### Total vegetation cover soil protection Region:LGA Whitsunday (R) QLD

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:

Date: July 2023

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.

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:

Total vegetation Cover:

- 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

Catchment Scale

of Australia (2018)

Derived from

Use of Australia

(2018) and Forests

of Australia (2018)

Anomaly show how many percetage points each

pixel is from

is, red pixels are about 20% lower than the

mean of that pixel. The mean is only for the

month of the map

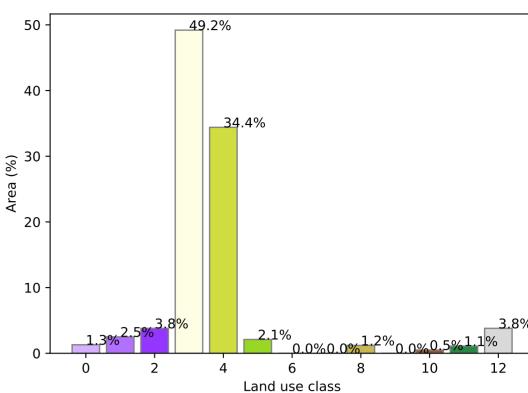
using baseline from 2001 to

2019.

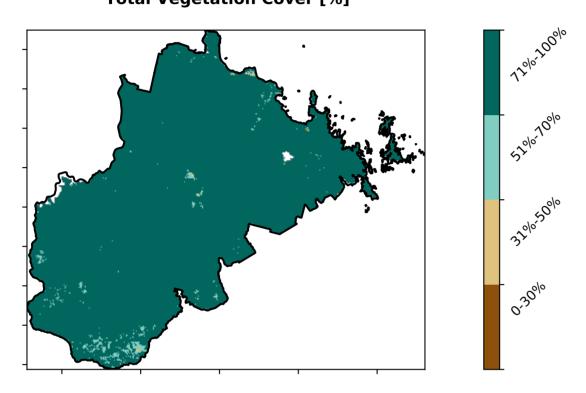
the mean. That

### 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

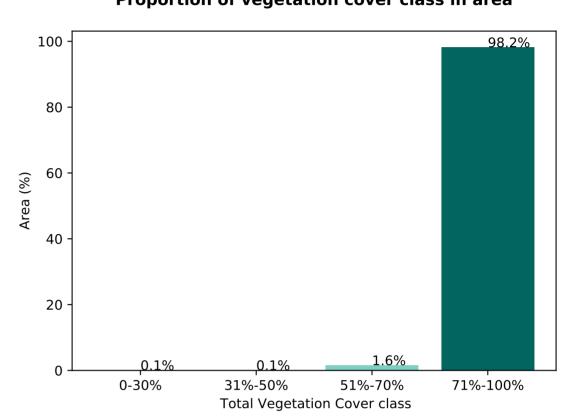
### Proportion of each land class in area

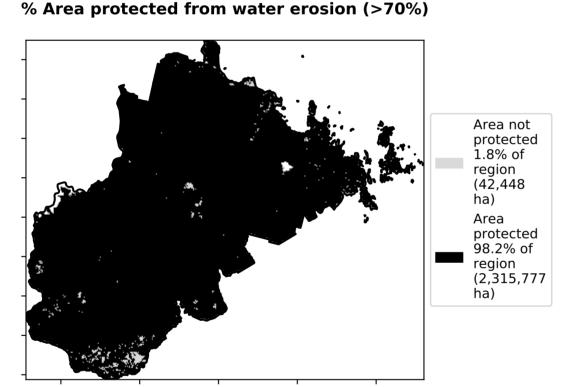


### **Total Vegetation Cover [%]**

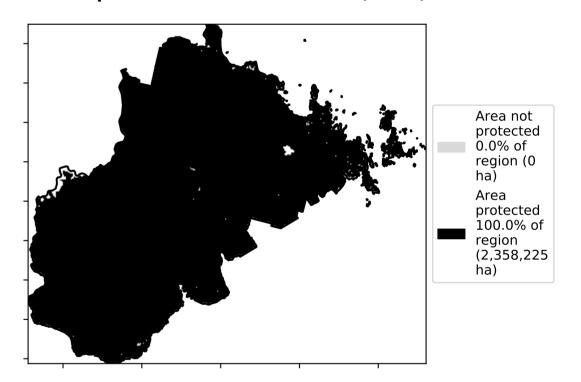


**Proportion of vegetation cover class in area** 

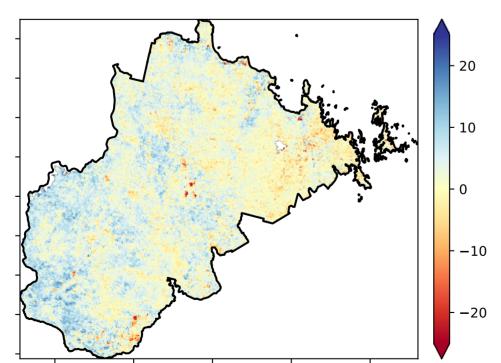




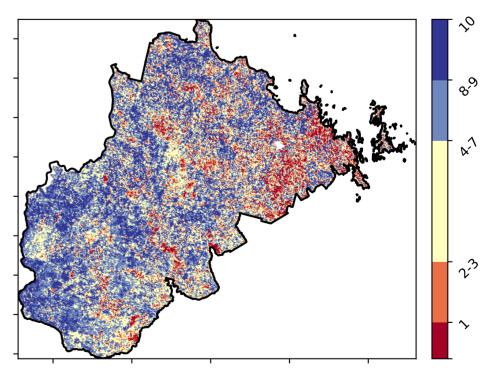
% Area protected from wind erosion (>50%)



**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.

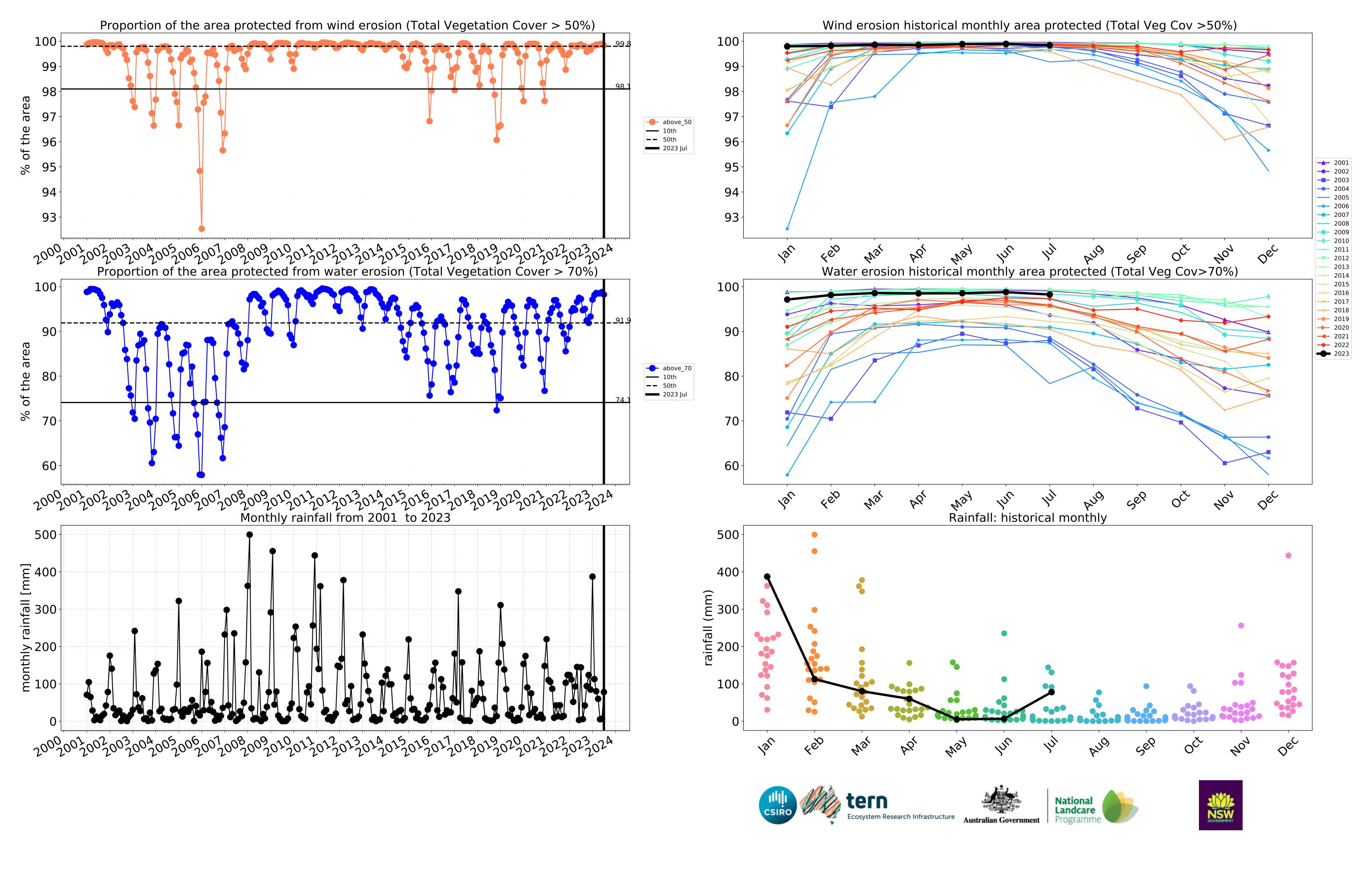








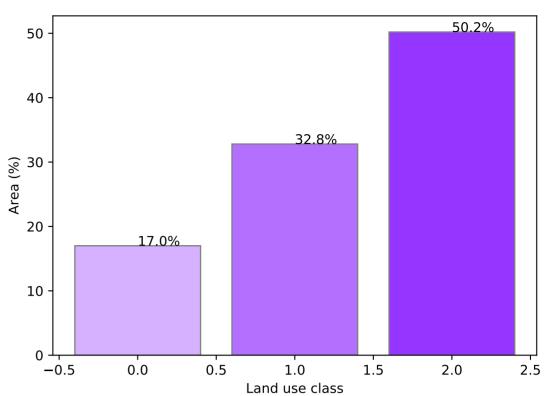




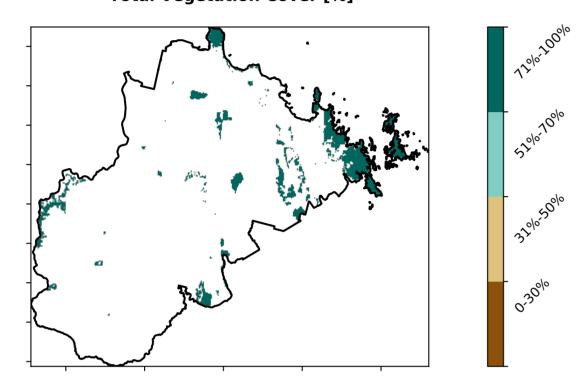
### **Conservation and natural environments**

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

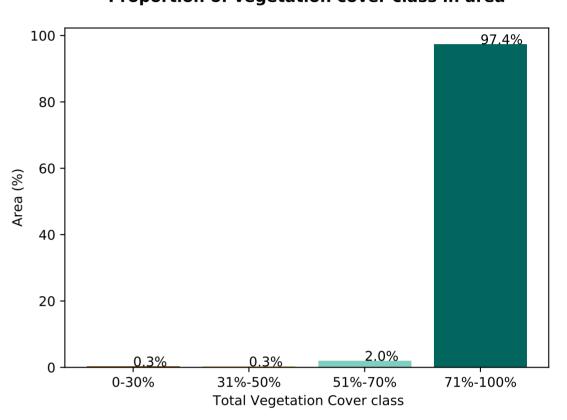
### Proportion of each land class in area



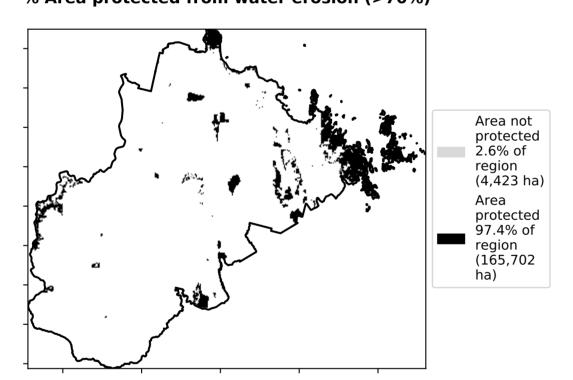
Total Vegetation Cover [%]



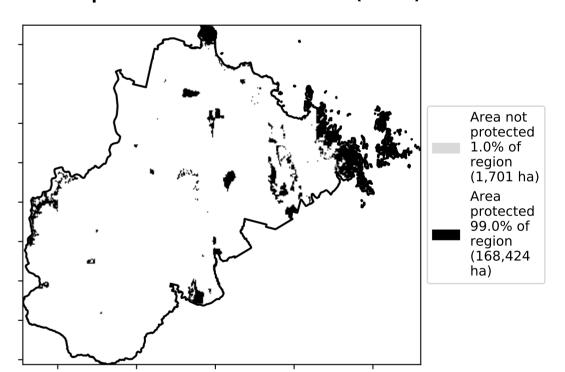
Proportion of vegetation cover class in area



% Area protected from water erosion (>70%)



% Area protected from wind erosion (>50%)



**Total Vegetation Cover Anomaly [%]** 

Anomaly show how many percetage points each pixel is from

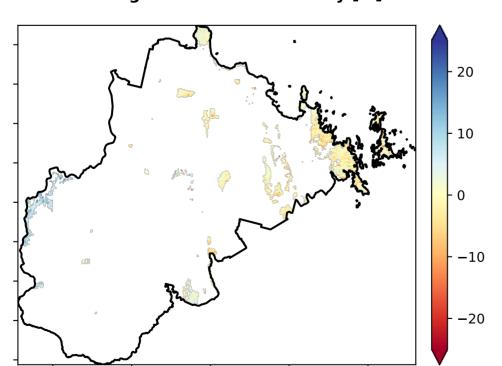
the mean. That

pixel. The mean

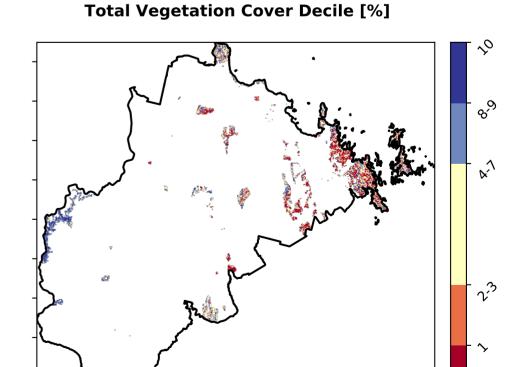
using baseline from 2001 to 2019.

is only for the month of the map

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



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.



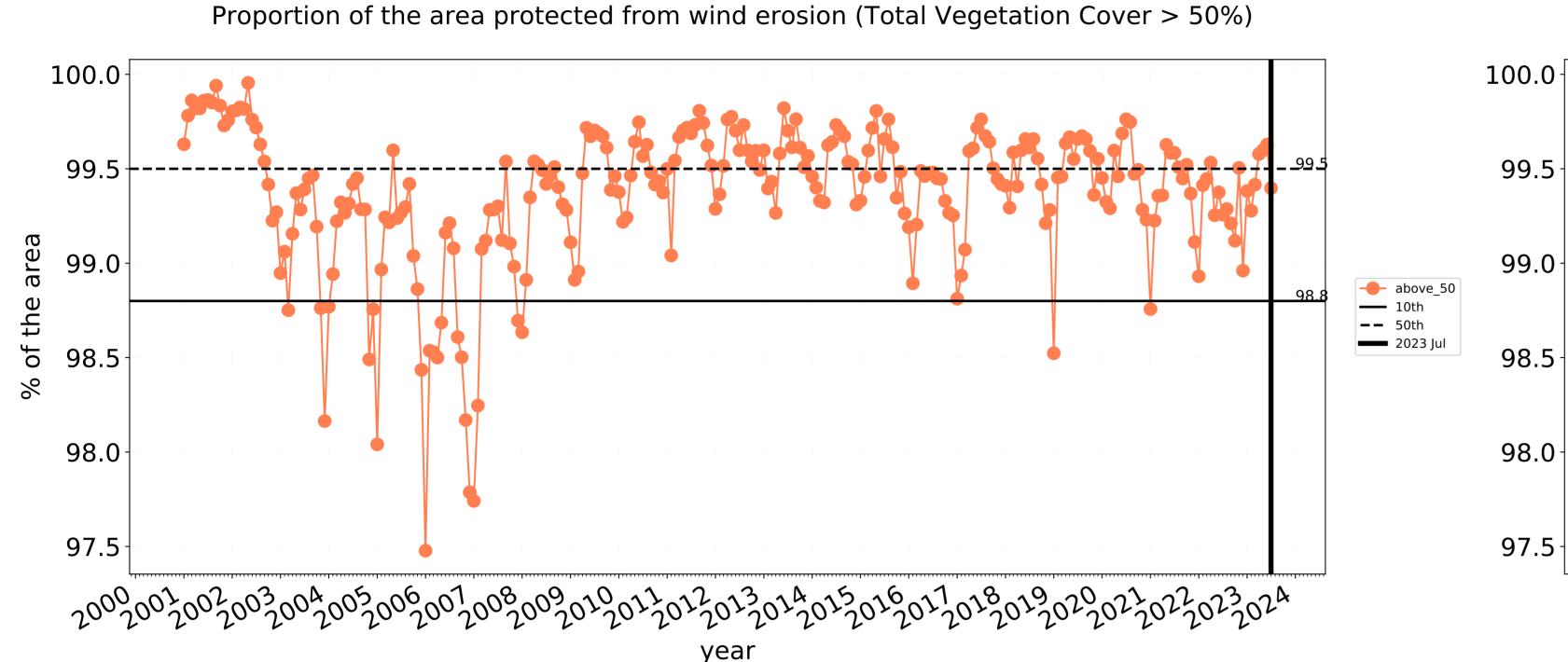


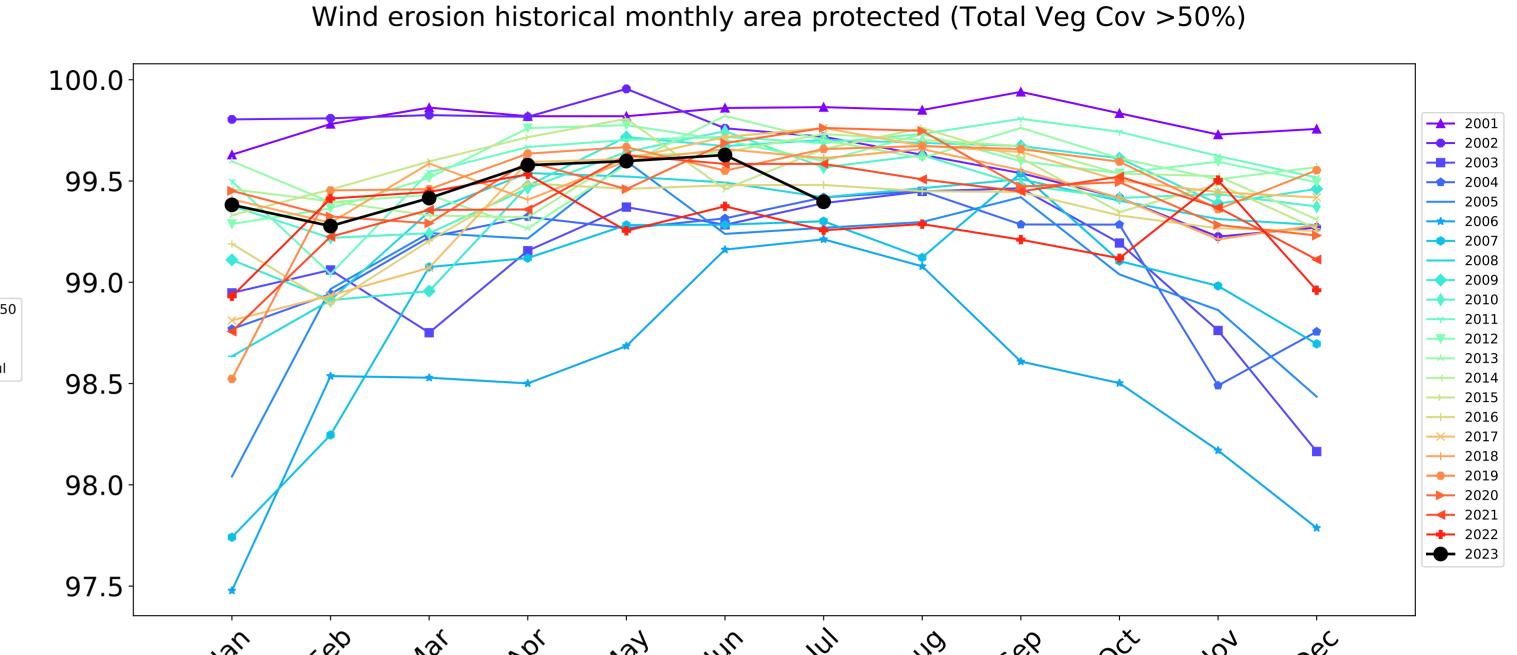




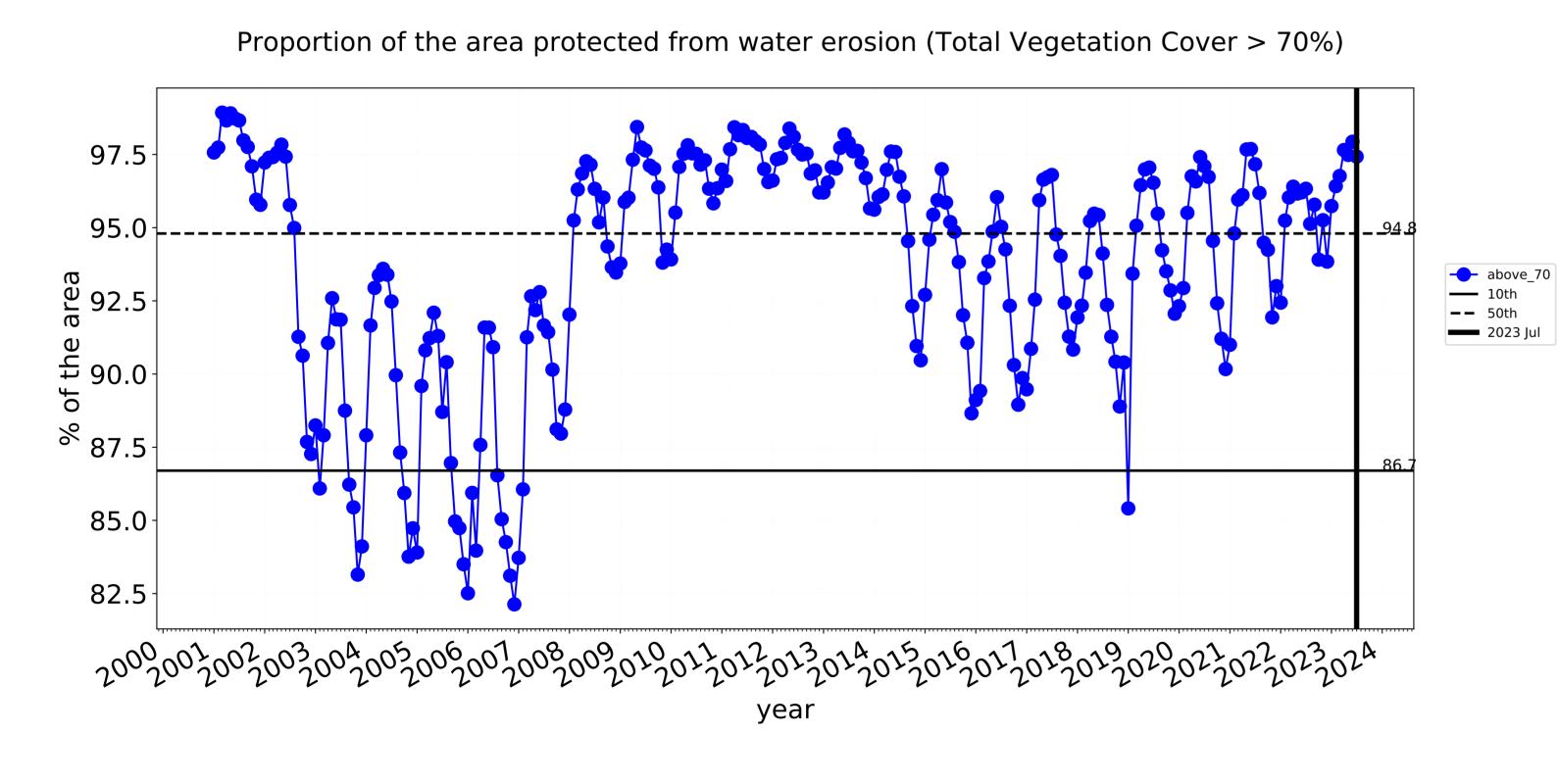


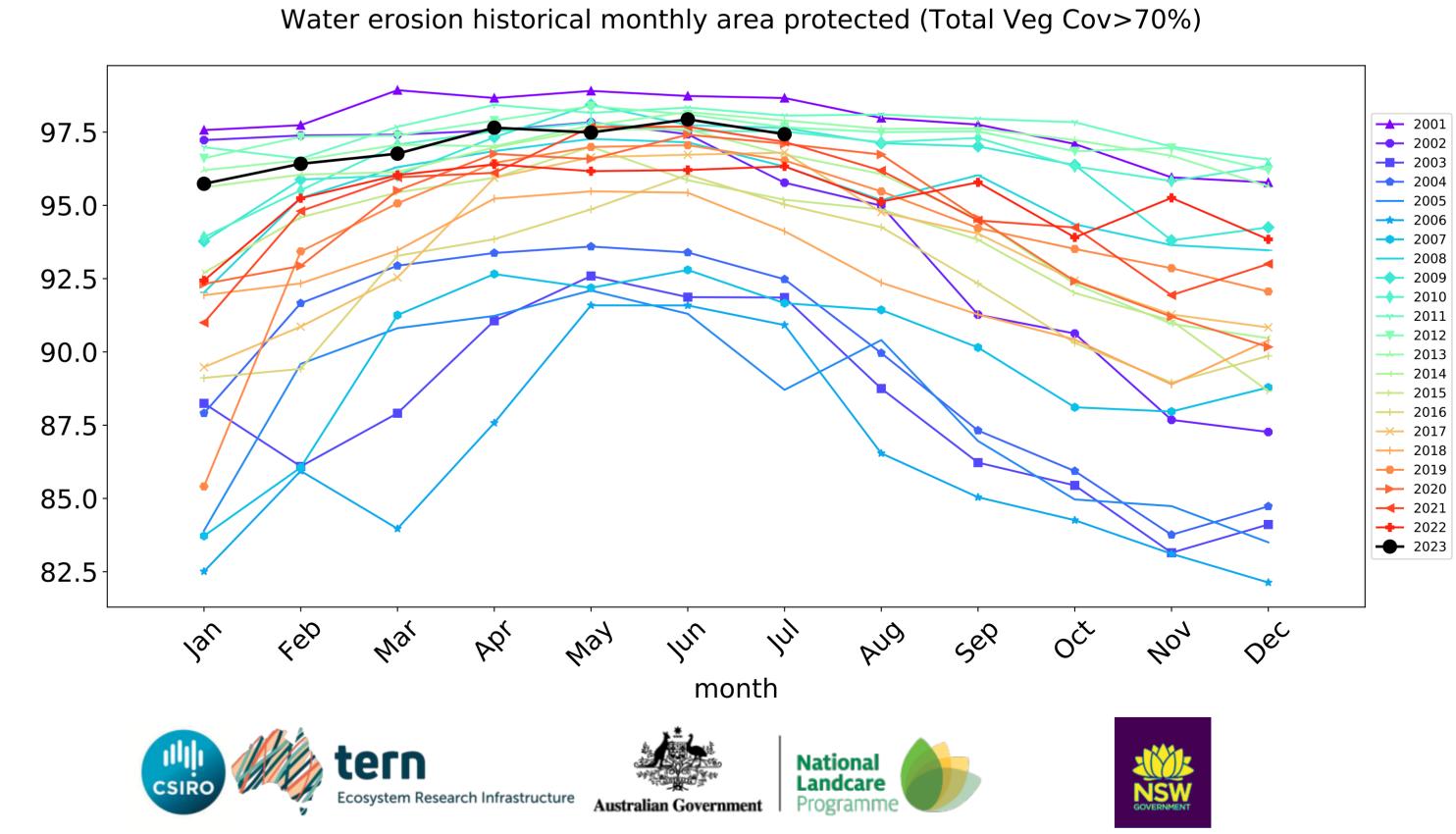
### **Conservation and natural environments timeseries**





month





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

### Land use and forest cover

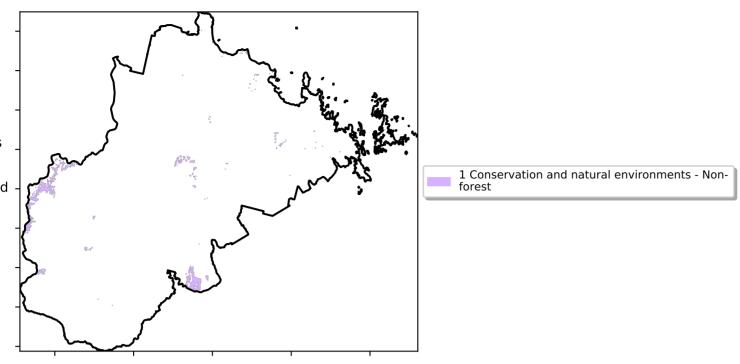


Anomaly show how many percetage points each pixel is from

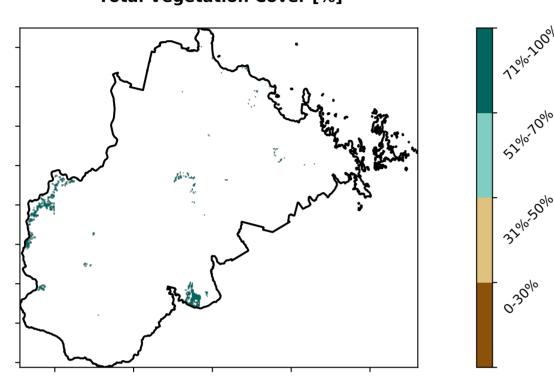
the mean. That

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

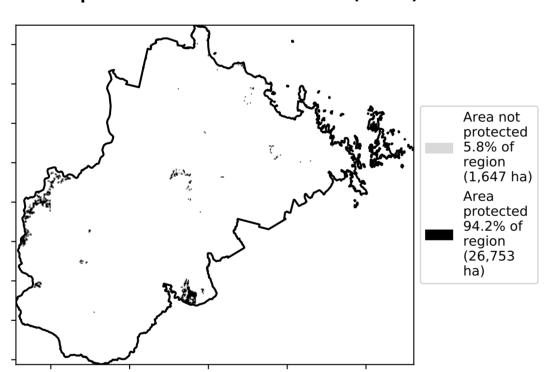
using baseline from 2001 to 2019.



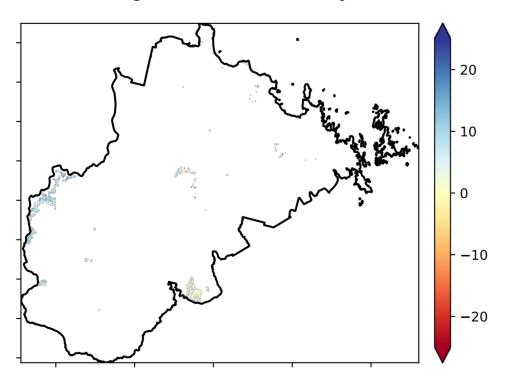
### **Total Vegetation Cover [%]**



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

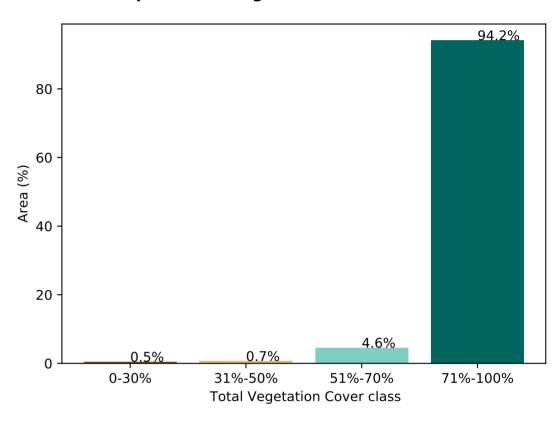


### Total Vegetation Cover Anomaly [%]

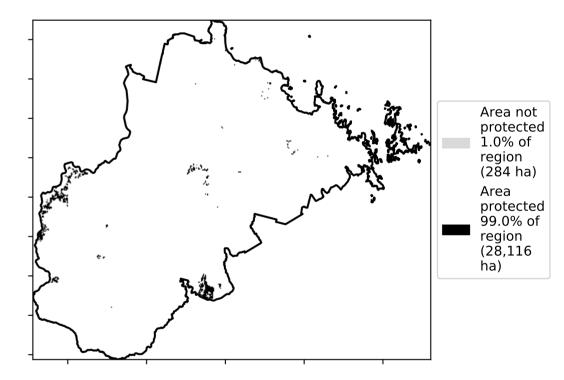


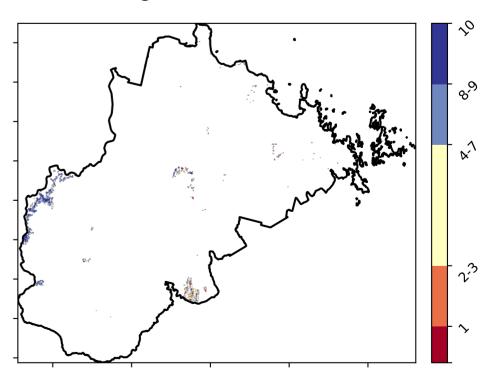
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

### Proportion of vegetation cover class in area



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





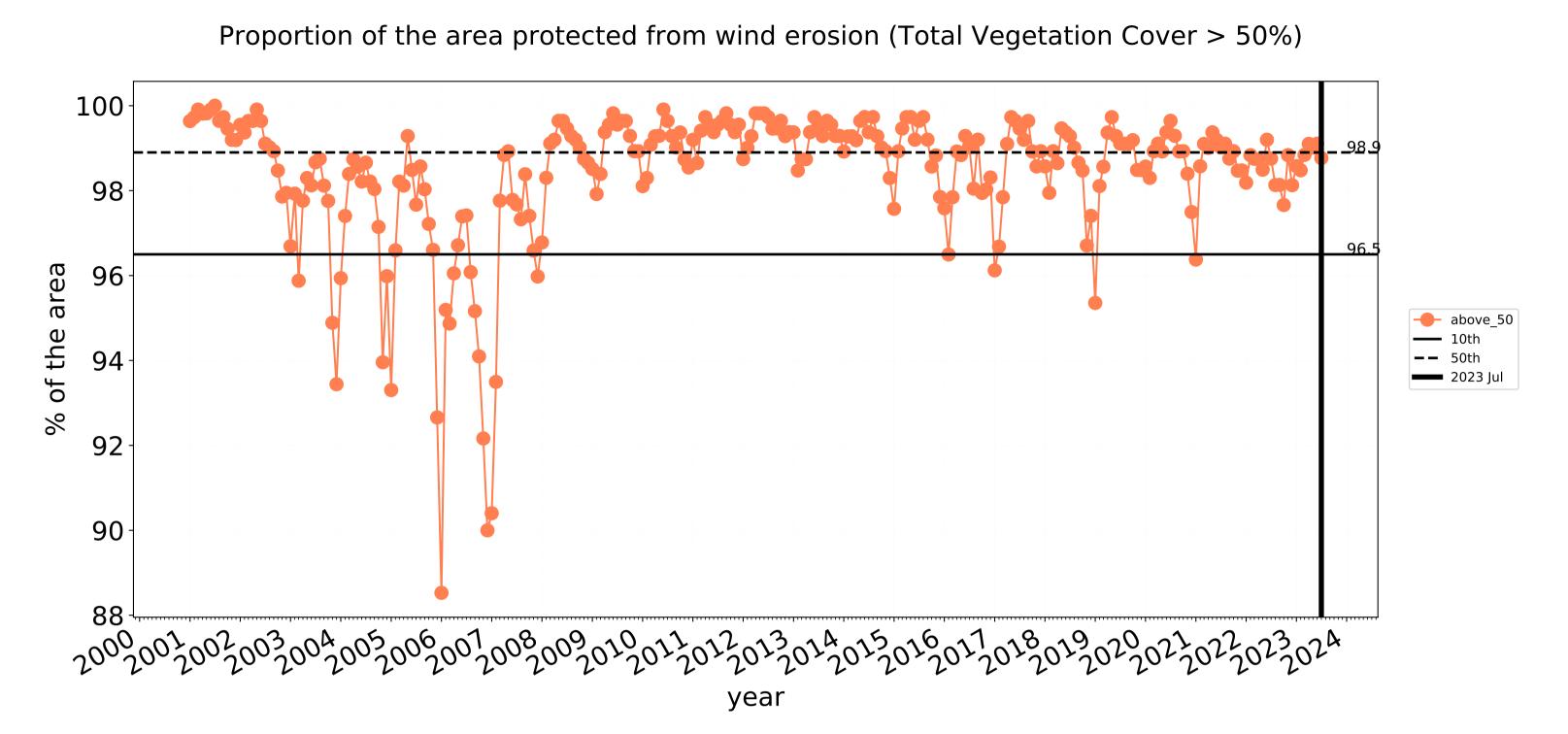


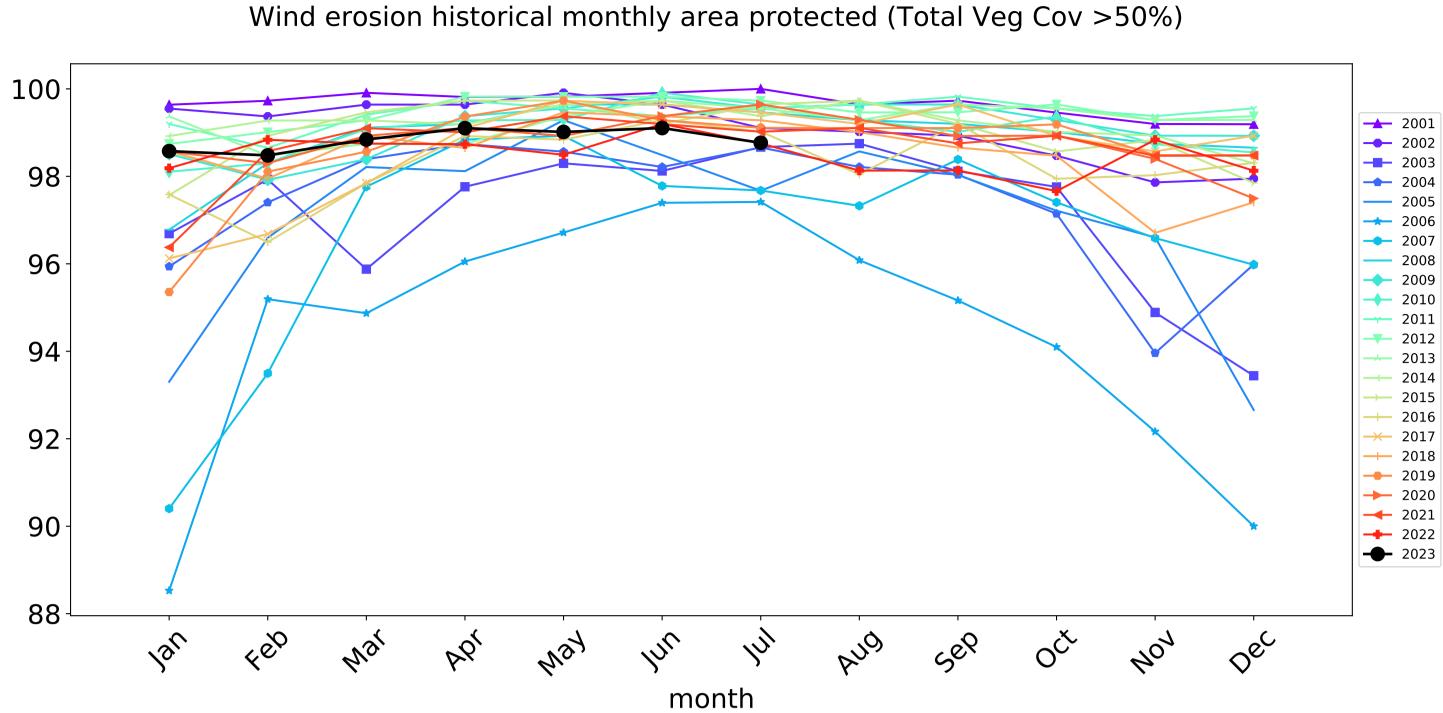


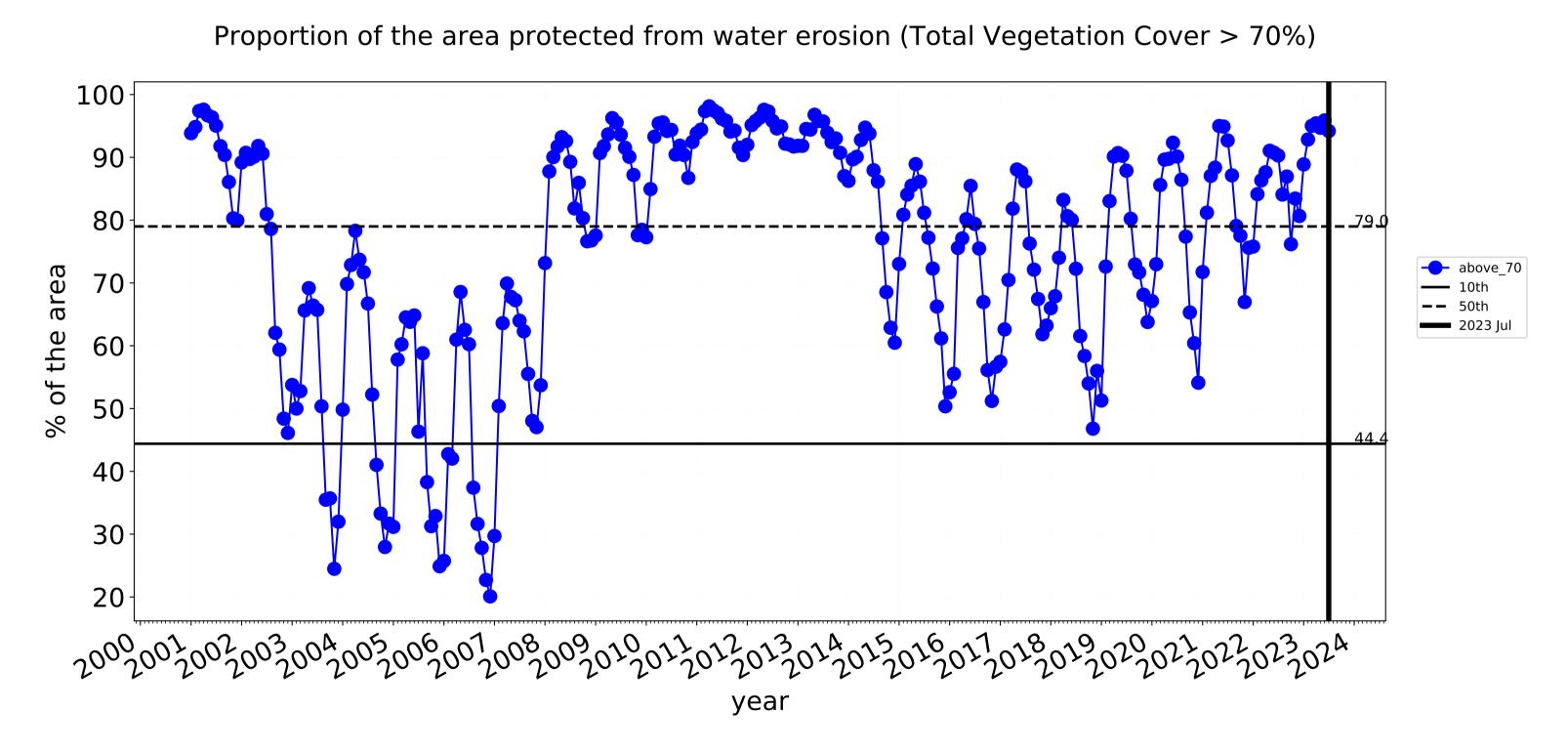


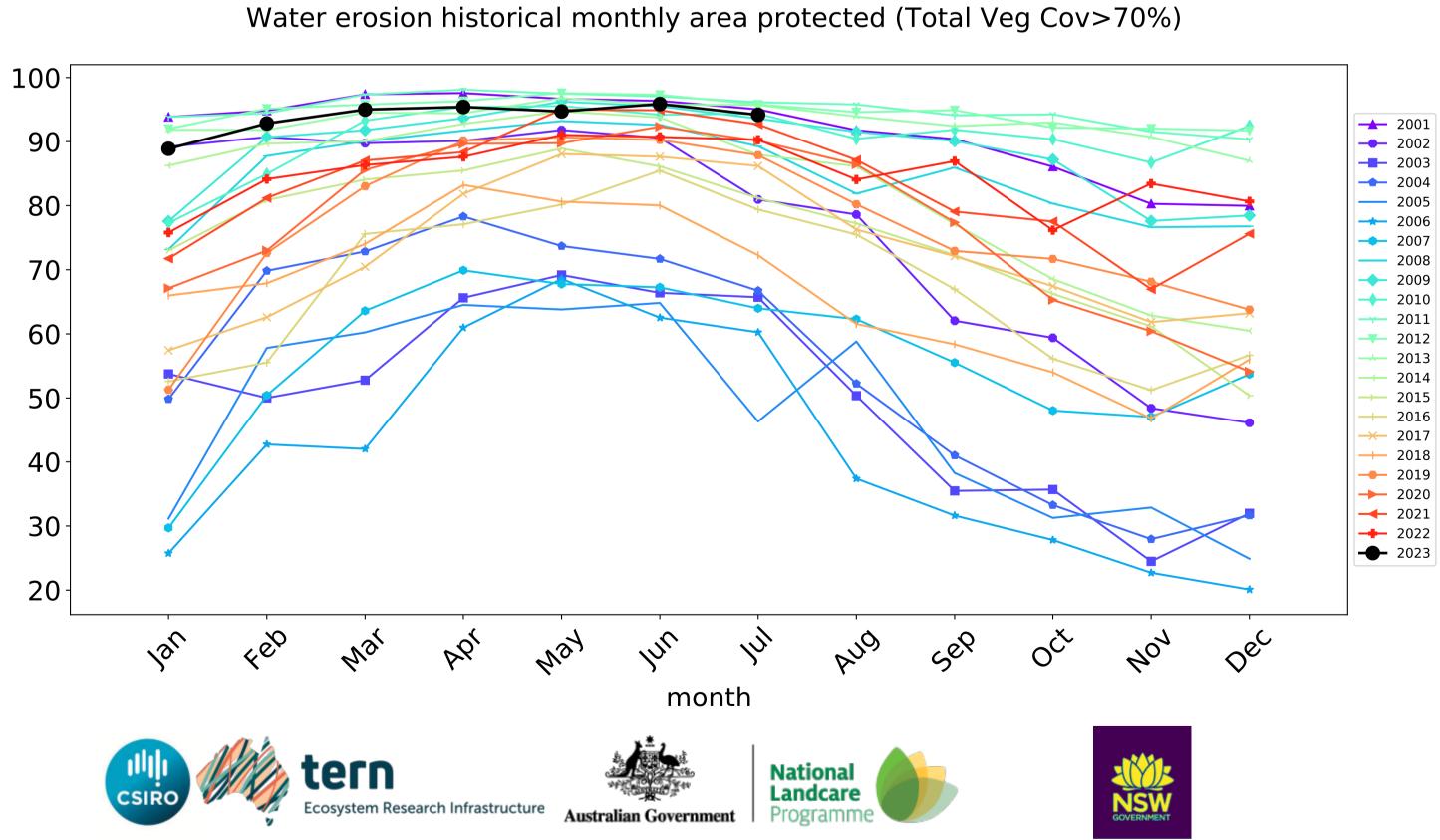


### **Conservation and natural environments non forest timeseries**





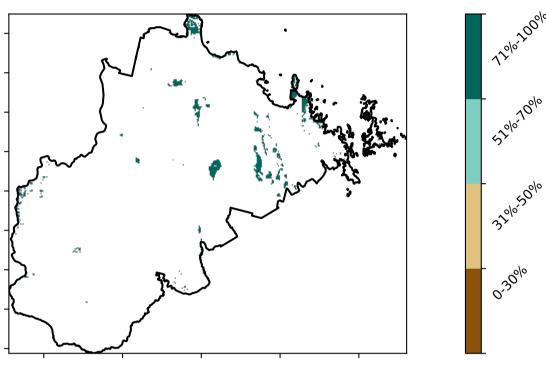




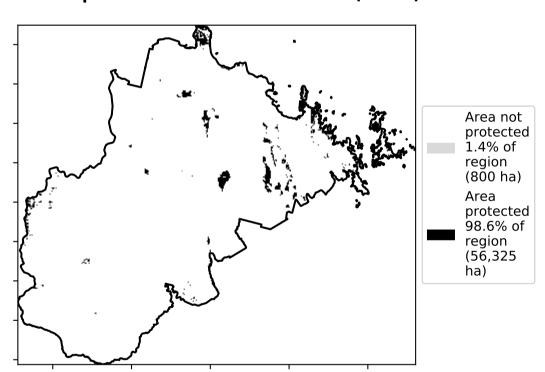
### **Conservation and natural environments Woodland forest**

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

### Total Vegetation Cover [%]



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



### Total Vegetation Cover Anomaly [%]

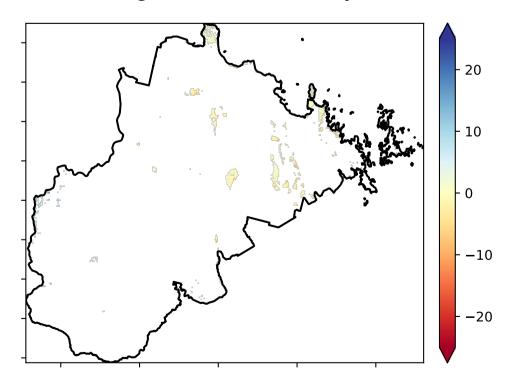
Anomaly show how many percetage points each pixel is from the mean. That

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pixel. The mean

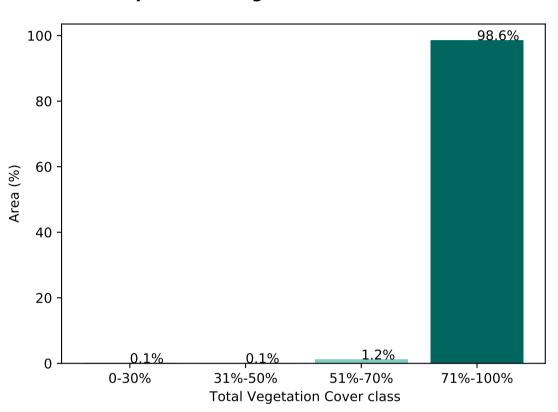
using baseline from 2001 to 2019.

is only for the month of the map

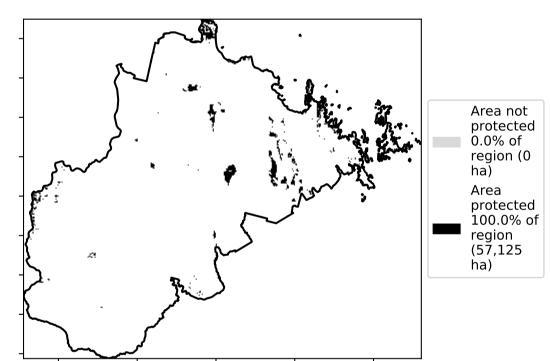


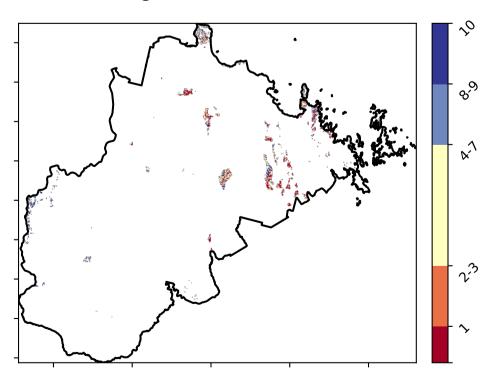
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

### Proportion of vegetation cover class in area



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





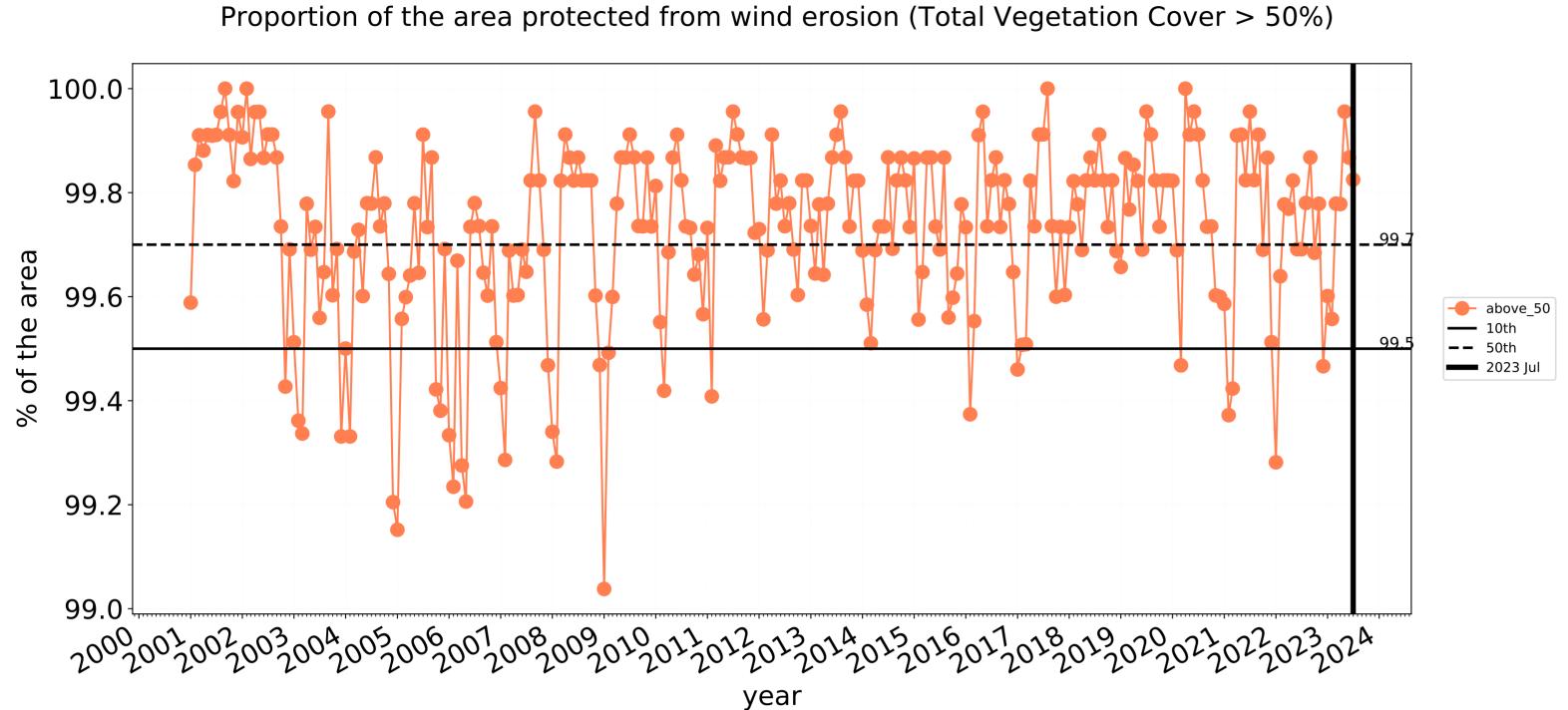


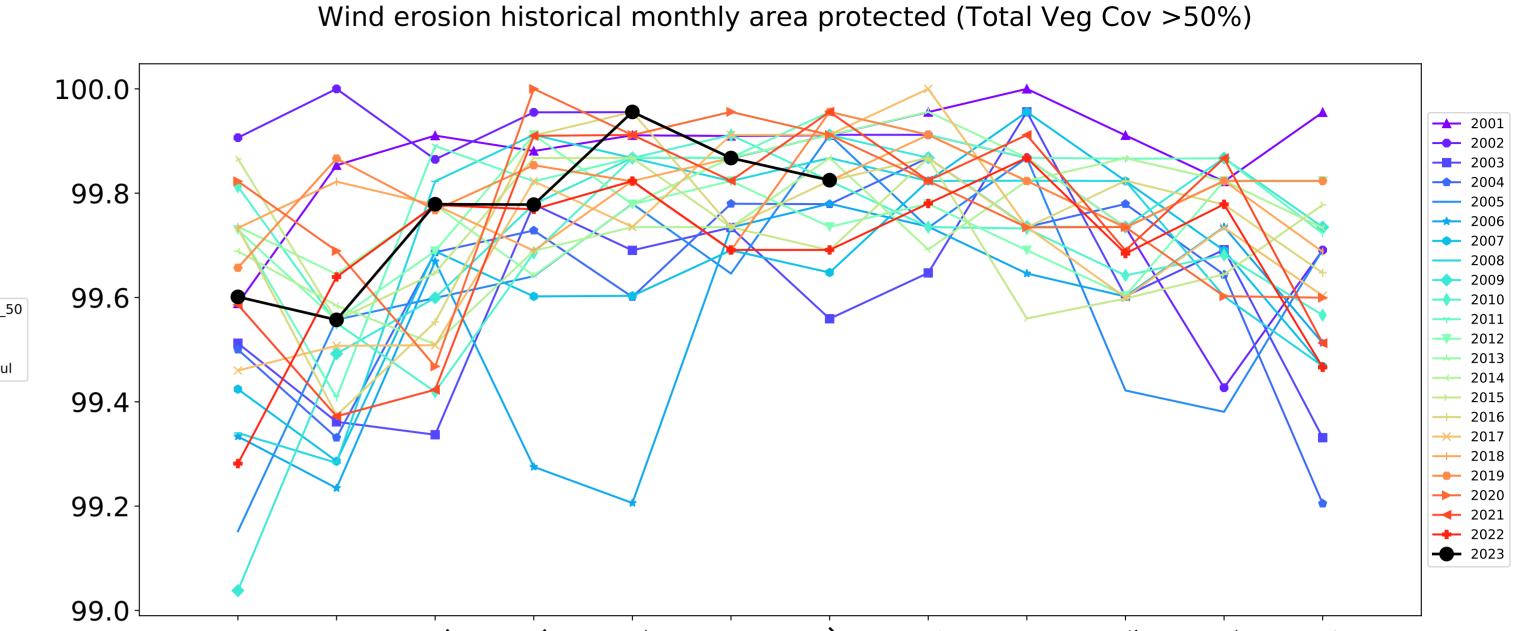




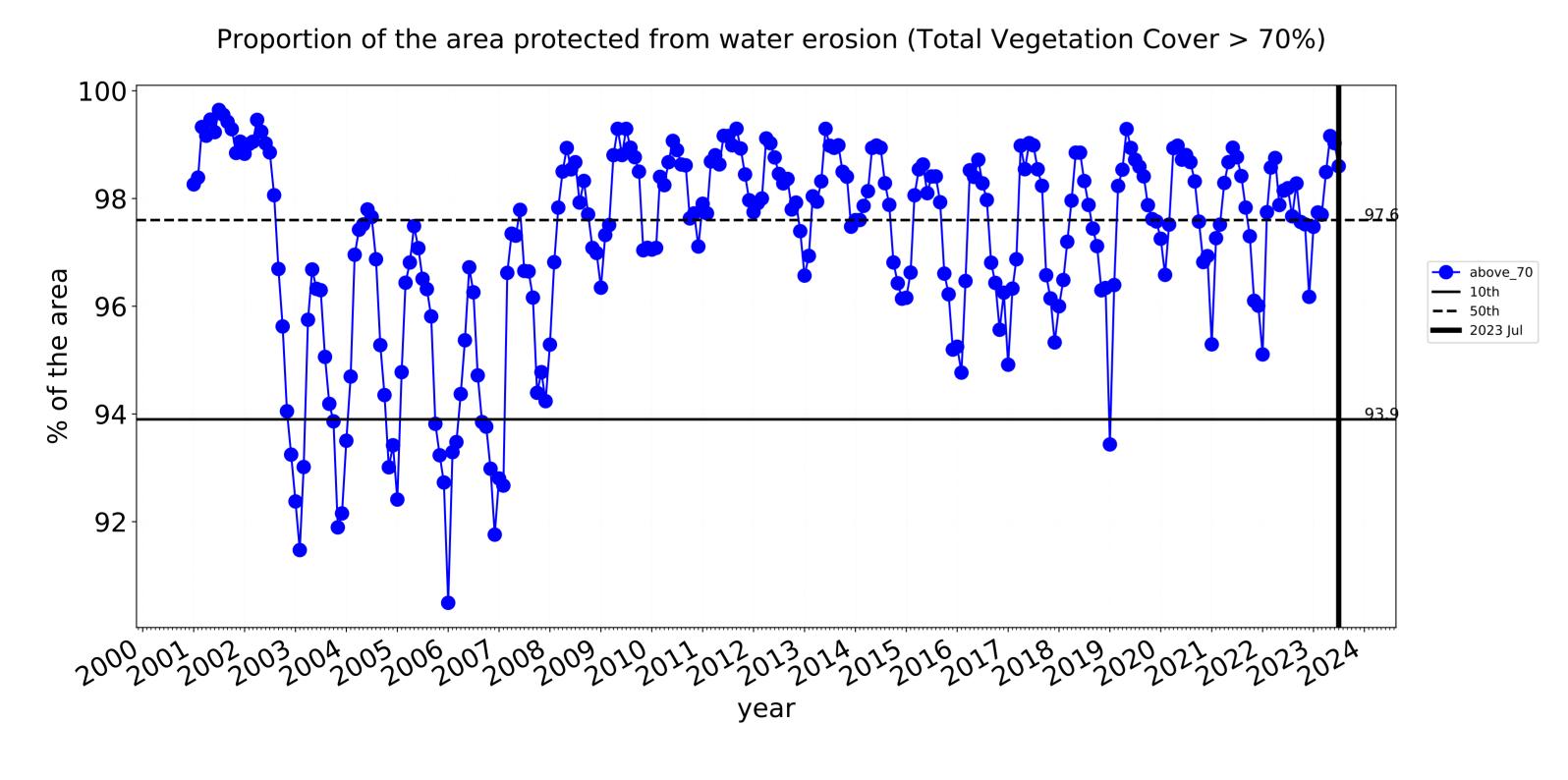


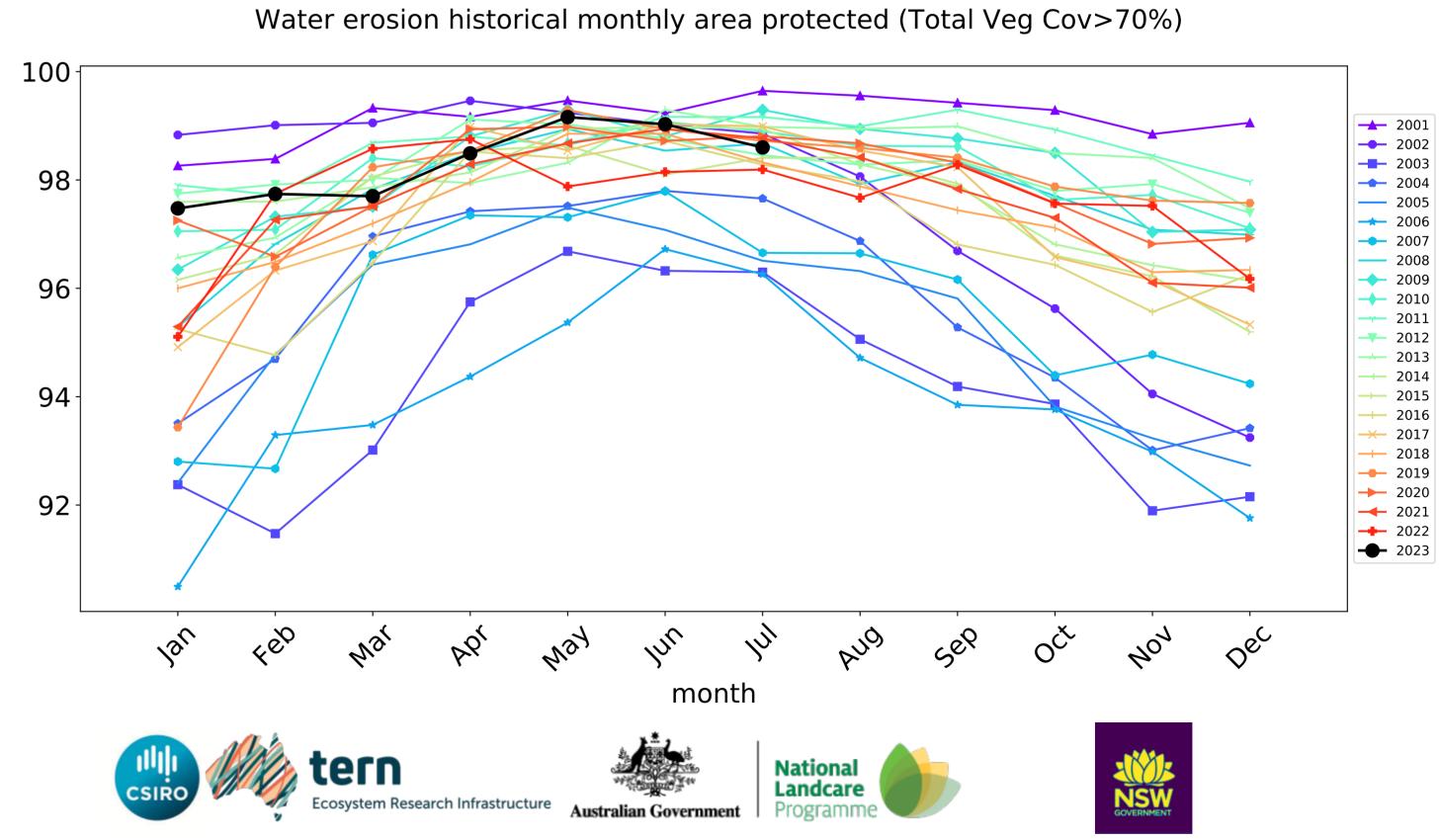
### **Conservation and natural environments Woodland forest timeseries**





month

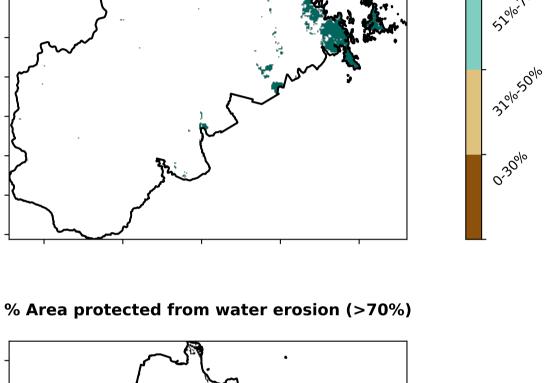


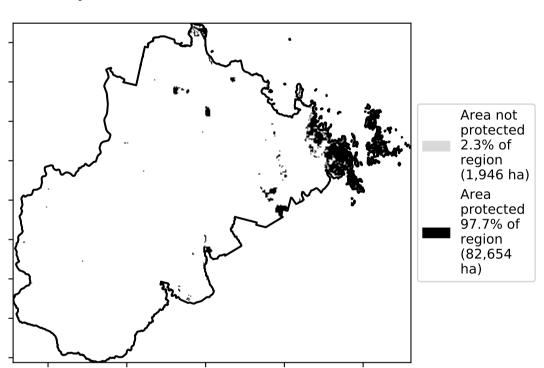


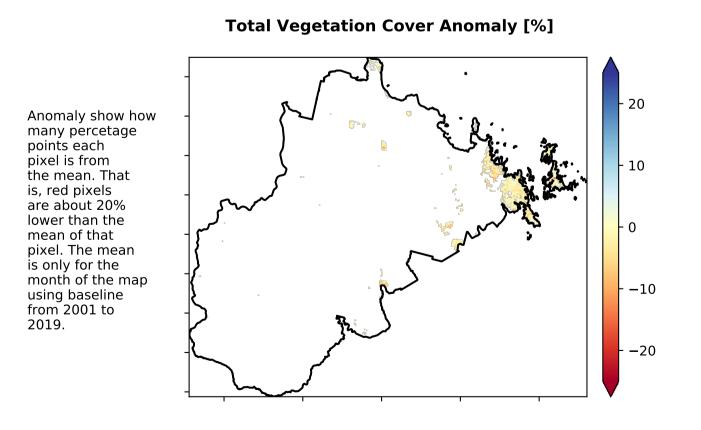
### **Conservation and natural environments Forest (non woodland)**

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

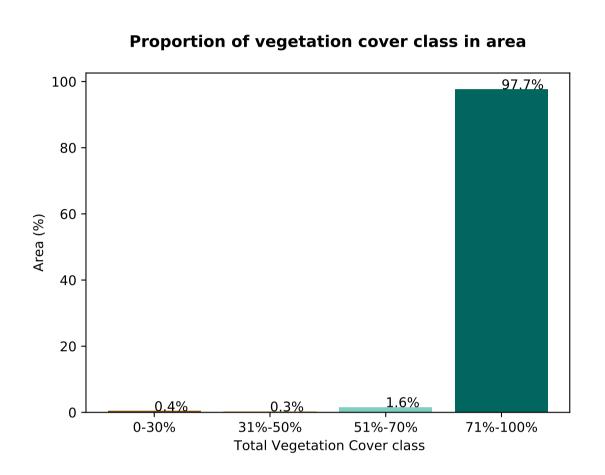
# **Total Vegetation Cover [%]**

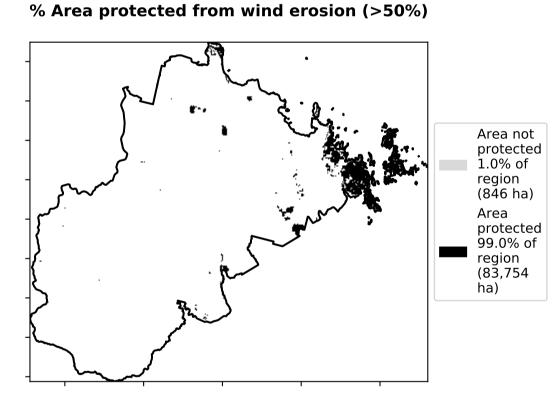


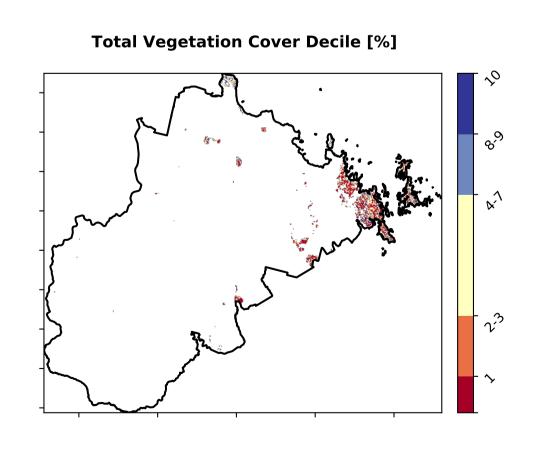




Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the man using baseline. the map using baseline from 2001 to 2019.





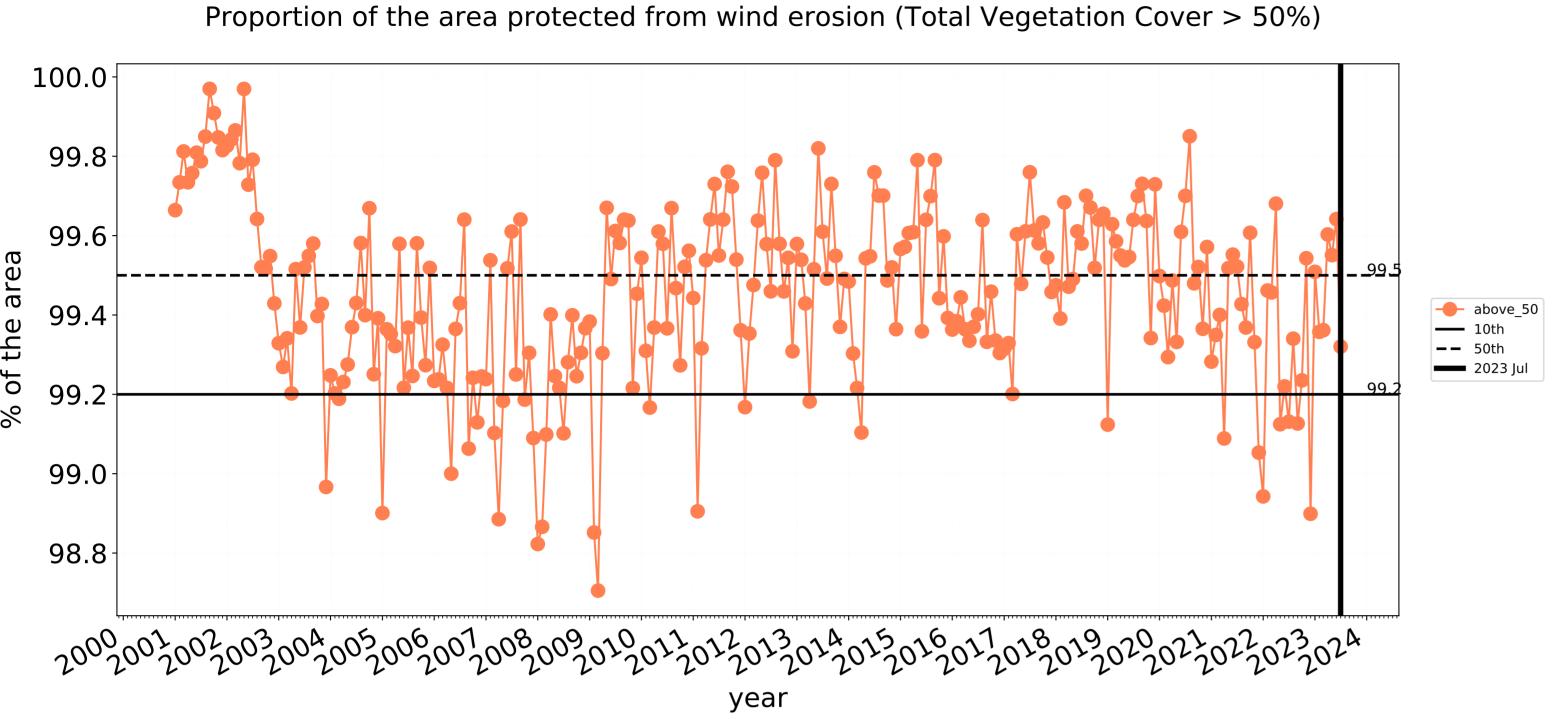


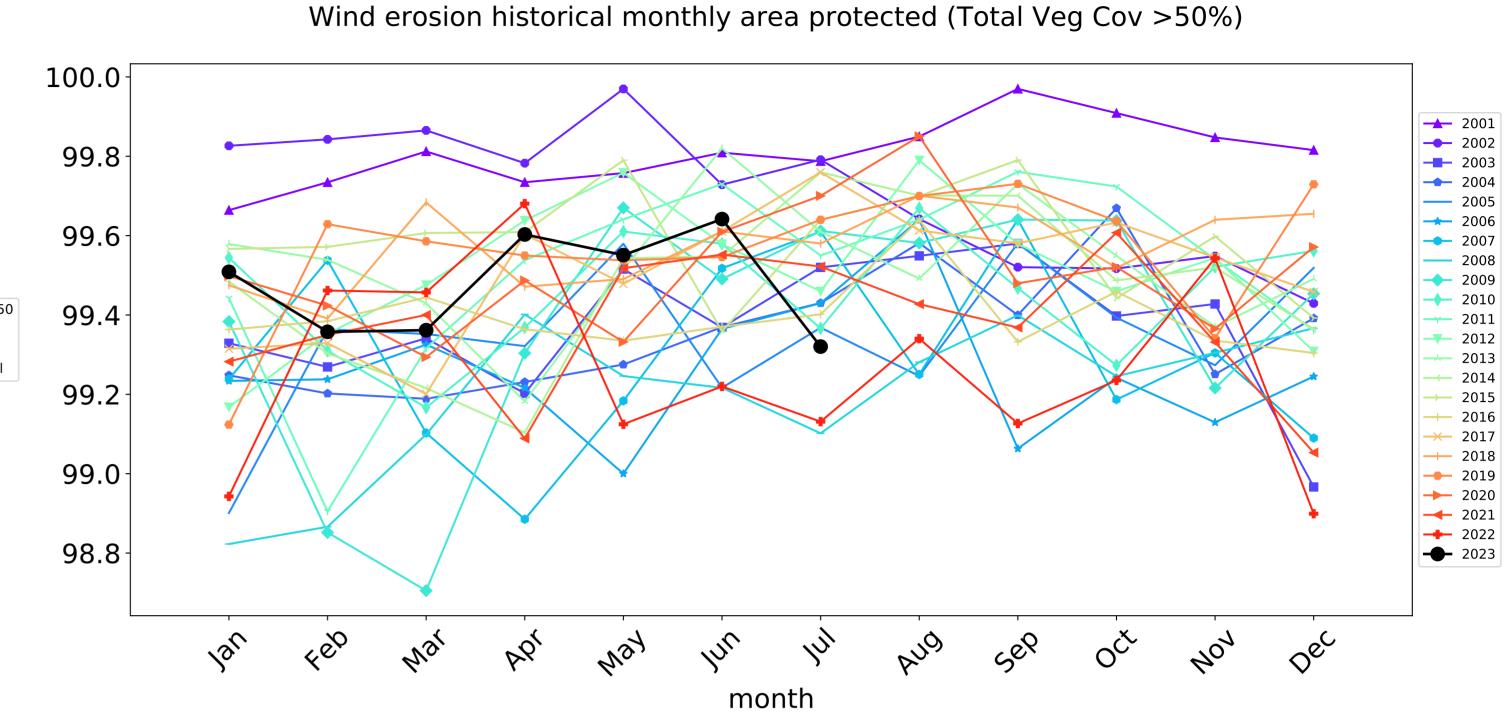


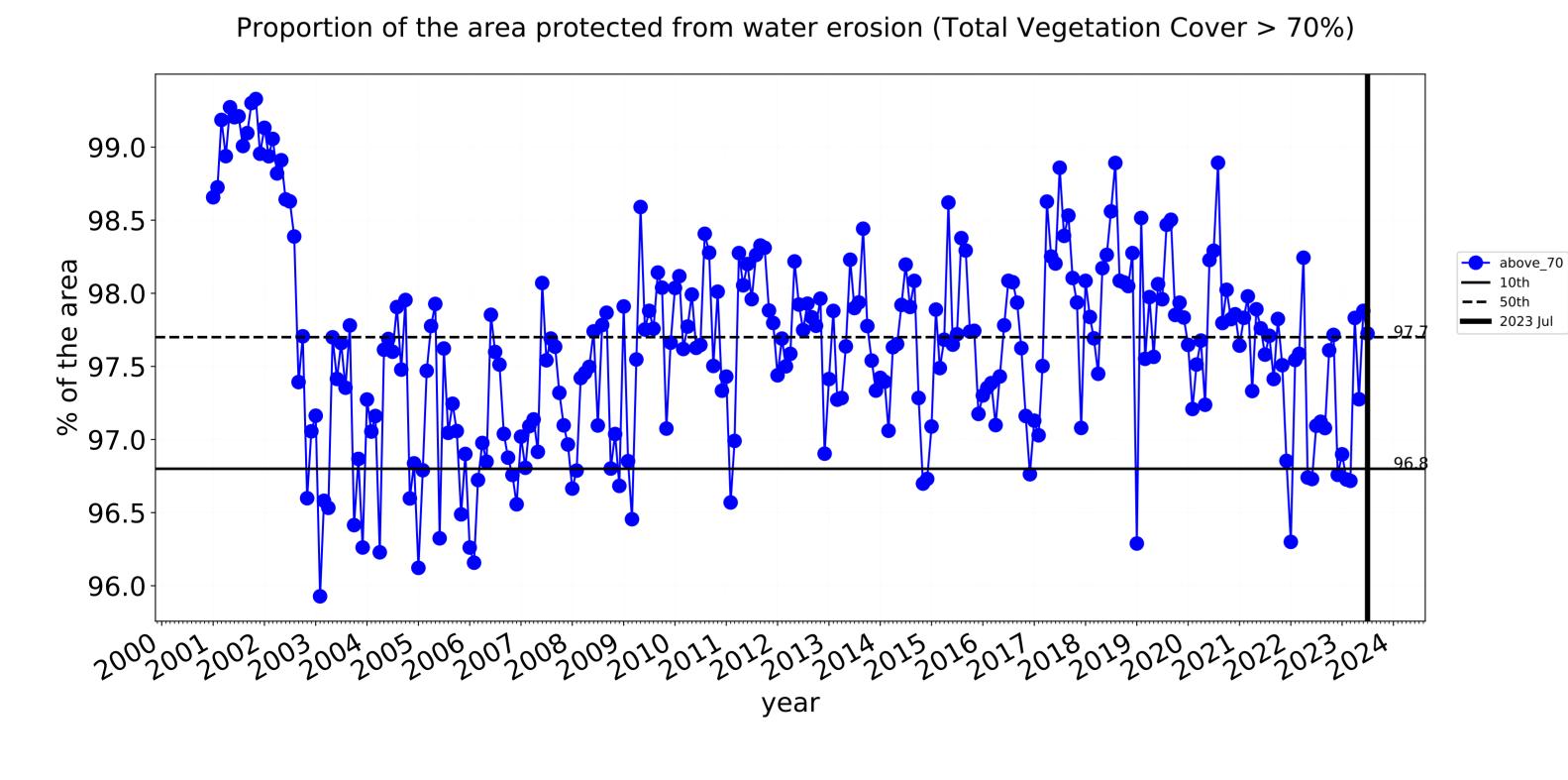


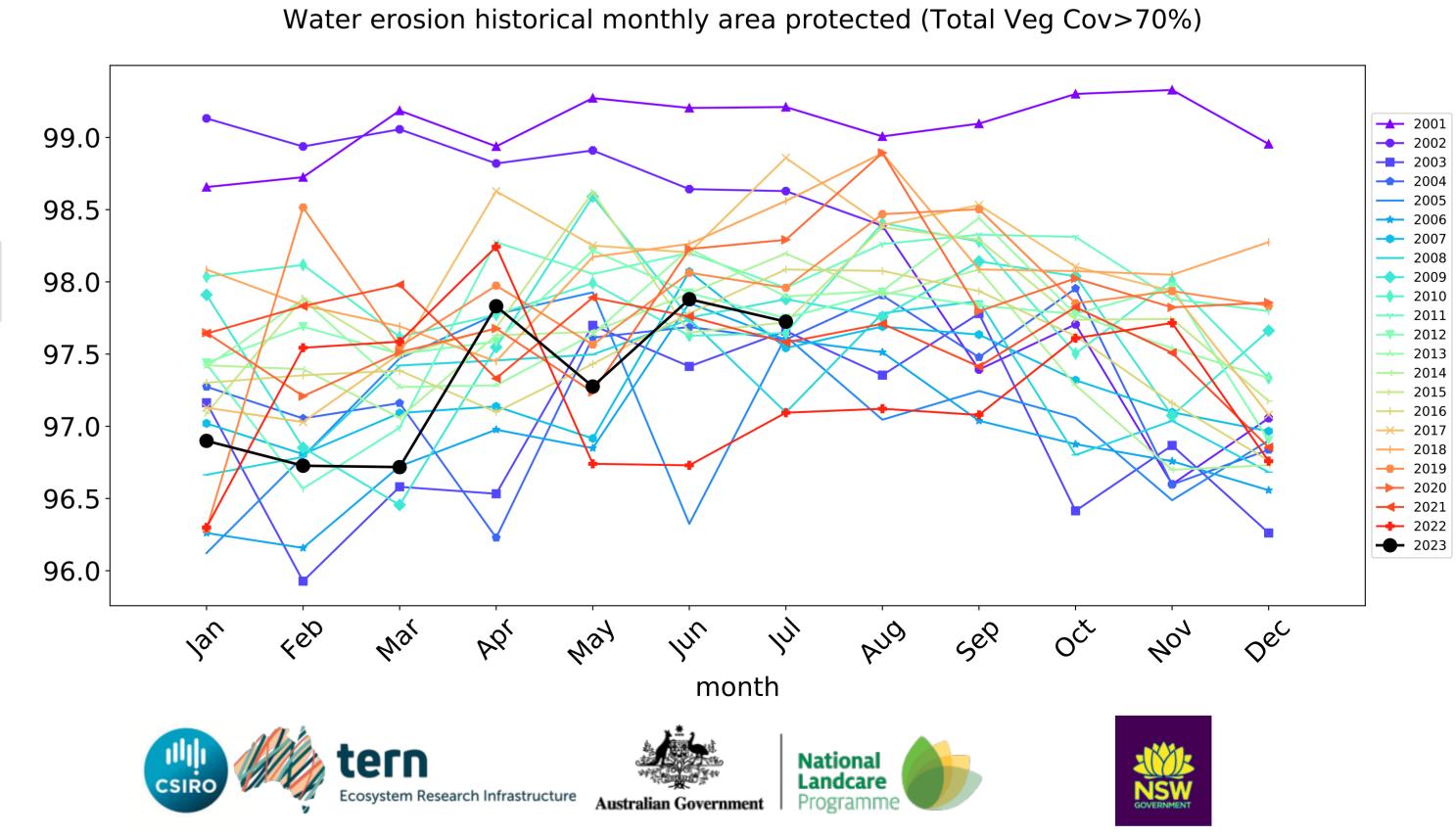












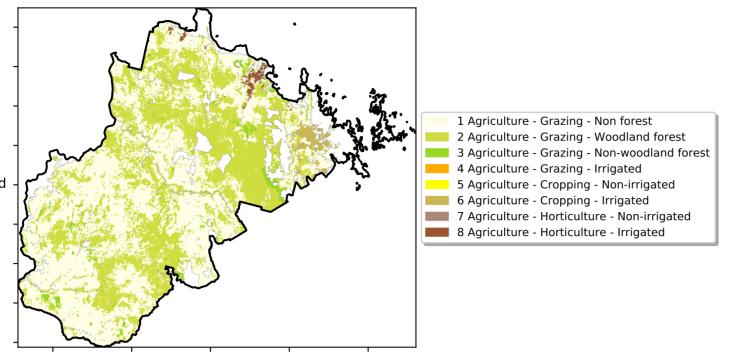
### **Agriculture**

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

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

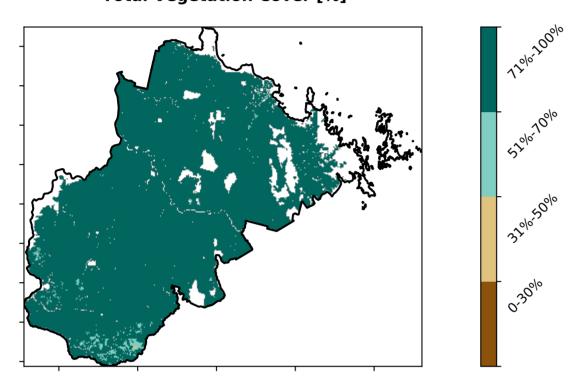
pixel. The mean

using baseline from 2001 to 2019.

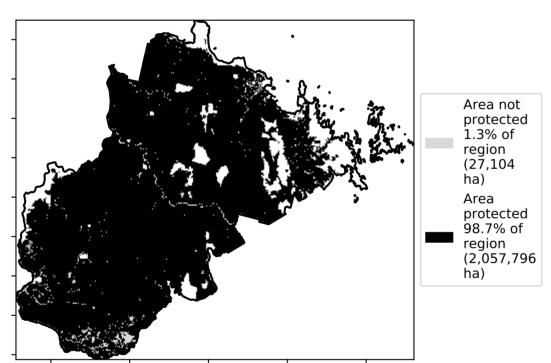


### **Total Vegetation Cover [%]**

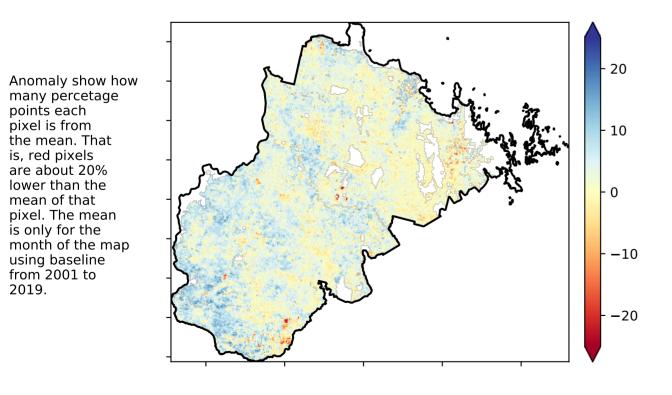
Land use and forest cover



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

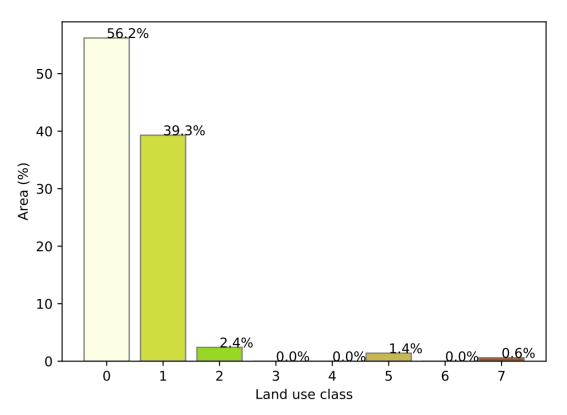


### **Total Vegetation Cover Anomaly [%]**

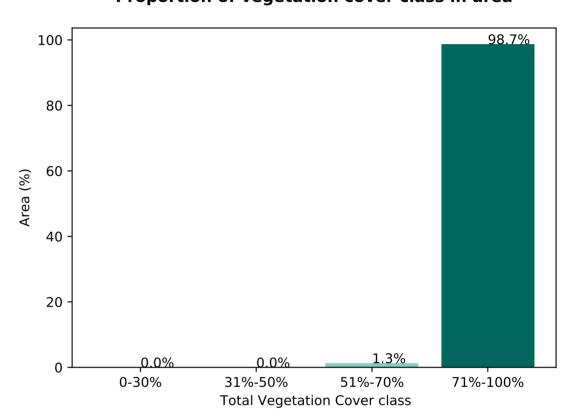


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

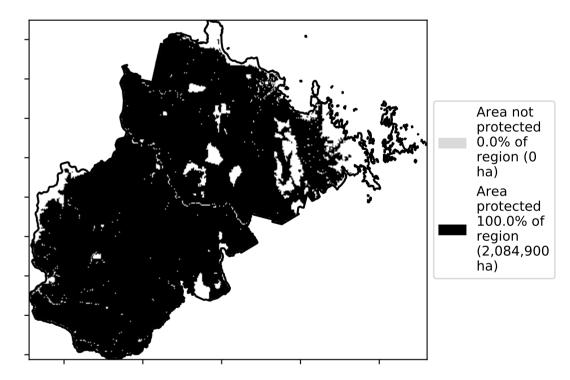
### Proportion of each land class in area

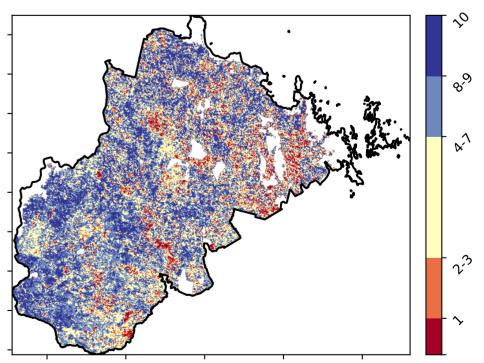


Proportion of vegetation cover class in area



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





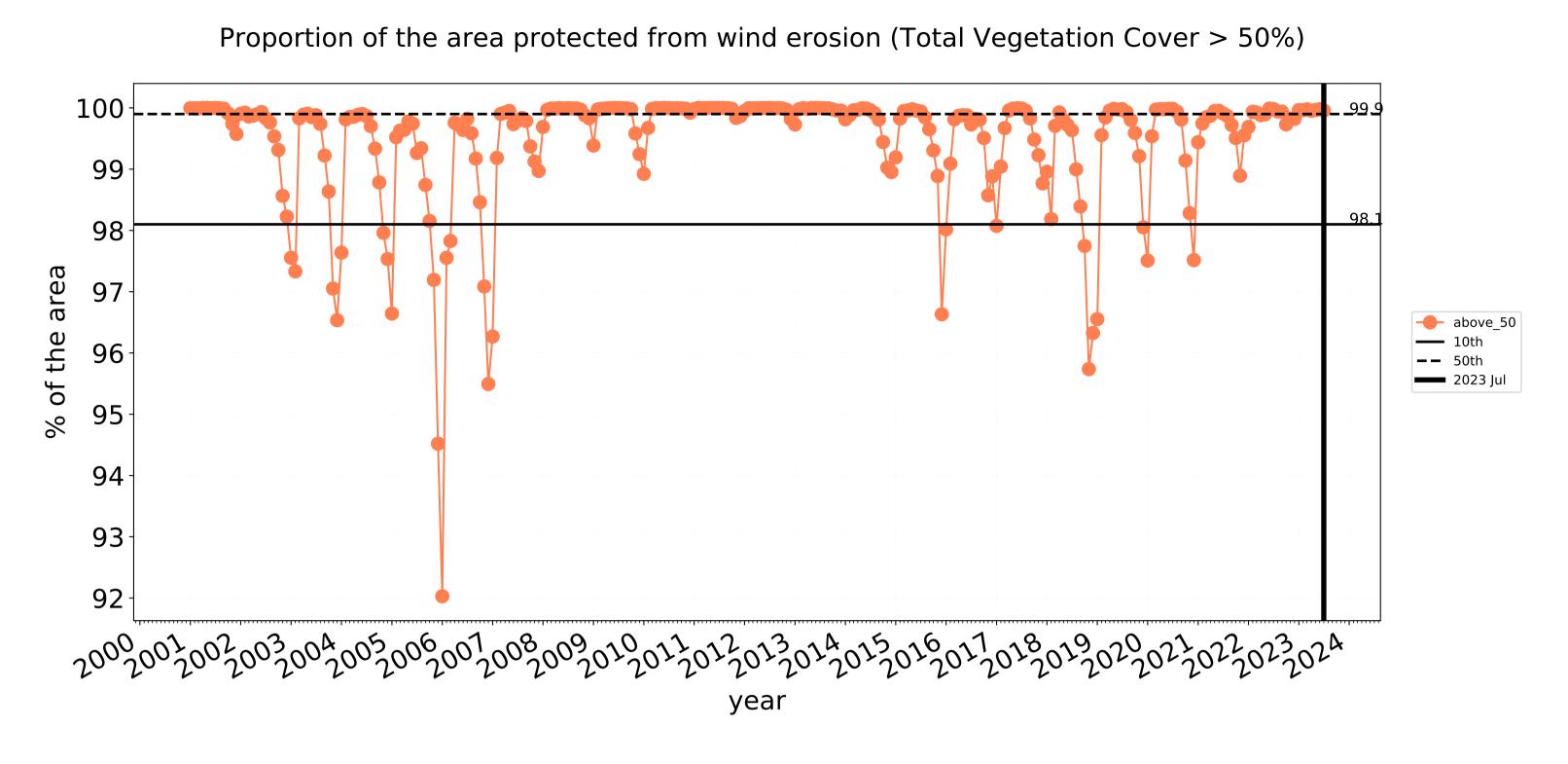


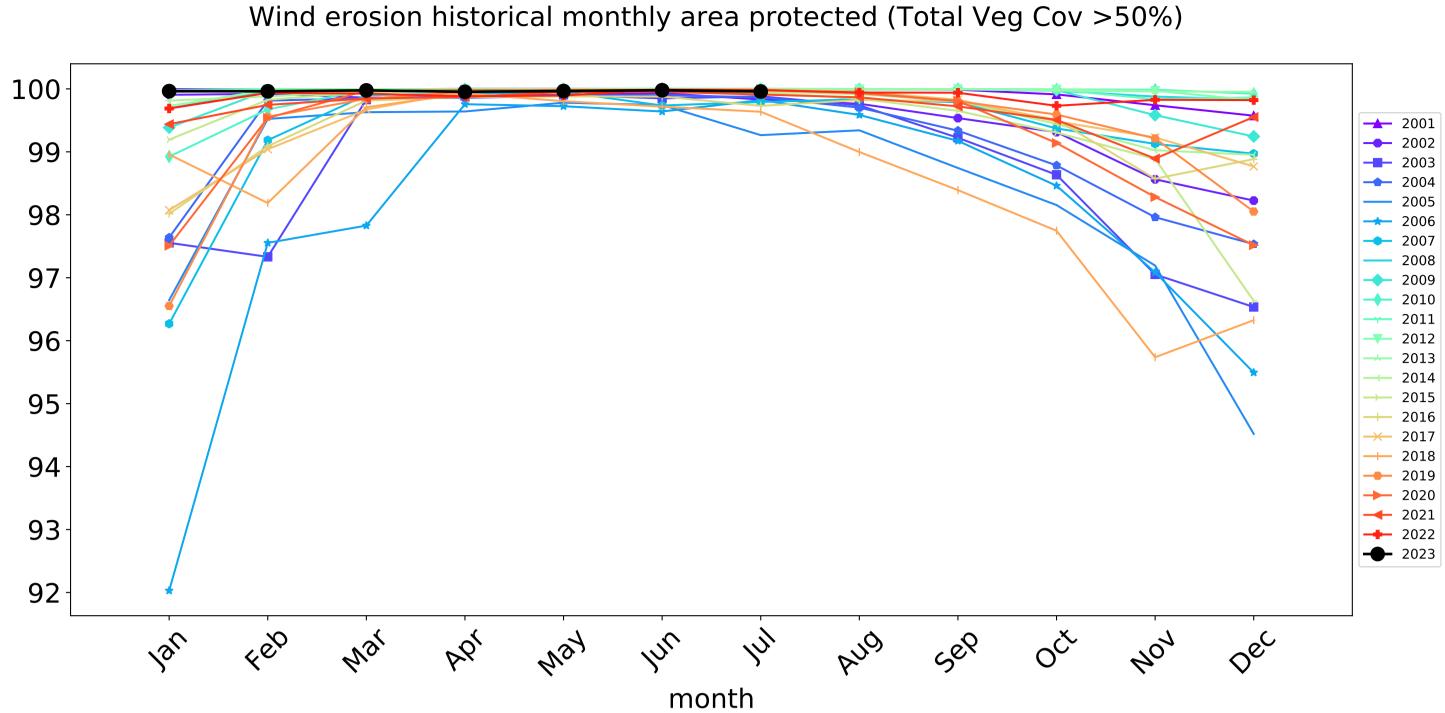


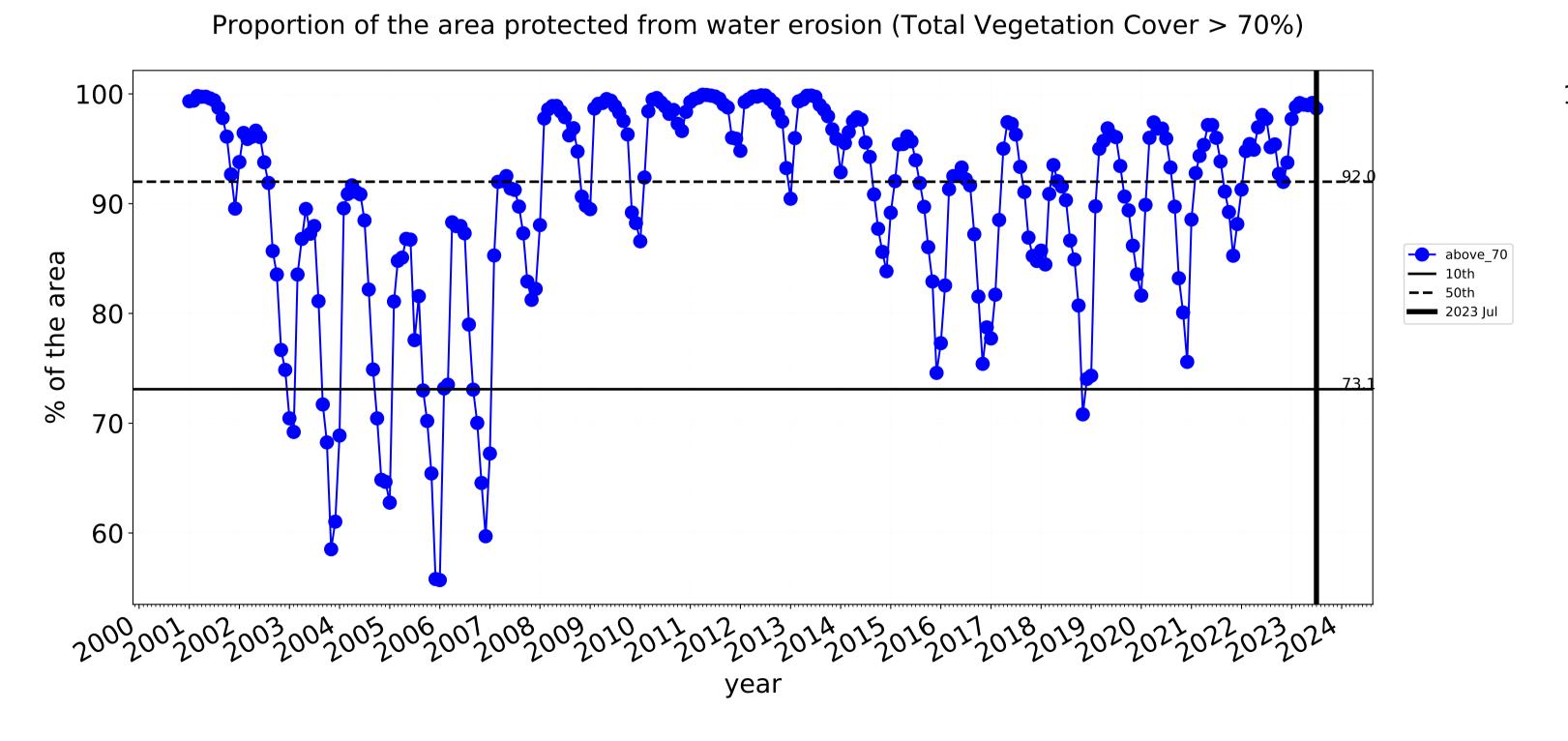


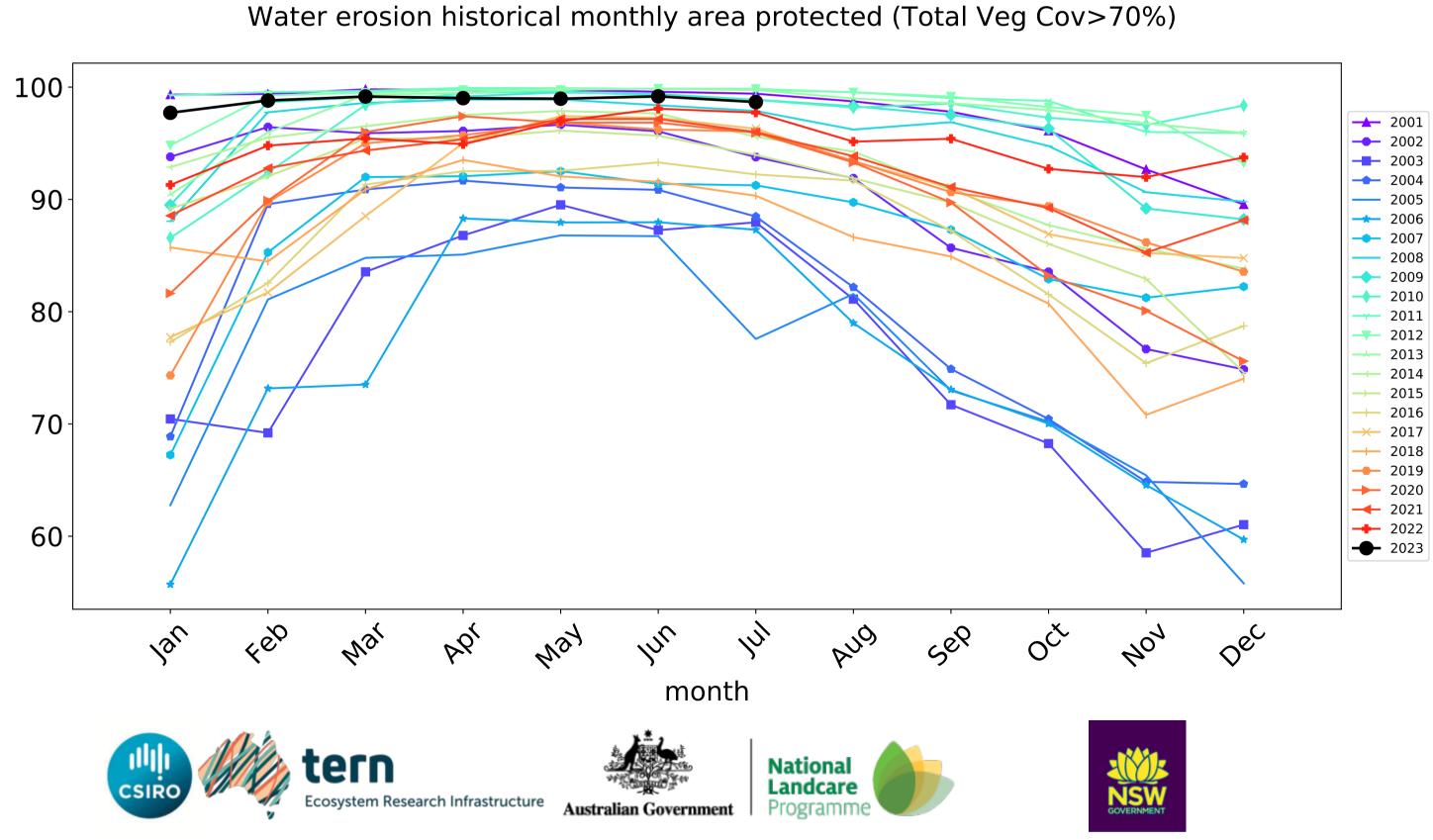


### **Agriculture timeseries**





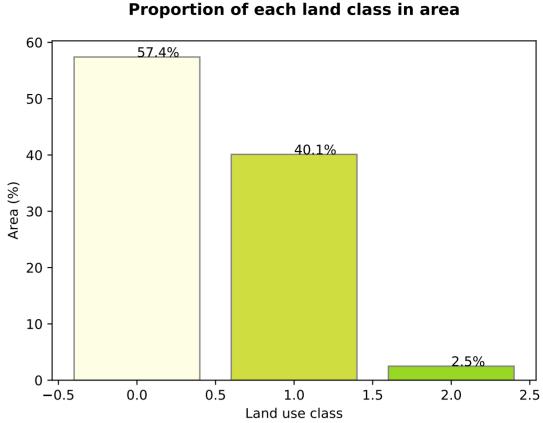


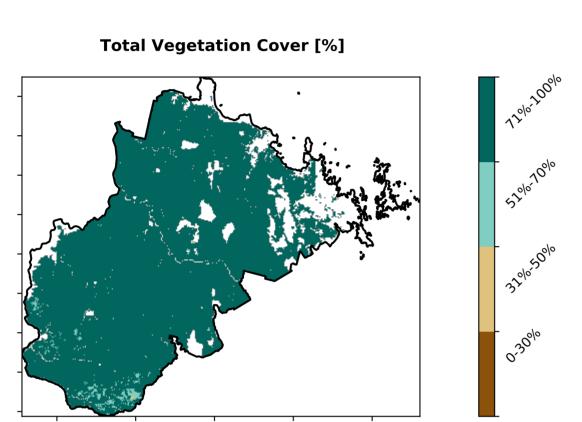


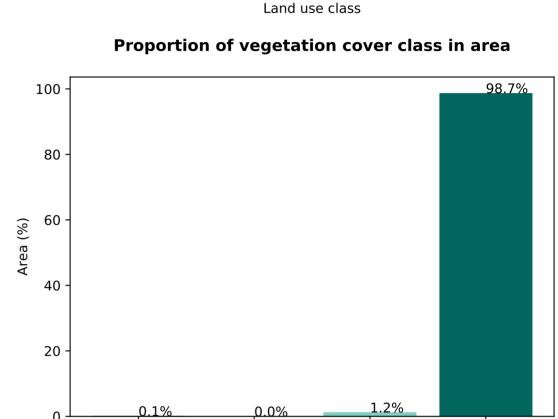
### **Grazing**

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

### 3 Agriculture - Grazing - Non-woodland forest

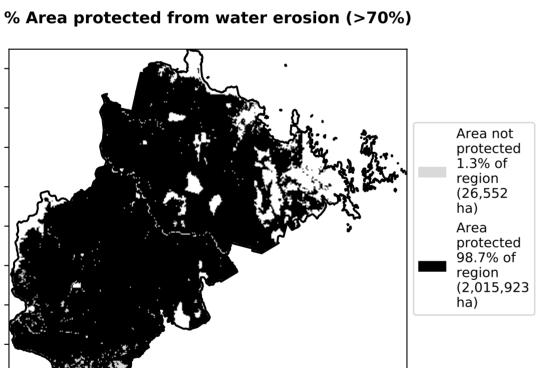






31%-50%

0-30%



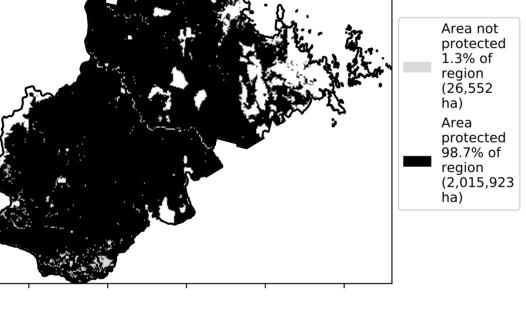
Area not protected 0.0% of region (0 ha) Area protected 100.0% of region (2,042,475 ha)

51%-70%

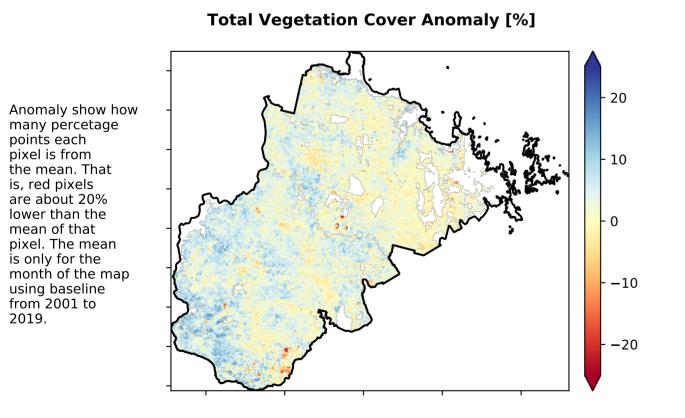
**Total Vegetation Cover class** 

% Area protected from wind erosion (>50%)

71%-100%

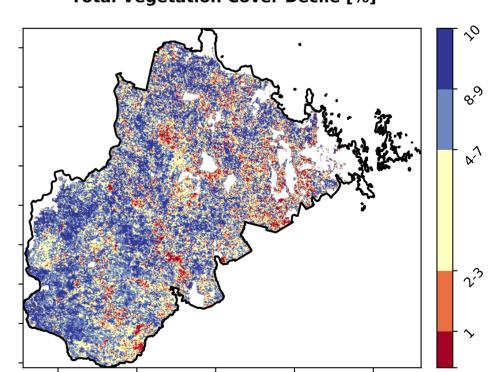


**Total Vegetation Cover Decile [%]** 



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.

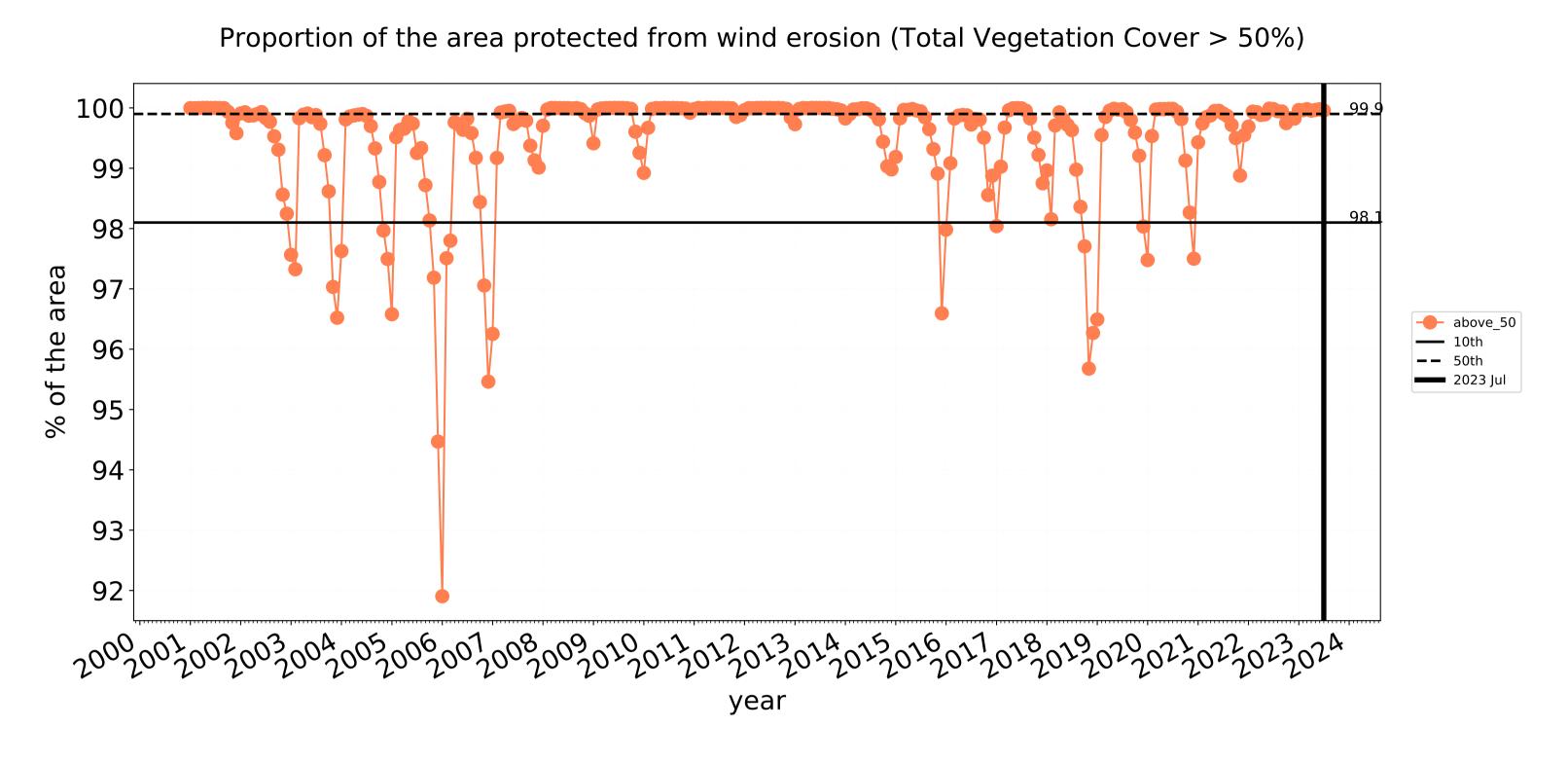


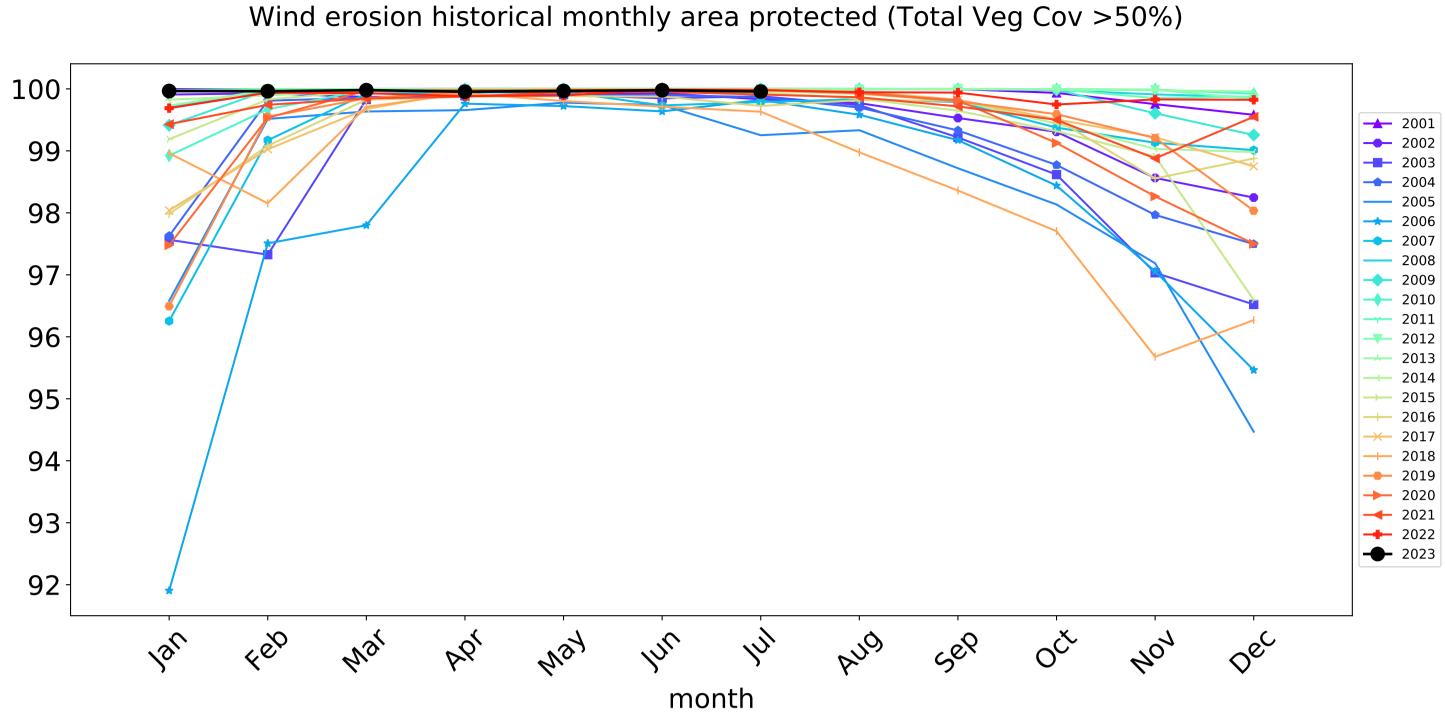


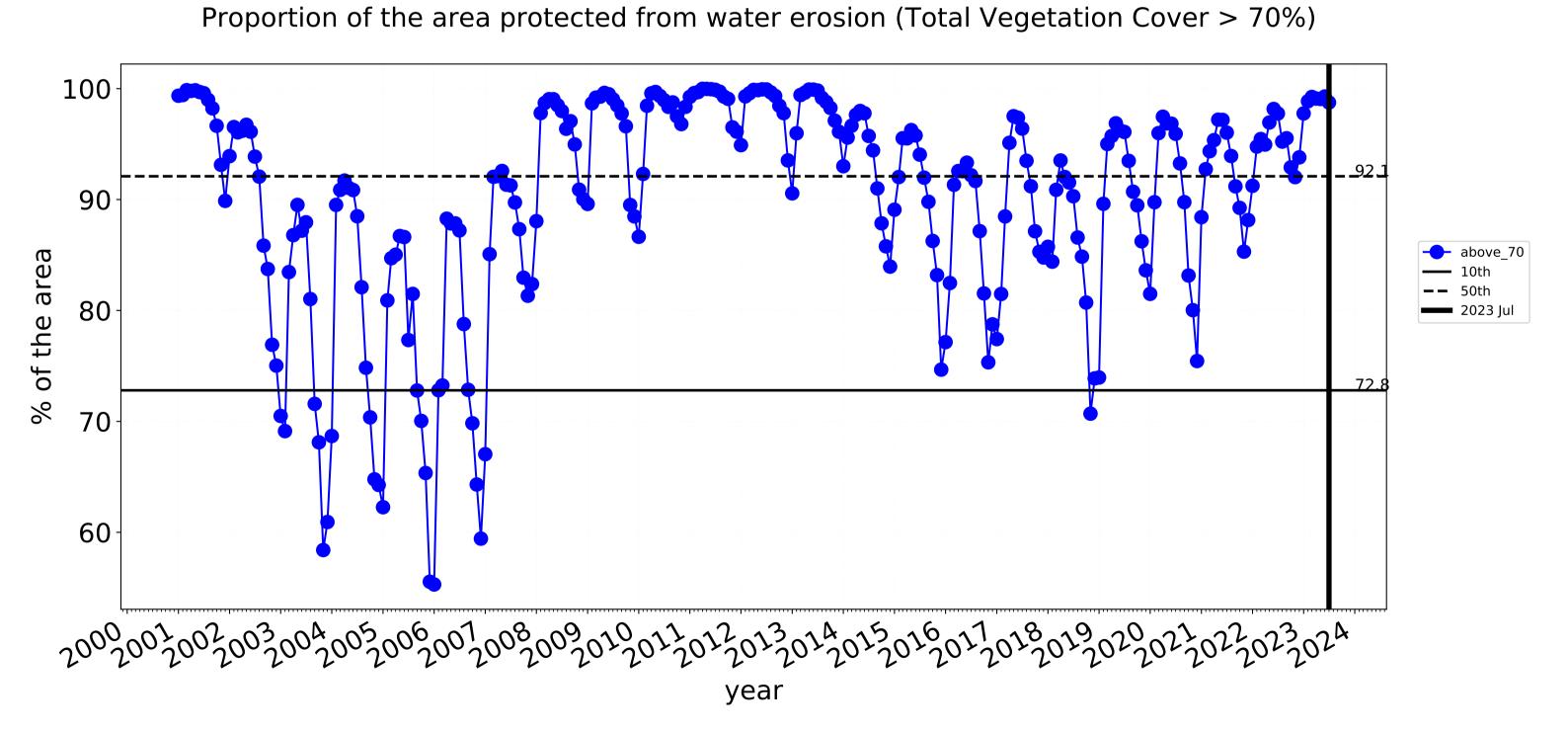


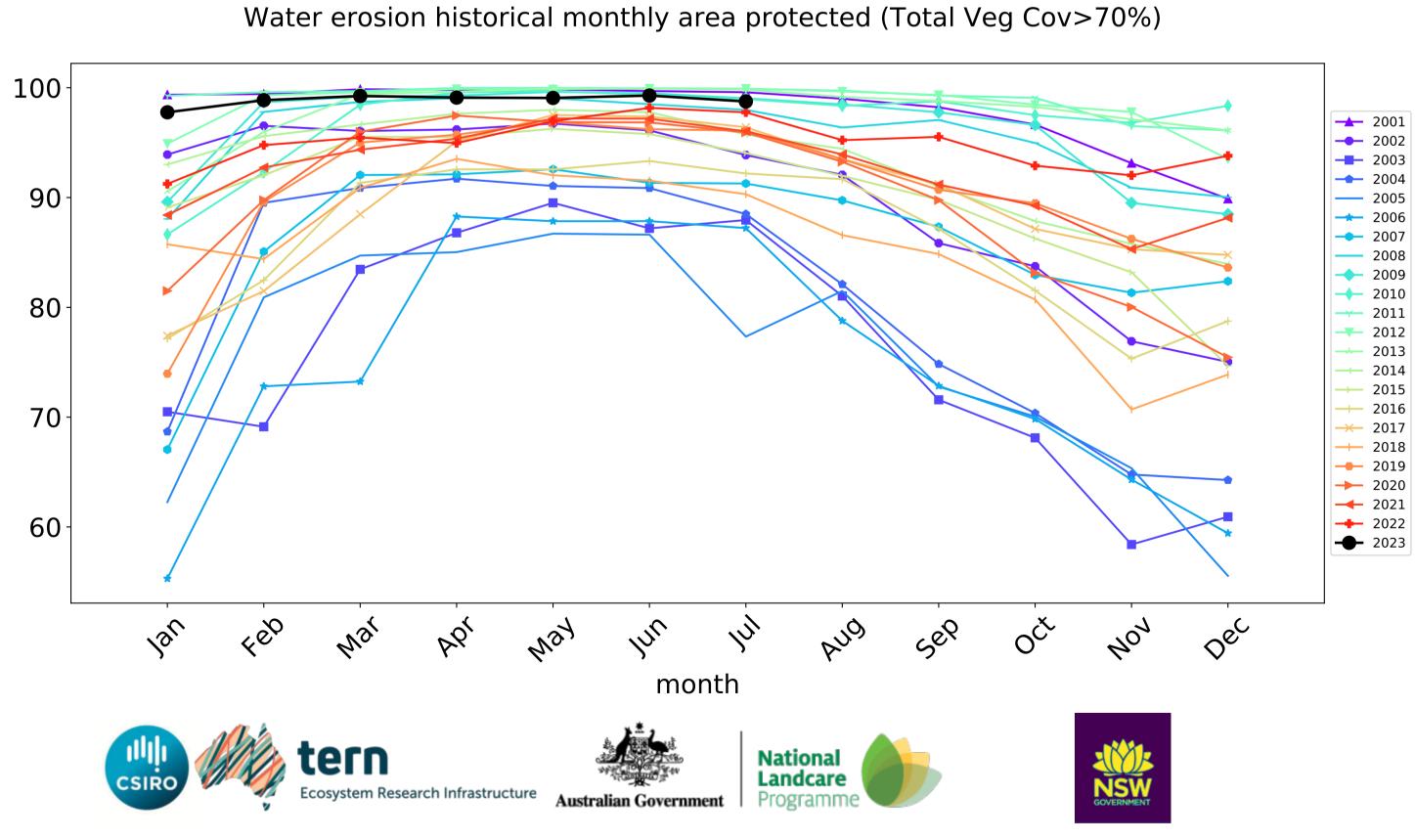


### **Grazing timeseries**





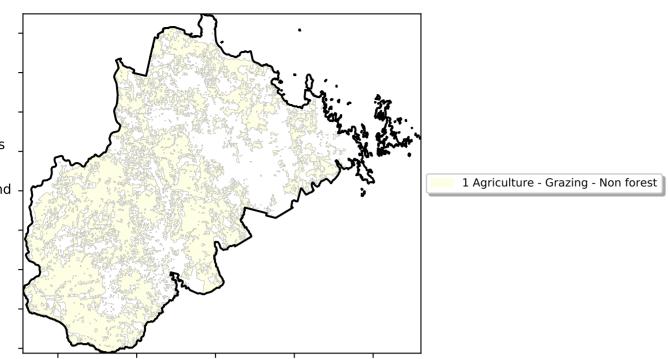




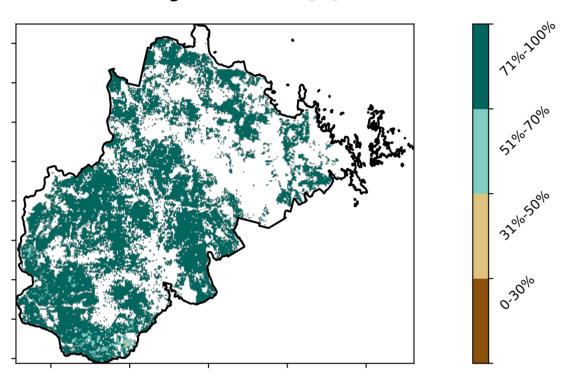
### **Grazing non forest**

### Land use and forest cover

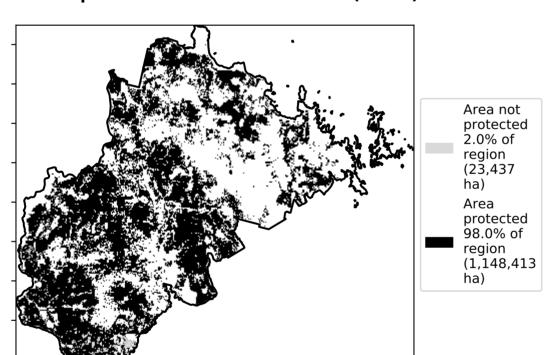
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)



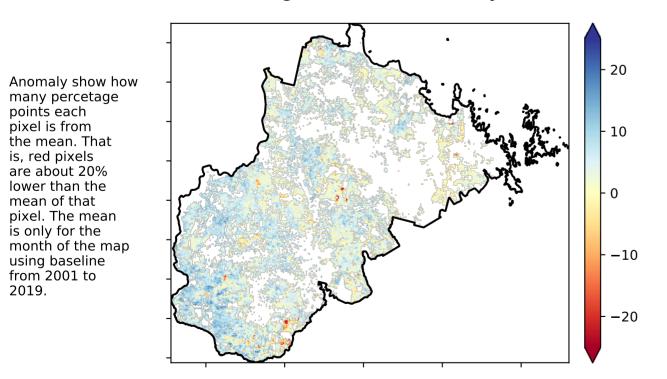
### **Total Vegetation Cover [%]**



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

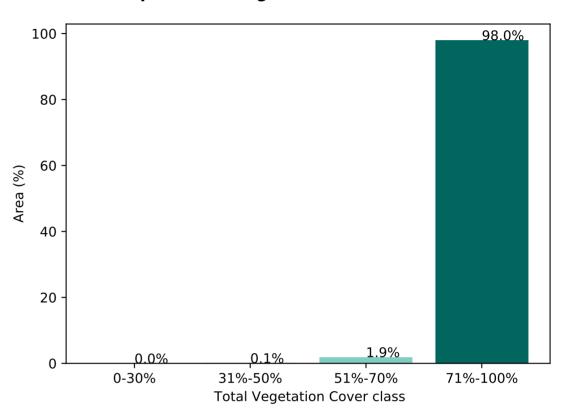


### Total Vegetation Cover Anomaly [%]

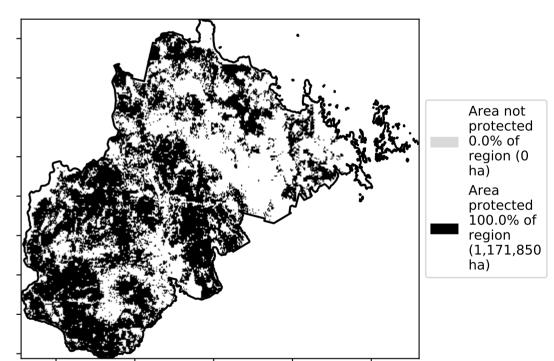


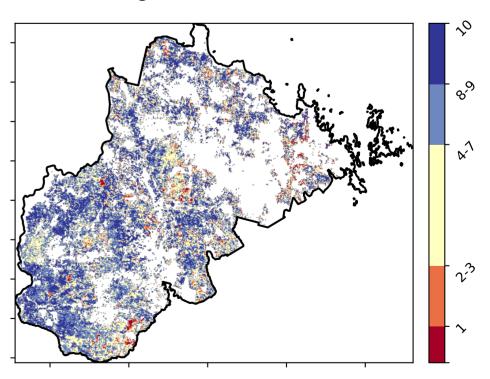
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

### Proportion of vegetation cover class in area



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





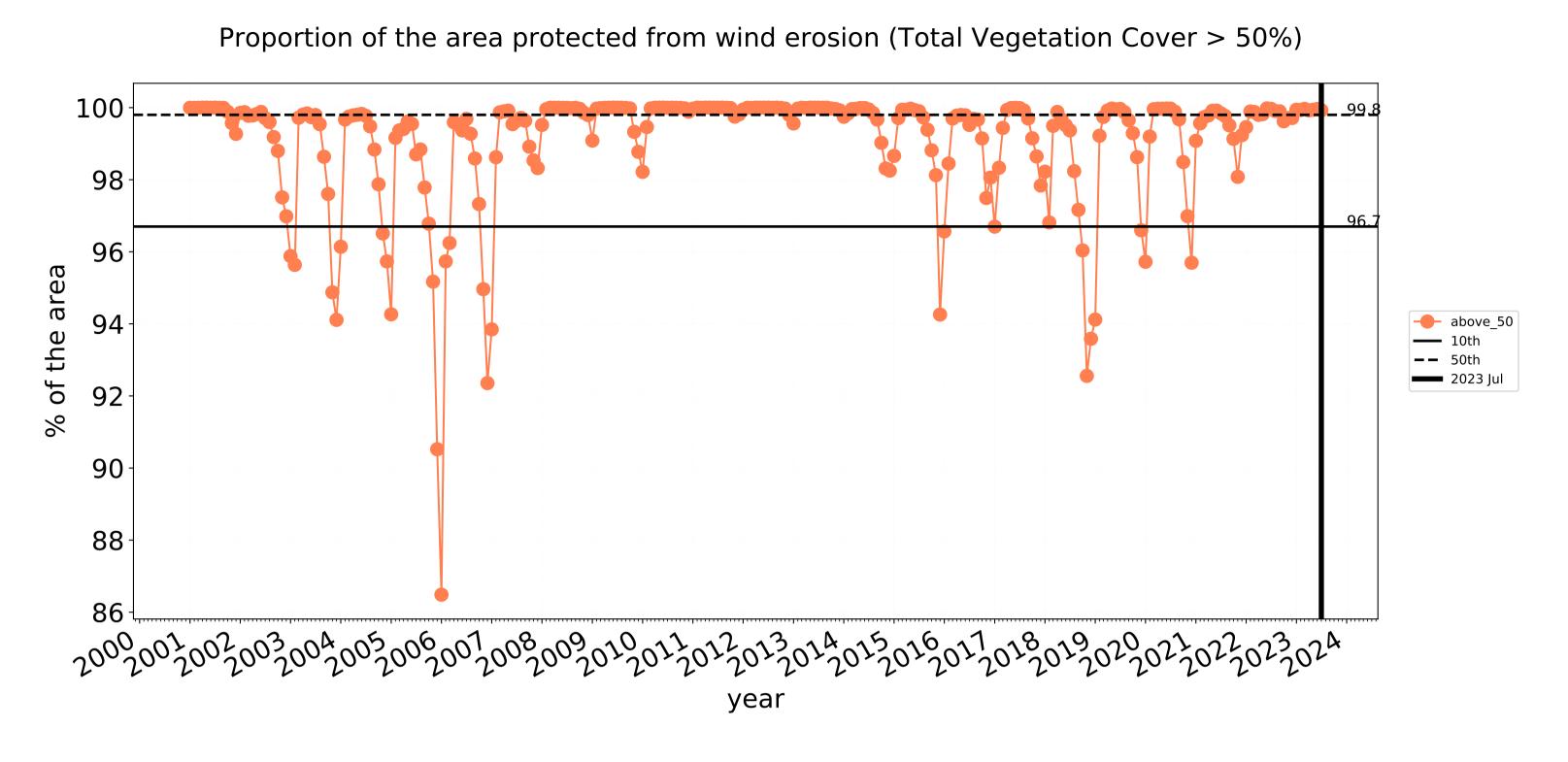


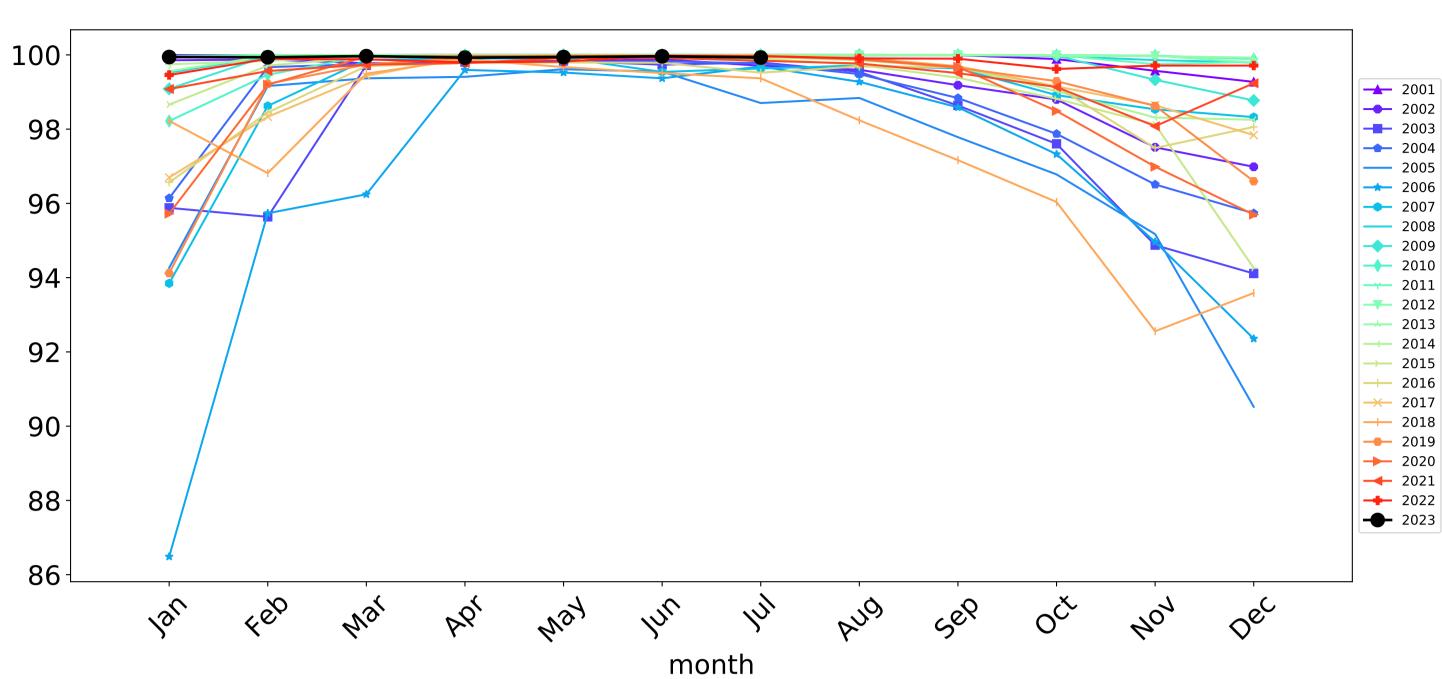




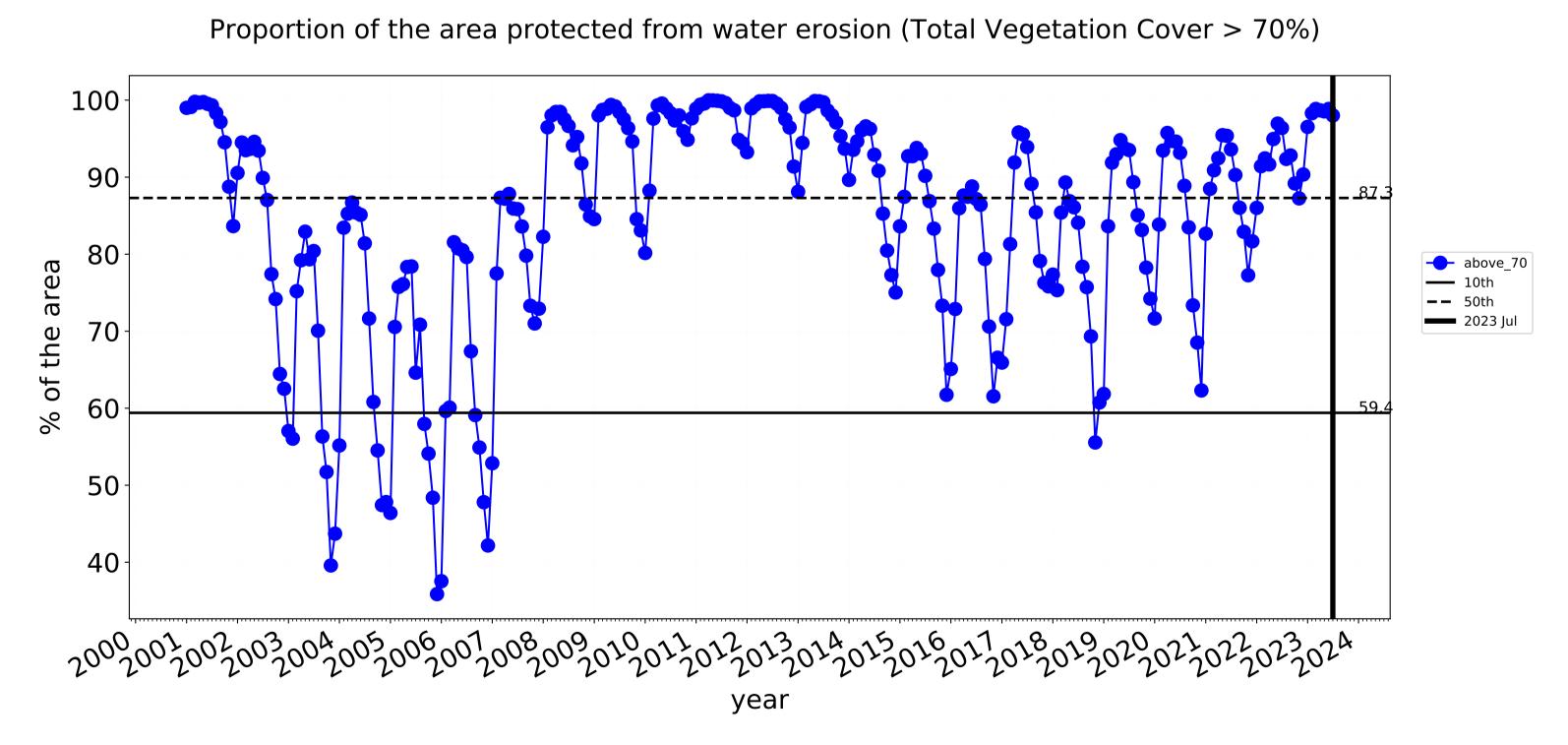


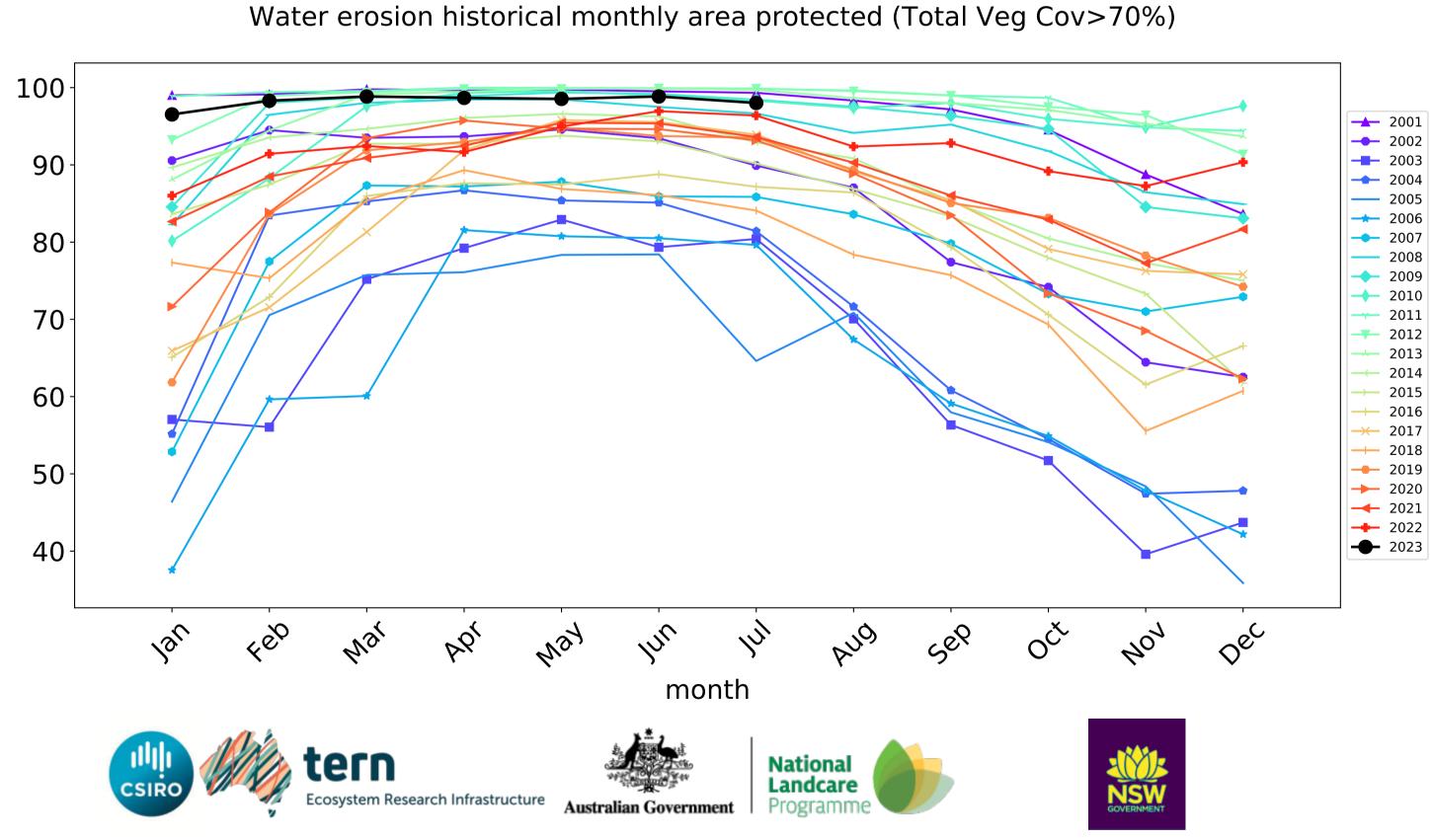
### **Grazing non forest timeseries**





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





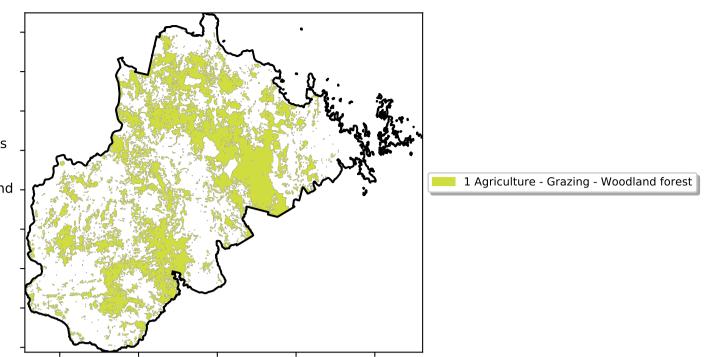
### **Grazing Woodland forest**

### Land use and forest cover

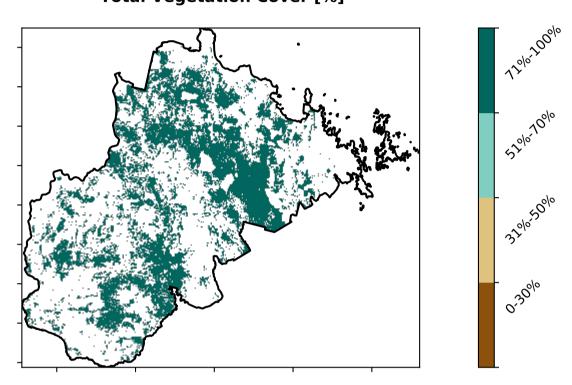


pixel. The mean is only for the month of the map

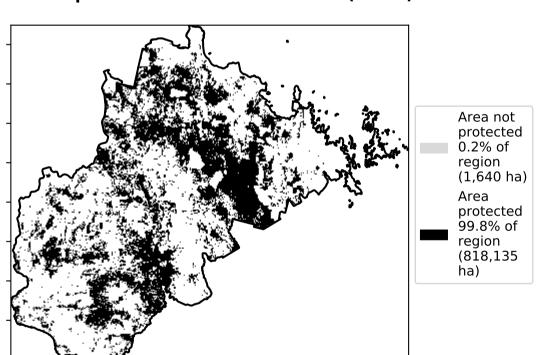
using baseline from 2001 to 2019.



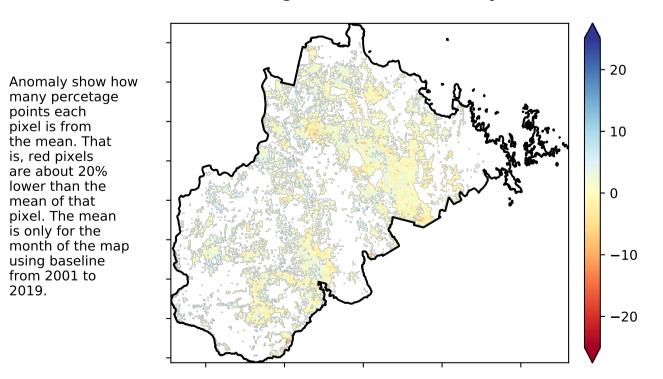
### **Total Vegetation Cover [%]**



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

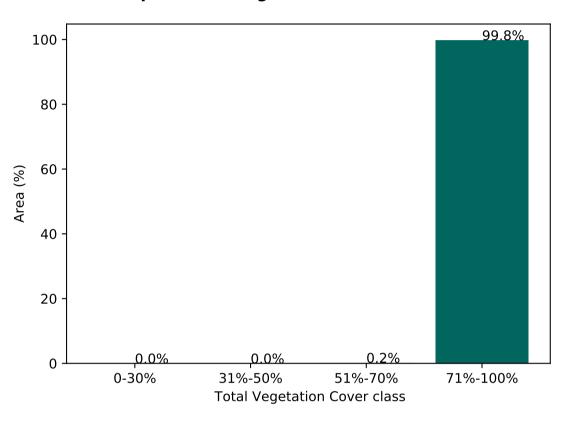


### **Total Vegetation Cover Anomaly [%]**

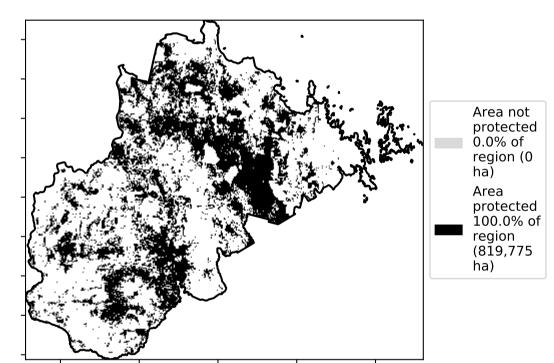


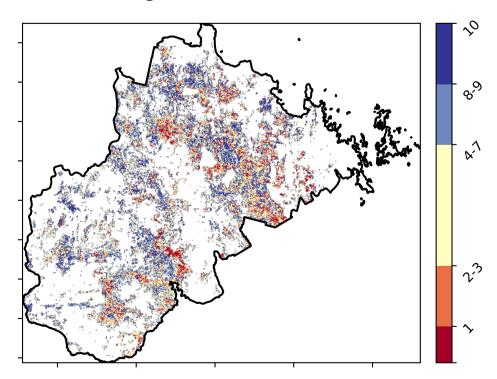
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the man using baseline. the map using baseline from 2001 to 2019.

### **Proportion of vegetation cover class in area**



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





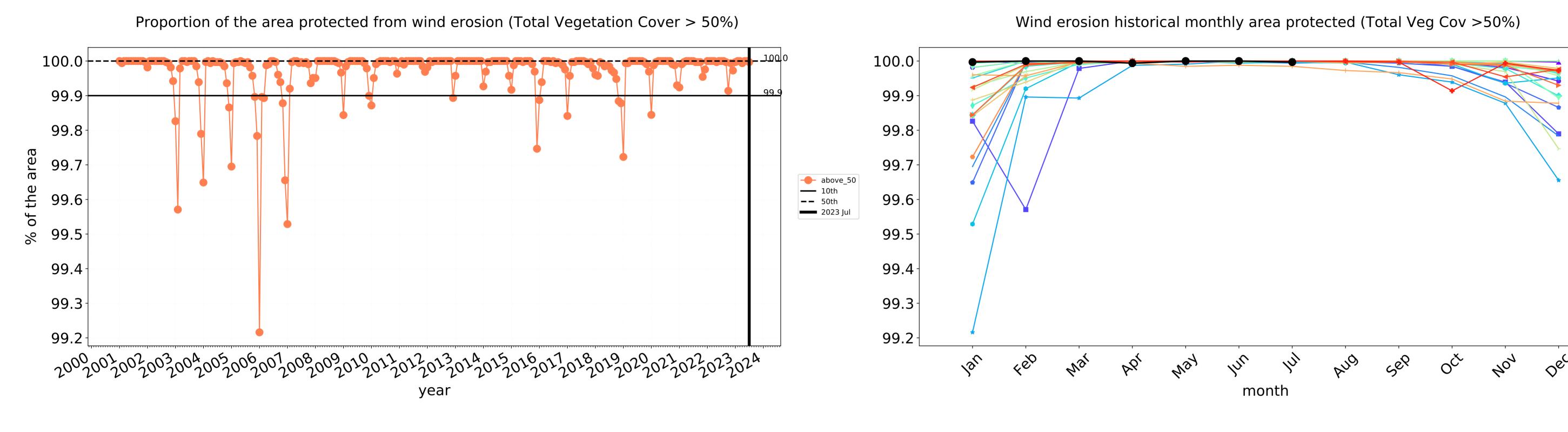


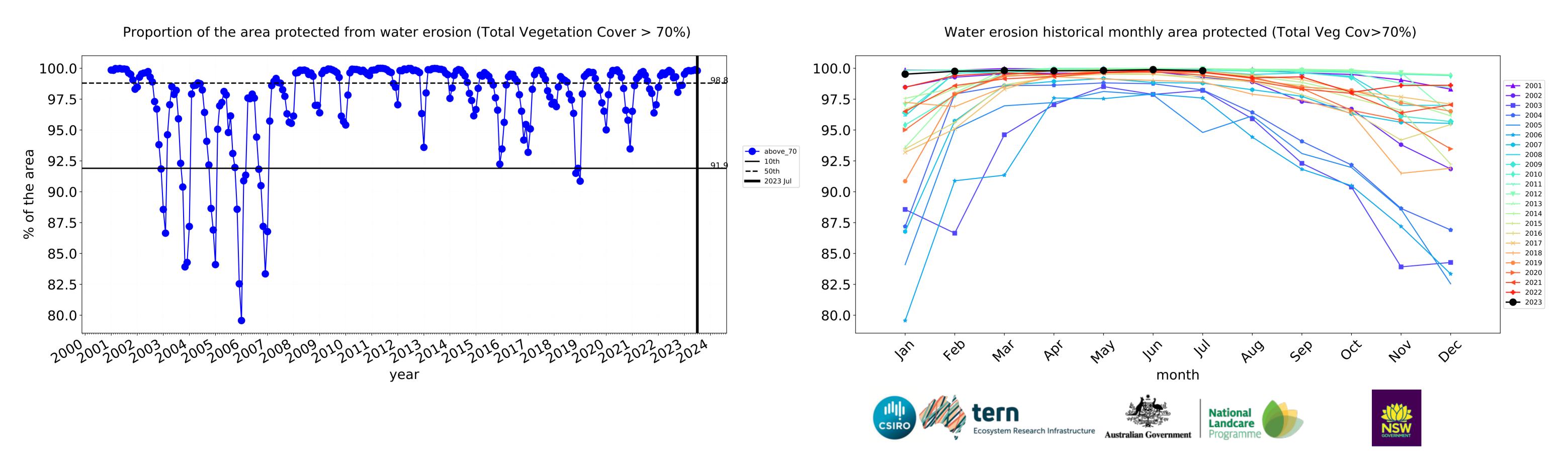






### **Grazing Woodland forest timeseries**





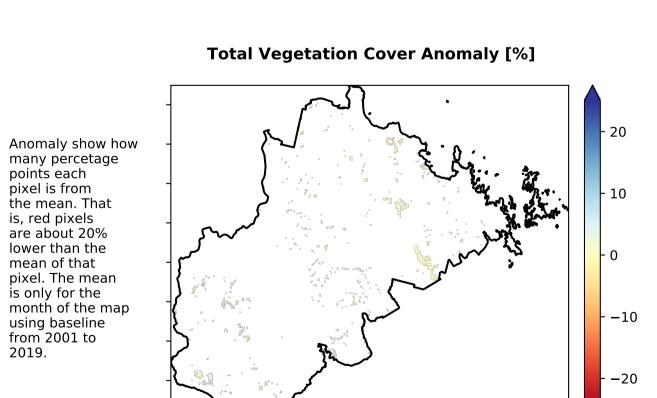
→ 2016→ 2017→ 2018

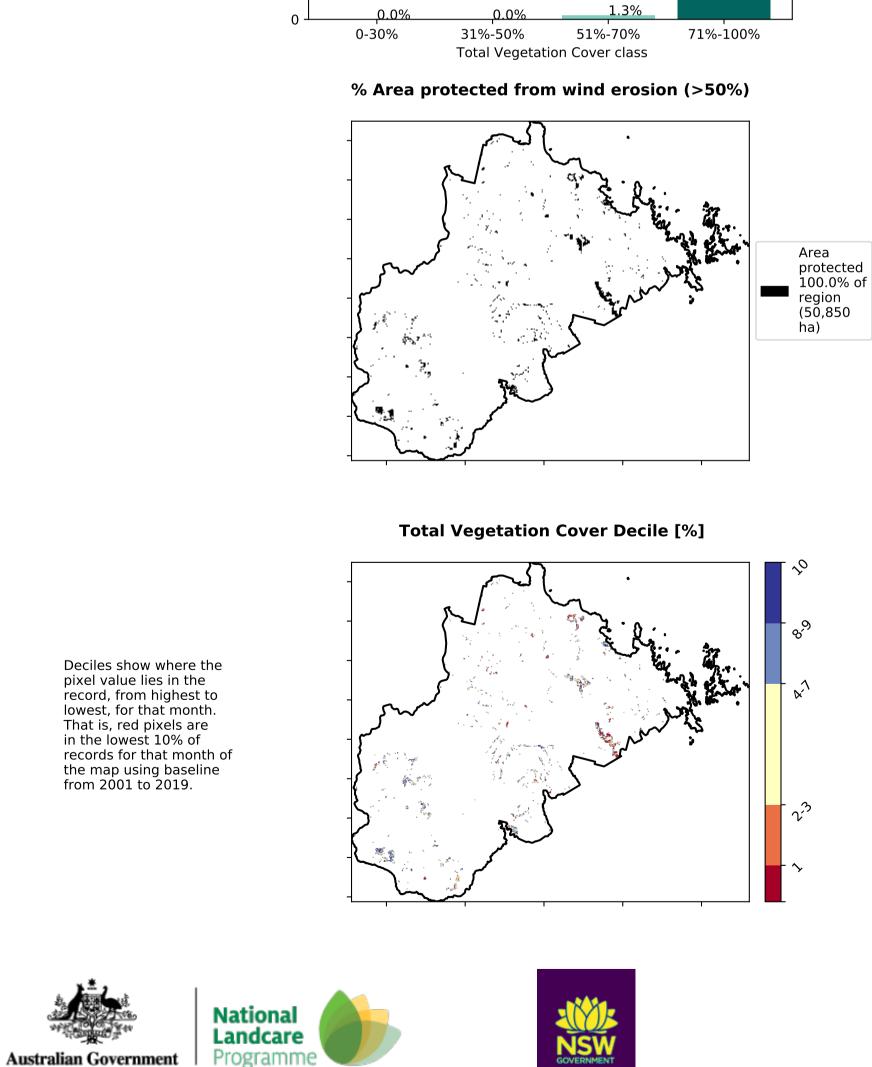
### **Grazing - Forest (non woodland)**

### 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) 1 Agriculture - Grazing - Non-woodland forest

# **Total Vegetation Cover [%]**

### % Area protected from water erosion (>70%) Area not protected 1.3% of region (661 ha) Area protected 98.7% of region (50,189 ha)





Proportion of vegetation cover class in area

100

80

60

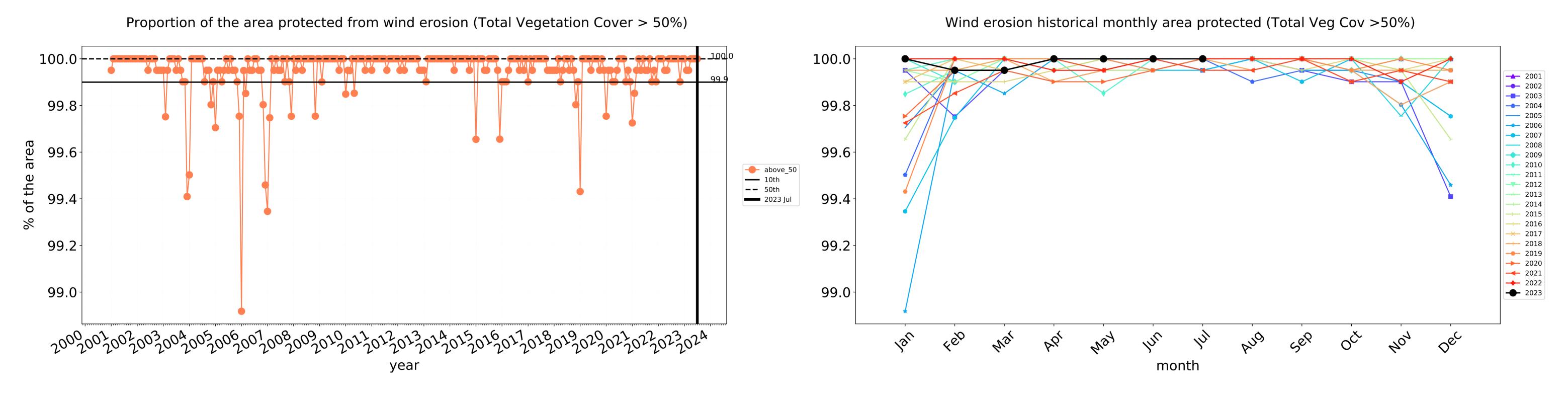
20

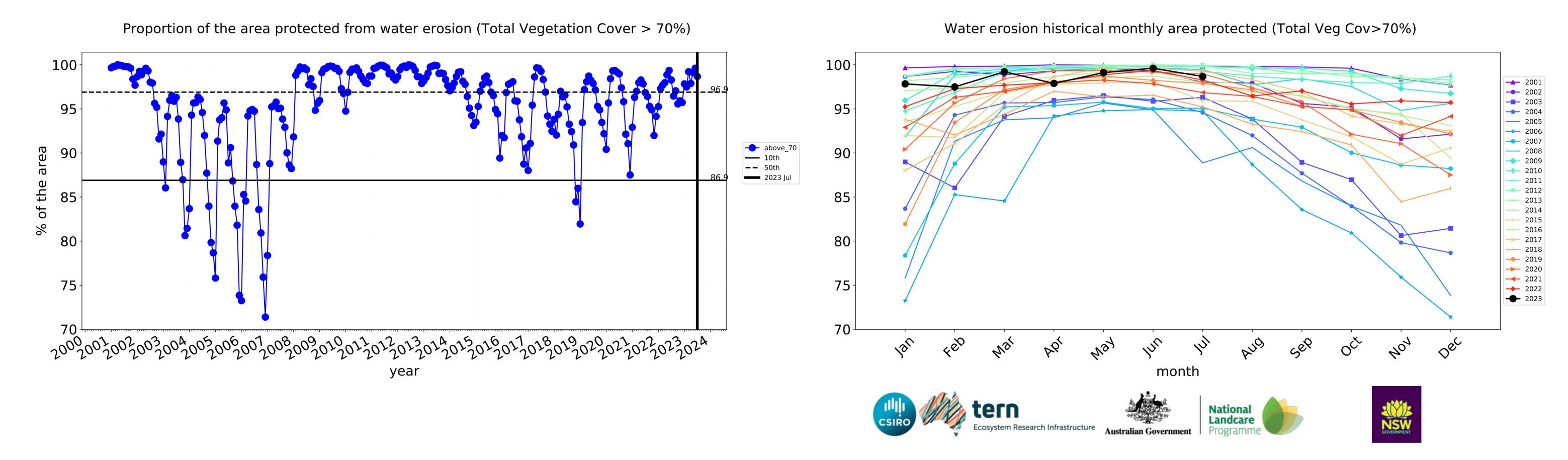
Area (%)

98.7%



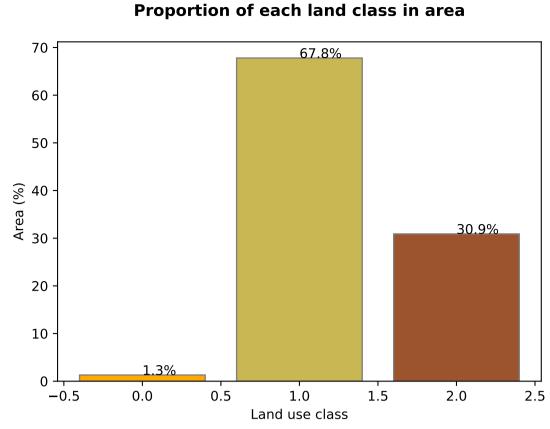






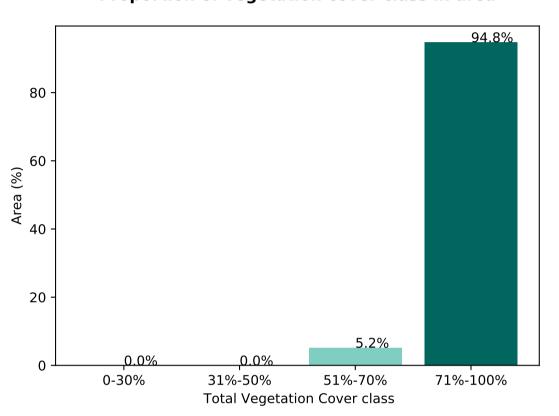
### Irrigation

### 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) 1 Agriculture - Grazing - Irrigated 2 Agriculture - Cropping - Irrigated 3 Agriculture - Horticulture - Irrigated

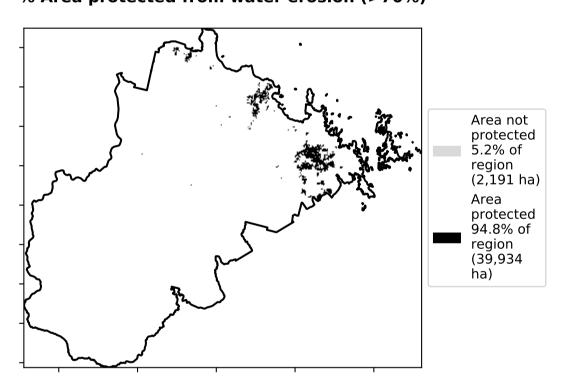




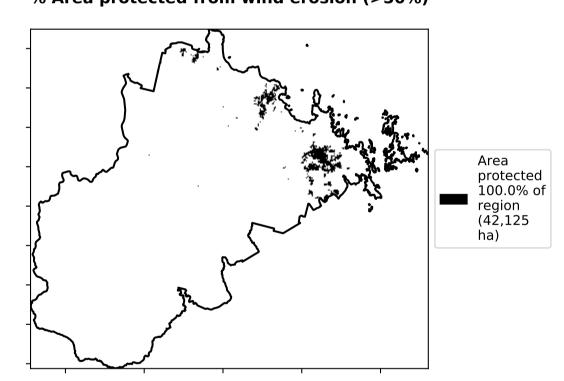
Proportion of vegetation cover class in area



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



% Area protected from wind erosion (>50%)



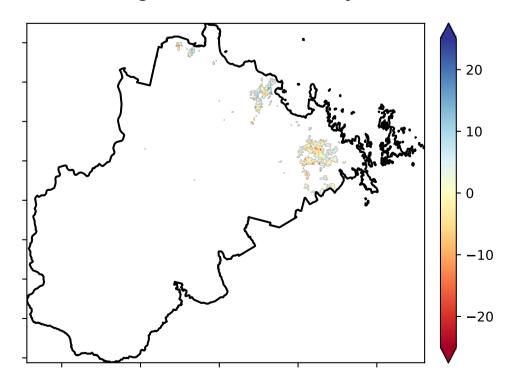
### **Total Vegetation Cover Anomaly [%]**

Anomaly show how many percetage points each pixel is from the mean. That

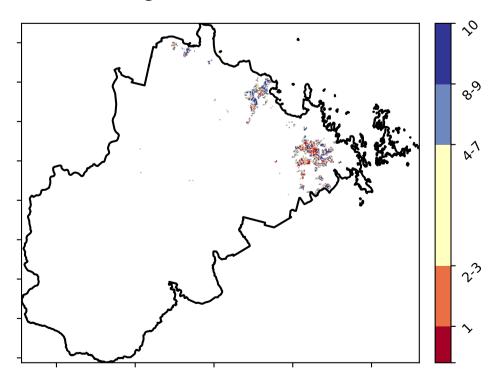
is only for the month of the map

using baseline from 2001 to 2019.

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



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.



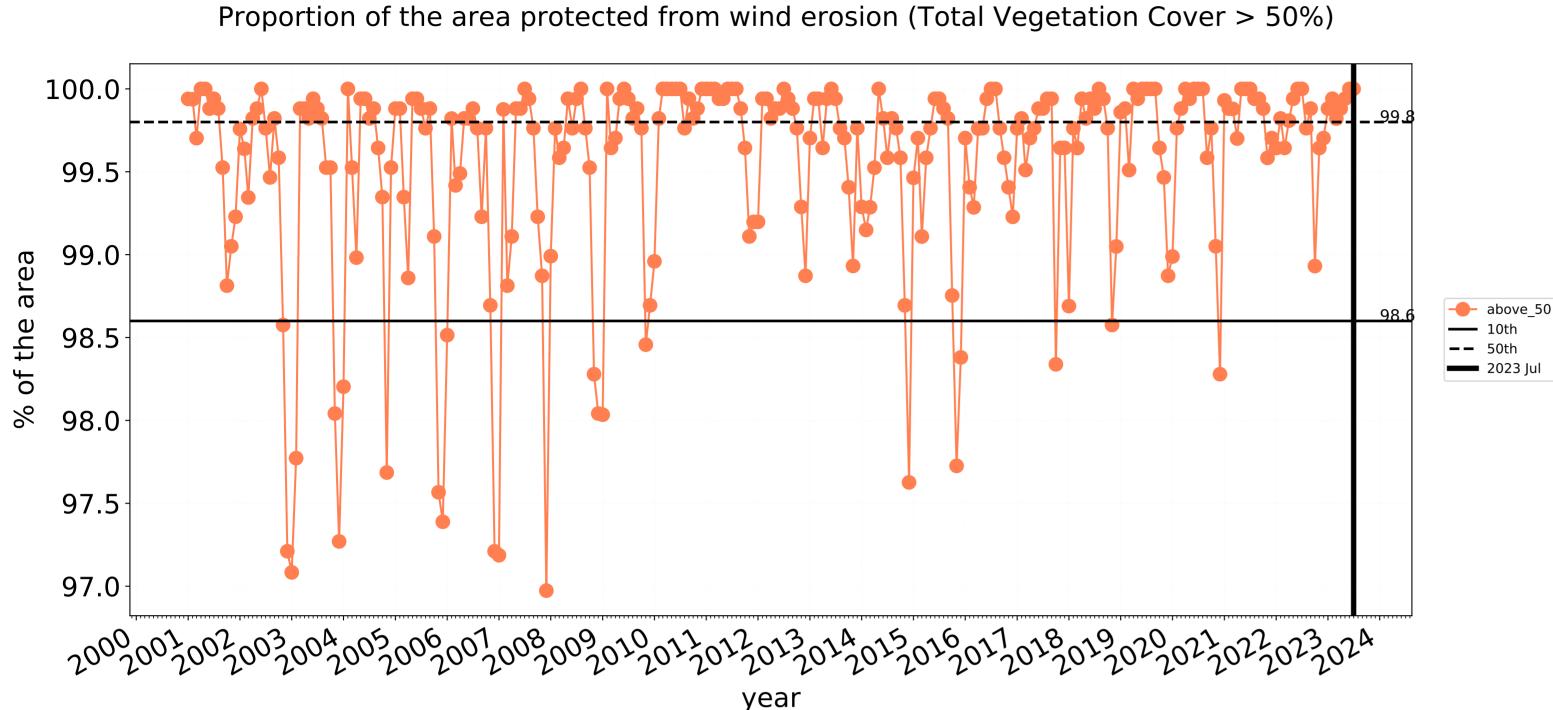


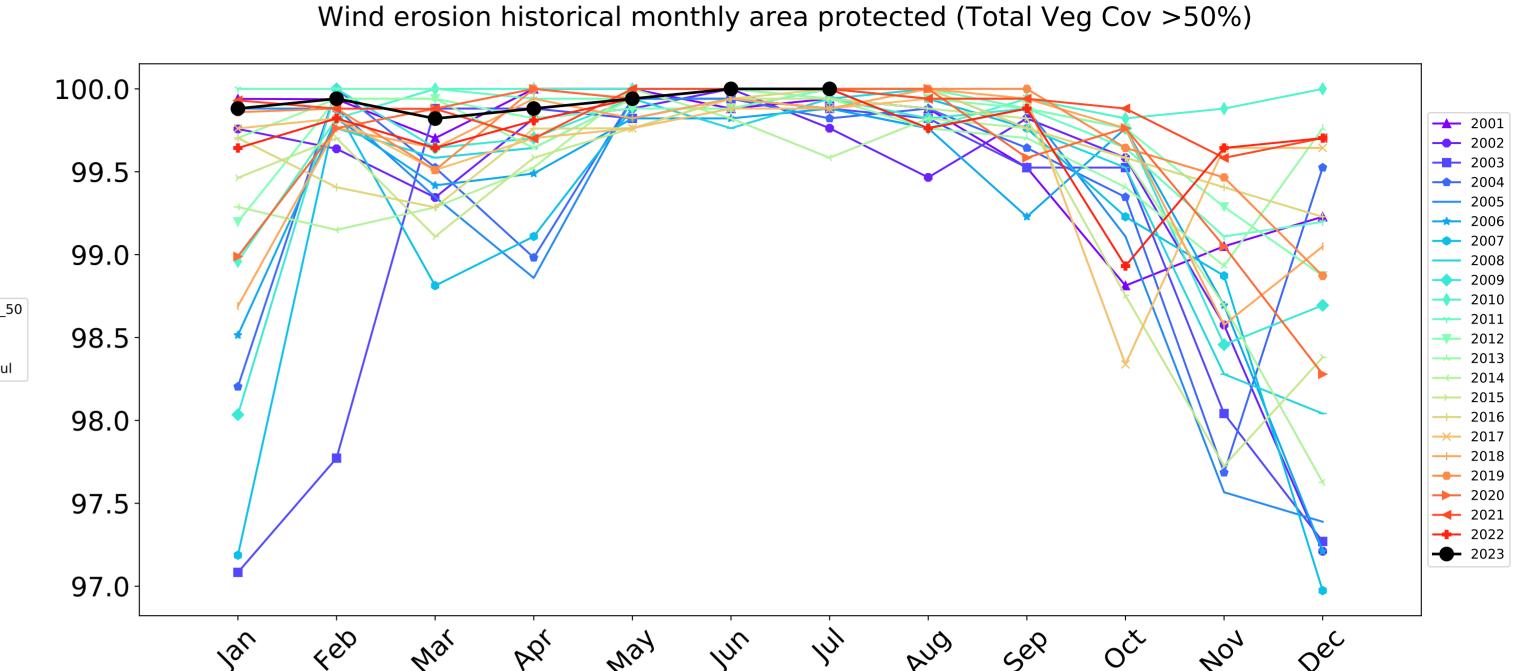




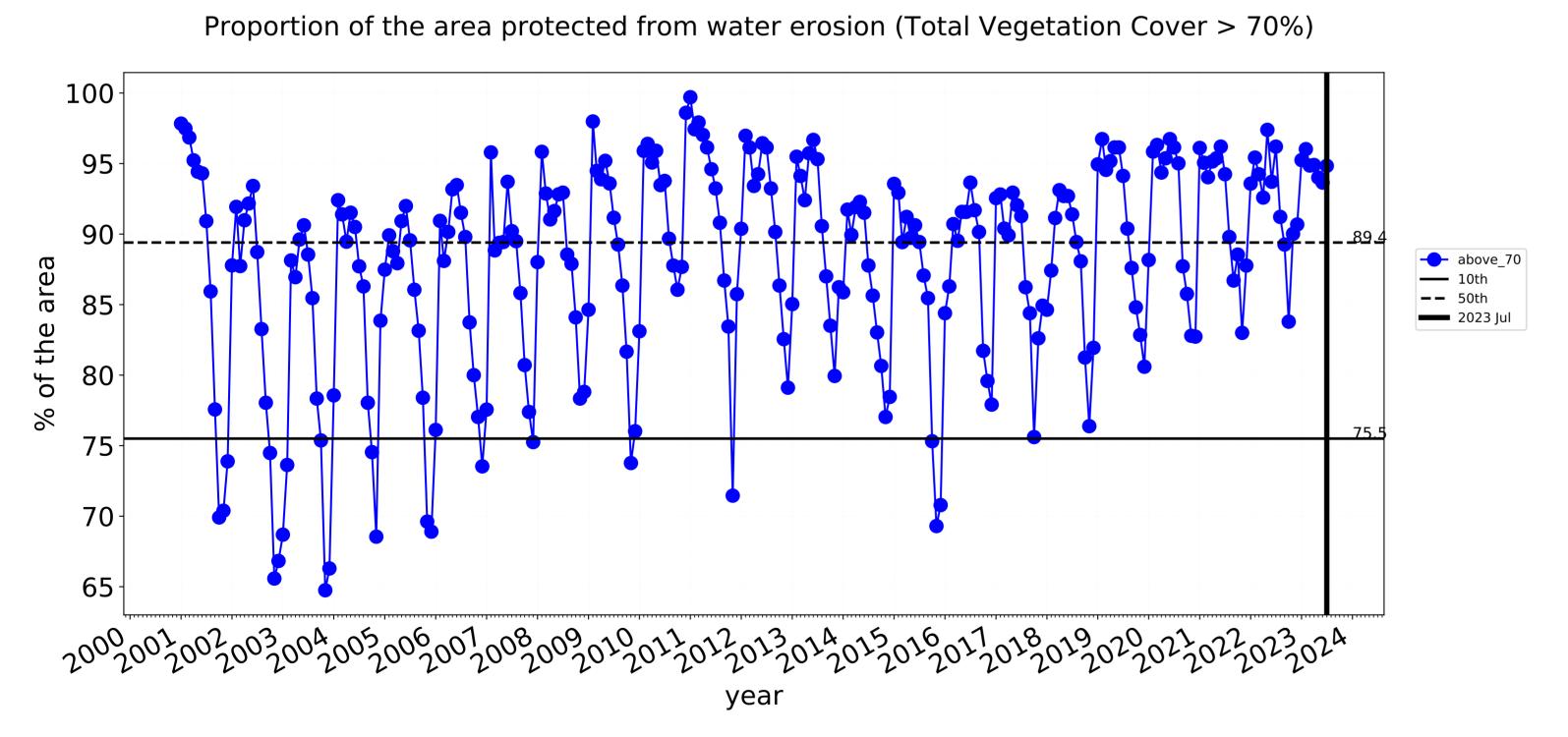


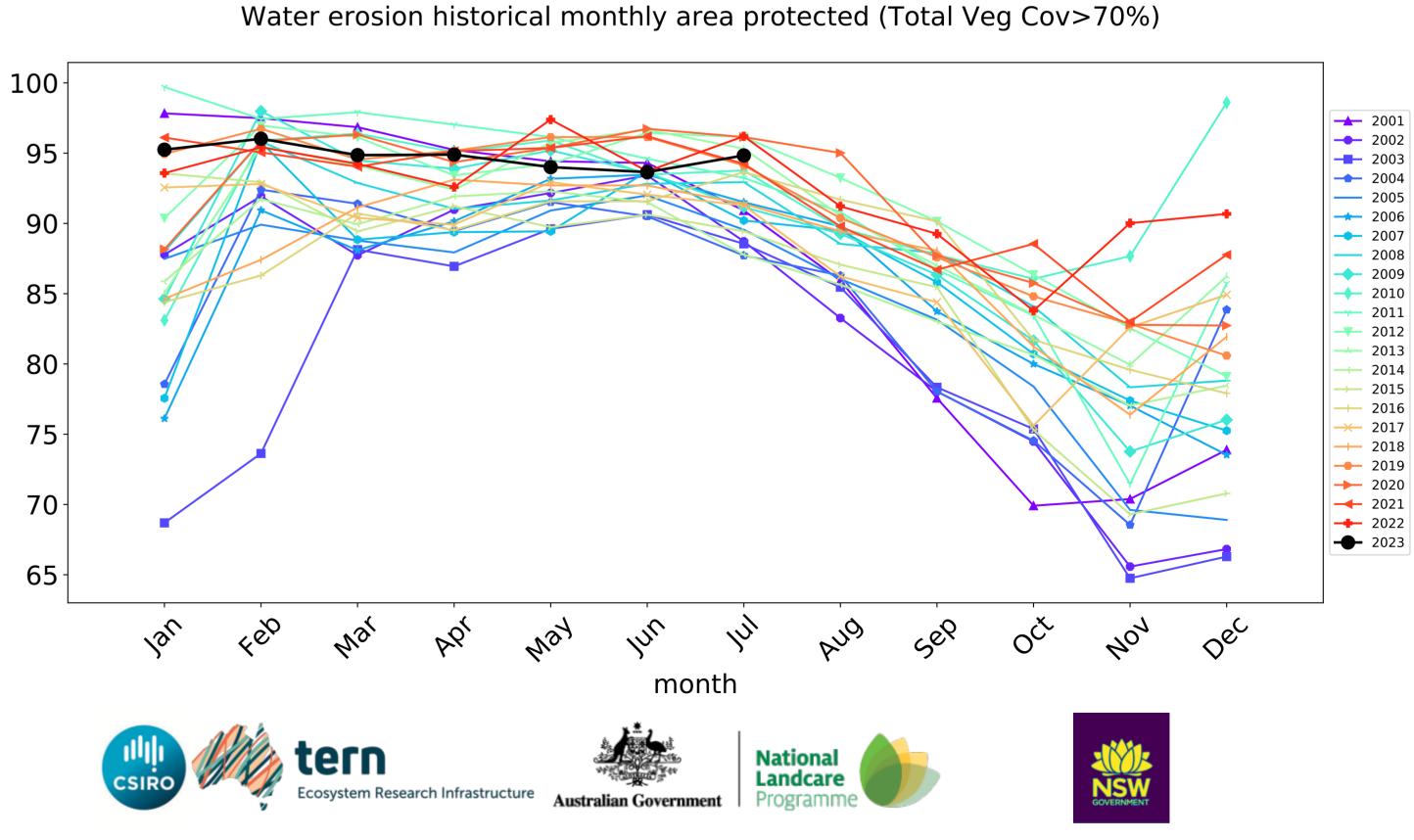
### Irrigation timeseries





month



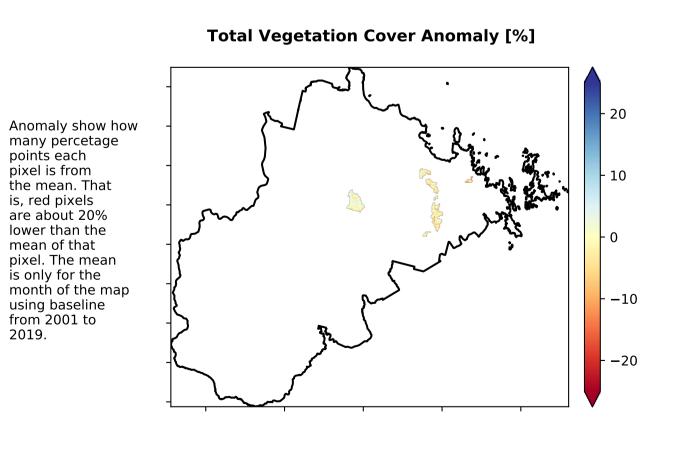


### **Production native forests and plantation forests**

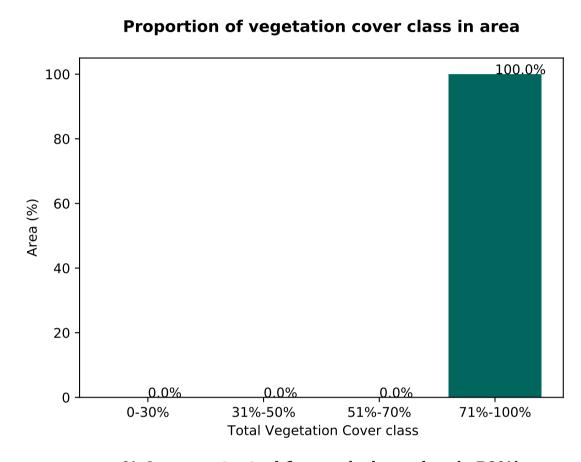
## Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) Of Australia (2018) 1 Production native forests and plantation forests 1 Production native forests and plantation forests

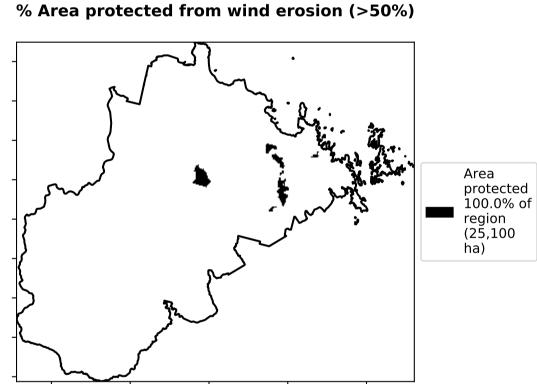
# Total Vegetation Cover [%]

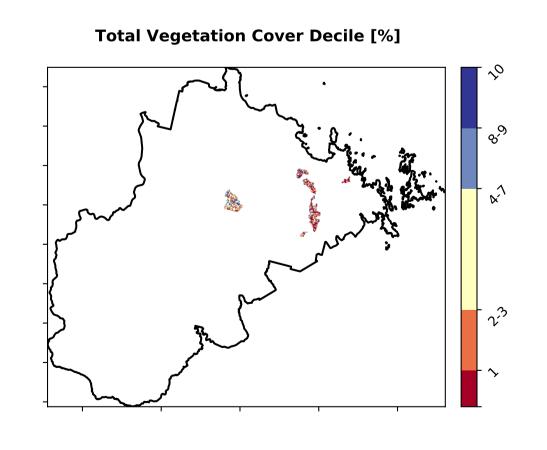
# Area protected from water erosion (>70%) Area protected 100.0% of region (25,100 ha)



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.







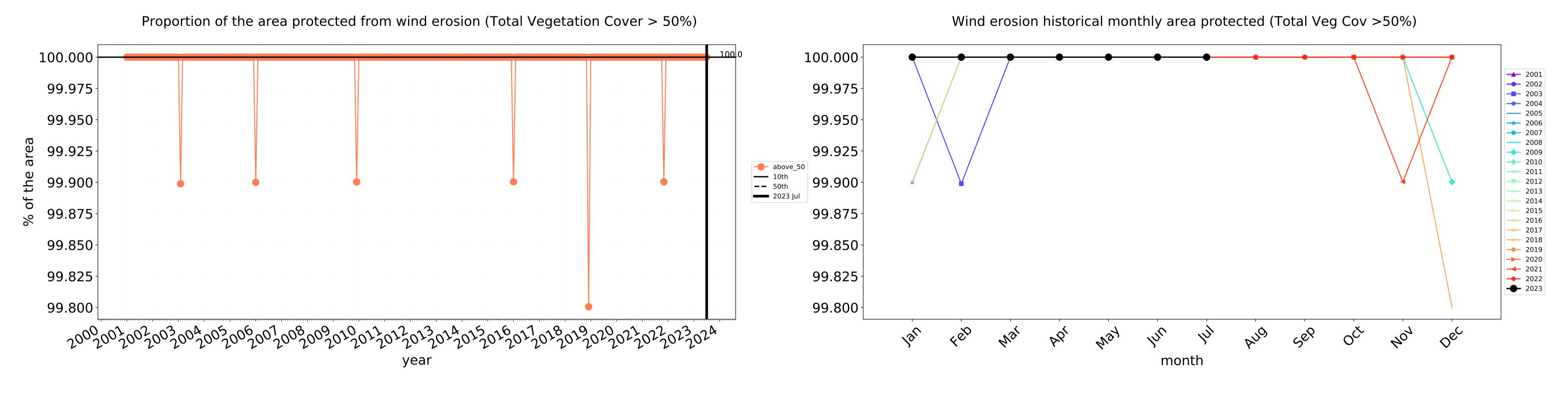


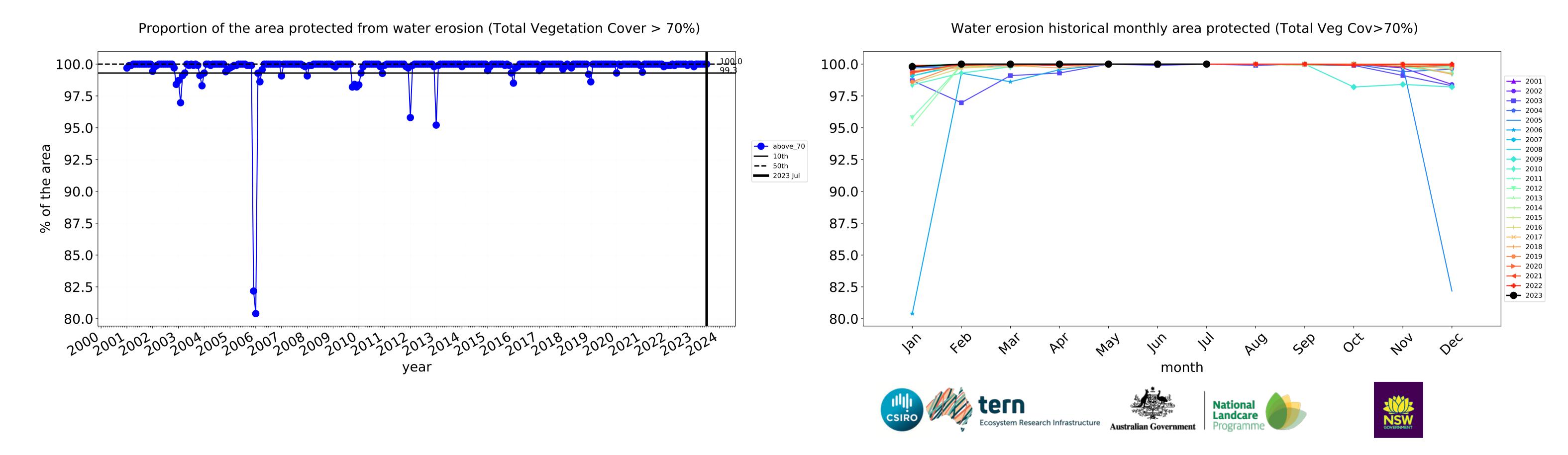






### **Production native forests and plantation forests timeseries**





### Whitsunday\_(R) (2,358,225 ha and no data 23,651 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	2,358,225	100.0% 2,357,375	99.8% 2,354,475	98.2% 2,316,875	91.3% 2,152,600	51.0% 1,202,225	14.4% 339,575
Conservation and natural environments	170,125	99.7% 169,625	99.4% 169,100	97.4% 165,750	91.2% 155,125	54.2% 92,200	19.2% 32,675
Conservation and natural environments non forest	28,400	99.5% 28,250	98.8% 28,050	94.2% 26,750	75.4% 21,400	16.6% 4,725	2.7% 775
Conservation and natural environments Woodland forest	57,125	99.9% 57,075	99.8% 57,025	98.6% 56,325	95.2% 54,400	64.2% 36,650	21.8% 12,425
Conservation and natural environments Forest (non woodland)	84,600	99.6% 84,300	99.3% 84,025	97.7% 82,675	93.8% 79,325	60.1% 50,825	23.0% 19,475
Agriculture	2,084,900	100.0% 2,084,875	100.0% 2,084,025	98.7% 2,057,175	92.1% 1,919,550	51.5% 1,074,275	14.2% 295,075
Grazing	2,042,475	100.0% 2,042,450	100.0% 2,041,600	98.7% 2,016,925	92.4% 1,888,250	52.0% 1,063,100	14.3% 292,050
Grazing non forest	1,171,850	100.0% 1,171,825	99.9% 1,171,000	98.0% 1,148,575	88.7% 1,039,100	45.4% 532,200	12.6% 147,375
Grazing Woodland forest	819,775	100.0% 819,775	100.0% 819,750	99.8% 818,175	97.8% 801,650	61.9% 507,525	16.6% 136,350
Grazing - Forest (non woodland)	50,850	100.0% 50,850	100.0% 50,850	98.7% 50,175	93.4% 47,500	46.0% 23,375	16.4% 8,325
Irrigation	42,125	100.0% 42,125	100.0% 42,125	94.8% 39,950	73.6% 31,000	26.4% 11,100	7.1% 3,000
Production native forests and plantation forests	25,100	100.0% 25,100	100.0% 25,100	100.0% 25,100	99.5% 24,975	69.4% 17,425	21.7% 5,450







