### Total vegetation cover soil protection Region:LGA Serpentine-Jarrahdale\_(S) WA

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 cover class that 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









**Date: February 2023** 

### **Vegetation Cover Feb 2023**

### **Land use and forest cover**

Catchment Scale

of Australia (2018)

(2018) and Forests

of Australia (2018)

Derived from

pixel is from

is, red pixels

the mean. That

are about 20%

lower than the

pixel. The mean is only for the month of the map

mean of that

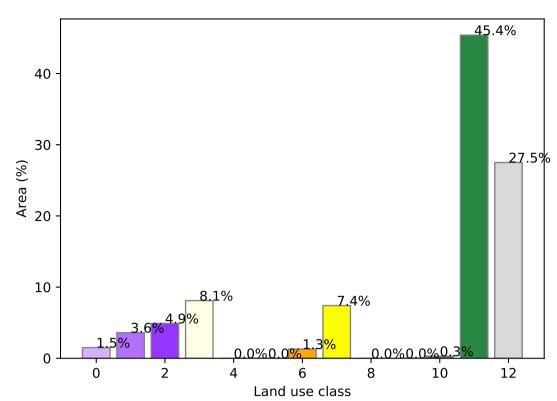
using baseline from 2001 to

2019.

Use of Australia

### Legend with land class forest cover and number, i.e. Forests is 12 1 Conservation and natural environments - Non-forest 2 Conservation and natural environments - Woodland forest 3 Conservation and natural environments -Land Use and Forests Non-Woodland forest 4 Agriculture - Grazing - Non-forest 5 Agriculture - Grazing - Woodland forest Catchment Scale Land 6 Agriculture - Grazing - Non-woodland forest 7 Agriculture - Grazing - Irrigated 8 Agriculture - Cropping - Non-irrigated 9 Agriculture - Cropping - Irrigated 10 Agriculture - Horticulture - Non-irrigated 11 Agriculture - Horticulture - Irrigated 12 Production native forests and plantation forests 13 Other uses

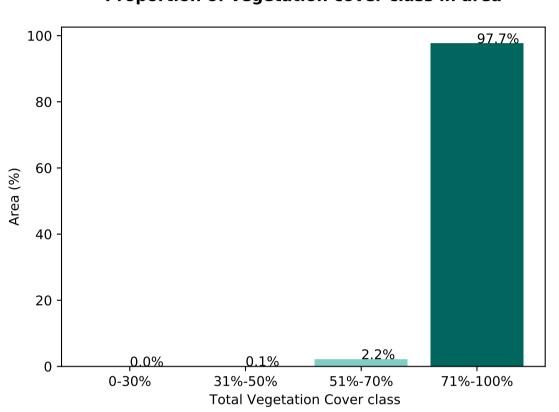
### **Proportion of each land class in area**

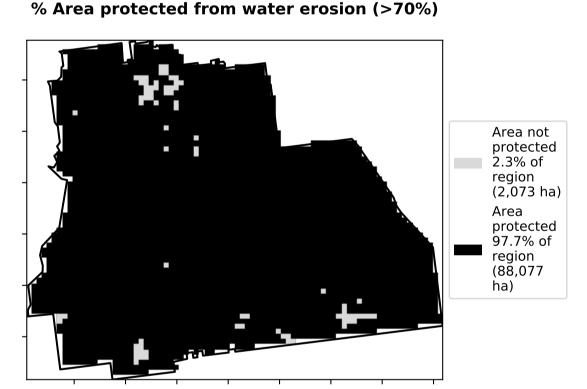


### **Total Vegetation Cover [%]**

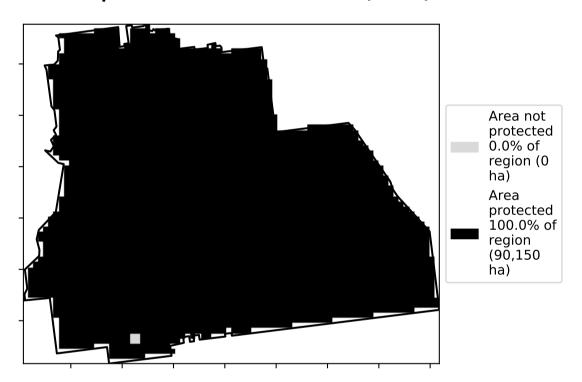


**Proportion of vegetation cover class in area** 

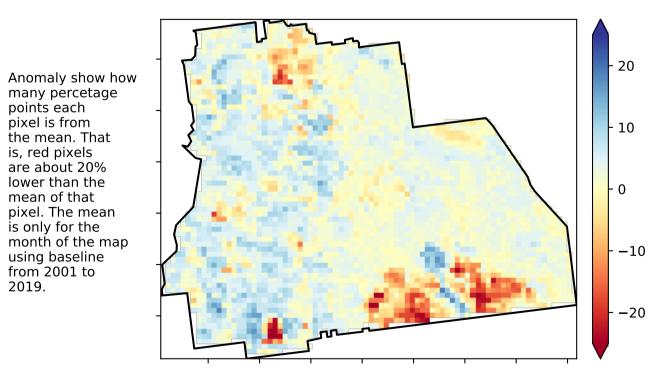




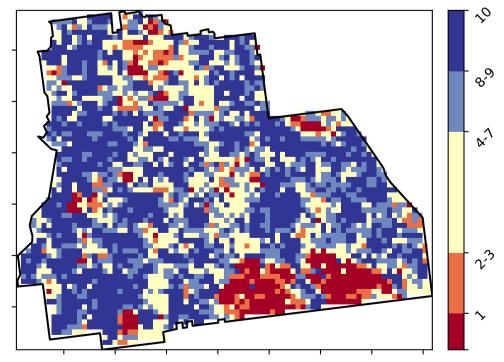
% Area protected from wind erosion (>50%)



### **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.

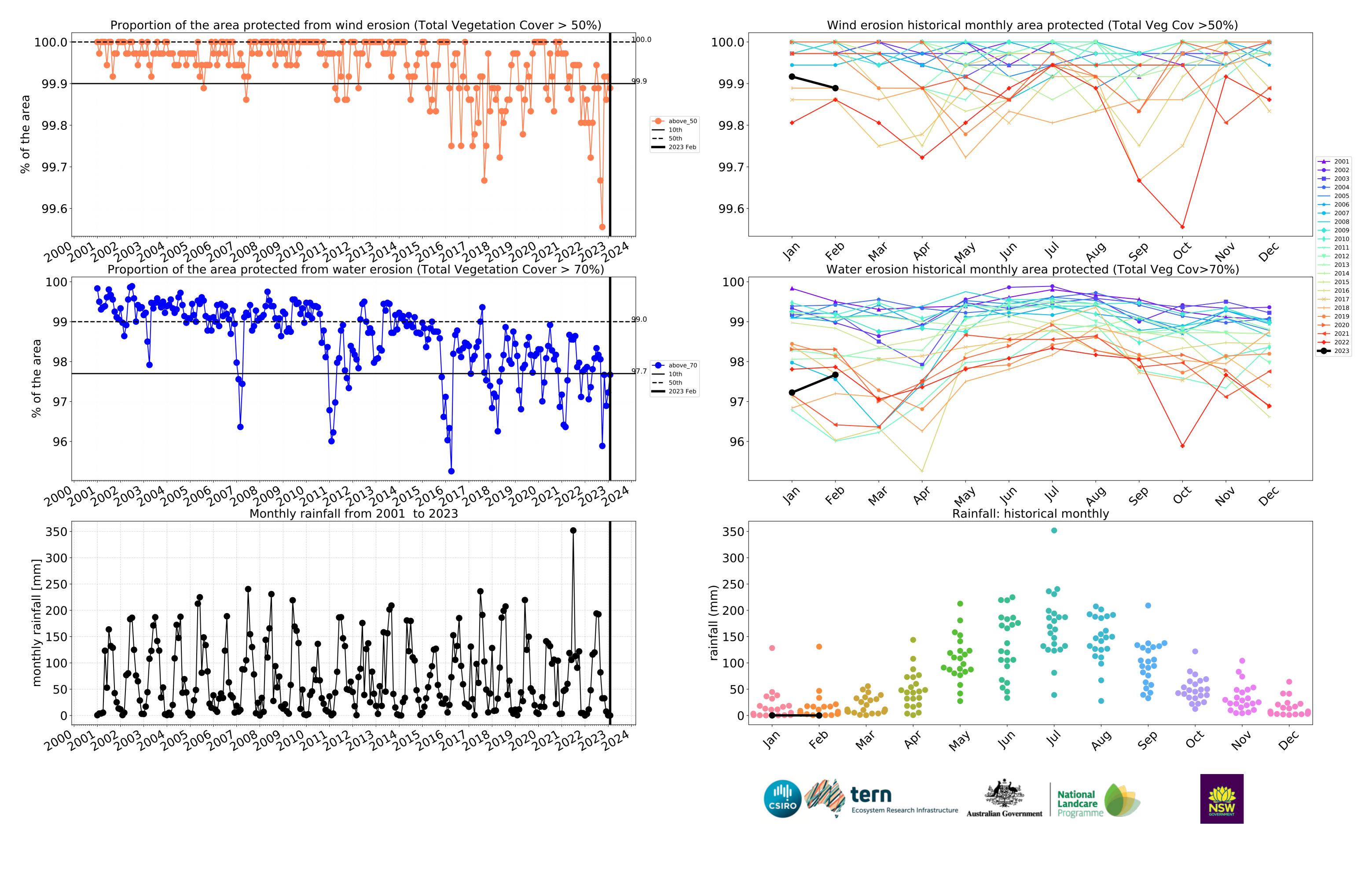


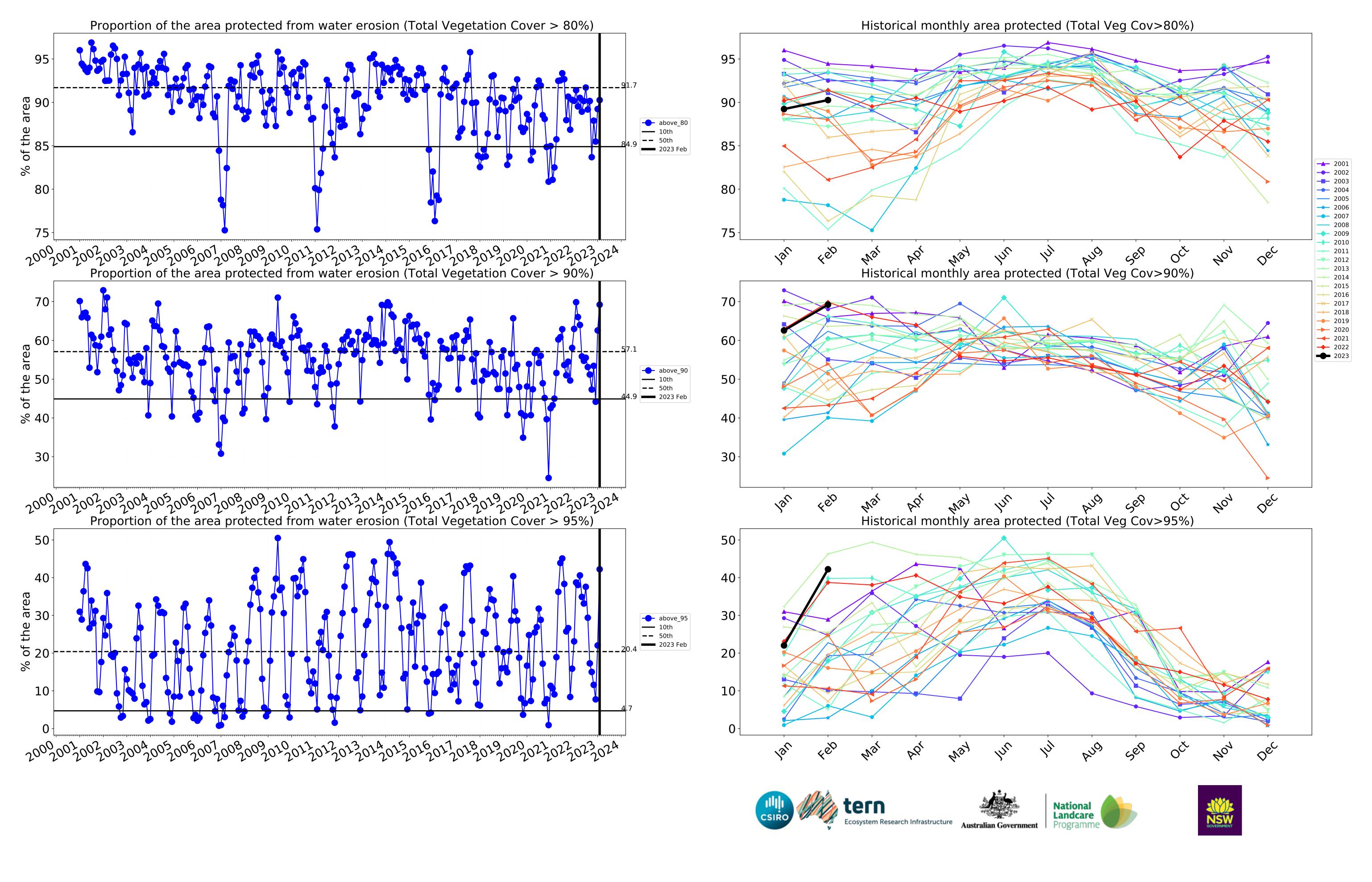












### **Conservation and natural environments**

### Land use and forest cover Catchment Scale Land Use and Forests of Australia (2018) ${\bf 1}$ Conservation and natural environments - Nonforest Derived from 2 Conservation and natural environments - Woodland Catchment Scale Land Use of Australia 3 Conservation and natural environments - Non-woodland forest (2018) and Forests of Australia (2018)

### 49.0% 36.3%

**Proportion of each land class in area** 

50

40 -

Area (%)

20

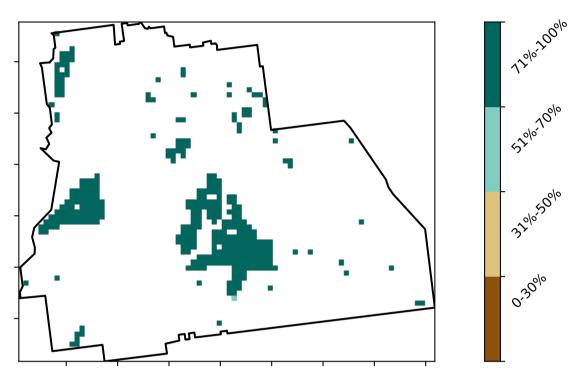
10

-0.5

14.7%

0.0

### **Total Vegetation Cover [%]**



Proportion of vegetation cover class in area

1.0

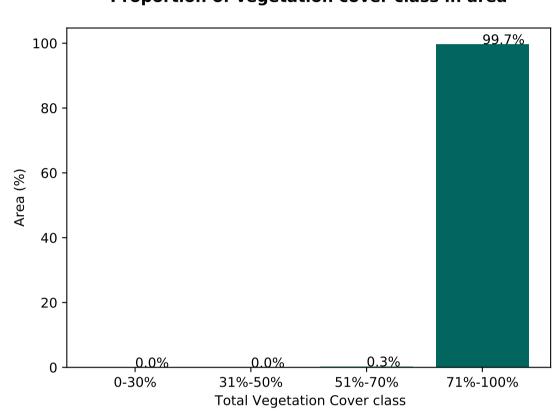
Land use class

1.5

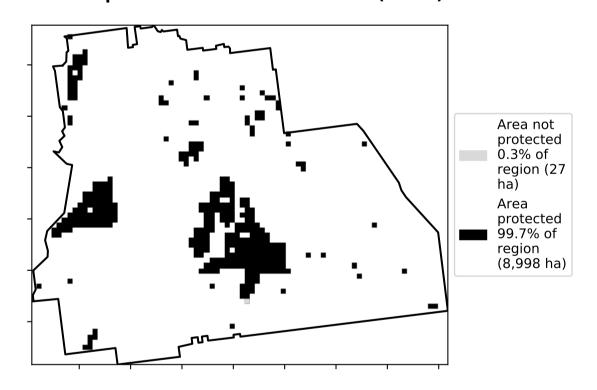
2.0

2.5

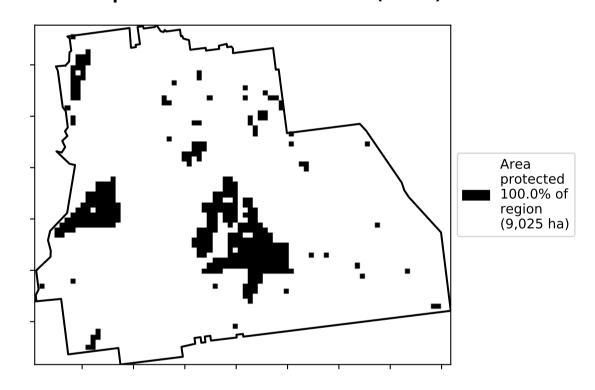
0.5



### % Area protected from water erosion (>70%)



% Area protected from wind erosion (>50%)



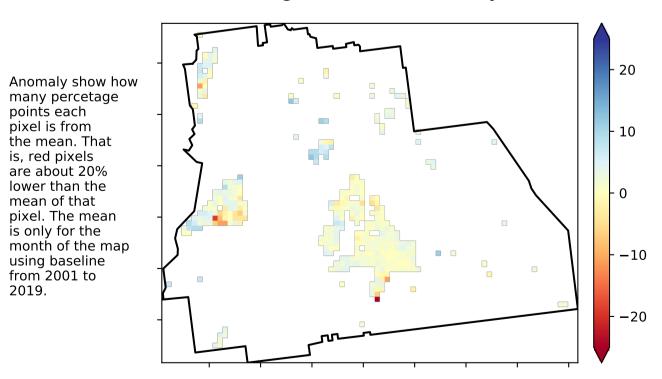
### **Total Vegetation Cover Anomaly [%]**

is, red pixels

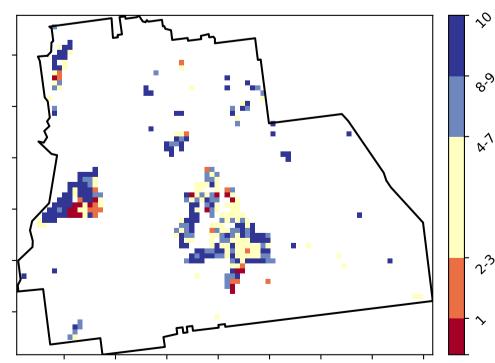
are about 20% lower than the mean of that pixel. The mean

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.



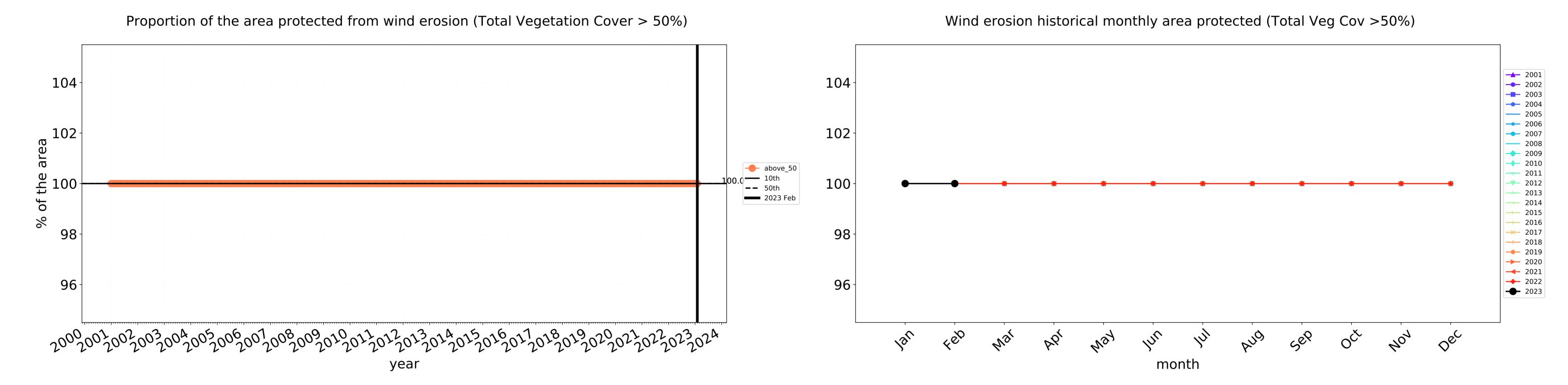


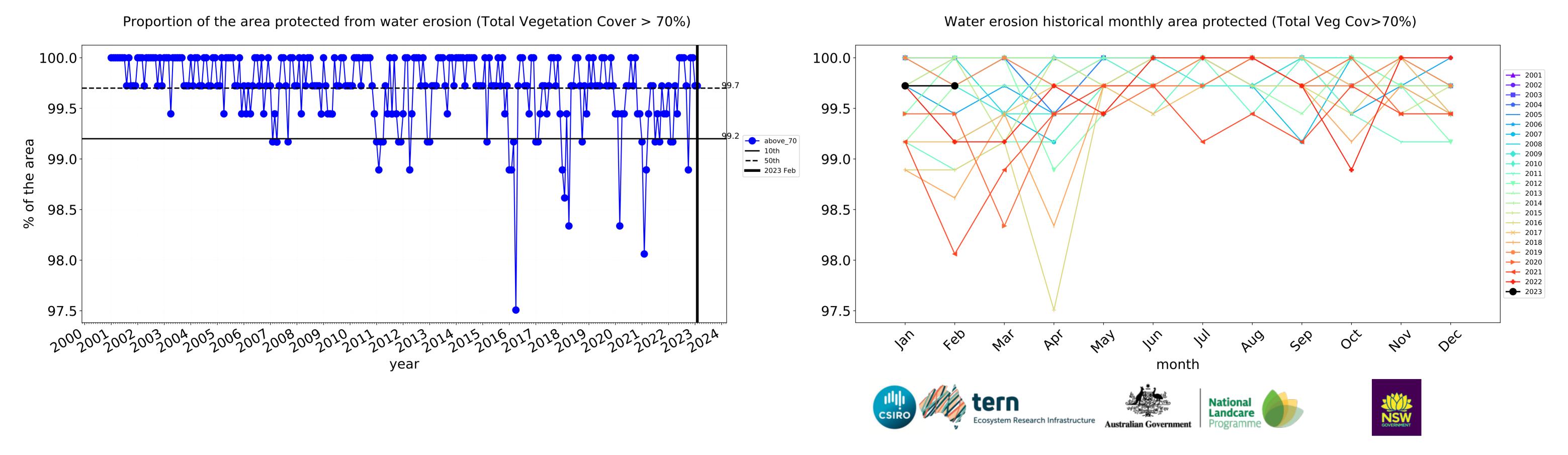


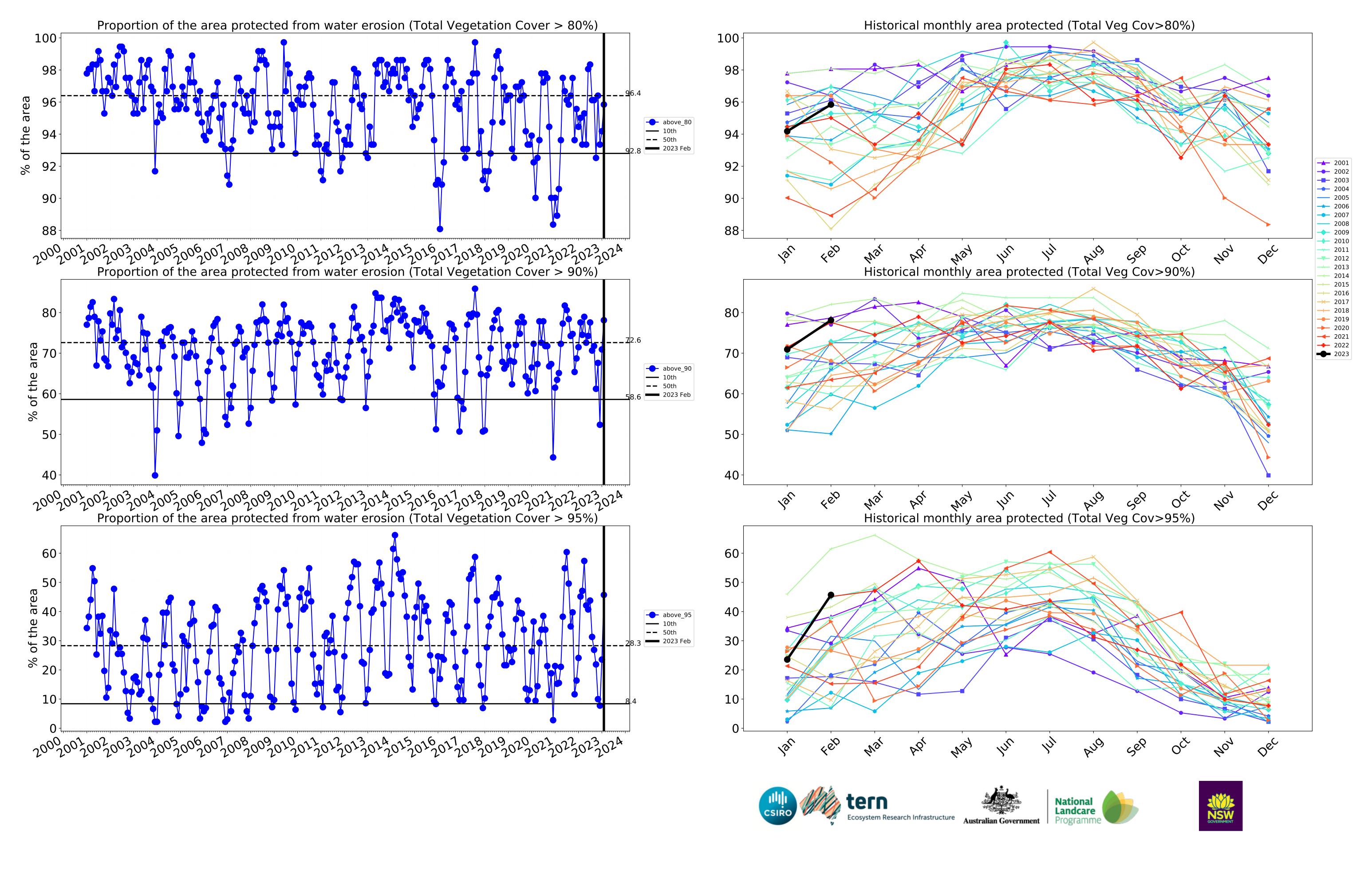




### **Conservation and natural environments timeseries**



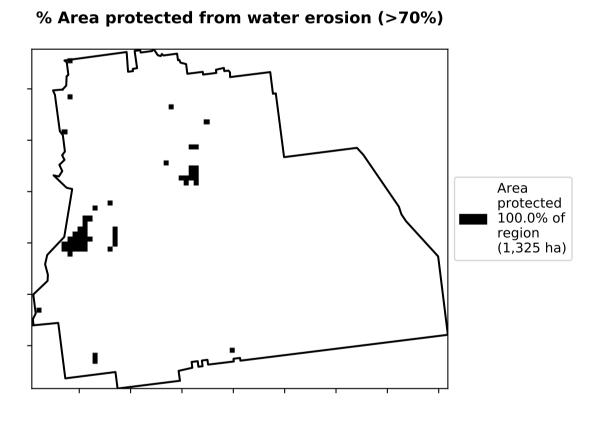


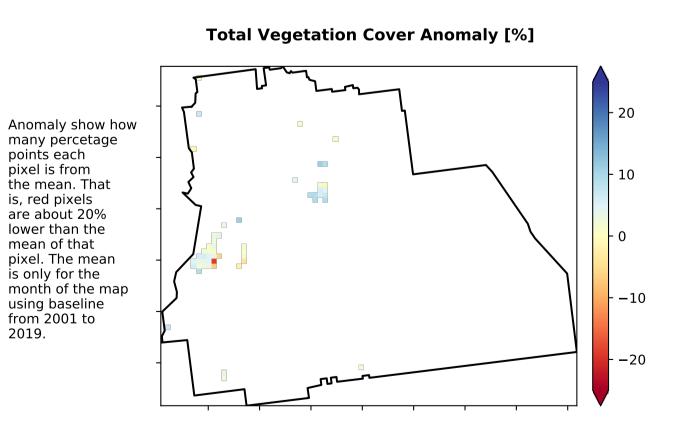


### **Conservation and natural environments non forest**

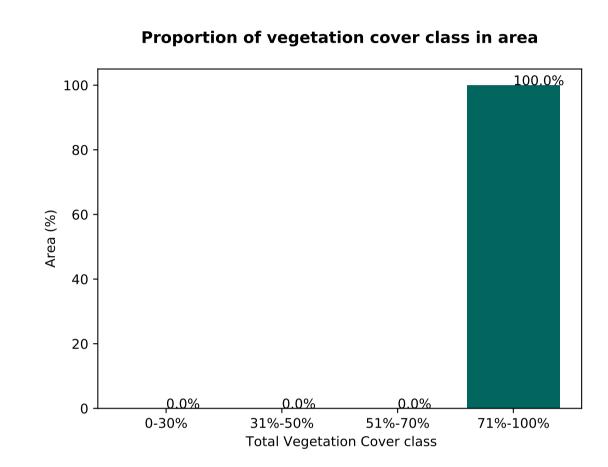
### Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) (2018) and Forests of Australia (2018)

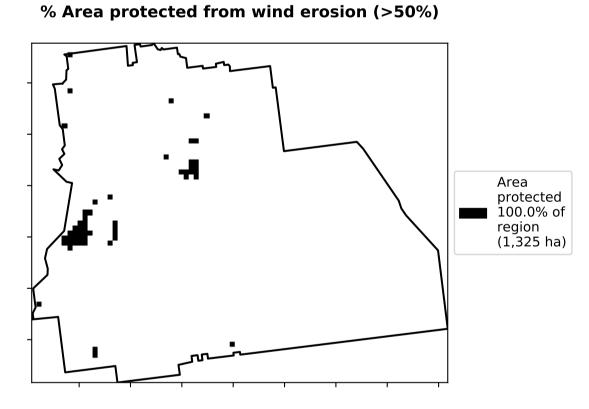
# Total Vegetation Cover [%]

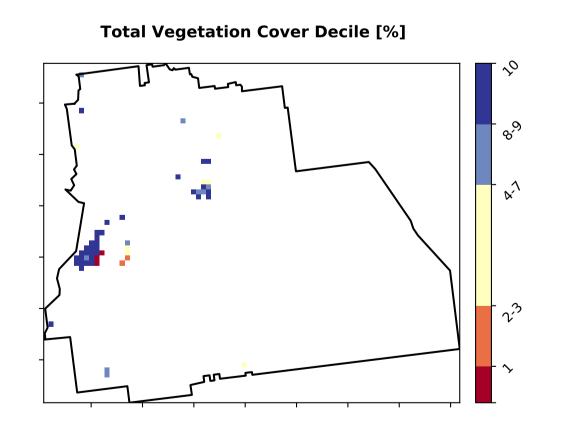




Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.







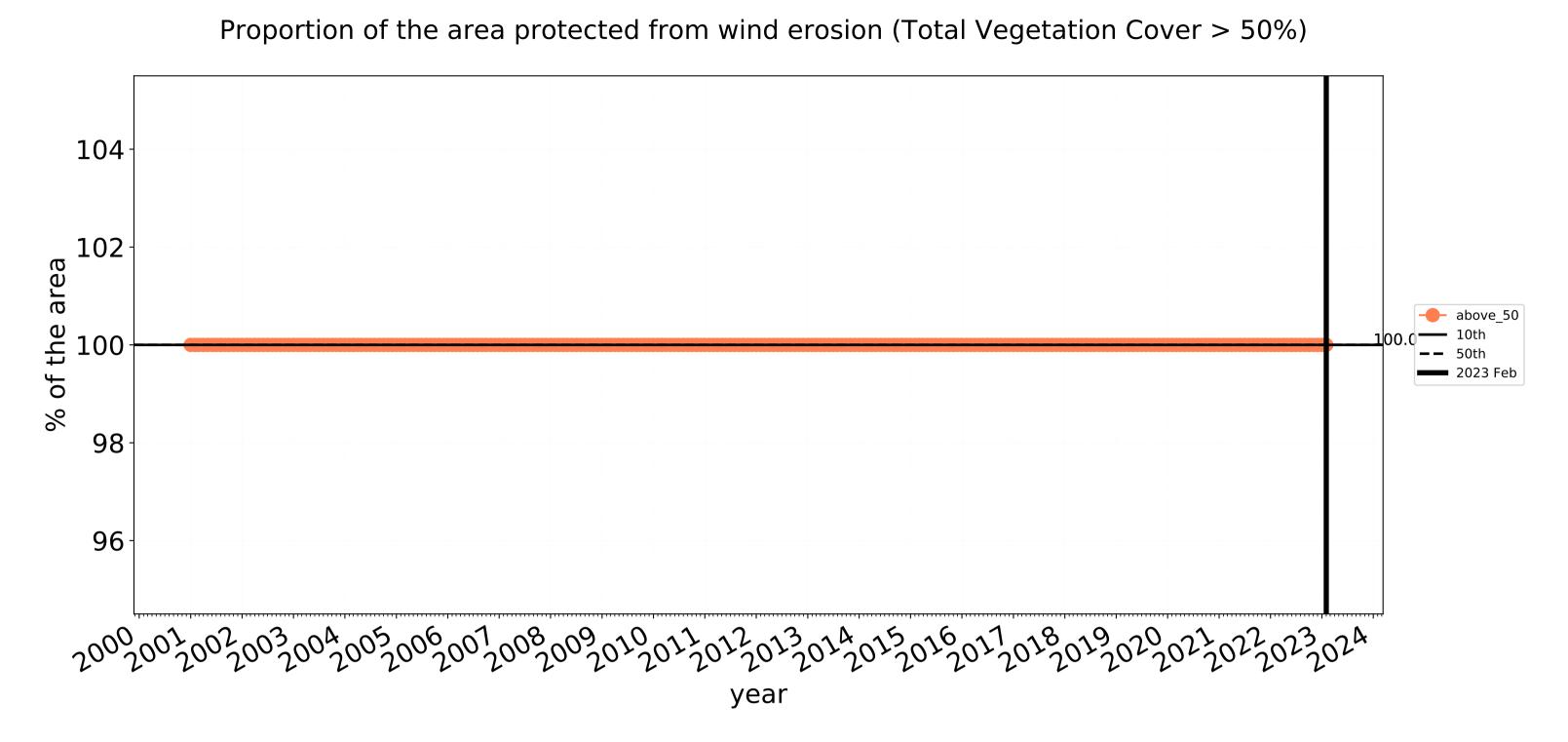




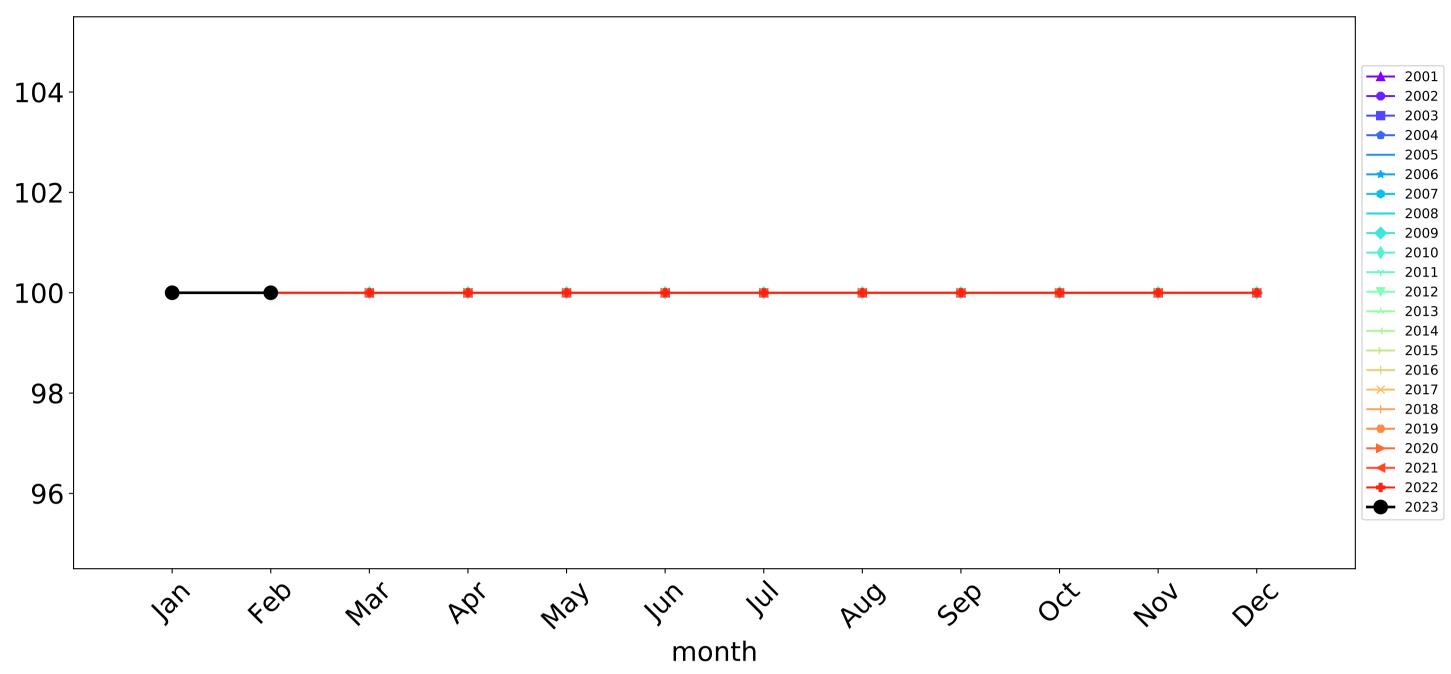


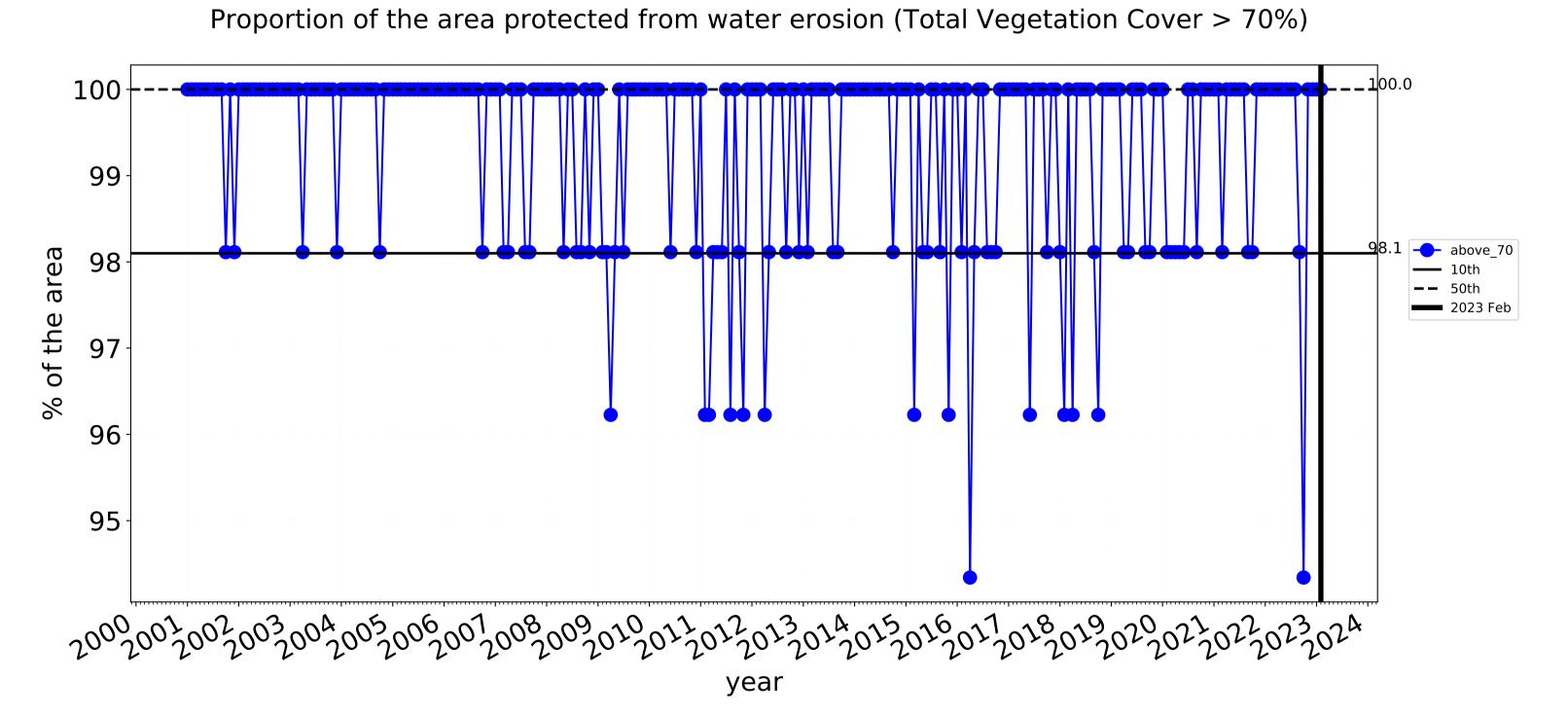


### **Conservation and natural environments non forest timeseries**

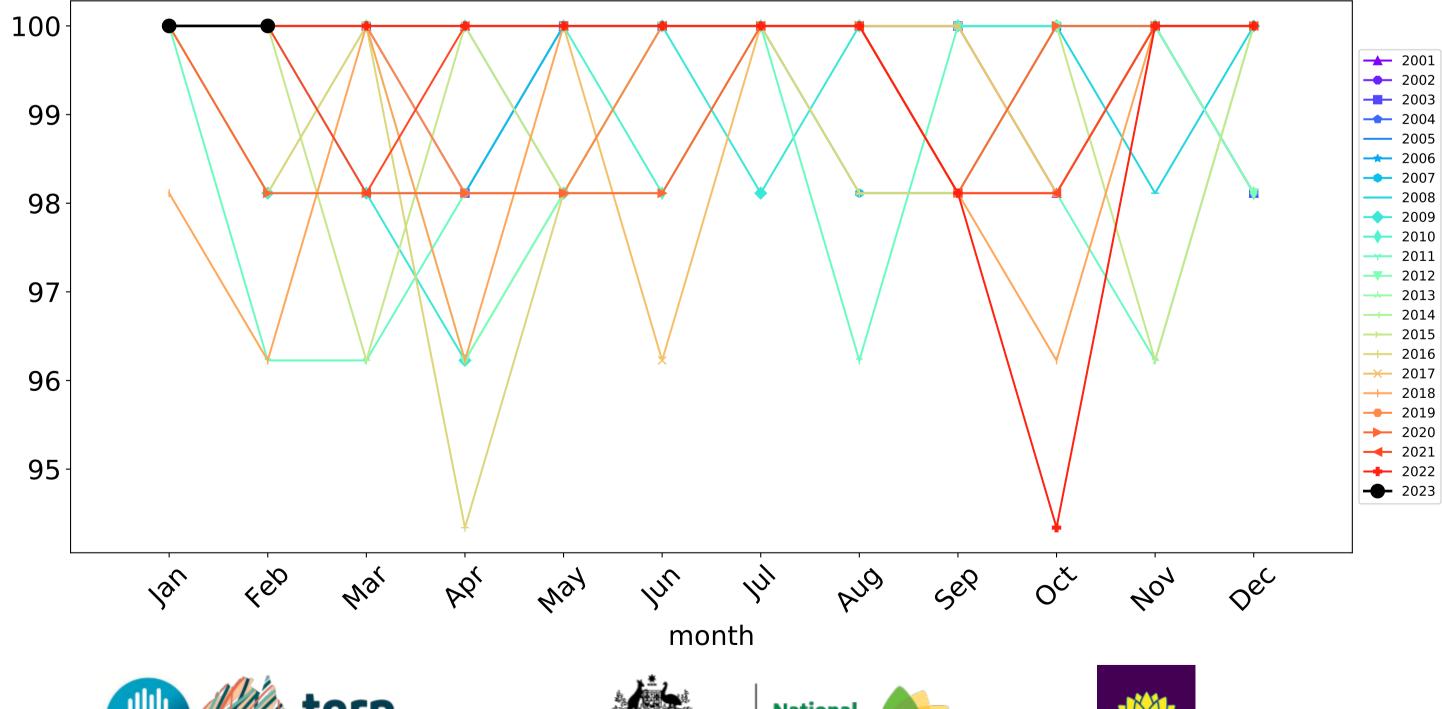


### Wind erosion historical monthly area protected (Total Veg Cov >50%)





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

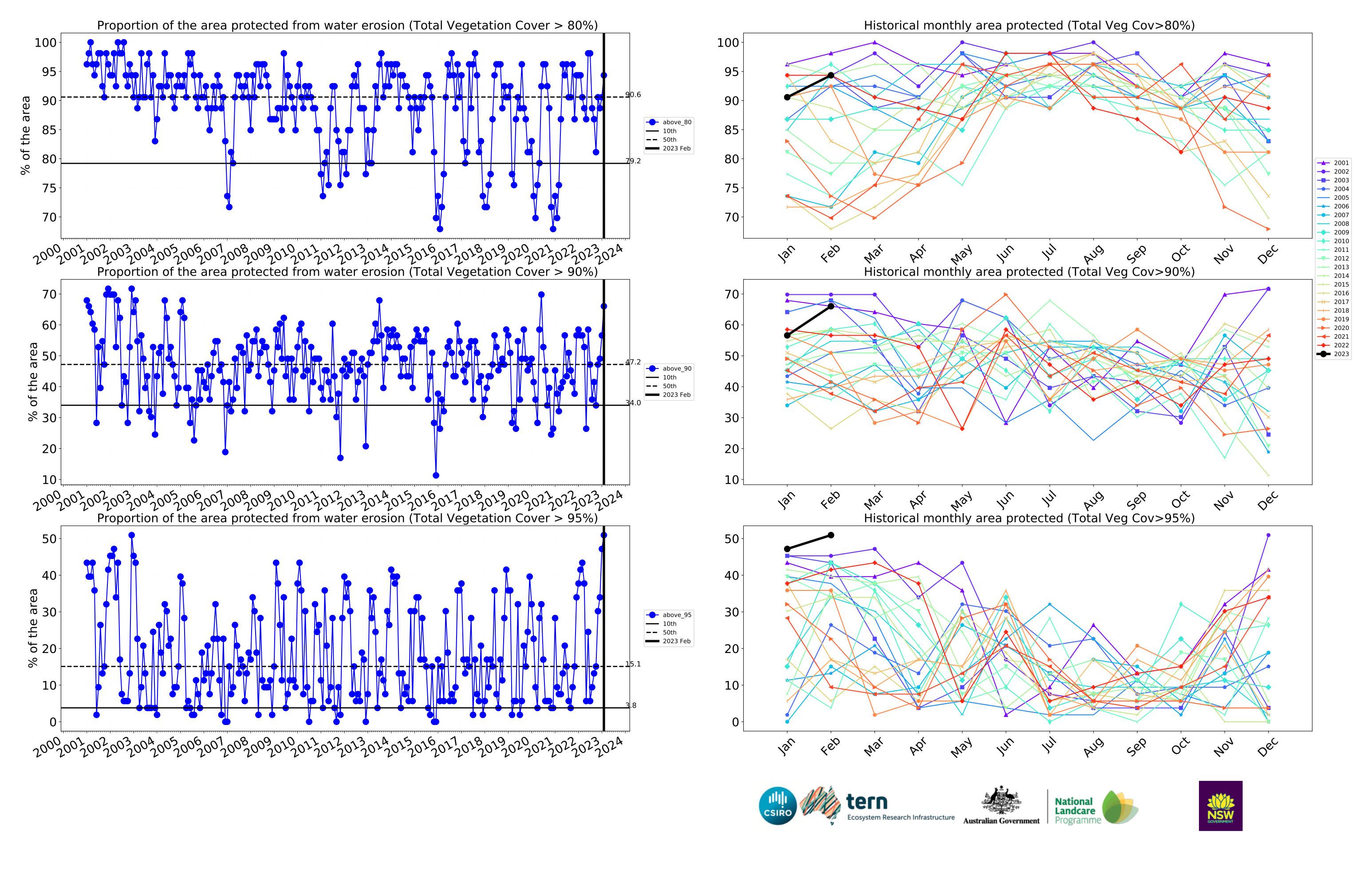










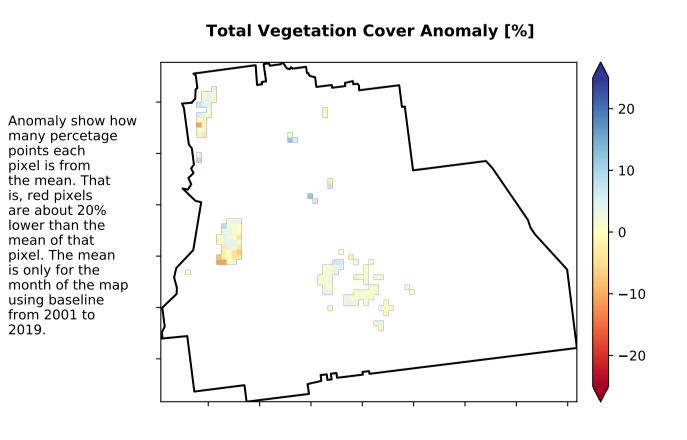


### **Conservation and natural environments Woodland forest**

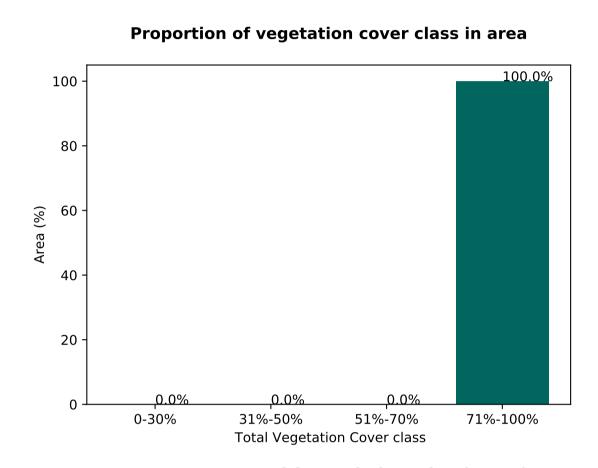
# Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) Australia (2018) Australia (2018)

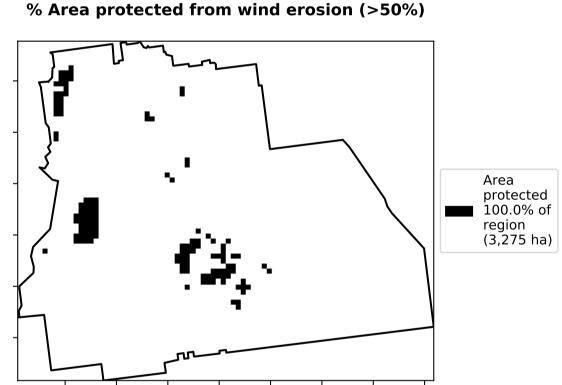
## Total Vegetation Cover [%]

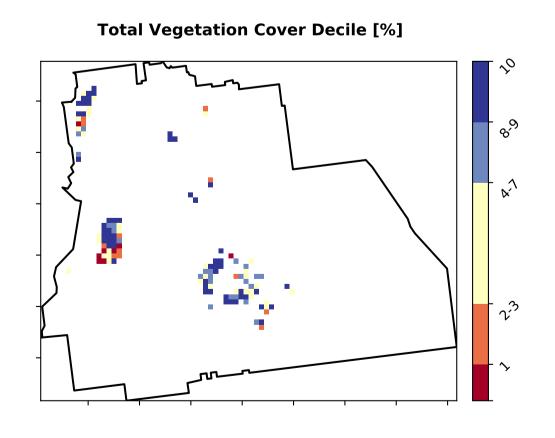
# % Area protected from water erosion (>70%) Area protected 100.0% of region (3,275 ha)



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.







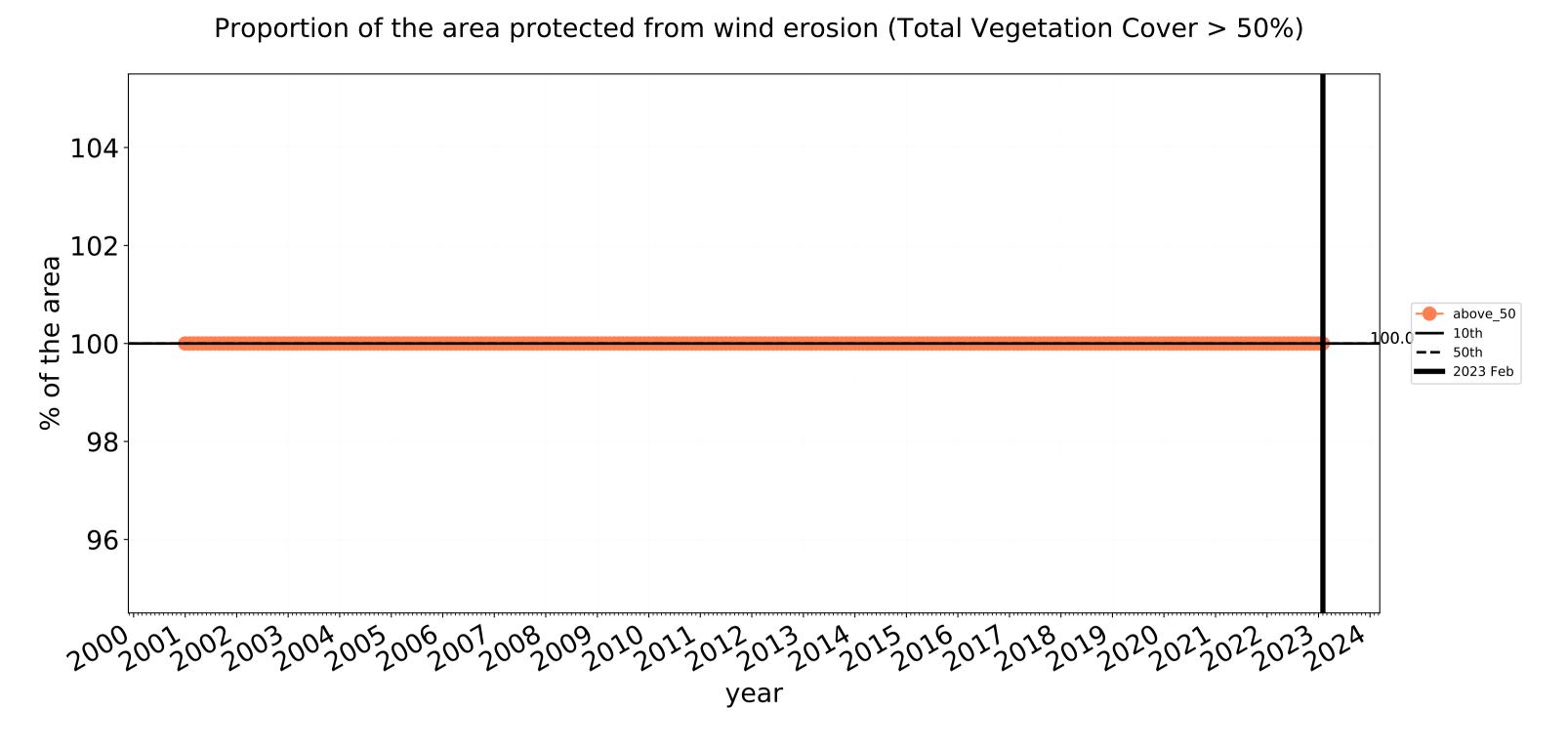




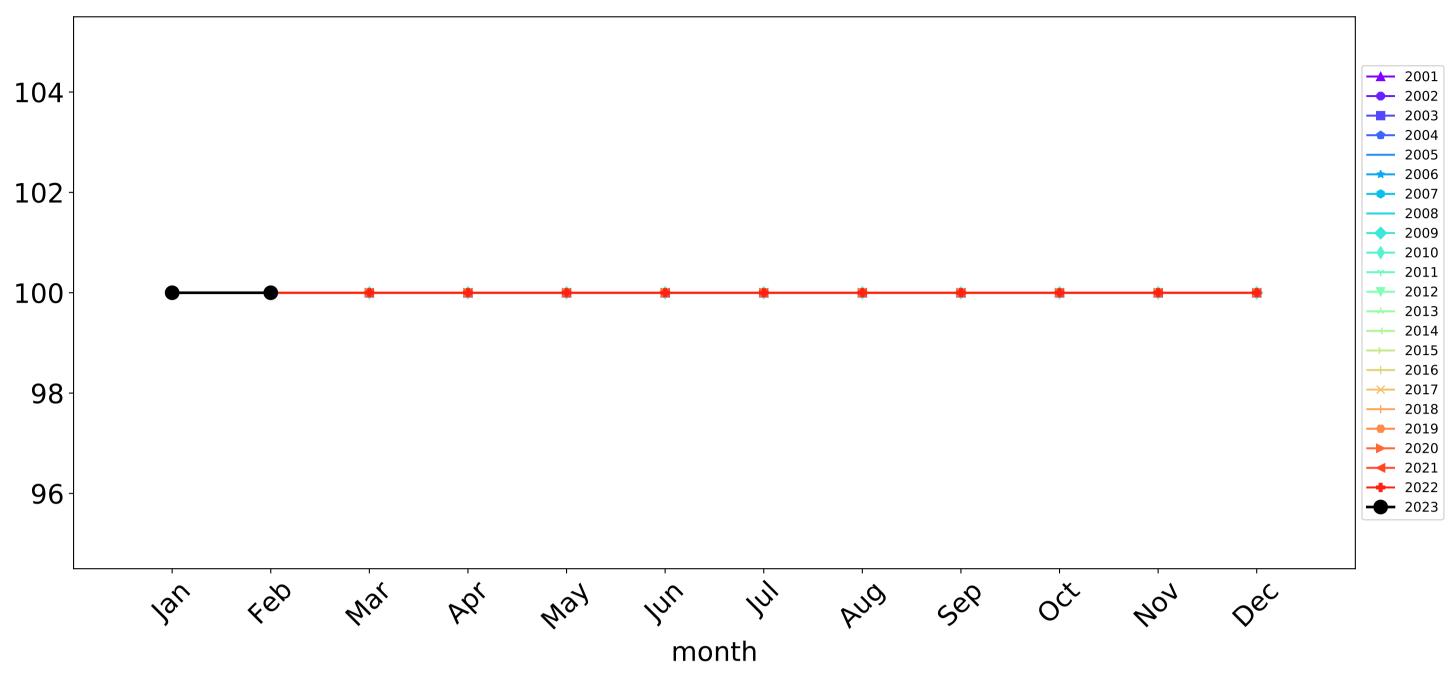


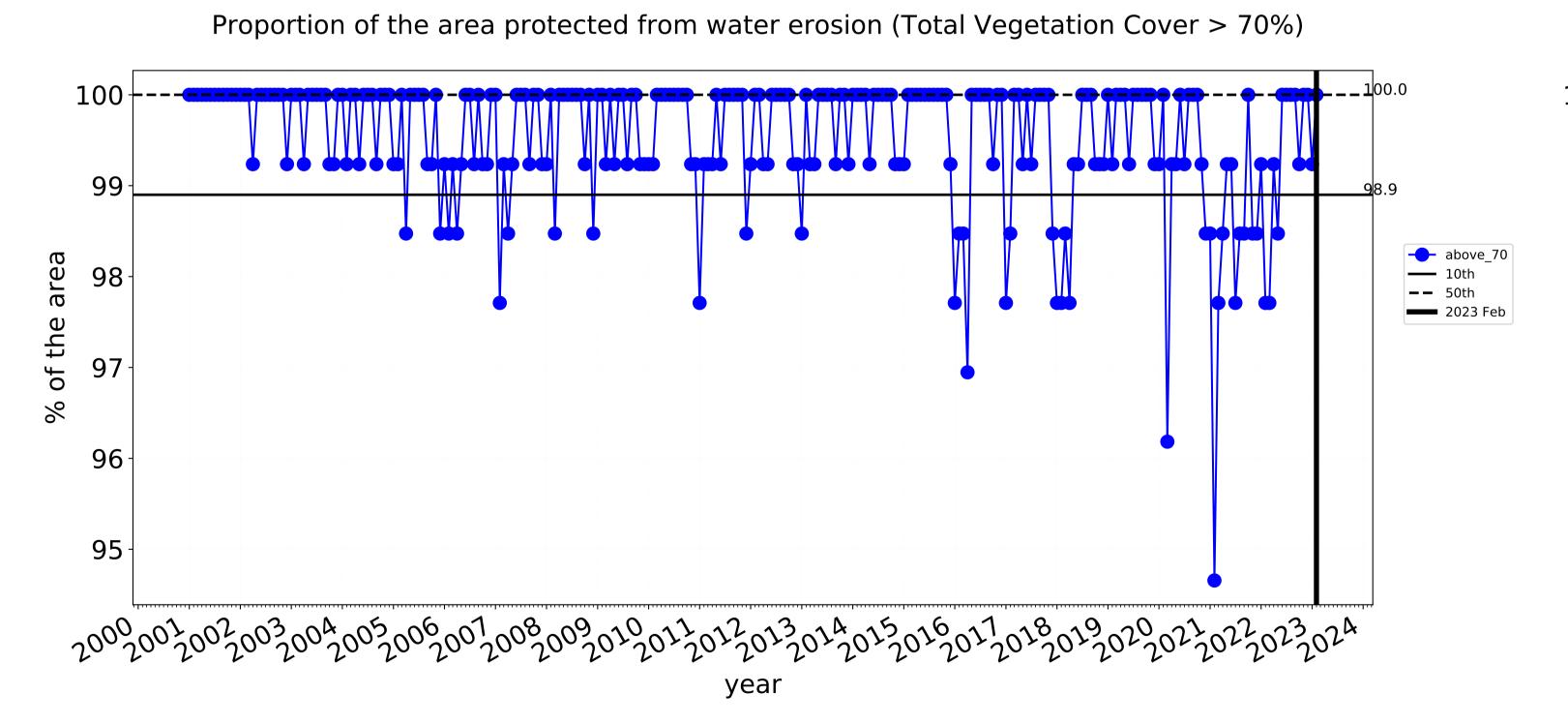


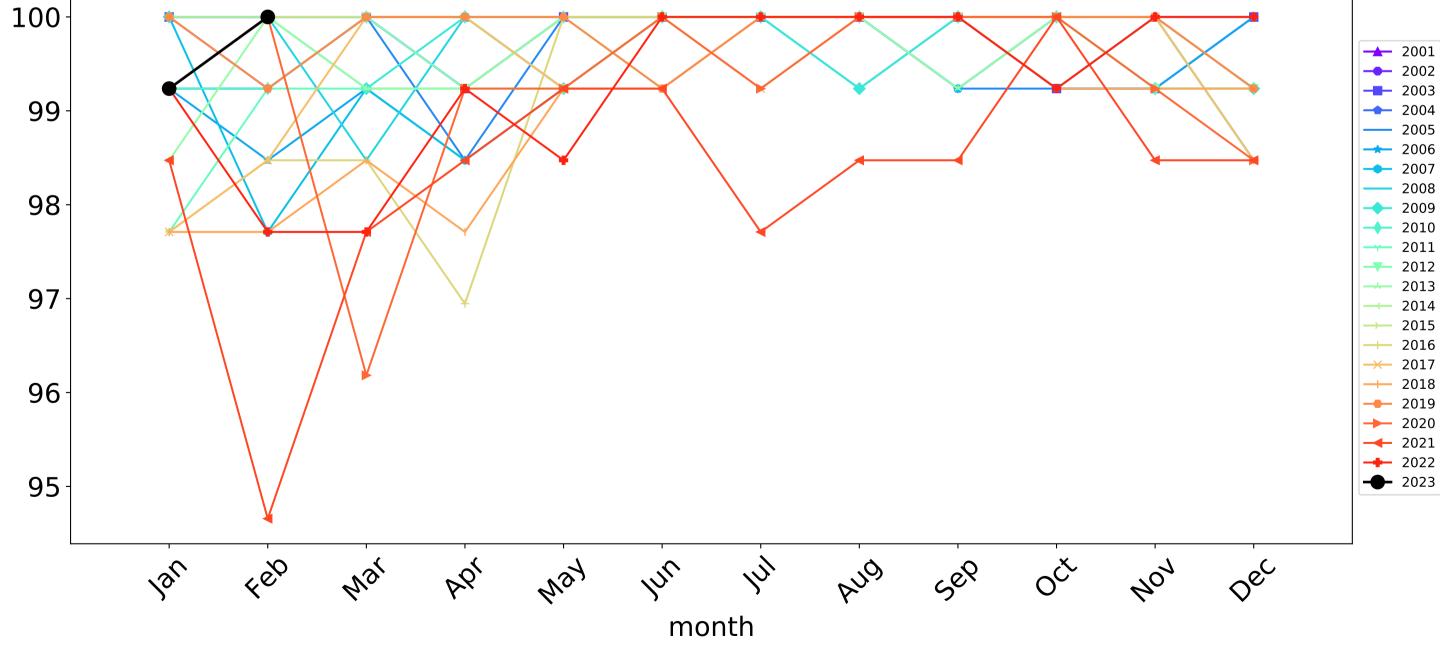
### **Conservation and natural environments Woodland forest timeseries**



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

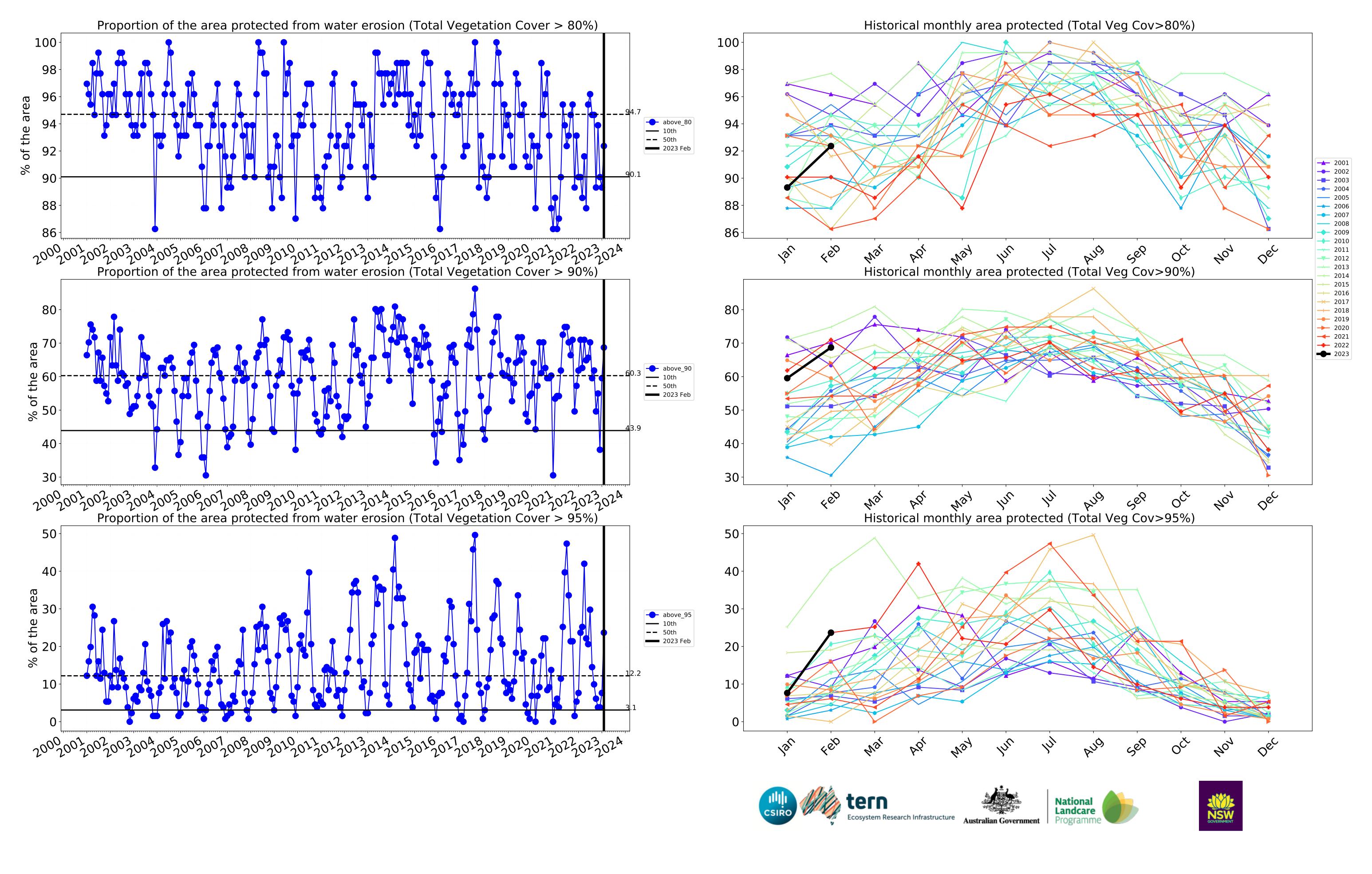






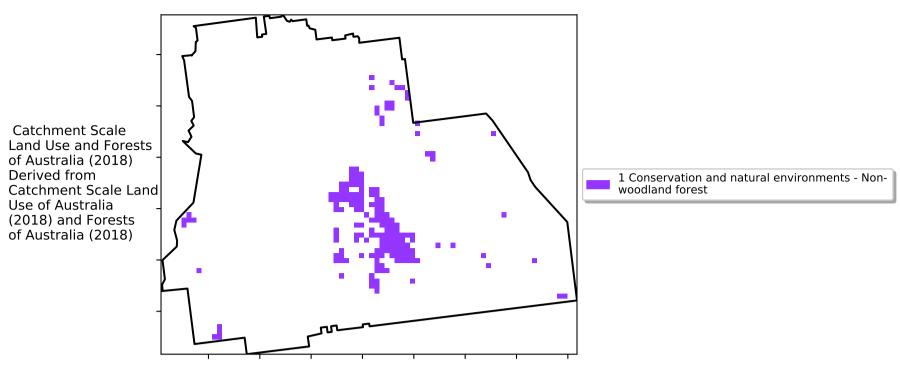
National Landcare

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

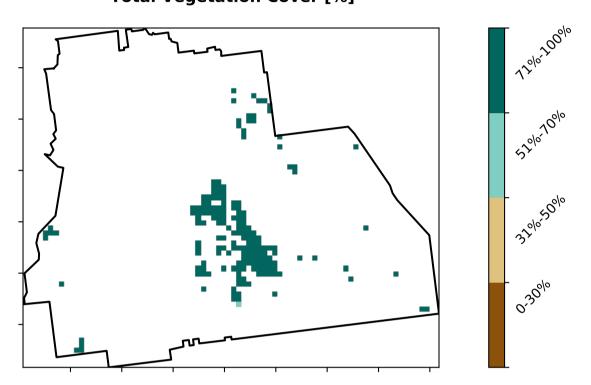


### **Conservation and natural environments Forest (non woodland)**

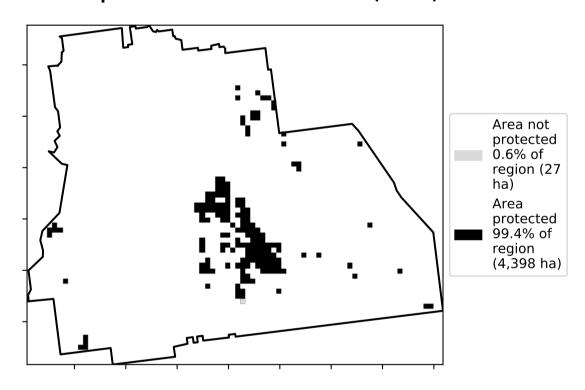
### Land use and forest cover



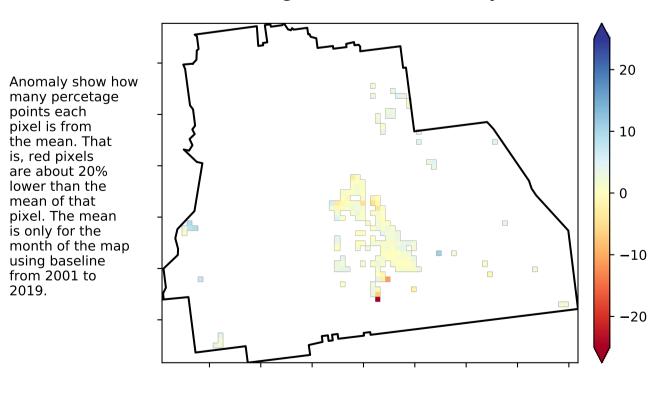
### **Total Vegetation Cover [%]**



% Area protected from water erosion (>70%)

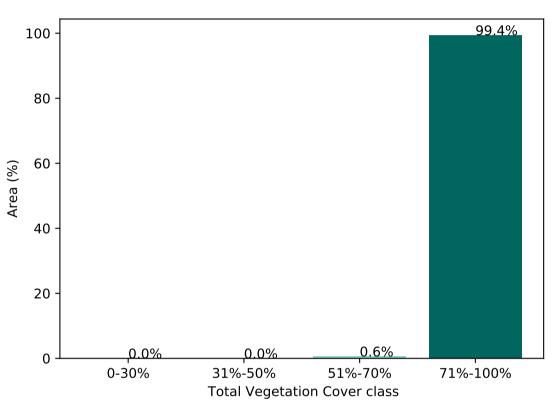


**Total Vegetation Cover Anomaly [%]** 

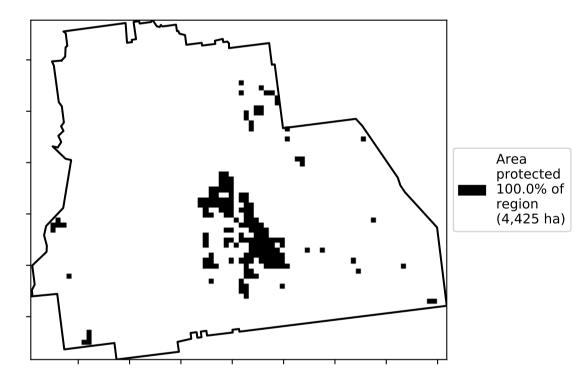


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

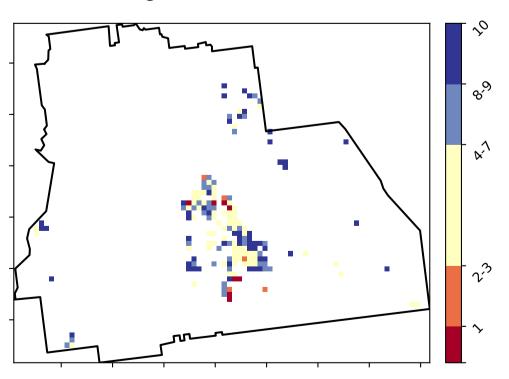
### Proportion of vegetation cover class in area



### % Area protected from wind erosion (>50%)



Total Vegetation Cover Decile [%]



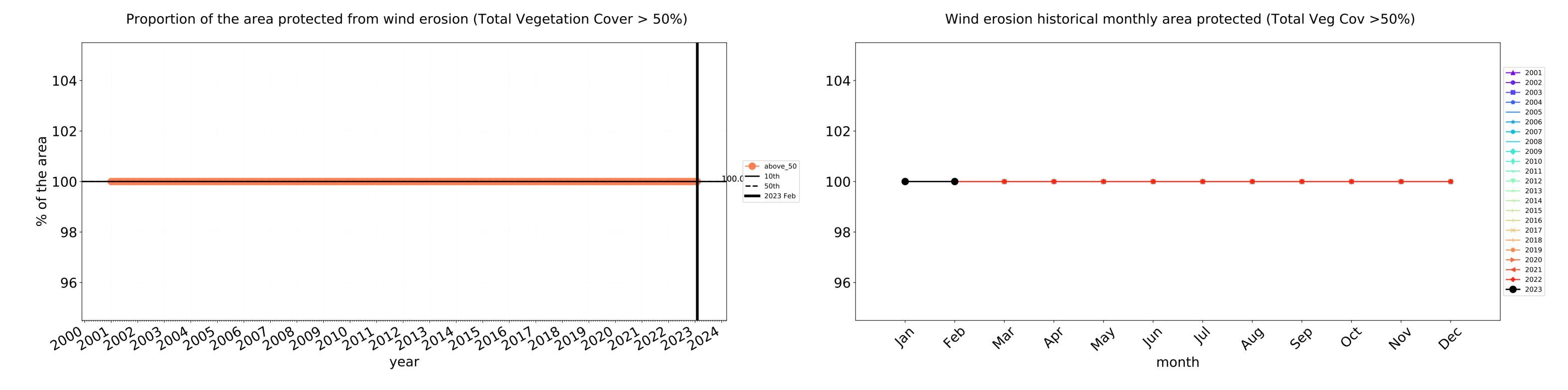


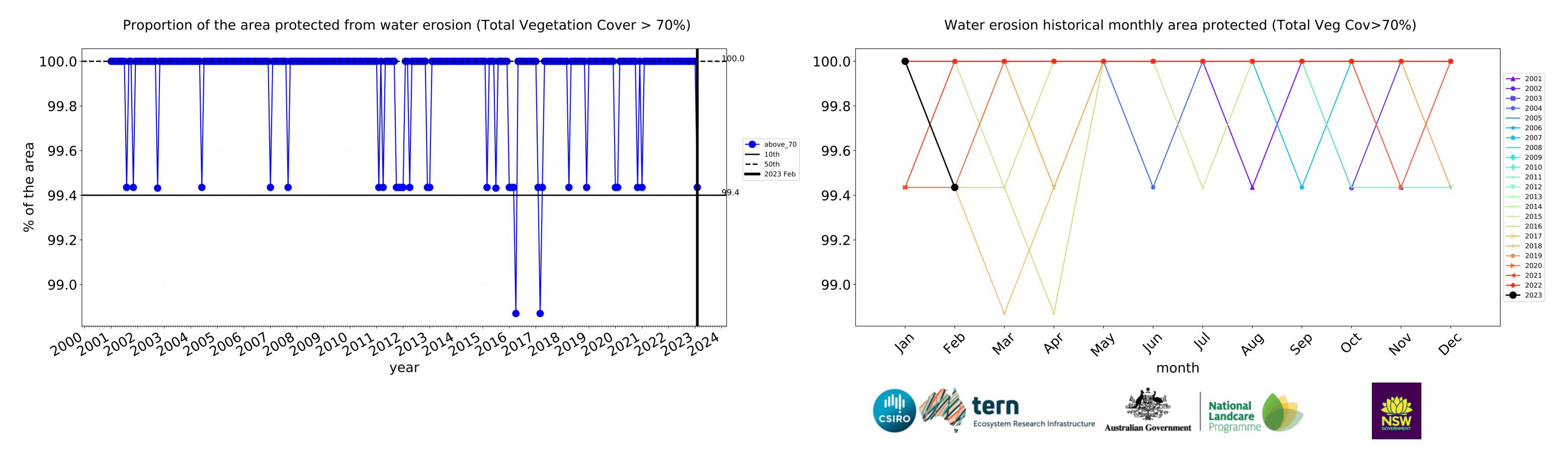


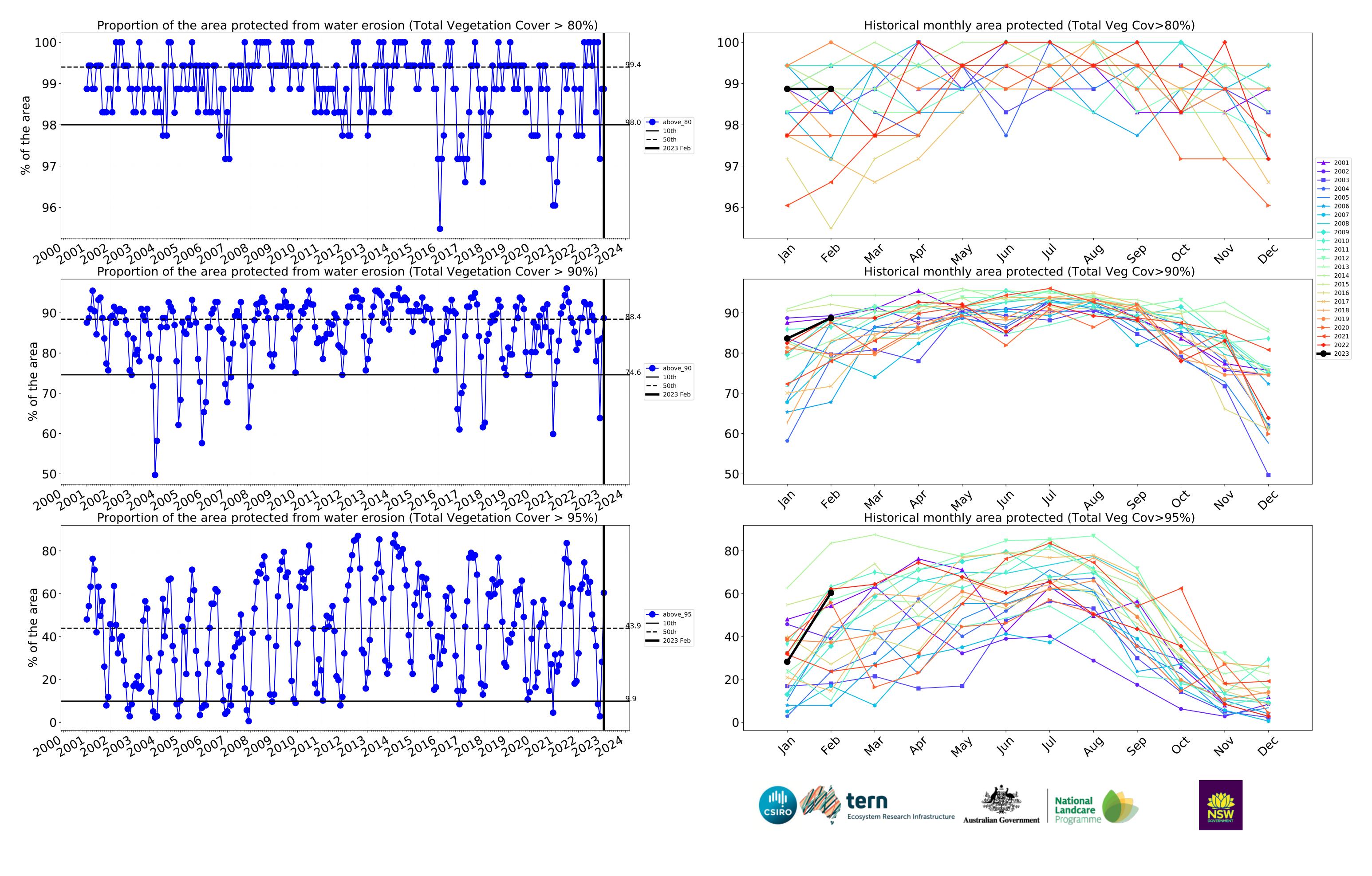




### Conservation and natural environments Forest (non woodland) timeseries

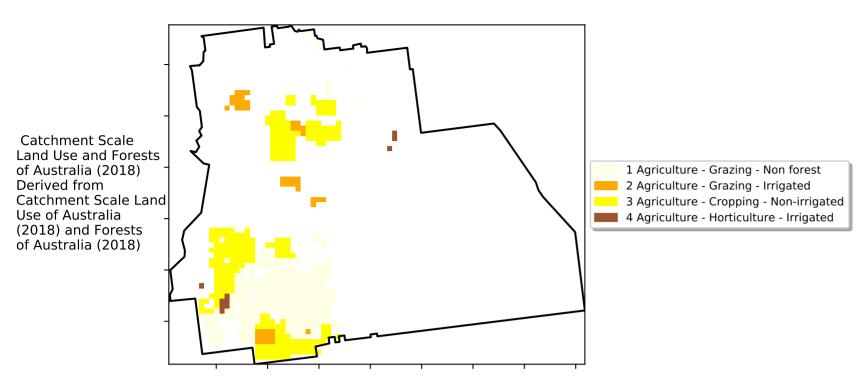




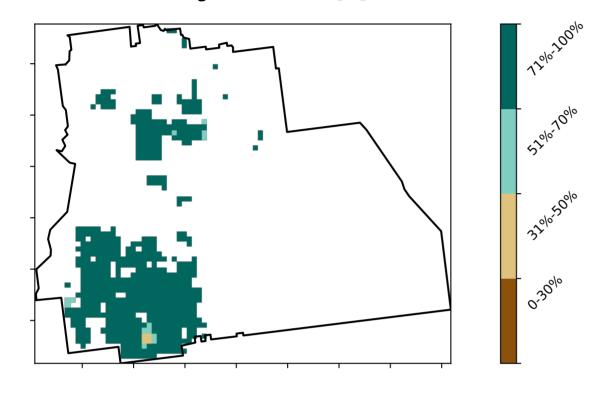


### **Agriculture**

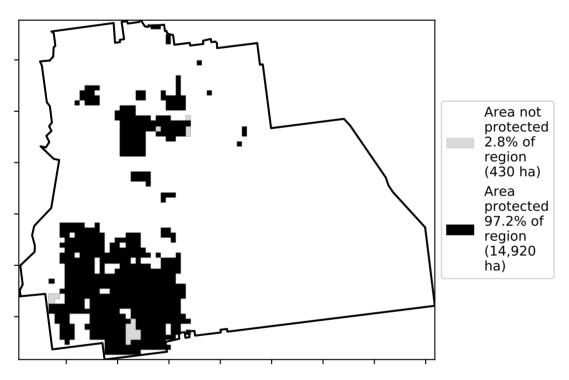
### Land use and forest cover



### **Total Vegetation Cover [%]**



### % Area protected from water erosion (>70%)



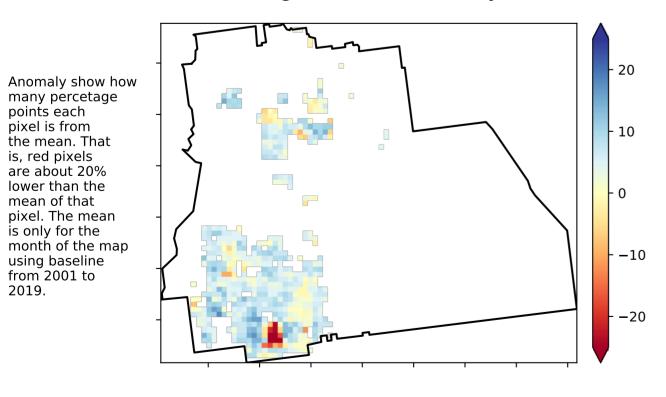
### **Total Vegetation Cover Anomaly [%]**

the mean. That is, red pixels

are about 20% lower than the mean of that

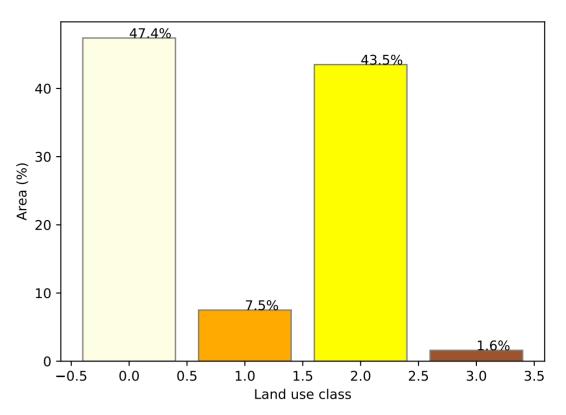
pixel. The mean

using baseline from 2001 to 2019.

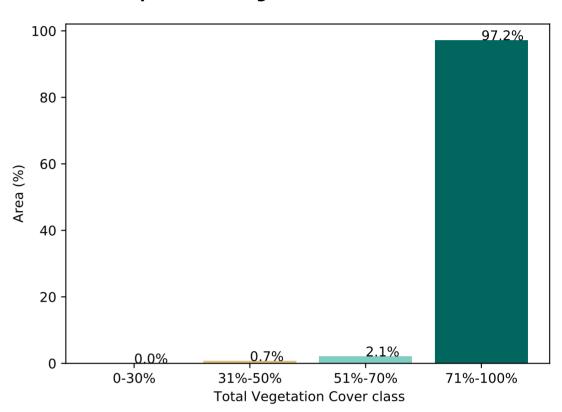


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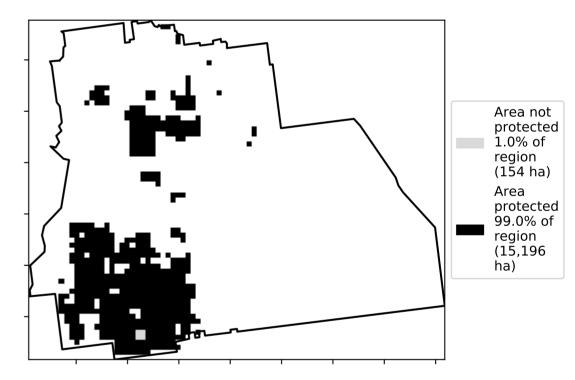
### **Proportion of each land class in area**

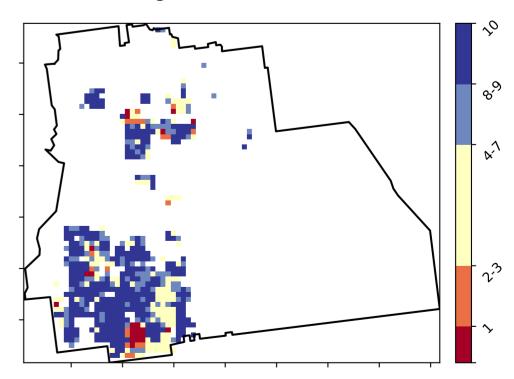


Proportion of vegetation cover class in area



### % Area protected from wind erosion (>50%)







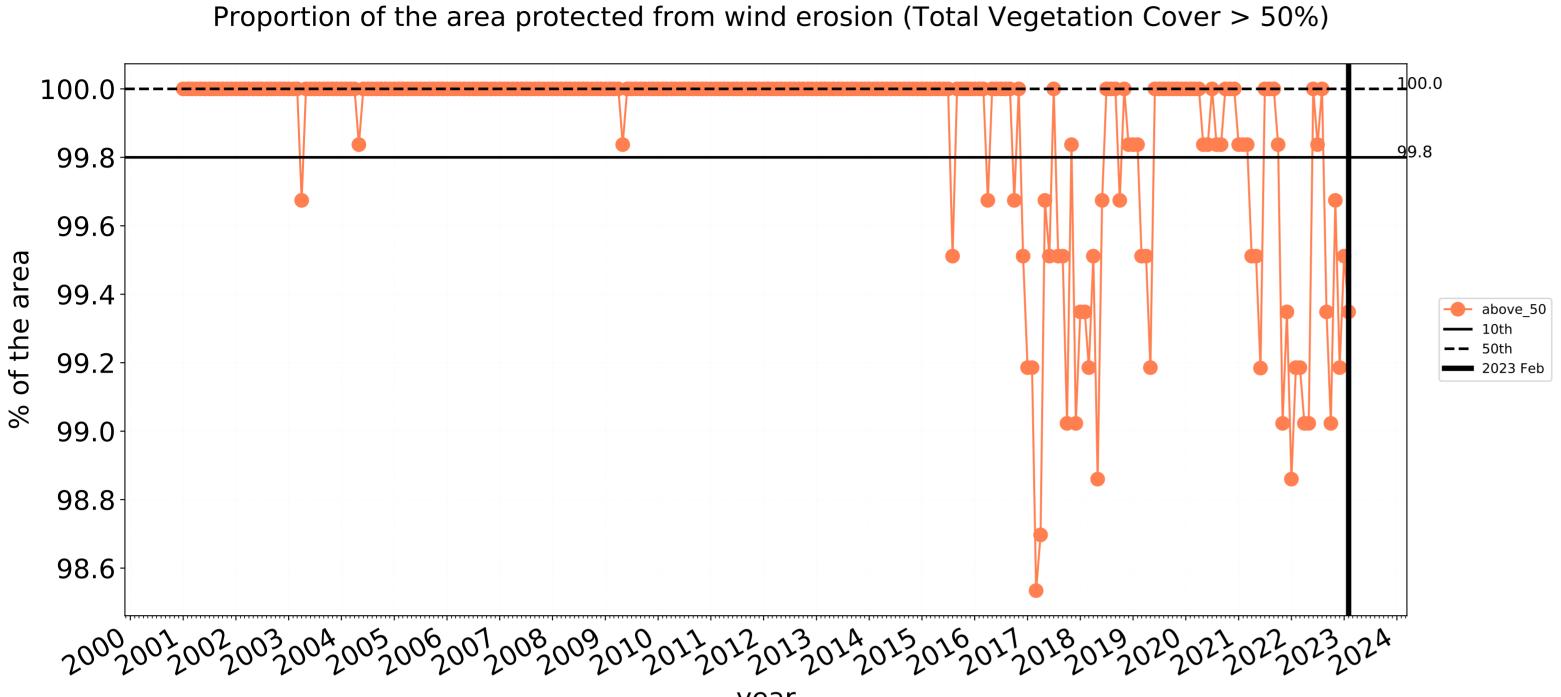


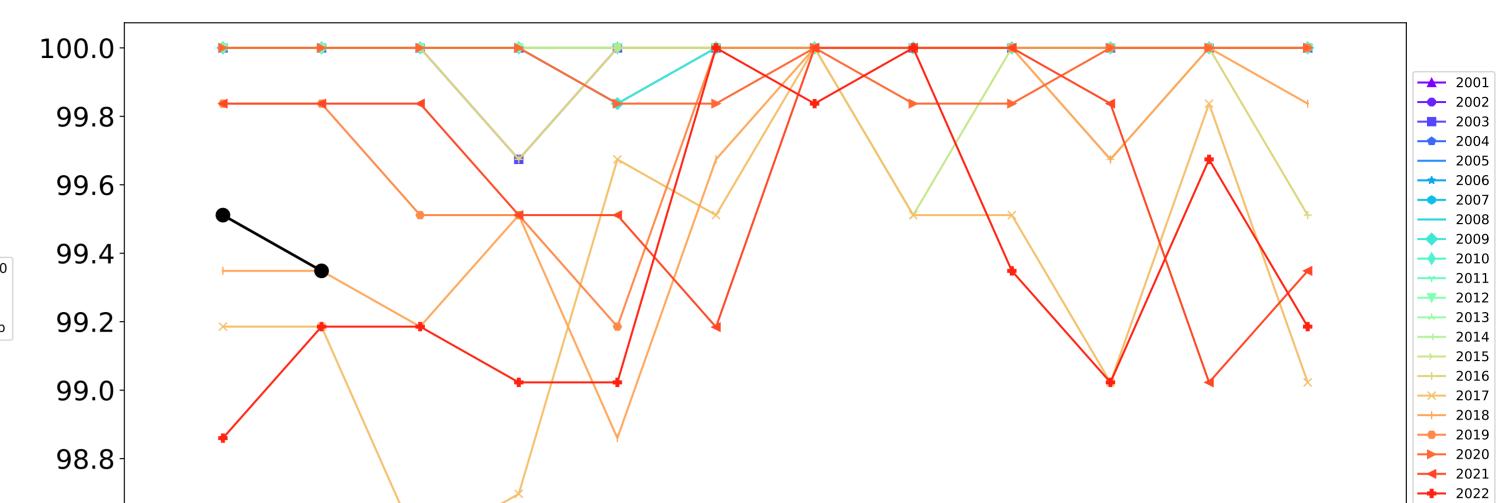




### **Agriculture timeseries**

98.6

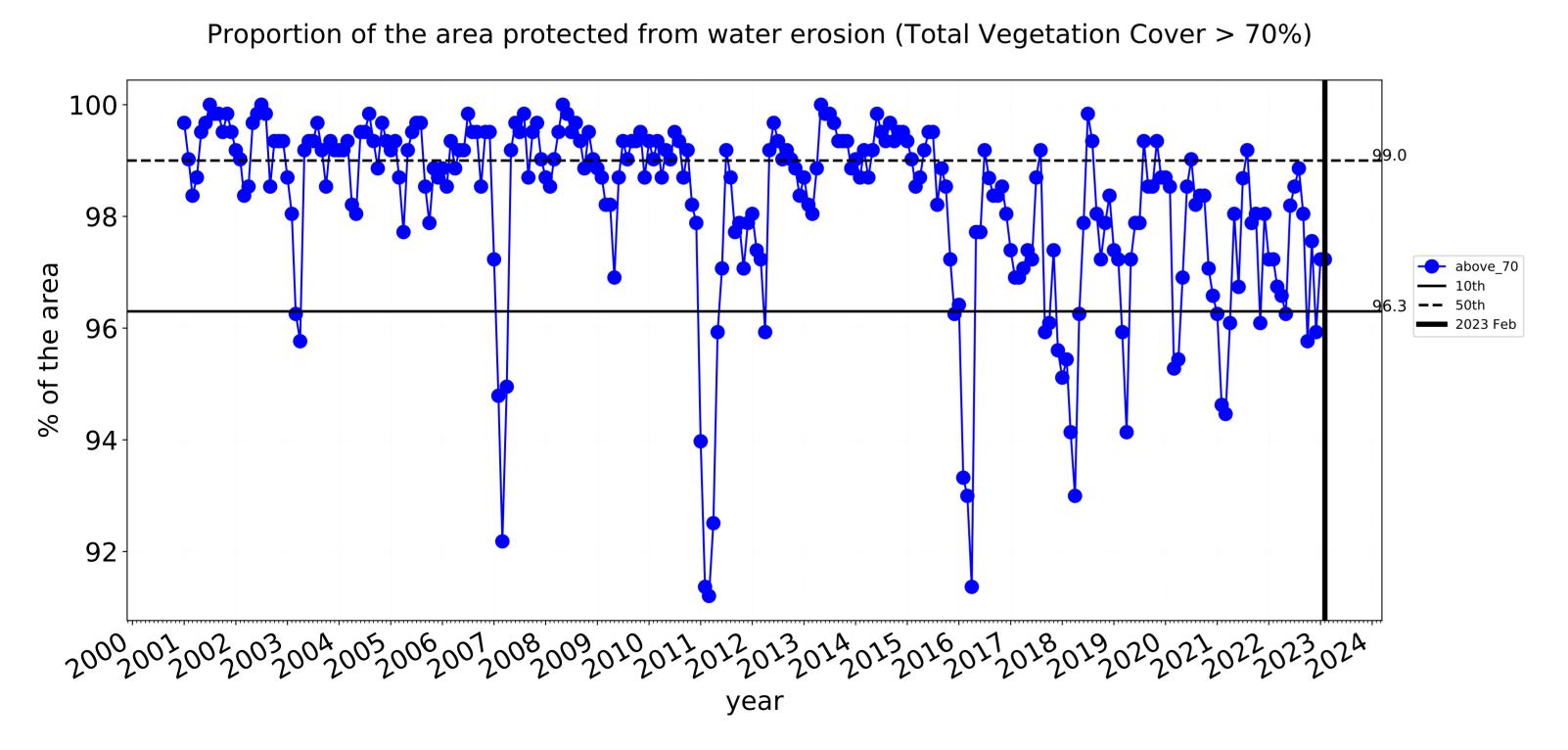


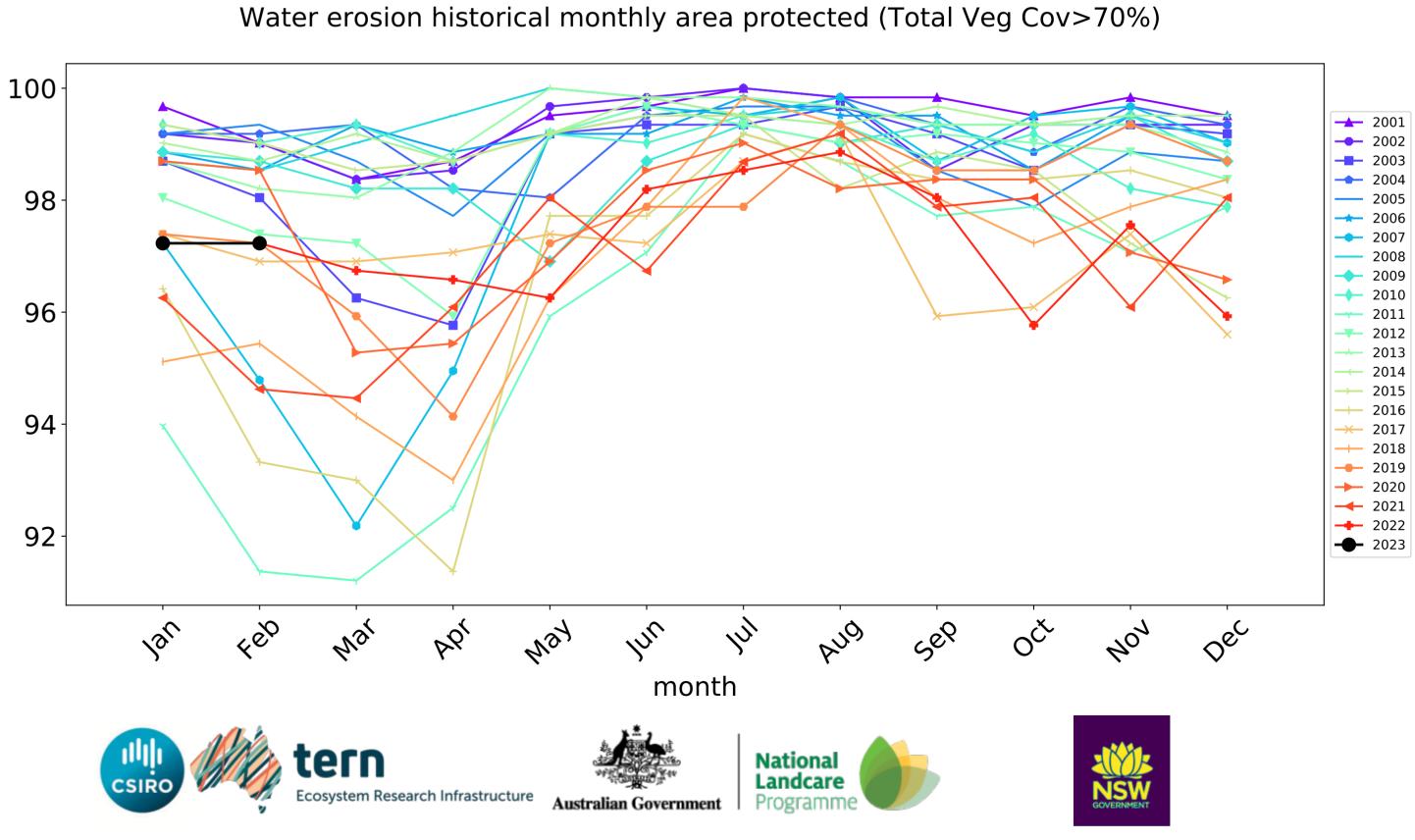


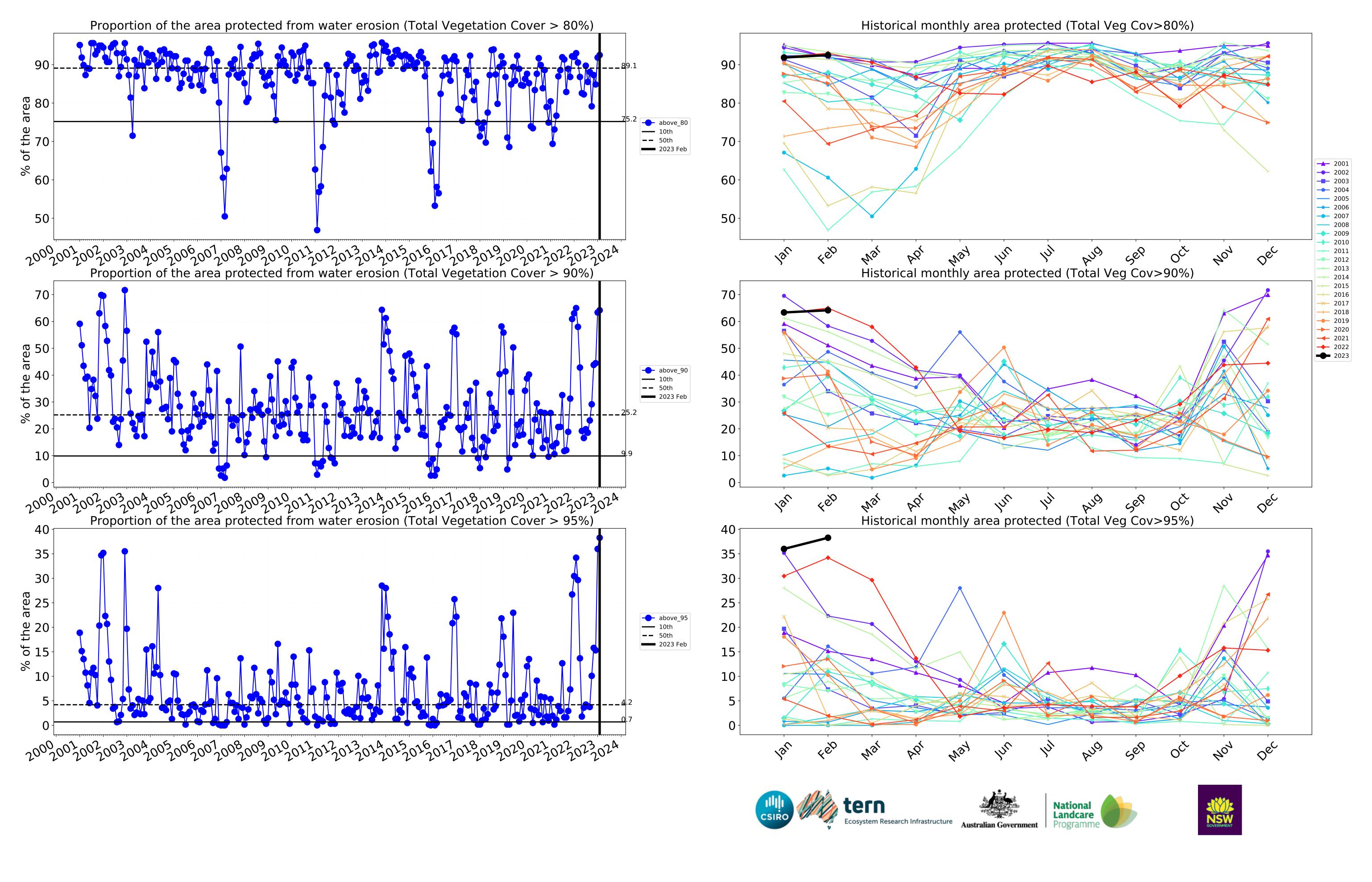
month

**---** 2023

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

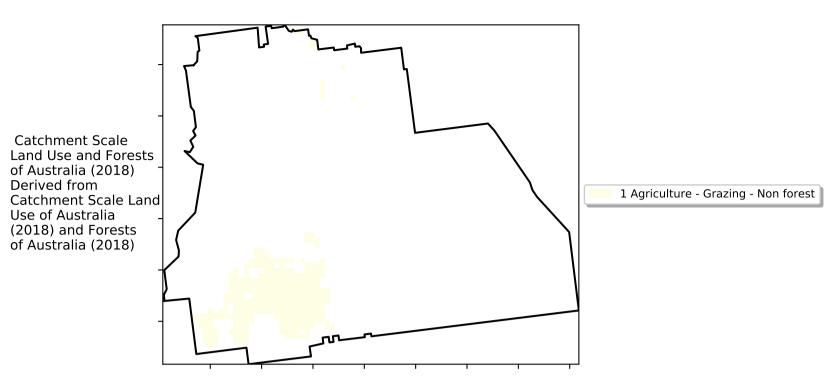




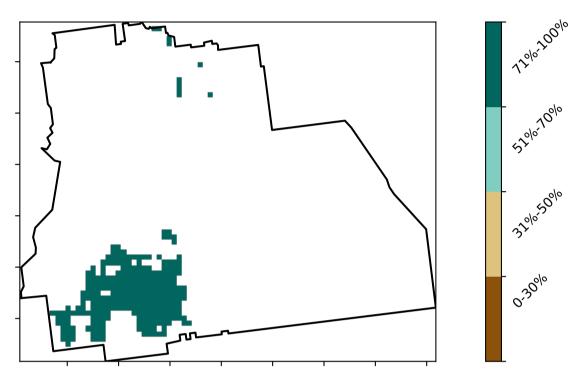


### Grazing

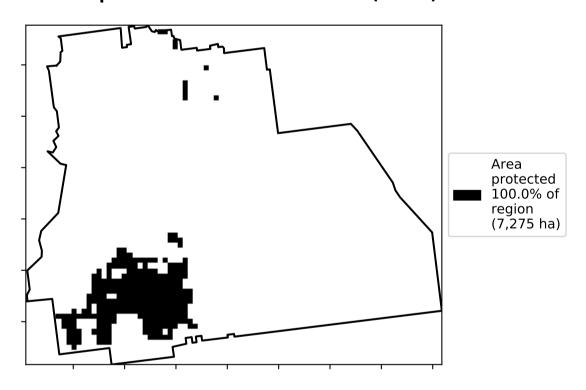
### Land use and forest cover



### **Total Vegetation Cover [%]**



### % Area protected from water erosion (>70%)

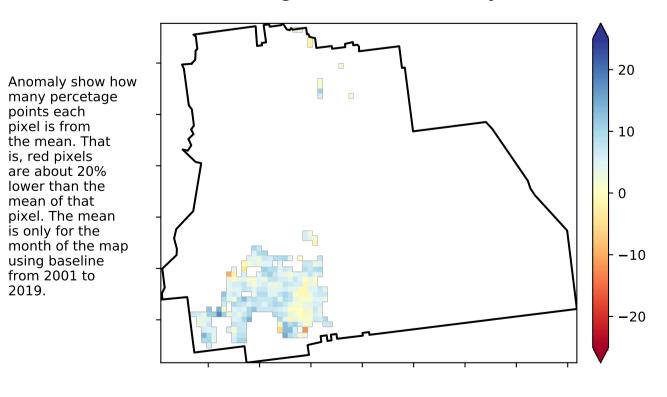


### **Total Vegetation Cover Anomaly [%]**

the mean. That

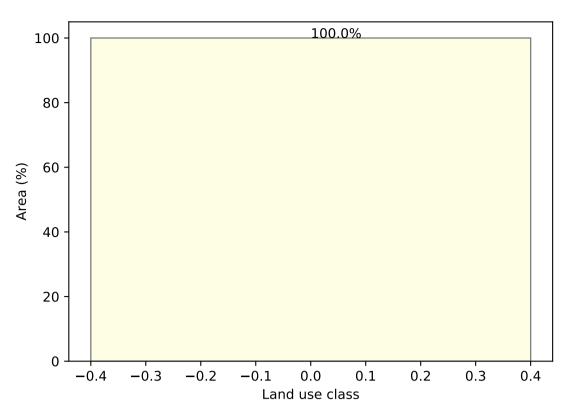
is, red pixels are about 20% lower than the mean of that pixel. The mean

using baseline from 2001 to 2019.

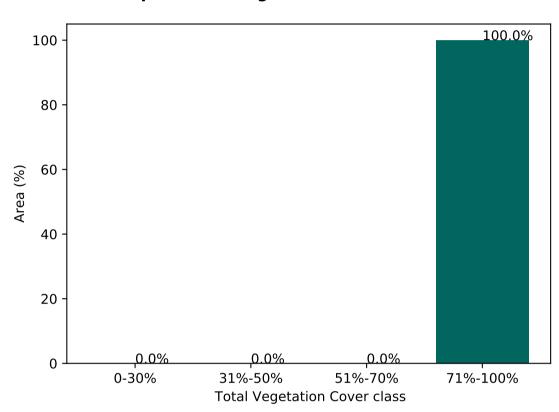


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

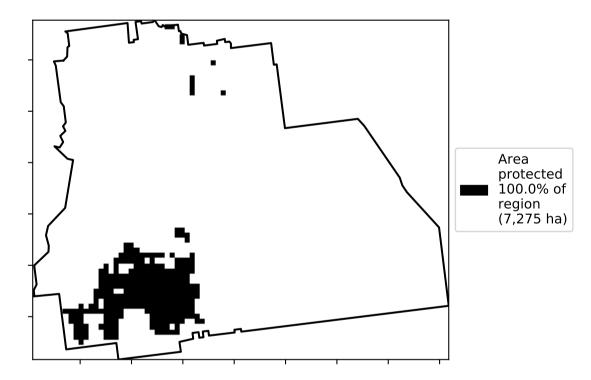
### **Proportion of each land class in area**

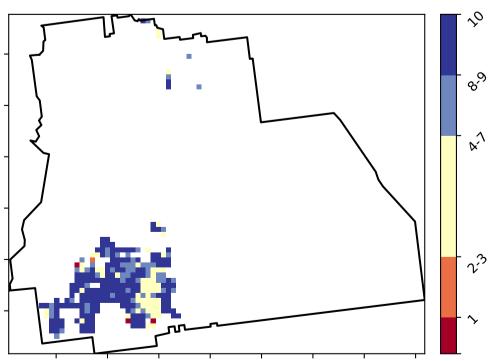


### Proportion of vegetation cover class in area



### % Area protected from wind erosion (>50%)





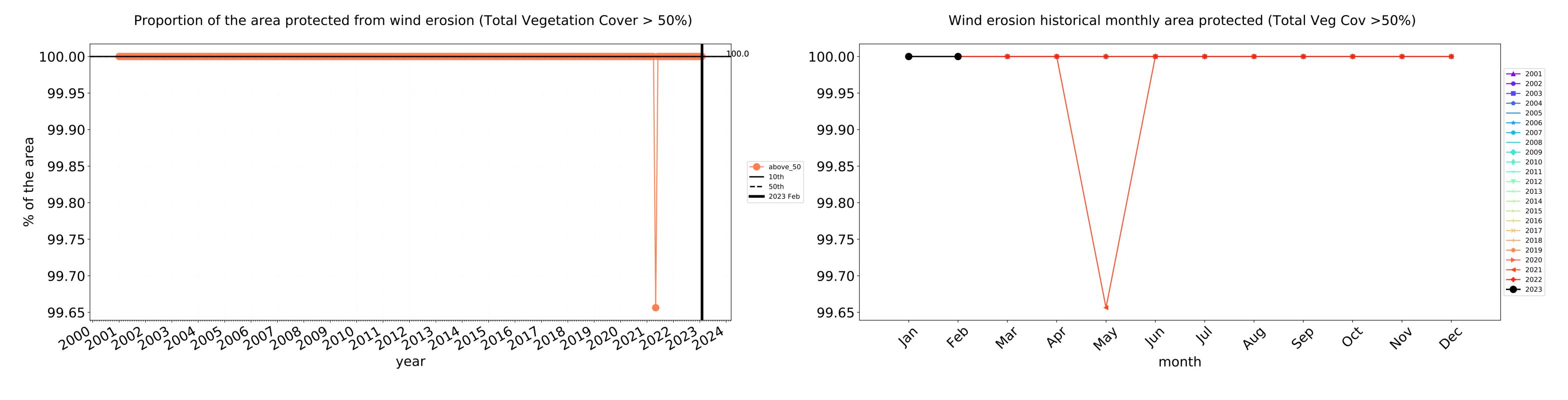


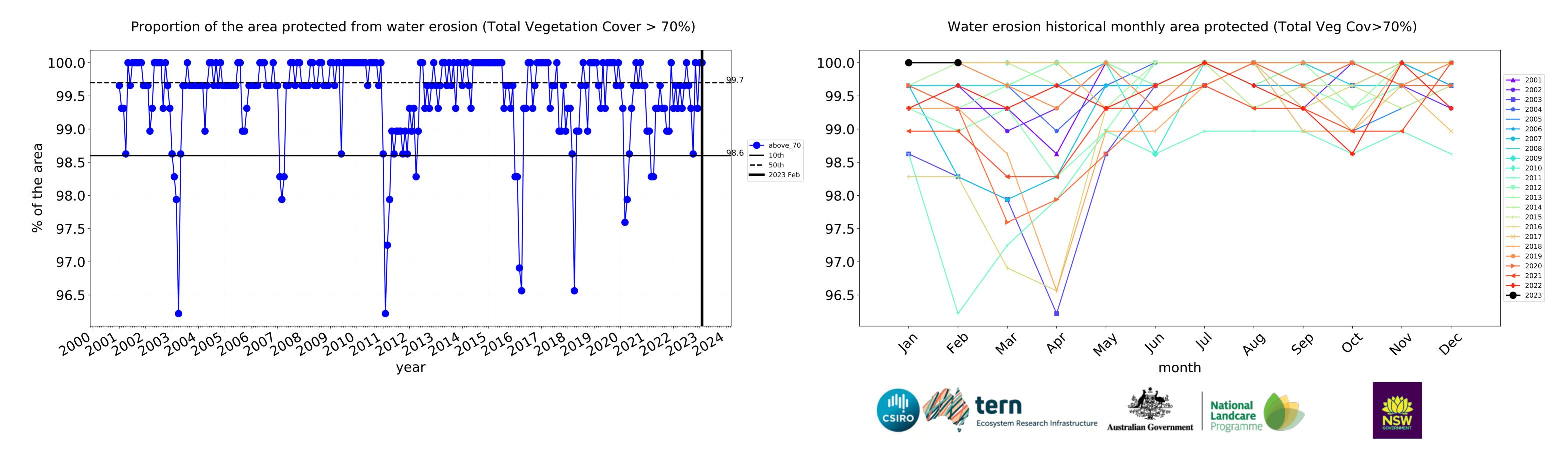


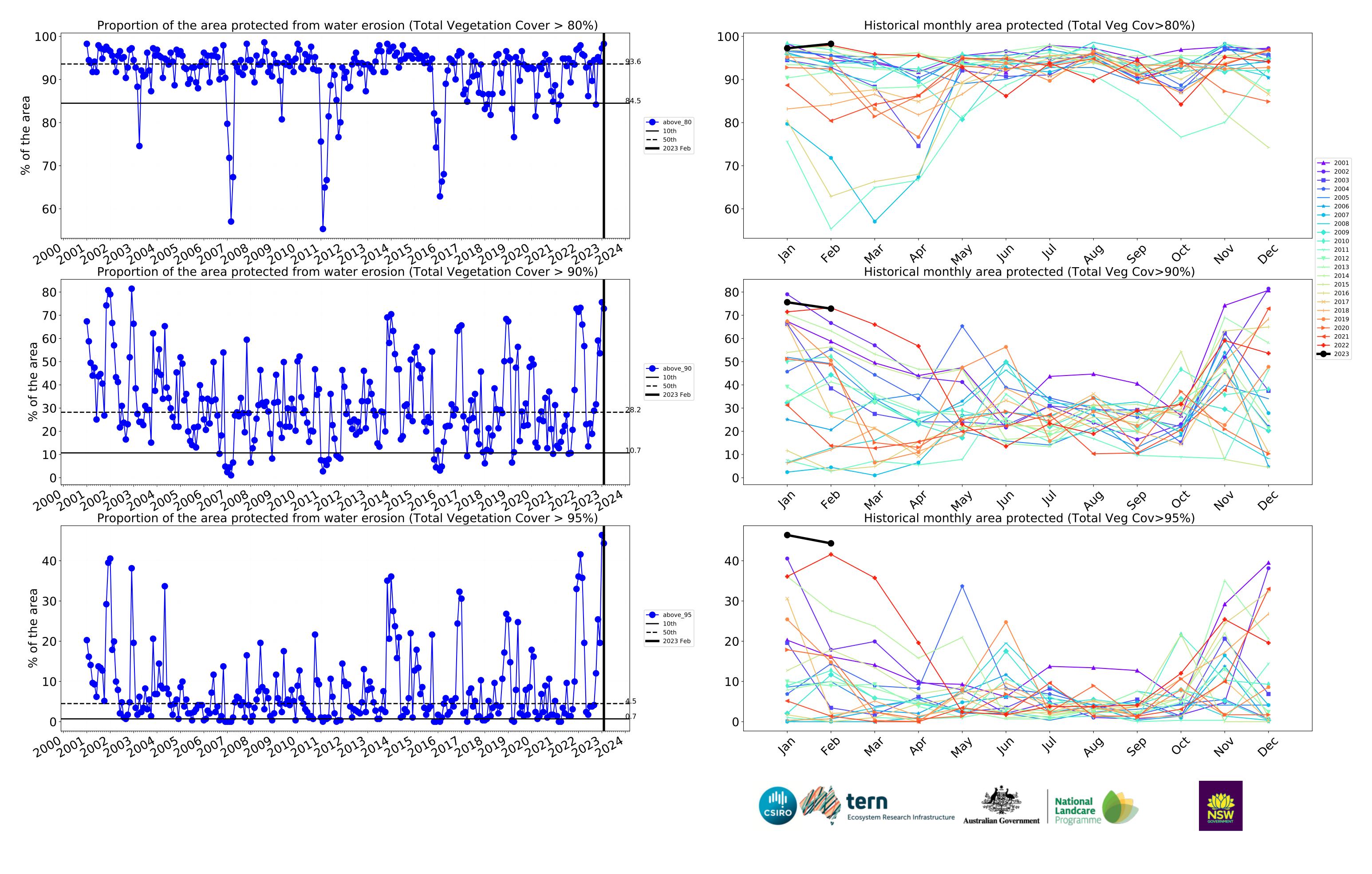




### **Grazing timeseries**

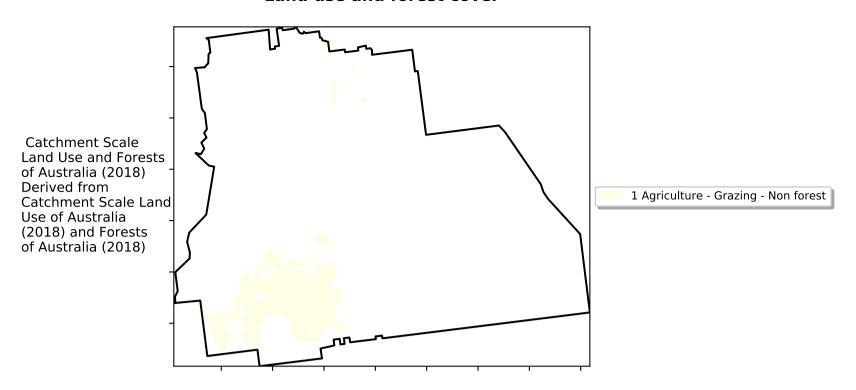




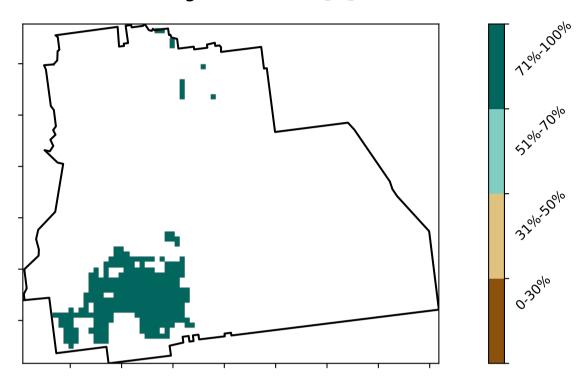


### **Grazing non forest**

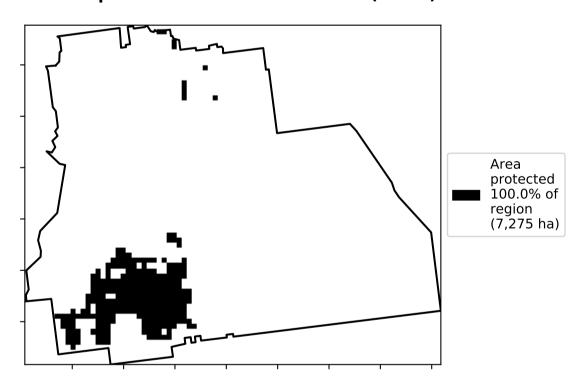
### Land use and forest cover



### **Total Vegetation Cover [%]**



### % Area protected from water erosion (>70%)

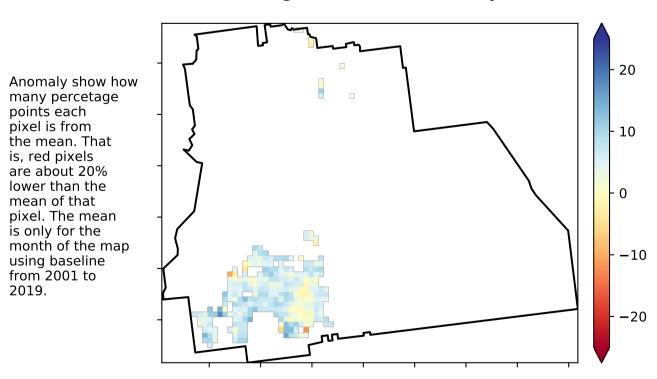


### **Total Vegetation Cover Anomaly [%]**

is, red pixels are about 20% lower than the mean of that pixel. The mean

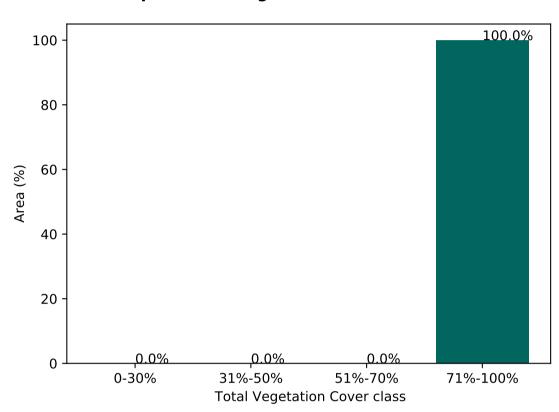
is only for the month of the map

using baseline from 2001 to 2019.

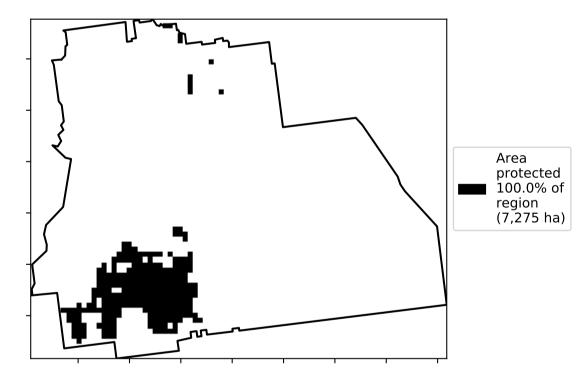


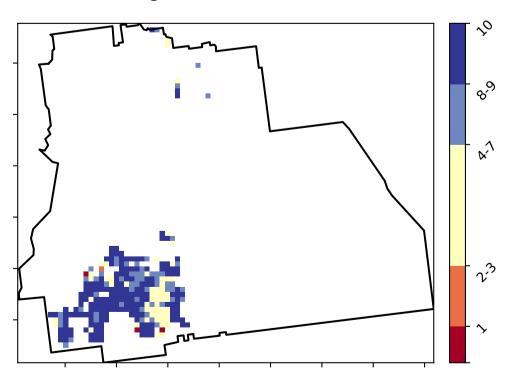
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

### Proportion of vegetation cover class in area



### % Area protected from wind erosion (>50%)





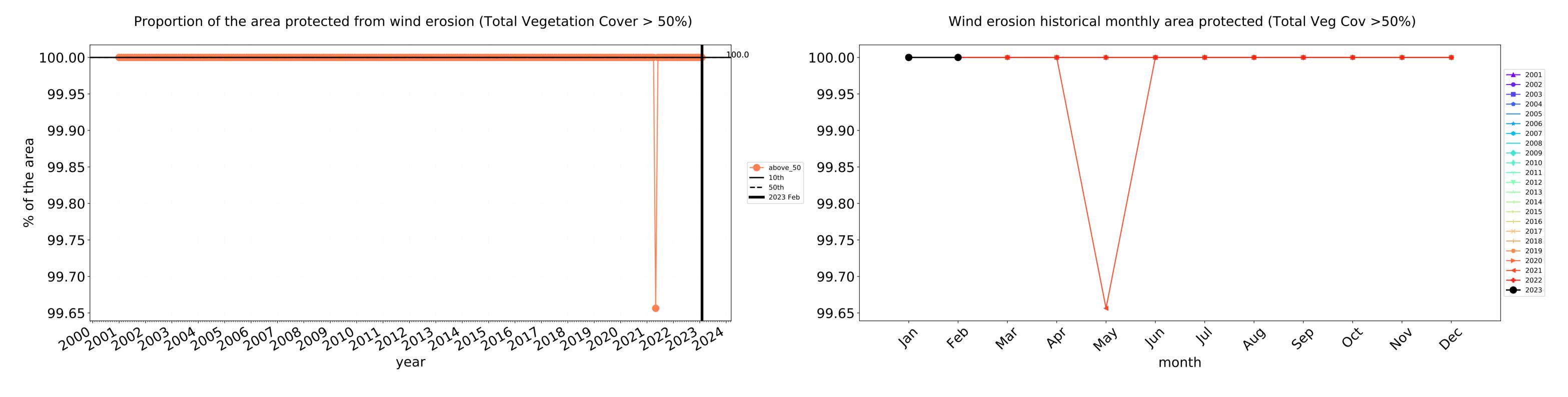


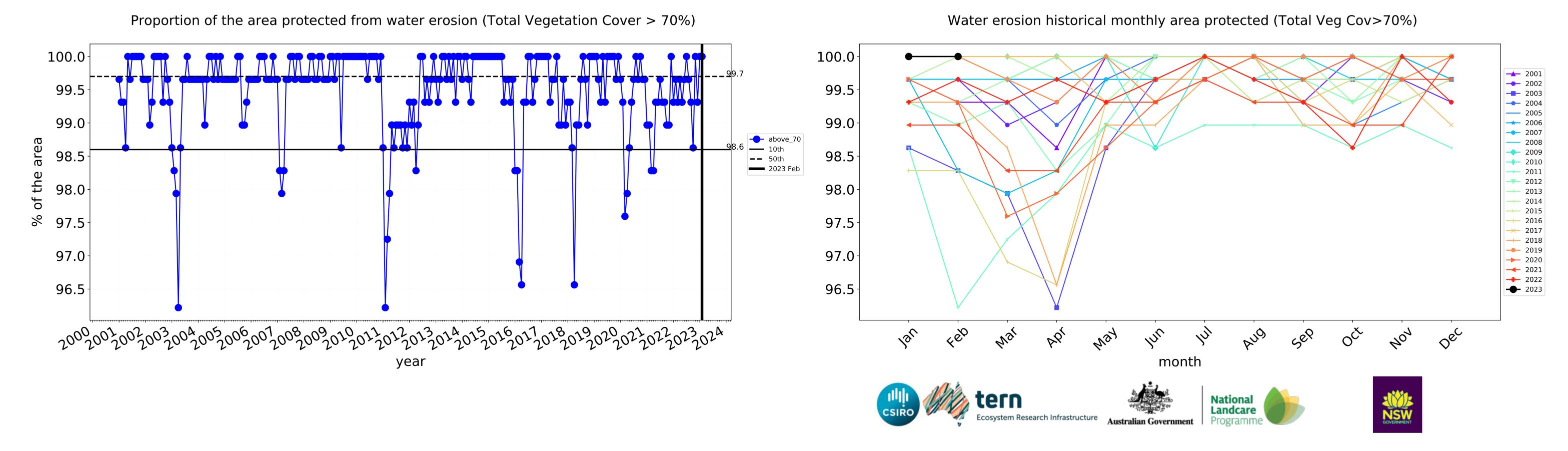


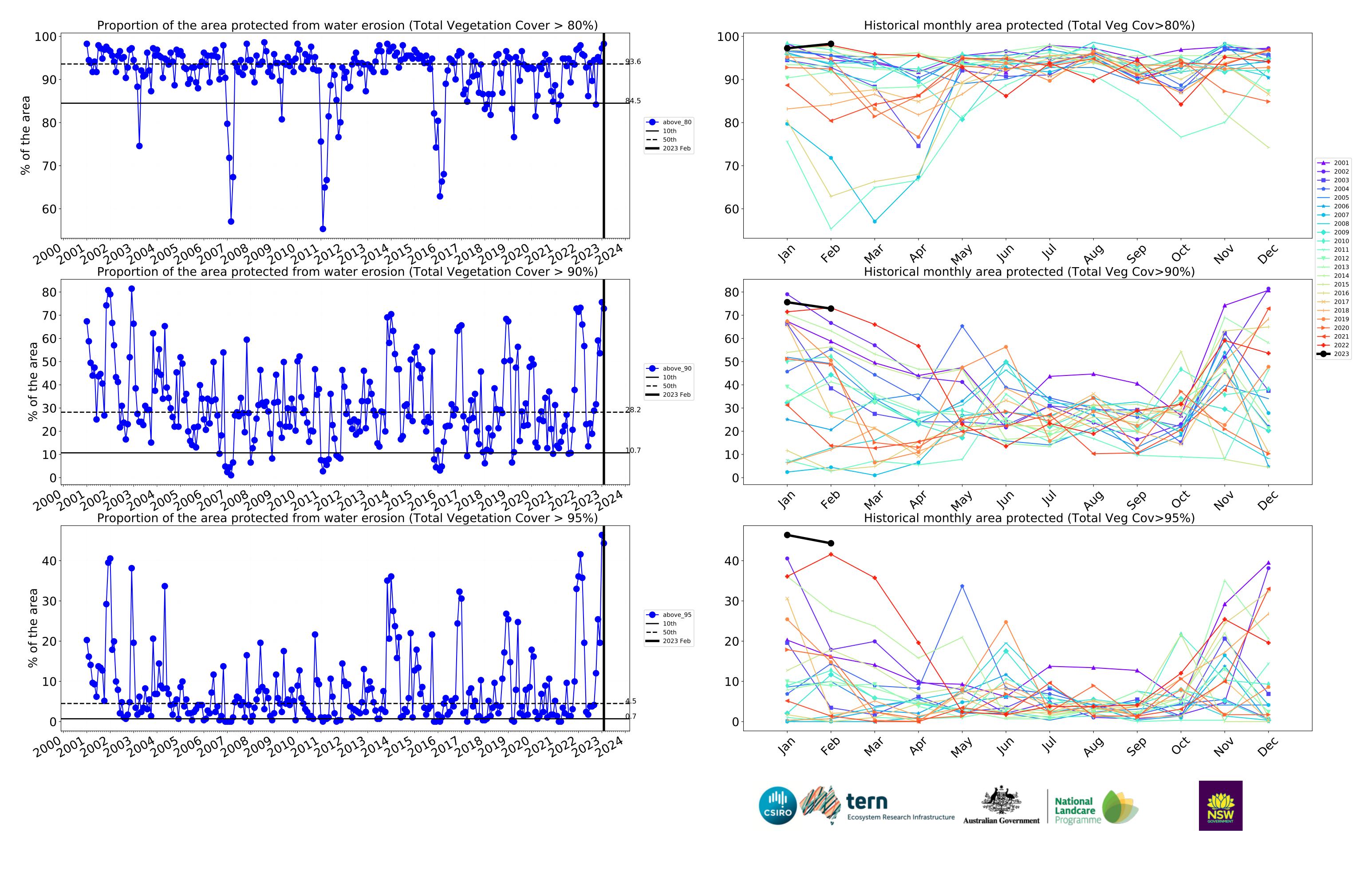




### **Grazing non forest timeseries**

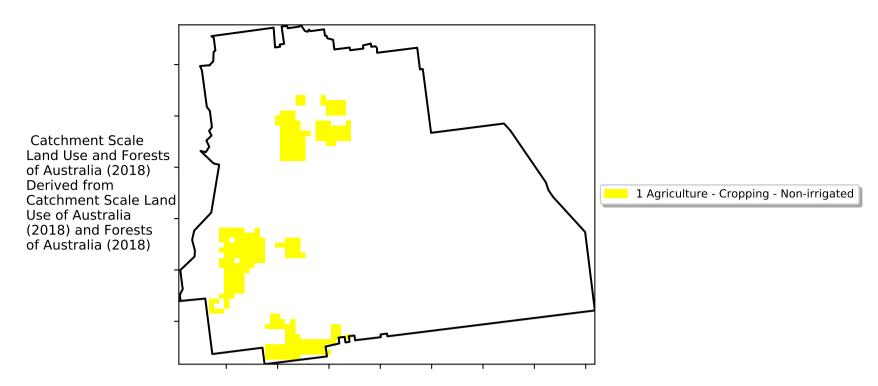




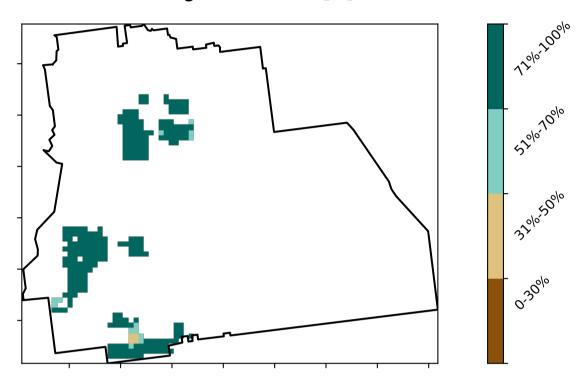


### **Cropping**

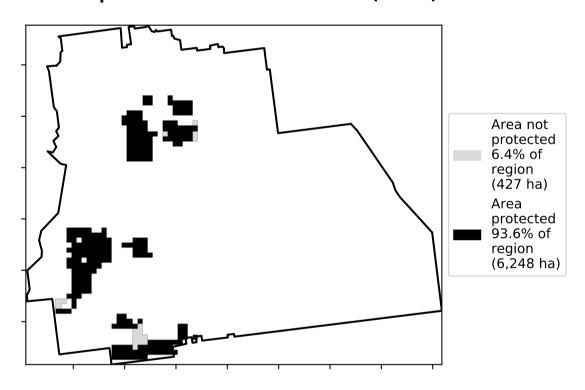
### Land use and forest cover



### **Total Vegetation Cover [%]**



### % Area protected from water erosion (>70%)

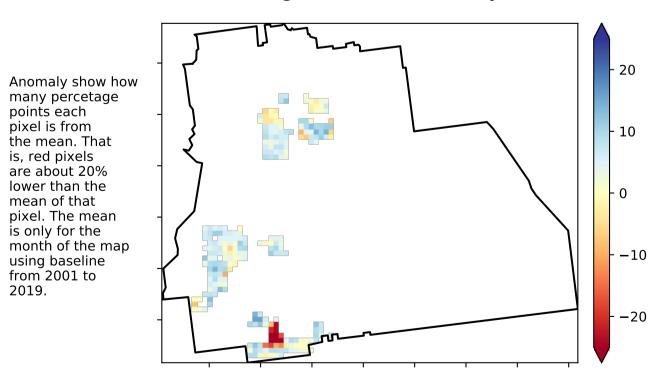


### **Total Vegetation Cover Anomaly [%]**

is, red pixels are about 20% lower than the mean of that pixel. The mean

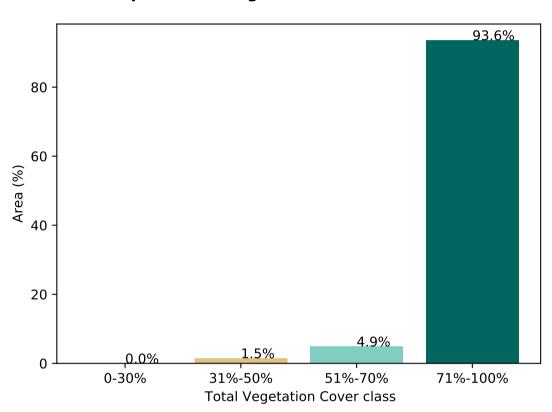
is only for the month of the map

using baseline from 2001 to 2019.

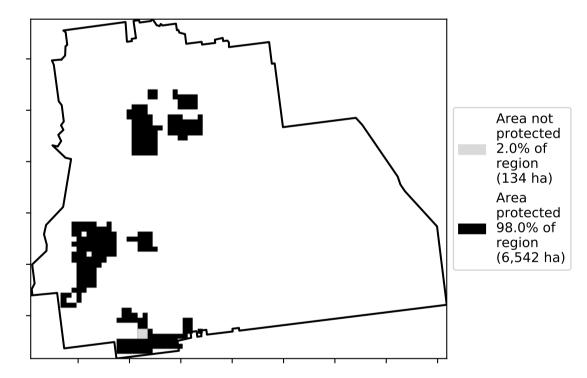


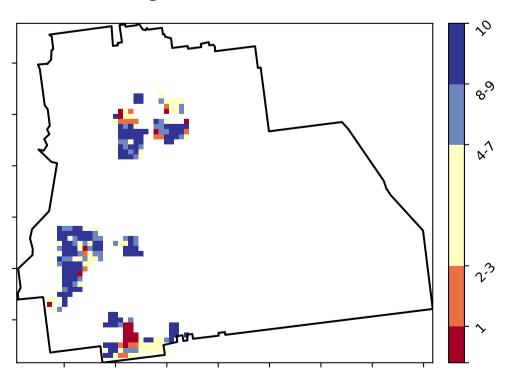
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

### Proportion of vegetation cover class in area



### % Area protected from wind erosion (>50%)





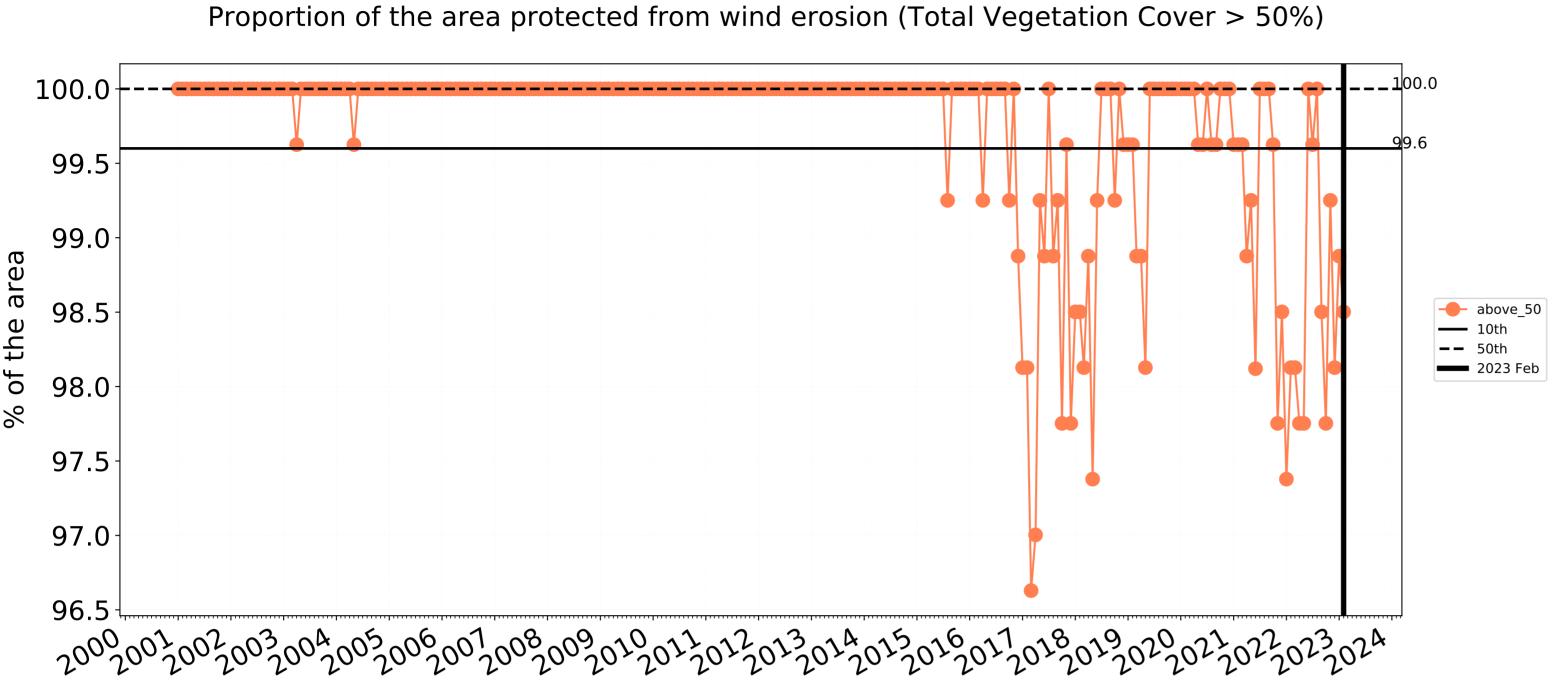


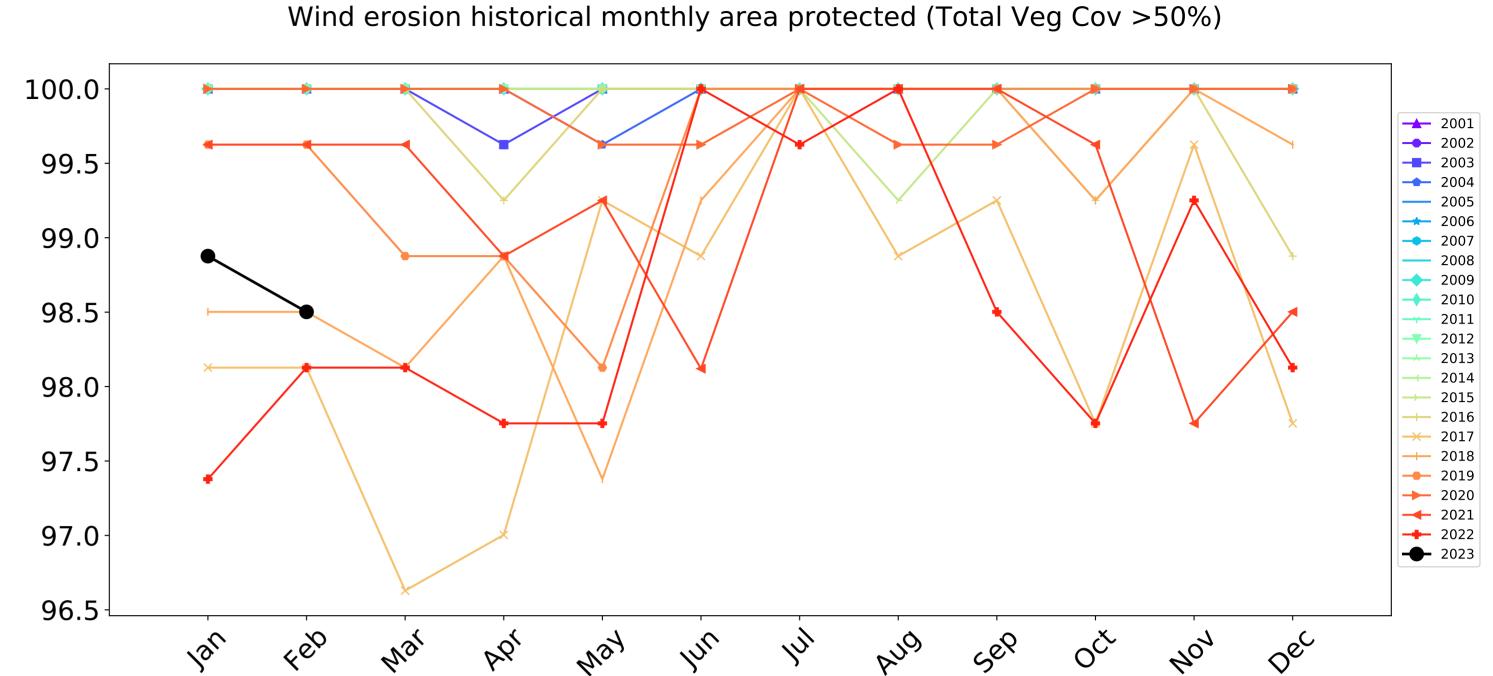




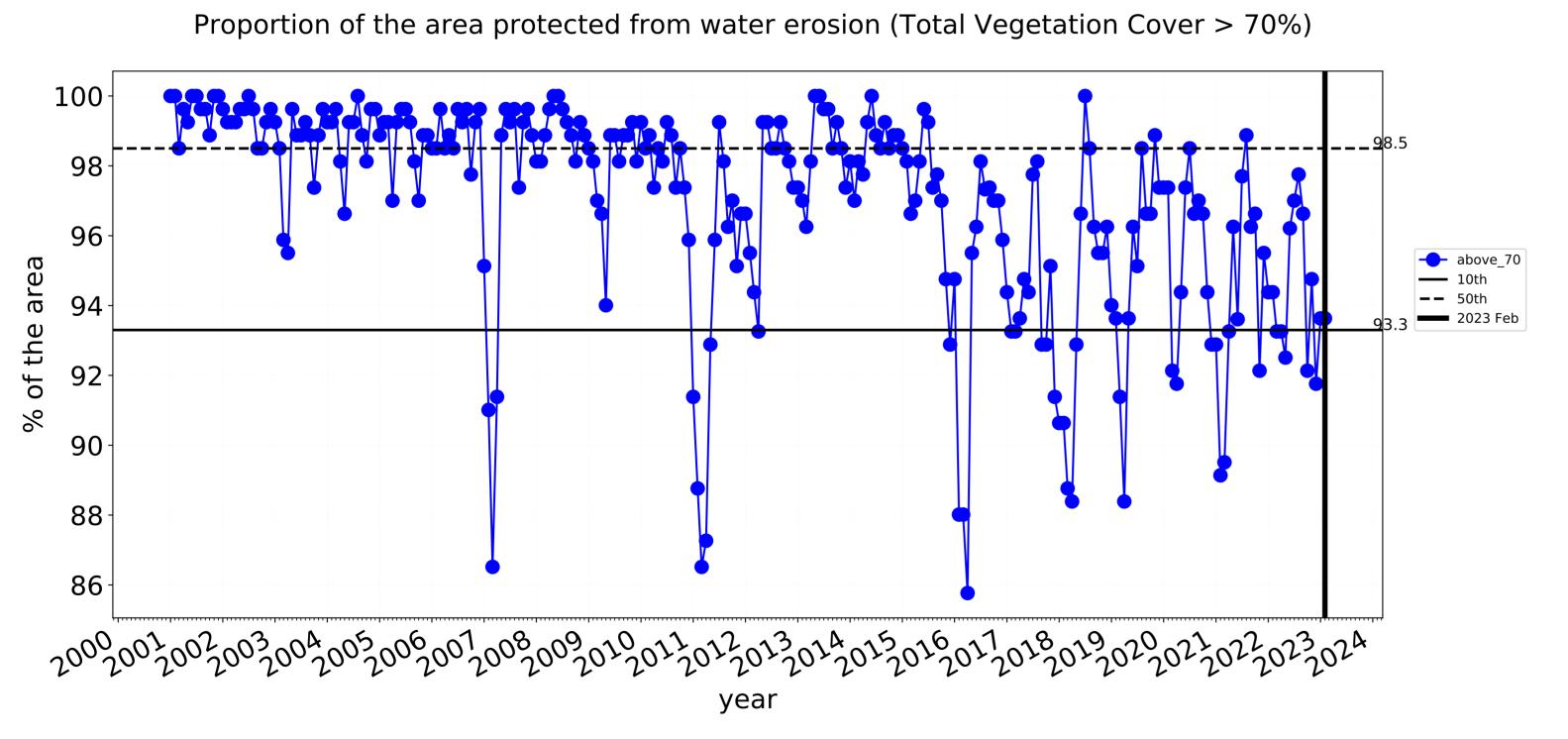


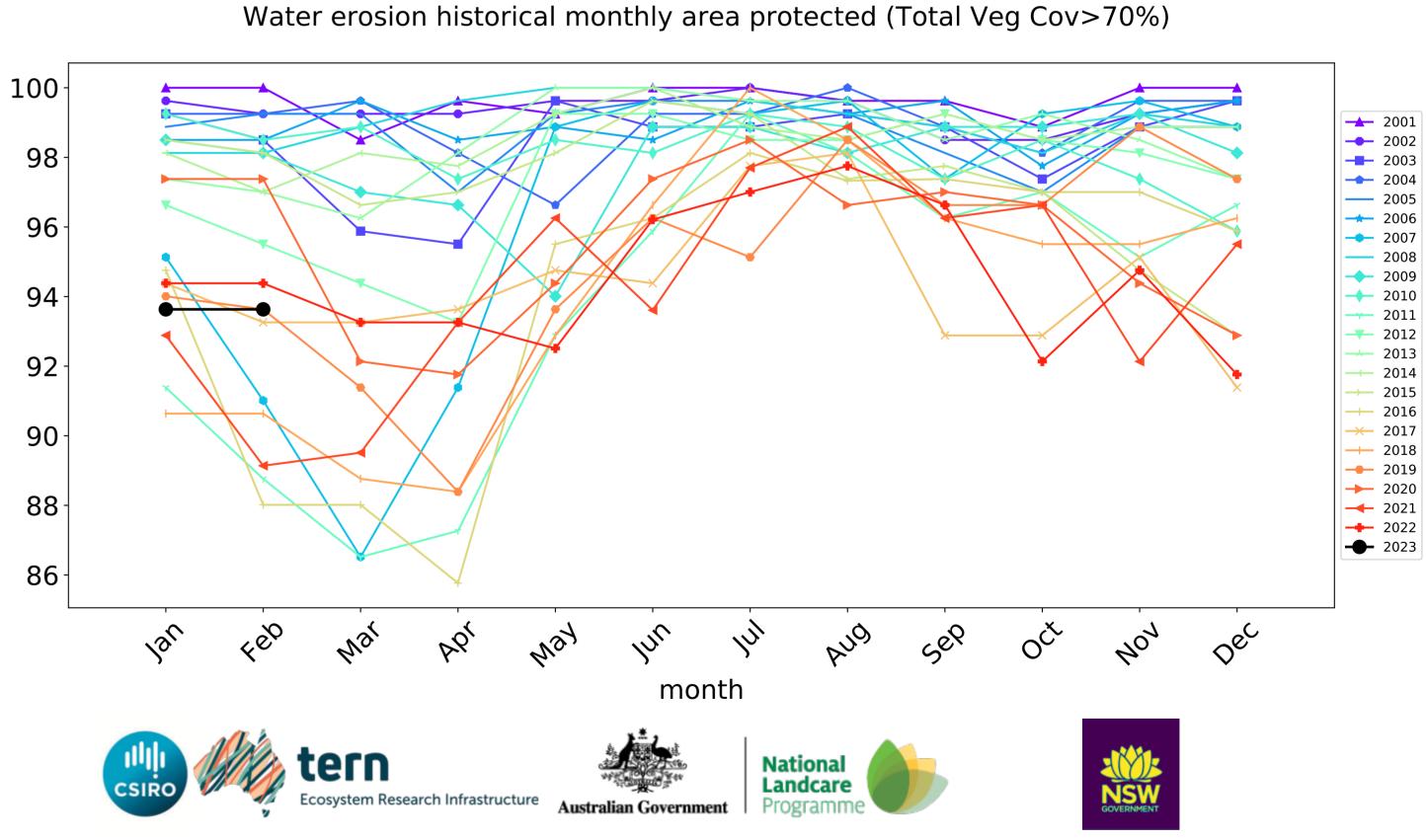
### **Cropping timeseries**

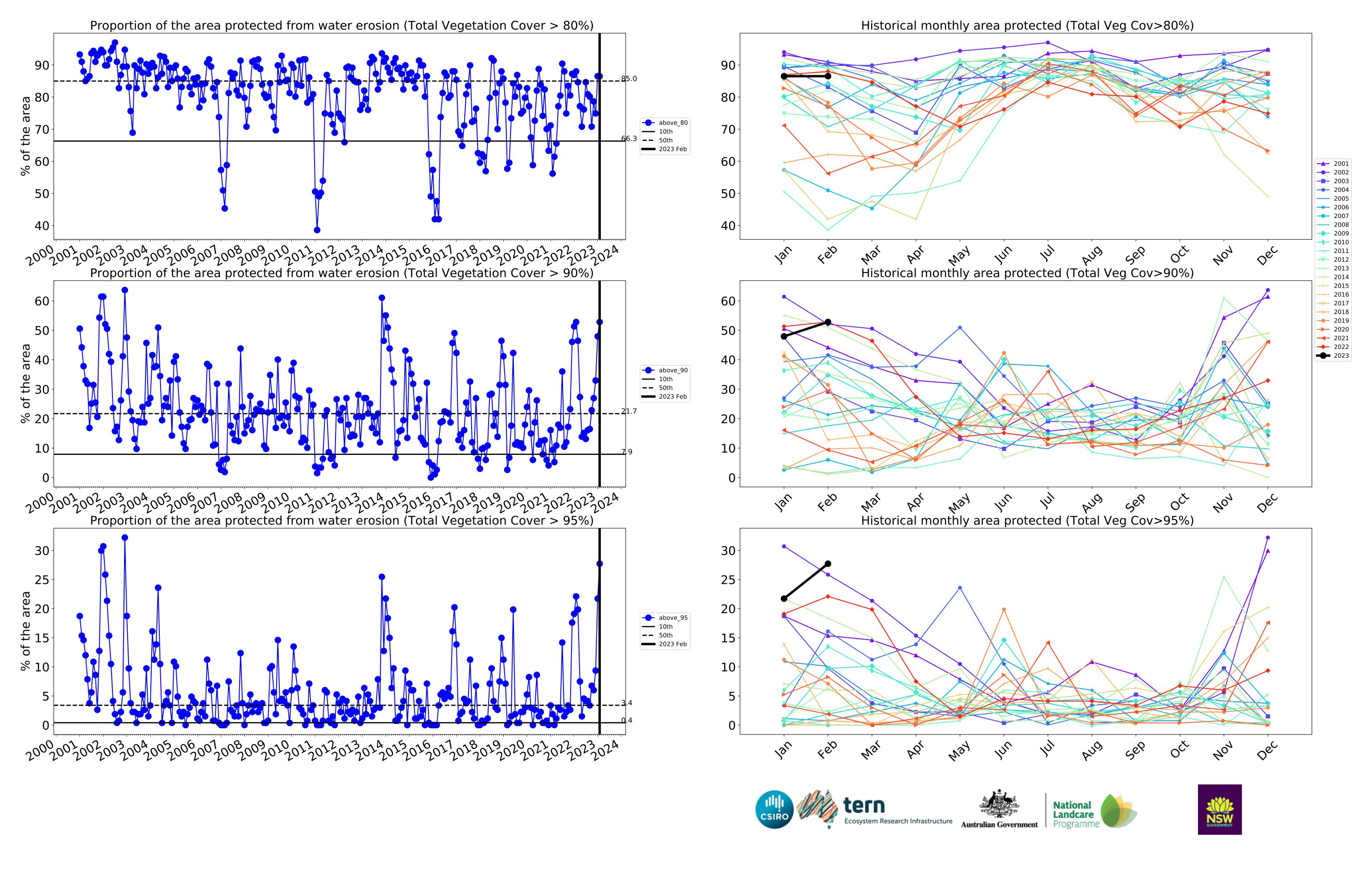




month





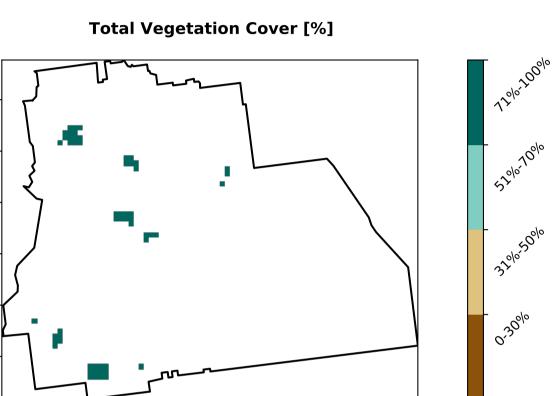


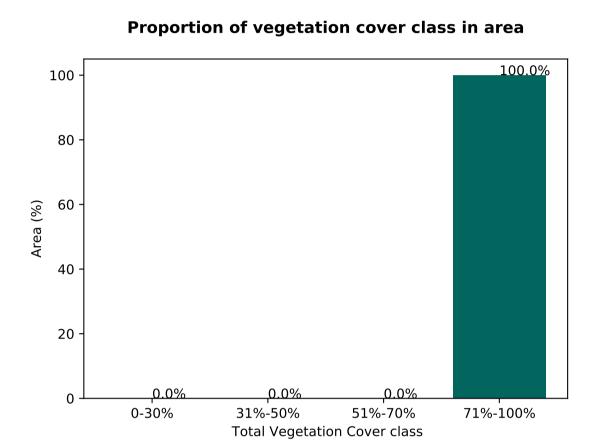
### Irrigation

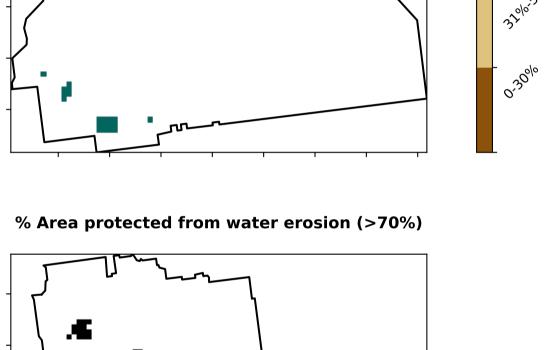
### Land use and forest cover Catchment Scale Land Use and Forests of Australia (2018) Derived from 1 Agriculture - Grazing - Irrigated Catchment Scale Land 2 Agriculture - Horticulture - Irrigated Use of Australia (2018) and Forests of Australia (2018)

### 82.1% 80 70 · 60 Area (%) 30 20 17.9% 10 -0.00 0.25 0.50 0.75 1.00 1.25 -0.25Land use class

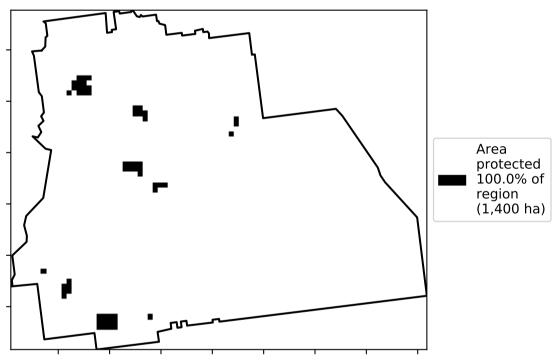
Proportion of each land class in area

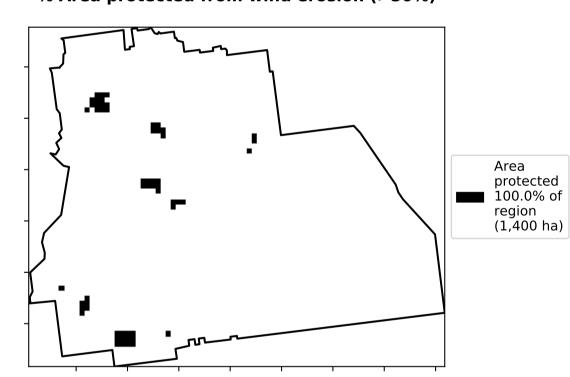














Anomaly show how many percetage points each pixel is from

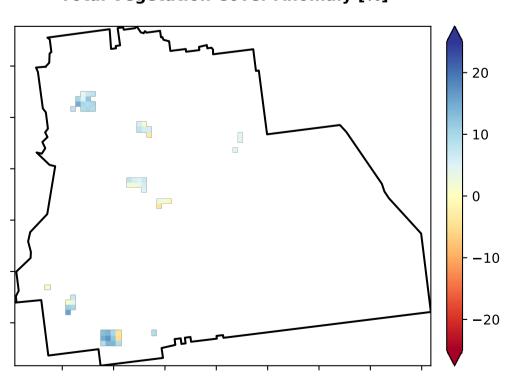
the mean. That is, red pixels

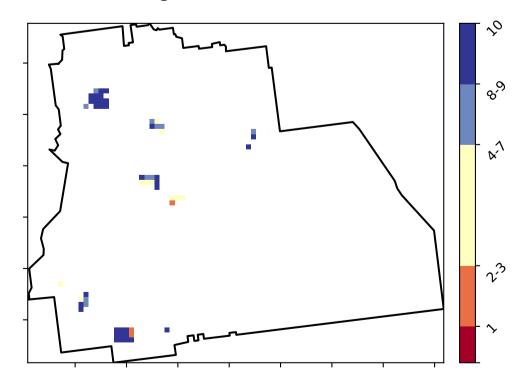
are about 20% lower than the mean of that pixel. The mean

is only for the month of the map

using baseline from 2001 to 2019.

**Total Vegetation Cover Decile [%]** 





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.

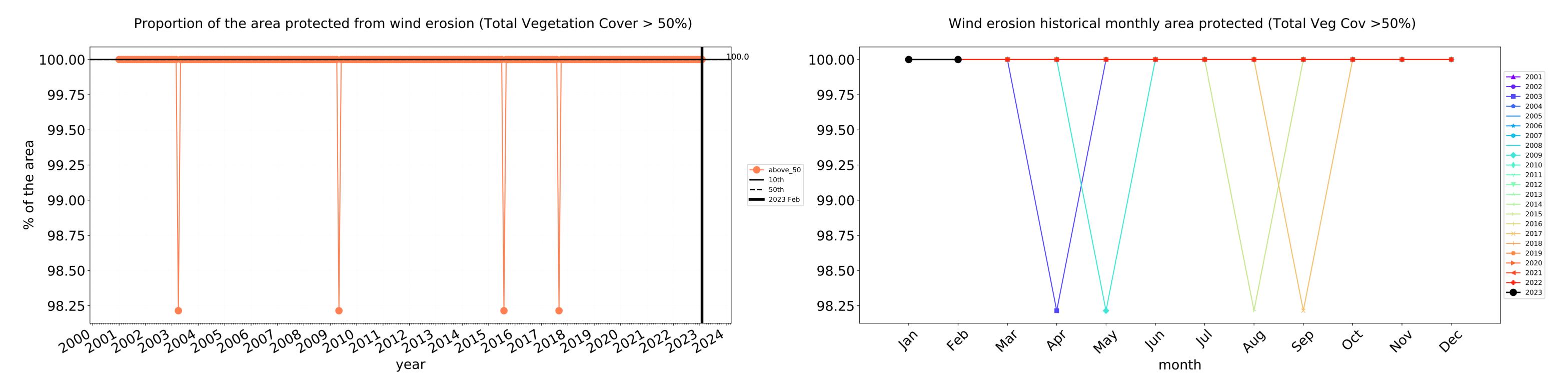


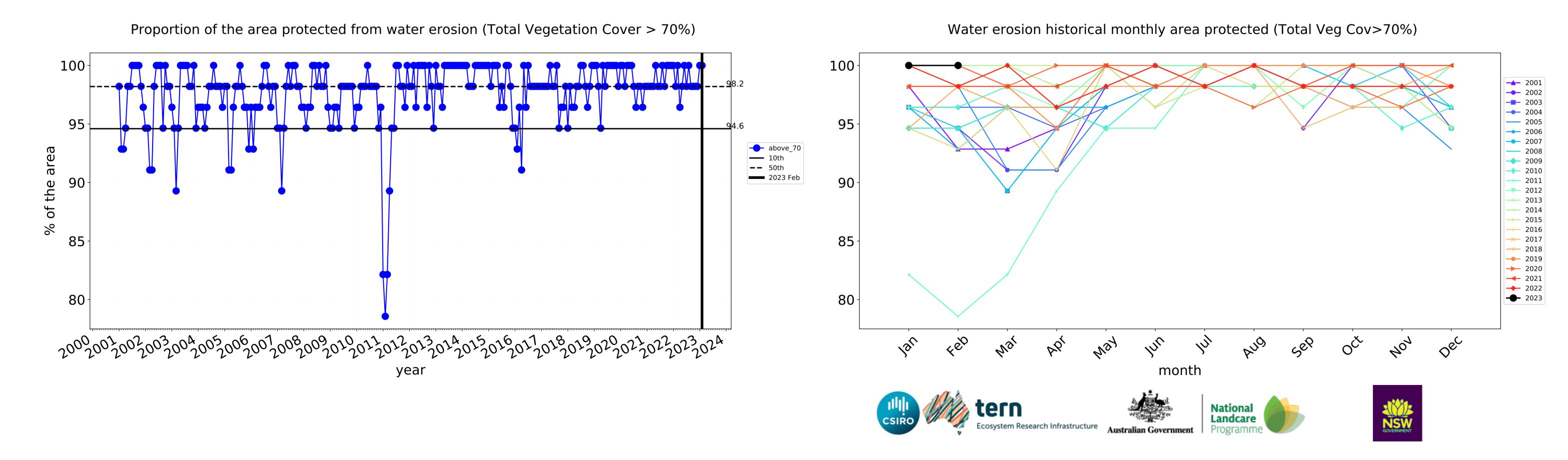


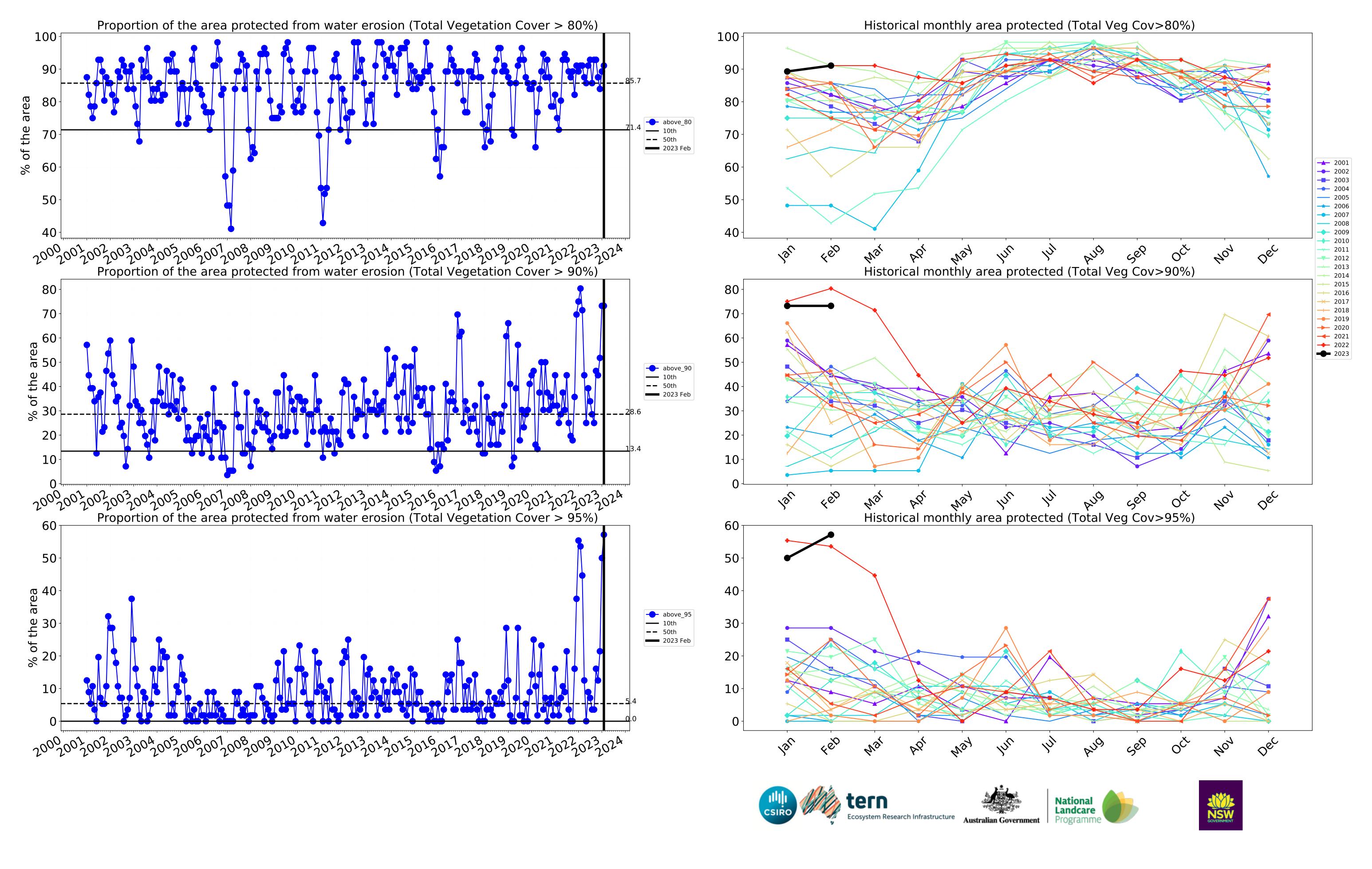




### **Irrigation timeseries**







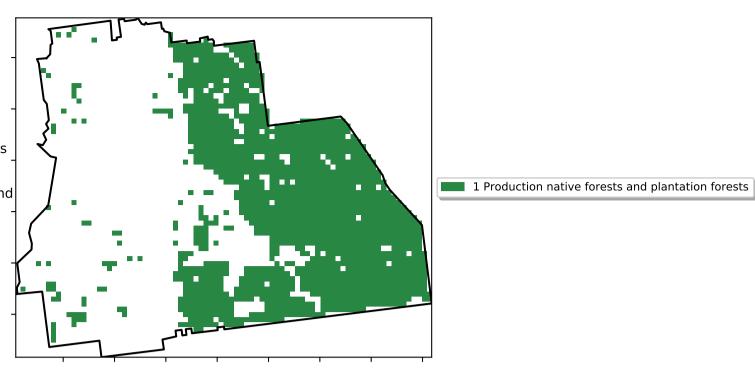
### **Production native forests and plantation forests**

### Land use and forest cover

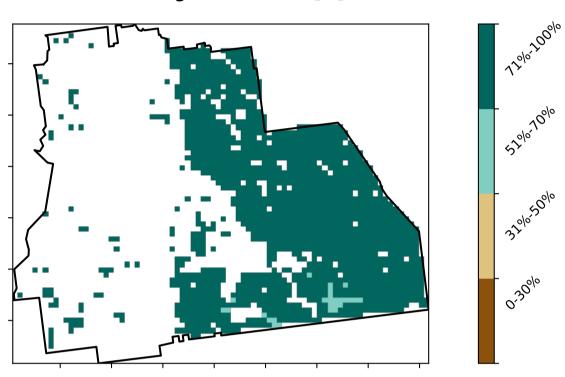
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

are about 20% lower than the mean of that

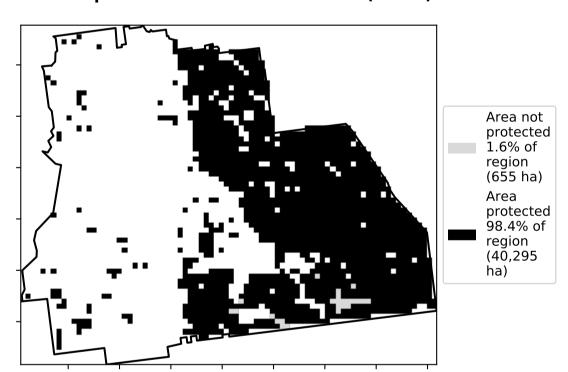
pixel. The mean



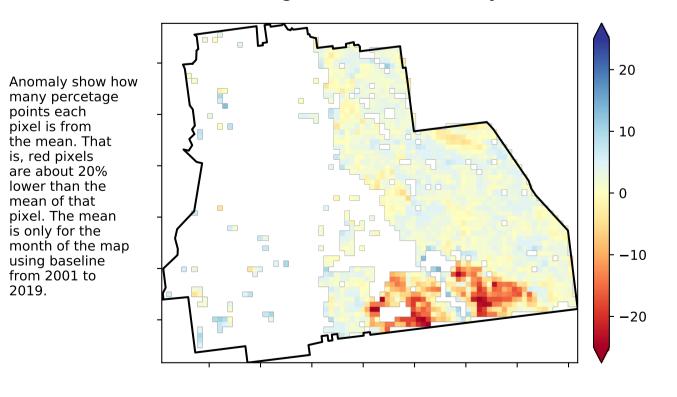
### **Total Vegetation Cover [%]**



### % Area protected from water erosion (>70%)

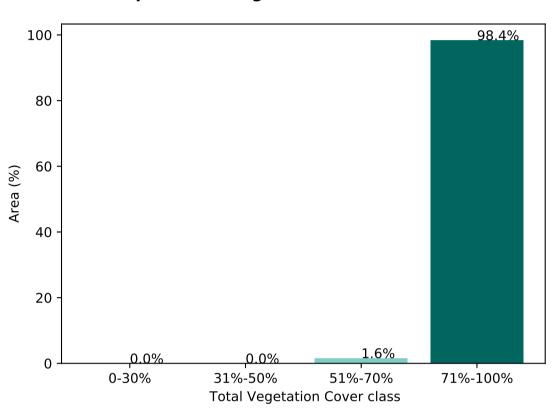


### **Total Vegetation Cover Anomaly [%]**

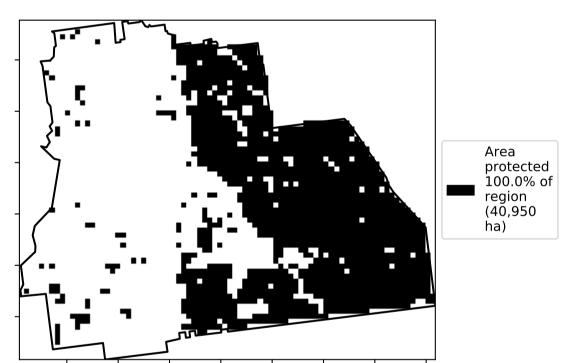


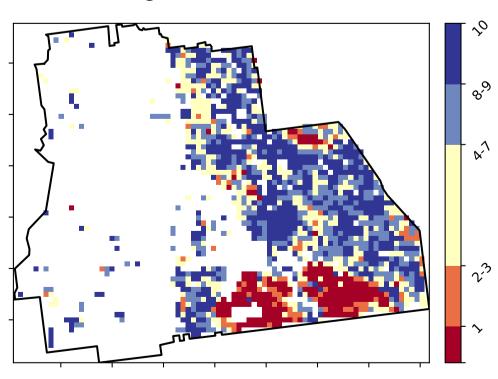
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

### Proportion of vegetation cover class in area



### % Area protected from wind erosion (>50%)





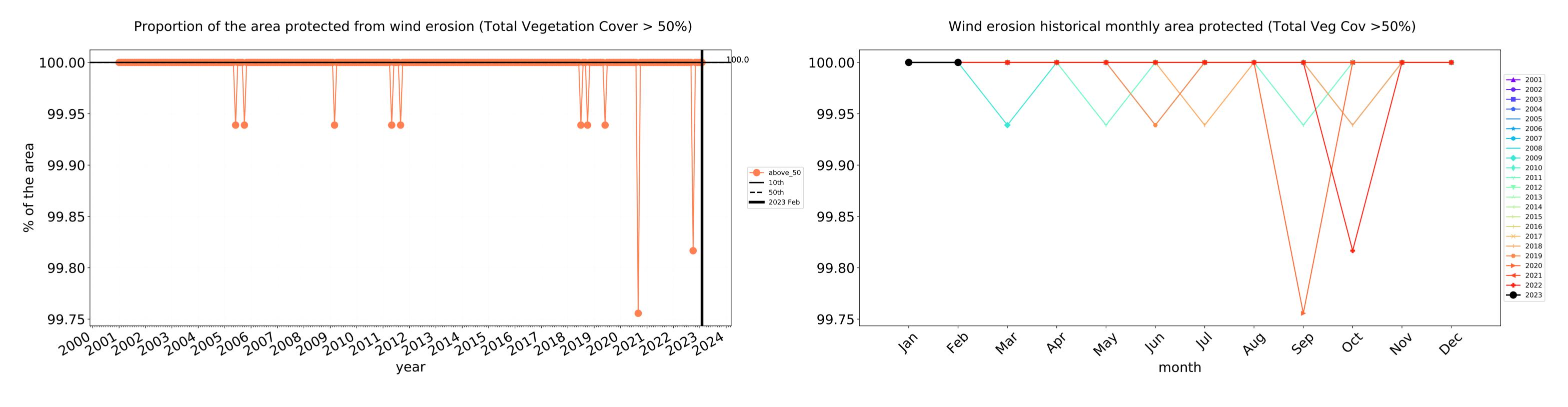


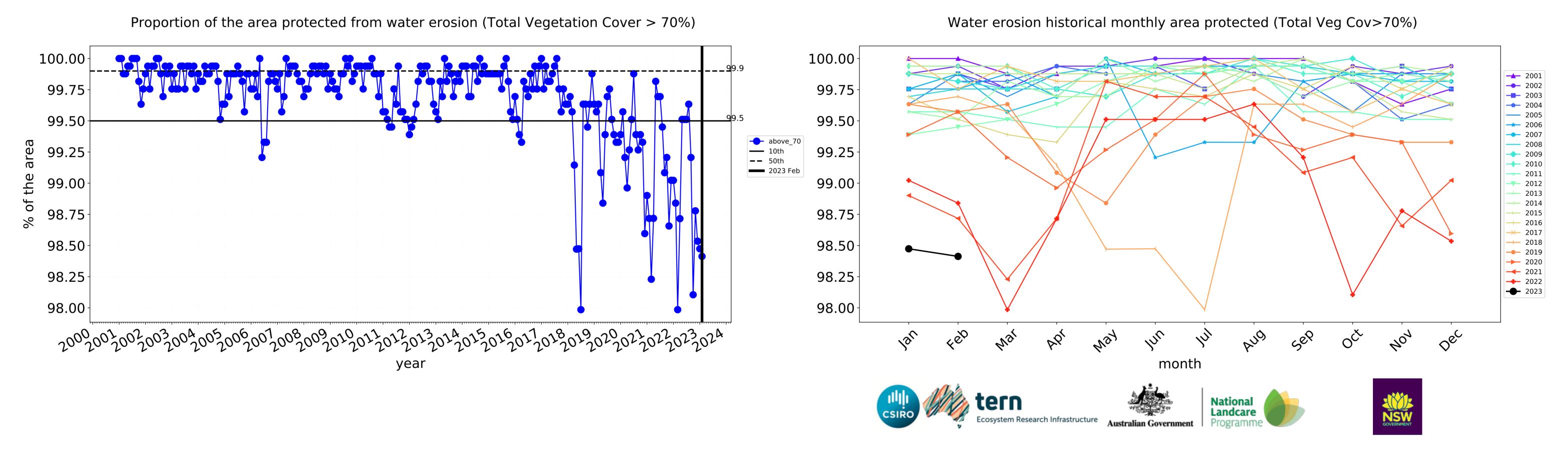


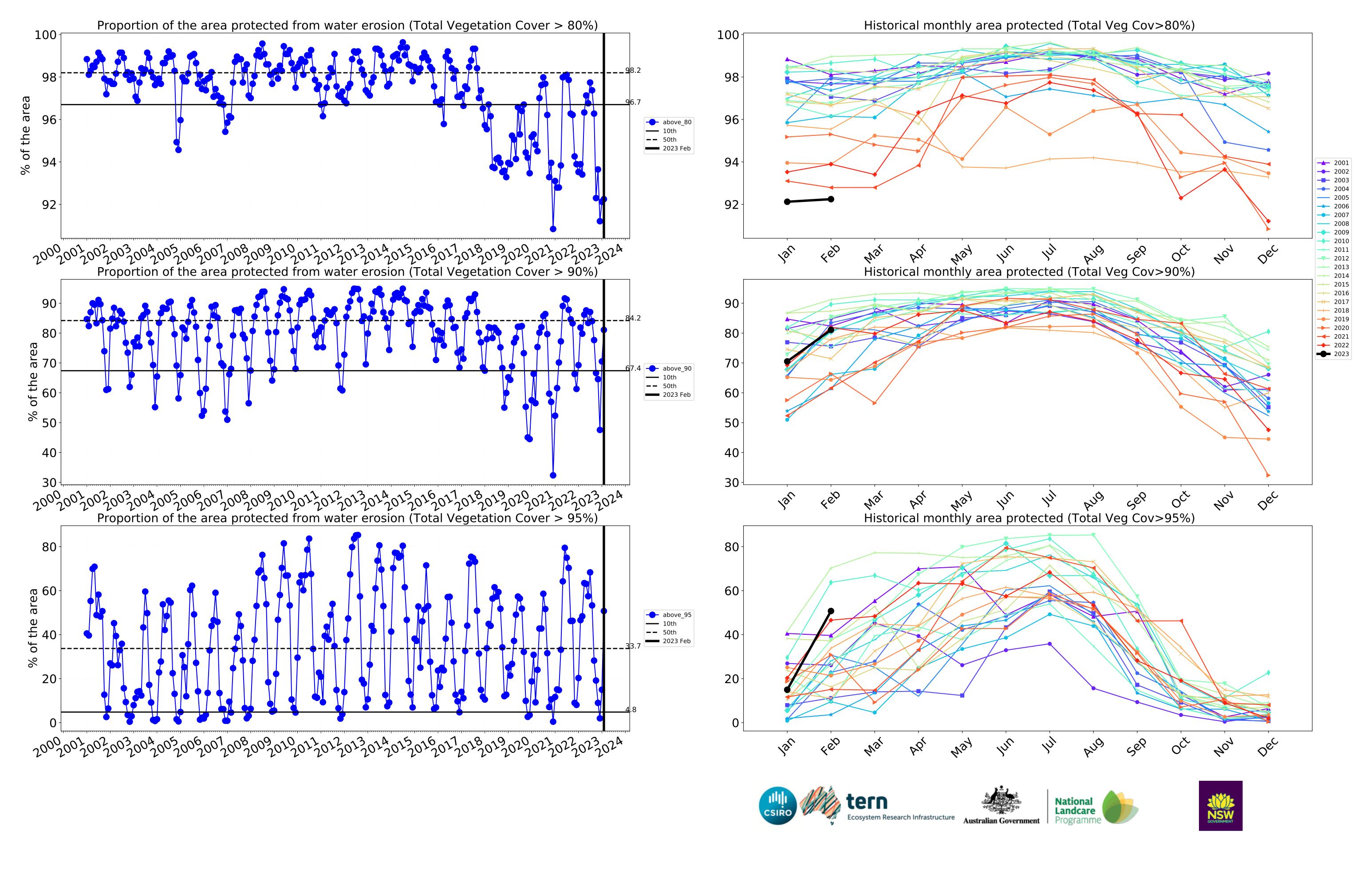




### **Production native forests and plantation forests timeseries**







### Serpentine-Jarrahdale\_(S) (total 90,150 ha) Percentage area and hectares protected with TVC threshold 30,50,70,80,90 and 95%

| Land use and<br>forest cover<br>Class                       | area(ha) | above_30         | above_50         | above_70        | above_80        | above_90        | above_95        |
|---|----------|------------------|------------------|-----------------|-----------------|-----------------|-----------------|
| Entire region   | 90,150   | 100.0%<br>90,150 | 99.9%<br>90,050  | 97.7%<br>88,050 | 90.3%<br>81,375 | 69.2%<br>62,400 | 42.2%<br>38,075 |
| Conservation and<br>natural<br>environments                 | 9,025    | 100.0%<br>9,025  | 100.0%<br>9,025  | 99.7%<br>9,000  | 95.8%<br>8,650  | 78.1%<br>7,050  | 45.7%<br>4,125  |
| Conservation and natural environments non forest            | 1,325    | 100.0%<br>1,325  | 100.0%<br>1,325  | 100.0%<br>1,325 | 94.3%<br>1,250  | 66.0%<br>875    | 50.9%<br>675    |
| Conservation and natural environments Woodland forest       | 3,275    | 100.0%<br>3,275  | 100.0%<br>3,275  | 100.0%<br>3,275 | 92.4%<br>3,025  | 68.7%<br>2,250  | 23.7%<br>775    |
| Conservation and natural environments Forest (non woodland) | 4,425    | 100.0%<br>4,425  | 100.0%<br>4,425  | 99.4%<br>4,400  | 98.9%<br>4,375  | 88.7%<br>3,925  | 60.5%<br>2,675  |
| Agriculture   | 15,350   | 100.0%<br>15,350 | 99.3%<br>15,250  | 97.2%<br>14,925 | 92.5%<br>14,200 | 64.2%<br>9,850  | 38.3%<br>5,875  |
| Grazing   | 7,275    | 100.0%<br>7,275  | 100.0%<br>7,275  | 100.0%<br>7,275 | 98.3%<br>7,150  | 72.9%<br>5,300  | 44.3%<br>3,225  |
| Grazing non<br>forest                                       | 7,275    | 100.0%<br>7,275  | 100.0%<br>7,275  | 100.0%<br>7,275 | 98.3%<br>7,150  | 72.9%<br>5,300  | 44.3%<br>3,225  |
| Cropping  | 6,675    | 100.0%<br>6,675  | 98.5%<br>6,575   | 93.6%<br>6,250  | 86.5%<br>5,775  | 52.8%<br>3,525  | 27.7%<br>1,850  |
| Irrigation  | 1,400    | 100.0%<br>1,400  | 100.0%<br>1,400  | 100.0%<br>1,400 | 91.1%<br>1,275  | 73.2%<br>1,025  | 57.1%<br>800    |
| Production native<br>forests and<br>plantation<br>forests   | 40,950   | 100.0%<br>40,950 | 100.0%<br>40,950 | 98.4%<br>40,300 | 92.2%<br>37,775 | 81.1%<br>33,200 | 50.7%<br>20,775 |







