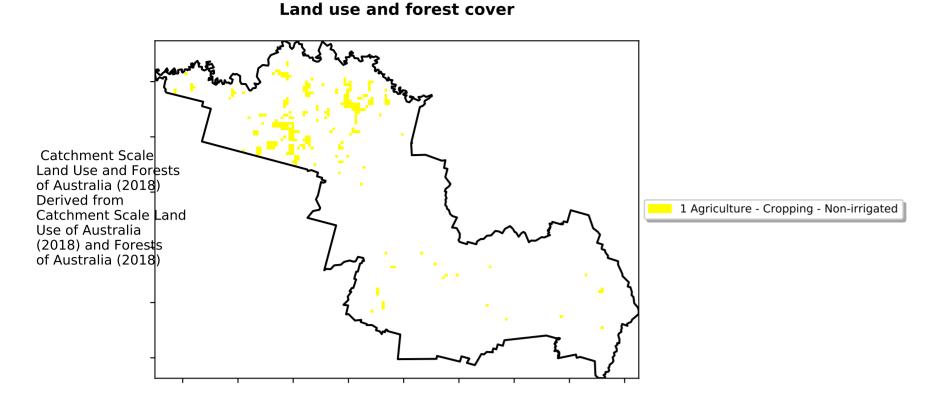


Historical monthly area protected (Total Veg Cov>80%)

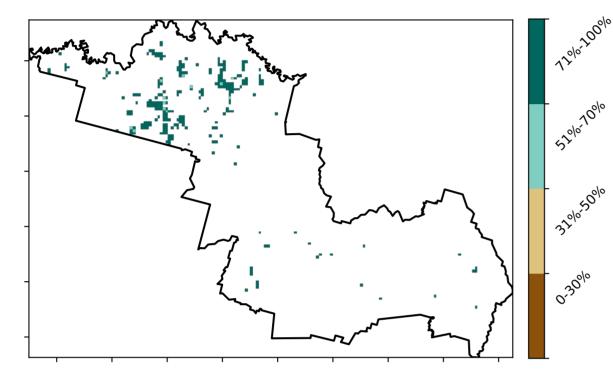




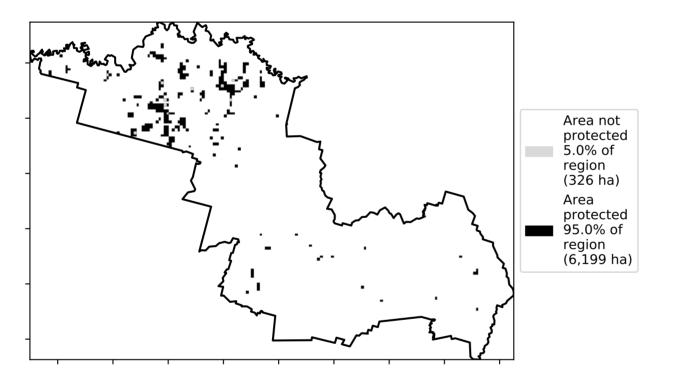
Cropping



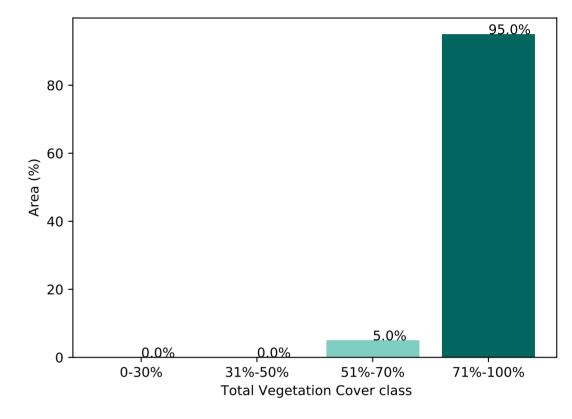
Total Vegetation Cover [%]



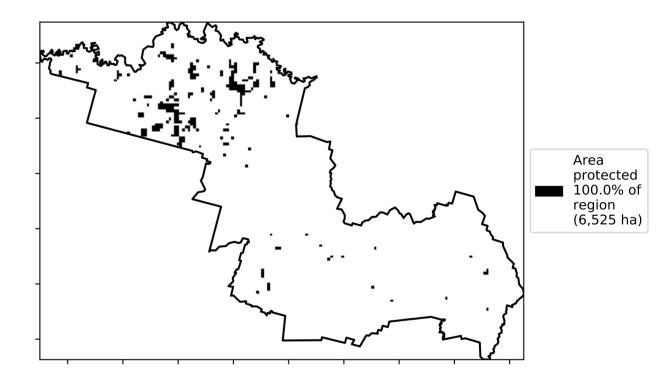
% Area protected from water erosion (>70%)



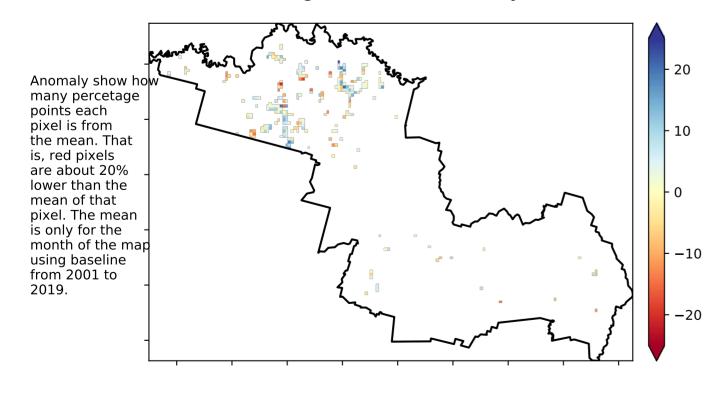
Proportion of vegetation cover class in area



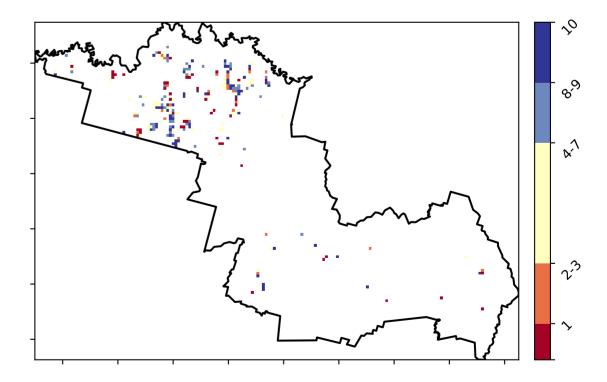
% Area protected from wind erosion (>50%)



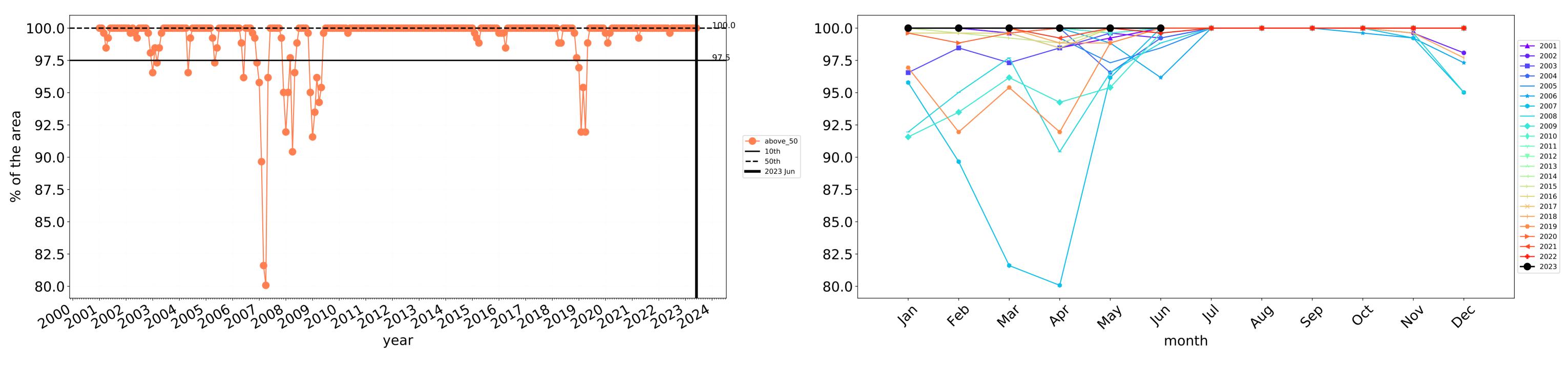
Total Vegetation Cover Anomaly [%]



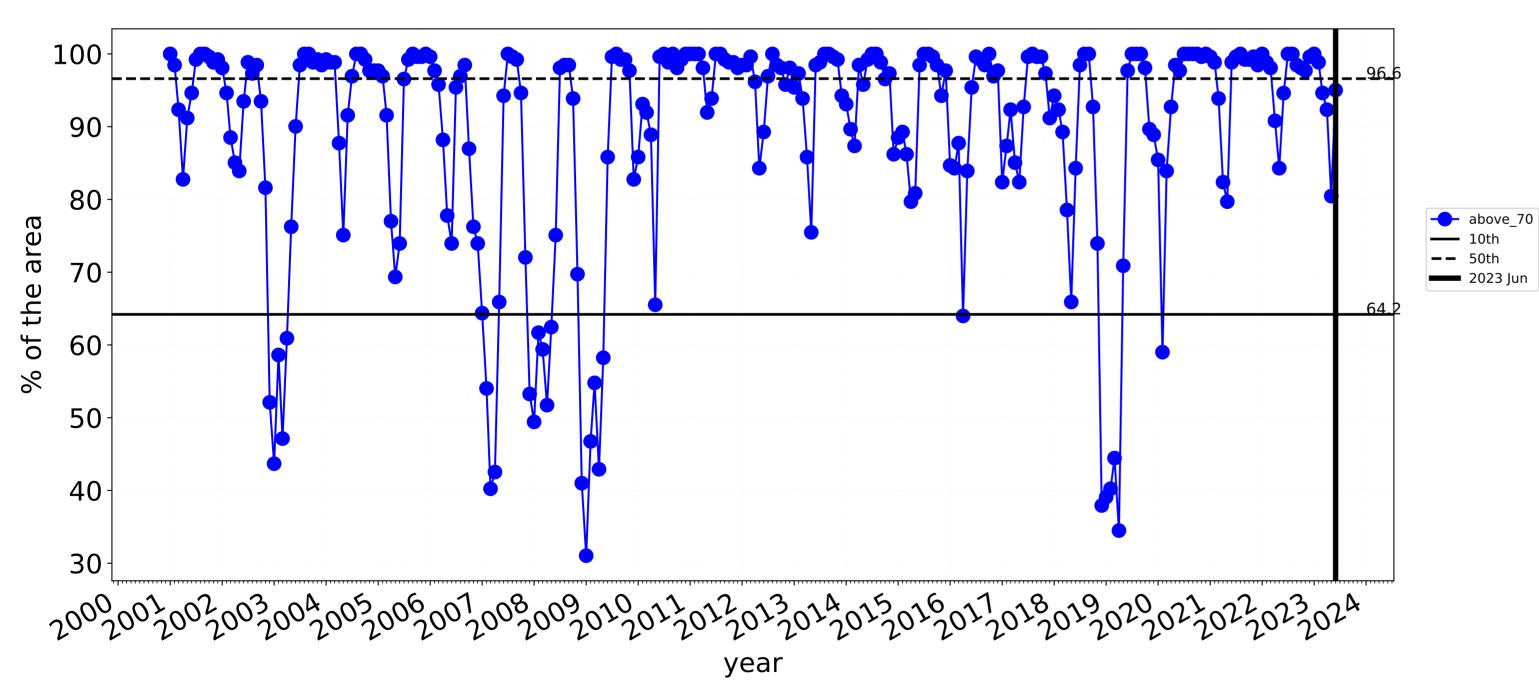
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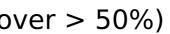




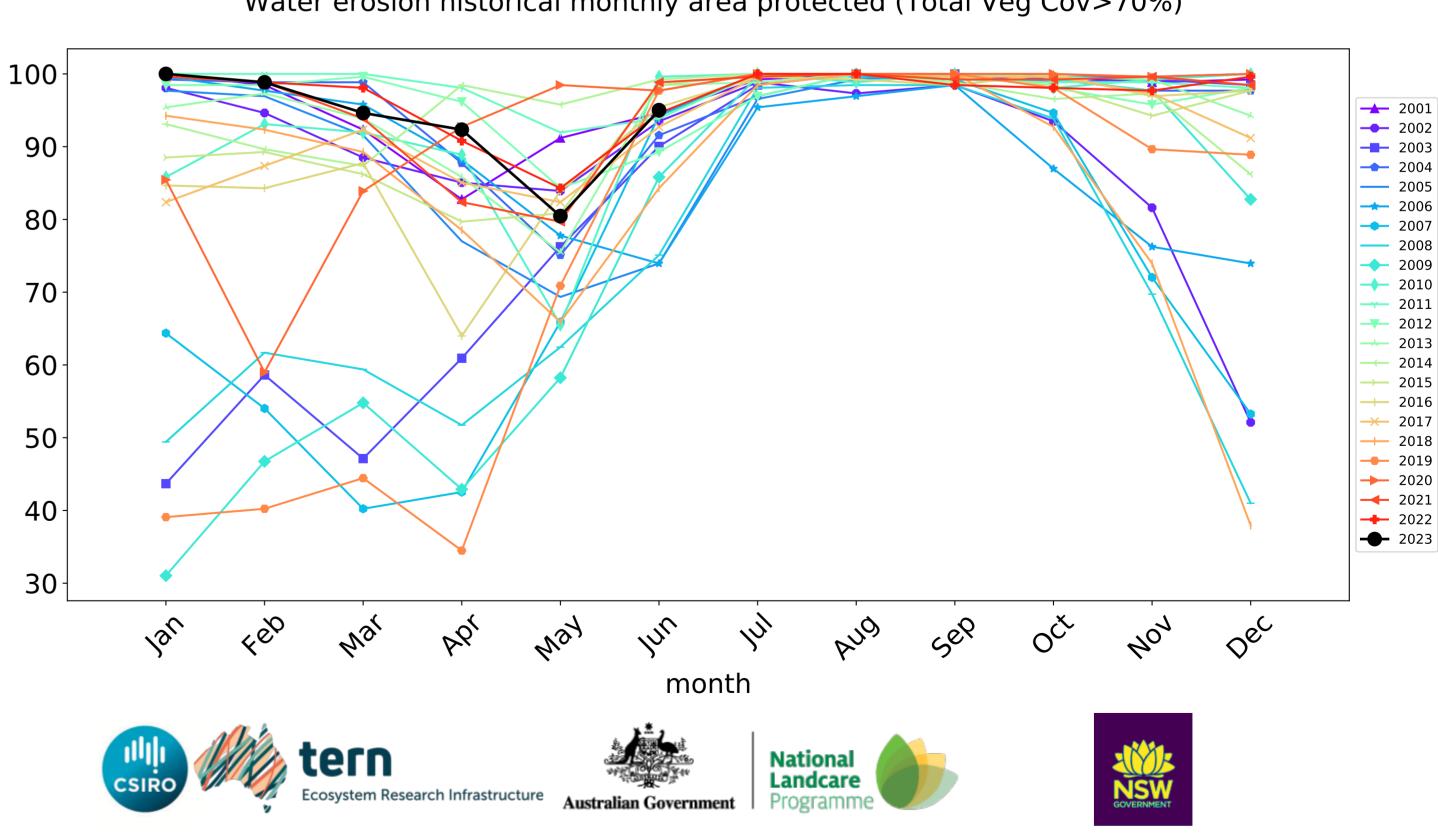


Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

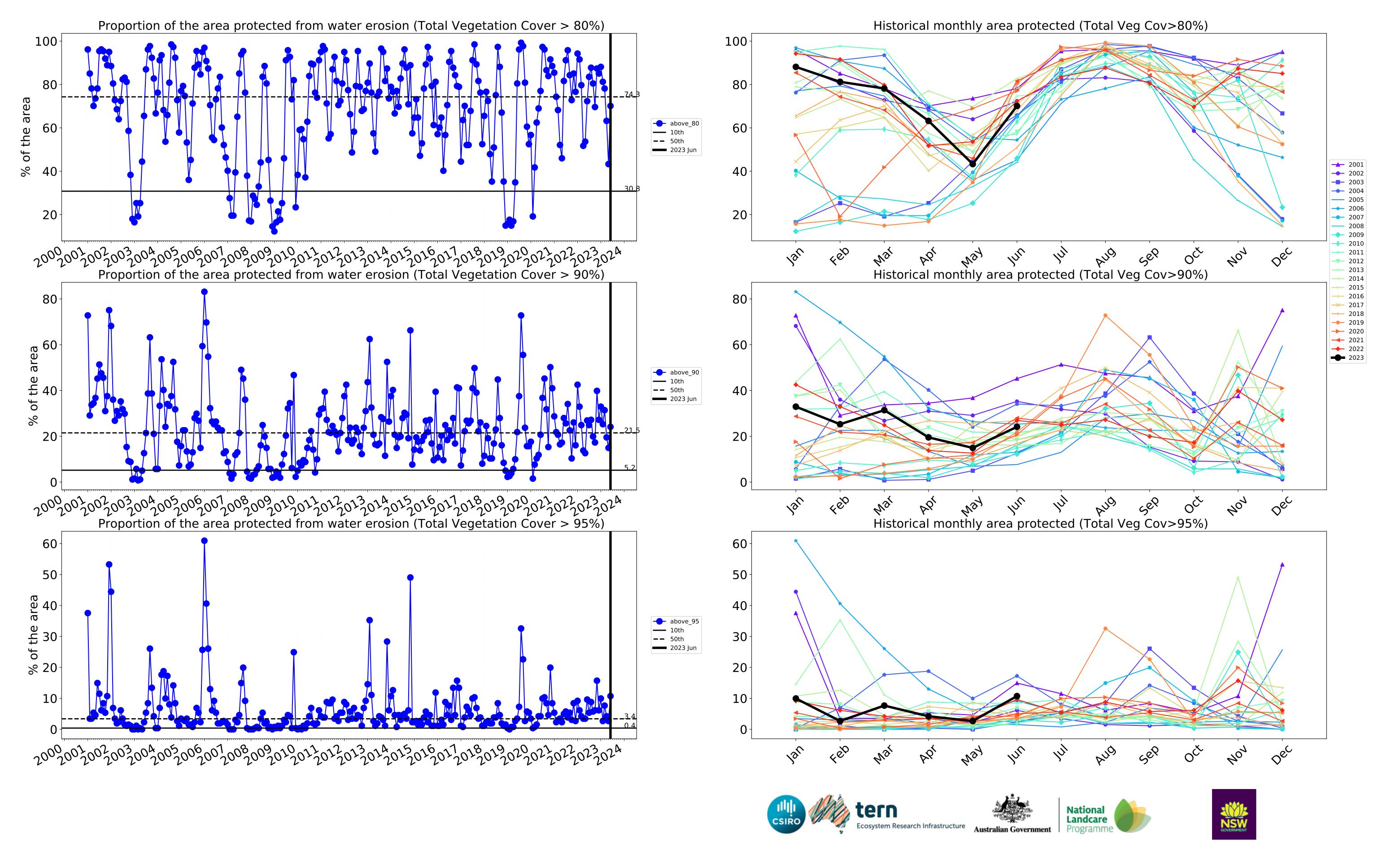




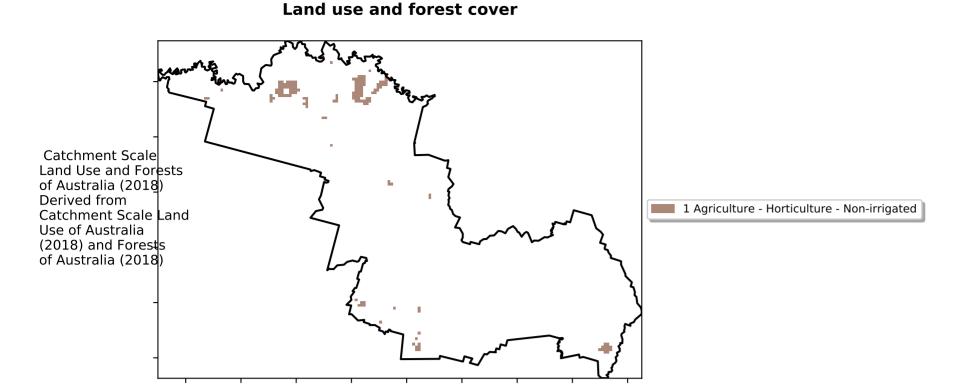
Wind erosion historical monthly area protected (Total Veg Cov >50%)



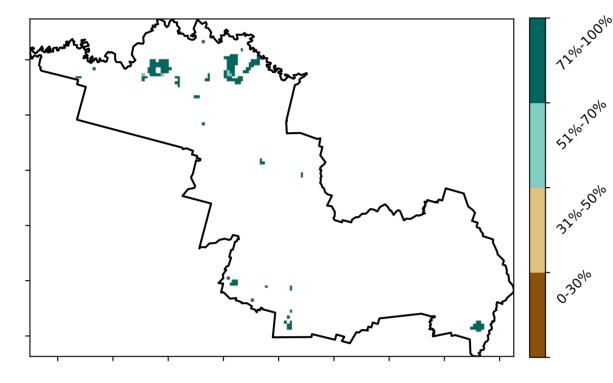
Water erosion historical monthly area protected (Total Veg Cov>70%)



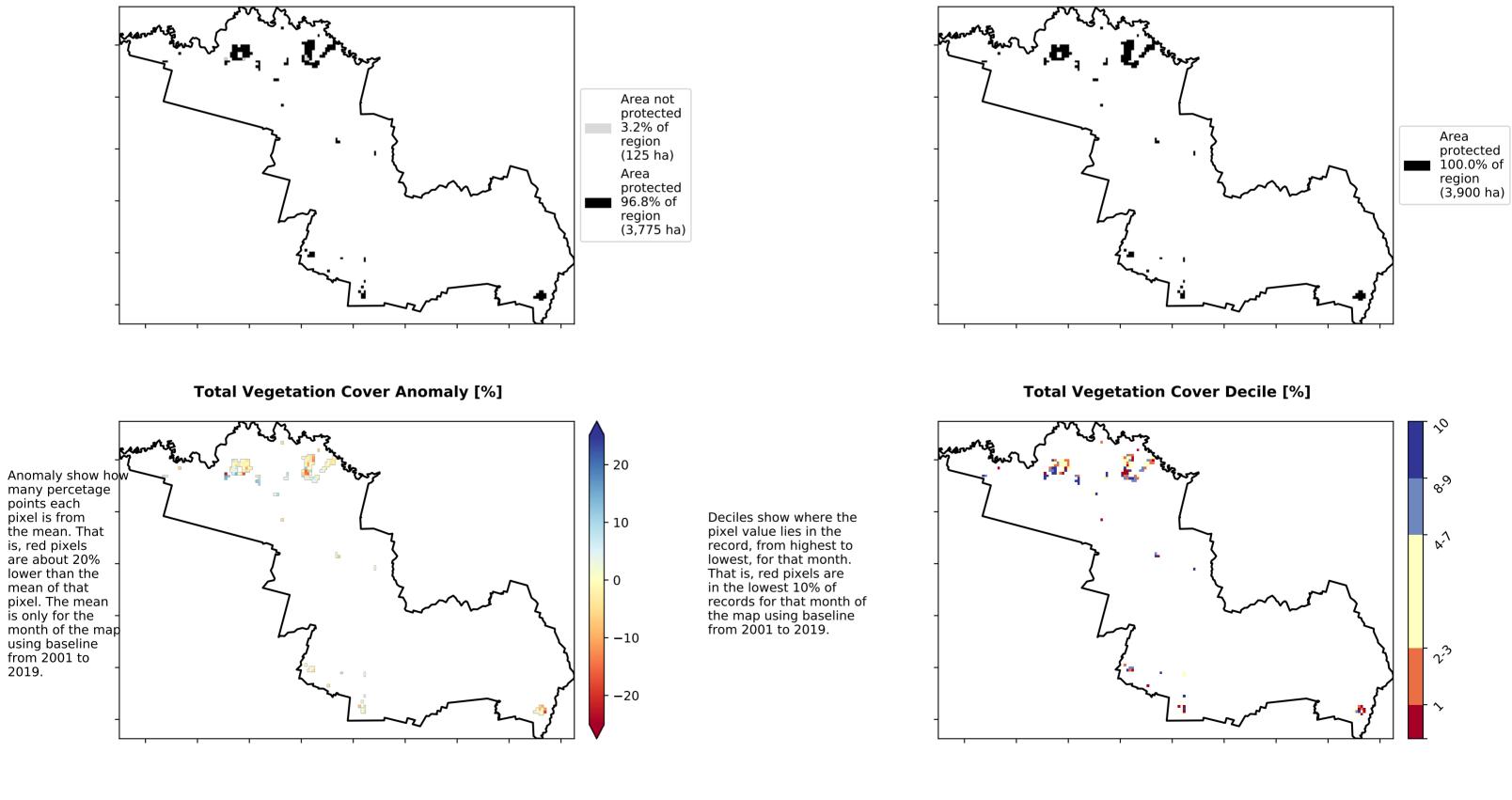
Horticulture



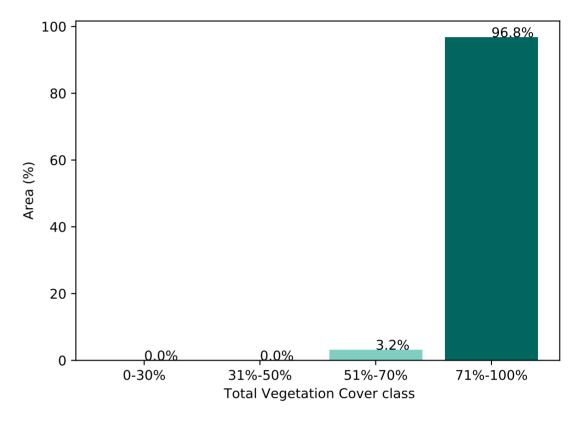
Total Vegetation Cover [%]



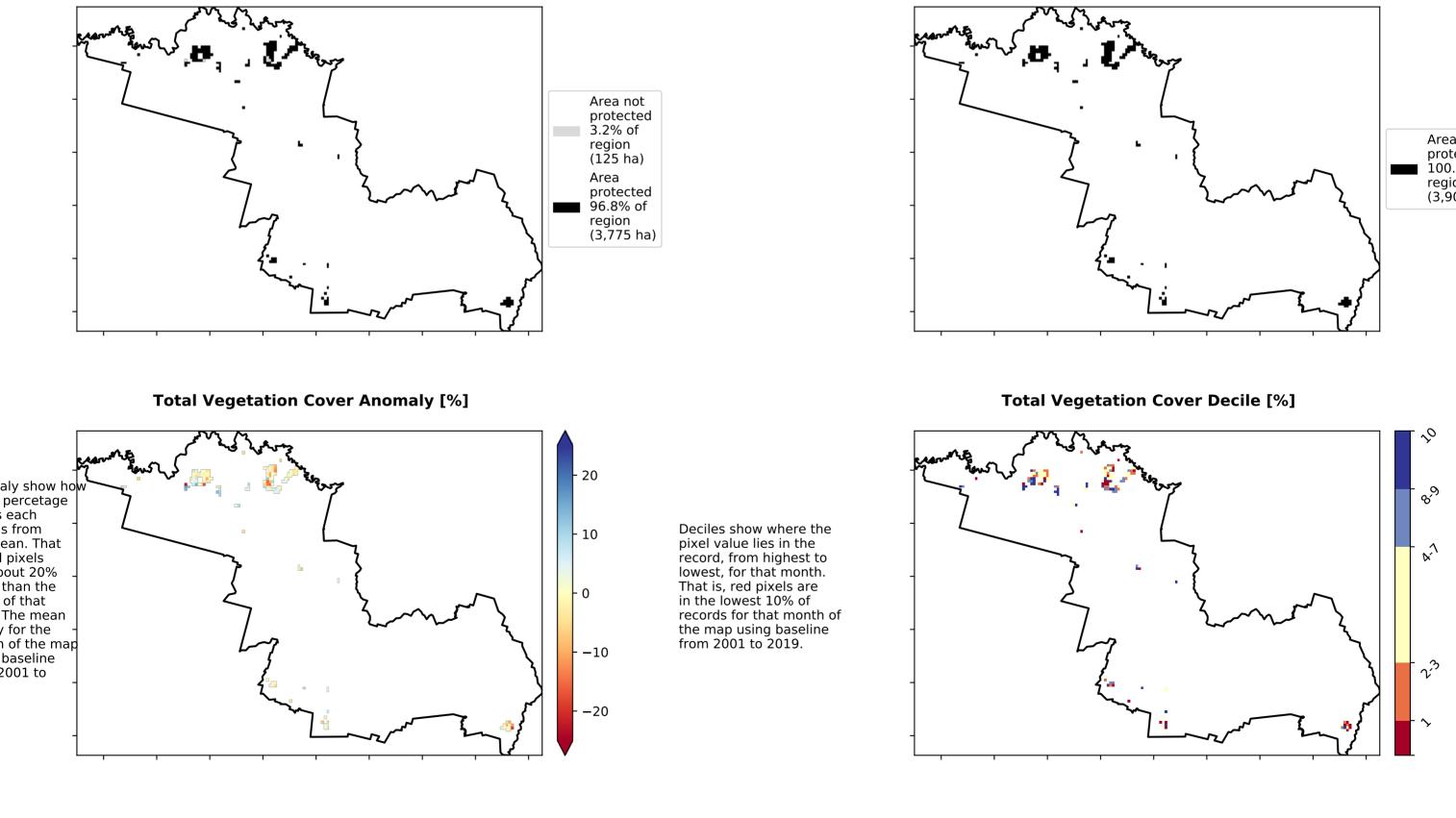
% Area protected from water erosion (>70%)



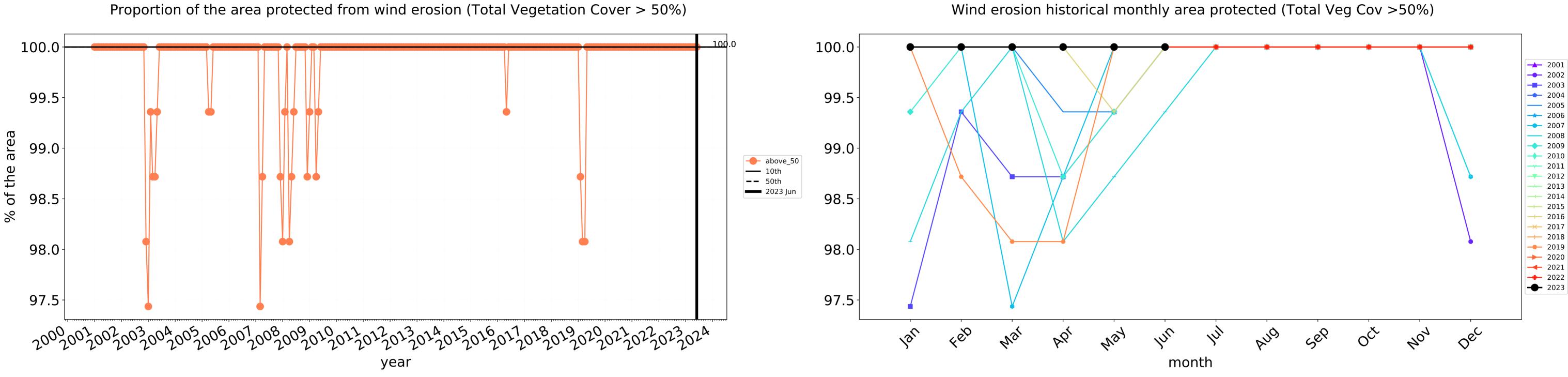
Proportion of vegetation cover class in area

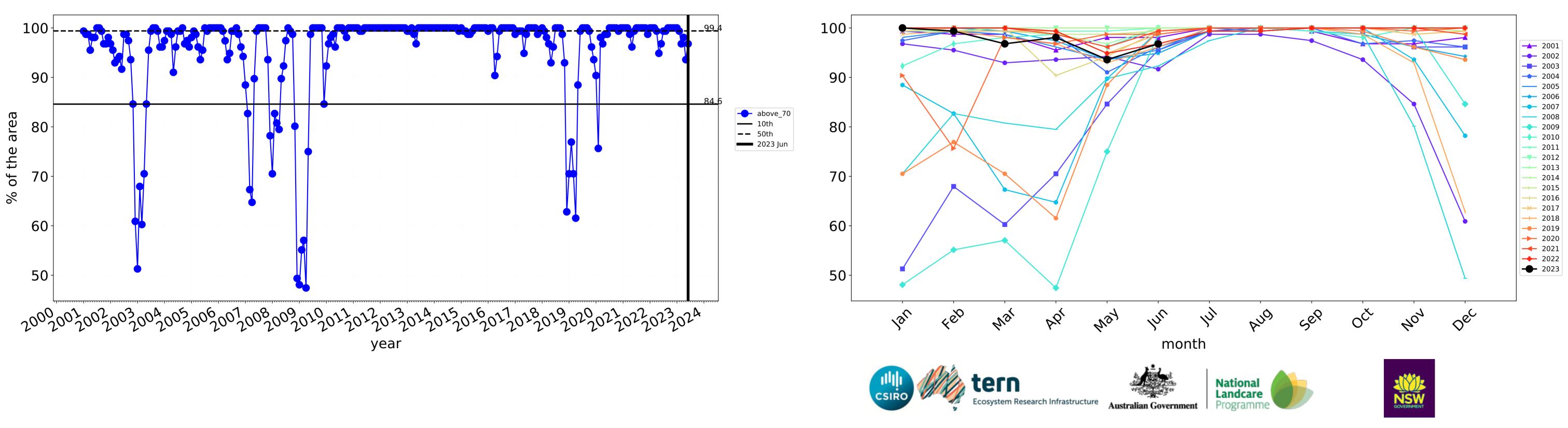


% Area protected from wind erosion (>50%)

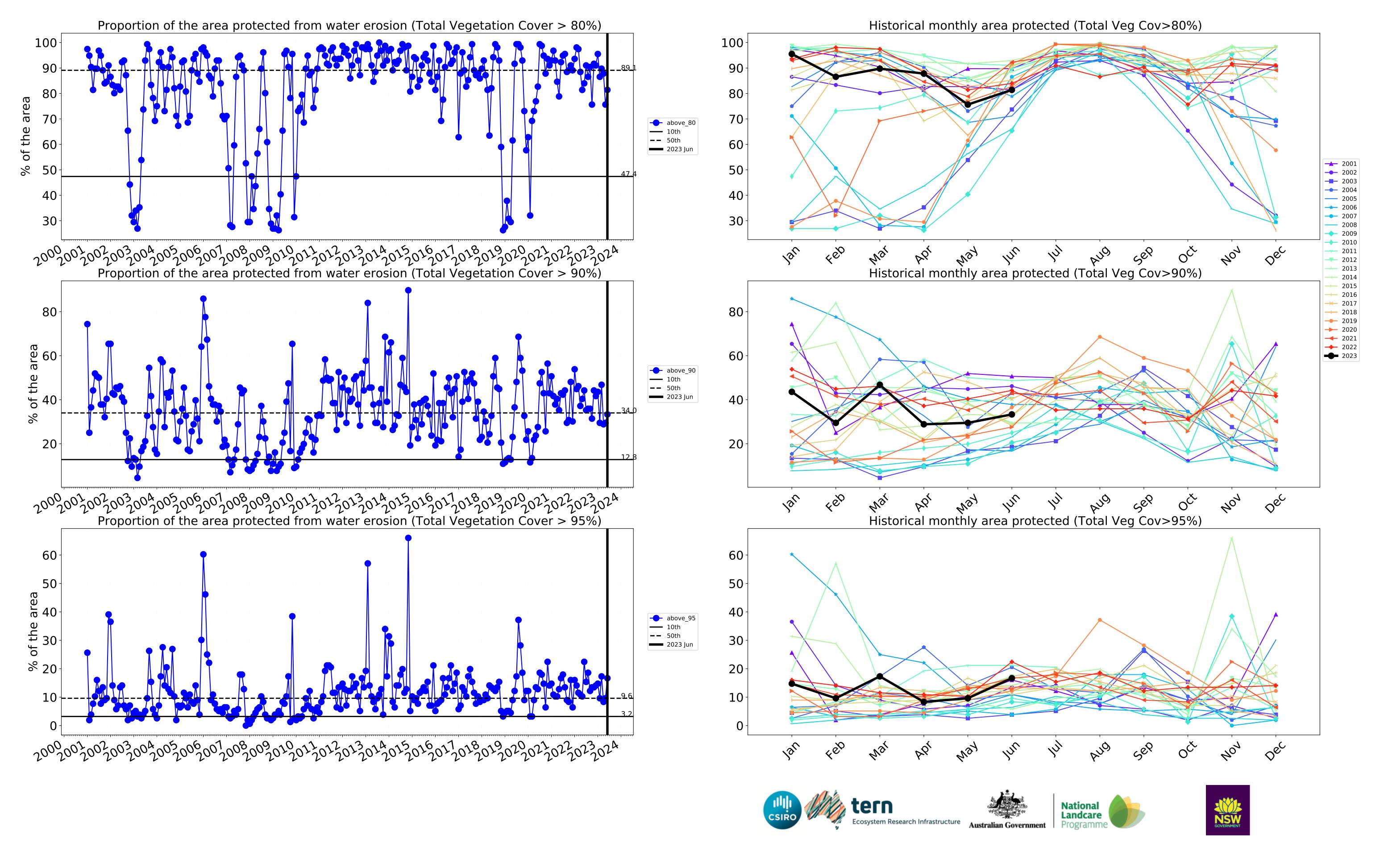








Water erosion historical monthly area protected (Total Veg Cov>70%)

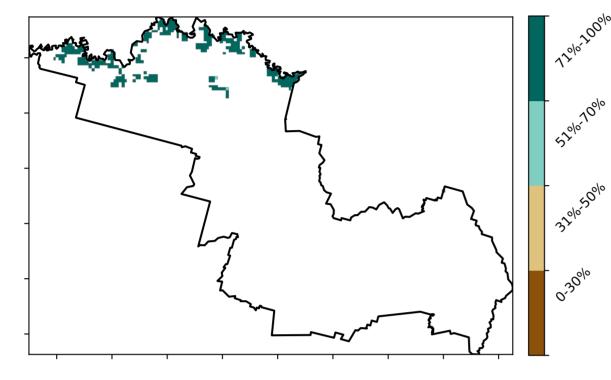


Irrigation

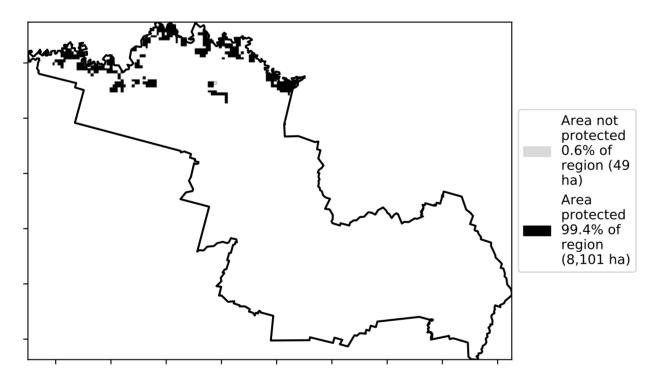
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) (2018) and Forests of Australia (2018)

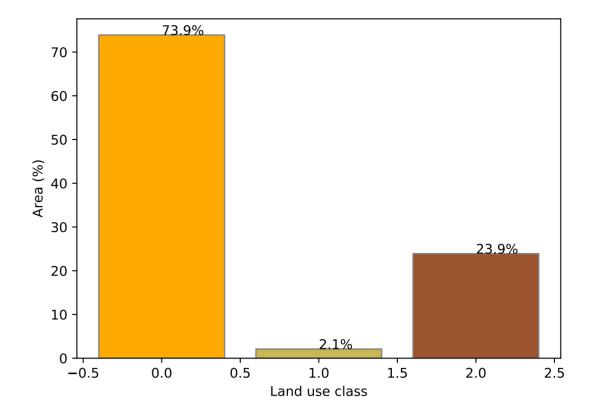
Land use and forest cover

Total Vegetation Cover [%]



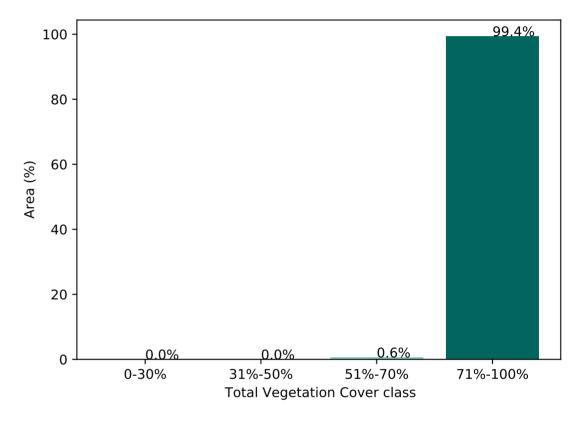
% Area protected from water erosion (>70%)





Proportion of each land class in area

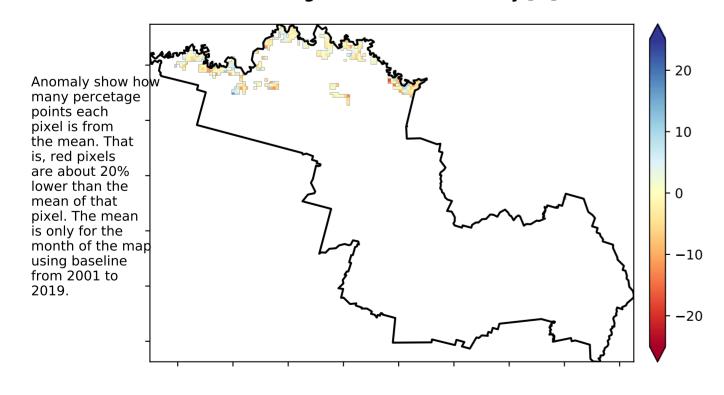
Proportion of vegetation cover class in area



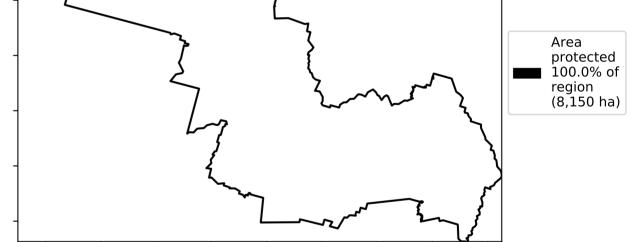
% Area protected from wind erosion (>50%)

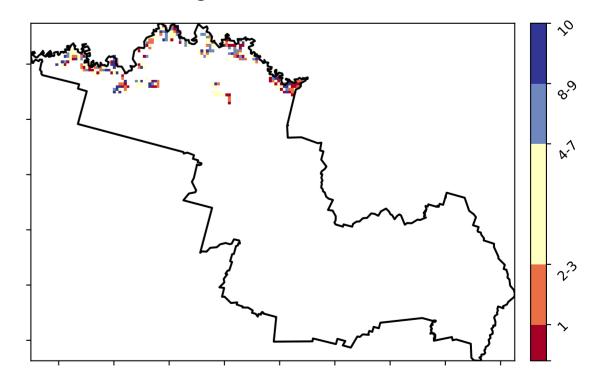


Total Vegetation Cover Anomaly [%]

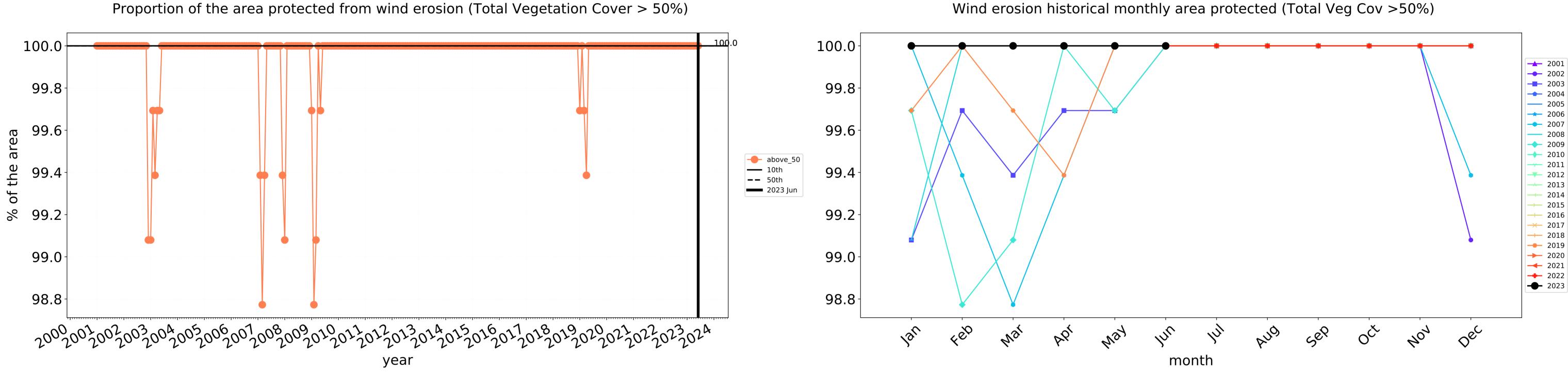


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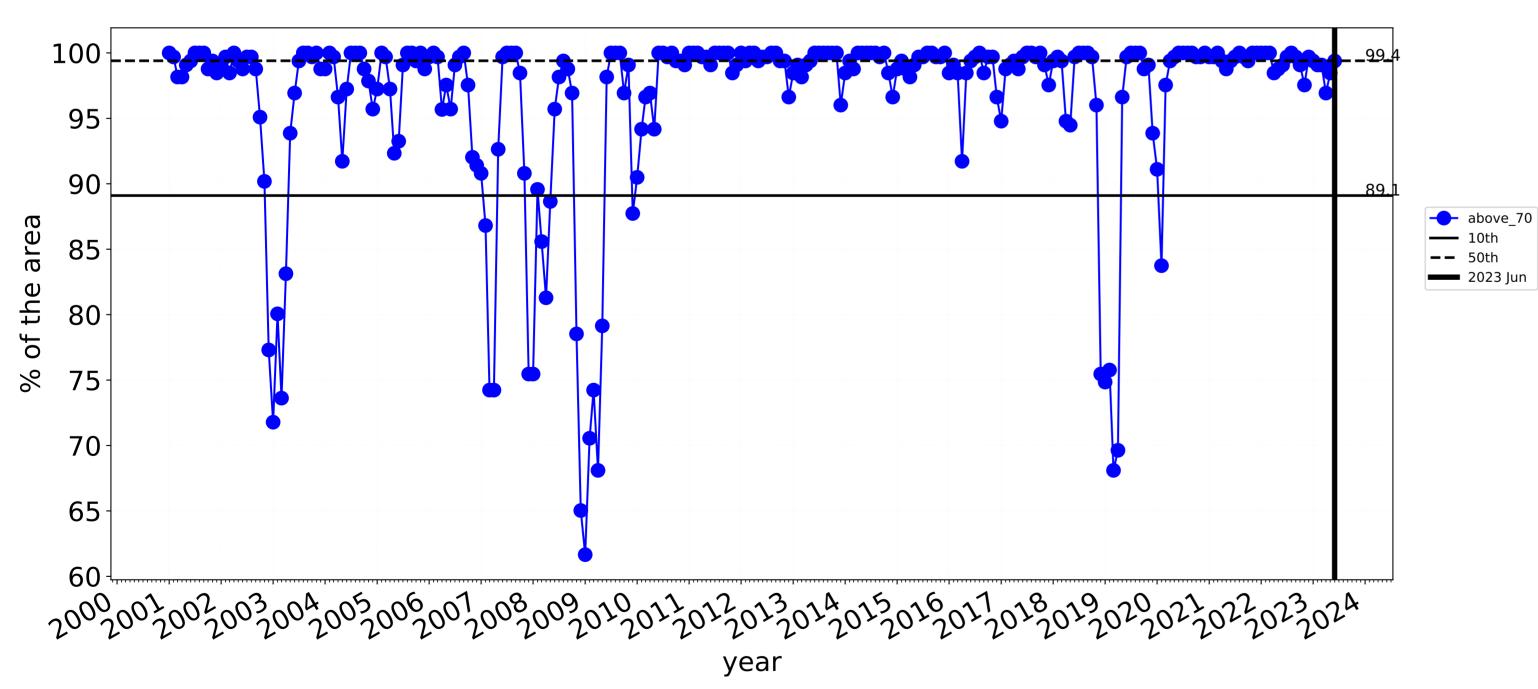


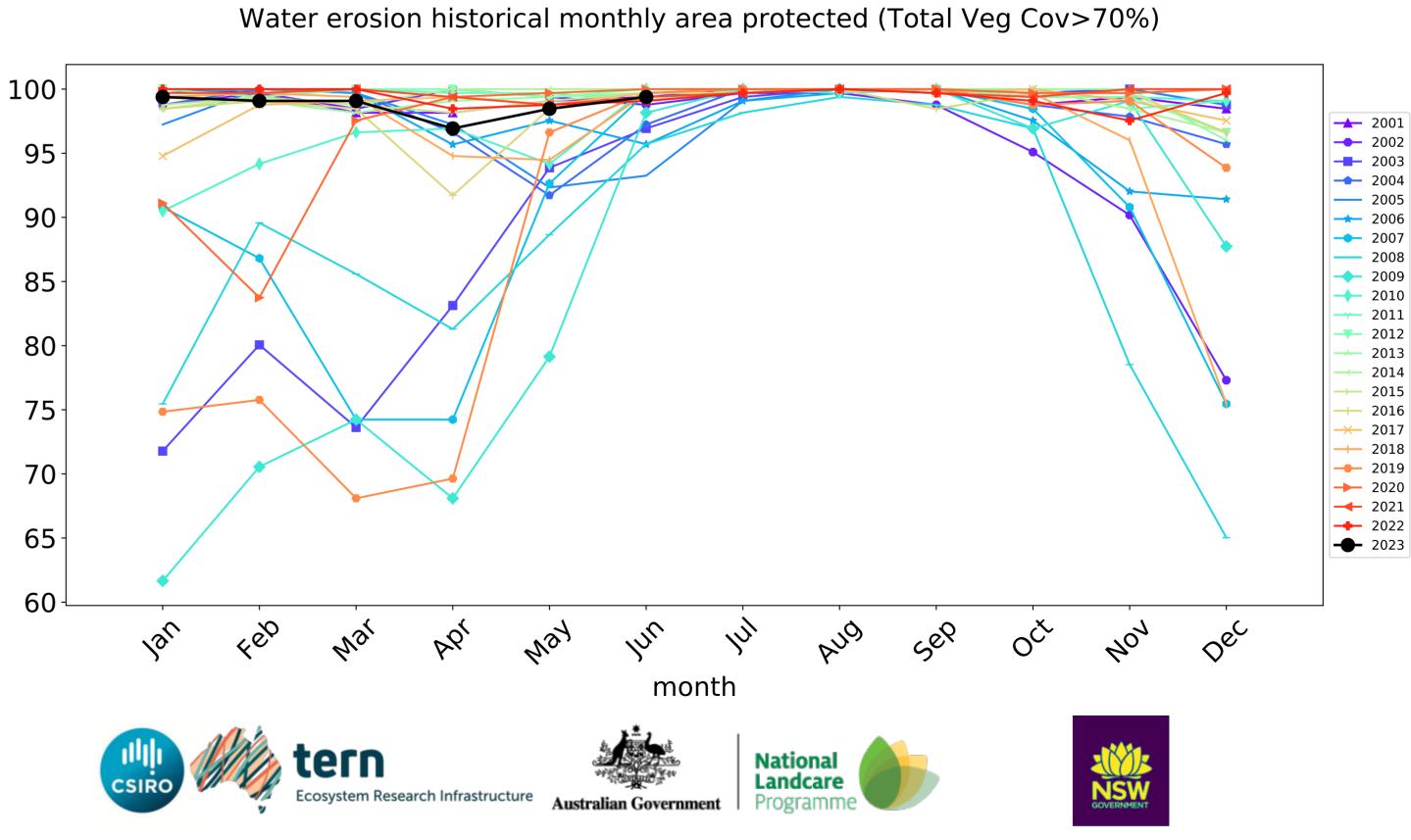


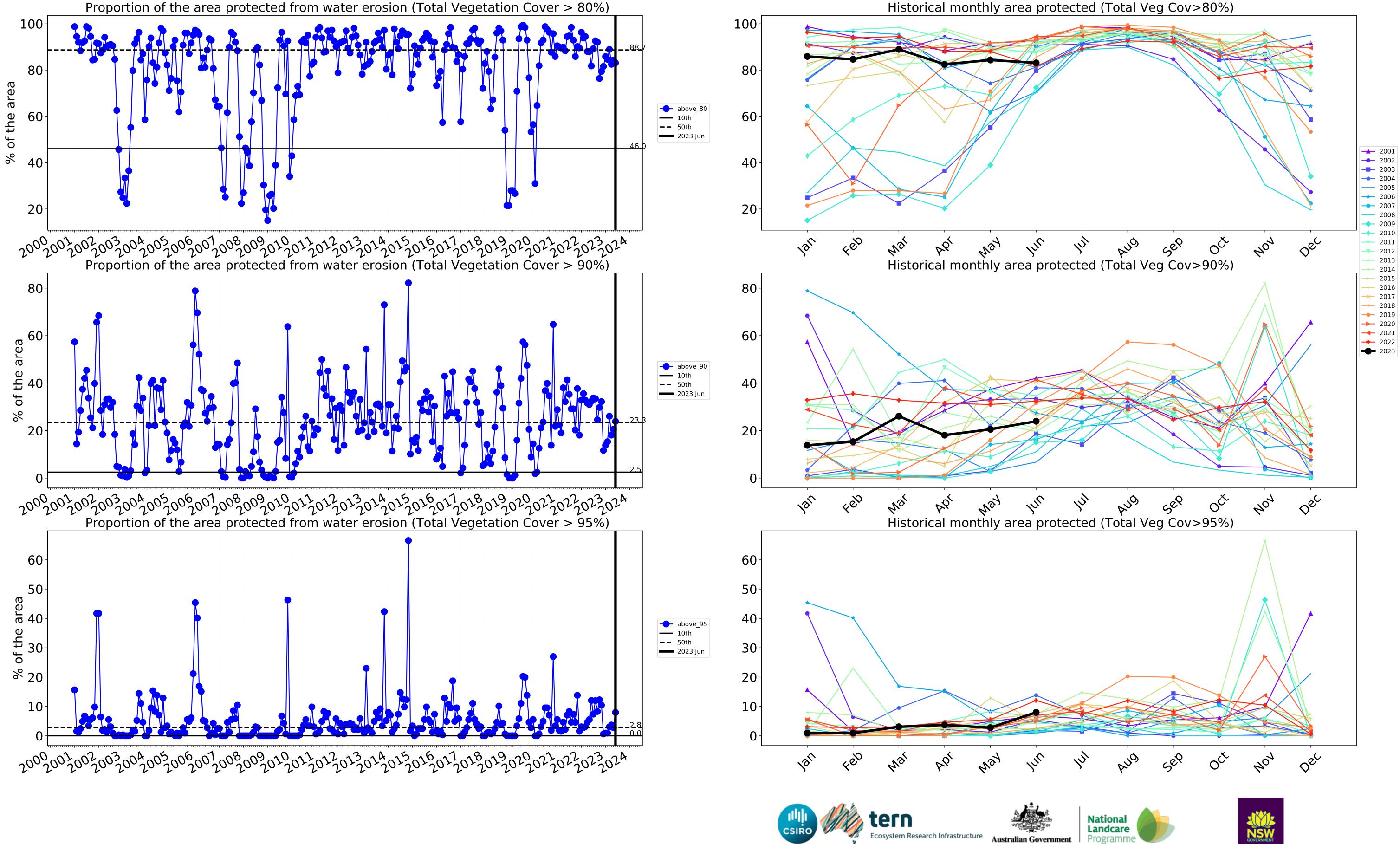




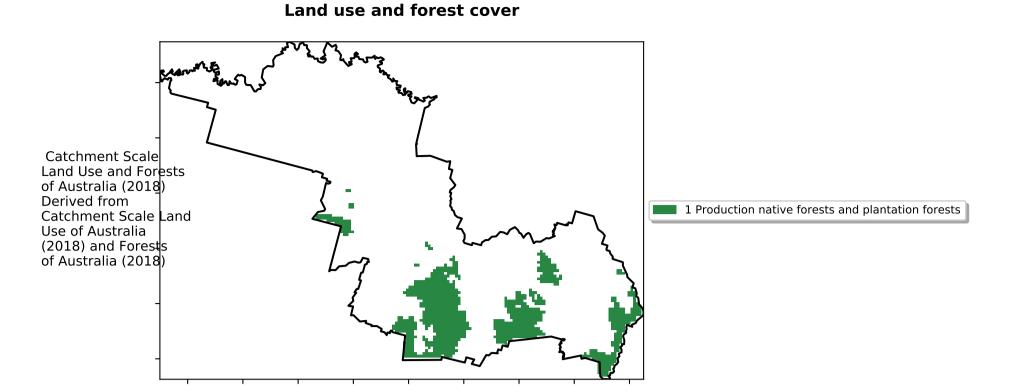
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)



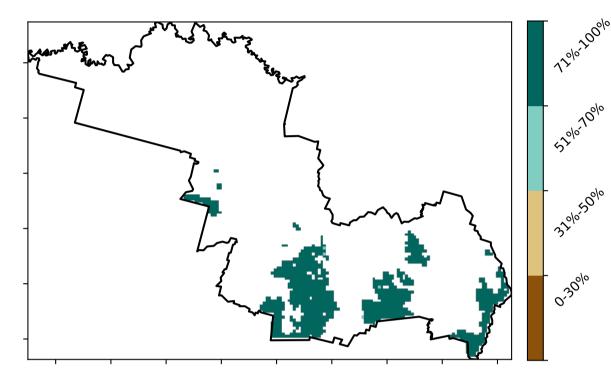




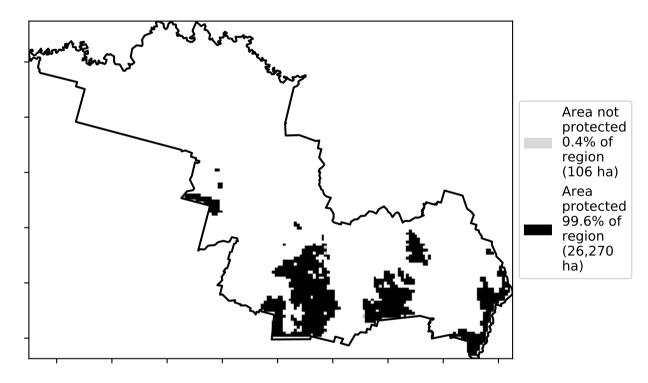
Production native forests and plantation forests



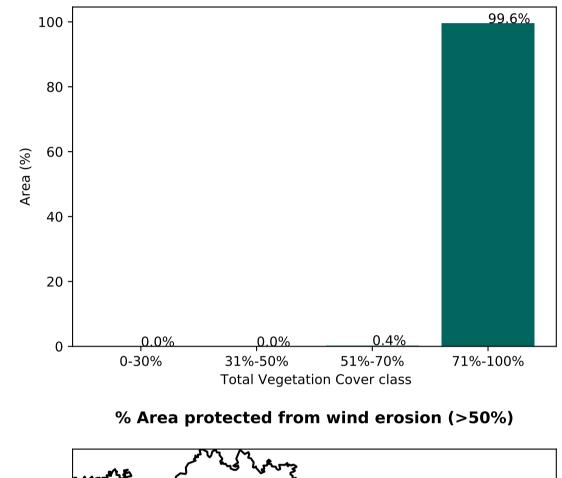
Total Vegetation Cover [%]

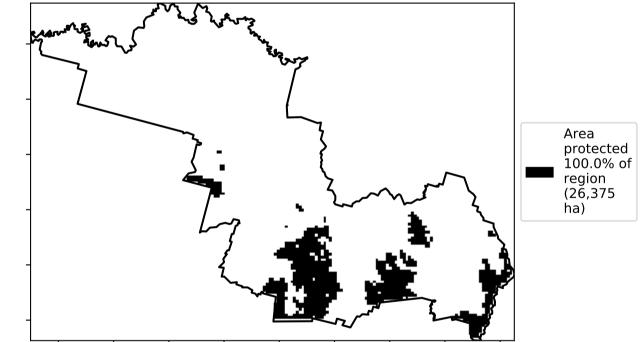


% Area protected from water erosion (>70%)

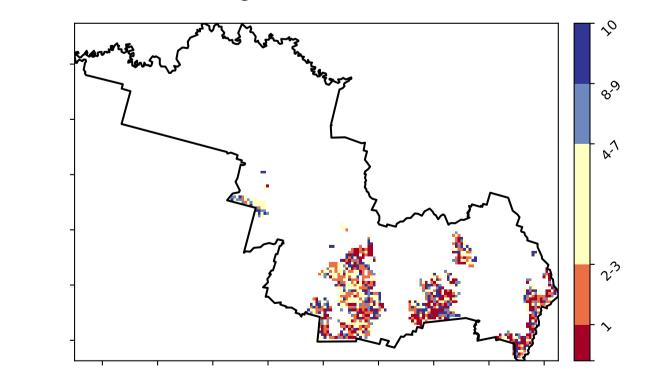


Proportion of vegetation cover class in area

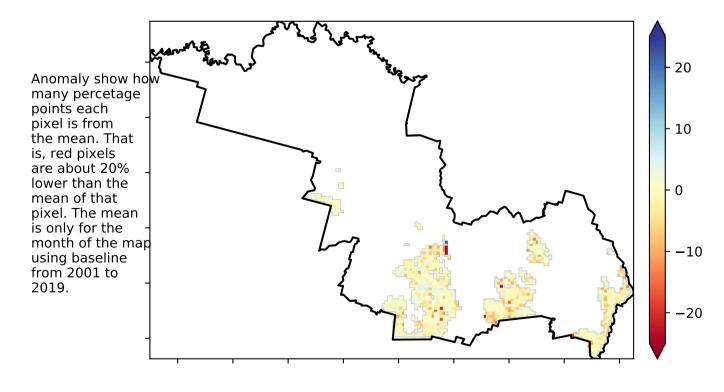




Total Vegetation Cover Decile [%]

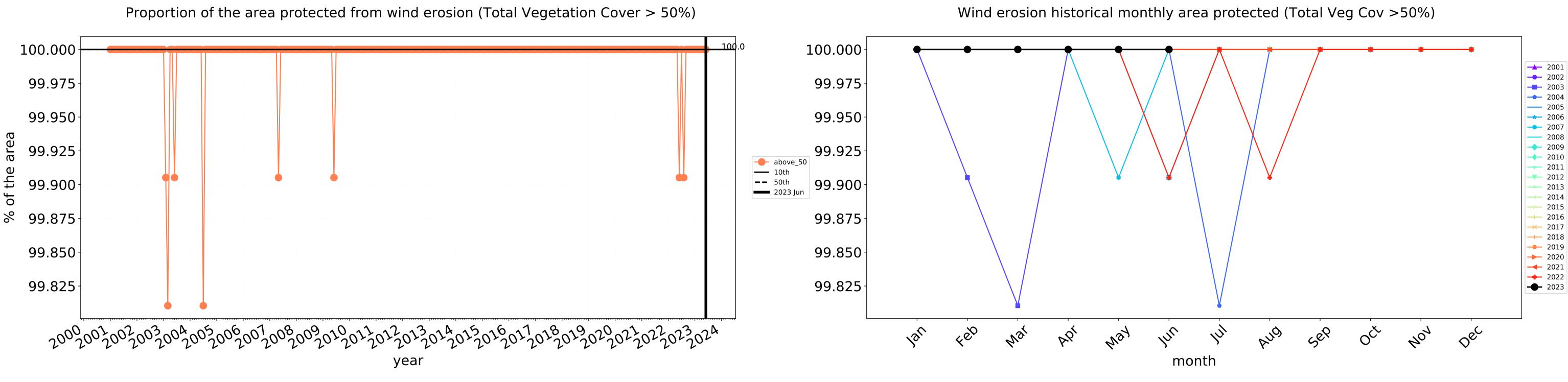


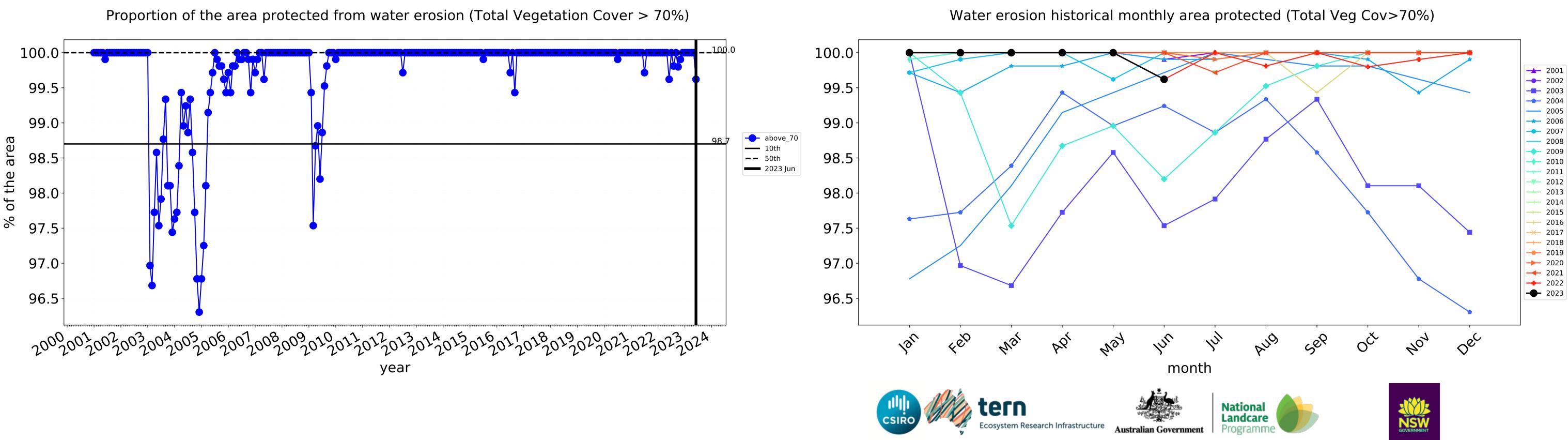
Total Vegetation Cover Anomaly [%]



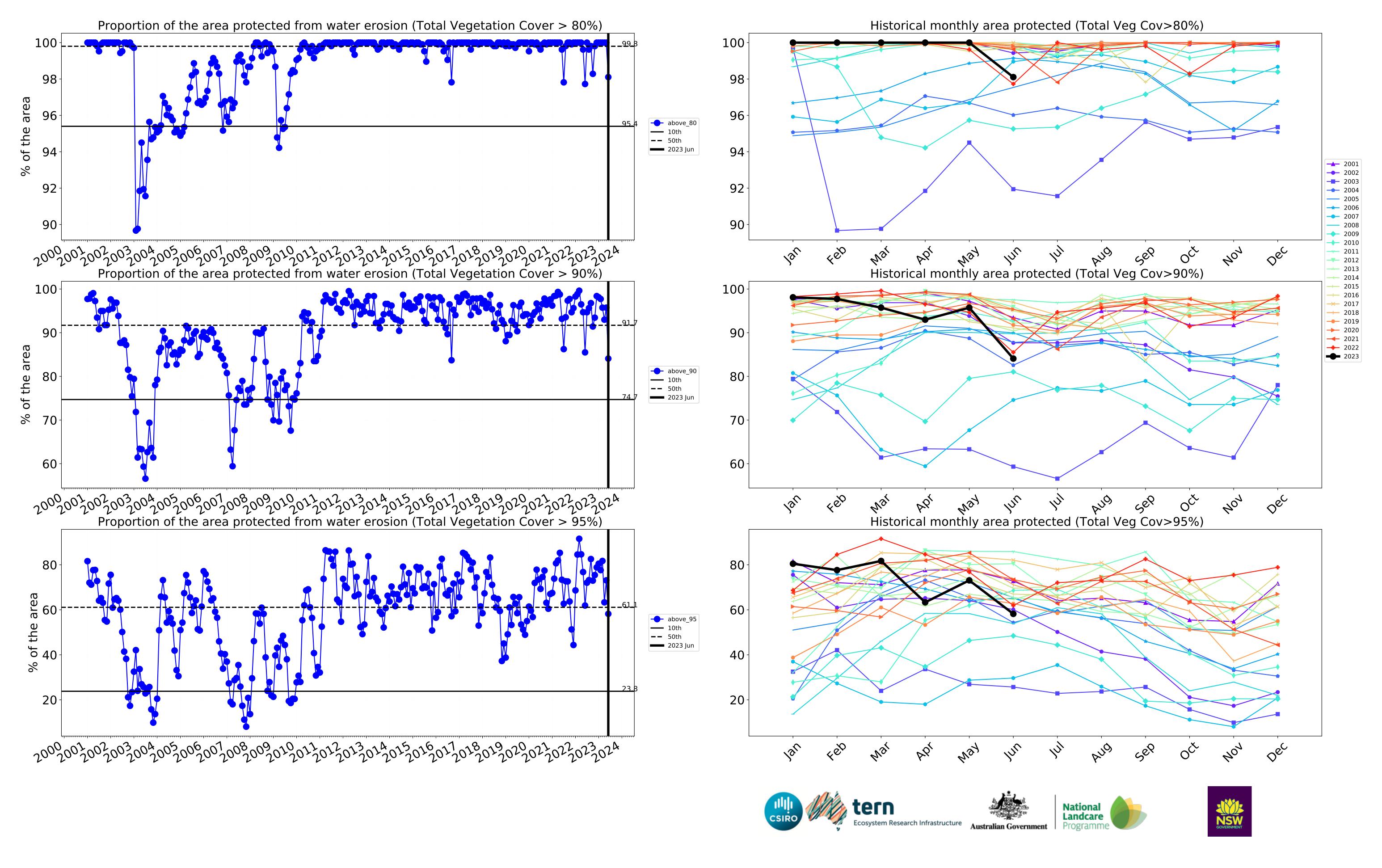
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39



Indigo_(S) (201,675 ha and no data 2,201 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	201,675	100.0% 201,625	99.9% 201,525	98.7% 199,100	91.0% 183,450	53.4% 107,725	29.7% 59,875
Conservation and natural environments	24,000	100.0% 24,000	100.0% 24,000	99.8% 23,950	97.8% 23,475	84.0% 20,150	54.0% 12,950
Conservation and natural environments Woodland forest	5,900	100.0% 5,900	100.0% 5,900	100.0% 5,900	96.6% 5,700	80.1% 4,725	54.2% 3,200
Conservation and natural environments Forest (non woodland)	16,625	100.0% 16,625	100.0% 16,625	99.8% 16,600	98.6% 16,400	87.1% 14,475	55.6% 9,250
Agriculture	133,200	100.0% 133,175	100.0% 133,150	98.7% 131,450	88.8% 118,225	42.0% 55,900	19.5% 25,950
Grazing	114,625	100.0% 114,600	100.0% 114,575	98.9% 113,375	90.5% 103,700	44.6% 51,075	20.9% 23,950
Grazing non forest	104,925	100.0% 104,925	100.0% 104,900	98.9% 103,725	89.8% 94,200	41.7% 43,775	18.3% 19,250
Grazing Woodland forest	2,325	100.0% 2,325	100.0% 2,325	100.0% 2,325	100.0% 2,325	79.6% 1,850	47.3% 1,100
Grazing - Forest (non woodland)	7,375	99.7% 7,350	99.7% 7,350	99.3% 7,325	97.3% 7,175	73.9% 5,450	48.8% 3,600
Cropping	6,525	100.0% 6,525	100.0% 6,525	95.0% 6,200	70.1% 4,575	24.1% 1,575	10.7% 700
Horticulture	3,900	100.0% 3,900	100.0% 3,900	96.8% 3,775	81.4% 3,175	33.3% 1,300	16.7% 650
Irrigation	8,150	100.0% 8,150	100.0% 8,150	99.4% 8,100	83.1% 6,775	23.9% 1,950	8.0% 650
Production native forests and plantation forests	26,375	100.0% 26,375	100.0% 26,375	99.6% 26,275	98.1% 25,875	84.1% 22,175	58.2% 15,350

